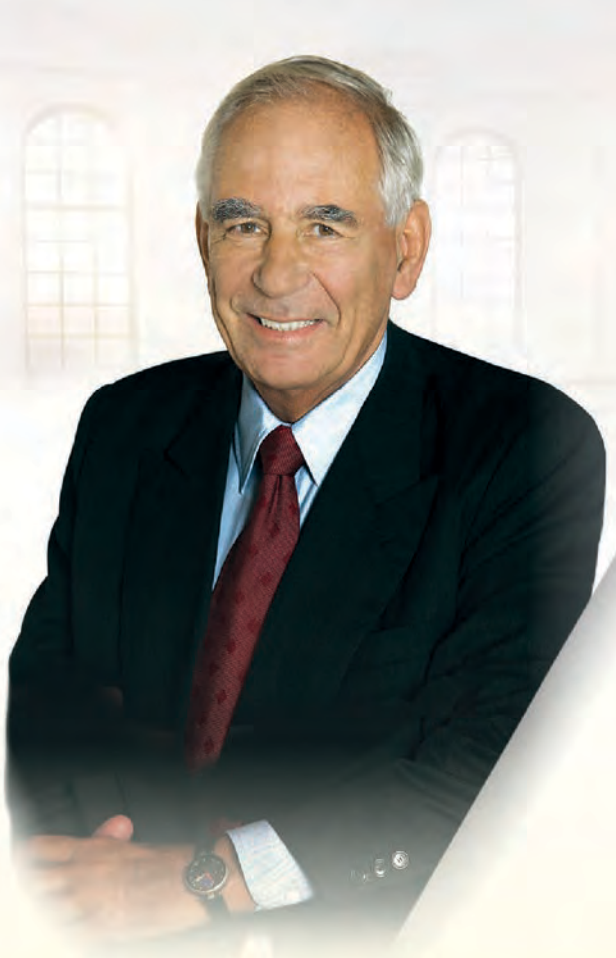
GÜHRING

# PODER DE ROSCADO



## Dr. Jörg Gühring

Presidente de la gerencia

## Oliver Gühring

Gerente de ventas y marketing

**7000**

Colaboradores
Mundialmente

**3500**

Colaboradores
en Alemania

Programa interno de
formación y especialización

Transmisión internacional de
conocimientos mediante programas de
intercambio para colaboradores

## Dietmar Pfränger

Gerente investigación y desarrollo,
logística, técnica y producción

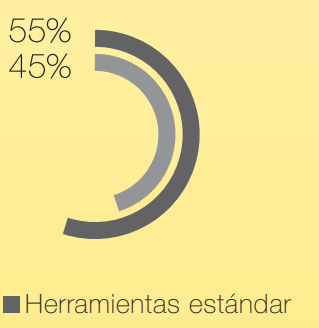
## Bernd Schatz

Gerente administración y finanzas

Segmento principal
Herramientas

**50000**
artículos estándar

**2000**
tipos de herramientas



# Todo de una sola mano – amplio y global

Con una red global de centros de producción Gühring desarrolla y produce herramientas de precisión para todos los mercados importantes. Usuarios de la industria del automóvil, de la aeronáutica o industria espacial y de la industria de la maquinaria, apuestan por las herramientas que marcan el camino y que se producen en todo el mundo según los estándares de calidad y al máximo nivel.

**28**
CENTROS DE PRODUCCIÓN

**46**
FILIALES

**47**
CENTROS DE SERVICIO

Con tecnologías innovadoras Gühring realiza deseos específicos para sus clientes desde el desarrollo de procesos hasta la aplicación en serie de herramientas de precisión – de manera flexible, a tiempo y global. Para este fin trabajan los expertos internacionalmente, asesorando al cliente. De esta forma están disponibles mundialmente y de una sola mano, producción, servicio y asesoramiento.

Producción de metal duro propia

Recubrimientos propios

Fabricación de maquinaria propia

Estándar de calidad máximo a nivel mundial

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www.guehring.de

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Gühring KG
service@german-carbide.com

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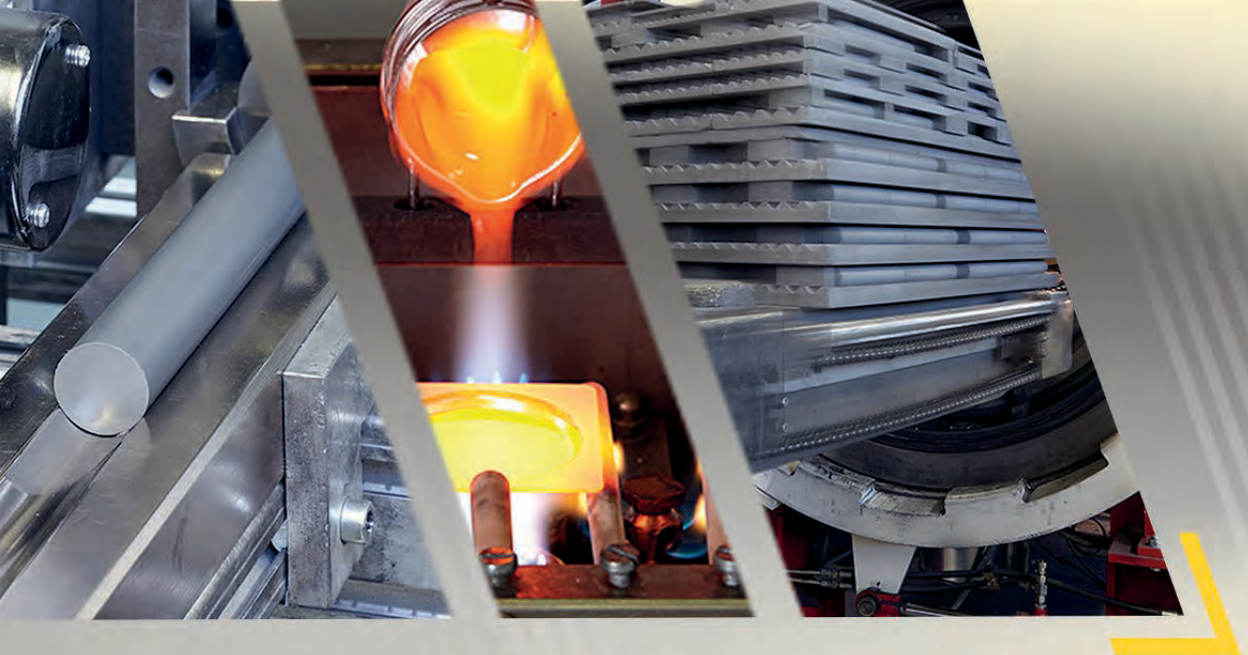
www.guhring.co.kr



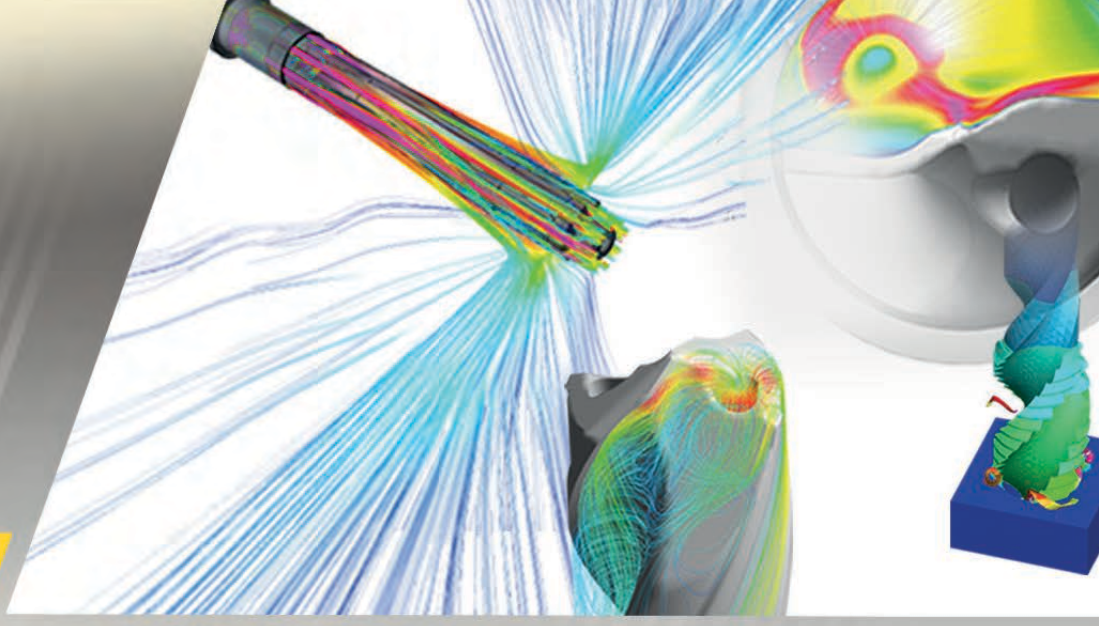
## MATERIALES DE CORTE

Producción de metal duro propia

Coordinación óptima de todos los parámetros de herramienta mediante sectores de I&D propios

## APARATOS Y FABRICACIÓN DE MAQUINARIA

Fabricación propia de maquinaria y desarrollo propio de aparatos



## GEOMETRÍAS

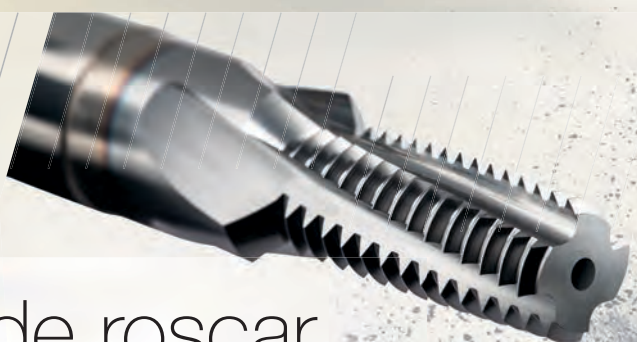
I&D propios para el desarrollo de las herramientas

## RECUBRIMIENTOS

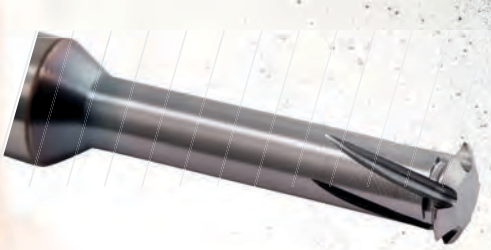
Hornos propios de recubrimiento y desarrollo de capas

# MÁS VARIEDAD PARA SU FABRICACIÓN

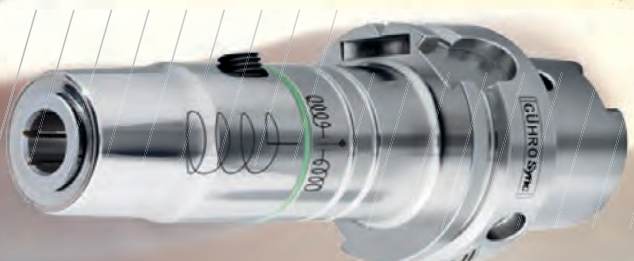
con nuestro programa de fresas de roscar



- Fresas de roscar



- Micro-fresas de roscar



- GühroSync

❖ Machos de roscar

❖ Machos de laminación

❖ Micro-machos de laminación

SIRIUS®

NEW

# Mecaniza más tiempo

## IDEAL PARA ACEROS INOXIDABLES ES EL SOLUCIONADOR DE PROBLEMAS CON UNA GRAN RESISTENCIA AL DESGASTE

Más informaciones sobre nuestra capa Sirius bajo el código QR o directamente en www.guehring.de

Art.nº 4218 ver en página 38

## Los nuevos machos de roscar VA

NEW *Mucha espiral para más seguridad de proceso, recubrimiento combinado para mayor rendimiento*

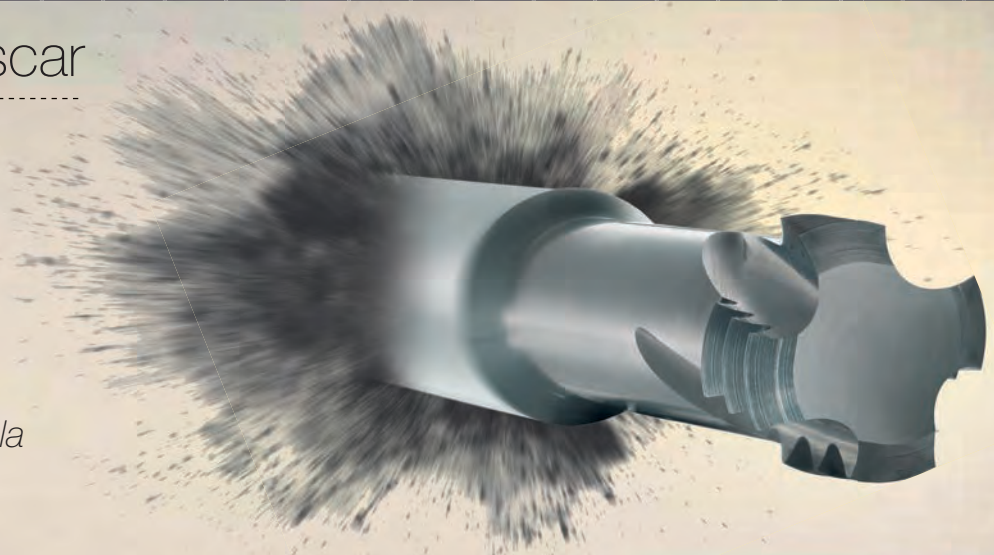
Art.nº 393 ver en página 244

# Fresas de roscar

NEW

*Metal duro especial, geometría innovadora y recubrimiento ideal para la herramienta perfecta*

Nº de artículo 4227 ver en página 703



Mecanizado en duro > 45 HRC

# Fresas de roscar con plano de viruta

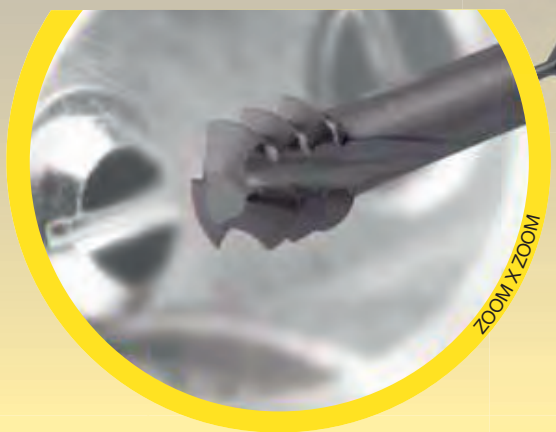
NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW NEW

*Ahora con mango HB para una sujeción segura*

Nº de artículo 3556 ver en página 209

Fabricación rentable y segura con herramientas de roscar Gühring

# NEW Micro-fresas de roscar




*Perfección al detalle para micro-roscas*

Art. nº 4226 M 1.6 ver página 215
Art. nº 4225 M 1.6 ver página 217

Escala de tamaños 1 : 1

PLANTA

# LAIZ

PLANTA

# TREUEN

**GÜHRING**

PLANTAS DE
PRODUCCIÓN
HERRRAMIENTAS
DE ROSCAR

# **PICTOGRAMAS**
EN UN VISTAZO

# Código ISO

| | |
|---|---|
| P | Acero, acero alta aleación |
| M | Acero inoxidable |
| K | Fundición gris, fund. perlítica y fund. maleable |
| N | Aluminio y otros metales no ferríticos |
| S | Aleaciones especiales, super-especiales y de Ti |
| H | Acero endurecido y fundición dura |

En las páginas de precios y programa encontrará para cada herramienta recomendaciones de aplicación por grupos

- ● muy adecuado
- ○ adecuado con limitaciones

# Pictogramas

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Material de corte | HSS | HSS-E | HSS-E-PM | | | | | | | |
| | acero rápido | | | | | | | | | |
| | VHM | | | | | | | | | |
| | metal duro integral grano fino (HM-UF) | | | | | | | | | |
| Profundidad de la rosca | 1,5xD | 2xD | 2,5xD | 3xD | | | | | | |
| Ø-Tolerancia | 2B | 2BX | 3B | 3BX | 4HX | 6H | 6HX | 6GX | 2a | 6g |
| | ISO1/4H | ISO2/6H | ISO3/6G | .... | | | | | | |
| Tipo de rosca | | | | | | | | | | |
| | roscas pasantes | | | roscas base | | | rosca pasante y ciega | | | |
| Dirección de corte | | | | | | | | | | |
| | derecha | | | izquierda | | | | | | |
| Refrigeración interna | | | | | | | | | | |
| | con RI | | | sin RI | | | | | | |
| Forma | A | B | C | C(K) | D | E | | | | |
| Descripción | V | | | M | | | F | | | |
| | desbaste | | | demi-acabado | | | acabado | | | |
| Norma | DIN 352 | DIN 371 | DIN 376 | DIN 374 | DIN 371/376 | DIN 2189 | DIN 5156 | .... | | |
| | según DIN | | | | | | | | | |
| | WN | | | | | | | | | |
| | según norma Gühring | | | | | | | | | |
| Tipo | N | N R40 | H | H R15 | VA | Al | GG | Ti Ni | .... | |

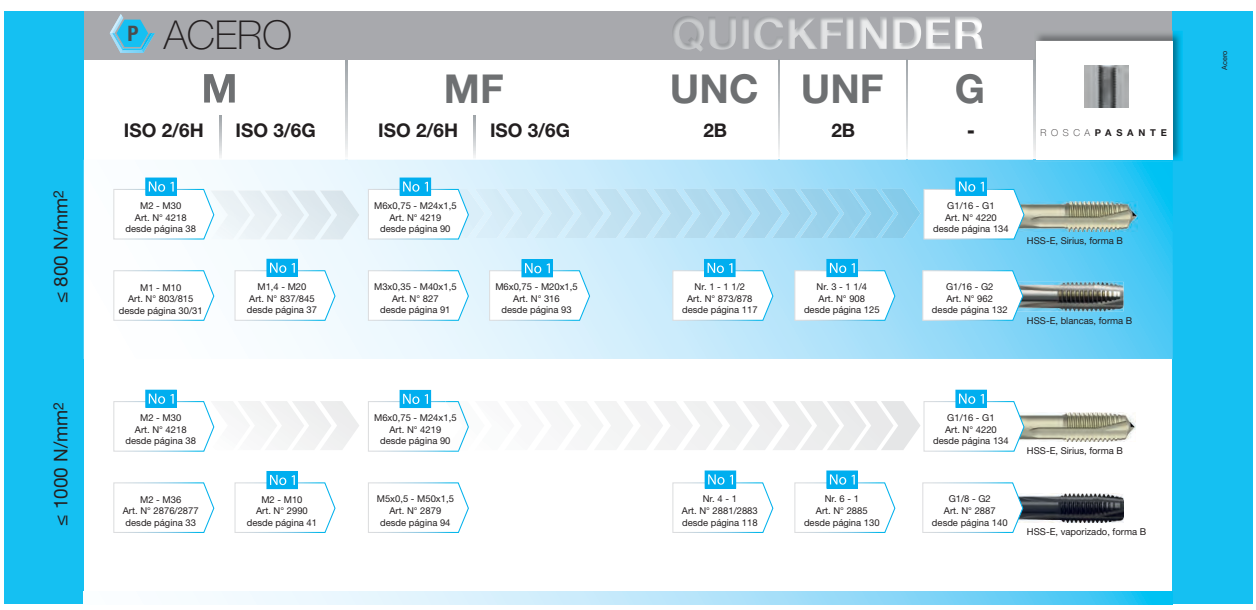
# Revestimiento

| | | | |
|---|---|---|---|
| ○ blancas | A TiAlN | P AlCrN | S Sirius |
| ○ vaporizado | C TiCN | S TiN | |
| ● nitrurada | Cb Carbo | M MolyGlide | |

# FÁCIL SELECCIÓN DE HERRAMIENTA

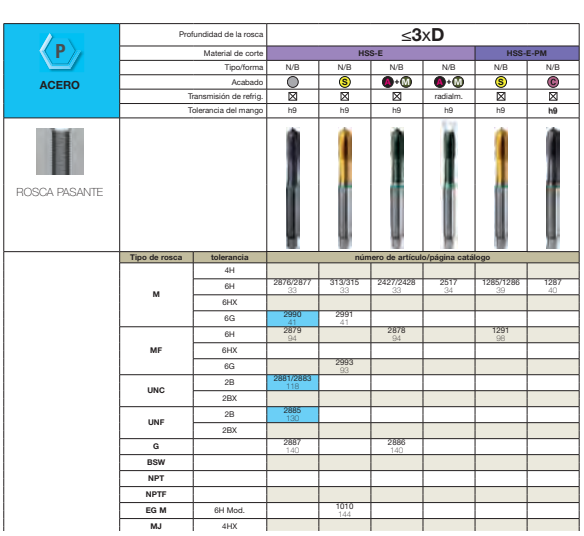
## QUICKFINDER

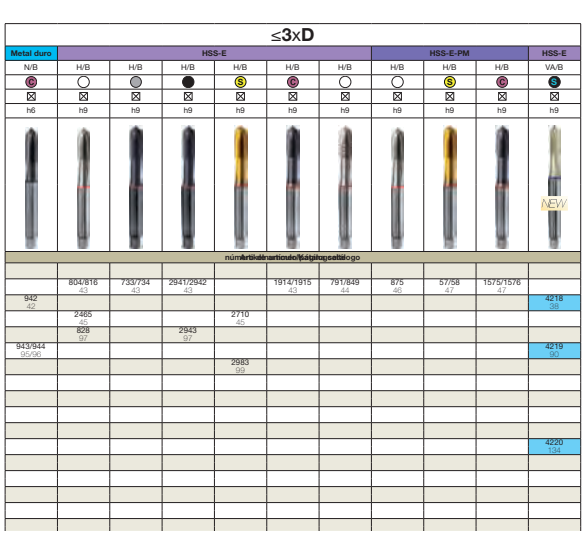
Rápido y sin complicaciones de la aplicación a la herramienta ideal




## COMPÁS

El programa completo en una tabla-condiciones de corte incluidas




| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | 12 | 15 | 15 | 15 | 20 | 20 |
| | | | C15 | 1.0401 | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | 10 | 12 | 12 | 12 | 15 | 15 |
| | | | C60 | 1.0601 | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | 6 | 8 | 8 | 8 | 10 | 10 |
| | | | 36CrNiMo4 | 1.6511 | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | |

| velocidad de corte recomendada vc m/min | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 40 | - | - | - | - | - | - | - | - | - | 25 |
| 30 | 6 | 6 | 6 | 6 | 6 | 6 | 8 | 10 | 10 | 20 |
| 25 | 10 | 10 | 10 | 12 | 12 | 10 | 12 | 15 | 15 | 15 |

# PÁGINA DE PRODUCTO

Todos los datos en un vistazo

**Machos máquina para rosca métrica ISO**

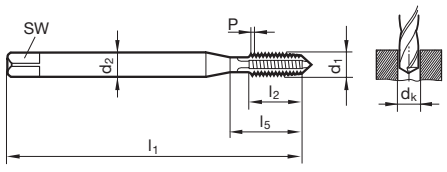
| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ☒ |

NEW

| | |
|---|---|
| P | ● |
| M | ● |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 21

Recomendación de aplicación:
- ● muy adecuado
- ○ adecuado con limitaciones



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **4218**

1 Artículo Nº

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |

2 Diámetro nominal

Por favor indíque siempre en su pedido **el nº de artículo y el diámetro nominal,** p.ej. Machos de roscar para rosca métrica ISO para diámetro nominal M5 = **4218 5,000**

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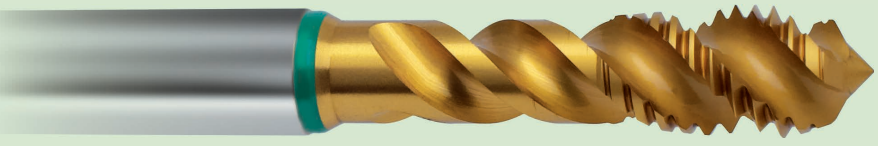

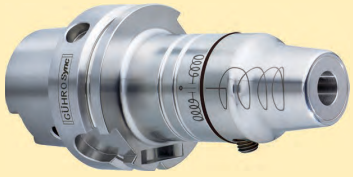

## Acero

ACERO

Quickfinder ..... desde página 10
Machos de roscar ..... desde página 18
Machos de laminación ..... desde página 26
Fresas de roscar ..... desde página 28

## Acero inoxidable

INOXIDABLE

Quickfinder ..... desde página 220
Machos de roscar ..... desde página 228
Machos de laminación ..... desde página 232
Fresas de roscar ..... desde página 234

## Fundición gris, fundición perlítica y fundición maleable

FUNDICIÓN

Quickfinder ..... desde página 338
Machos de roscar ..... desde página 348
Machos de laminación ..... desde página 352
Fresas de roscar ..... desde página 354

## Aluminio, metales no férricos y plásticos

ALUMINIO

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Machos de roscar ..... desde página 462
Machos de laminación ..... desde página 466
Fresas de roscar ..... desde página 468

## Aleaciones especiales, super-especiales y de titanio

TITANIO

Quickfinder ..... desde página 590
Machos de roscar ..... desde página 596
Machos de laminación ..... desde página 598
Fresas de roscar ..... desde página 600

## Acero endurecido

ENDURECIDO

Quickfinder ..... desde página 672
Machos de roscar ..... desde página 676
Fresas de roscar ..... desde página 678

**Cojinetes** ..... desde página 706

**Machos para roscar a mano** ..... desde página 721

**Porta machos** ..... desde página 735

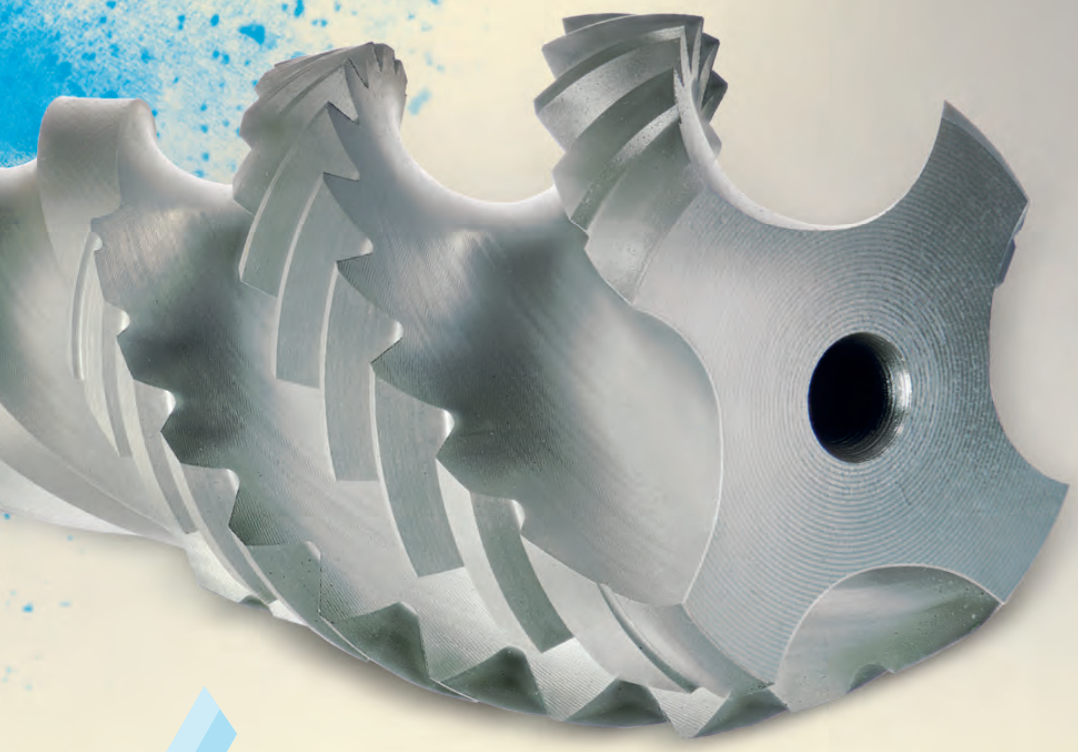
**Parte técnica** ..... desde página 773

**Índice** ..... desde página 824

**Índice de números de artículo** ..... desde página 854

# ACERO





**P**

Aceros generales con tenacidades desde 500 hasta 1200 N/mm², aceros de herramientas, aceros bonificados, aceros rápidos

# P ACERO

## M

### ISO 2/6H

≤ 800 N/mm²

No 1
M2 - M30
Art. N° 4218
desde página 38

M1 - M10
Art. N° 803/815
desde página 30/31

≤ 1000 N/mm²

No 1
M2 - M30
Art. N° 4218
desde página 38

M2 - M36
Art. N° 2876/2877
desde página 33

≤ 1200 N/mm²

No 1
M2 - M30
Art. N° 4218
desde página 38

M2 - M24
Art. N° 2941/2942
desde página 43

### ISO 3/6G

≤ 800 N/mm²

No 1
M1,4 - M20
Art. N° 837/845
desde página 37

≤ 1000 N/mm²

No 1
M2 - M10
Art. N° 2990
desde página 41

## MF

### ISO 2/6H

≤ 800 N/mm²

No 1
M6x0,75 - M24x1,5
Art. N° 4219
desde página 90

M3x0,35 - M40x1,5
Art. N° 827
desde página 91

≤ 1000 N/mm²

No 1
M6x0,75 - M24x1,5
Art. N° 4219
desde página 90

M5x0,5 - M50x1,5
Art. N° 2879
desde página 94

≤ 1200 N/mm²

No 1
M6x0,75 - M24x1,5
Art. N° 4219
desde página 90

M3x0,35 - M24x1,5
Art. N° 2943
desde página 97

### ISO 3/6G

≤ 800 N/mm²

No 1
M6x0,75 - M20x1,5
Art. N° 316
desde página 93

No 1 herramienta ideal

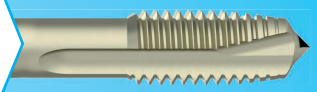
Acero

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA PASANTE

No 1
G1/16 - G1
Art. N° 4220
desde página 134

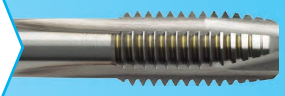


HSS-E, Sirius, forma B

No 1
Nr. 1 - 1 1/2
Art. N° 873/878
desde página 117

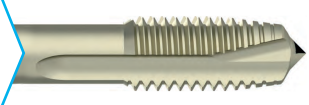
No 1
Nr. 3 - 1 1/4
Art. N° 908
desde página 125

G1/16 - G2
Art. N° 962
desde página 132



HSS-E, blancas, forma B

No 1
G1/16 - G1
Art. N° 4220
desde página 134



HSS-E, Sirius, forma B

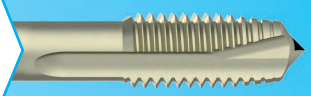
No 1
Nr. 4 - 1
Art. N° 2881/2883
desde página 118

No 1
Nr. 6 - 1
Art. N° 2885
desde página 130

G1/8 - G2
Art. N° 2887
desde página 140

HSS-E, vaporizado, forma B

No 1
G1/16 - G1
Art. N° 4220
desde página 134



HSS-E, Sirius, forma B

HSS-E, nitrurada, forma B

# P ACERO

## M

### ISO 2/6H

≤ 800 N/mm²

No 1
M2 - M30
Art. N° 393
desde página 71

M2 - M30
Art. N° 810/822
desde página 60

≤ 1000 N/mm²

No 1
M2 - M30
Art. N° 393
desde página 71

M2 - M36
Art. N° 836/826
desde página 66

≤ 1200 N/mm²

No 1
M2 - M30
Art. N° 393
desde página 71

M2 - M30
Art. N° 2850/2851
desde página 81

### ISO 3/6G

No 1
M3 - M24
Art. N° 844/848
desde página 61

No 1
M2 - M20
Art. N° 2994
desde página 73

No 1
M2 - M10
Art. N° 2985
desde página 84

## MF

### ISO 2/6H

No 1
M6x0,75 - M24x1,5
Art. N° 394
desde página 115

M3x0,35 - M30x2
Art. N° 834
desde página 105

No 1
M6x0,75 - M24x1,5
Art. N° 394
desde página 115

M5x0,5 - M30x2
Art. N° 2853
desde página 107

No 1
M6x0,75 - M24x1,5
Art. N° 394
desde página 115

M6x0,75 - M24x1,5
Art. N° 2852
desde página 114

### ISO 3/6G

No 1
M8x1 - M20x1,5
Art. N° 2999
desde página 108

No 1
M8x1 - M20x1,5
Art. N° 2988
desde página 116

No 1 herramienta ideal

# QUICKFINDER



| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA CIEGA

## Acero

No 1
G1/16 - G1
Art. N° 395
desde página 139

HSS-E, TiAlN, forma C

No 1
Nr. 2 - 1
Art. N° 876/881
desde página 122

No 1
Nr. 3 - 1
Art. N° 911
desde página 128

G1/16 - G1 1/2
Art. N° 965
desde página 136

HSS-E, blancas, forma C

No 1
G1/16 - G1
Art. N° 395
desde página 139

HSS-E, TiAlN, forma C

No 1
Nr.2 - 1
Art. N° 2855/2857
desde página 123

No 1
Nr.10 - 7/8
Art. N° 2859
desde página 129

G1/8 - G2
Art. N° 2861
desde página 137

HSS-E, vaporizado, forma C

No 1
G1/16 - G1
Art. N° 395
desde página 139

HSS-E, TiAlN, forma C

HSS-E, vaporizado, forma C

# ACERO

## M

### 6HX

sin ranuras de lubr.

No 1
M1 - M20
Art. N° 921/925
desde página 149

con ranuras de lubr.

M3 - M39
Art. N° 919/923
desde página 152

No 1
M3 - M39
Art. N° 2012/2013
desde página 152

con refrigeración interna

No 1
M3 - M20
Art. N° 1270/1271
desde página 159

No 1
M3 - M20
Art. N° 1725/1727
desde página 159

No 1
M3 - M20
Art. N° 1972/1931
desde página 163

### 6GX

sin ranuras de lubr.

No 1
M2 - M10
Art. N° 920
desde página 150

con ranuras de lubr.

No 1
M3 - M20
Art. N° 918/922
desde página 153

con refrigeración interna

No 1
M5 - M10
Art. N° 1713
desde página 160

No 1
M3 - M20
Art. N° 1726/1728
desde página 161

## MF

### 6HX

sin ranuras de lubr.

No 1
M8x1 - M20x1,5
Art. N° 929
desde página 165

con ranuras de lubr.

M6x0,75 - M24x1,5
Art. N° 1275/927
desde página 169

No 1
M6x0,75 - M20x1,5
Art. N° 2008
desde página 170

con refrigeración interna

No 1
M8x1 - M24x1,5
Art. N° 1272/1273
desde página 178

No 1
M8x1 - M24x1,5
Art. N° 1729/1731
desde página 178

No 1
M10x1 - M24x1,5
Art. N° 1581
desde página 181

### 6GX

sin ranuras de lubr.

No 1
M8x1 - M18x1,5
Art. N° 928
desde página 168

con ranuras de lubr.

No 1
M8x1 - M20x1,5
Art. N° 1277/926
desde página 172

con refrigeración interna

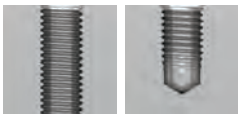
No 1
M8x1 - M24x1,5
Art. N° 1715/1716
desde página 179

No 1
M8x1 - M24x1,5
Art. N° 1730/1732
desde página 179

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2BX | 2BX | - |

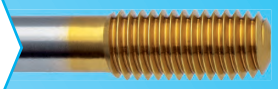


ROSCA **PASANTE**
ROSCA **CIEGA**

No 1
Nr. 4 - 7/8
Art. N° 2273/2274
desde página 182

No 1
Nr. 4 - 1
Art. N° 1283/2275
desde página 183

No 1
G1/16 - G1 1/4
Art. N° 966
desde página 184



HSS-E, TiN, forma C

No 1
Nr. 4 - 7/8
Art. N° 1582/1583
desde página 182

No 1
Nr. 4 - 1
Art. N° 1584/1585
desde página 183

No 1
G1/16 - G1 1/4
Art. N° 1586
desde página 184

HSS-E, TiN, forma C

HSS-E, TiCN, forma C

FORMA C

HSS-E-PM, TiCN, forma C

FORMA E

HSS-E-PM, TiN, forma E

METAL DURO

Metal duro, TiCN, forma C

# P ACERO

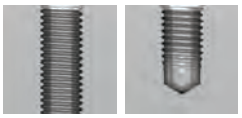
| | M<br>UNIVERSAL | MF<br>UNIVERSAL |
|---|---|---|
| 1,5xD | No 1<br>M3 - M20<br>Art. N° 3525<br>desde página 188 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3527<br>desde página 191 |
| 2xD | No 1<br>M3 - M20<br>Art. N° 3526<br>desde página 189 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3528<br>desde página 192 |
| 2,5xD | No 1<br>M3 - M20<br>Art. N° 3759<br>desde página 190 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3762<br>desde página 193 |
| 3xD | No 1<br>M1,6 - M16<br>Art. N° 4226<br>desde página 215 | |
| universal | No 1<br>Ø8x0,5 - Ø20xP3,5<br>Art. N° 3541<br>desde página 209 | No 1<br>Ø8x0,5 - Ø20xP3,5<br>Art. N° 3541<br>desde página 209 |

No 1 herramienta ideal

# QUICKFINDER



| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3516<br>desde página 195 | No 1<br>1/4 - 1/2<br>Art. N° 3518<br>desde página 198 | No 1<br>1/8 - 3/8<br>Art. N° 3514<br>desde página 202 |

Metal duro, TiCN

| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3517<br>desde página 196 | No 1<br>1/4 - 1/2<br>Art. N° 3519<br>desde página 199 | No 1<br>1/8 - 3/8<br>Art. N° 3515<br>desde página 203 |

Metal duro, TiCN

Metal duro, TiCN

Metal duro, TiCN

| UNC | UNF | G |
|---|---|---|
| No 1<br>Ø10xUN24 - Ø20xUN7<br>Art. N° 3595<br>desde página 211 | No 1<br>Ø10xUN24 - Ø20xUN7<br>Art. N° 3595<br>desde página 211 | No 1<br>Ø10xG19 - Ø20xG11<br>Art. N° 3542<br>desde página 212 |

Metal duro, TiCN

**ACERO**

ROSCA PASANTE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Profundidad de la rosca | | ≤1,5xD | | | | | |
| | Material de corte | | HSS-E | | | | | |
| | Tipo/forma | | N/C | N/C | N/C | N/D | NR28/D | N/- |
| | Acabado | | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| | Transmisión de refrig. | | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| | Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | | | | | Broca combinada | Machos de roscar tuercas para máquina |
| | **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | |
| | **M** | 4H | | | | | | |
| | | 6H | 995<br>53 | | 806/818<br>50/51 | 801/813<br>49 | 1839<br>87 | 851<br>85 |
| | | 6HX | | | | | | |
| | | 6G | | | 795<br>52 | | | |
| | **MF** | 6H | | | 830<br>100 | | | |
| | | 6HX | | | | | | |
| | | 6G | | | 829<br>100 | | | |
| | **UNC** | 2B | | | 1977<br>121 | | | |
| | | 2BX | | | | | | |
| | **UNF** | 2B | | | 1987<br>126 | | | |
| | | 2BX | | | | | | |
| | **G** | | | | 963<br>133 | | | |
| | **BSW** | | | | | | | |
| | **NPT** | | | 973<br>146 | | | | |
| | **NPTF** | | | | | | | |
| | **EG M** | 6H Mod. | | | | | | |
| | **MJ** | 4HX | | | | | | |
| | **MJF** | 4HX | | | | | | |
| | **UNJC** | 3BX | | | | | | |
| | **UNJF** | 3BX | | | | | | |
| | **PG** | | | 979<br>147 | | | | |
| | **refrigerante apropiado** | | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ |

= No 1

◯ = aire
● = aceite
◯ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | | C15 | 1.0401 | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | - | 4 | - | - | - | - |
| | | | C60 | 1.0601 | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | - | - | - | - | - | - |
| | | | 36CrNiMo4 | 1.6511 | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | |

| ≤1,5xD | | | ≤3xD | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| HSS-E | | | | | | | | | | |
| N/B | N/B | N/B | NL15/D | N/B | N/B | N/B | N/B | N/B | N/B | N/B |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● | S | C | ○ |
| ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 |
| mecanizado de capa | mecanizado de capa | | | | machos pasantes | | | | | rosca izquierda |
| número de artículo/página catálogo | | | | | | | | | | |
| | | | | | | 794 36 | | | | |
| 839/847 54 | 838/846 54 | 802 55 | 808/820 89 | 991 35 | 998 86 | 803/815 30/31 | 945/948 30/31 | 912/915 30/31 | 1246/1249 30/31 | 789/790 32 |
| | | | | | | | | | | |
| 796 56 | 869 56 | 797 56 | | | | 837/845 37 | | | | |
| | | | | | | 827 91 | 2888 91 | 832 91 | | |
| | | | | | | | | | | |
| | | | | | | 316 93 | | | | |
| | | | | | | 873/878 117 | 2889/2890 117 | | | |
| | | | | | | | | | | |
| | | | | | | 908 125 | 2891 125 | | | |
| | | | | | | | | | | |
| | | | | | | 962 132 | 2894 132 | | | |
| | | | | | | | 2892/2893 142 | | | |
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| | | | | | | | | | | |
| | | | | 980 147 | | | | | | |
| ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

| velocidad de corte recomendada vc m/min | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 10 | 10 | 10 | 10 | 6 | 10 | 10 | 12 | 12 | 10 |
| - | - | - | - | 6 | - | 6 | 6 | 8 | 8 | 6 |
| - | - | - | - | - | - | - | - | - | - | - |

**P**

**ACERO**

ROSCA PASANTE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | | | | |
| Material de corte | | HSS-E | | | | HSS-E-PM | | |
| Tipo/forma | | N/B | N/B | N/B | N/B | N/B | N/B | |
| Acabado | | ○ | S | A+M | A+M | S | C | |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | radialm. | ☒ | ☒ | |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 | |
| | | | | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | | |
| **M** | 4H | | | | | | | |
| | 6H | 2876/2877<br>33 | 313/315<br>33 | 2427/2428<br>33 | 2517<br>34 | 1285/1286<br>39 | 1287<br>40 | |
| | 6HX | | | | | | | |
| | 6G | 2990<br>41 | 2991<br>41 | | | | | |
| **MF** | 6H | 2879<br>94 | | 2878<br>94 | | 1291<br>98 | | |
| | 6HX | | | | | | | |
| | 6G | | 2993<br>93 | | | | | |
| **UNC** | 2B | 2881/2883<br>118 | | | | | | |
| | 2BX | | | | | | | |
| **UNF** | 2B | 2885<br>130 | | | | | | |
| | 2BX | | | | | | | |
| **G** | | 2887<br>140 | | 2886<br>140 | | | | |
| **BSW** | | | | | | | | |
| **NPT** | | | | | | | | |
| **NPTF** | | | | | | | | |
| **EG M** | 6H Mod. | | 1010<br>144 | | | | | |
| **MJ** | 4HX | | | | | | | |
| **MJF** | 4HX | | | | | | | |
| **UNJC** | 3BX | | | | | | | |
| **UNJF** | 3BX | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **P** | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | **12** | **15** | **15** | **15** | **20** | **20** |
| | | | C15 | 1.0401 | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | **10** | **12** | **12** | **12** | **15** | **15** |
| | | | C60 | 1.0601 | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | 6 | 8 | 8 | 8 | **10** | **10** |
| | | | 36CrNiMo4 | 1.6511 | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | |

## ≤3xD

| Metal duro | HSS-E | | | | | | HSS-E-PM | | | HSS-E |
|---|---|---|---|---|---|---|---|---|---|---|
| N/B | H/B | H/B | H/B | H/B | H/B | H/B | H/B | H/B | H/B | VA/B |
| C | ○ | ● | ● | S | C | ○ | ○ | S | C | S |
| ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| h6 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | | | | | | | | NEW |
| **número de artículo/página catálogo** | | | | | | | | | | |
| | | | | | | | | | | |
| | 804/816<br>43 | 733/734<br>43 | 2941/2942<br>43 | | 1914/1915<br>43 | 791/849<br>44 | 875<br>46 | 57/58<br>47 | 1575/1576<br>47 | |
| 942<br>42 | | | | | | | | | | 4218<br>38 |
| | 2465<br>45 | | | 2710<br>45 | | | | | | |
| | 828<br>97 | | 2943<br>97 | | | | | | | |
| 943/944<br>95/96 | | | | | | | | | | 4219<br>90 |
| | | | | 2983<br>99 | | | | | | |
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| | | | | 980<br>147 | | | | | | |
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| velocidad de corte recomendada vc m/min | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **40** | - | - | - | - | - | - | - | - | - | **25** |
| **30** | 6 | 6 | 6 | 6 | 6 | 6 | 8 | 10 | 10 | **20** |
| **25** | **10** | **10** | **10** | **12** | **12** | **10** | **12** | **15** | **15** | **15** |

**ACERO**

ROSCA CIEGA

| Profundidad de la rosca | ≤1,5xD | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Material de corte | HSS-E | | | | | | | |
| Tipo/forma | N/C | N/C | N/C | NR15/C | NR15/C | NR15/C | NR15/C | NR15/C |
| Acabado | ○ | ○ | ○ | ○ | ○ | ● | Ⓢ | ○ |
| Transmisión de refrig. | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | axialm. |
| Tolerancia del mango | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 |

| Tipo de rosca | tolerancia | número de artículo/página catálogo | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M | 4H | | | | | | | | |
| | 6H | 995 53 | | 806/818 50/51 | 992 58 | 809/821 57 | 946/949 57 | 913/916 57 | 1891/1898 59 |
| | 6HX | | | | | | | | |
| | 6G | | | 795 52 | | 799 52 | | | |
| MF | 6H | | | 830 100 | | 833 102 | 2838 102 | 1971 102 | 1905 104 |
| | 6HX | | | | | | | | |
| | 6G | | | 829 100 | | | | | |
| UNC | 2B | | | 1977 121 | | 1978 119 | 2839/2840 120 | | |
| | 2BX | | | | | | | | |
| UNF | 2B | | | 1987 126 | | 1988 127 | 2841 127 | | |
| | 2BX | | | | | | | | |
| G | | | | 963 133 | | 964 135 | 2842 135 | | |
| BSW | | | | | | | | | |
| NPT | | | 973 146 | | | | | | |
| NPTF | | | | | | | | | |
| EG M | 6H Mod. | | | | | | | | |
| MJ | 4HX | | | | | | | | |
| MJF | 4HX | | | | | | | | |
| UNJC | 3BX | | | | | | | | |
| UNJF | 3BX | | | | | | | | |
| PG | | | 979 147 | | | | | | |
| refrigerante apropiado | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

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○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | 6 | 6 | 6 | 8 | 8 | 8 | 10 | 8 |
| | | | C15 | 1.0401 | | | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | - | - | - | - | - | - | - | - |
| | | | C60 | 1.0601 | | | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | - | - | - | - | - | - | - | - |
| | | | 36CrNiMo4 | 1.6511 | | | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | | | |

| ≤1,5xD | | | | | ≤2xD | | | | | ≤3xD | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSS-E | | | HSS-E-PM | | HSS-E | | HSS-E-PM | | | HSS-E | | | | |
| NR15/C | NR15/C | NR15/E | HR15/C | HR15/C | H/C | H/C | H/C | H/E | HR15/C | NR40/C | NR40/C | NR40/C | NR40/C | NR40/C |
| S | C | C | ○ | A | C | C | C | C | C | ○ | ○ | ○ | ● | S |
| axialm. | ☒ | ☒ | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ | ☒ | ☒ | ☒ |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | | | viruta corta | viruta corta, extra larga | viruta corta | viruta corta | viruta corta, cortes sin recubrir | | extra larga | | | |
| número de artículo/página catálogo | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 2436/2437 59 | 4154 48 | 4155 48 | 872/935 76 | 1577/1578 76 | | | | | | 993 65 | 888 88 | 810/822 60 | 783/784 60 | 914/917 60 |
| | | | | | 778 79 | 779 80 | 302/297 78 | 1091/4165 78 | 1188/1194 77 | | | | | |
| | | | | | | | | | | | | 844/848 61 | | |
| | 4156 103 | 4157 103 | 874 112 | | | | | | | 1970 106 | | 834 105 | 2843 105 | 852 105 |
| | | | | | | | 1090 113 | 1007 113 | 1200 112 | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 876/881 122 | 2844/2845 122 | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | 911 128 | 2846 128 | |
| | | | | | | | | | | | | | | |
| | | 4158 135 | | | | | | | | | | 965 136 | 2849 136 | |
| | | | | | | | | | | | | | 2847/2848 143 | |
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| velocidad de corte recomendada vc m/min | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 15 | 15 | - | - | - | - | - | - | - | 8 | 8 | 8 | 8 | 12 |
| - | 10 | 10 | - | - | 15 | 15 | 15 | 15 | 12 | - | - | - | - | - |
| - | 8 | 8 | 4 | 6 | 12 | 12 | 12 | 12 | 10 | - | - | | - | - |

**ACERO**

ROSCA CIEGA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | | | | | |
| Material de corte | | HSS-E | | | | | | | |
| Tipo/forma | | NR40/C | NL40/C | NR40/C | NR40/C | NR40/C | NR40/E | NR40/C | NR40/C |
| Acabado | | C | ○ | ○ | S | ○ | ○ | ● | S |
| Transmisión de refrig. | | ☒ | ☒ | axialm. | axialm. | ☒ | ☒ | ☒ | ☒ |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | rosca izquierda | | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | | | |
| **M** | 4H | | | | | | | | |
| | 6H | 1252/1254 60 | 786/787 62 | 1893 63 | 2438/2439 64 | 889/890 64 | 2790/2791 69 | 836/826 66 | 2440/2441 66 |
| | 6HX | | | | | | | | |
| | 6G | | | | | | | 2994 73 | 2995 73 |
| **MF** | 6H | | | | | 2424 107 | 2792 107 | 2853 107 | |
| | 6HX | | | | | | | | |
| | 6G | | | | | 2998 108 | | 2999 108 | 1049 108 |
| **UNC** | 2B | | | | | 2854/2856 123 | | 2855/2857 123 | |
| | 2BX | | | | | | | | |
| **UNF** | 2B | | | | | | | 2859 129 | |
| | 2BX | | | | | | | | |
| **G** | | | | | | 2860 137 | | 2861 137 | |
| **BSW** | | | | | | | | | |
| **NPT** | | | | | | | | | |
| **NPTF** | | | | | | | | | |
| **EG M** | 6H Mod. | | | | | | | | 1011 145 |
| **MJ** | 4HX | | | | | | | | |
| **MJF** | 4HX | | | | | | | | |
| **UNJC** | 3BX | | | | | | | | |
| **UNJF** | 3BX | | | | | | | | |
| **PG** | | | | | | | | | |
| **refrigerante apropiado** | | ●/●/△ | ●/●/△ | ●/●/△ | ●/●/△ | ●/●/△ | ●/●/△ | ●/●/△ | ●/●/△ |

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○ = aire
● = aceite
● = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | 12 | 8 | 8 | 12 | 10 | 10 | 10 | 15 |
| | | | C15 | 1.0401 | | | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | - | - | - | - | 8 | 8 | 8 | 10 |
| | | | C60 | 1.0601 | | | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | - | - | - | - | 4 | 4 | 6 | 8 |
| | | | 36CrNiMo4 | 1.6511 | | | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | | | |

## ≤3xD

| HSS-E | | HSS-E-PM | | | | HSS-E | | | | | | HSS-E-PM | | HSS-E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NR40/C | NR40/C | NR40/C | NR40/C | NR50/C | NR50/C | HR40/C | HR40/C | HR40/C | HR40/C | HR40/C | HR40/C | VAR50/C | VAR50/C | VAR45/C |
| S | S | S | C | S | C | ○ | ○ | ● | S | C | ○ | S | C | A |
| ☒ | ☒ | ☒ | ☒ | ☒ | axialm. | ☒ | ☒ | ☒ | ☒ | ☒ | axialm. | ☒ | axialm. | ☒ |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 | h9 |
| herramienta con corrección | extra larga | | | | | | | | | | | machos de roscar Synchro | machos de roscar Synchro | |
| **número de artículo/página catálogo** | | | | | | | | | | | | | | |
| 174/196 70 | | 1288/1289 72 | 1290 73 | 767/1098 74 | 1152/1293 74 | 811/823 81 | 947/950 81 | 2850/2851 81 | 361/362 82 | 1916/1917 82 | 1894/1901 83 | | | |
| | 4153 67 | | | | | | | | | | | 761/763 75 | 1139/1142 75 | 393 71 |
| | | | | | | | | 2985 84 | 2986 84 | | | | | |
| 273 109 | | 1292 109 | | 1100 110 | 1294 110 | 835 114 | 2940 114 | 2852 114 | | | | | | |
| | | | | | | | | | | | | 764 111 | 1144 111 | 394 115 |
| | | | | | | | | 2988 116 | 2989 116 | | | | | |
| 1837 124 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 1838 131 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 937 141 | | | | | | | | | | | | 4159 138 | | 395 139 |
| | | | | | | | | | | | | | | |
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| velocidad de corte recomendada vc m/min | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **15** | **15** | **15** | **15** | **15** | **20** | - | - | - | - | - | - | **15** | **20** | **20** |
| **10** | **10** | **10** | **10** | **12** | **15** | - | - | - | - | - | - | **12** | **15** | **15** |
| 8 | 8 | 8 | 8 | 8 | 10 | 6 | 6 | 6 | 8 | **10** | **6** | 8 | 10 | **10** |

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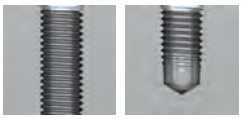
**ACERO**



ROSCA PASANTE Y CIEGA

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤1,5xD | | | ≤3xD | | |
| Material de corte | | HSS-E | HSS-E-PM | Metal duro | HSS-E | | |
| Tipo/forma | | N/C | N/C | N/C | N/C | N/C | N/C |
| Acabado | | S | S | S | S | C | P |
| Transmisión de refrig. | | ☒ | ☒ | axialm. | ☒ | ☒ | ☒ |
| Tolerancia del mango | | h9 | h9 | h6 | h9 | h9 | h9 |
| | | | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | |
| **M** | 4H | | | | | | |
| | 6HX | 921/925 149 | 1255/1256 149 | 2518 151 | 919/923 152 | 2012/2013 152 | 1587/1589 152 |
| | 6G | | | | | | |
| | 6GX | 920 150 | 903/952 149 | | 918/922 153 | | 1588/1590 153 |
| **MF** | 6HX | 929 165 | 1257/1258 166 | | 1275/927 169 | 2008 170 | 1591/1593 169 |
| | 6G | | | | | | |
| | 6GX | 928 168 | 1740 167 | | 1277/926 172 | | 1592 171 |
| **UNC** | 2B | | | | | | |
| | 2BX | 2273/2274 182 | | | 1582/1583 182 | | |
| **UNF** | 2B | | | | | | |
| | 2BX | 1283/2275 183 | | | 1584/1585 183 | | |
| **G** | | 966 184 | | | 1586 184 | | |
| **BSW** | | | | | | | |
| **NPT** | | | | | | | |
| **NPTF** | | | | | | | |
| **EG M** | 6H Mod. | | | | | | |
| **MJ** | 4HX | | | | | | |
| **MJF** | 4HX | | | | | | |
| **UNJC** | 3BX | | | | | | |
| **UNJF** | 3BX | | | | | | |
| **PG** | | | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | 12 | 15 | 35 | 15 | 15 | 15 |
| | | | C15 | 1.0401 | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | 12 | 15 | 35 | 15 | 15 | 15 |
| | | | C60 | 1.0601 | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | 10 | 12 | 25 | 12 | 12 | 12 |
| | | | 36CrNiMo4 | 1.6511 | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | |

## ≤3xD

| HSS-E | | HSS-E-PM | | | | | | | | Metal duro | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N/C | N/C | N/C | N/C | N/C | N/C | N/C | N/C | N/C | N/E | N/C | N/E |
| S | C | S | S | P | S | S | C | A | S | C | C |
| axialm. | radialm. | ☒ | ☒ | ☒ | radialm. | axialm. | radialm. | radialm. | axialm. | radialm. | radialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 |
| | | | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | | |
| | | | | | | | | | | | |
| 2442/2444<br>156 | 2446/2448<br>156 | 322/339<br>154 | 1266/1267<br>155 | 1599/1707<br>155 | 323/342<br>158 | 4143<br>162 | 1270/1271<br>159 | 1717/1719<br>159 | 1725/1727<br>159 | 1972/1931<br>163 | 1927<br>164 |
| 2443/2445<br>156 | 2447<br>157 | | | 1705/1708<br>153 | | | 1713<br>160 | 1718/1720<br>161 | 1726/1728<br>161 | | |
| | | | | | | | | | | | |
| | | 333<br>173 | 1268/1269<br>174 | 1711<br>175 | 338<br>177 | 4145<br>180 | 1272/1273<br>178 | 1721/1723<br>178 | 1729/1731<br>178 | 1581<br>181 | |
| | | | | 1710/1712<br>176 | | | 1715/1716<br>179 | | 1730/1732<br>179 | | |
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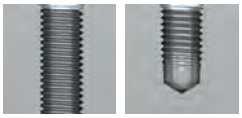
| velocidad de corte recomendada vc m/min | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 15 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 35 | 35 |
| 15 | 15 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 35 | 35 |
| 12 | 12 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 25 | 25 |

**ACERO**

ROSCA PASANTE Y CIEGA



| Profundidad de la rosca | ≤2xD | | | | ≤2,5xD | | ≤1,5xD | |
|---|---|---|---|---|---|---|---|---|
| Material de corte | | Metal duro | | | | | | |
| Tipo | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP | TMC SP | TMC SP |
| Acabado | C | C | C | C | C | C | C | C |
| Transmisión de refrig. | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| Forma del mango | HA | HB | HA | HB | HA | HB | HA | HA |
| Espiral | 27° | 27° | 27° | 27° | 27° | 27° | 10° | 10° |

| Tipo de rosca | número de artículo/página catálogo | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **M** | 4132 186 | 4133 186 | 3737 186 | 3743 186 | 3735 187 | 3740 187 | 3525 188 | 3543 188 |
| **MF** | | | 3737 186 | 3743 186 | | | 3527 191 | 3545 191 |
| **UNC** | | | 4134 194 | 4135 194 | | | 3516 195 | 3534 195 |
| **UNF** | | | 4136 197 | 4137 197 | | | 3518 198 | 3536 198 |
| **G** | | | 3745 200 | 3748 200 | 3746 201 | 3750 201 | 3514 202 | 3529 202 |
| **BSW** | | | | | | | | |
| **NPT** | | | 3753 205 | 3754 205 | | | 3520 206 | 3538 206 |
| **NPTF** | | | 3756 207 | 3757 207 | | | 3521 208 | 3539 208 |
| **EG M** | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
| **MJ** | | | | | | | | |
| **MJF** | | | | | | | | |
| **UNJC** | | | | | | | | |
| **UNJF** | | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | aceros de construcción/ automáticos, aceros no aleados | ≤800 N/mm² | S235JR | 1.0037 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | | | C15 | 1.0401 | | | | | | | | |
| | | | 11SMnPb30 | 1.0718 | | | | | | | | |
| | aceros automáticos, aceros no aleados, aceros nitrurados | 800 - 1000 N/mm² | S355J2 | 1.0577 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | | | C60 | 1.0601 | | | | | | | | |
| | | | 31CrMo12 | 1.8515 | | | | | | | | |
| | aceros aleados y bonificados, aceros para herramientas, aceros rápido | 800 - 1200 N/mm² | 42CrMo4 | 1.7225 | + | + | + | + | + | + | ++ | ++ |
| | | | 36CrNiMo4 | 1.6511 | | | | | | | | |
| | | | X36CrMo17 | 1.2316 | | | | | | | | |
| | | | HS 6-5-2 | 1.3343 | | | | | | | | |

| ≤2xD | | ≤2,5xD | | universal | | | | ≤3xD | |
|---|---|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | | | |
| TMC SP | TMC SP | TMC SP | TMC SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | MTM 1 SP |
| C | C | C | C | C | C | C | C | C | C |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ |
| HA | HB | HA | HB | HA | HB | HA | HB | HA | HA |
| 10° | 10° | 27° | 27° | 15° | 15° | 15° | 15° | 15° | 15° |
| | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | |
| 3526 189 | 3544 189 | 3759 190 | 3760 190 | 3541 209 | 3556 209 | 4162 210 | 4163 210 | 4226 215 | 4225 217 |
| 3528 192 | 3546 192 | 3762 193 | 3763 193 | 3541 209 | 3556 209 | 4162 210 | 4163 210 | | 4225 217 |
| 3517 196 | 3535 196 | | | 3595 211 | 3596 211 | | | | |
| 3519 199 | 3537 199 | | | 3595 211 | 3596 211 | | | | |
| 3515 203 | 3533 203 | 3765 204 | 3766 204 | 3542 212 | 3557 212 | 3542 212 | 3557 212 | 4228 216 | |
| | | | | | | | | | |
| | | | | 3768 213 | 3769 213 | | | | |
| | | | | 3772 214 | 3773 214 | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

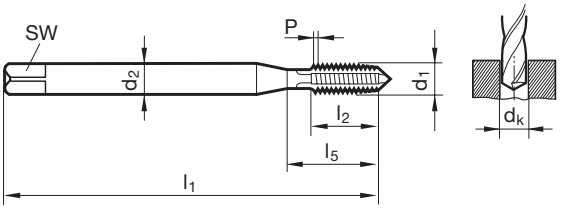
| recomendación de aplicación | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |

## Machos máquina para rosca métrica ISO

| | | | | |
|---|---|---|---|---|
| Material de corte | HSS-E | | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | S | ● | C |
| Tipo | N | N | N | N |
| Forma | B | B | B | B |
| Con refrigeración interna | ✗ | ✗ | ✗ | ✗ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19



**DIN 2184-1 DIN 371** — Artículo Nº **803** **912** **945** **1246**

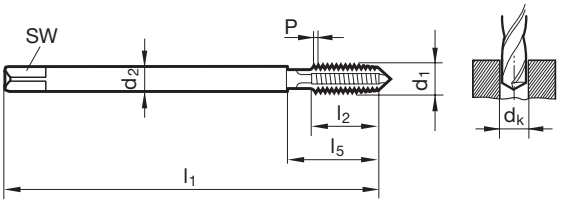
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0.250 | 2.500 | 2.100 | 0.75 | 40.000 | 5.500 | |
| M 1.2 | 0.250 | 2.500 | 2.100 | 0.95 | 40.000 | 5.500 | |
| M 1.4 | 0.300 | 2.500 | 2.100 | 1.10 | 40.000 | 7.000 | |
| M 1.6 | 0.350 | 2.500 | 2.100 | 1.25 | 40.000 | 8.000 | |
| M 1.7 | 0.350 | 2.500 | 2.100 | 1.35 | 40.000 | 8.000 | |
| M 1.8 | 0.350 | 2.500 | 2.100 | 1.45 | 40.000 | 8.000 | |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | | | | |
|---|---|---|---|---|
| Material de corte | HSS-E | | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | S | ● | C |
| Tipo | N | N | N | N |
| Forma | B | B | B | B |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19



**DIN 2184-1 DIN 376** — Artículo Nº **815** **915** **948** **1249**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M 1.6 | 0.350 | 1.200 | | 1.25 | 40.000 | 8.000 | |
| M 1.8 | 0.350 | 1.200 | | 1.45 | 40.000 | 8.000 | |
| M2 | 0.400 | 1.400 | | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 1.600 | | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.3 | 0.400 | 1.600 | | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 1.800 | | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 1.800 | | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 2.500 | 2.100 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M7 | 1.000 | 5.500 | 4.300 | 6.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |
| M33 | 3.500 | 25.000 | 20.000 | 29.50 | 180.000 | 40.000 | 91.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 200.000 | 50.000 | 102.000 |
| M39 | 4.000 | 32.000 | 24.000 | 35.00 | 200.000 | 50.000 | 107.000 |
| M42 | 4.500 | 32.000 | 24.000 | 37.50 | 200.000 | 56.000 | 112.000 |
| M45 | 4.500 | 36.000 | 29.000 | 40.50 | 220.000 | 58.000 | 117.000 |
| M48 | 5.000 | 36.000 | 29.000 | 43.00 | 250.000 | 65.000 | 127.000 |
| M52 | 5.000 | 40.000 | 32.000 | 47.00 | 250.000 | 65.000 | 128.000 |

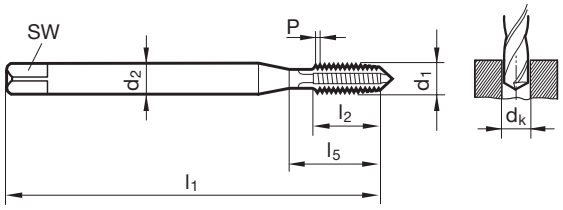
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N-LH |
| Forma | B |
| Con refrigeración interna | ⊠ |

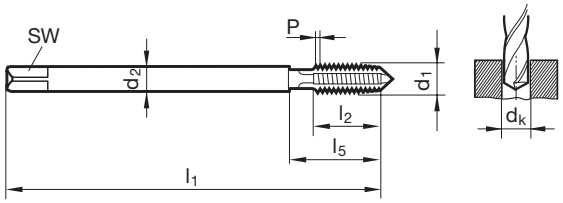
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **789**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **790**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |

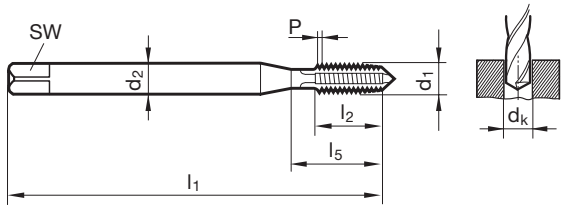
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

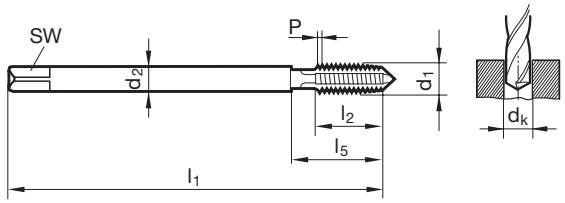
Cond. de corte pág. 20

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | S | A+M | ○ |
| Tipo | N | N | N |
| Forma | B | B | B |
| Con refrigeración interna | ✗ | ✗ | ✗ |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **313** **2427** **2876**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **315** **2428** **2877**

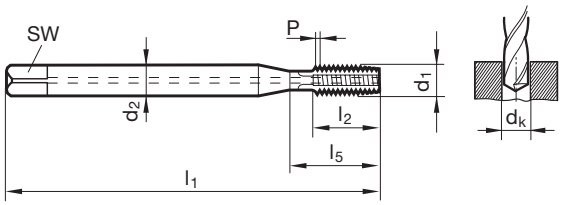
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 200.000 | 50.000 | 102.000 |

## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | A+M |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20



**DIN 2184-1 DIN 371** Artículo Nº **2517**

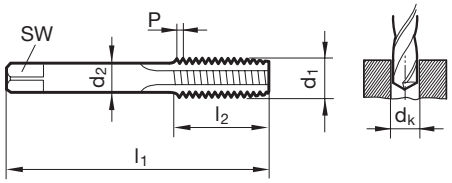
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19



**DIN 2184-2 DIN 352** Artículo Nº **991**

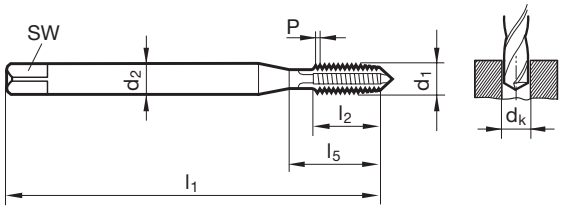
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 36.000 | 8.000 | |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 36.000 | 9.000 | |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 36.000 | 9.000 | |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 40.000 | 9.000 | |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 40.000 | 9.000 | |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 40.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 45.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 45.000 | 12.000 | 21.000 |
| M 4.5 | 0.750 | 6.000 | 4.900 | 3.70 | 50.000 | 14.000 | 24.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 50.000 | 14.000 | 24.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 56.000 | 16.000 | 27.000 |
| M7 | 1.000 | 6.000 | 4.900 | 6.00 | 56.000 | 16.000 | 32.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 63.000 | 17.000 | 32.000 |
| M9 | 1.250 | 7.000 | 5.500 | 7.80 | 63.000 | 17.000 | 32.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 70.000 | 20.000 | 36.000 |
| M11 | 1.500 | 8.000 | 6.200 | 9.50 | 70.000 | 20.000 | 36.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 75.000 | 24.000 | 40.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 80.000 | 26.000 | 42.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 80.000 | 26.000 | 45.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 95.000 | 30.000 | 50.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 95.000 | 32.000 | 50.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 100.000 | 32.000 | 50.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 110.000 | 36.000 | 60.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO1/4H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 19



**DIN 2184-1 DIN 371** Artículo Nº **794**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

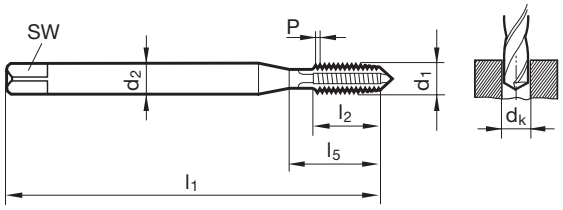
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO3/6G |
| Acabado | ○ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ✕ |

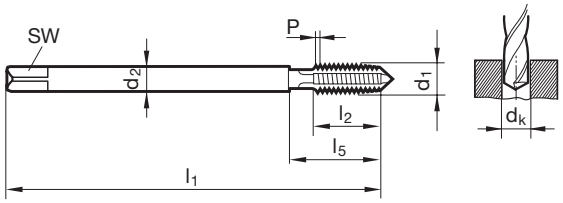
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **837**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M 1.4 | 0.300 | 2.500 | 2.100 | 1.10 | 40.000 | 7.000 | |
| M 1.6 | 0.350 | 2.500 | 2.100 | 1.25 | 40.000 | 8.000 | |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **845**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 1.400 | 1.250 | 1.60 | 45.000 | 8.000 | 13.500 |
| M3 | 0.500 | 2.200 | 1.800 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |

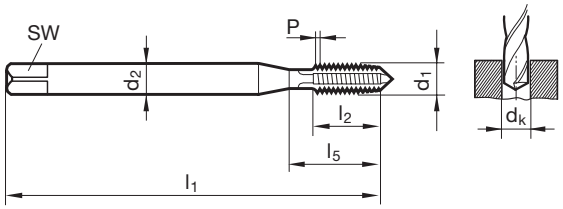
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **4218**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |

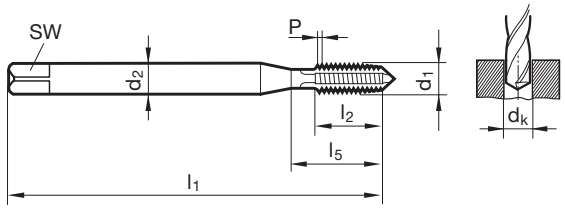
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

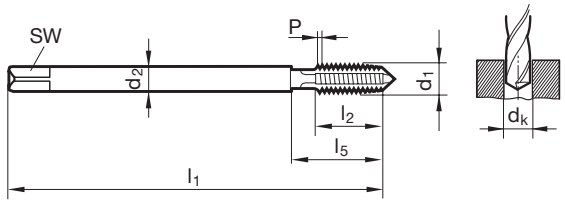
| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1285**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **1286**

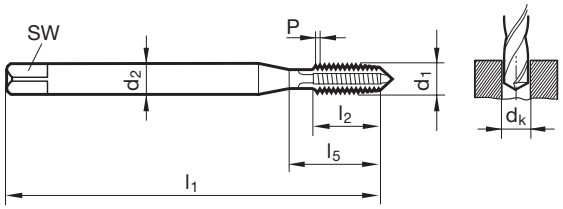
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | C |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20



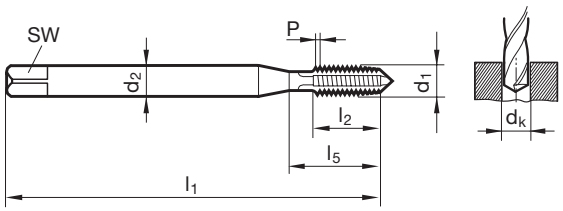
**DIN 2184-1 DIN 371** Artículo Nº **1287**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | ≤ 1000 | Cond. de corte pág. 20 |
| M | ○ | |
| K | | |
| N | | |
| S | | |
| H | | |

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | ● | Ⓢ |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |



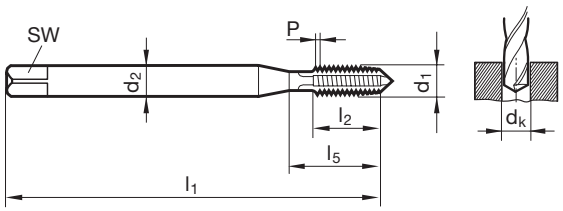
**DIN 2184-1 DIN 371** Artículo Nº **2990** **2991**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | ≤ 1000 | Cond. de corte pág. 21 |
| M | | |
| K | | |
| N | | |
| S | | |
| H | | |

| | |
|---|---|
| Material de corte | **Solid carbide** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |



**DIN 2184-1 ~DIN 371** Artículo Nº **942**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 12.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 15.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 19.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 22.500 | 39.000 |
| M12 | 1.750 | 12.000 | 9.000 | 10.20 | 110.000 | 26.500 | 49.000 |

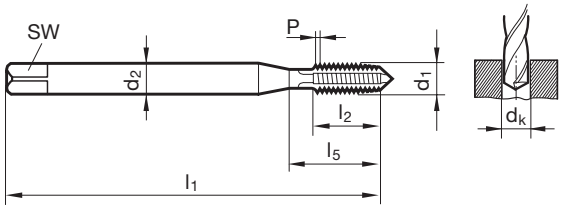
## Machos máquina para rosca métrica ISO

| | | | | |
|---|---|---|---|---|
| Material de corte | HSS-E | | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | | | C | |
| Tipo | H | H | H | H |
| Forma | B | B | B | B |
| Con refrigeración interna | | | | |

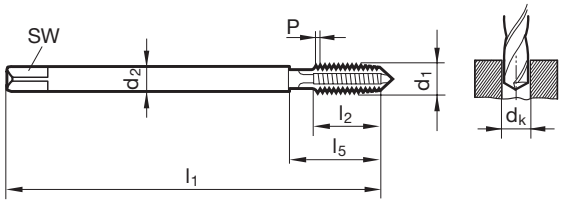
| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 733 | 804 | 1914 | 2941 |
|---|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 734 | 816 | 1915 | 2942 |
|---|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |

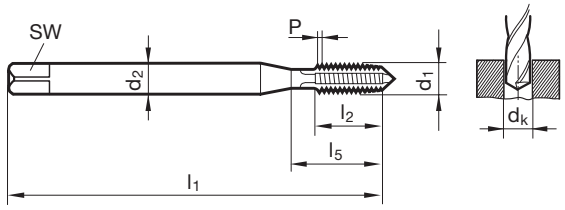
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | H AZ |
| Forma | B |
| Con refrigeración interna | ⊠ |

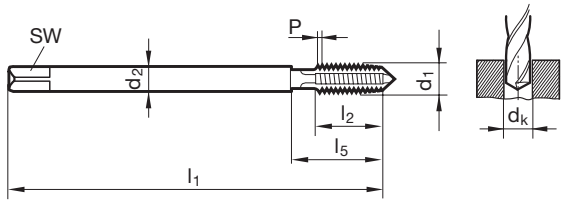
| | |
|---|---|
| **P** | ≤ 1200 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 21

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **791**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **849**

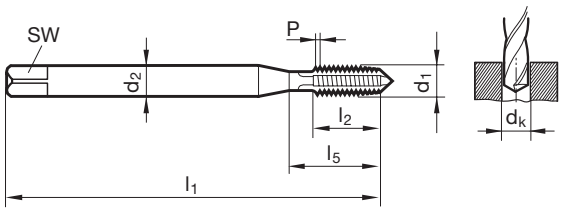
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | ◯ | Ⓢ |
| Tipo | H | H |
| Forma | B | B |
| Con refrigeración interna | ☒ | ☒ |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 371** — Artículo Nº **2465** **2710**

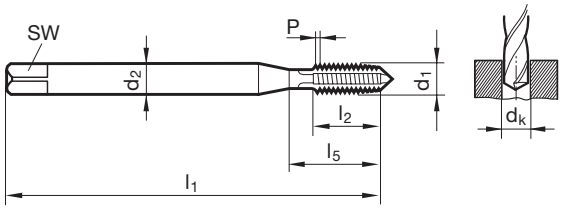
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | H |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 371** Artículo Nº **875**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

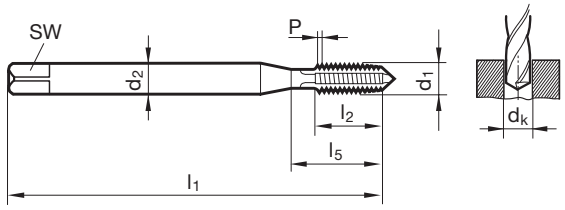
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

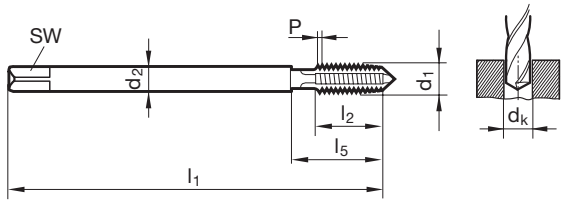
Cond. de corte pág. 21

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | A |
| Tipo | H | H |
| Forma | B | B |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **57** **1575**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **58** **1576**

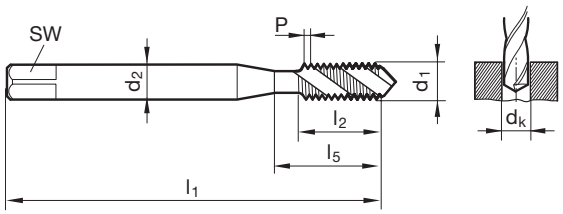
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | C | C |
| Tipo | N R15 | N R15 |
| Forma | C | E |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 371/DIN 376** — Artículo Nº **4154** **4155**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

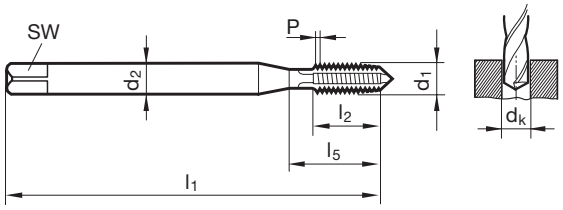
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ○ |
| Tipo | N |
| Forma | D |
| Con refrigeración interna | ⊠ |

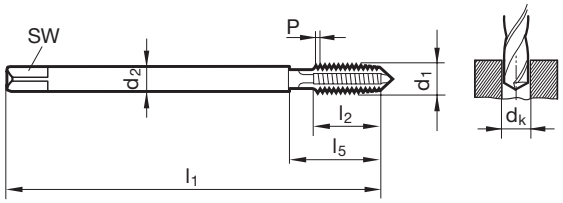
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **801**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **813**

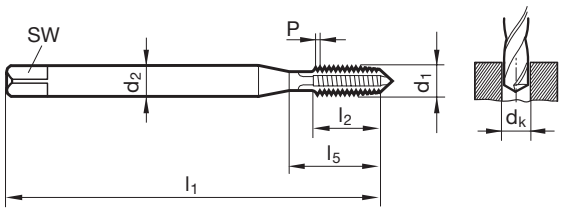
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 1.400 | | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.3 | 0.400 | 1.600 | 1.250 | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 1.800 | | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 1.800 | 1.400 | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 30.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 32.000 | 62.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 18/22



**DIN 2184-1 DIN 371** Artículo Nº **806**

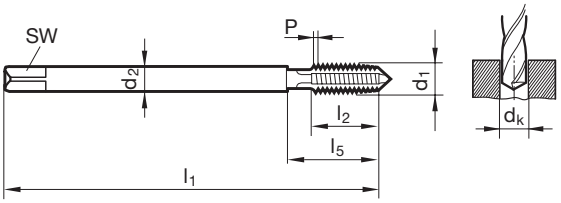
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0.250 | 2.500 | 2.100 | 0.75 | 40.000 | 5.500 | |
| M 1.2 | 0.250 | 2.500 | 2.100 | 0.95 | 40.000 | 5.500 | |
| M 1.4 | 0.300 | 2.500 | 2.100 | 1.10 | 40.000 | 7.000 | |
| M 1.6 | 0.350 | 2.500 | 2.100 | 1.25 | 40.000 | 4.500 | |
| M 1.7 | 0.350 | 2.500 | 2.100 | 1.35 | 40.000 | 4.500 | |
| M 1.8 | 0.350 | 2.500 | 2.100 | 1.45 | 40.000 | 4.500 | |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 4.500 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ○ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



**DIN 2184-1 DIN 376** Artículo Nº **818**

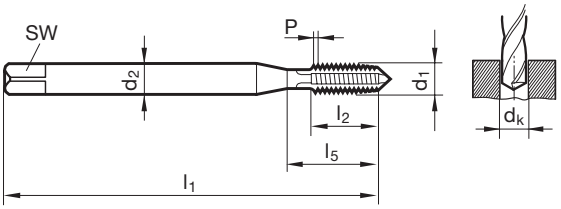
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M 1.6 | 0.350 | 1.200 | | 1.25 | 40.000 | 4.500 | |
| M 1.7 | 0.350 | 1.200 | | 1.35 | 40.000 | 4.500 | |
| M2 | 0.400 | 1.400 | | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.5 | 0.450 | 1.800 | | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 1.800 | | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 200.000 | 40.000 | 102.000 |
| M42 | 4.500 | 32.000 | 24.000 | 37.50 | 200.000 | 45.000 | 112.000 |
| M48 | 5.000 | 36.000 | 29.000 | 43.00 | 250.000 | 50.000 | 127.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | ◯ | ◯ |
| Tipo | N | N R15 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



| DIN 2184-1 DIN 371 | Artículo Nº | 795 | 799 |
|---|---|---|---|

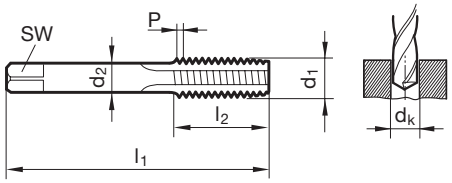
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 5.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 18/22



**DIN 2184-2 DIN 352** — Artículo Nº **995**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 36.000 | 9.000 | |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 36.000 | 9.000 | |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 40.000 | 9.000 | |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 40.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 45.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 45.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 50.000 | 8.500 | 24.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 56.000 | 11.000 | 27.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 63.000 | 14.000 | 32.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 70.000 | 16.000 | 36.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 75.000 | 18.500 | 40.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 80.000 | 20.000 | 45.000 |

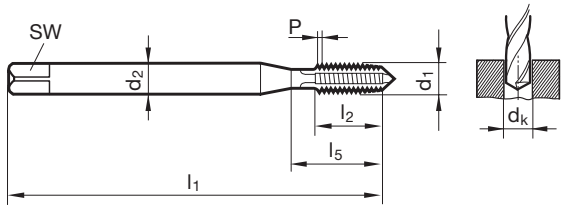
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ◯ | ◯ |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ☒ | ☒ |

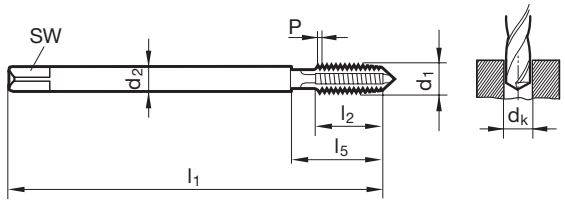
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 838 | 839 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M 1.2 | 0.250 | 2.500 | 2.100 | 0.95 | 40.000 | 5.500 | |
| M 1.4 | 0.300 | 2.500 | 2.100 | 1.10 | 40.000 | 7.000 | |
| M 1.6 | 0.350 | 2.500 | 2.100 | 1.25 | 40.000 | 8.000 | |
| M 1.7 | 0.350 | 2.500 | 2.100 | 1.35 | 40.000 | 8.000 | |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 9.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 9.000 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 846 | 847 |
|---|---|---|---|

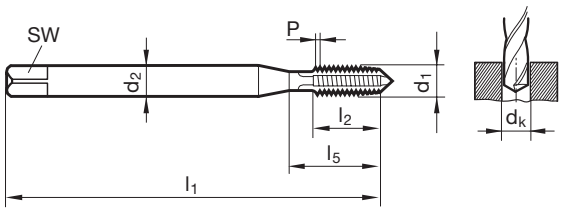
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | 1.800 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19



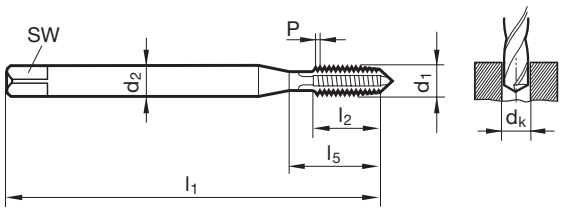
**DIN 2184-1 DIN 371** Artículo Nº **802**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | ≤ 800 | Cond. de corte pág. 19 |
| M | | |
| K | | |
| N | | |
| S | | |
| H | | |

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO3/6G | ISO3/6G | ISO3/6G |
| Acabado | ◯ | ◯ | ◯ |
| Tipo | N | N | N |
| Forma | B | B | B |
| Con refrigeración interna | ☒ | ☒ | ☒ |



**DIN 2184-1 DIN 371** — Artículo Nº **869** **796** **797**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 8.000 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 9.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

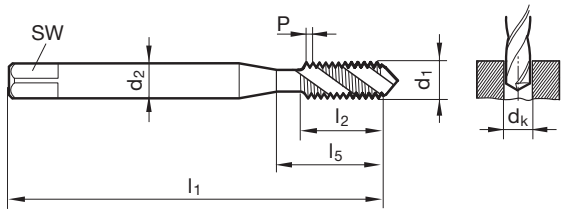
## Machos máquina para rosca métrica ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | Ⓢ | ● |
| Tipo | N R15 | N R15 | N R15 |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

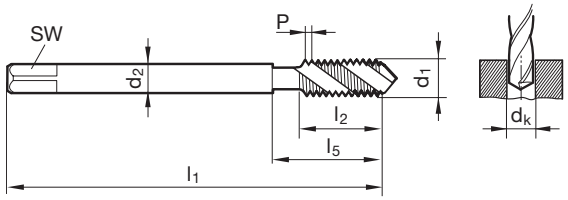
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **809** **913** **946**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 5.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 4.500 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **821** **916** **949**

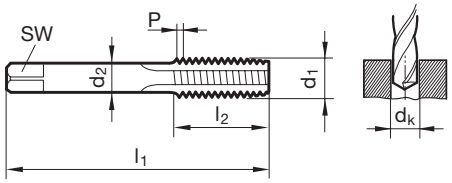
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 2.500 | 2.100 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 22



**DIN 2184-2 DIN 352** — Artículo Nº **992**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 40.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 45.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 50.000 | 8.500 | 24.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 56.000 | 11.000 | 27.000 |
| M7 | 1.000 | 6.000 | 4.900 | 6.00 | 56.000 | 11.000 | 32.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 63.000 | 14.000 | 32.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 70.000 | 16.000 | 36.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 75.000 | 18.500 | 40.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 80.000 | 20.000 | 42.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 80.000 | 20.000 | 45.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 95.000 | 25.000 | 50.000 |

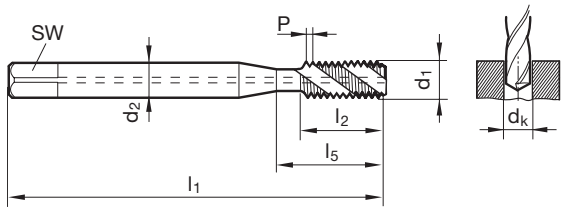
## Oil feed taps for ISO metric threads

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ○ | Ⓢ |
| Tipo | N R15 | N R15 |
| Forma | C | C |
| Con refrigeración interna | | |

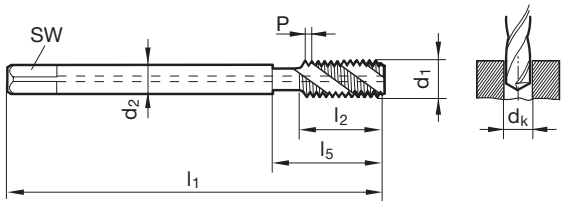
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22/23

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **1891** **2436**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1898** **2437**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

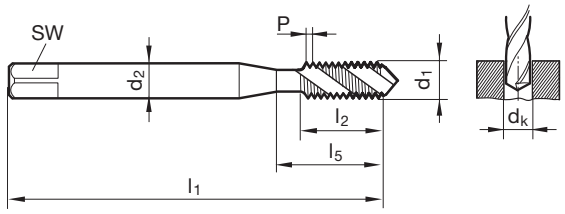
## Machos máquina para rosca métrica ISO

| | | | | | |
|---|---|---|---|---|---|
| Material de corte | HSS-E | | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ● | ○ | S | C |
| Tipo | N R40 | N R40 | N R40 | N R40 |
| Forma | C | C | C | C |
| Con refrigeración interna | ✕ | ✕ | ✕ | ✕ |

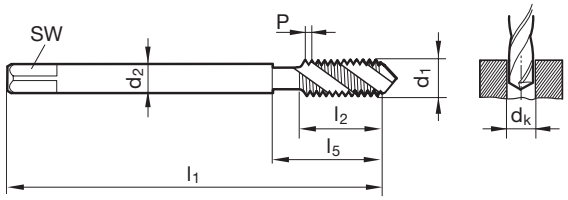
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22/23

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 783 | 810 | 914 | 1252 |
|---|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 5.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 4.500 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 784 | 822 | 917 | 1254 |
|---|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 2.500 | 2.100 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M7 | 1.000 | 5.500 | 4.300 | 6.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

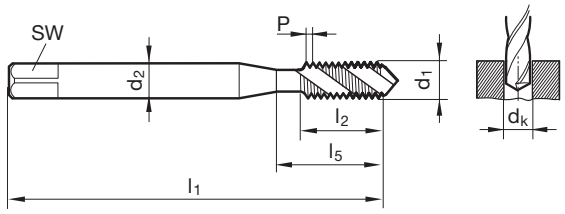
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO3/6G |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

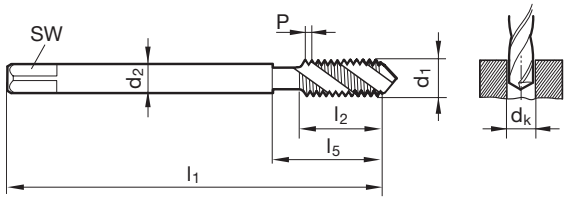
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **844**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **848**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | 1.800 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M7 | 1.000 | 5.500 | 4.300 | 6.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |

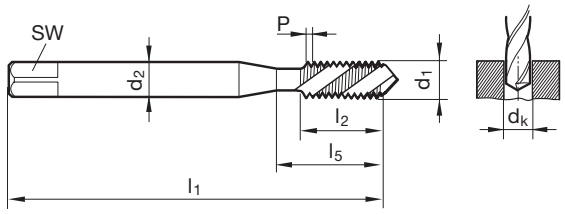
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N L40-LH |
| Forma | C |
| Con refrigeración interna | ✕ |

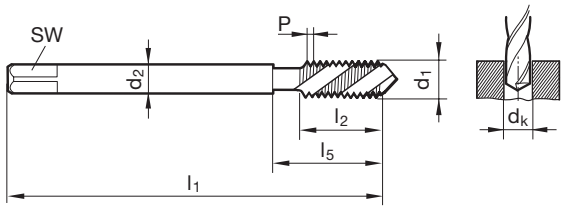
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 24

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **786**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **787**

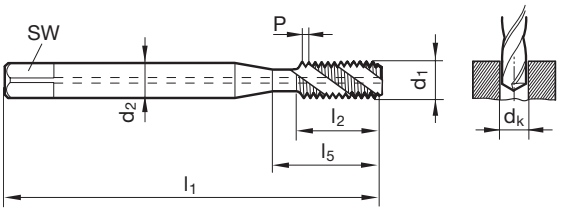
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 24



**DIN 2184-1 DIN 371** Artículo Nº **1893**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

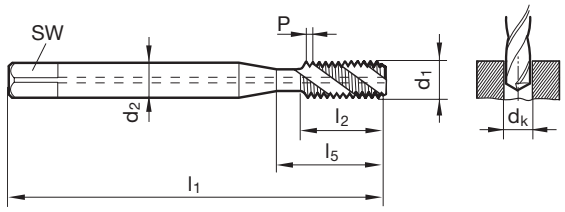
## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

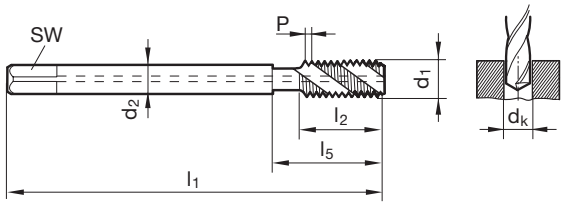
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 24

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **2438**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **2439**

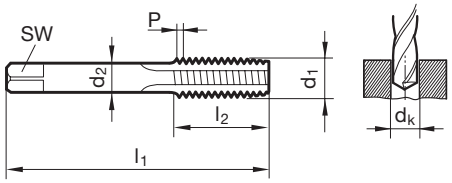
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 23



**DIN 2184-2 DIN 352** — Artículo Nº **993**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 36.000 | 8.000 | |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 40.000 | 9.000 | |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 40.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 45.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 45.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 50.000 | 8.500 | 24.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 56.000 | 11.000 | 27.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 63.000 | 14.000 | 32.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 70.000 | 16.000 | 36.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 75.000 | 18.500 | 40.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 80.000 | 20.000 | 45.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 95.000 | 25.000 | 50.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 95.000 | 25.000 | 50.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 100.000 | 27.000 | 50.000 |

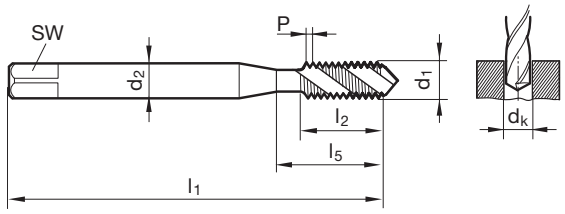
## Machos máquina para rosca métrica ISO

| | | | | | |
|---|---|---|---|---|---|
| Material de corte | HSS-E | | | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ● | ○ | A+M | S |
| Tipo | N R40 | N R40 | N R40 | N R40 |
| Forma | C | C | C | C |
| Con refrigeración interna | ✕ | ✕ | ✕ | ✕ |

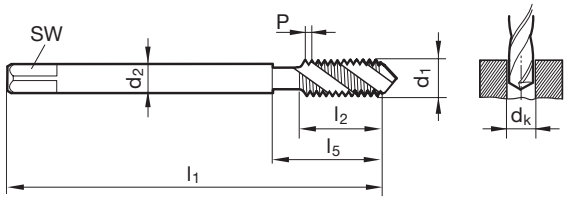
| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 24

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **836** **889** **2425** **2440**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.2 | 0.450 | 2.800 | 2.100 | 1.75 | 45.000 | 5.000 | 14.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 4.500 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **826** **890** **2426** **2441**

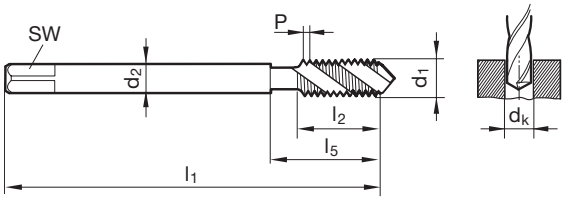
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 2.500 | 2.100 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M7 | 1.000 | 5.500 | 4.300 | 6.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 200.000 | 40.000 | 102.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



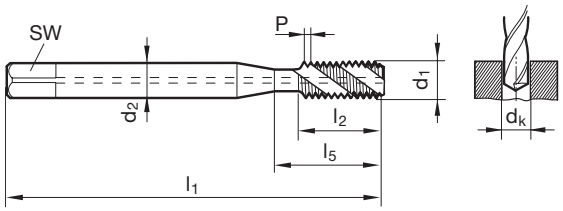
**Norma de fab. Norma de fab.** Artículo Nº **4153**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 112.000 | 6.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 112.000 | 7.500 | 77.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 125.000 | 8.500 | 90.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 125.000 | 11.000 | 90.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 140.000 | 14.000 | 97.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 160.000 | 16.000 | 117.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 180.000 | 18.500 | 133.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 220.000 | 20.000 | 168.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 280.000 | 25.000 | 225.000 |

## Oil feed taps for ISO metric threads

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | A+M |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 371** Artículo Nº **2514**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

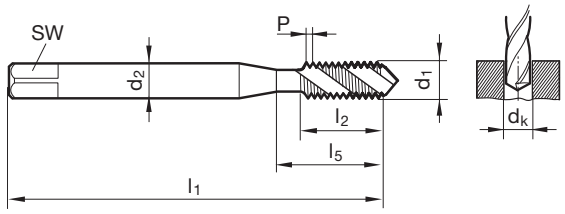
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | E |
| Con refrigeración interna | ⊠ |

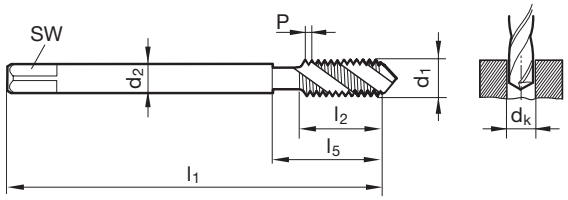
| | |
|---|---|
| **P** | ≤ 1000 |
| **M** | ○ |
| **K** | ○ |
| **N** | ○ |
| **S** | |
| **H** | |

Cond. de corte pág. 24

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **2790**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **2791**

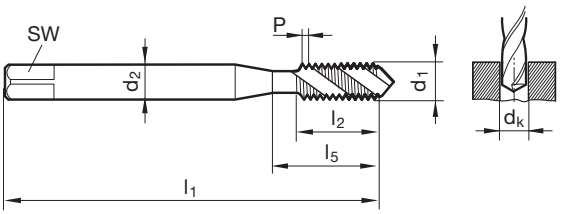
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 371** — Artículo Nº **174**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **196**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

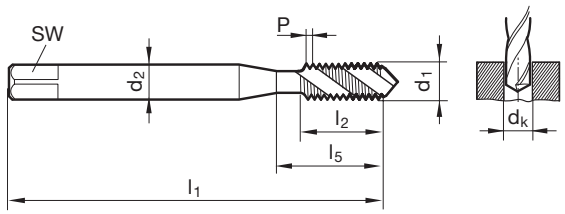
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 25

NEW



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **393**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

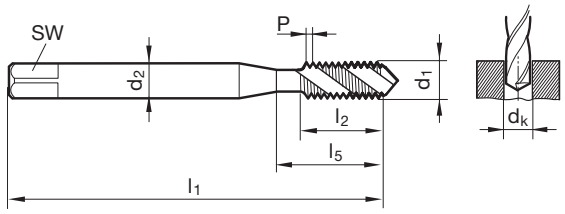
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

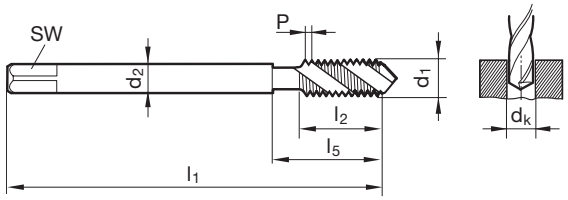
| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1288**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **1289**

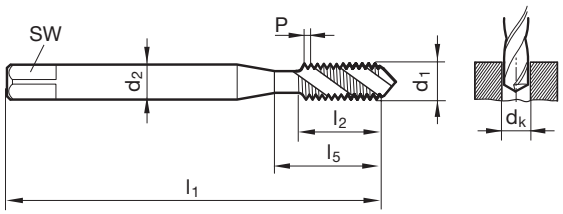
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 24/25

| Material de corte | HSS-E-PM | HSS-E | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO3/6G | ISO3/6G |
| Acabado | C | | S |
| Tipo | N R40 | N R40 | N R40 |
| Forma | C | C | C |
| Con refrigeración interna | | | |



| DIN 2184-1 DIN 371 | Artículo Nº | 1290 | 2994 | 2995 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

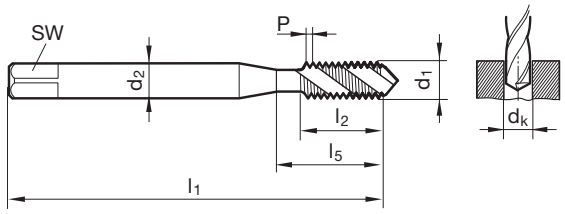
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | • | |
| M | • | |
| K | ○ | |
| N | • | |
| S | ○ | |
| H | | |

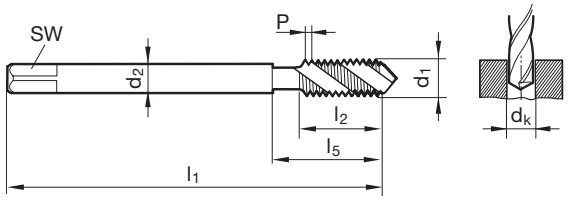
Cond. de corte pág. 25

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 767 | 1152 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 1098 | 1293 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

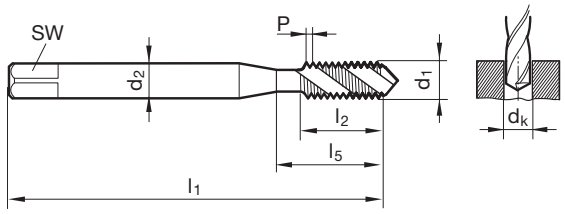
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

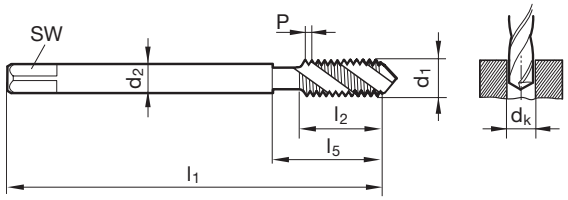
Cond. de corte pág. 25

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 761 | 1139 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 2.500 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 3.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 4.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 5.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 6.300 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 7.500 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 763 | 1142 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 8.800 | 63.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 10.000 | 58.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 10.000 | 58.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 12.500 | 85.000 |

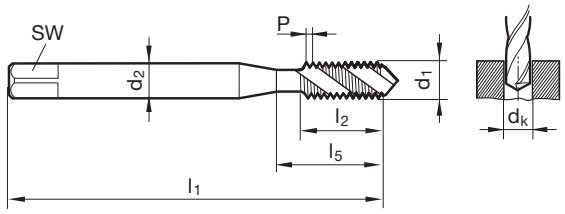
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ◯ | A |
| Tipo | H R15 | H R15 |
| Forma | C | C |
| Con refrigeración interna | | |

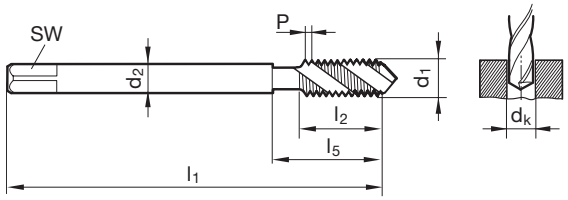
| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **872** **1577**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **935** **1578**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

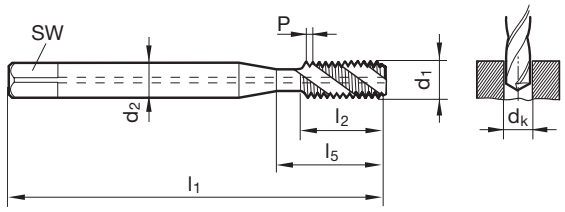
## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H R15 |
| Forma | C |
| Con refrigeración interna | |

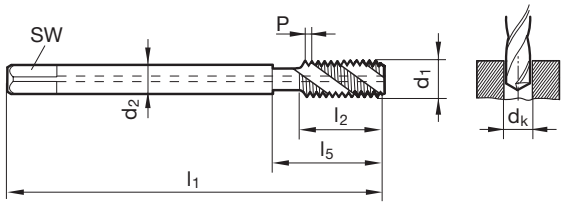
| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1188**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **1194**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |

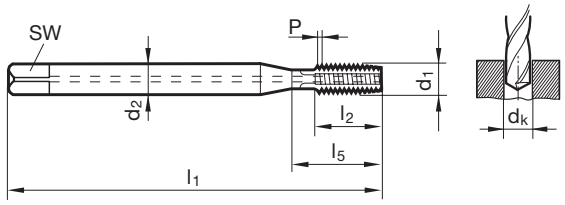
## Oil feed taps for ISO metric threads

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

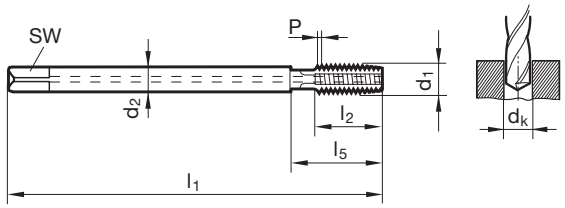
Cond. de corte pág. 23

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | C |
| Tipo | H | H |
| Forma | C | E |
| Con refrigeración interna | | |

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 302 | 1091 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 297 | 4165 |
|---|---|---|---|

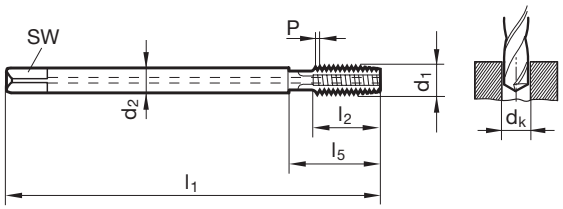
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |

## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Cond. de corte pág. 23



**DIN 2184-1 DIN 376** Artículo Nº **778**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 32.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 36.000 | 73.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 160.000 | 36.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 40.000 | 85.000 |
| M33 | 3.500 | 25.000 | 20.000 | 29.50 | 180.000 | 40.000 | 91.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 200.000 | 50.000 | 102.000 |
| M39 | 4.000 | 32.000 | 24.000 | 35.00 | 200.000 | 50.000 | 107.000 |

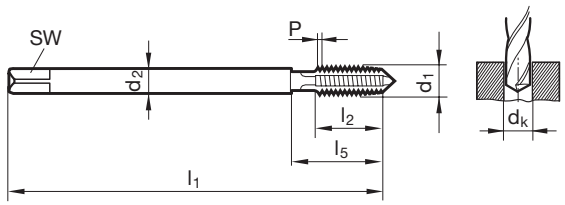
## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Cond. de corte pág. 23

NEW



**Norma de fab. ~DIN 376** Artículo Nº **779**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 160.000 | 26.000 | 100.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 180.000 | 32.000 | 120.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 200.000 | 36.000 | 120.000 |
| M27 | 3.000 | 20.000 | 16.000 | 24.00 | 225.000 | 36.000 | 145.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 250.000 | 40.000 | 160.000 |
| M33 | 3.500 | 25.000 | 20.000 | 29.50 | 275.000 | 40.000 | 170.000 |
| M36 | 4.000 | 28.000 | 22.000 | 32.00 | 300.000 | 50.000 | 180.000 |
| M39 | 4.000 | 32.000 | 24.000 | 35.00 | 325.000 | 50.000 | 210.000 |

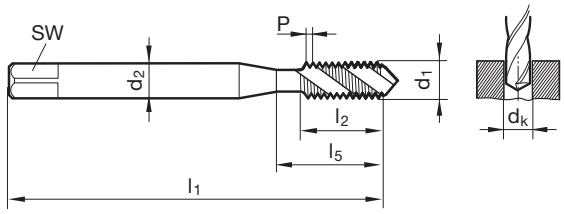
## Machos máquina para rosca métrica ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | ● | ● |
| Tipo | H R40 | H R40 | H R40 |
| Forma | C | C | C |
| Con refrigeración interna | ✕ | ✕ | ✕ |

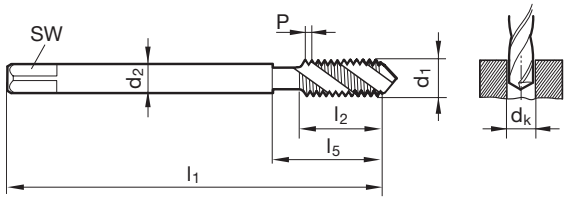
| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **811** **947** **2850**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.3 | 0.400 | 2.800 | 2.100 | 1.90 | 45.000 | 4.500 | 14.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M 2.6 | 0.450 | 2.800 | 2.100 | 2.15 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **823** **950** **2851**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 2.500 | 2.100 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

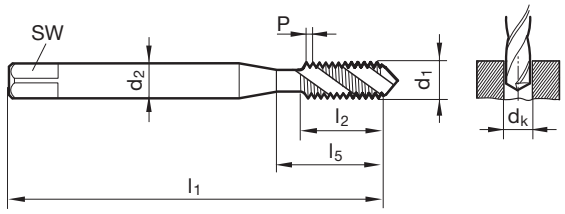
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

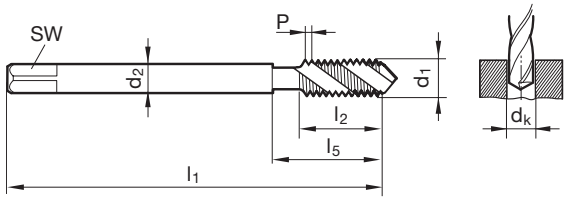
Cond. de corte pág. 25

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | H R40 | H R40 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **361** **1916**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 7.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M7 | 1.000 | 7.000 | 5.500 | 6.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** — Artículo Nº **362** **1917**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 16.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |
| M22 | 2.500 | 18.000 | 14.500 | 19.50 | 140.000 | 27.000 | 62.000 |
| M24 | 3.000 | 18.000 | 14.500 | 21.00 | 160.000 | 30.000 | 73.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 180.000 | 35.000 | 85.000 |

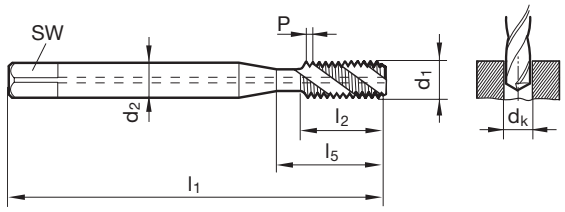
## Oil feed taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | H R40 |
| Forma | C |
| Con refrigeración interna | |

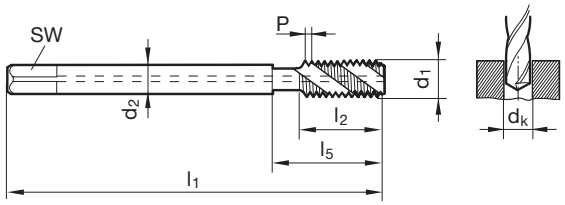
| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1894**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **1901**

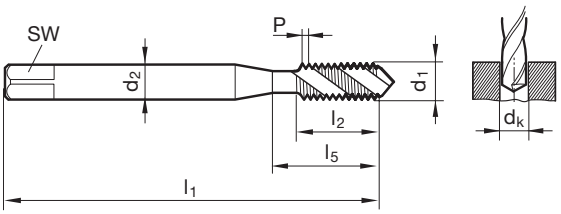
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 18.500 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 20.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 20.000 | 54.000 |
| M18 | 2.500 | 14.000 | 11.000 | 15.50 | 125.000 | 25.000 | 62.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 140.000 | 25.000 | 62.000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | ● | Ⓢ |
| Tipo | H R40 | H R40 |
| Forma | C | C |
| Con refrigeración interna | ✕ | ✕ |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



| DIN 2184-1 DIN 371 | Artículo Nº | 2985 | 2986 |
|---|---|---|---|

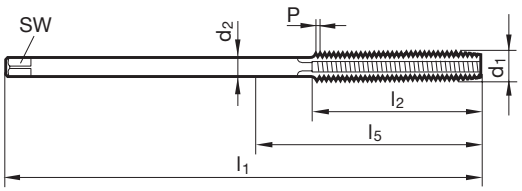
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0.400 | 2.800 | 2.100 | 1.60 | 45.000 | 4.500 | 13.500 |
| M 2.5 | 0.450 | 2.800 | 2.100 | 2.05 | 50.000 | 5.000 | 14.500 |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 11.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 14.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 16.000 | 39.000 |

## Machine nut taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | |
| Con refrigeración interna | ✕ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18



**DIN 357 DIN 357** Artículo Nº **851**

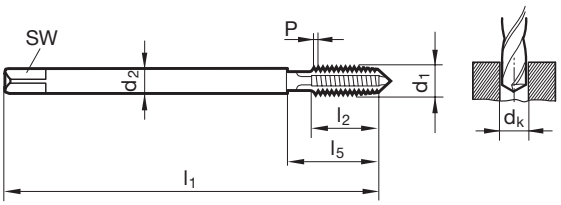
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 70.000 | 22.000 | 30.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 90.000 | 25.000 | 33.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 100.000 | 28.000 | 38.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 110.000 | 32.000 | 44.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 125.000 | 40.000 | 61.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 140.000 | 45.000 | 85.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 180.000 | 50.000 | 120.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 200.000 | 63.000 | 145.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 250.000 | 70.000 | 170.000 |
| M30 | 3.500 | 22.000 | 18.000 | 26.50 | 315.000 | 100.000 | 230.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 19



**Norma de fab. Norma de fab.** Artículo Nº **998**

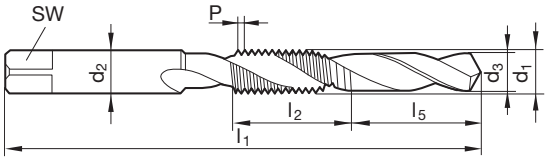
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | | 2.50 | 70.000 | 18.000 | 35.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 90.000 | 22.000 | 55.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 100.000 | 24.000 | 65.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 110.000 | 25.000 | 75.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 125.000 | 28.000 | 68.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 140.000 | 30.000 | 80.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 180.000 | 35.000 | 115.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 200.000 | 35.000 | 125.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 200.000 | 40.000 | 130.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 250.000 | 45.000 | 165.000 |

## Machine combination drill taps for ISO metric threads

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | D |
| Con refrigeración interna | ✕ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18



**Norma de fab. Norma de fab.** Artículo Nº **1839**

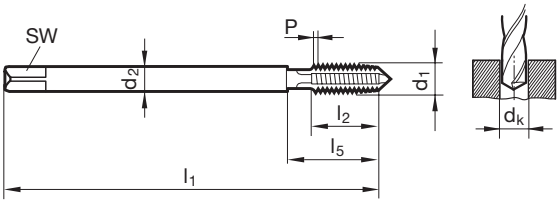
| d1 | P | d2 | d3 | SW | l1 | l5 | l2 | Code no. |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | |
| M3 | 0.500 | 3.500 | 2.500 | 2.700 | 62.000 | 11.000 | 12.000 | 3.000 |
| M4 | 0.700 | 4.500 | 3.300 | 3.400 | 66.000 | 10.000 | 16.000 | 4.000 |
| M5 | 0.800 | 6.000 | 4.200 | 4.900 | 75.000 | 12.000 | 18.000 | 5.000 |
| M6 | 1.000 | 6.000 | 5.000 | 4.900 | 81.000 | 14.000 | 20.000 | 6.000 |
| M8 | 1.250 | 6.000 | 6.800 | 4.900 | 93.000 | 20.000 | 12.000 | 8.000 |
| M10 | 1.500 | 7.000 | 8.500 | 5.500 | 99.000 | 22.000 | 14.000 | 10.000 |
| M12 | 1.750 | 9.000 | 10.200 | 7.000 | 106.000 | 25.000 | 16.000 | 12.000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 23



**Norma de fab. Norma de fab.** Artículo Nº **888**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 90.000 | 6.000 | 18.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 125.000 | 7.500 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 140.000 | 8.500 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 160.000 | 11.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 180.000 | 14.000 | |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 200.000 | 16.000 | 140.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 220.000 | 18.500 | 160.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 220.000 | 20.000 | 160.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 220.000 | 20.000 | 16.000 |
| M20 | 2.500 | 16.000 | 12.000 | 17.50 | 280.000 | 25.000 | 220.000 |

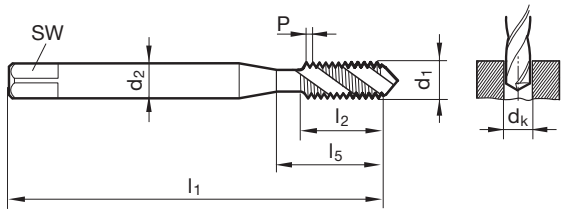
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ○ |
| Tipo | N L15 |
| Forma | D |
| Con refrigeración interna | ⊠ |

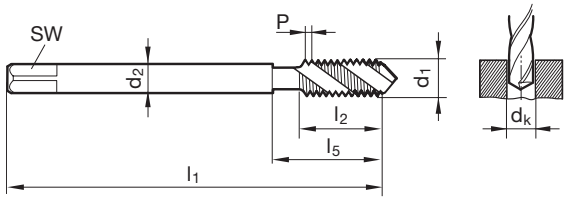
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **808**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 3.500 | 2.700 | 2.50 | 56.000 | 10.000 | 18.000 |
| M 3.5 | 0.600 | 4.000 | 3.000 | 2.90 | 56.000 | 12.000 | 20.000 |
| M4 | 0.700 | 4.500 | 3.400 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 6.000 | 4.900 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 6.000 | 4.900 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 8.000 | 6.200 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 10.000 | 8.000 | 8.50 | 100.000 | 20.000 | 39.000 |

**DIN 2184-1 DIN 376** Artículo Nº **820**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0.500 | 2.200 | 1.800 | 2.50 | 56.000 | 10.000 | 18.000 |
| M4 | 0.700 | 2.800 | 2.100 | 3.30 | 63.000 | 12.000 | 21.000 |
| M5 | 0.800 | 3.500 | 2.700 | 4.20 | 70.000 | 14.000 | 25.000 |
| M6 | 1.000 | 4.500 | 3.400 | 5.00 | 80.000 | 16.000 | 30.000 |
| M8 | 1.250 | 6.000 | 4.900 | 6.80 | 90.000 | 17.000 | 35.000 |
| M10 | 1.500 | 7.000 | 5.500 | 8.50 | 100.000 | 20.000 | 39.000 |
| M12 | 1.750 | 9.000 | 7.000 | 10.20 | 110.000 | 24.000 | 49.000 |
| M14 | 2.000 | 11.000 | 9.000 | 12.00 | 110.000 | 26.000 | 53.000 |
| M16 | 2.000 | 12.000 | 9.000 | 14.00 | 110.000 | 26.000 | 54.000 |

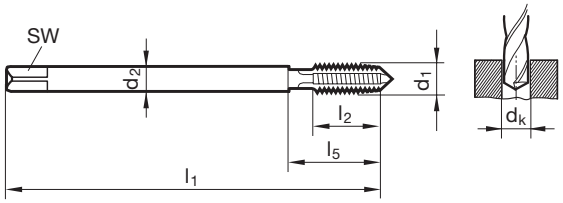
## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 374** Artículo Nº **4219**

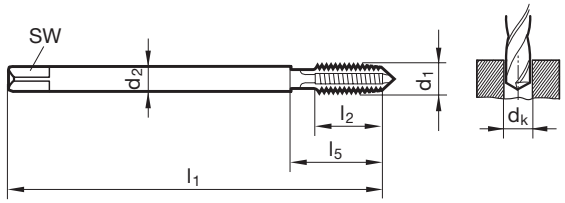
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máquina para rosca métrica fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | (S) | ● |
| Tipo | N | N | N |
| Forma | B | B | B |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19



| DIN 2184-1 DIN 374 | Artículo Nº | 827 | 832 | 2888 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 7,000 | 18,000 | 3,002 |
| M3,5 x 0,35 | 2,500 | 2,100 | 3,15 | 56,000 | 8,000 | 20,000 | 3,502 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 8,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 13,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 100,000 | 13,000 | 30,000 | 6,004 |
| M7 x 0,75 | 5,500 | 4,300 | 6,20 | 80,000 | 13,000 | 30,000 | 7,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 80,000 | 14,000 | 30,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 0,75 | 7,000 | 5,500 | 9,20 | 90,000 | 16,000 | 35,000 | 10,004 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 17,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M11 x 1 | 8,000 | 6,200 | 10,00 | 90,000 | 20,000 | 33,000 | 11,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M15 x 1 | 12,000 | 9,000 | 14,00 | 100,000 | 20,000 | 40,000 | 15,005 |
| M15 x 1,5 | 12,000 | 9,000 | 13,50 | 100,000 | 20,000 | 44,000 | 15,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M18 x 2 | 14,000 | 11,000 | 16,00 | 125,000 | 30,000 | 58,000 | 18,008 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M20 x 2 | 16,000 | 12,000 | 18,00 | 140,000 | 32,000 | 60,000 | 20,008 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M22 x 2 | 18,000 | 14,500 | 20,00 | 140,000 | 32,000 | 62,000 | 22,008 |
| M24 x 1 | 18,000 | 14,500 | 23,00 | 140,000 | 28,000 | 48,000 | 24,005 |

**DIN 2184-1 DIN 374** Artículo Nº **827** **832** **2888**

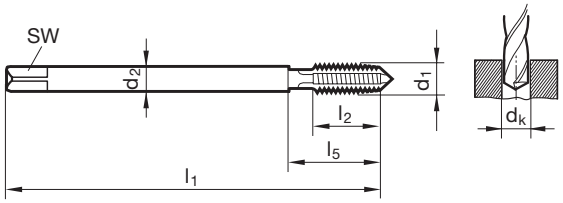
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 140,000 | 28,000 | 50,000 | 26,007 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 28,000 | 53,000 | 27,008 |
| M28 x 1,5 | 20,000 | 16,000 | 26,50 | 140,000 | 28,000 | 53,000 | 28,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 28,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 28,000 | 53,000 | 30,008 |
| M32 x 1,5 | 22,000 | 18,000 | 30,50 | 150,000 | 28,000 | 53,000 | 32,007 |
| M33 x 1,5 | 25,000 | 20,000 | 31,50 | 160,000 | 30,000 | 56,000 | 33,007 |
| M35 x 1,5 | 28,000 | 22,000 | 33,50 | 170,000 | 30,000 | 56,000 | 35,007 |
| M36 x 1,5 | 28,000 | 22,000 | 34,50 | 170,000 | 30,000 | 56,000 | 36,007 |
| M38 x 1,5 | 28,000 | 22,000 | 36,50 | 170,000 | 30,000 | 56,000 | 38,007 |
| M40 x 1,5 | 32,000 | 24,000 | 38,50 | 170,000 | 30,000 | 57,000 | 40,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19/20

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | (S) | ○ |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |



**DIN 2184-1 DIN 374** — Artículo Nº **2993** **316**

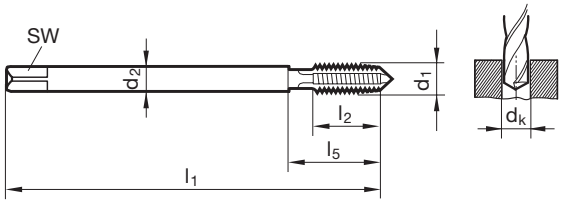
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | A+M | |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **2878** **2879**

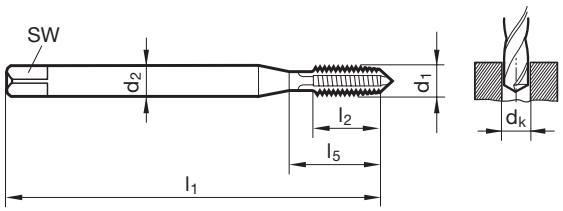
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 140,000 | 28,000 | 50,000 | 26,007 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 28,000 | 53,000 | 27,008 |
| M28 x 1,5 | 20,000 | 16,000 | 26,50 | 140,000 | 28,000 | 53,000 | 28,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 28,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 28,000 | 53,000 | 30,008 |
| M32 x 1,5 | 22,000 | 18,000 | 30,50 | 150,000 | 28,000 | 53,000 | 32,007 |
| M36 x 1,5 | 28,000 | 22,000 | 34,50 | 170,000 | 30,000 | 56,000 | 36,007 |
| M40 x 1,5 | 32,000 | 24,000 | 38,50 | 170,000 | 30,000 | 57,000 | 40,007 |
| M42 x 1,5 | 32,000 | 24,000 | 40,50 | 170,000 | 30,000 | 57,000 | 42,007 |
| M45 x 1,5 | 36,000 | 29,000 | 43,50 | 180,000 | 32,000 | 60,000 | 45,007 |
| M48 x 1,5 | 36,000 | 29,000 | 46,50 | 190,000 | 32,000 | 60,000 | 48,007 |
| M50 x 1,5 | 36,000 | 29,000 | 48,50 | 190,000 | 32,000 | 60,000 | 50,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |



**DIN 2184-1 ~DIN 371** Artículo Nº **943**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 7,500 | 25,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 80,000 | 7,500 | 30,000 | 6,003 |
| M6 x 0,75 | 6,000 | 4,900 | 5,20 | 80,000 | 11,500 | 30,000 | 6,004 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 15,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 15,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 8,80 | 100,000 | 19,000 | 39,000 | 10,006 |
| M12 x 1 | 12,000 | 9,000 | 11,00 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,25 | 12,000 | 9,000 | 10,80 | 100,000 | 19,000 | 40,000 | 12,006 |
| M12 x 1,5 | 12,000 | 9,000 | 10,50 | 100,000 | 22,500 | 40,000 | 12,007 |

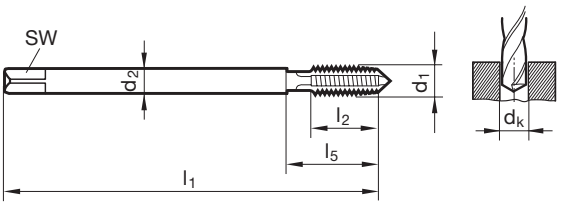
## Machos máquina para rosca métrica fina ISO

h6

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |



**DIN 2184-1 DIN 374** Artículo Nº **944**

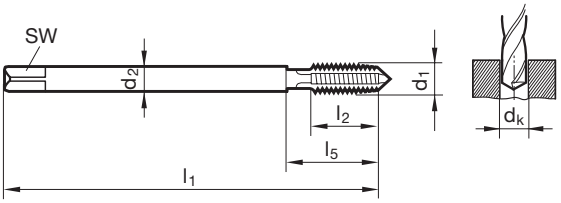
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 19,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,500 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 15,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,500 | 44,000 | 16,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ○ | ● |
| Tipo | H | H |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 374** — Artículo Nº **828** **2943**

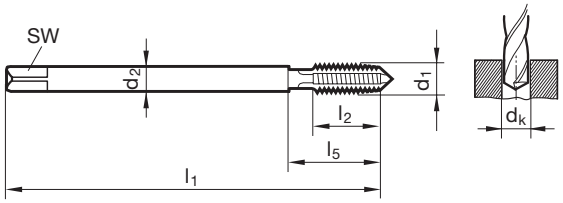
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 7,000 | 18,000 | 3,002 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 8,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 13,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20



**DIN 2184-1 DIN 374** Artículo Nº **1291**

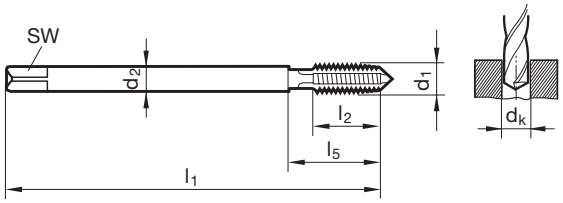
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO3/6G |
| Acabado | S |
| Tipo | H |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 374** Artículo Nº **2983**

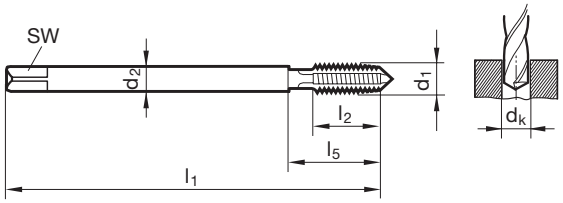
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO3/6G |
| Acabado | ◯ | ◯ |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



**DIN 2184-1 DIN 374** — Artículo Nº **830** **829**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 4,000 | 18,000 | 3,002 |
| M3,5 x 0,35 | 2,500 | 2,100 | 3,15 | 56,000 | 4,000 | 20,000 | 3,502 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 5,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 5,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M7 x 0,75 | 5,500 | 4,300 | 6,20 | 80,000 | 8,000 | 30,000 | 7,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 80,000 | 8,000 | 30,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 11,000 | 35,000 | 9,005 |
| M10 x 0,75 | 7,000 | 5,500 | 9,20 | 90,000 | 11,000 | 35,000 | 10,004 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M11 x 1 | 8,000 | 6,200 | 10,00 | 90,000 | 11,000 | 33,000 | 11,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 11,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M15 x 1 | 12,000 | 9,000 | 14,00 | 100,000 | 11,000 | 40,000 | 15,005 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 11,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 110,000 | 12,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M18 x 2 | 14,000 | 11,000 | 16,00 | 125,000 | 20,000 | 58,000 | 18,008 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 125,000 | 12,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M20 x 2 | 16,000 | 12,000 | 18,00 | 140,000 | 20,000 | 60,000 | 20,008 |
| M22 x 1 | 18,000 | 14,500 | 21,00 | 125,000 | 12,000 | 44,000 | 22,005 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M22 x 2 | 18,000 | 14,500 | 20,00 | 140,000 | 22,000 | 62,000 | 22,008 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 22,000 | 48,000 | 24,008 |
| M25 x 1,5 | 18,000 | 14,500 | 23,50 | 140,000 | 20,000 | 50,000 | 25,007 |

**DIN 2184-1 DIN 374** Artículo Nº **830** **829**

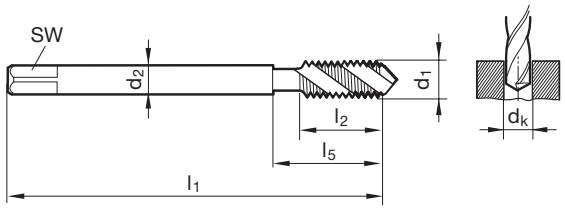
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 140,000 | 20,000 | 50,000 | 26,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 20,000 | 53,000 | 27,008 |
| M28 x 1,5 | 20,000 | 16,000 | 26,50 | 140,000 | 20,000 | 53,000 | 28,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 20,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 20,000 | 53,000 | 30,008 |
| M32 x 1,5 | 22,000 | 18,000 | 30,50 | 150,000 | 25,000 | 53,000 | 32,007 |
| M35 x 1,5 | 28,000 | 22,000 | 33,50 | 170,000 | 25,000 | 56,000 | 35,007 |
| M36 x 1,5 | 28,000 | 22,000 | 34,50 | 170,000 | 25,000 | 56,000 | 36,007 |
| M38 x 1,5 | 28,000 | 22,000 | 36,50 | 170,000 | 25,000 | 56,000 | 38,007 |
| M40 x 1,5 | 32,000 | 24,000 | 38,50 | 170,000 | 25,000 | 57,000 | 40,007 |
| M50 x 1,5 | 36,000 | 29,000 | 48,50 | 190,000 | 27,000 | 60,000 | 50,007 |
| M63 x 1,5 | 50,000 | 39,000 | 61,50 | 275,000 | 25,000 | 62,000 | 63,007 |

## Machos máquina para rosca métrica fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | Ⓢ | ● |
| Tipo | N R15 | N R15 | N R15 |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22



| DIN 2184-1 DIN 374 | Artículo Nº | 833 | 1971 | 2838 |
|---|---|---|---|---|

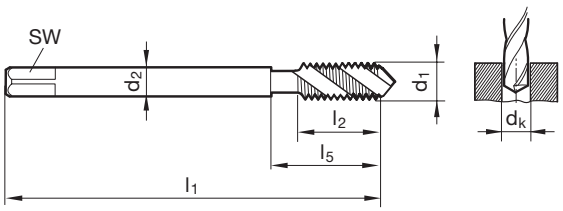
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 5,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 11,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 11,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 125,000 | 12,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 22,000 | 48,000 | 24,008 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 140,000 | 20,000 | 53,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 20,000 | 53,000 | 27,008 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 20,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 20,000 | 53,000 | 30,008 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | C | C |
| Tipo | N R15 | N R15 |
| Forma | C | E |
| Con refrigeración interna | | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 23



**DIN 2184-1 DIN 374** — Artículo Nº **4156** **4157**

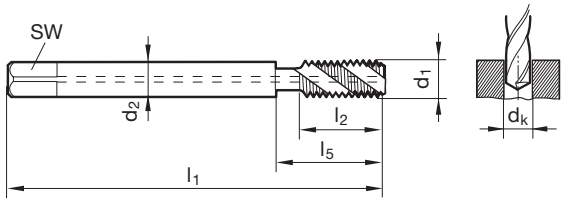
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 22



**DIN 2184-1 DIN 374** Artículo Nº **1905**

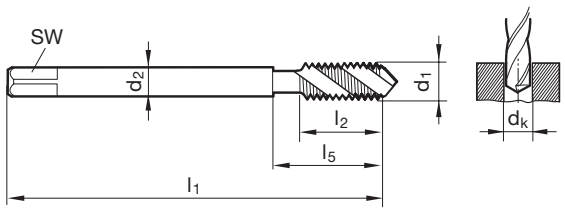
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 11,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 11,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 110,000 | 12,000 | 44,000 | 18,005 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 125,000 | 12,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | Ⓢ | ● |
| Tipo | N R40 | N R40 | N R40 |
| Forma | C | C | C |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23



**DIN 2184-1 DIN 374** — Artículo Nº: **834** | **852** | **2843**

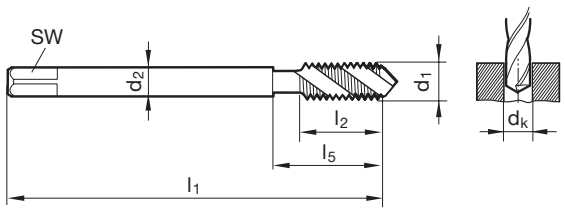
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 4,000 | 18,000 | 3,002 |
| M3,5 x 0,35 | 2,500 | 2,100 | 3,15 | 56,000 | 4,000 | 20,000 | 3,502 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 5,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 5,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 80,000 | 8,000 | 30,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 0,75 | 7,000 | 5,500 | 9,20 | 90,000 | 11,000 | 35,000 | 10,004 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 11,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 11,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 110,000 | 12,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 125,000 | 12,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 22,000 | 48,000 | 24,008 |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 140,000 | 20,000 | 50,000 | 26,007 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 140,000 | 20,000 | 53,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 20,000 | 53,000 | 27,008 |
| M28 x 1,5 | 20,000 | 16,000 | 26,50 | 140,000 | 20,000 | 53,000 | 28,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 20,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 20,000 | 53,000 | 30,008 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| **P** | ≤ 800 |
| **M** | |
| **K** | |
| **N** | |
| **S** | |
| **H** | |

Cond. de corte pág. 23



**DIN 2184-2 DIN 2181** — Artículo Nº **1970**

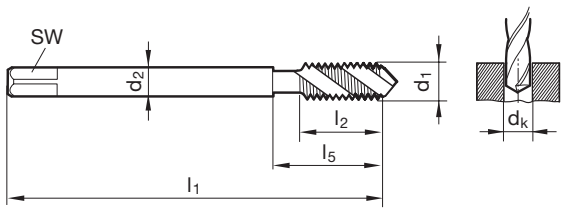
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 6,000 | 4,900 | 5,20 | 56,000 | 8,000 | 27,000 | 6,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 56,000 | 8,000 | 30,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 56,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 63,000 | 11,000 | 30,000 | 8,005 |
| M10 x 0,75 | 7,000 | 5,500 | 9,20 | 63,000 | 11,000 | 32,000 | 10,004 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 63,000 | 11,000 | 32,000 | 10,005 |
| M11 x 1 | 8,000 | 6,200 | 10,00 | 63,000 | 11,000 | 33,000 | 11,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 70,000 | 11,000 | 35,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 70,000 | 16,000 | 35,000 | 12,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | ○ |
| S | |
| H | |

Cond. de corte pág. 24

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | ● | ○ |
| Tipo | N R40 | N R40 | N R40 |
| Forma | C | C | E |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |



**DIN 2184-1 DIN 374** — Artículo Nº: **2424** | **2853** | **2792**

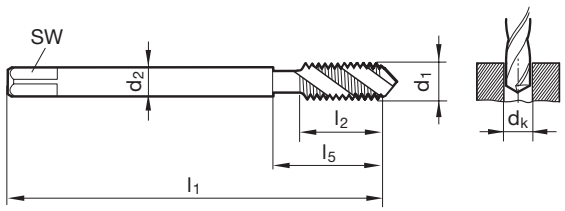
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 11,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 11,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 110,000 | 12,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 22,000 | 48,000 | 24,008 |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 140,000 | 20,000 | 50,000 | 26,007 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 140,000 | 20,000 | 53,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 140,000 | 20,000 | 53,000 | 27,008 |
| M28 x 1,5 | 20,000 | 16,000 | 26,50 | 140,000 | 20,000 | 53,000 | 28,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 20,000 | 53,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 150,000 | 20,000 | 53,000 | 30,008 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 24

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO3/6G | ISO3/6G | ISO3/6G |
| Acabado | S | ○ | ● |
| Tipo | N R40 | N R40 | N R40 |
| Forma | C | C | C |
| Con refrigeración interna | ✕ | ✕ | ✕ |



| DIN 2184-1 DIN 374 | Artículo Nº | 1049 | 2998 | 2999 |
|---|---|---|---|---|

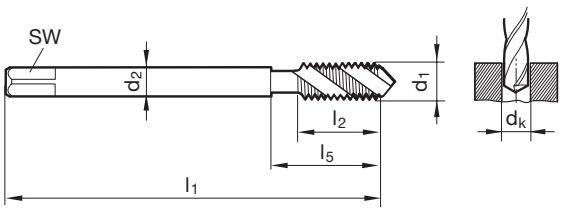
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

| Material de corte | HSS-E | HSS-E-PM |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | S |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **273** **1292**

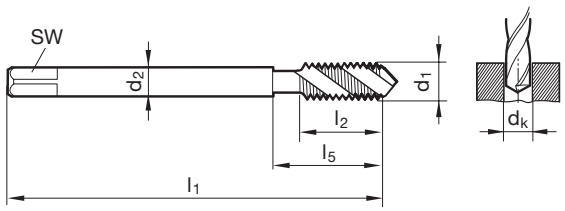
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 22,000 | 48,000 | 24,008 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 374** — Artículo Nº **1100** **1294**

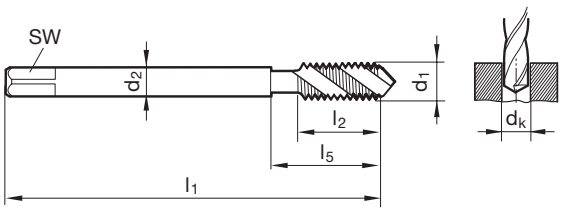
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Cond. de corte pág. 25



| DIN 2184-1 DIN 374 | Artículo Nº | 764 | 1144 |
|---|---|---|---|

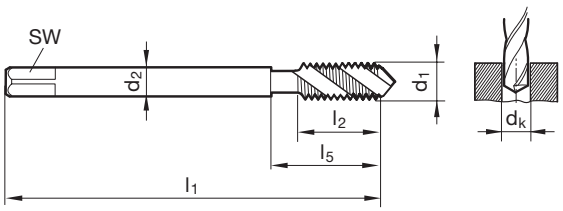
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 44,000 | 8,005 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 47,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 47,000 | 10,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 44,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 5,000 | 53,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 7,500 | 53,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 7,500 | 48,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 7,500 | 48,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 7,500 | 58,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 7,500 | 70,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | ISO2/6H | 6HX |
| Acabado | ◯ | C |
| Tipo | H R15 | H R15 |
| Forma | C | C |
| Con refrigeración interna | ✕ | ✕ |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23



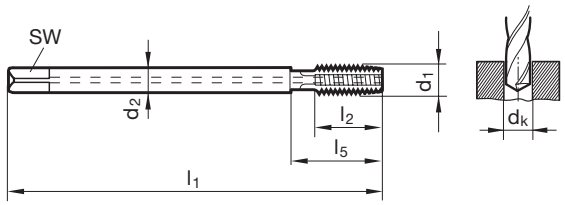
**DIN 2184-1 DIN 374** — Artículo Nº **874** **1200**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 11,000 | 35,000 | 9,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| P | ≤ 1200 | Cond. de corte pág. 23 |
| M | | |
| K | • | |
| N | ≥ 7 | |
| S | | |
| H | | |

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | C |
| Tipo | H | H |
| Forma | E | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **1007** **1090**

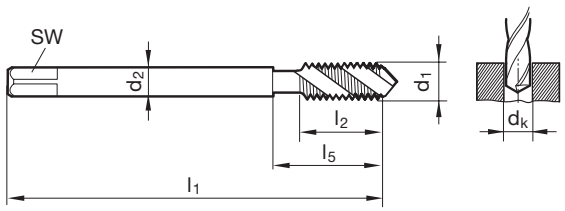
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 13,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | ● | ● |
| Tipo | H R40 | H R40 | H R40 |
| Forma | C | C | C |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |



| DIN 2184-1 DIN 374 | Artículo Nº | 835 | 2852 | 2940 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

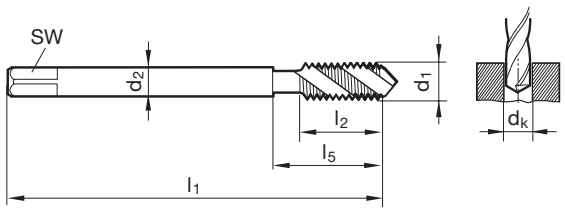
## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 374** Artículo Nº **394**

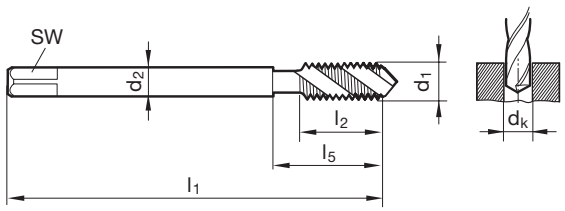
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO3/6G | ISO3/6G |
| Acabado | S | |
| Tipo | H R40 | H R40 |
| Forma | C | C |
| Con refrigeración interna | | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



| DIN 2184-1 DIN 374 | Artículo Nº | 2989 | 2988 |
|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

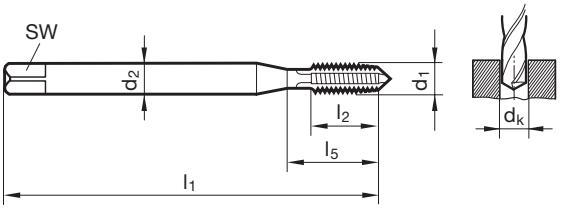
## Machos máquina para roscas UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ☒ | ☒ |

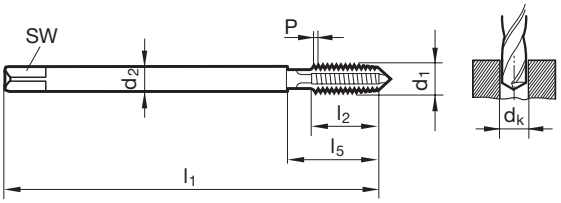
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **873** **2889**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 1 - 64 | 2,800 | 2,100 | 1,55 | 45,000 | 8,000 | | 1,854 |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 9,000 | 14,500 | 2,184 |
| 3 - 48 | 2,800 | 2,100 | 2,10 | 50,000 | 9,000 | 14,500 | 2,515 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **878** **2890**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 35,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 38,000 | 73,000 | 25,400 |
| 1 1/8 - 7 | 22,000 | 18,000 | 25,00 | 180,000 | 44,000 | 85,000 | 28,575 |
| 1 1/4 - 7 | 22,000 | 18,000 | 28,00 | 180,000 | 44,000 | 85,000 | 31,750 |
| 1 1/2 - 6 | 28,000 | 22,000 | 34,00 | 200,000 | 50,000 | 102,000 | 38,100 |

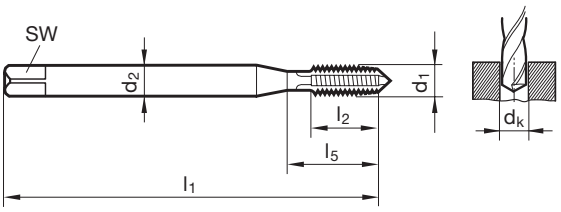
## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

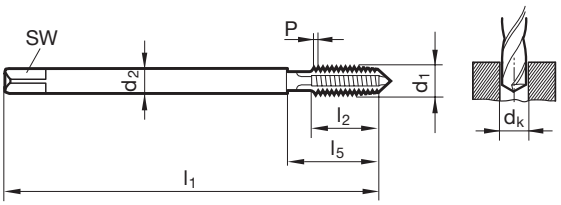
| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **2881**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **2883**

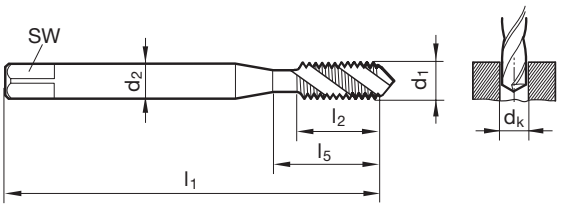
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 35,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 38,000 | 73,000 | 25,400 |

## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22



**DIN 2184-1 ~DIN 371** Artículo Nº **1978**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

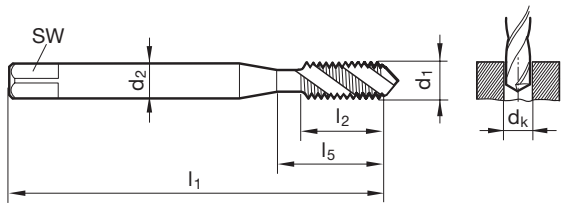
## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | |

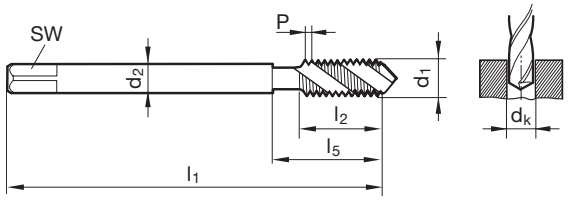
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **2839**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |

**DIN 2184-1 ~DIN 376** Artículo Nº **2840**

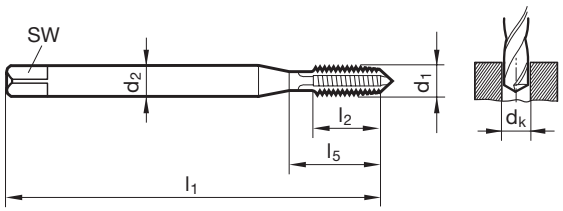
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 20,000 | 49,000 | 12,700 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 28,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 32,000 | 73,000 | 25,400 |

## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



**DIN 2184-1 ~DIN 371** Artículo Nº **1977**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 3 - 48 | 2,800 | 2,100 | 2,10 | 50,000 | 6,000 | 14,500 | 2,515 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 7,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

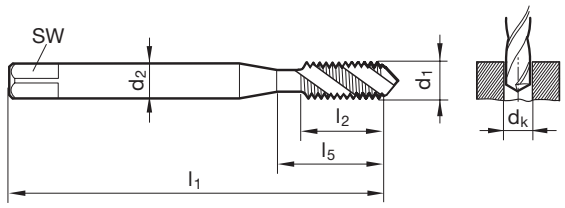
## Machos máquina para roscas UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |

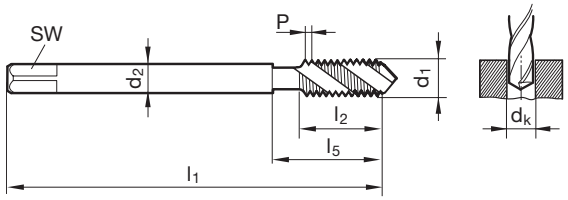
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **876** **2844**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 5,000 | 14,500 | 2,184 |
| 3 - 48 | 2,800 | 2,100 | 2,10 | 50,000 | 6,000 | 14,500 | 2,515 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 7,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **881** **2845**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 18,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 20,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 21,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 24,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 25,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 28,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 32,000 | 73,000 | 25,400 |

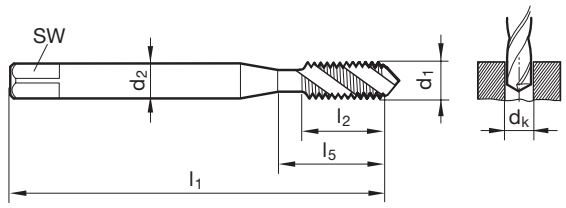
## Machos máquina para roscas UNC

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | ○ |
| S | |
| H | |

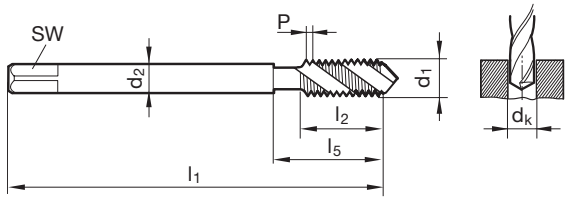
Cond. de corte pág. 24

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **2854** **2855**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 5,000 | 14,500 | 2,184 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 7,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **2856** **2857**

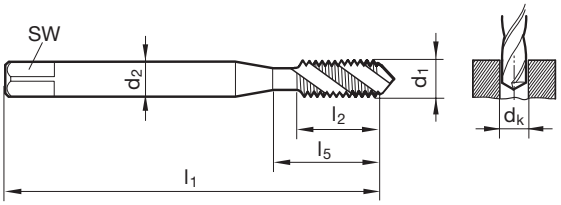
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 18,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 20,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 21,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 24,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 25,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 28,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 32,000 | 73,000 | 25,400 |

## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 ~DIN 371** Artículo Nº **1837**

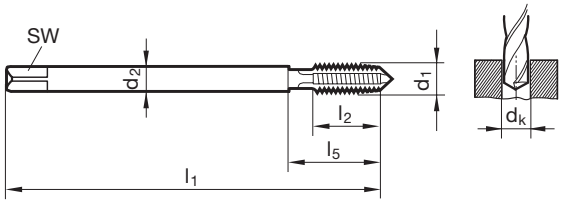
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

## Machos máquina para roscas UNF

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-1 ~DIN 374** — Artículo Nº **908** **2891**

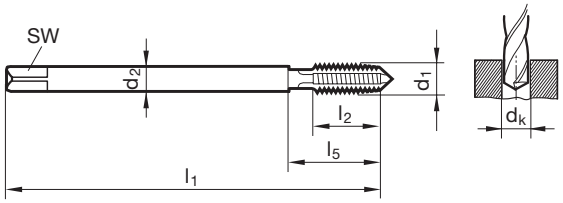
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 3 - 56 | 1,800 | | 2,15 | 50,000 | 9,000 | 14,500 | 2,515 |
| 4 - 48 | 2,200 | | 2,40 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 2,500 | 2,100 | 2,70 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 2,800 | 2,100 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 100,000 | 22,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 28,000 | 50,000 | 25,400 |
| 1 1/8 - 12 | 22,000 | 18,000 | 26,50 | 150,000 | 28,000 | 53,000 | 28,575 |
| 1 1/4 - 12 | 22,000 | 18,000 | 29,50 | 150,000 | 28,000 | 53,000 | 31,750 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



**DIN 2184-1 ~DIN 374** Artículo Nº **1987**

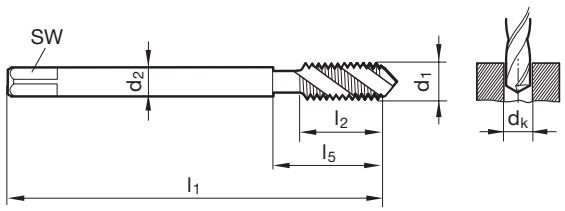
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 3 - 56 | 1,800 | 1,400 | 2,15 | 50,000 | 5,000 | 14,500 | 2,515 |
| 4 - 48 | 2,200 | 1,800 | 2,40 | 56,000 | 6,000 | 18,000 | 2,845 |
| 5 - 44 | 2,500 | 2,100 | 2,70 | 56,000 | 6,000 | 18,000 | 3,175 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 6,500 | 20,000 | 3,505 |
| 8 - 36 | 2,800 | 2,100 | 3,50 | 63,000 | 7,000 | 21,000 | 4,166 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 9,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 100,000 | 14,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 16,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N R15 | N R15 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-1 ~DIN 374** — Artículo Nº **1988** **2841**

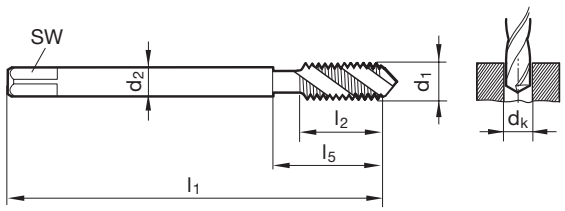
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 3 - 56 | 1,800 | 1,400 | 2,15 | 50,000 | 5,000 | 14,500 | 2,515 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 6,500 | 20,000 | 3,505 |
| 8 - 36 | 2,800 | 2,100 | 3,50 | 63,000 | 7,000 | 21,000 | 4,166 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 100,000 | 14,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 16,000 | 44,000 | 19,050 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23



**DIN 2184-1 ~DIN 374** — Artículo Nº **911** **2846**

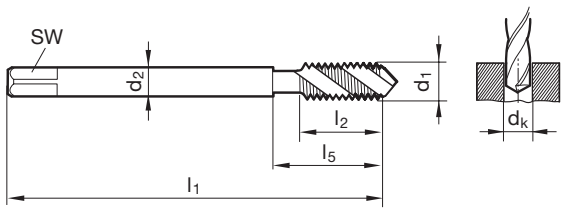
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 3 - 56 | 1,800 | 1,400 | 2,15 | 50,000 | 5,000 | 14,500 | 2,515 |
| 4 - 48 | 2,200 | 1,800 | 2,40 | 56,000 | 6,000 | 18,000 | 2,845 |
| 5 - 44 | 2,500 | 2,100 | 2,70 | 56,000 | 6,000 | 18,000 | 3,175 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 6,500 | 20,000 | 3,505 |
| 8 - 36 | 2,800 | 2,100 | 3,50 | 63,000 | 7,000 | 21,000 | 4,166 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 9,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 100,000 | 14,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 16,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 24



**DIN 2184-1 ~DIN 374** Artículo Nº **2859**

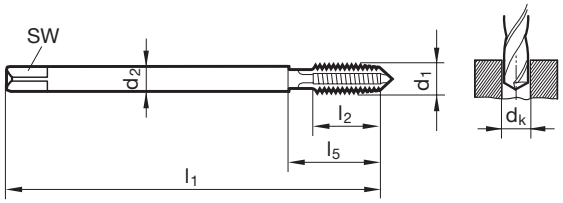
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 9,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20



**DIN 2184-1 ~DIN 374** Artículo Nº **2885**

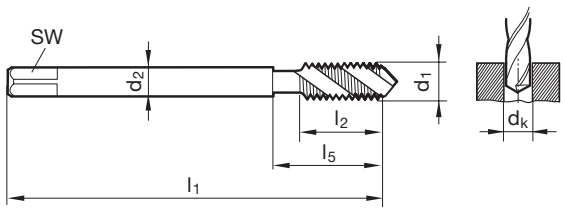
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 ~DIN 374** Artículo Nº **1838**

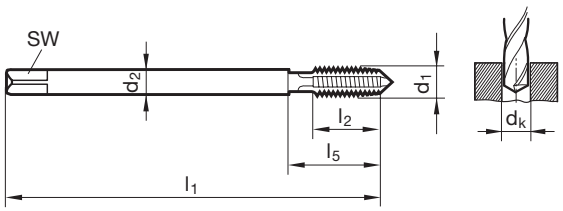
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 9,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | | |
| Acabado | ○ | ● |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ✕ | ✕ |



**DIN 2184-1 DIN 5156** — Artículo Nº **962** **2894**

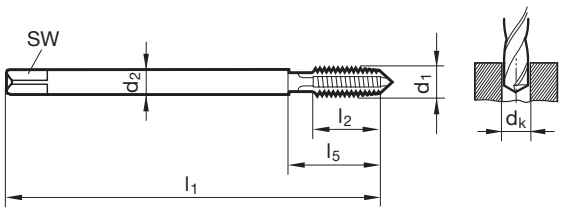
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 25,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 30,000 | 57,000 | 41,910 |
| G1 3/8 | 11,000 | 36,000 | 29,000 | 41,75 | 180,000 | 32,000 | 60,000 | 44,323 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 32,000 | 60,000 | 47,803 |
| G2 | 11,000 | 45,000 | 35,000 | 57,00 | 220,000 | 40,000 | 95,000 | 59,614 |

## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18/22



**DIN 2184-1 DIN 5156** — Artículo Nº **963**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |
| G1 1/8 | 11,000 | 28,000 | 22,000 | 35,50 | 170,000 | 24,000 | 56,000 | 37,897 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 25,000 | 57,000 | 41,910 |
| G1 3/8 | 11,000 | 36,000 | 29,000 | 41,75 | 180,000 | 27,000 | 60,000 | 44,323 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 27,000 | 60,000 | 47,803 |
| G1 3/4 | 11,000 | 40,000 | 32,000 | 51,00 | 190,000 | 27,000 | 93,000 | 53,746 |
| G2 | 11,000 | 45,000 | 35,000 | 57,00 | 220,000 | 32,000 | 95,000 | 59,614 |

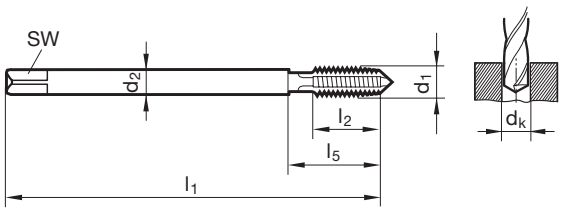
## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | X |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 21



**DIN 2184-1 DIN 5156** Artículo Nº **4220**

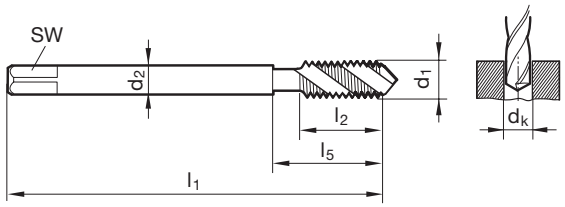
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 25,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |

## Machos máquina para roscas GAS

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | | | |
| Acabado | ○ | ● | C |
| Tipo | N R15 | N R15 | N R15 |
| Forma | C | C | E |
| Con refrigeración interna | ✕ | ✕ | ✕ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 22/23



| DIN 2184-1 DIN 5156 | Artículo Nº | 964 | 2842 | 4158 |
|---|---|---|---|---|

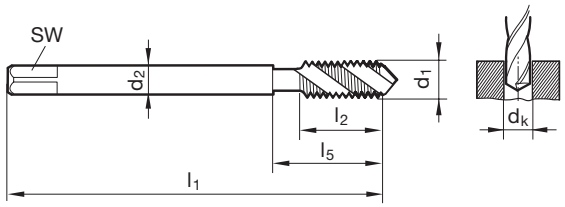
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | | |
| Acabado | ○ | ● |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |



**DIN 2184-1 DIN 5156** — Artículo Nº **965** **2849**

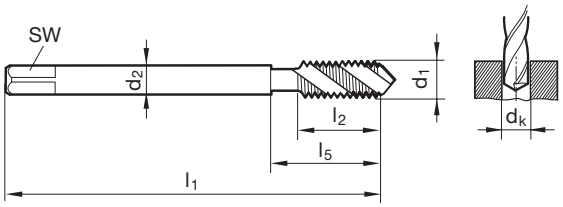
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 25,000 | 57,000 | 41,910 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 27,000 | 60,000 | 47,803 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | ○ |
| S | |
| H | |

Cond. de corte pág. 24

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | ○ | ● |
| Tipo | N R40 | N R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |



**DIN 2184-1 DIN 5156** — Artículo Nº **2860** **2861**

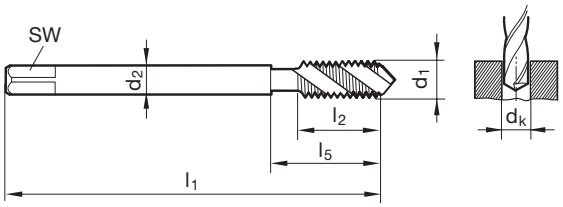
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |
| G1 1/8 | 11,000 | 28,000 | 22,000 | 35,50 | 170,000 | 24,000 | 56,000 | 37,897 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 25,000 | 57,000 | 41,910 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 27,000 | 60,000 | 47,803 |
| G2 | 11,000 | 45,000 | 35,000 | 57,00 | 220,000 | 32,000 | 95,000 | 59,614 |

## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | VA R50 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 5156** Artículo Nº **4159**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 4,500 | 47,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 4,500 | 47,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 6,700 | 48,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 6,700 | 48,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 9,100 | 70,000 | 20,955 |

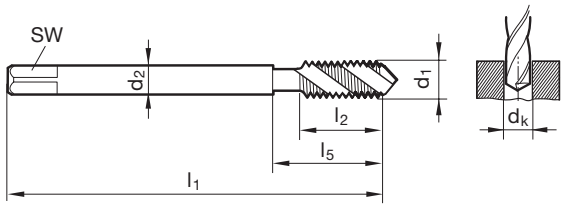
## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | X |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 5156** — Artículo Nº **395**

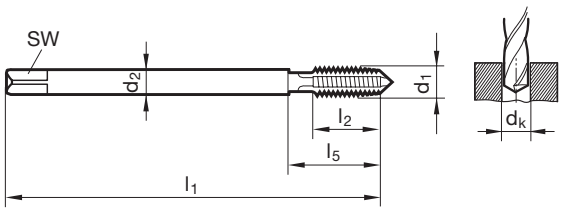
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | A+M | |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 5156** — Artículo Nº **2886** **2887**

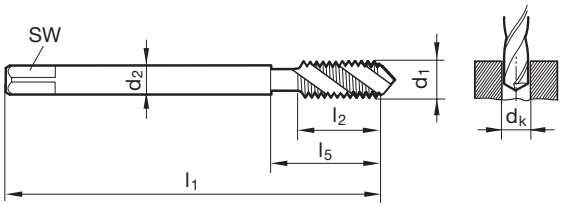
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 30,000 | 57,000 | 41,910 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 32,000 | 60,000 | 47,803 |
| G2 | 11,000 | 45,000 | 35,000 | 57,00 | 220,000 | 40,000 | 95,000 | 59,614 |

## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 25



**DIN 2184-1 DIN 5156** — Artículo Nº **937**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |

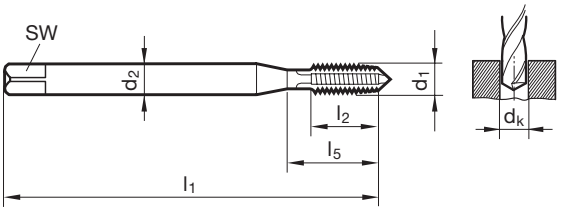
## Machos máquina para roscas BSW

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

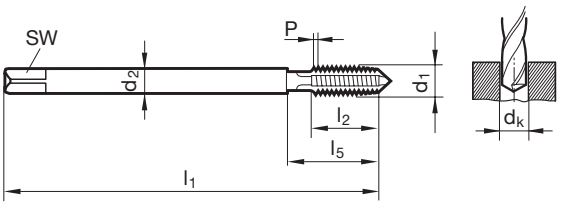
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 19

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **2892**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| W1/8 | 40,000 | 3,500 | 2,700 | 2,50 | 56,000 | 11,000 | 18,000 | 3,175 |
| W5/32 | 32,000 | 4,500 | 3,400 | 3,20 | 63,000 | 12,000 | 21,000 | 3,969 |
| W3/16 | 24,000 | 6,000 | 4,900 | 3,60 | 70,000 | 14,000 | 25,000 | 4,762 |
| W1/4 | 20,000 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| W5/16 | 18,000 | 8,000 | 6,200 | 6,50 | 90,000 | 18,000 | 35,000 | 7,938 |
| W3/8 | 16,000 | 10,000 | 8,000 | 7,90 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **2893**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| W7/16 | 14,000 | 8,000 | 6,200 | 9,20 | 100,000 | 22,000 | 42,000 | 11,113 |
| W1/2 | 12,000 | 9,000 | 7,000 | 10,50 | 110,000 | 25,000 | 49,000 | 12,700 |
| W9/16 | 12,000 | 11,000 | 9,000 | 12,00 | 110,000 | 28,000 | 53,000 | 14,287 |
| W5/8 | 11,000 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,876 |
| W3/4 | 10,000 | 14,000 | 11,000 | 16,25 | 125,000 | 33,000 | 62,000 | 19,051 |
| W7/8 | 9,000 | 18,000 | 14,500 | 19,25 | 140,000 | 35,000 | 62,000 | 22,226 |
| W1 | 8,000 | 18,000 | 14,500 | 22,00 | 160,000 | 38,000 | 73,000 | 25,401 |

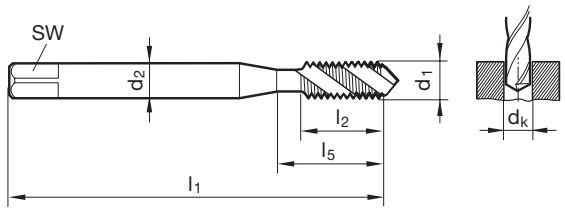
## Machos máquina para roscas BSW

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | |
| Acabado | |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

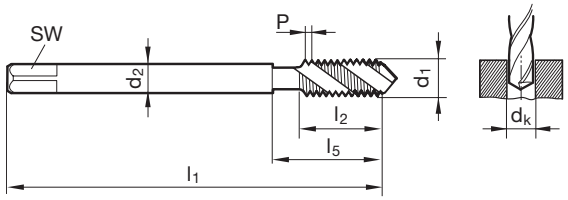
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 23

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **2847**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| W1/8 | 40,000 | 3,500 | 2,700 | 2,50 | 56,000 | 7,000 | 18,000 | 3,175 |
| W3/16 | 24,000 | 6,000 | 4,900 | 3,60 | 70,000 | 11,000 | 25,000 | 4,762 |
| W1/4 | 20,000 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| W5/16 | 18,000 | 8,000 | 6,200 | 6,50 | 90,000 | 14,000 | 35,000 | 7,938 |
| W3/8 | 16,000 | 10,000 | 8,000 | 7,90 | 100,000 | 16,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **2848**

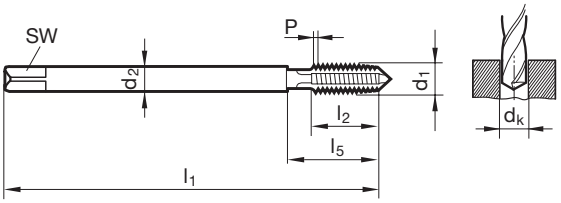
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| W3/8 | 16,000 | 7,000 | 5,500 | 7,90 | 100,000 | 16,000 | 39,000 | 9,525 |
| W7/16 | 14,000 | 8,000 | 6,200 | 9,20 | 100,000 | 18,000 | 42,000 | 11,113 |
| W1/2 | 12,000 | 9,000 | 7,000 | 10,50 | 110,000 | 20,000 | 49,000 | 12,700 |
| W5/8 | 11,000 | 12,000 | 9,000 | 13,50 | 110,000 | 24,000 | 53,000 | 15,876 |
| W3/4 | 10,000 | 14,000 | 11,000 | 16,25 | 125,000 | 25,000 | 62,000 | 19,051 |
| W7/8 | 9,000 | 18,000 | 14,500 | 19,25 | 140,000 | 28,000 | 62,000 | 22,226 |
| W1 | 8,000 | 18,000 | 14,500 | 22,00 | 160,000 | 32,000 | 73,000 | 25,401 |

## Machos para roscas EG

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 20

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6H mod |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |



**DIN 40435 DIN 40435** Artículo Nº **1010**

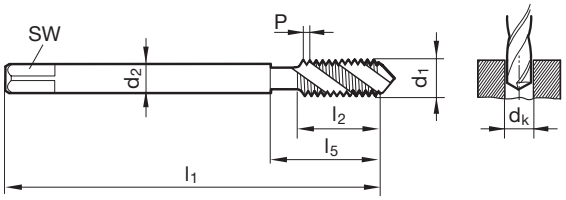
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| EG M4 | 0,700 | 6,000 | 4,900 | 4,20 | 70,000 | 12,000 | 25,000 |
| EG M5 | 0,800 | 6,000 | 4,900 | 5,25 | 80,000 | 14,000 | 30,000 |
| EG M6 | 1,000 | 8,000 | 6,200 | 6,30 | 90,000 | 17,000 | 35,000 |
| EG M8 | 1,250 | 10,000 | 8,000 | 8,40 | 100,000 | 20,000 | 39,000 |
| EG M10 | 1,500 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 |
| EG M12 | 1,750 | 11,000 | 9,000 | 12,50 | 110,000 | 28,000 | 53,000 |
| EG M14 | 2,000 | 12,000 | 9,000 | 14,50 | 110,000 | 26,000 | 54,000 |
| EG M16 | 2,000 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 |

## Machos para roscas EG

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6H mod |
| Acabado | S |
| Tipo | N R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | ○ |
| K | ○ |
| N | |
| S | |
| H | |

Cond. de corte pág. 24



**DIN 40435 DIN 40435** Artículo Nº **1011**

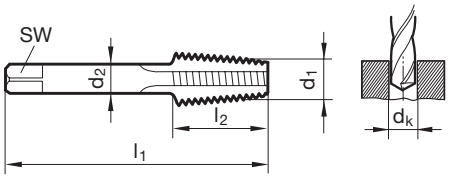
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| EG M4 | 0,700 | 6,000 | 4,900 | 4,20 | 70,000 | 7,500 | 25,000 |
| EG M5 | 0,800 | 6,000 | 4,900 | 5,25 | 80,000 | 8,500 | 30,000 |
| EG M6 | 1,000 | 8,000 | 6,200 | 6,30 | 90,000 | 11,000 | 35,000 |
| EG M8 | 1,250 | 10,000 | 8,000 | 8,40 | 100,000 | 14,000 | 39,000 |
| EG M10 | 1,500 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 |
| EG M12 | 1,750 | 11,000 | 9,000 | 12,50 | 110,000 | 18,500 | 53,000 |
| EG M14 | 2,000 | 12,000 | 9,000 | 14,50 | 110,000 | 20,000 | 54,000 |
| EG M16 | 2,000 | 14,000 | 11,000 | 16,50 | 125,000 | 20,000 | 62,000 |

## Machos máquina para roscas NPT

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | ◯ |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 18/22



**Norma de fab. Norma de fab.** Artículo Nº **973**

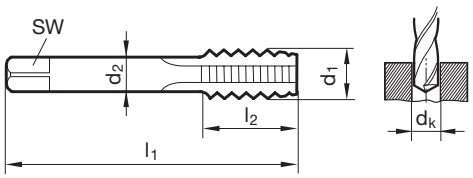
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| 1/16 | 27,000 | 6,000 | 4,900 | 6,15 | 56,000 | 14,000 | 27,000 | 8,190 |
| 1/8 | 27,000 | 7,000 | 5,500 | 8,40 | 63,000 | 15,000 | 29,000 | 10,620 |
| 1/4 | 18,000 | 11,000 | 9,000 | 11,10 | 63,000 | 21,000 | 33,000 | 14,140 |
| 3/8 | 18,000 | 12,000 | 9,000 | 14,30 | 70,000 | 21,000 | 35,000 | 17,570 |
| 1/2 | 14,000 | 16,000 | 12,000 | 17,90 | 80,000 | 27,000 | 41,000 | 21,900 |
| 3/4 | 14,000 | 20,000 | 16,000 | 23,30 | 100,000 | 27,000 | 42,000 | 27,230 |
| 1 | 11,500 | 25,000 | 20,000 | 29,00 | 110,000 | 32,000 | 53,000 | 34,180 |
| 1 1/4 | 11,500 | 32,000 | 24,000 | 37,70 | 125,000 | 33,000 | 54,500 | 42,900 |
| 1 1/2 | 11,500 | 36,000 | 29,000 | 43,70 | 140,000 | 33,000 | 56,000 | 48,940 |
| 2 | 11,500 | 36,000 | 29,000 | 55,60 | 160,000 | 33,000 | 63,000 | 61,000 |

## Machos máquina para roscas PG

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | |
| S | |
| H | |

Cond. de corte pág. 18-22

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | ◯ | ◯ |
| Tipo | N | N |
| Forma | B | C |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-2 DIN 40432** — Artículo Nº **980** **979**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| PG7 | 20,000 | 9,000 | 7,000 | 11,40 | 70,000 | 22,000 | 35,000 | 12,500 |
| PG9 | 18,000 | 12,000 | 9,000 | 14,00 | 70,000 | 22,000 | 35,000 | 15,200 |
| PG11 | 18,000 | 14,000 | 11,000 | 17,30 | 80,000 | 22,000 | 40,000 | 18,600 |
| PG13,5 | 18,000 | 16,000 | 12,000 | 19,00 | 80,000 | 22,000 | 40,000 | 20,400 |
| PG16 | 18,000 | 18,000 | 14,500 | 21,30 | 80,000 | 22,000 | 40,000 | 22,500 |
| PG21 | 16,000 | 22,000 | 18,000 | 26,90 | 90,000 | 22,000 | 42,000 | 28,300 |
| PG29 | 16,000 | 28,000 | 22,000 | 35,50 | 100,000 | 25,000 | 45,000 | 37,000 |

# MACHOS MÁQ. DE LAMINACIÓN

P

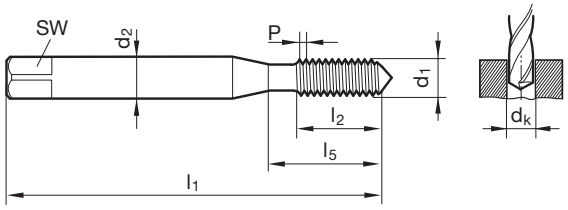
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | HSS-E | HSS-E-PM |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | S |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

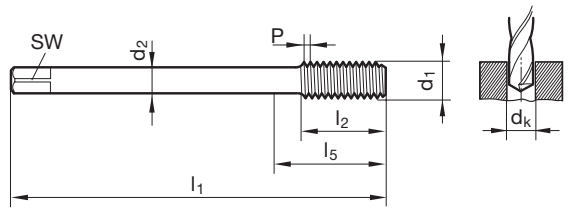
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 376



| DIN 2174 ~DIN 371 | Artículo Nº | 903 | 921 | 1255 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,90 | 40,000 | 4,000 | |
| M1,2 | 0,250 | 2,500 | 2,100 | 1,10 | 40,000 | 4,800 | |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,25 | 40,000 | 5,600 | |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,45 | 40,000 | 6,400 | |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,55 | 40,000 | 6,800 | |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,65 | 40,000 | 7,300 | |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

| DIN 2174 ~DIN 376 | Artículo Nº | 952 | 925 | 1256 |
|---|---|---|---|---|

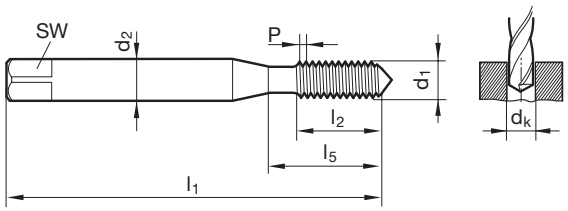
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 371** Artículo Nº **920**

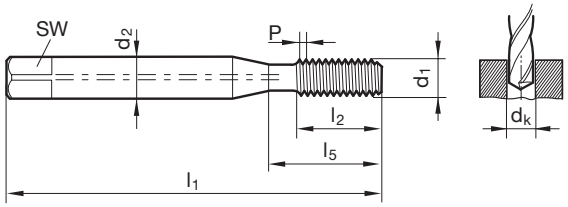
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **2518**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

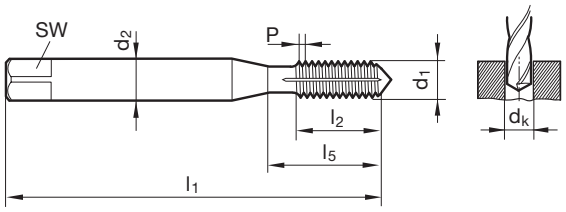
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | S | P | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

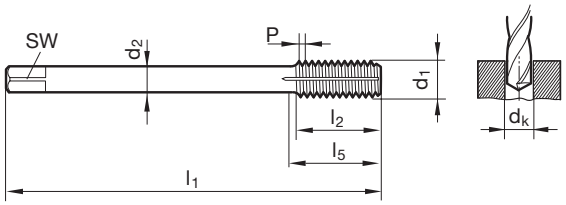
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **919** **1587** **2012**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **923** **1589** **2013**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 20,90 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 22,70 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 25,70 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 28,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 31,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 34,30 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 37,30 | 200,000 | 50,000 | 107,000 |

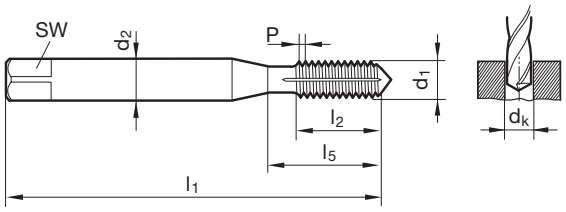
## Machos máq. de laminación para rosca metr. ISO

| | | |
|---|---|---|
| P | • | |
| M | • | |
| K | | |
| N | ○ | |
| S | ○ | |
| H | | |

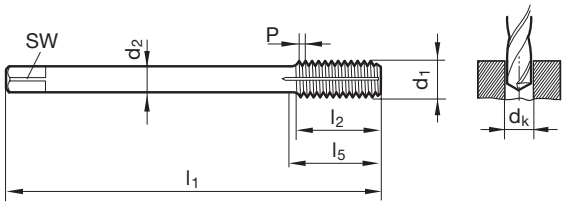
Condiciones de corte ver pág. 26/27

| Material de corte | HSS-E | | HSS-E-PM |
|---|---|---|---|
| Ø-Tolerancia | 6GX | 6GX | 6GX |
| Acabado | S | P | P |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

~ DIN 371




~ DIN 376



| DIN 2174 ~DIN 371 | Artículo Nº | 918 | 1588 | 1705 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

| DIN 2174 ~DIN 376 | Artículo Nº | 922 | 1590 | 1708 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

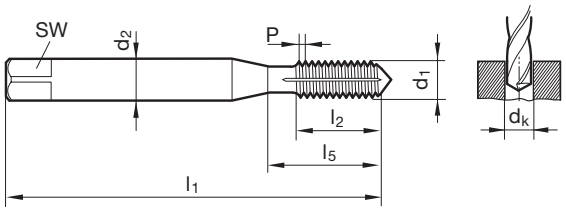
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

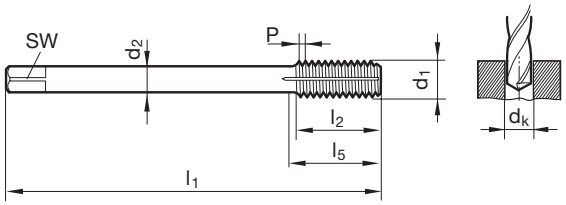
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **322**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **339**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

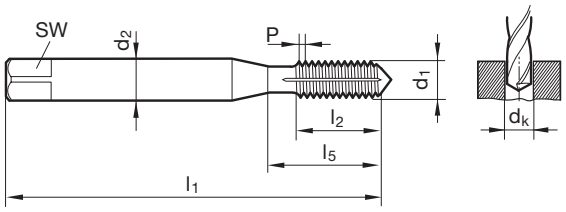
## Machos máq. de laminación para rosca metr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | P |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

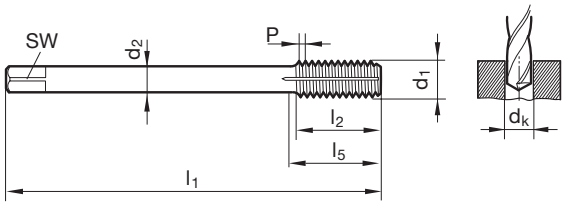
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1266** **1599**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1267** **1707**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

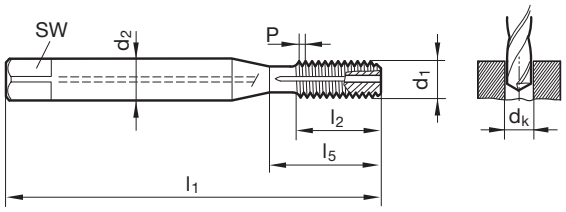
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6GX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | | | |

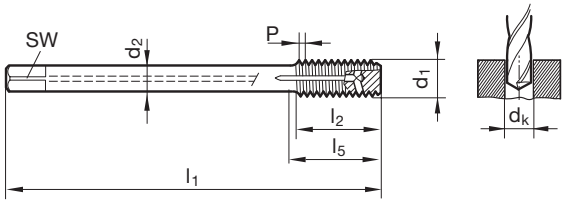
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **2442** **2443** **2446**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **2444** **2445** **2448**

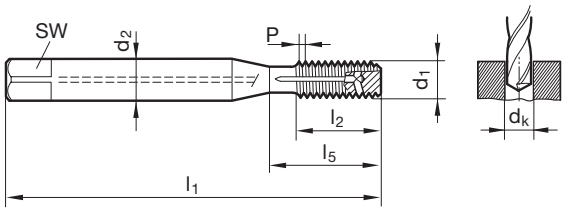
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27



**DIN 2174 ~DIN 371** Artículo Nº **2447**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

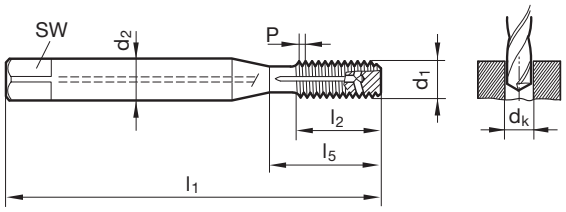
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

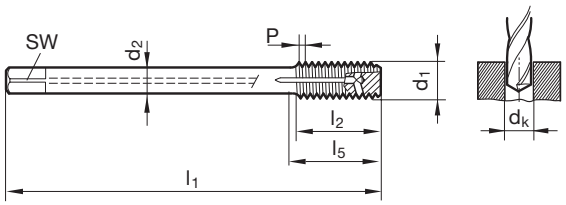
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **323**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **342**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

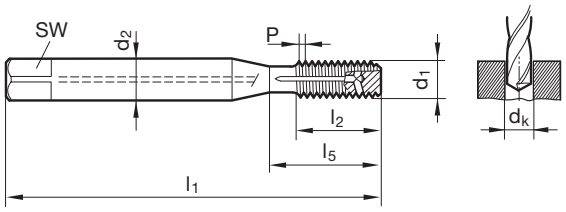
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

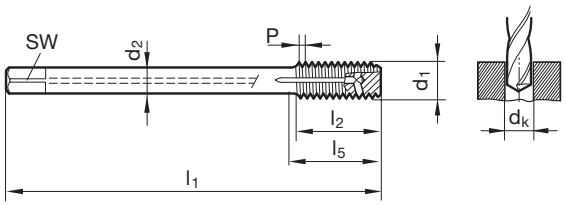
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1270** **1717** **1725**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1271** **1719** **1727**

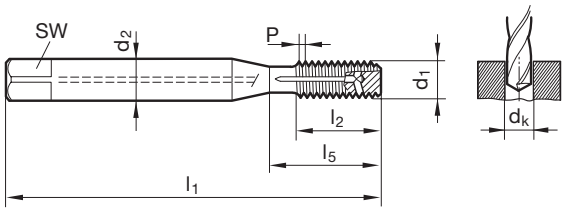
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27



**DIN 2174 ~DIN 371** Artículo Nº **1713**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

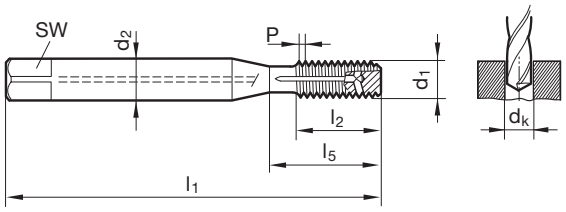
## Machos máq. laminación refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | A | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

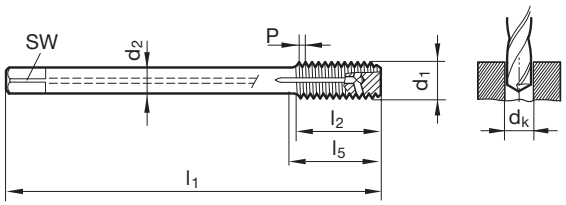
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1718** **1726**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1720** **1728**

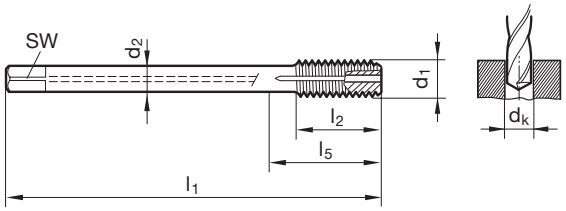
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27



**Norma de fab. Norma de fab.** Artículo Nº **4143**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 112,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,70 | 112,000 | 7,500 | 77,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,65 | 125,000 | 8,500 | 90,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 125,000 | 11,000 | 90,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 140,000 | 14,000 | 97,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 160,000 | 16,000 | 117,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 180,000 | 18,500 | 133,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 220,000 | 20,000 | 168,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 280,000 | 25,000 | 225,000 |

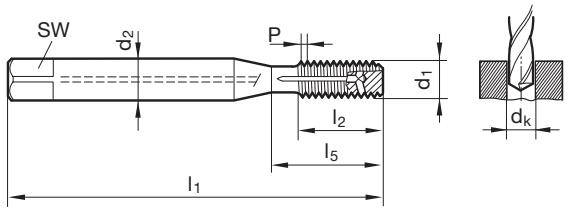
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

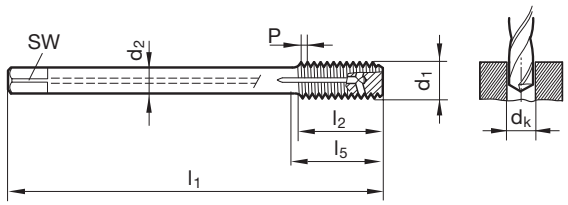
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1972**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1931**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

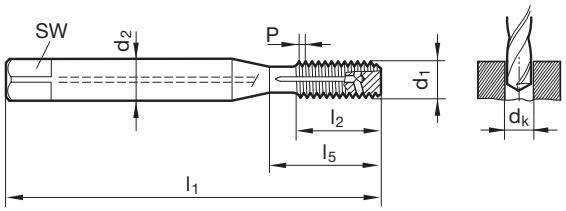
## Machos máq. laminación refrig., rosca métr. ISO

h6

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |



**DIN 2174 ~DIN 371** Artículo Nº **1927**

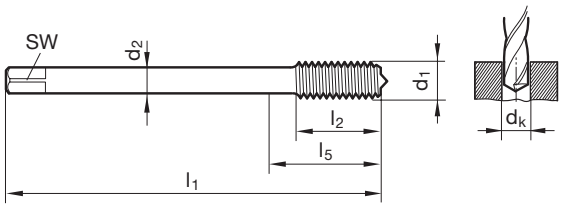
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 374** — Artículo Nº **929**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

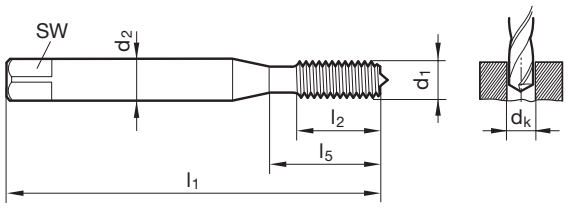
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

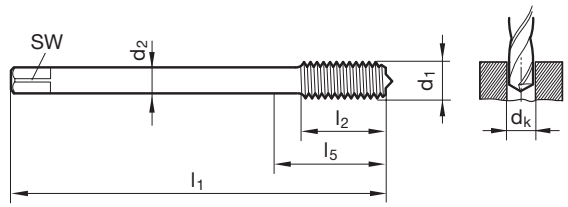
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1257**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1258**

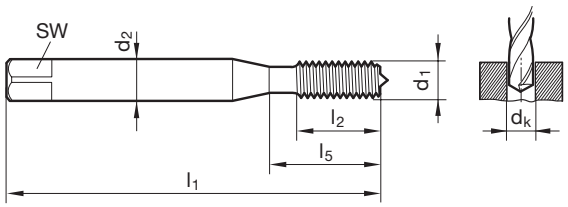
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 371** Artículo Nº **1740**

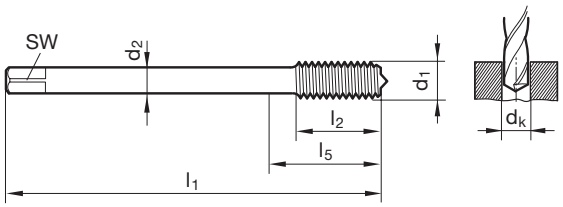
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 374** — Artículo Nº **928**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |

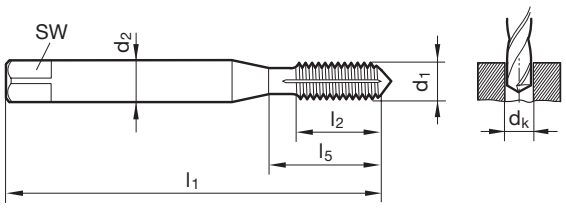
## Machos máq. de laminación p. rosca metr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | P |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | ✗ | ✗ |

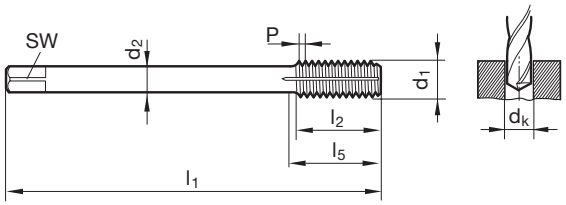
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1275** **1591**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 6,000 | 4,900 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 8,000 | 6,200 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **927** **1593**

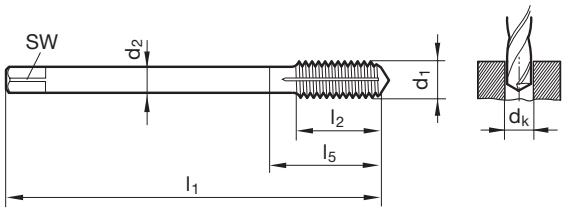
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 374** Artículo Nº **2008**

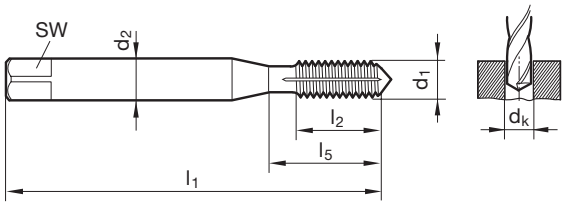
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | P |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2174 ~DIN 371** Artículo Nº **1592**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

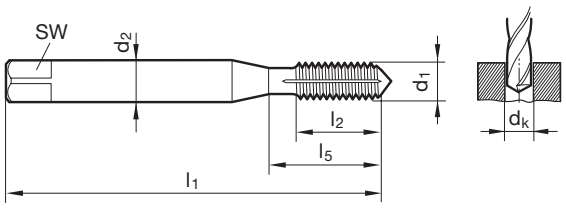
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

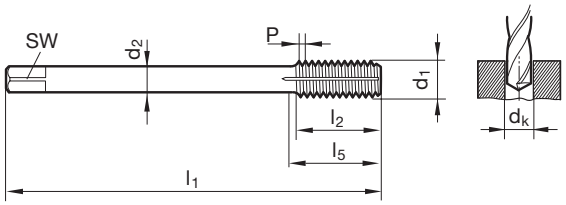
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** Artículo Nº **1277**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** Artículo Nº **926**

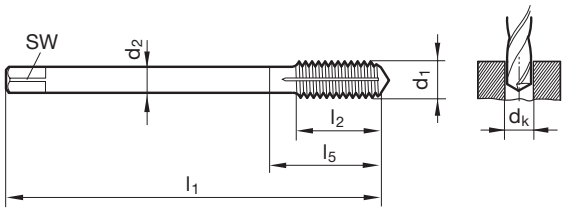
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27



**DIN 2174 ~DIN 374** — Artículo Nº **333**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 16,000 | 44,000 | 20,007 |

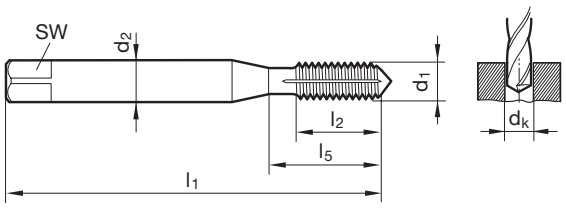
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

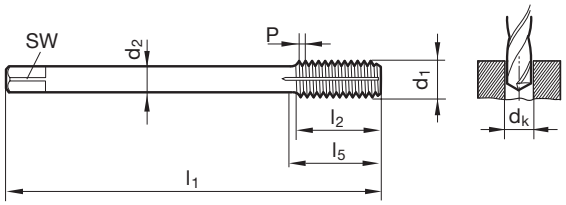
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1268**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1269**

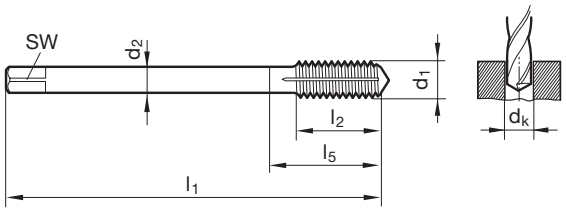
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | P |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 27



**DIN 2174 ~DIN 374** — Artículo Nº **1711**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

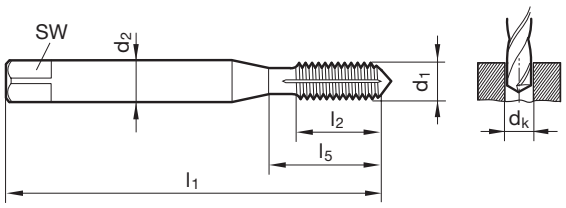
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | P |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

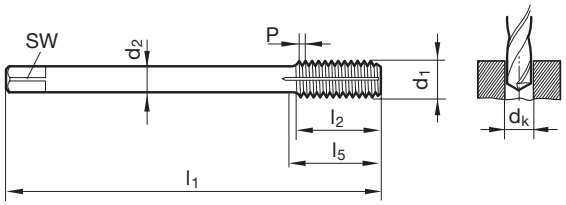
| | |
|---|---|
| P | • |
| M | |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** Artículo Nº **1710**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** Artículo Nº **1712**

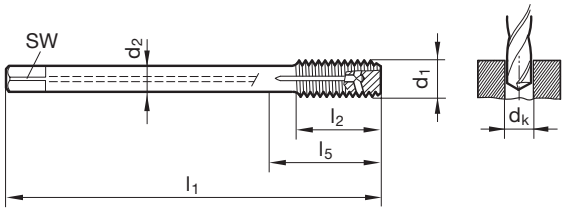
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27



**DIN 2174 ~DIN 374** — Artículo Nº **338**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

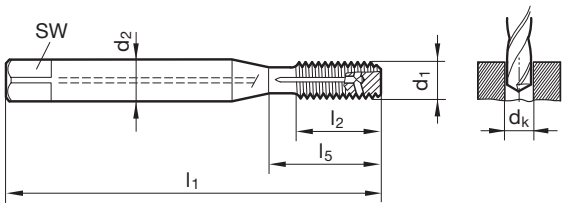
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

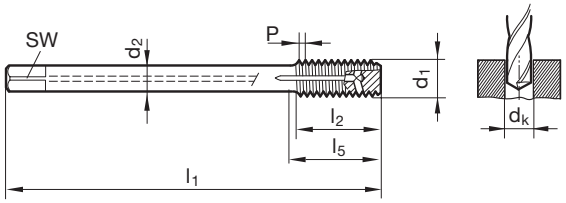
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1272** **1721** **1729**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1273** **1723** **1731**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

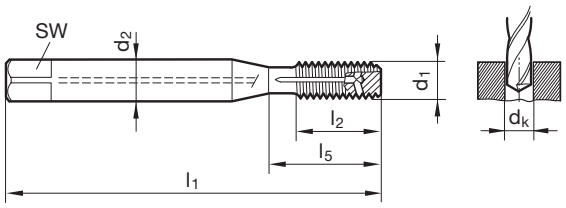
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

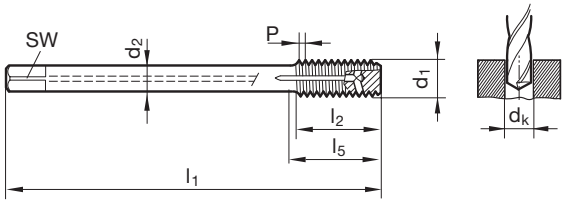
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1715** **1730**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1716** **1732**

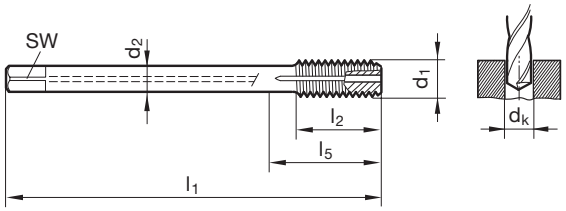
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 27



**Norma de fab. Norma de fab.** Artículo Nº **4145**

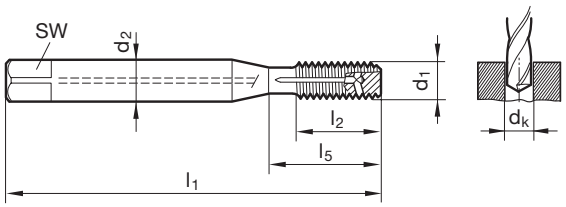
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 140,000 | 14,000 | 97,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 160,000 | 16,000 | 117,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 160,000 | 16,000 | 117,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 180,000 | 18,500 | 133,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 180,000 | 18,500 | 133,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 220,000 | 20,000 | 168,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 220,000 | 20,000 | 168,000 | 16,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 27

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **1581**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 15,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 15,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 15,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 15,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 15,000 | 48,000 | 24,007 |

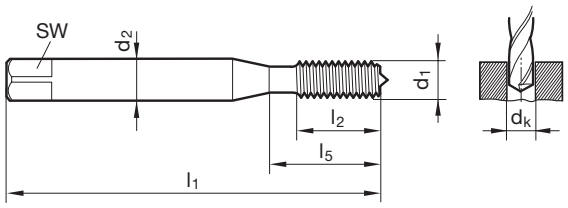
## Machos máq. de laminación para rosca UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

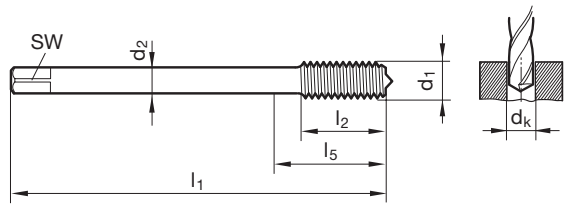
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **2273** **1582**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,55 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,90 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 3,15 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,80 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 4,35 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,75 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 7,30 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **2274** **1583**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 10,30 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 11,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 13,30 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 14,80 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 17,90 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 21,00 | 140,000 | 35,000 | 62,000 | 22,225 |

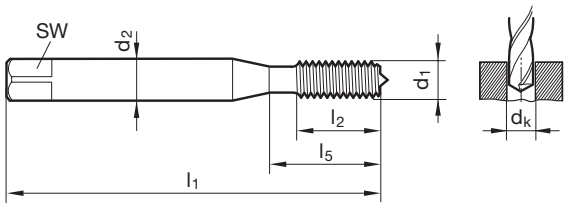
## Machos máq. de laminación para rosca UNF

| | | |
|---|---|---|
| P | • | |
| M | • | |
| K | | |
| N | ○ | |
| S | | |
| H | | |

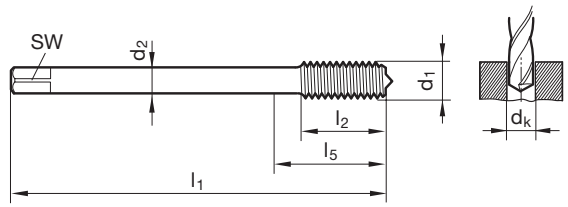
Condiciones de corte ver pág. 26

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **1283** **1584**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,90 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 3,20 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,85 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |

**DIN 2184-1 ~DIN 374** — Artículo Nº **2275** **1585**

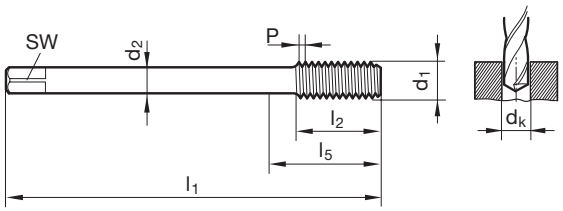
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 10,55 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 12,10 | 100,000 | 20,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 13,65 | 100,000 | 22,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 18,35 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 21,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 24,45 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máq. de laminación para rosca GAS

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | X | X |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 26



**DIN 2184-1 DIN 2189** — Artículo Nº **966** **1586**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 32,00 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 40,75 | 170,000 | 30,000 | 57,000 | 41,910 |

# FRESAS DE ROSCAR

P

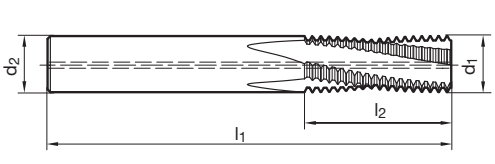
## Fresas de roscar sin chaflán para rosca métrica ISO

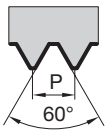
2xD

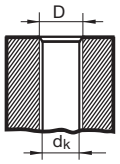
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | C | C | C | C |
| Tipo | TM SP | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | | |
| Forma del mango | HA | HB | HA | HB |
| | | NEW | | NEW |



| Norma de fab. | Artículo Nº | 3737 | 3743 | 4132 | 4133 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M8 x 1 | 1,000 | 6,400 | 8,000 | 7,00 | 62,000 | 17,500 | 3 | 8,005 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M10 x 1 | 1,000 | 7,950 | 10,000 | 9,00 | 74,000 | 21,500 | 3 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 10,000 | 8,80 | 74,000 | 21,900 | 3 | 10,006 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M12 x 1,5 | 1,500 | 9,950 | 10,000 | 10,50 | 74,000 | 26,300 | 4 | 12,007 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M14 x 1,5 | 1,500 | 11,200 | 12,000 | 12,50 | 90,000 | 30,800 | 4 | 14,007 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M16 x 1,5 | 1,500 | 12,800 | 14,000 | 14,50 | 90,000 | 33,800 | 4 | 16,007 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |
| M20 x 1,5 | 1,500 | 14,950 | 16,000 | 18,50 | 102,000 | 42,800 | 4 | 20,007 |

## Fresas de roscar sin chaflán para rosca métrica ISO

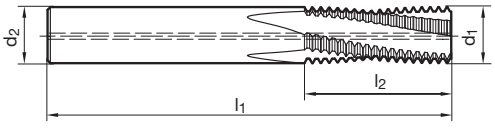
2,5xD

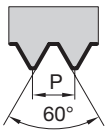
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

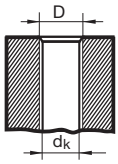
Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3735 | 3740 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 26,300 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 48,800 | 4 | 20,000 |

## Fresas de roscar con chaflán para rosca métrica ISO

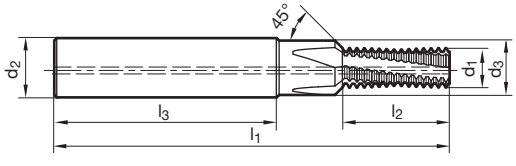
1,5xD

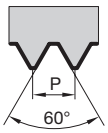
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

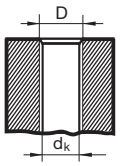
Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3525 | 3543 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

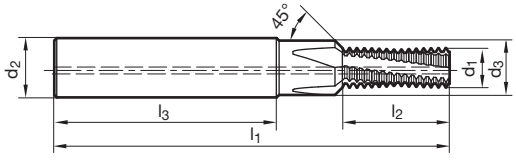
## Fresas de roscar con chaflán para rosca métrica ISO

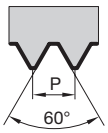
2xD

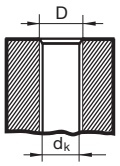
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3526 | 3544 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

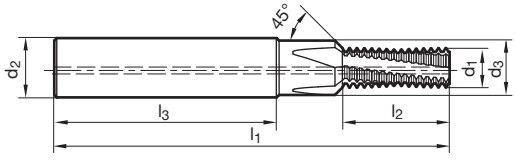
## Fresas de roscar con chaflán para rosca métrica ISO

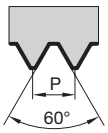
2,5xD

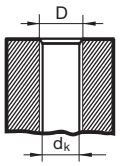
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3759 | 3760 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 7,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 35,600 | 10,900 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 13,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 26,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 48,800 | 4 | 20,000 |

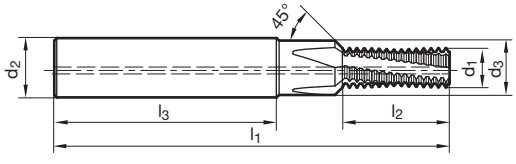
## Fresas de roscar con chaflán para rosca métrica fina ISO

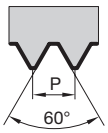
1,5xD

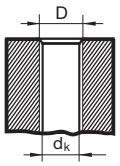
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3527** **3545**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

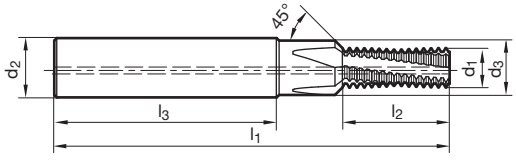
## Fresas de roscar con chaflán para rosca métrica fina ISO

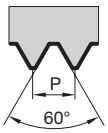
2xD

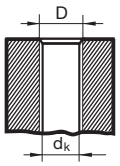
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3528 | 3546 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

## Fresas de roscar con chaflán para rosca métrica fina ISO

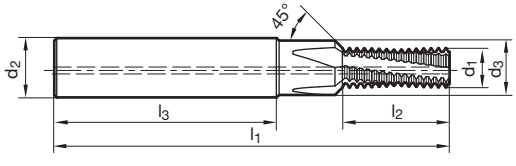
2,5xD

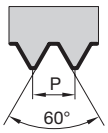
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

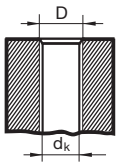
Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3762 | 3763 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 10,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 12,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 15,300 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 15,400 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 20,600 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 20,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 25,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 25,600 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 30,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 30,800 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 38,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 41,300 | 4 | 16,007 |

## Fresas de roscar sin chaflán para roscas UNC

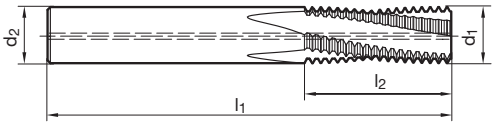
2xD

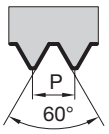
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

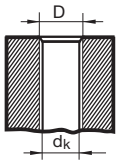
Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 4134 | 4135 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 24 | 3,400 | 6,000 | 3,90 | 54,000 | 11,100 | 3 | 4,826 |
| 12 - 24 | 4,100 | 6,000 | 4,50 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 20 | 4,700 | 6,000 | 5,10 | 54,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 6,100 | 8,000 | 6,60 | 64,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,600 | 8,000 | 8,00 | 64,000 | 21,400 | 3 | 9,525 |
| 7/16 - 14 | 9,000 | 10,000 | 9,40 | 74,000 | 24,500 | 3 | 11,113 |
| 1/2 - 13 | 9,950 | 10,000 | 10,80 | 74,000 | 28,300 | 4 | 12,700 |
| 9/16 - 12 | 11,400 | 12,000 | 12,20 | 90,000 | 30,700 | 4 | 14,288 |
| 5/8 - 11 | 12,700 | 14,000 | 13,50 | 90,000 | 35,800 | 4 | 15,875 |

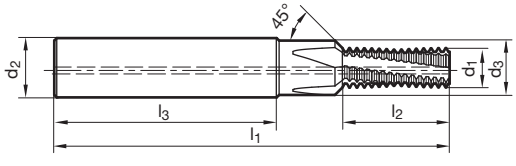
## Fresas de roscar con chaflán para roscas UNC

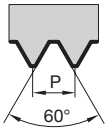
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

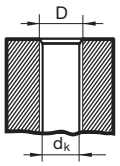
Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3516 | 3534 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

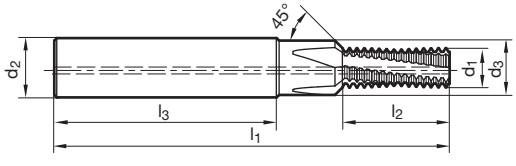
## Fresas de roscar con chaflán para roscas UNC

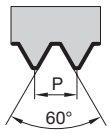
2xD

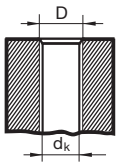
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3517 | 3535 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

## Fresas de roscar sin chaflán para roscas UNF

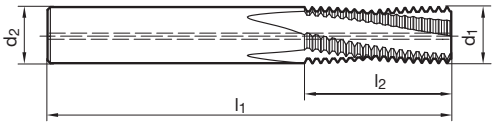
2xD

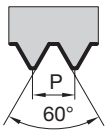
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

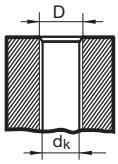
Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 4136 | 4137 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 32 | 3,800 | 6,000 | 4,10 | 54,000 | 11,500 | 3 | 4,826 |
| 12 - 28 | 4,300 | 6,000 | 4,60 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 28 | 5,100 | 6,000 | 5,50 | 54,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 6,300 | 8,000 | 6,90 | 64,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,800 | 8,000 | 8,50 | 64,000 | 20,600 | 3 | 9,525 |
| 7/16 - 20 | 9,400 | 10,000 | 9,90 | 74,000 | 24,800 | 3 | 11,113 |
| 1/2 - 20 | 9,950 | 10,000 | 11,50 | 74,000 | 27,300 | 4 | 12,700 |
| 9/16 - 18 | 11,400 | 12,000 | 12,90 | 90,000 | 30,300 | 4 | 14,288 |
| 5/8 - 18 | 12,700 | 14,000 | 14,50 | 90,000 | 33,200 | 4 | 15,875 |

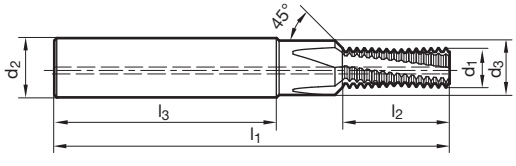
## Fresas de roscar con chaflán para roscas UNF

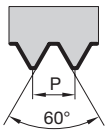
1,5xD

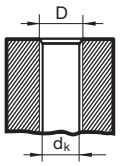
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3518 | 3536 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

## Fresas de roscar con chaflán para roscas UNF

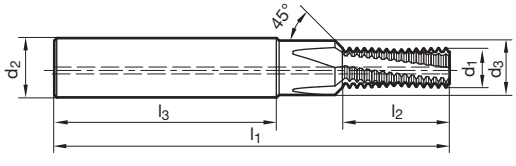
2xD

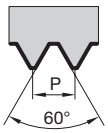
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

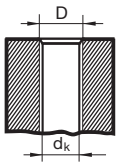
Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3519 | 3537 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

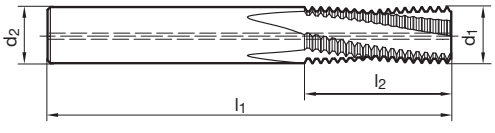
## Fresas de roscar para roscas GAS sin fase de avellanado

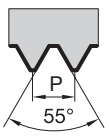
2xD

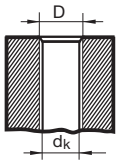
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3745** **3748**

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 21,300 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 35,400 | 4 | 16,662 |

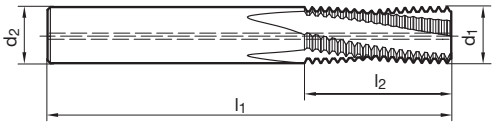
## Fresas de roscar para roscas GAS sin fase de avellanado

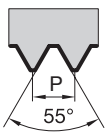
2,5xD

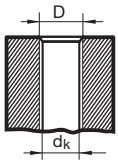
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3746 | 3750 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 24,900 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 43,500 | 4 | 16,662 |

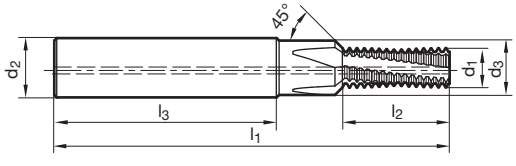
## Fresas de roscar para roscas GAS con fase de avellanado

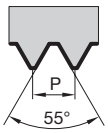
1,5xD

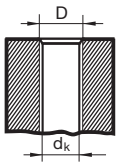
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

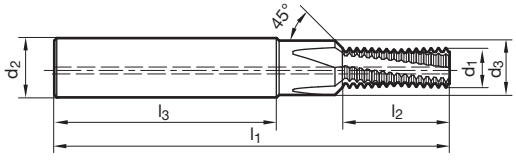
## Fresas de roscar para roscas GAS con fase de avellanado

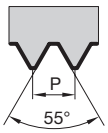
2xD

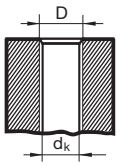
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

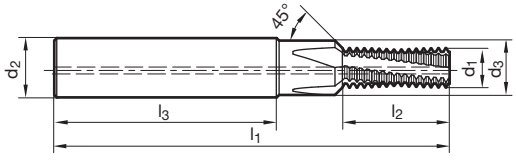
## Fresas de roscar para roscas GAS con fase de avellanado

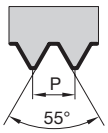
2,5xD

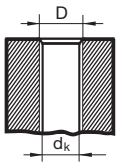
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3765 | 3766 |
|---|---|---|---|

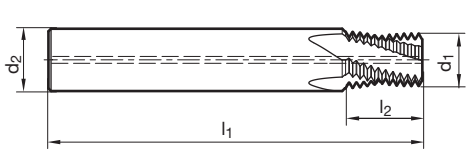
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 24,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 43,500 | 4 | 16,662 |

## Fresas de roscar sin chaflán para roscas NPT

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3753 | 3754 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

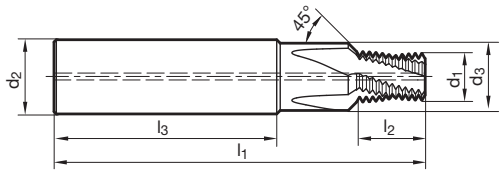
## Fresas de roscar para roscas NPT con fase de avellanado

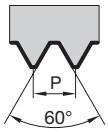
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

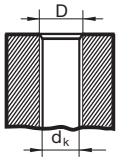
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28



| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

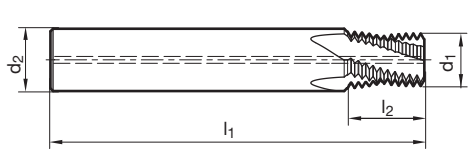
## Fresas de roscar para roscas NPTF sin fase de avellanado

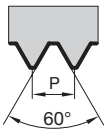
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

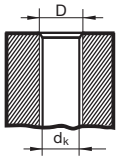
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28



| Norma de fab. | Artículo Nº | 3756 | 3757 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

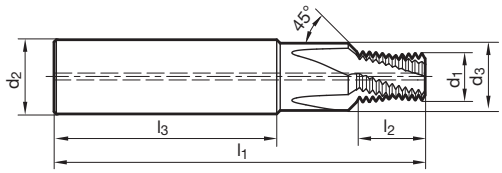
## Fresas de roscar para roscas NPTF con fase de avellanado

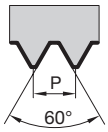
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

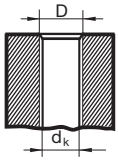
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 28



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

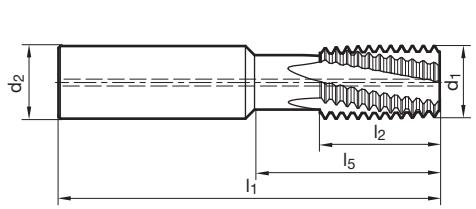
## Fresas para roscar universales para rosca métrica ISO

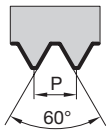
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

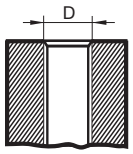
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29



| Norma de fab. | Artículo Nº | 3541 | 3556 |
|---|---|---|---|

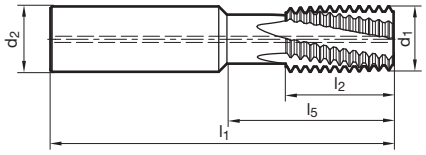
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

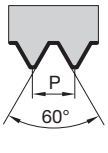
## Fresado de roscas exteriores

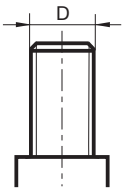
| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 29 |
| M | • | |
| K | • | |
| N | • | |
| S | • | |
| H | ≤55 | |

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **4162** **4163**

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

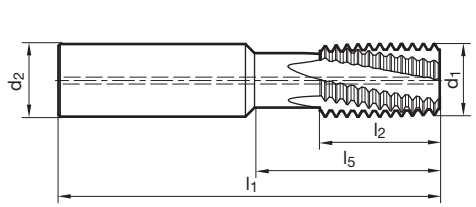
## Fresas para roscar universales para roscas UN

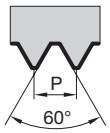
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

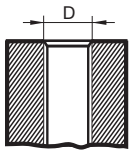
Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

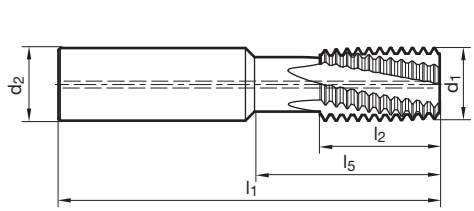
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

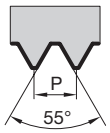
## Fresas para roscar universales para roscas GAS

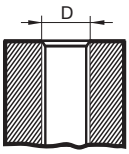
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29



| Norma de fab. | Artículo Nº | 3542 | 3557 |
|---|---|---|---|

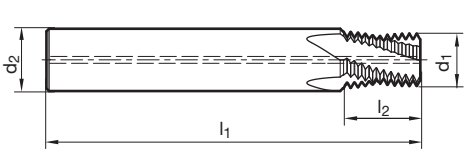
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

## Fresas para roscar universales para roscas NPT

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

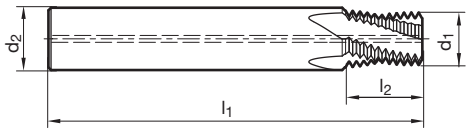
## Fresas para roscar universales para roscas NPTF

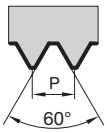
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

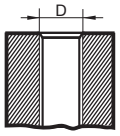
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 29



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Microfresas de roscar

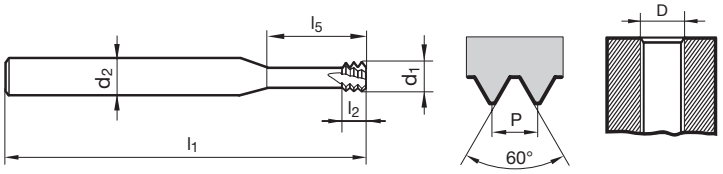
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 29

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4226**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,6 | 0,350 | 1,200 | 3,000 | 39,000 | 1,100 | 4,800 | 3 | 1,600 |
| M1,8 | 0,350 | 1,400 | 3,000 | 39,000 | 1,100 | 5,400 | 3 | 1,800 |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,400 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M3,5 | 0,600 | 2,800 | 6,000 | 58,000 | 1,800 | 11,000 | 4 | 3,500 |
| M4 | 0,700 | 3,200 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 73,000 | 4,500 | 33,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 84,000 | 5,300 | 38,000 | 4 | 12,000 |
| M16 | 2,000 | 11,800 | 10,000 | 84,000 | 6,000 | 35,000 | 5 | 16,000 |

## Microfresas de roscar

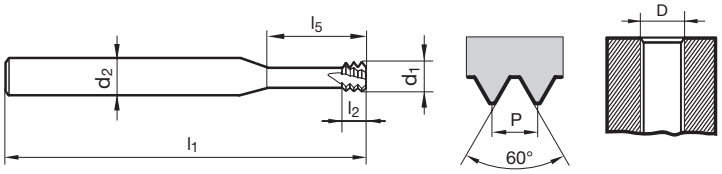
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 29

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP G |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4228**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 6,200 | 8,000 | 64,000 | 2,700 | 19,500 | 4 | 9,728 |
| G3/8 | 19,000 | 9,950 | 10,000 | 73,000 | 4,000 | 25,000 | 4 | 16,662 |
| G7/8 | 14,000 | 11,950 | 12,000 | 84,000 | 5,400 | 37,000 | 4 | 30,201 |
| G2 | 11,000 | 15,950 | 16,000 | 105,000 | 6,900 | 44,000 | 5 | 59,614 |

## Microfresas de roscar

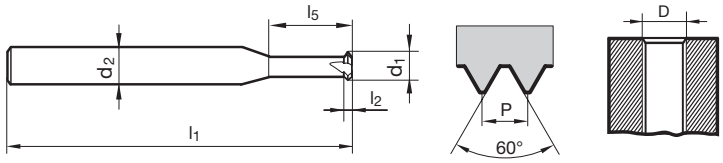
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 29

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M/MF |
| Pasos de rosca | 1,0 |
| Forma del mango | HA |

NEW



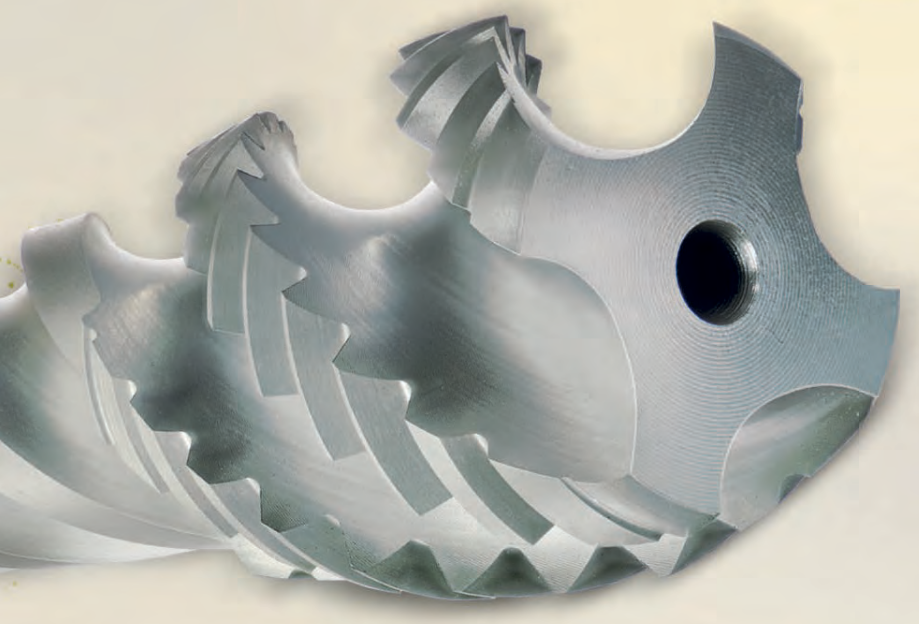
**Norma de fab.** Artículo Nº **4225**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,4 - M1,8 | 0,350 | 1,050 | 3,000 | 39,000 | 0,400 | 3,800 | 3 | 1,800 |
| M2 - M2,4 | 0,400 | 1,500 | 3,000 | 39,000 | 0,400 | 7,000 | 3 | 2,400 |
| M2,5 - M3 | 0,500 | 2,000 | 3,000 | 39,000 | 0,500 | 9,000 | 4 | 3,000 |
| M3,5 - M4,5 | 0,750 | 2,800 | 6,000 | 58,000 | 0,800 | 14,000 | 4 | 4,500 |
| M5 - M7 | 1,000 | 4,000 | 6,000 | 58,000 | 1,000 | 19,000 | 4 | 7,000 |
| M8 - M10 | 1,500 | 6,400 | 8,000 | 64,000 | 1,500 | 24,000 | 5 | 10,000 |

# AC INOX

# ERO
# IDABLE





M

Aceros inoxidables y resistentes al ácido, sulfurados, austeníticos y martensíticos

# ACERO INOXIDABLE

## M

### ISO 2/6H

No 1

M2 - M30
Art. N° 4218
desde página 239

### ISO 3/6G

M2 - M30
Art. N° 2869/2870
desde página 236

## MF

### ISO 2/6H

No 1

M6x0,75 - M24x2
Art. N° 4219
desde página 248

### ISO 3/6G

M3x0,35 - M24x1,5
Art. N° 2871
desde página 257

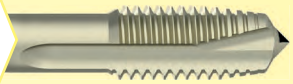
No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G | |
|---|---|---|---|
| 2B | 2B | - | ROSCA **PASANTE** |



No 1
G1/16 - G1
Art. N° 4220
desde página 264



HSS-E, Sirius, Forma B

No 1
No. 4 - 1
Art. N° 2872/2873
desde página 258

No 1
No. 4 - 1
Art. N° 2874
desde página 260

G1/16 - G1
Art. N° 2875
desde página 263

HSS-E, vaporizado, Forma B

# ACERO INOXIDABLE

## M

### ISO 2/6H

No 1

M2 - M30
Art. N° 393
desde página 244

M3 - M30
Art. N° 2862/2863
desde página 243

No 1

M3 - M20
Art. N° 761/763
desde página 247

No 1

M3 - M20
Art. N° 1139/1142
desde página 247

### ISO 3/6G

## MF

### ISO 2/6H

No 1

M6x0,75 - M24x1,5
Art. N° 394
desde página 252

M3x0,35 - M24x1,5
Art. N° 2864
desde página 251

No 1

M8x1 - M20x1,5
Art. N° 764
desde página 255

No 1

M8x1 - M20x1,5
Art. N° 1144
desde página 255

### ISO 3/6G

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA **CIEGA**



**No 1**
G1/16 - G1
Art. N° 395
desde página 267

HSS-E, TiAlN, Forma C

**No 1**
No. 2 - 7/8
Art. N° 2865/2866
desde página 259

**No 1**
No. 10 - 1
Art. N° 2868
desde página 262

**No 1**
G1/16 - G1 1/2
Art. N° 968
desde página 265

HSS-E, vaporizado, Forma C

PARA
SYNCHRO MACHINING
TOLERANCIA DEL MANGO h6

**No 1**
G1/16 - G1/2
Art. N° 4159
desde página 266

HSS-E-PM, TiN, Forma C

HSS-E-PM, TiCN, Forma C

# ACERO INOXIDABLE

## sin ranuras de lubr.

| M | | MF | |
|---|---|---|---|
| 6HX | 6GX | 6HX | 6GX |
| No 1<br>M1 - M20<br>Art. N° 921/925<br>desde página 271 | No 1<br>M2 - M10<br>Art. N° 920<br>desde página 272 | No 1<br>M8x1 - M20x1,5<br>Art. N° 929<br>desde página 286 | No 1<br>M8x1 - M18x1,5<br>Art. N° 928<br>desde página 290 |

## con ranuras de lubr.

| | | | |
|---|---|---|---|
| M3 - M39<br>Art. N° 919/923<br>desde página 274 | No 1<br>M3 - M39<br>Art. N° 918/922<br>desde página 274 | M6x0,75 - M24x1,5<br>Art. N° 1275/927<br>desde página 288 | No 1<br>M8x1 - M20x1,5<br>Art. N° 1277/926<br>desde página 292 |
| No 1<br>M3 - M39<br>Art. N° 2012/2013<br>desde página 274 | | No 1<br>M6x0,75 - M20x1,5<br>Art. N° 2008<br>desde página 291 | |

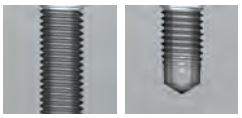
## con refrigeración interna

| | | | |
|---|---|---|---|
| No 1<br>M3 - M20<br>Art. N° 1270/1271<br>desde página 280 | No 1<br>M5 - M10<br>Art. N° 1713<br>desde página 281 | No 1<br>M8x1 - M24x1,5<br>Art. N° 1272/1273<br>desde página 296 | No 1<br>M8x1 - M24x1,5<br>Art. N° 1715/1716<br>desde página 297 |
| No 1<br>M3 - M20<br>Art. N° 1725/1727<br>desde página 280 | No 1<br>M3 - M20<br>Art. N° 1726/1728<br>desde página 282 | No 1<br>M8x1 - M24x1,5<br>Art. N° 1729/1731<br>desde página 296 | No 1<br>M8x1 - M24x1,5<br>Art. N° 1730/1732<br>desde página 297 |
| No 1<br>M3 - M20<br>Art. N° 1972/1931<br>desde página 284 | | No 1<br>M10x1 - M24x1,5<br>Art. N° 1581<br>desde página 299 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2BX | 2BX | - |



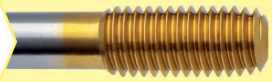
ROSCA **PASANTE**
ROSCA **CIEGA**



**No 1**
Nr. 4 - 7/8
Art. N° 2273/2274
desde página 300

**No 1**
Nr. 4 - 1
Art. N° 1283/2275
desde página 301

**No 1**
G1/16 - G1 1/4
Art. N° 966
desde página 302

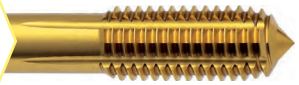


HSS-E, TiN, Forma C

**No 1**
Nr. 4 - 7/8
Art. N° 1582/1583
desde página 300

**No 1**
Nr. 4 - 1
Art. N° 1584/1585
desde página 301

**No 1**
G1/16 - G1 1/4
Art. N° 1586
desde página 302



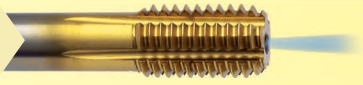
HSS-E, TiN, Forma C

HSS-E, TiCN, Forma C

FORMA C

HSS-E-PM, TiCN, Forma C

FORMA E



HSS-E-PM, TiN, Forma E

METAL DURO

Metal duro, TiCN, Forma C

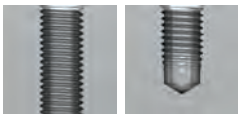
# ACERO INOXIDABLE

| | M<br>UNIVERSAL | MF<br>UNIVERSAL |
|---|---|---|
| 1,5xD | No 1<br>M3 - M20<br>Art. N° 3525<br>desde página 306 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3527<br>desde página 309 |
| 2xD | No 1<br>M3 - M20<br>Art. N° 3526<br>desde página 307 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3528<br>desde página 310 |
| 2,5xD | No 1<br>M3 - M20<br>Art. N° 3759<br>desde página 308 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3762<br>desde página 311 |
| 3xD | No 1<br>M1,6 - M16<br>Art. N° 4226<br>desde página 333 | |
| universal | No 1<br>Ø8x0,5 - Ø30xP3,5<br>Art. N° 3541<br>desde página 327 | No 1<br>Ø8x0,5 - Ø30xP3,5<br>Art. N° 3541<br>desde página 327 |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**



**No 1**
1/4 - 1/2
Art. N° 3516
desde página 313

**No 1**
1/4 - 1/2
Art. N° 3518
desde página 316

**No 1**
1/8 - 3/8
Art. N° 3514
desde página 320

Metal duro, TiCN

**No 1**
1/4 - 1/2
Art. N° 3517
desde página 314

**No 1**
1/4 - 1/2
Art. N° 3519
desde página 317

**No 1**
1/8 - 3/8
Art. N° 3515
desde página 321

Metal duro, TiCN

Metal duro, TiCN

Metal duro, TiCN

**No 1**
Ø10xUN24 - Ø20xUN7
Art. N° 3595
desde página 329

**No 1**
Ø10xUN24 - Ø20xUN7
Art. N° 3595
desde página 329

**No 1**
Ø10xG19 - Ø20xG11
Art. N° 3542
desde página 330

Metal duro, TiCN

M

# COMPÁS

**M**

## ACERO INOXIDABLE

ROSCA PASANTE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤1,5xD | | | | | | |
| Material de corte | | HSS-E | | | | | HSS-E-PM | |
| Tipo/forma | | VA/B | VA/B | VA/B | VA AZ/B | VA/B | VA/B | VA/B |
| Acabado | | ○ | ● | (S) | ○ | (S) | ○ | (S) |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | | | | NEW | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | | |
| **M** | 4H | | | | | | | |
| | 6H | 1870/1872 236 | 2869/2870 236 | 2086/2087 236 | 1871/792 240 | | 877/879 237 | 1002 238 |
| | 6HX | | | | | 4218 239 | | |
| | 6G | | | | | | | |
| **MF** | 6H | 1873 256 | 2871 257 | 1001 257 | | | 887 256 | 1291 248 |
| | 6HX | | | | | 4219 248 | | |
| | 6G | | | | | | | |
| **UNC** | 2B | 1980/1985 258 | 2872/2873 258 | | | | | |
| | 2BX | | | | | | | |
| **UNF** | 2B | 1990 260 | 2874 260 | | | | | |
| | 2BX | | | | | | | |
| **G** | | 967 263 | 2875 263 | | | 4220 264 | | |
| **BSW** | | | | | | | | |
| **NPT** | | | | | | | | |
| **NPTF** | | | | | | | | |
| **EG M** | 6H Mod. | | | | | | | |
| **MJ** | 4HX | | | | | | | |
| **MJF** | 4HX | | | | | | | |
| **UNJC** | 3BX | | | | | | | |
| **UNJF** | 3BX | | | | | | | |
| **PG** | | | | | | | | |
| | **emulsión** | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M** | aceros inoxidables, sulfanizados, austeníticos | ≤1000 N/mm² | X5CrNi18-10 | 1.4301 | **8** | **8** | **10** | **8** | **10** | **8** | **10** |
| | | | X6CrNiTi18-10 | 1.4571 | | | | | | | |
| | | | X8CrNiS18-9 | 1.4305 | | | | | | | |
| | aceros inoxidables resistentes al acido, mateníticos | ≤1000 N/mm² | X17CrNi16-2 | 1.4057 | **6** | **6** | **8** | **6** | **12** | **6** | **8** |
| | | | X90CrMoV18 | 1.4112 | | | | | | | |
| | | | X2CrTi12 | 1.4512 | | | | | | | |
| | duplex y superduplex | ≤1300 N/mm² | X2CrNiMoN22-5-3 | 1.4462 | - | - | - | - | **10** | - | - |
| | | | X2CrNiMoN25-7-4 | 1.4410 | | | | | | | |
| | | | X2CrNiMoCuWN25-7-4 | 1.4501 | | | | | | | |

**M**

**ACERO INOXIDABLE**

ROSCA CIEGA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤1,5xD | | | | | |
| Material de corte | | HSS-E | | | | | |
| Tipo/forma | | VA R15 / C | VA R15 / C | VA R25 / C | VA R25 / C | NR15 / C | NR15 / C |
| Material de corte | | ● | (S) | ● | (S) | (C) | (C) |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 |
| | | | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | |
| **M** | 4H | | | | | | |
| | 6H | 843/785 241 | 2896/2895 241 | | | 4154 242 | 4155 242 |
| | 6HX | | | | | | |
| | 6G | | | | | | |
| **MF** | 6H | 1874 249 | 2897 249 | | | 4156 250 | 4157 250 |
| | 6HX | | | | | | |
| | 6G | | | | | | |
| **UNC** | 2B | | | | | | |
| | 2BX | | | | | | |
| **UNF** | 2B | 1991 261 | 2898 261 | | | | |
| | 2BX | | | | | | |
| **G** | | | | | | | |
| **BSW** | | | | | | | |
| **NPT** | | | | 1087 268 | 1088 268 | | |
| **NPTF** | | | | | 4127 269 | | |
| **EG M** | 6H Mod. | | | | | | |
| **MJ** | 4HX | | | | | | |
| **MJF** | 4HX | | | | | | |
| **UNJC** | 3BX | | | | | | |
| **UNJF** | 3BX | | | | | | |
| **PG** | | | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **M** | aceros inoxidables, sulfanizados, austeníticos | ≤1000 N/mm² | X5CrNi18-10 | 1.4301 | **6** | **8** | **6** | **8** | **8** | **8** |
| | | | X6CrNiTi18-10 | 1.4571 | | | | | | |
| | | | X8CrNiS18-9 | 1.4305 | | | | | | |
| | aceros inoxidables resistentes al acido, mateníticos | ≤1000 N/mm² | X17CrNi16-2 | 1.4057 | 4 | 6 | 4 | 6 | 6 | 6 |
| | | | X90CrMoV18 | 1.4112 | | | | | | |
| | | | X2CrTi12 | 1.4512 | | | | | | |
| | duplex y superduplex | ≤1300 N/mm² | X2CrNiMoN22-5-3 | 1.4462 | - | - | - | - | - | - |
| | | | X2CrNiMoN25-7-4 | 1.4410 | | | | | | |
| | | | X2CrNiMoCuWN25-7-4 | 1.4501 | | | | | | |

## ≤3xD

| HSS-E | | | | HSS-E-PM | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NR40 / C | NR40 / C | NR40 / C | VA R45/C | NR40 / C | NR40 / C | NR50 / C | NR50 / C | VA R50/C | VA R50/C |
| ○ | ● | ○ | A | ○ | S | S | C | S | C |
| ☒ | ☒ | axialm. | ☒ | ☒ | ☒ | ☒ | axialm. | ☒ | axialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 |
| | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | |
| | | | | | | | | | |
| 814/825<br>243 | 2862/2863<br>243 | 1892/1899<br>243 | | 909/910<br>246 | 59/60<br>246 | 767/1098<br>245 | 1152/1293<br>245 | | |
| | | | 393<br>244 | | | | | 761/763<br>247 | 1139/1142<br>247 |
| | | | | | | | | | |
| | 2864<br>251 | | | 936<br>253 | 1004<br>253 | 1100<br>254 | 1294<br>254 | | |
| | | | 394<br>252 | | | | | 764<br>255 | 1144<br>255 |
| | | | | | | | | | |
| 1981/1986<br>259 | 2865/2866<br>259 | | | | | | | | |
| | | | | | | | | | |
| 2867<br>262 | 2868<br>262 | | | | | | | | |
| | | | | | | | | | |
| | 968<br>265 | | 395<br>267 | 939<br>265 | | | | 4159<br>266 | |
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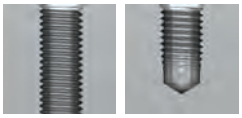
| velocidad de corte recomendada vc m/min | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **6** | **6** | **6** | **15** | **8** | **10** | **10** | **10** | **12** | **12** |
| 4 | 4 | **4** | **10** | **6** | **6** | 6 | 6 | **8** | **8** |
| - | - | - | **6** | - | - | - | - | - | - |

**M**

## ACERO INOXIDABLE



ROSCA PASANTE Y CIEGA

| | | | |
|---|---|---|---|
| Profundidad de la rosca | 1,5xD | | |
| Material de corte | HSS-E | HSS-E-PM | Metal duro |
| Tipo/forma | N / C | N / C | N / C |
| Material de corte | S | S | S |
| Transmisión de refrig. | ☒ | ☒ | axialm. |
| Tolerancia del mango | h9 | h9 | h6 |

| Tipo de rosca | tolerancia | número de artículo/página catálogo | | |
|---|---|---|---|---|
| M | 4H | | | |
| | 6H | | | |
| | 6HX | 921/925 271 | 1255/1256 271 | 2518 273 |
| | 6GX | 920 272 | 903/952 271 | |
| MF | 6H | | | |
| | 6HX | 929 286 | 1257/1258 287 | |
| | 6GX | 928 290 | 1740 289 | |
| UNC | 2BX | 2273/2274 300 | | |
| | 3BX | | | |
| UNF | 2BX | 1283/2275 301 | | |
| | 3BX | | | |
| G | | 966 302 | | |
| BSW | | | | |
| NPT | | | | |
| NPTF | | | | |
| EG M | 6H Mod. | | | |
| MJ | 4HX | | | |
| MJF | 4HX | | | |
| UNJC | 3BX | | | |
| UNJF | 3BX | | | |
| PG | | | | |
| refrigerante apropiado | | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | |
|---|---|---|---|---|---|---|---|
| M | aceros inoxidables, sulfanizados, austeníticos | ≤1000 N/mm² | X5CrNi18-10 | 1.4301 | 4 | 4 | 15 |
| | | | X6CrNiTi18-10 | 1.4571 | | | |
| | | | X8CrNiS18-9 | 1.4305 | | | |
| | aceros inoxidables resistentes al acido, mateníticos | ≤1000 N/mm² | X17CrNi16-2 | 1.4057 | 4 | 4 | 12 |
| | | | X90CrMoV18 | 1.4112 | | | |
| | | | X2CrTi12 | 1.4512 | | | |
| | duplex y superduplex | ≤1300 N/mm² | X2CrNiMoN22-5-3 | 1.4462 | - | - | - |
| | | | X2CrNiMoN25-7-4 | 1.4410 | | | |
| | | | X2CrNiMoCuWN25-7-4 | 1.4501 | | | |

# ≤3xD

| HSS-E | | | | HSS-E-PM | | | | | | | Metal duro | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / E | N / C | N / E |
| S | C | S+ | C | S | S | S | S | C | A | S | C | C |
| ☒ | ☒ | axialm. | radialm. | ☒ | ☒ | radialm. | axialm. | radialm. | radialm. | axialm. | radialm. | radialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 |
| | | | |  | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| 919/923 274 | 2012/2013 274 | 2442/2444 277 | 2446/2448 277 | 322/339 275 | 1266/1267 276 | 323/342 279 | 4143 283 | 1270/1271 280 | 1717/1719 280 | 1725/1727 280 | 1972/1931 284 | 1927 285 |
| 918/922 274 | | 2443/2445 277 | 2447 278 | | | | | 1713 281 | 1718/1720 282 | 1726/1728 282 | | |
| | | | | | | | | | | | | |
| 1275/927 288 | 2008 291 | | | 333 294 | 1268/1269 293 | 338 295 | 4145 298 | 1272/1273 296 | 1721/1723 296 | 1729/1731 296 | 1581 299 | |
| 1277/926 292 | | | | | | | | 1715/1716 297 | | 1730/1732 297 | | |
| 1582/1583 300 | | | | | | | | | | | | |
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| 1584/1585 301 | | | | | | | | | | | | |
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| 1586 302 | | | | | | | | | | | | |
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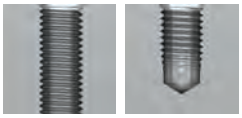
| velocidad de corte recomendada vc m/min | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | **8** | 6 | **8** | **8** | **8** | **8** | **8** | **10** | **10** | **8** | **15** | **15** |
| 4 | **6** | 4 | *6* | *6* | *6* | *6* | *6* | *8* | **8** | **6** | **12** | **12** |
| - | - | - | **8** | **8** | **8** | **8** | **8** | **10** | **10** | **8** | **15** | **15** |

**ACERO INOXIDABLE**



ROSCA PASANTE Y CIEGA

| Profundidad de la rosca | ≤2xD | | | | ≤2,5xD | | ≤1,5xD | |
|---|---|---|---|---|---|---|---|---|
| Material de corte | | Metal duro | | | | | | |
| Tipo | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP | TMC SP | TMC SP |
| Acabado | C | C | C | C | C | C | C | C |
| Transmisión de refrig. | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| Forma del mango | HA | HB | HA | HB | HA | HB | HA | HA |
| Espiral | 27° | 27° | 27° | 27° | 27° | 27° | 10° | 10° |

| Tipo de rosca | número de artículo/página catálogo | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **M** | 4132 304 | 4133 304 | 3737 304 | 3743 304 | 3735 305 | 3740 305 | 3525 306 | 3543 306 |
| **MF** | | | 3737 304 | 3743 304 | | | 3527 309 | 3545 309 |
| **UNC** | | | 4134 312 | 4135 312 | | | 3516 313 | 3534 313 |
| **UNF** | | | 4136 315 | 4137 315 | | | 3518 316 | 3536 316 |
| **G** | | | 3745 318 | 3748 318 | 3746 319 | 3750 319 | 3514 320 | 3529 320 |
| **BSW** | | | | | | | | |
| **NPT** | | | 3753 323 | 3754 323 | | | 3520 324 | 3538 324 |
| **NPTF** | | | 3756 325 | 3757 325 | | | 3521 326 | 3539 326 |
| **EG M** | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
| **MJ** | | | | | | | | |
| **MJF** | | | | | | | | |
| **UNJC** | | | | | | | | |
| **UNJF** | | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **M** | aceros inoxidables, sulfanizados, austeníticos | ≤1000 N/mm² | X5CrNi18-10 | 1.4301 | + | + | + | + | + | + | ++ | ++ |
| | | | X6CrNiTi18-10 | 1.4571 | | | | | | | | |
| | | | X8CrNiS18-9 | 1.4305 | | | | | | | | |
| | aceros inoxidables resistentes al acido, mateníticos | ≤1000 N/mm² | X17CrNi16-2 | 1.4057 | + | + | + | + | + | + | ++ | ++ |
| | | | X90CrMoV18 | 1.4112 | | | | | | | | |
| | | | X2CrTi12 | 1.4512 | | | | | | | | |
| | duplex y superduplex | ≤1300 N/mm² | X2CrNiMoN22-5-3 | 1.4462 | + | + | + | + | + | + | ++ | ++ |
| | | | X2CrNiMoN25-7-4 | 1.4410 | | | | | | | | |
| | | | X2CrNiMoCuWN25-7-4 | 1.4501 | | | | | | | | |

| ≤2xD | | ≤2,5xD | | universal | | | | ≤3xD | |
|---|---|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | | | |
| TMC SP | TMC SP | TMC SP | TMC SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | MTM 1 SP |
| C | C | C | C | C | C | C | C | C | C |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ |
| HA | HB | HA | HB | HA | HB | HA | HB | HA | HA |
| 10° | 10° | 27° | 27° | 15° | 15° | 15° | 15° | 15° | 15° |
| | | | | | | por fresado de roscas exteriores | por fresado de roscas exteriores | | |
| número de artículo/página catálogo | | | | | | | | | |
| 3526<br>307 | 3544<br>307 | 3759<br>308 | 3760<br>308 | 3541<br>327 | 3556<br>327 | 4162<br>328 | 4163<br>328 | 4226<br>333 | 4225<br>335 |
| 3528<br>310 | 3546<br>310 | 3762<br>311 | 3763<br>311 | 3541<br>327 | 3556<br>327 | 4162<br>328 | 4163<br>328 | | 4225<br>335 |
| 3517<br>314 | 3535<br>314 | | | 3595<br>329 | 3596<br>329 | | | | |
| 3519<br>317 | 3537<br>317 | | | 3595<br>329 | 3596<br>329 | | | | |
| 3515<br>321 | 3533<br>321 | 3765<br>322 | 3766<br>322 | 3542<br>330 | 3557<br>330 | | | 4228<br>334 | |
| | | | | | | | | | |
| | | | | 3768<br>331 | 3769<br>331 | | | | |
| | | | | 3772<br>332 | 3773<br>332 | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | | | |
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| recomendación de aplicación | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |

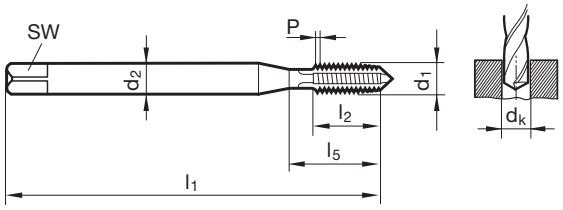
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | ≤ 1000 | |
| M | • | |
| K | | |
| N | • | |
| S | | |
| H | | |

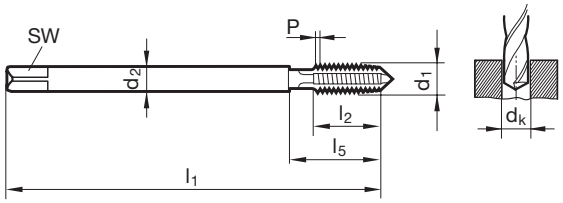
Condiciones de corte ver pág. 229

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | S | ● |
| Tipo | N | N | VA |
| Forma | B | B | B |
| Con refrigeración interna | ✗ | ✗ | ✗ |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **1870** **2086** **2869**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1872** **2087** **2870**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 2,200 | | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |

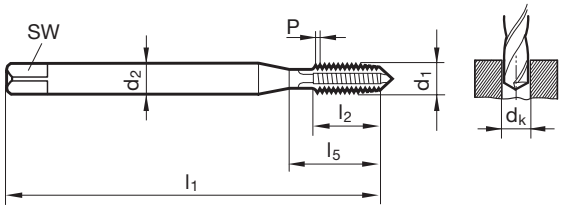
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ✕ |

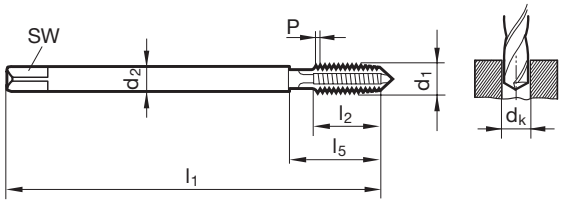
| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 229

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **877**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **879**

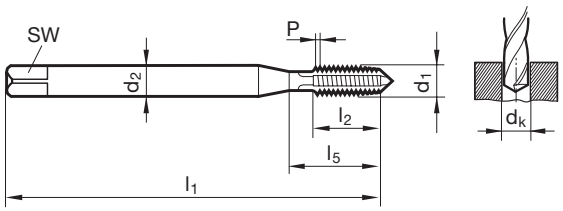
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 229



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **1002**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |

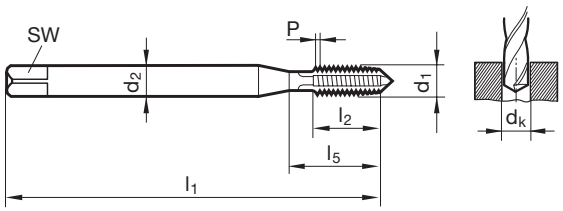
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 229

NEW



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **4218**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |

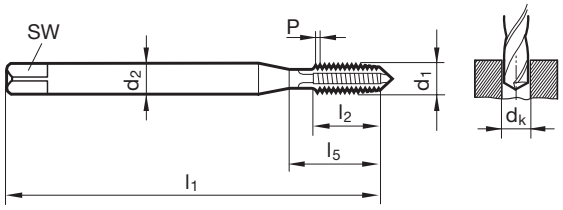
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | VA AZ |
| Forma | B |
| Con refrigeración interna | ⊠ |

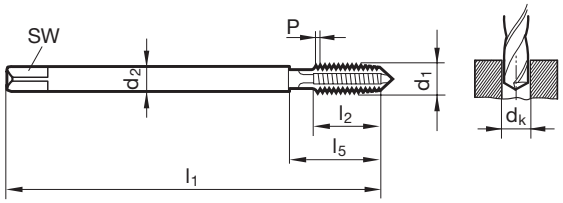
| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 229

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1871**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **792**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |

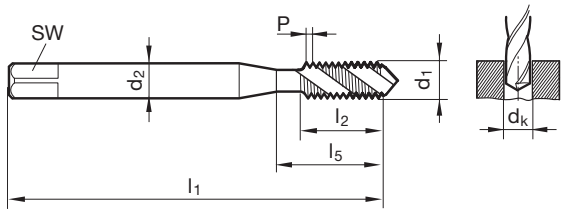
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ● | S |
| Tipo | VA R15 | VA R15 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |

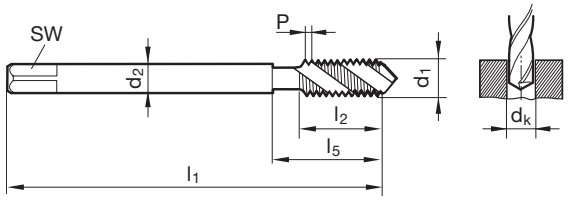
| | |
|---|---|
| P | |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 230

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **843** **2896**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 4,500 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 5,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 7,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

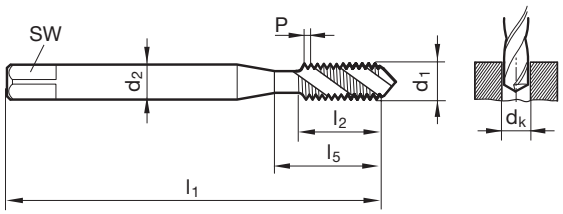
**DIN 2184-1 DIN 376** — Artículo Nº **785** **2895**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 140,000 | 27,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | ≤ 1000 | Condiciones de corte ver pág. 230 |
| M | ○ | |
| K | ○ | |
| N | | |
| S | | |
| H | | |

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | C | C |
| Tipo | N R15 | N R15 |
| Forma | C | E |
| Con refrigeración interna | ✕ | ✕ |



**DIN 2184-1 DIN 371/DIN 376** — Artículo Nº **4154** **4155**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |

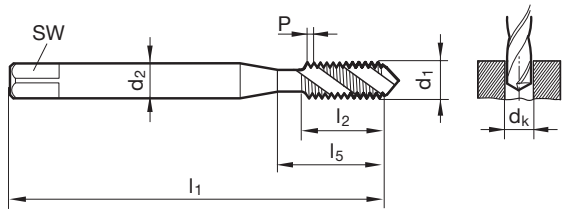
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

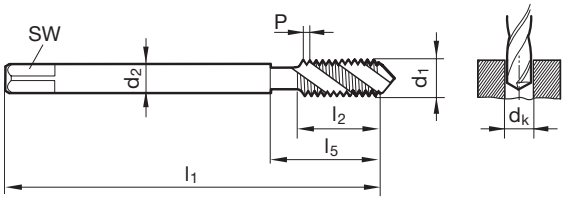
Condiciones de corte ver pág. 231

| Material de corte | HSS-E | | |
|---|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H | ISO2/6H |
| Acabado | ○ | ○ | ● |
| Tipo | VA R40 | VA R40 | VA R40 |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 814 | 1892 | 2862 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 825 | 1899 | 2863 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 140,000 | 27,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 35,000 | 85,000 |

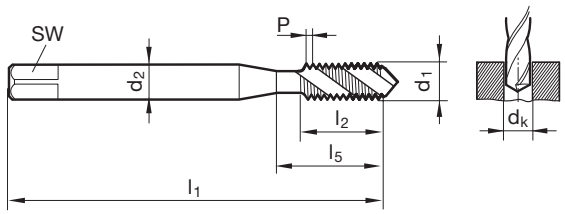
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231

NEW



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **393**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 4,500 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 5,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 35,000 | 85,000 |

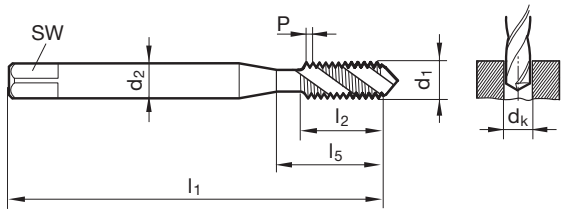
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

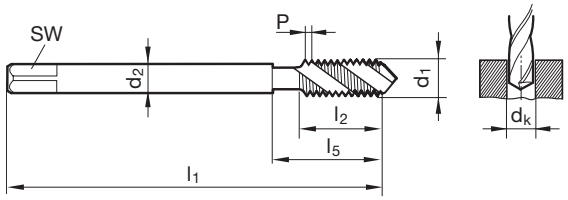
Condiciones de corte ver pág. 231

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **767** **1152**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1098** **1293**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |

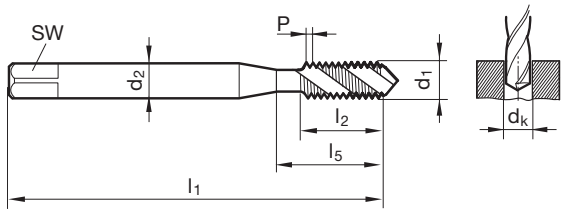
## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | ○ |
| Tipo | VA R40 | VA R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |

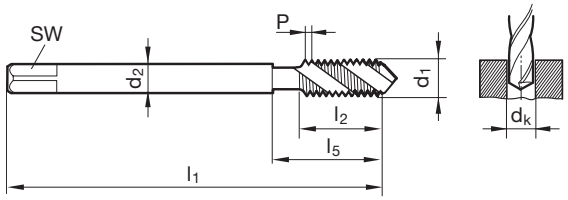
| | |
|---|---|
| P | |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 231

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **59** **909**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **60** **910**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |

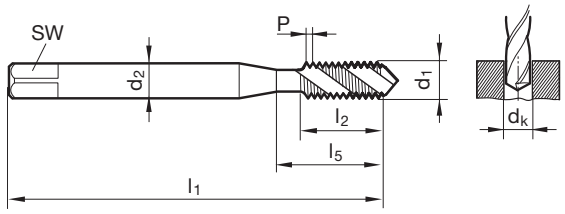
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

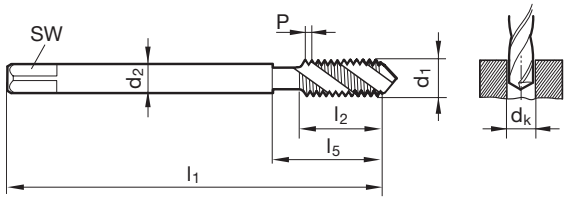
Condiciones de corte ver pág. 231

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **761** **1139**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 2,500 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 3,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 4,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 5,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 6,300 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 7,500 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **763** **1142**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 8,800 | 63,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 10,000 | 58,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 10,000 | 58,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 12,500 | 85,000 |

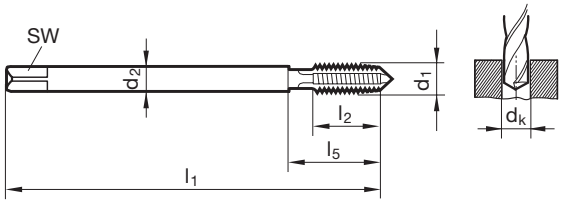
## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 229

| Material de corte | HSS-E-PM | HSS-E |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | 6HX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | | |

NEW



**DIN 2184-1 DIN 374** — Artículo Nº **1291** **4219**

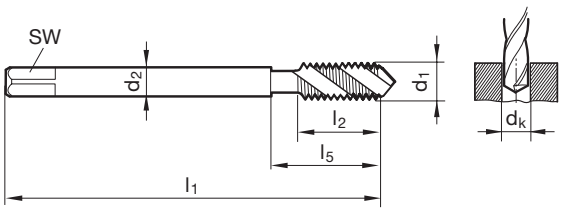
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| P | | |
| M | • | |
| K | | |
| N | | |
| S | | |
| H | | |

Condiciones de corte ver pág. 230

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ● | S |
| Tipo | VA R15 | VA R15 |
| Forma | C | C |
| Con refrigeración interna | ✗ | ✗ |



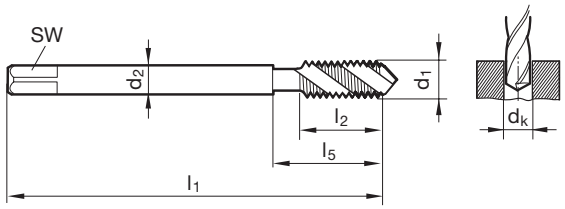
**DIN 2184-1 DIN 374** — Artículo Nº **1874** **2897**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 5,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 5,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M20 x 2 | 16,000 | 12,000 | 18,00 | 140,000 | 20,000 | 60,000 | 20,008 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| P | ≤ 1000 | Condiciones de corte ver pág. 230 |
| M | ○ | |
| K | ○ | |
| N | | |
| S | | |
| H | | |

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | C | C |
| Tipo | N R15 | N R15 |
| Forma | C | E |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **4156** **4157**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |

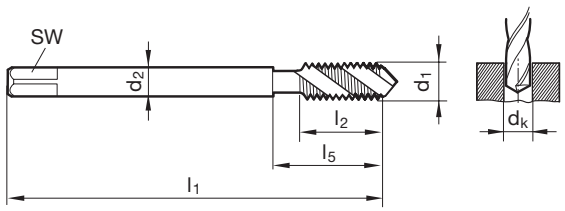
## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 231





**DIN 2184-1 DIN 374** Artículo Nº **2864**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 4,000 | 18,000 | 3,002 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 5,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 5,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 5,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 80,000 | 8,000 | 30,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 16,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

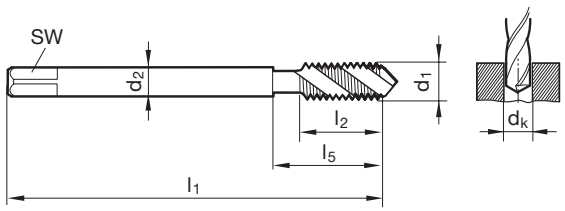
## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231



**DIN 2184-1 DIN 374** Artículo Nº **394**

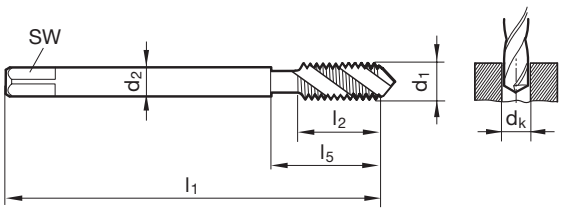
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 8,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 8,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 16,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 16,000 | 48,000 | 24,007 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ◯ | Ⓢ |
| Tipo | VA R40 | VA R40 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 231



| DIN 2184-1 DIN 374 | Artículo Nº | 936 | 1004 |
|---|---|---|---|

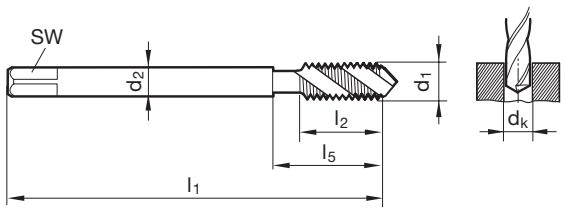
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **1100** **1294**

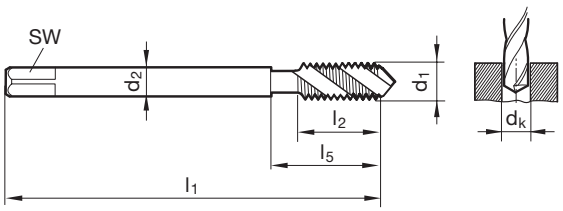
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **764** **1144**

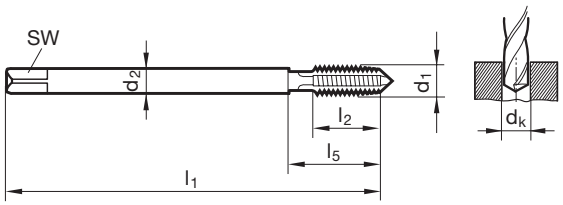
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 44,000 | 8,005 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 47,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 47,000 | 10,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 44,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 5,000 | 53,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 7,500 | 53,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 7,500 | 48,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 7,500 | 48,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 7,500 | 58,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 7,500 | 70,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 229

| Material de corte | HSS-E-PM | HSS-E |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | ◯ | ◯ |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-1 DIN 374** — Artículo Nº **887** **1873**

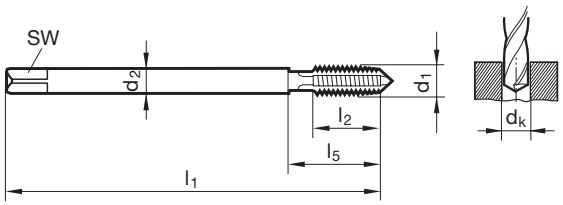
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M7 x 0,75 | 5,500 | 4,300 | 6,20 | 80,000 | 13,000 | 30,000 | 7,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| P | ≤ 1000 | Condiciones de corte ver pág. 229 |
| M | • | |
| K | | |
| N | | |
| S | | |
| H | | |

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | |
| Tipo | N | N |
| Forma | B | B |
| Con refrigeración interna | | |





| DIN 2184-1 DIN 374 | Artículo Nº | 1001 | 2871 |
|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 2,200 | | 2,65 | 56,000 | 7,000 | 18,000 | 3,002 |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 8,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |

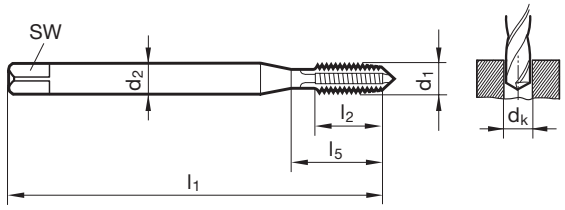
## Machos máquina para roscas UNC

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

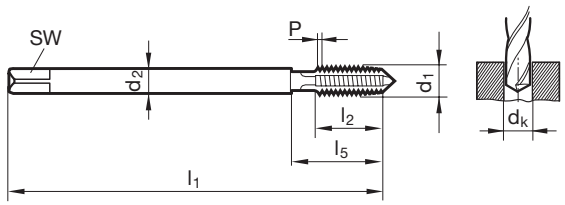
Condiciones de corte ver pág. 229

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N | VA |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **1980** **2872**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **1985** **2873**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 35,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 38,000 | 73,000 | 25,400 |

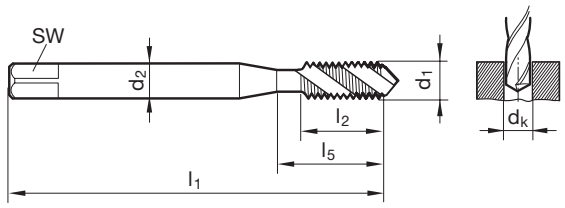
## Machos máquina para roscas UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | VA R40 | VA R40 |
| Forma | C | C |
| Con refrigeración interna | ⊠ | ⊠ |

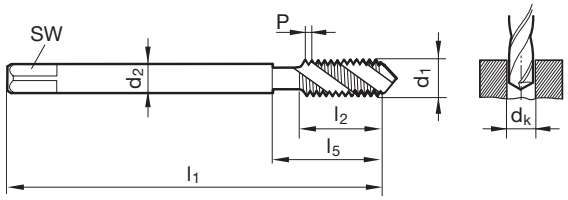
| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 231

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **1981** **2865**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 5,000 | 14,500 | 2,184 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 7,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **1986** **2866**

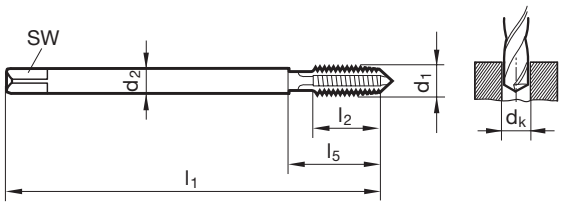
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 18,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 20,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 21,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 24,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 25,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 28,000 | 62,000 | 22,225 |

## Machos máquina para roscas UNF

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 229

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | N | VA |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |



**DIN 2184-1 ~DIN 374** — Artículo Nº **1990** **2874**

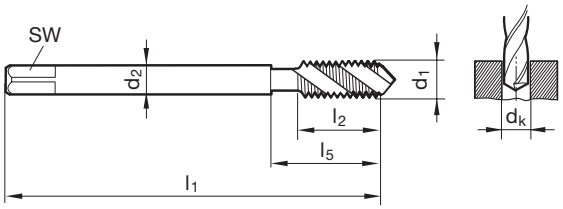
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 2,200 | | 2,40 | 56,000 | 10,000 | 18,000 | 2,845 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2B | 2B |
| Acabado | ● | S |
| Tipo | VA R15 | VA R15 |
| Forma | C | C |
| Con refrigeración interna | ✗ | ✗ |

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 230



**DIN 2184-1 ~DIN 374** — Artículo Nº **1991** **2898**

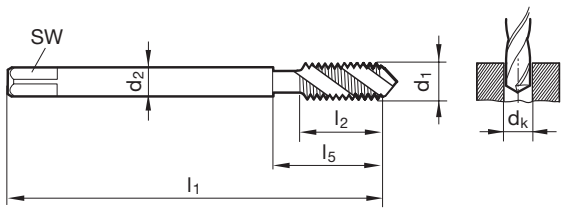
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 5 - 44 | 2,500 | 2,100 | 2,70 | 56,000 | 6,000 | 18,000 | 3,175 |
| 6 - 40 | 2,500 | 2,100 | 2,95 | 56,000 | 6,500 | 20,000 | 3,505 |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas UNF

| | | |
|---|---|---|
| P | | |
| M | • | |
| K | | |
| N | • | |
| S | | |
| H | | |

Condiciones de corte ver pág. 231

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | 2B | 2B |
| Acabado | ○ | ● |
| Tipo | VA R40 | VA R40 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-1 ~DIN 374** Artículo Nº **2867** **2868**

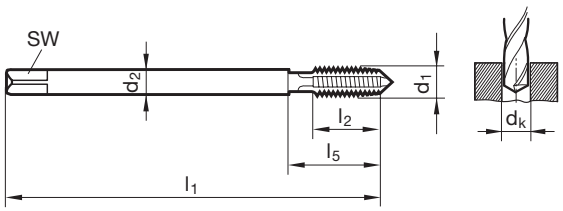
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 8,500 | 25,000 | 4,826 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 13,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 15,875 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 229

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | ○ | ● |
| Tipo | N | VA |
| Forma | B | B |
| Con refrigeración interna | ⊠ | ⊠ |



**DIN 2184-1 DIN 5156** — Artículo Nº **967** **2875**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |

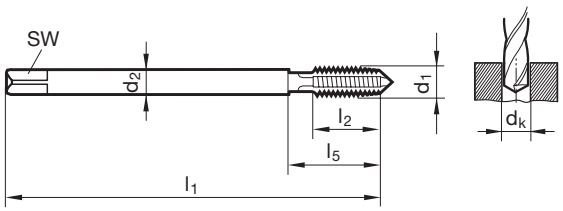
## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | X |
| Acabado | S |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 229



**DIN 2184-1 DIN 5156** Artículo Nº **4220**

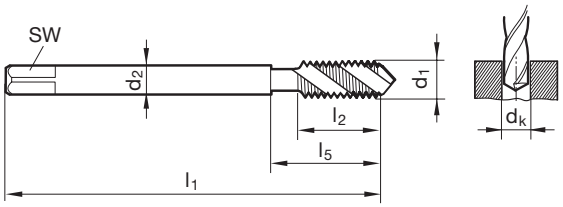
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 25,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |

## Machos máquina para roscas GAS

| | | |
|---|---|---|
| P | | |
| M | • | |
| K | | |
| N | • | |
| S | | |
| H | | |

Condiciones de corte ver pág. 231

| Material de corte | HSS-E-PM | HSS-E |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | ○ | ● |
| Tipo | VA R40 | VA R40 |
| Forma | C | C |
| Con refrigeración interna | ☒ | ☒ |



**DIN 2184-1 DIN 5156** — Artículo Nº **939** **968**

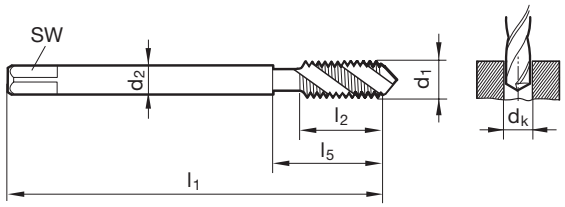
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |
| G1 1/8 | 11,000 | 28,000 | 22,000 | 35,50 | 170,000 | 24,000 | 56,000 | 37,897 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 170,000 | 25,000 | 57,000 | 41,910 |
| G1 3/8 | 11,000 | 36,000 | 29,000 | 41,75 | 180,000 | 27,000 | 60,000 | 44,323 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 190,000 | 27,000 | 60,000 | 47,803 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | VA R50 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 5156** Artículo Nº **4159**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 4,500 | 47,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 4,500 | 47,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 6,700 | 48,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 6,700 | 48,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 9,100 | 70,000 | 20,955 |

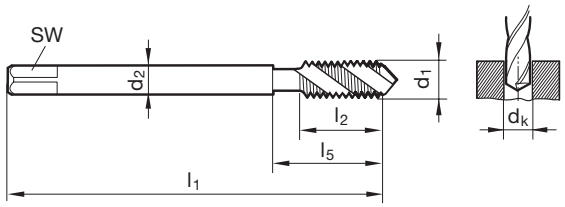
## Machos máquina para roscas GAS

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 231

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | X |
| Acabado | A |
| Tipo | VA R45 |
| Forma | C |
| Con refrigeración interna | |

NEW



**DIN 2184-1 DIN 5156** Artículo Nº **395**

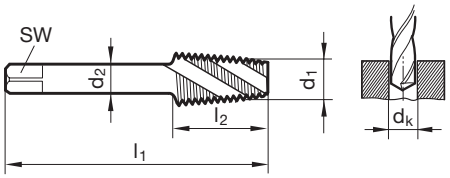
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 125,000 | 18,000 | 48,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 22,000 | 53,000 | 30,201 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 160,000 | 24,000 | 56,000 | 33,249 |

## Machos máquina para roscas NPT

| | | |
|---|---|---|
| P | | |
| M | • | |
| K | ○ | |
| N | ○ | |
| S | | |
| H | | |

Condiciones de corte ver pág. 230

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | | |
| Acabado | | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |



| Norma de fab. Norma de fab. | Artículo Nº | 1087 | 1088 |
|---|---|---|---|

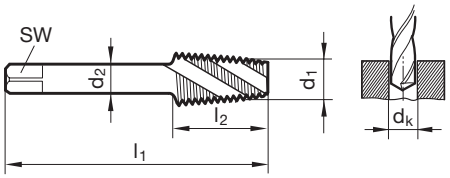
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| 1/16 | 27,000 | 8,000 | 6,200 | 6,25 | 90,000 | 14,000 | 27,000 | 8,190 |
| 1/8 | 27,000 | 11,000 | 9,000 | 8,50 | 90,000 | 15,000 | 29,000 | 10,620 |
| 1/4 | 18,000 | 14,000 | 11,000 | 11,20 | 100,000 | 21,000 | 40,000 | 14,140 |
| 3/8 | 18,000 | 16,000 | 12,000 | 14,40 | 110,000 | 21,000 | 35,000 | 17,570 |
| 1/2 | 14,000 | 18,000 | 14,500 | 18,00 | 125,000 | 27,000 | 44,000 | 21,900 |
| 3/4 | 14,000 | 22,000 | 18,000 | 23,40 | 140,000 | 27,000 | 52,000 | 27,230 |
| 1 | 11,500 | 25,000 | 20,000 | 29,10 | 170,000 | 32,000 | 53,000 | 34,180 |

## Machos para roscas NPTF

| | |
|---|---|
| P | |
| M | • |
| K | ○ |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 230

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |



**Norma de fab. Norma de fab.** Artículo Nº **4127**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| 1/16 | 27,000 | 8,000 | 6,200 | 6,25 | 90,000 | 14,000 | 27,000 | 8,190 |
| 1/8 | 27,000 | 11,000 | 9,000 | 8,50 | 90,000 | 15,000 | 29,000 | 10,620 |
| 1/4 | 18,000 | 14,000 | 11,000 | 11,20 | 100,000 | 21,000 | 40,000 | 14,140 |
| 3/8 | 18,000 | 16,000 | 12,000 | 14,40 | 110,000 | 21,000 | 35,000 | 17,570 |
| 1/2 | 14,000 | 18,000 | 14,500 | 18,00 | 125,000 | 27,000 | 44,000 | 21,900 |
| 3/4 | 14,000 | 22,000 | 18,000 | 23,40 | 140,000 | 27,000 | 52,000 | 27,230 |
| 1 | 11,500 | 25,000 | 20,000 | 29,10 | 170,000 | 32,000 | 53,000 | 34,180 |

# MACHOS MÁQ. DE LAMINACIÓN

M

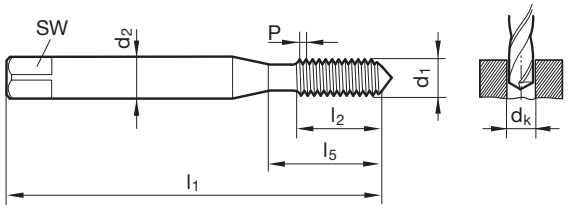
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | HSS-E | HSS-E-PM |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | S |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

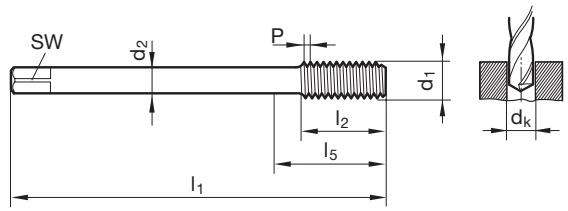
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **903** **921** **1255**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,90 | 40,000 | 4,000 | |
| M1,2 | 0,250 | 2,500 | 2,100 | 1,10 | 40,000 | 4,800 | |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,25 | 40,000 | 5,600 | |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,45 | 40,000 | 6,400 | |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,55 | 40,000 | 6,800 | |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,65 | 40,000 | 7,300 | |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **952** **925** **1256**

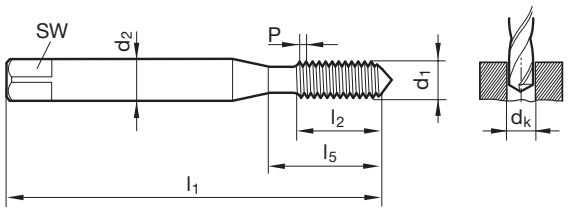
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232



**DIN 2174 ~DIN 371** Artículo Nº **920**

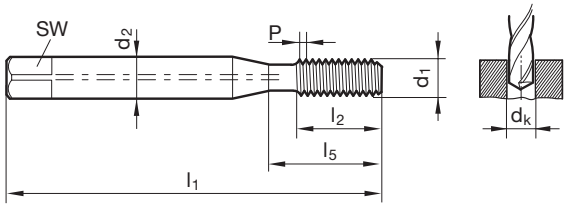
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 232



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **2518**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

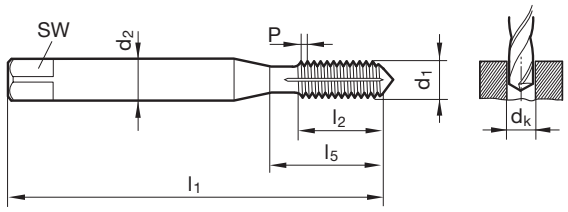
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

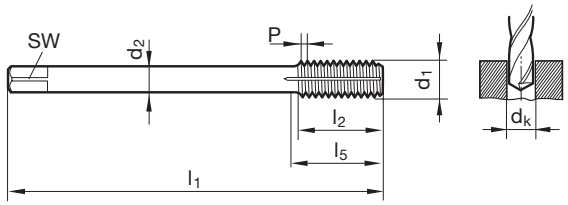
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **918** **919** **2012**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **922** **923** **2013**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 20,90 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 22,70 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 25,70 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 28,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 31,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 34,30 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 37,30 | 200,000 | 50,000 | 107,000 |

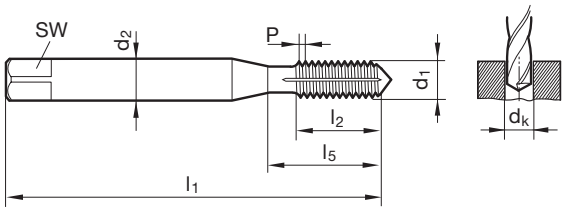
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

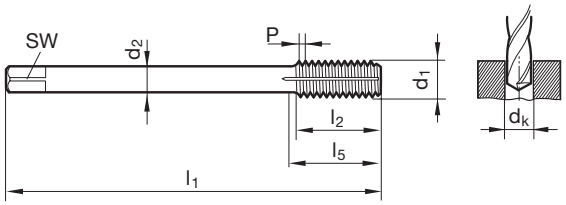
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **322**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **339**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

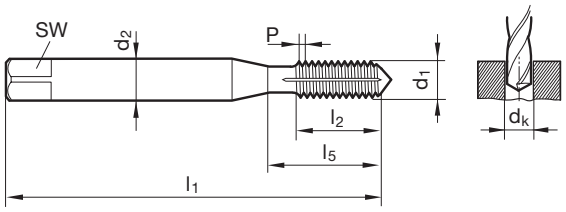
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

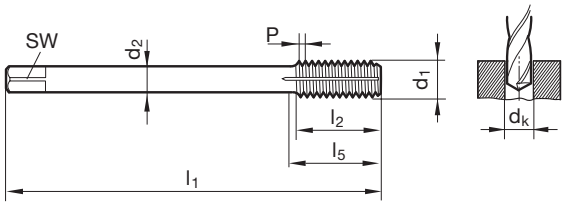
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1266**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1267**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

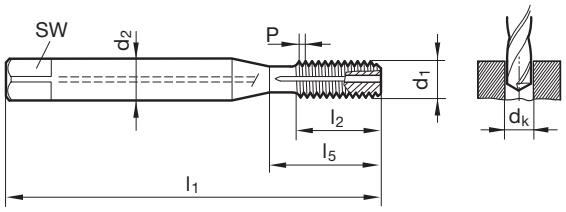
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6GX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | | | |

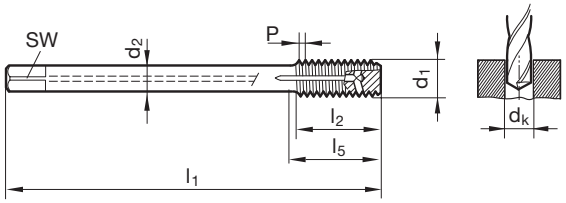
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **2442** **2443** **2446**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **2444** **2445** **2448**

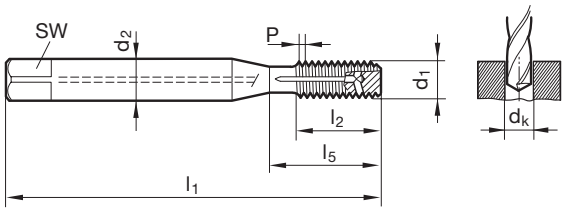
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 371** Artículo Nº **2447**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

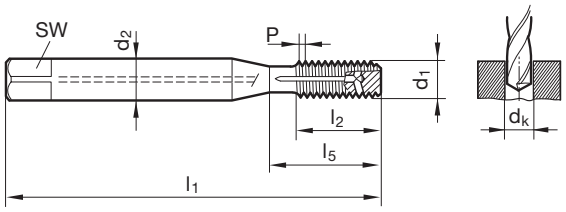
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

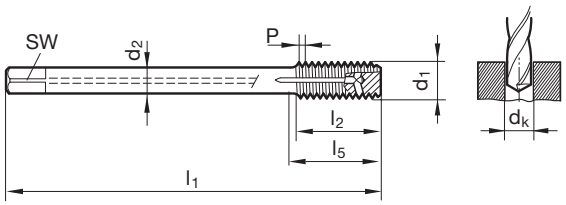
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **323**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **342**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

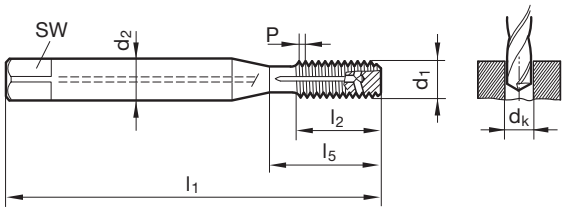
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

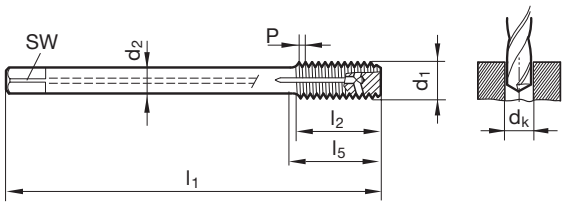
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1270** **1717** **1725**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1271** **1719** **1727**

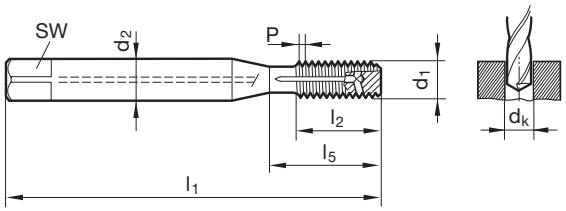
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 371** Artículo Nº **1713**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

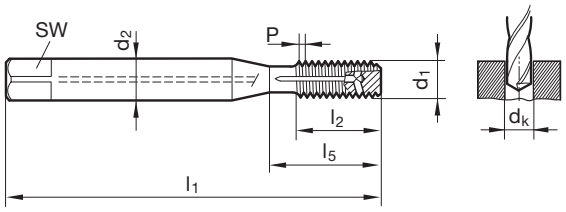
## Machos máq. laminación refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | A | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

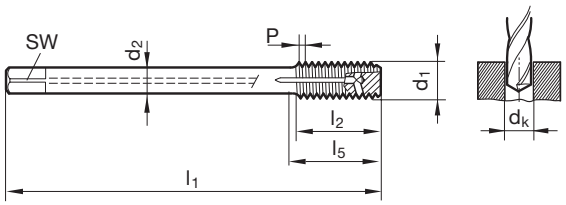
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1718** **1726**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1720** **1728**

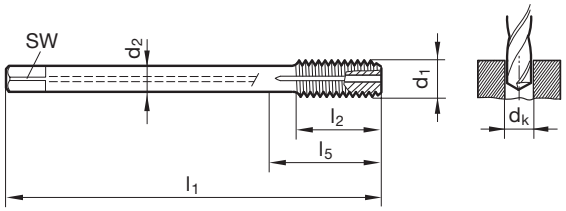
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233



**Norma de fab. Norma de fab.** Artículo Nº **4143**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 112,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,70 | 112,000 | 7,500 | 77,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,65 | 125,000 | 8,500 | 90,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 125,000 | 11,000 | 90,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 140,000 | 14,000 | 97,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 160,000 | 16,000 | 117,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 180,000 | 18,500 | 133,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 220,000 | 20,000 | 168,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 280,000 | 25,000 | 225,000 |

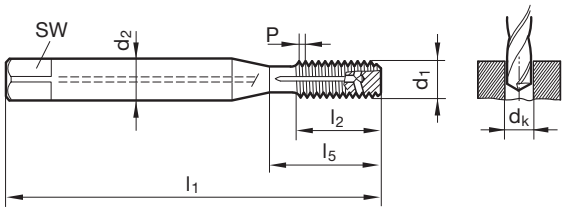
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

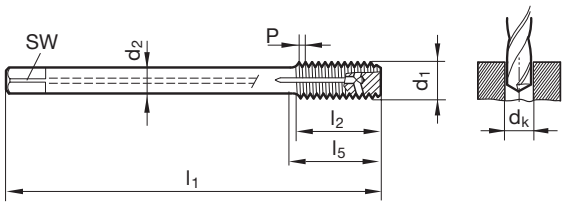
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1972**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1931**

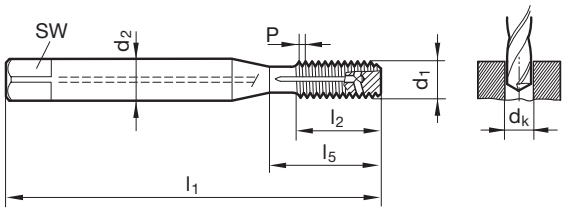
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 371** Artículo Nº **1927**

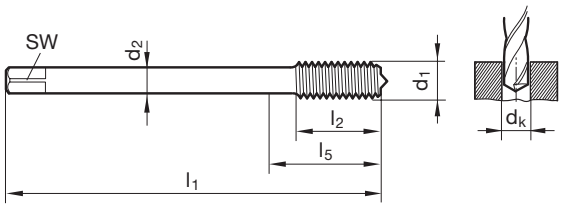
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232



**DIN 2174 ~DIN 374** Artículo Nº **929**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

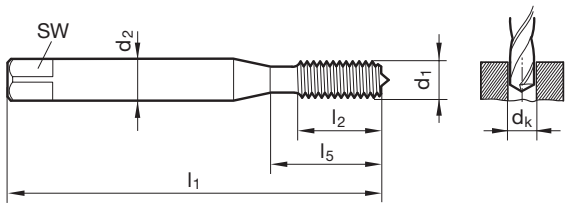
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

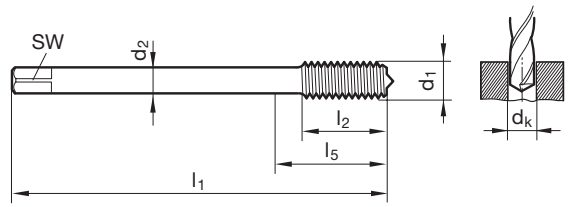
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1257**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1258**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

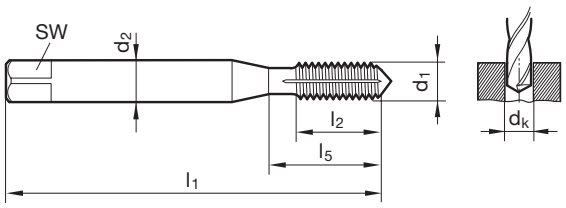
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

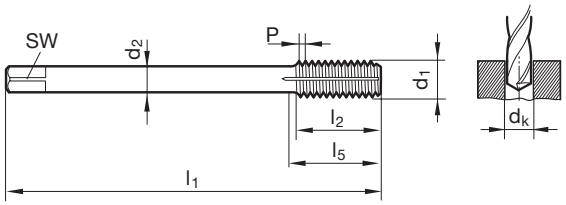
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1275**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 6,000 | 4,900 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 8,000 | 6,200 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **927**

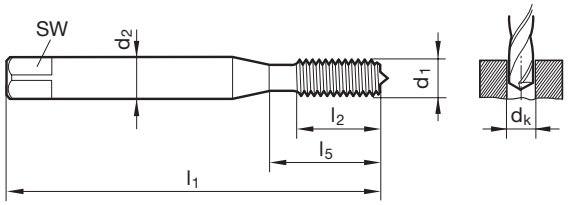
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232



**DIN 2174 ~DIN 371** Artículo Nº **1740**

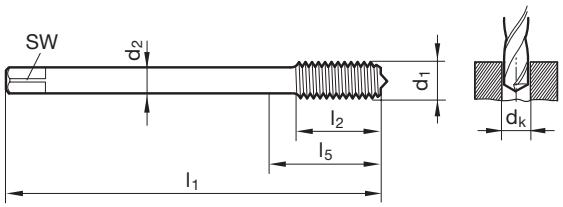
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232



**DIN 2174 ~DIN 374** — Artículo Nº **928**

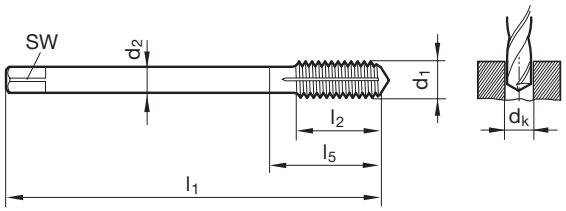
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 374** Artículo Nº **2008**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

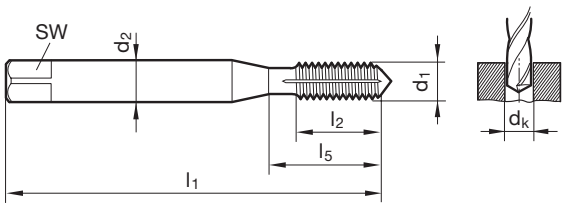
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

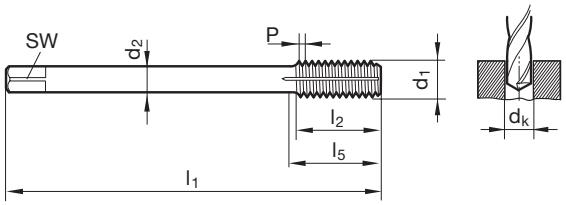
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1277**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **926**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

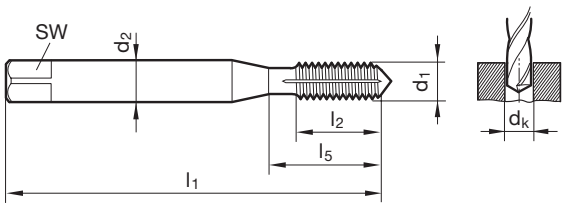
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

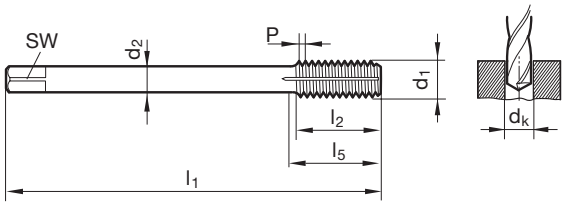
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1268**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1269**

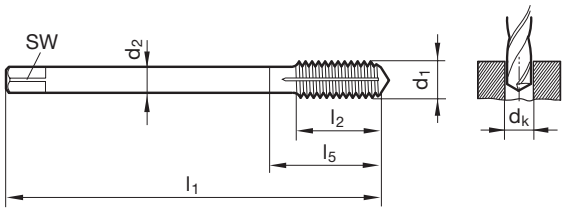
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

| | |
|---|---|
| Material de corte | **HSS-E-PM** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |



**DIN 2174 ~DIN 374** Artículo Nº **333**

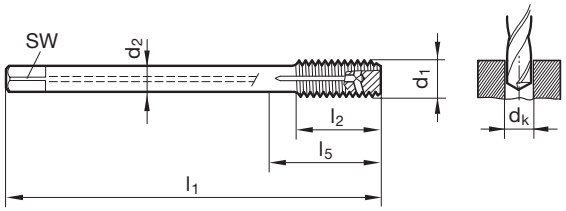
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 374** — Artículo Nº **338**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

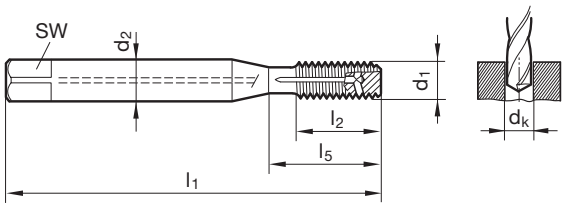
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

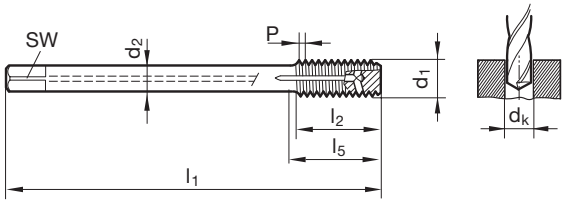
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 374



| DIN 2174 ~DIN 371 | Artículo Nº | 1272 | 1721 | 1729 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

| DIN 2174 ~DIN 374 | Artículo Nº | 1273 | 1723 | 1731 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

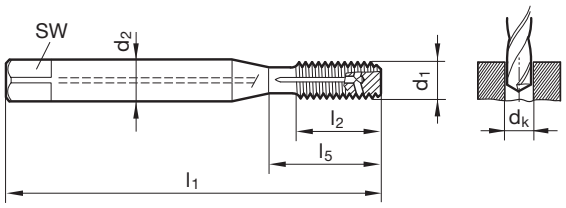
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

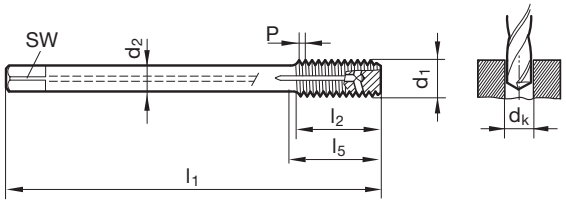
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1715** **1730**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1716** **1732**

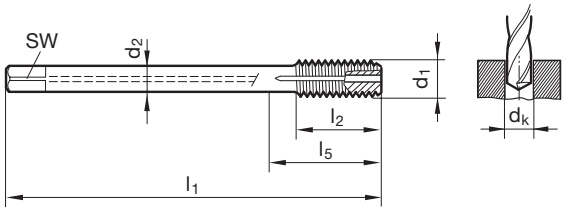
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 233

| | |
|---|---|
| Material de corte | **HSS-E-PM** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |



**Norma de fab. Norma de fab.** Artículo Nº **4145**

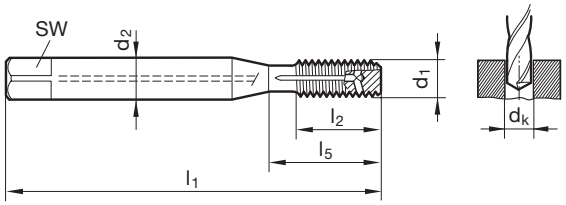
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 140,000 | 14,000 | 97,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 160,000 | 16,000 | 117,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 160,000 | 16,000 | 117,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 180,000 | 18,500 | 133,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 180,000 | 18,500 | 133,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 220,000 | 20,000 | 168,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 220,000 | 20,000 | 168,000 | 16,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 233



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **1581**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 15,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 15,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 15,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 15,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 15,000 | 48,000 | 24,007 |

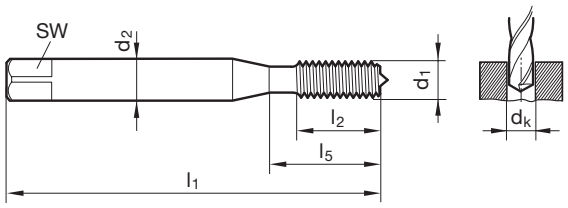
## Machos máq. de laminación para rosca UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

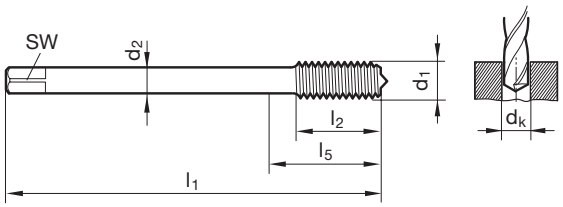
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232/233

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **2273** **1582**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,55 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,90 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 3,15 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,80 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 4,35 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,75 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 7,30 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **2274** **1583**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 10,30 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 11,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 13,30 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 14,80 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 17,90 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 21,00 | 140,000 | 35,000 | 62,000 | 22,225 |

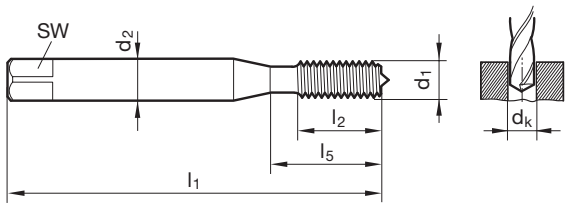
## Machos máq. de laminación para rosca UNF

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

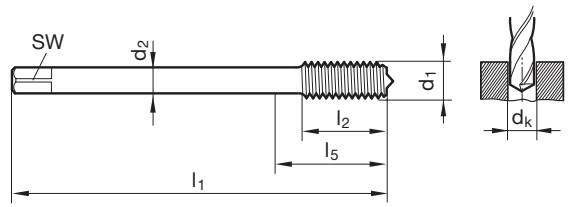
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 232/233

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **1283** **1584**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,90 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 3,20 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,85 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |

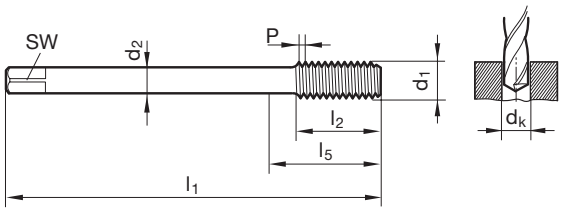
**DIN 2184-1 ~DIN 374** — Artículo Nº **2275** **1585**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 10,55 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 12,10 | 100,000 | 20,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 13,65 | 100,000 | 22,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 18,35 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 21,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 24,45 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máq. de laminación para rosca GAS

| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 232/233 |
| M | • | |
| K | | |
| N | ○ | |
| S | | |
| H | | |

| Material de corte | HSS-E | |
|---|---|---|
| Ø-Tolerancia | X | X |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 2189** — Artículo Nº **966** **1586**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 32,00 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 40,75 | 170,000 | 30,000 | 57,000 | 41,910 |

Acero inoxidable

# FRESAS DE ROSCAR

M

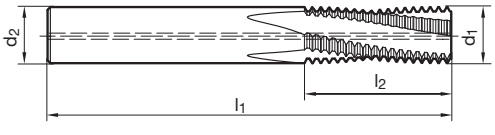
## Fresas de roscar sin chaflán para rosca métrica ISO

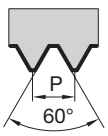
2xD

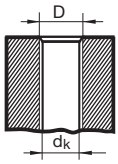
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

#R01#

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | C | C | C | C |
| Tipo | TM SP | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | | |
| Forma del mango | HA | HB | HA | HB |
| | | NEW | | NEW |



| Norma de fab. | Artículo Nº | 3737 | 3743 | 4132 | 4133 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M8 x 1 | 1,000 | 6,400 | 8,000 | 7,00 | 62,000 | 17,500 | 3 | 8,005 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M10 x 1 | 1,000 | 7,950 | 10,000 | 9,00 | 74,000 | 21,500 | 3 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 10,000 | 8,80 | 74,000 | 21,900 | 3 | 10,006 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M12 x 1,5 | 1,500 | 9,950 | 10,000 | 10,50 | 74,000 | 26,300 | 4 | 12,007 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M14 x 1,5 | 1,500 | 11,200 | 12,000 | 12,50 | 90,000 | 30,800 | 4 | 14,007 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M16 x 1,5 | 1,500 | 12,800 | 14,000 | 14,50 | 90,000 | 33,800 | 4 | 16,007 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |
| M20 x 1,5 | 1,500 | 14,950 | 16,000 | 18,50 | 102,000 | 42,800 | 4 | 20,007 |

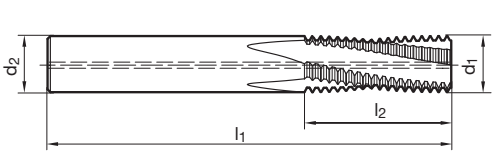
## Fresas de roscar sin chaflán para rosca métrica ISO

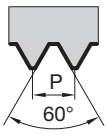
2,5xD

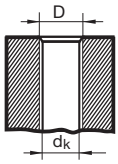
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3735** **3740**

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 26,300 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 48,800 | 4 | 20,000 |

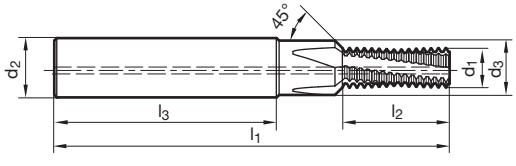
## Fresas de roscar con chaflán para rosca métrica ISO

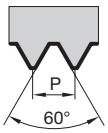
1,5xD

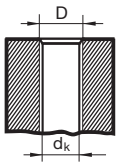
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3525 | 3543 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

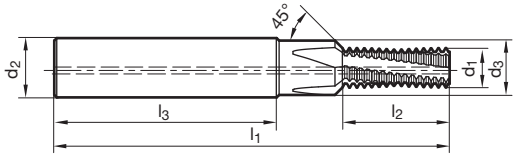
## Fresas de roscar con chaflán para rosca métrica ISO

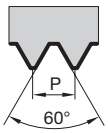
2xD

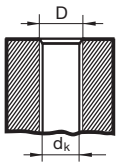
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3526 | 3544 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

## Fresas de roscar con chaflán para rosca métrica ISO

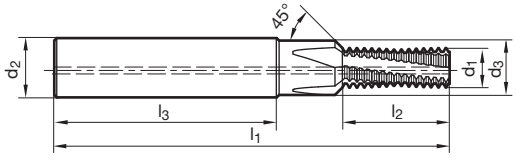
2,5xD

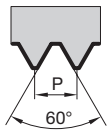
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

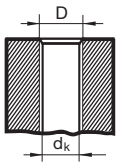
Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3759 | 3760 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 7,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 35,600 | 10,900 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 13,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 26,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 48,800 | 4 | 20,000 |

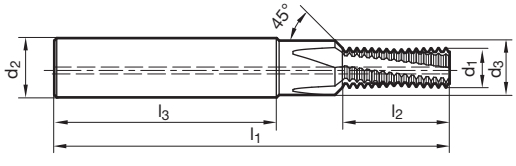
## Fresas de roscar con chaflán para rosca métrica fina ISO

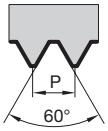
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

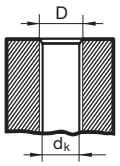
Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3527 | 3545 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

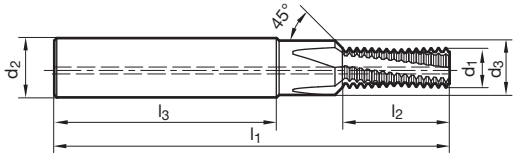
## Fresas de roscar con chaflán para rosca métrica fina ISO

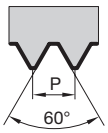
2xD

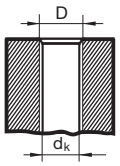
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3528 | 3546 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

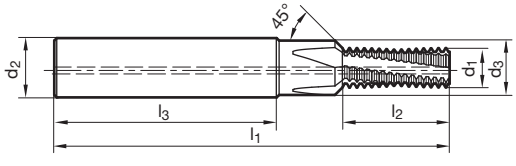
## Fresas de roscar con chaflán para rosca métrica fina ISO

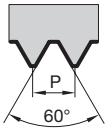
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

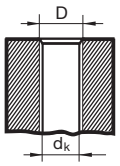
Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3762 | 3763 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 10,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 12,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 15,300 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 15,400 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 20,600 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 20,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 25,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 25,600 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 30,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 30,800 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 38,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 41,300 | 4 | 16,007 |

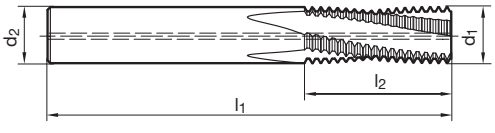
## Fresas de roscar sin chaflán para roscas UNC

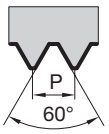
2xD

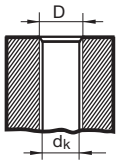
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4134 | 4135 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 24 | 3,400 | 6,000 | 3,90 | 54,000 | 11,100 | 3 | 4,826 |
| 12 - 24 | 4,100 | 6,000 | 4,50 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 20 | 4,700 | 6,000 | 5,10 | 54,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 6,100 | 8,000 | 6,60 | 64,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,600 | 8,000 | 8,00 | 64,000 | 21,400 | 3 | 9,525 |
| 7/16 - 14 | 9,000 | 10,000 | 9,40 | 74,000 | 24,500 | 3 | 11,113 |
| 1/2 - 13 | 9,950 | 10,000 | 10,80 | 74,000 | 28,300 | 4 | 12,700 |
| 9/16 - 12 | 11,400 | 12,000 | 12,20 | 90,000 | 30,700 | 4 | 14,288 |
| 5/8 - 11 | 12,700 | 14,000 | 13,50 | 90,000 | 35,800 | 4 | 15,875 |

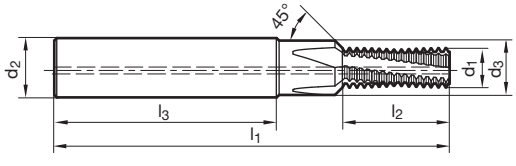
## Fresas de roscar con chaflán para roscas UNC

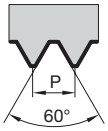
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

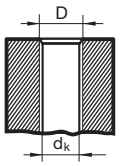
Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3516 | 3534 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

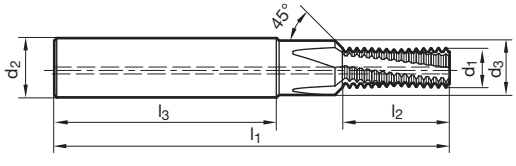
## Fresas de roscar con chaflán para roscas UNC

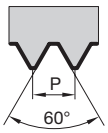
2xD

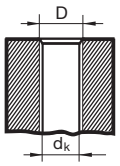
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3517 | 3535 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

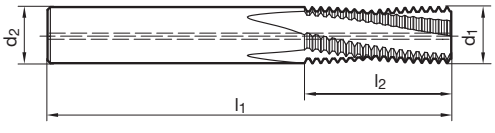
## Fresas de roscar sin chaflán para roscas UNF

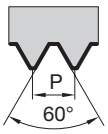
2xD

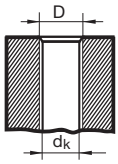
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4136 | 4137 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 32 | 3,800 | 6,000 | 4,10 | 54,000 | 11,500 | 3 | 4,826 |
| 12 - 28 | 4,300 | 6,000 | 4,60 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 28 | 5,100 | 6,000 | 5,50 | 54,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 6,300 | 8,000 | 6,90 | 64,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,800 | 8,000 | 8,50 | 64,000 | 20,600 | 3 | 9,525 |
| 7/16 - 20 | 9,400 | 10,000 | 9,90 | 74,000 | 24,800 | 3 | 11,113 |
| 1/2 - 20 | 9,950 | 10,000 | 11,50 | 74,000 | 27,300 | 4 | 12,700 |
| 9/16 - 18 | 11,400 | 12,000 | 12,90 | 90,000 | 30,300 | 4 | 14,288 |
| 5/8 - 18 | 12,700 | 14,000 | 14,50 | 90,000 | 33,200 | 4 | 15,875 |

## Fresas de roscar con chaflán para roscas UNF

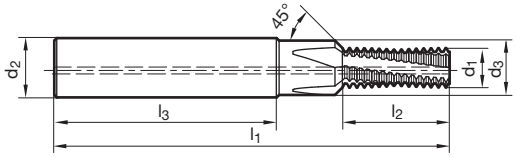
1,5xD

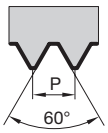
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

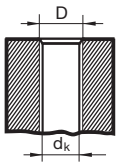
Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **3518** **3536**

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

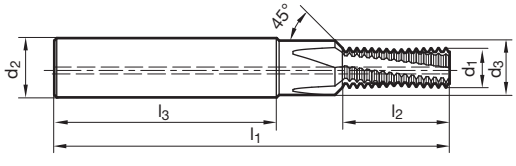
## Fresas de roscar con chaflán para roscas UNF

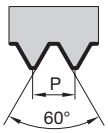
2xD

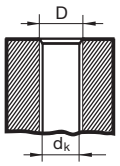
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| | | |
|---|---|---|
| Material de corte | **Metal duro** | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| **Norma de fab.** | Artículo Nº | **3519** | **3537** |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

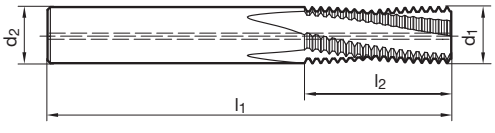
## Fresas de roscar para roscas GAS sin fase de avellanado

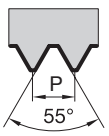
2xD

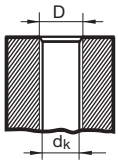
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3745 | 3748 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 21,300 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 35,400 | 4 | 16,662 |

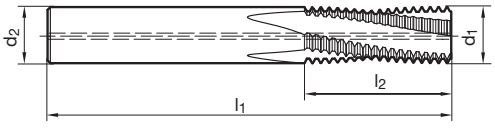
## Fresas de roscar para roscas GAS sin fase de avellanado

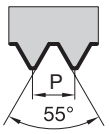
2,5xD

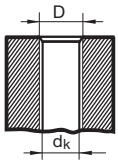
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3746 | 3750 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 24,900 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 43,500 | 4 | 16,662 |

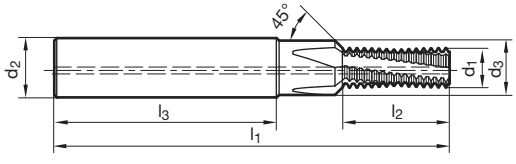
## Fresas de roscar para roscas GAS con fase de avellanado

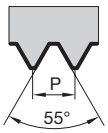
1,5xD

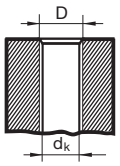
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

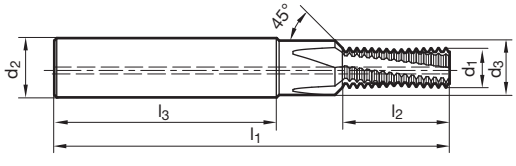
## Fresas de roscar para roscas GAS con fase de avellanado

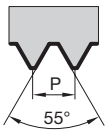
2xD

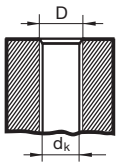
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

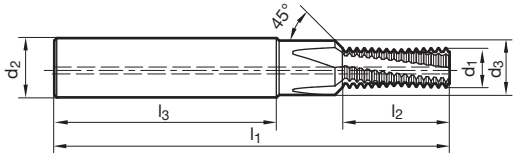
## Fresas de roscar para roscas GAS con fase de avellanado

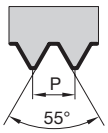
2,5xD

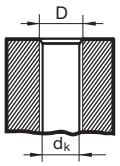
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3765 | 3766 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 24,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 43,500 | 4 | 16,662 |

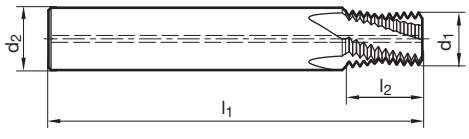
## Fresas de roscar sin chaflán para roscas NPT

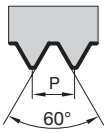
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

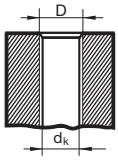
Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3753 | 3754 |
|---|---|---|---|

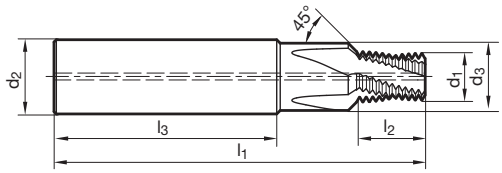
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

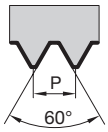
## Fresas de roscar para roscas NPT con fase de avellanado

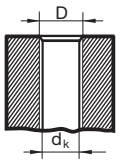
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

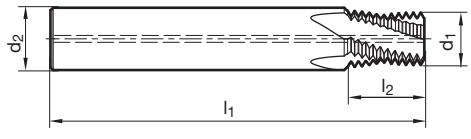
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

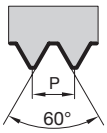
## Fresas de roscar para roscas NPTF sin fase de avellanado

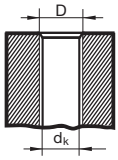
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3756** **3757**

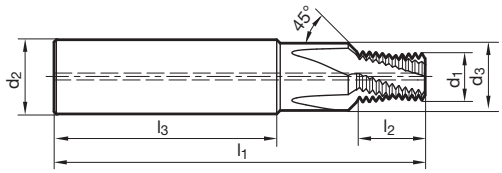
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

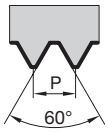
## Fresas de roscar para roscas NPTF con fase de avellanado

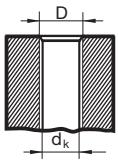
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 234

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

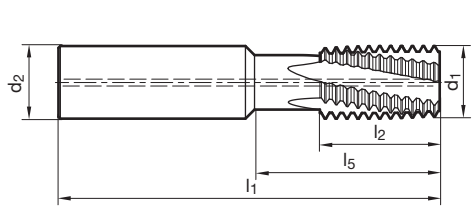
## Fresas para roscar universales para rosca métrica ISO

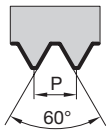
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

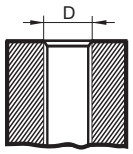
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235



| Norma de fab. | Artículo Nº | 3541 | 3556 |
|---|---|---|---|

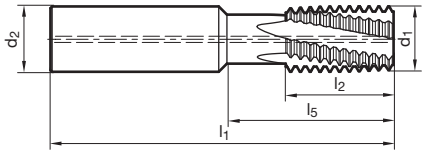
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

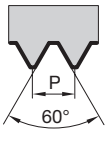
## Fresado de roscas exteriores

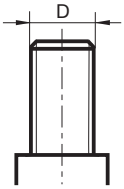
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4162 | 4163 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

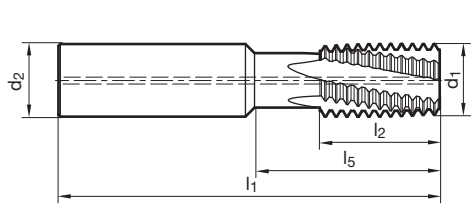
## Fresas para roscar universales para roscas UN

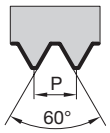
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

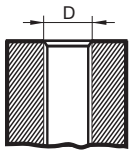
Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

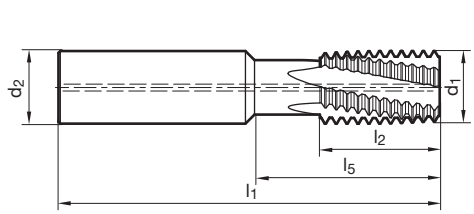
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

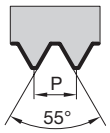
## Fresas para roscar universales para roscas GAS

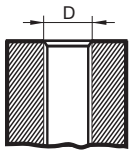
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



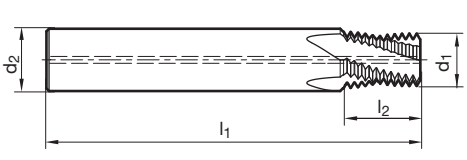
| Norma de fab. | Artículo Nº | 3542 | 3557 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

## Fresas para roscar universales para roscas NPT

| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 235 |
| M | • | |
| K | • | |
| N | • | |
| S | • | |
| H | ≤55 | |

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

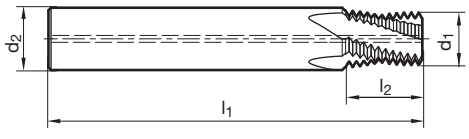
| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

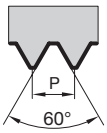
## Fresas para roscar universales para roscas NPTF

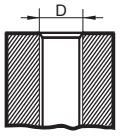
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 235

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Microfresas de roscar

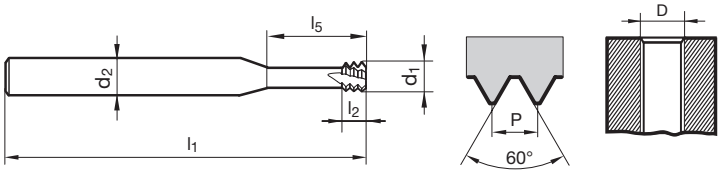
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 235

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4226**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,6 | 0,350 | 1,200 | 3,000 | 39,000 | 1,100 | 4,800 | 3 | 1,600 |
| M1,8 | 0,350 | 1,400 | 3,000 | 39,000 | 1,100 | 5,400 | 3 | 1,800 |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,400 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M3,5 | 0,600 | 2,800 | 6,000 | 58,000 | 1,800 | 11,000 | 4 | 3,500 |
| M4 | 0,700 | 3,200 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 73,000 | 4,500 | 33,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 84,000 | 5,300 | 38,000 | 4 | 12,000 |
| M16 | 2,000 | 11,800 | 10,000 | 84,000 | 6,000 | 35,000 | 5 | 16,000 |

## Microfresas de roscar

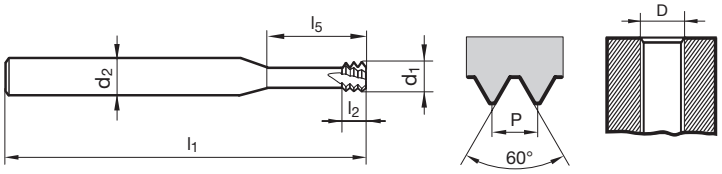
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 235

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP G |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4228**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 6,200 | 8,000 | 64,000 | 2,700 | 19,500 | 4 | 9,728 |
| G3/8 | 19,000 | 9,950 | 10,000 | 73,000 | 4,000 | 25,000 | 4 | 16,662 |
| G7/8 | 14,000 | 11,950 | 12,000 | 84,000 | 5,400 | 37,000 | 4 | 30,201 |
| G2 | 11,000 | 15,950 | 16,000 | 105,000 | 6,900 | 44,000 | 5 | 59,614 |

## Microfresas de roscar

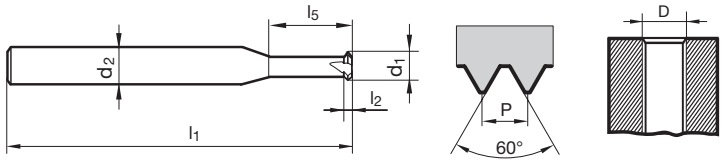
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 235

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M/MF |
| Pasos de rosca | 1,0 |
| Forma del mango | HA |

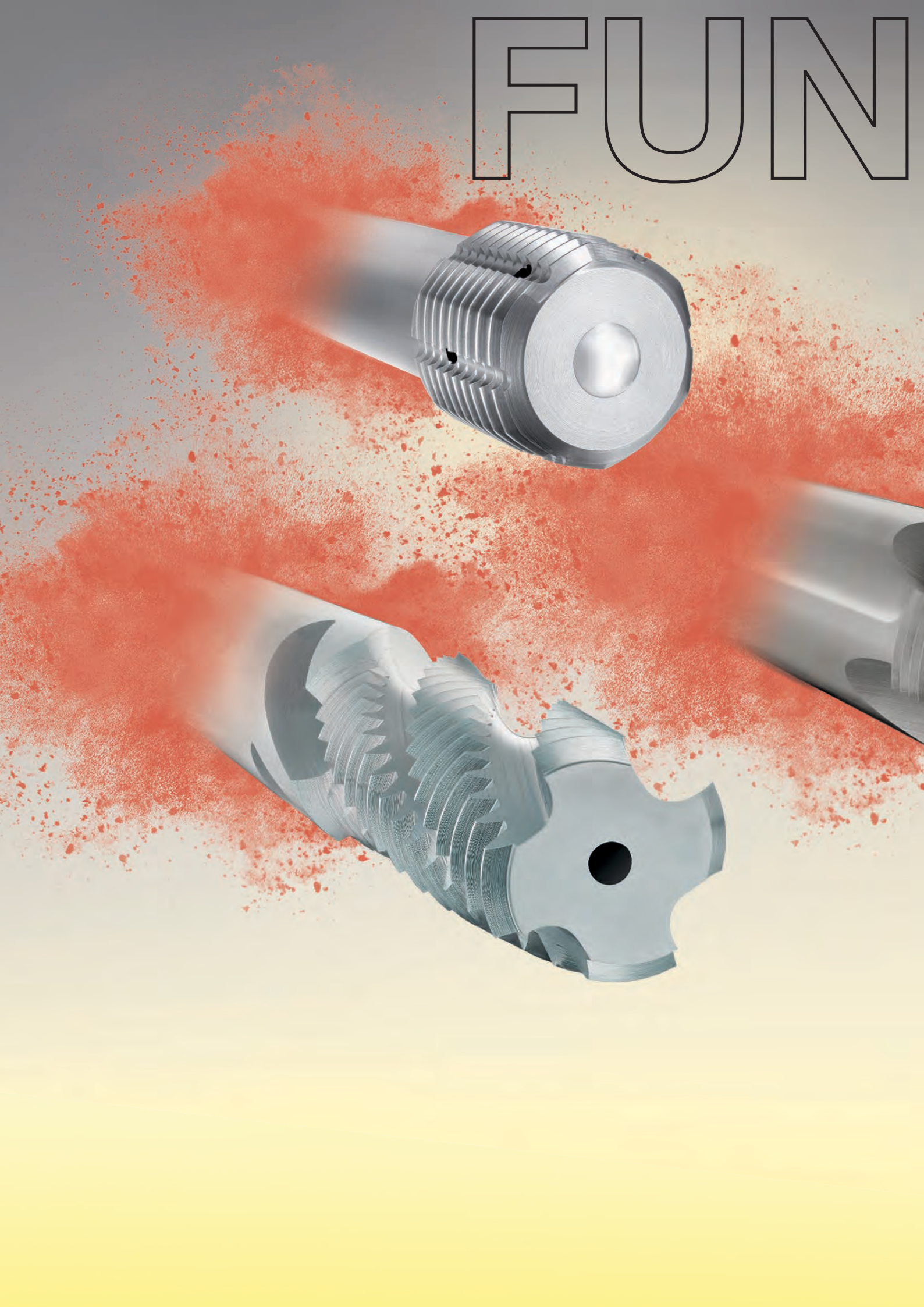
NEW



**Norma de fab.** Artículo Nº **4225**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,4 - M1,8 | 0,350 | 1,050 | 3,000 | 39,000 | 0,400 | 3,800 | 3 | 1,800 |
| M2 - M2,4 | 0,400 | 1,500 | 3,000 | 39,000 | 0,400 | 7,000 | 3 | 2,400 |
| M2,5 - M3 | 0,500 | 2,000 | 3,000 | 39,000 | 0,500 | 9,000 | 4 | 3,000 |
| M3,5 - M4,5 | 0,750 | 2,800 | 6,000 | 58,000 | 0,800 | 14,000 | 4 | 4,500 |
| M5 - M7 | 1,000 | 4,000 | 6,000 | 58,000 | 1,000 | 19,000 | 4 | 7,000 |
| M8 - M10 | 1,500 | 6,400 | 8,000 | 64,000 | 1,500 | 24,000 | 5 | 10,000 |

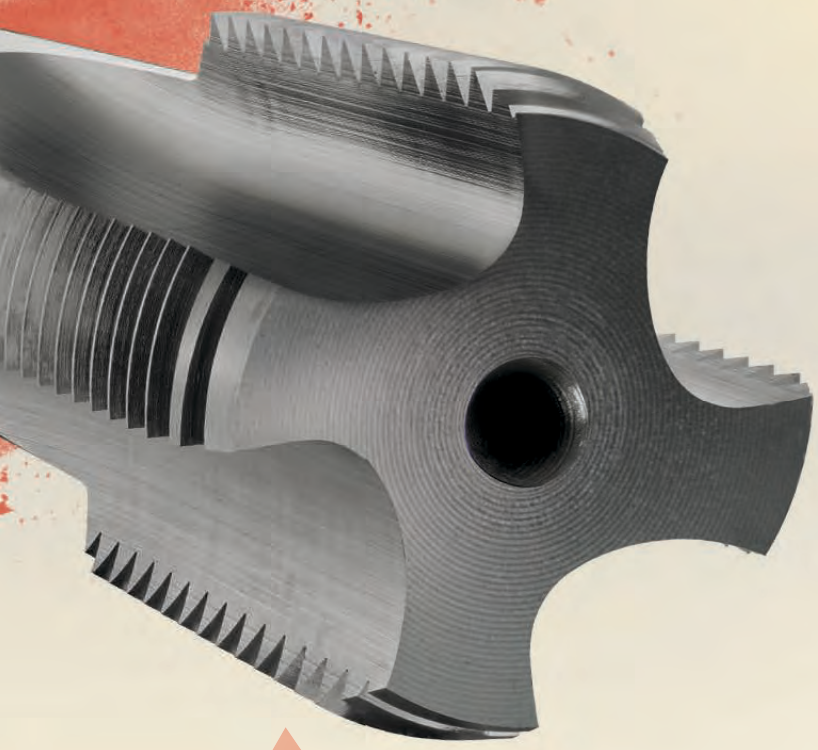
FUN



# DICIÓN

## GRIS/ ESFÉRICA/ PERLÍTICA





K

Tipos de fundición como fundición gris (EN-GJL-250), fundición esférica y aleaciones de fundición especiales y abrasivas

# FUNDICIÓN GRIS

## M

### ISO 2/6H

No 1
M3 - M30
Art. N° 1918/1919
desde página 356

M3 - M30
Art. N° 807/819
desde página 356

No 1
M3 - M10
Art. N° 2311
desde página 364

M3 - M20
Art. N° 1858/1859
desde página 362

### ISO 3/6G

## MF

### ISO 2/6H

No 1
M4x0,5 - M30x1,5
Art. N° 169
desde página 365

M4x0,5 - M30x1,5
Art. N° 831
desde página 365

No 1
M5x0,5 - M20x1,5
Art. N° 1861/1860
desde página 368

### ISO 3/6G

sin refrigeración interior

con refrigeración interna

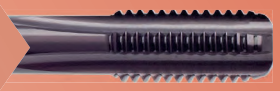
No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA **PASANTE**





HSS-E, TiAlN, Forma C

No 1
No. 2 - 3/4
Art. N° 1979/1984
desde página 370

No 1
No. 4 - 1
Art. N° 1989
desde página 372

No 1
G1/16 - G2
Art. N° 961
desde página 374

HSS-E, nitrurada, Forma C

METAL DURO

Metal duro, TiAlN, Forma C

METAL DURO

Metal duro, blancas, Forma C

# FUNDICIÓN GRIS

## M

### ISO 2/6H

No 1
M3 - M30
Art. N° 1918/1919
desde página 356

M3 - M30
Art. N° 807/819
desde página 356

### ISO 3/6G

## MF

### ISO 2/6H

No 1
M4x0,5 - M30x1,5
Art. N° 169
desde página 365

M4x0,5 - M30x1,5
Art. N° 831
desde página 365

### ISO 3/6G

sin refrigeración interior

con refrigeración interna

No 1
M5 - M20
Art. N° 318/319
desde página 358

No 1
M5 - M10
Art. N° 2506
desde página 363

M3 - M20
Art. N° 969/1883
desde página 362

No 1
M8x1 - M24x1,5
Art. N° 347
desde página 366

No 1
M5x0,5 - M20x1,5
Art. N° 972/974
desde página 368

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA CIEGA

Fundición gris, fund. perlítica y fund. maleable

HSS-E, TiAlN, Forma C

No 1
No. 2 - 3/4
Art. N° 1979/1984
desde página 370

No 1
No. 4 - 1
Art. N° 1989
desde página 372

G1/16 - G2
Art. N° 961
desde página 374

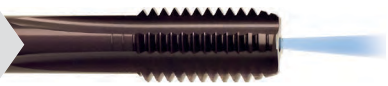
HSS-E, nitrurada, Forma C

No 1
No. 10 - 7/8
Art. N° 1085/1086
desde página 371

No 1
No. 10 - 7/8
Art. N° 1082
desde página 373

HSS-E, TiAlN, Forma C

METAL DURO



Metal duro, TiAlN, Forma C

METAL DURO

Metal duro, blancas, Forma C

# FUNDICIÓN GRIS

## sin ranuras de lubr.

| M | | MF | |
|---|---|---|---|
| 6HX | 6GX | 6HX | 6GX |
| No 1 M1 - M20 Art. N° 921/925 desde página 376 | No 1 M2 - M10 Art. N° 920 desde página 377 | No 1 M8x1 - M20x1,5 Art. N° 929 desde página 391 | No 1 M8x1 - M18x1,5 Art. N° 928 desde página 393 |

## con ranuras de lubr.

| | | | |
|---|---|---|---|
| M3 - M39 Art. N° 919/923 desde página 379 | No 1 M3 - M39 Art. N° 918/922 desde página 379 | M6x0,75 - M24x1,5 Art. N° 1275/927 desde página 395 | No 1 M8x1 - M20x1,5 Art. N° 1277/926 desde página 397 |
| No 1 M3 - M39 Art. N° 2012/2013 desde página 379 | | No 1 M6x0,75 - M20x1,5 Art. N° 2008 desde página 396 | |

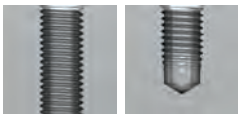
## con refrigeración interna

| | | | |
|---|---|---|---|
| No 1 M3 - M20 Art. N° 1270/1271 desde página 385 | No 1 M5 - M10 Art. N° 1713 desde página 386 | No 1 M8x1 - M24x1,5 Art. N° 1272/1273 desde página 401 | No 1 M8x1 - M24x1,5 Art. N° 1715/1716 desde página 402 |
| No 1 M3 - M20 Art. N° 1725/1727 desde página385 | No 1 M3 - M20 Art. N° 1726/1728 desde página 387 | No 1 M8x1 - M24x1,5 Art. N° 1729/1731 desde página 401 | No 1 M8x1 - M24x1,5 Art. N° 1730/1732 desde página 402 |
| No 1 M3 - M20 Art. N° 1972/1931 desde página 389 | | No 1 M10x1 - M24x1,5 Art. N° 1581 desde página 404 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2BX | 2BX | - |



ROSCA **PASANTE**
ROSCA **CIEGA**



**No 1**
Nr. 4 - 7/8
Art. N° 2273/2274
desde página 405

**No 1**
Nr. 4 - 1
Art. N° 1283/2275
desde página 406

**No 1**
G1/16 - G1 1/4
Art. N° 966
desde página 407

HSS-E, TiN, Forma C

**No 1**
Nr. 4 - 7/8
Art. N° 1582/1583
desde página 405

**No 1**
Nr. 4 - 1
Art. N° 1584/1585
desde página 406

**No 1**
G1/16 - G3/4
Art. N° 1586
desde página 408

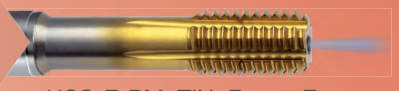
HSS-E, TiN, Forma C

HSS-E, TiCN, Forma C

FORMA C

HSS-E-PM, TiCN, Forma C

FORMA E



HSS-E-PM, TiN, Forma E

METAL DURO

Metal duro, TiCN, Forma C

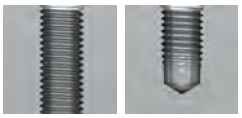
# FUNDICIÓN GRIS

| | M<br>UNIVERSAL | MF<br>UNIVERSAL |
|---|---|---|
| 1,5xD | No 1<br>M3 - M20<br>Art. N° 3525<br>desde página 413 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3527<br>desde página 416 |
| 2xD | No 1<br>M3 - M20<br>Art. N° 3526<br>desde página 414 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3528<br>desde página 417 |
| 2,5xD | No 1<br>M3 - M20<br>Art. N° 3759<br>desde página 415 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3762<br>desde página 418 |
| 3xD | No 1<br>M1,6 - M16<br>Art. N° 4226<br>desde página 440 | |
| universal | No 1<br>Ø8xP0,5 - Ø20xP3,5<br>Art. N° 3541<br>desde página 434 | No 1<br>Ø8xP0,5 - Ø20xP3,5<br>Art. N° 3541<br>desde página 434 |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

Fundición gris, fund. perlítica y fund. maleable

**No 1**
1/4 - 1/2
Art. N° 3516
desde página 420

**No 1**
1/4 - 1/2
Art. N° 3518
desde página 423

**No 1**
1/8 - 3/8
Art. N° 3514
desde página 429

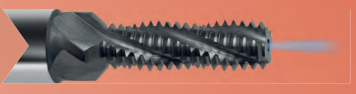
Metal duro, TiCN

**No 1**
1/4 - 1/2
Art. N° 3517
desde página 421

**No 1**
1/4 - 1/2
Art. N° 3519
desde página 424

**No 1**
1/8 - 3/8
Art. N° 3515
desde página 430

Metal duro, TiCN



Metal duro, TiCN

Metal duro, TiCN

**No 1**
Ø10xUN24 - Ø20xUN7
Art. N° 3595
desde página 436

**No 1**
Ø10xUN24 - Ø20xUN7
Art. N° 3595
desde página 436

**No 1**
Ø10xG19 - Ø20xG11
Art. N° 3542
desde página 437

Metal duro, TiCN

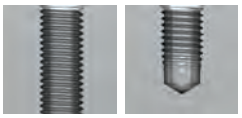
# FUNDICIÓN GRIS

| | M | MF |
|---|---|---|
| | UNIVERSAL | UNIVERSAL |
| 1,5xD | No 1<br>M3 - M16<br>Art. N° 3777<br>desde página 443 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3789<br>desde página 446 |
| 1,5xD | M3 - M16<br>Art. N° 3776<br>desde página 443 | M4x0,5 - M16x1,5<br>Art. N° 3788<br>desde página 446 |
| 2xD | No 1<br>M3 - M16<br>Art. N° 3781<br>desde página 444 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3793<br>desde página 447 |
| 2xD | M3 - M16<br>Art. N° 3780<br>desde página 444 | M4x0,5 - M16x1,5<br>Art. N° 3792<br>desde página 447 |
| 2,5xD | No 1<br>M3 - M16<br>Art. N° 3785<br>desde página 445 | |
| 2,5xD | M3 - M16<br>Art. N° 3784<br>desde página 445 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

Fundición gris, fund. perlítica y fund. maleable

Metal duro, TiCN

Metal duro, TiCN

**No 1**
1/4 - 5/8
Art. N° 4139
desde página 448

**No 1**
1/4 - 5/8
Art. N° 4141
desde página 449

Metal duro, TiCN

Metal duro, TiCN

Metal duro, TiCN

Metal duro, TiCN

# COMPÁS

**K**

**FUNDICIÓN GRIS/ ESFÉRICA/ TEMPLADA**

ROSCA PASANTE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | | | | |
| Material de corte | | HSS-E | | | | Metal duro | | |
| Tipo/forma | | GG/C | GG/C | GGT/C | GG/C | H/C | H/C | |
| Acabado | | ○ | (S) | (S) | (A) | ○ | (A) | |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | ☒ | radialm. | radialm. | |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h6 | h6 | |
| | | | | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | | | |
| **M** | 4H | | | | | | | |
| | 6H | | | 1875/1876 357 | | | | |
| | 6HX | 807/819 356 | 930/931 356 | | 1918/1919 356 | 1858/1859 362 | 2311 364 | |
| | 6G | | | | | | | |
| **MF** | 6H | | | | | | | |
| | 6HX | 831 365 | 932 365 | | 169 365 | 1861/1860 368 | | |
| | 6G | | | | | | | |
| **UNC** | 2B | 1979/1984 370 | | | | | | |
| | 2BX | | | | | | | |
| **UNF** | 2B | 1989 372 | | | | | | |
| | 2BX | | | | | | | |
| **G** | | 961 374 | | | | | | |
| **BSW** | | | | | | | | |
| **NPT** | | | | | | | | |
| **NPTF** | | | | | | | | |
| **EG M** | 6H Mod. | | | | | | | |
| **MJ** | 4HX | | | | | | | |
| **MJF** | 4HX | | | | | | | |
| **UNJC** | 3BX | | | | | | | |
| **UNJF** | 3BX | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

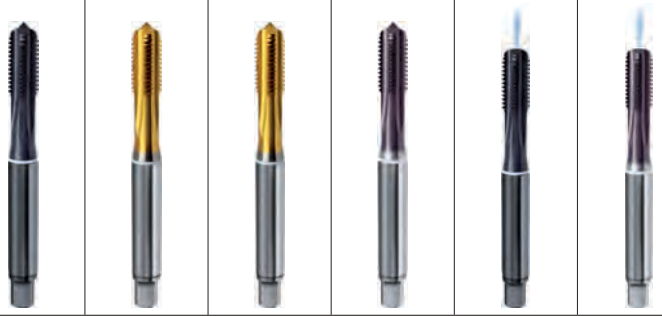
| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| K | hierro fundido | 300 HB | EN-GJL-150 | 0.6015 | **15** | **20** | **20** | **25** | **45** | **45** |
| | | | EN-GJL-250 | 0.6025 | | | | | | |
| | | | EN-GJL-300 | 0.6030 | | | | | | |
| | grafito de bola y fundición templada | 350 HB | EN-GJS-400-15 | 0.7040 | **10** | **15** | **15** | **20** | **35** | **35** |
| | | | EN-GJS-600-3 | 0.7060 | | | | | | |
| | | | EN-GJS-700-2 | 0.7070 | | | | | | |
| | ADI GGV | 1000 N/mm² | EN-GJS1000-5 | | 8 | **12** | **12** | **15** | 30 | **30** |
| | | 350 HB | EN-GJV250 | | | | | | | |
| | | | EN-GJV400 | | | | | | | |

**K**

**FUNDICIÓN GRIS/ ESFÉRICA/ TEMPLADA**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | | | |
| Material de corte | | HSS-E | | | | | |
| Tipo/forma | | GG/C | GG/C | GGT/C | GG/C | GG/C | GGT/C |
| Acabado | | ○ | (S) | (S) | (A) | ○ | (A) |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | ☒ | axialm. | axialm. |
| Tolerancia del mango | | h9 | h9 | h9 | h9 | h9 | h9 |

ROSCA CIEGA



| Tipo de rosca | tolerancia | número de artículo/página catálogo | | | | | |
|---|---|---|---|---|---|---|---|
| M | 4H | | | | | | |
| | 6H | | | 1875/1876 357 | | | |
| | 6HX | 807/819 356 | 930/931 356 | | 1918/1919 356 | 1890/1897 358 | 318/319 358 |
| | 6G | | | | | | |
| MF | 6H | | | | | | |
| | 6HX | 831 365 | 932 365 | | 169 365 | 1904 366 | 347 366 |
| | 6G | | | | | | |
| UNC | 2B | 1979/1984 370 | | | | | 1085/1086 371 |
| | 2BX | | | | | | |
| UNF | 2B | 1989 372 | | | | | 1082 373 |
| | 2BX | | | | | | |
| G | | 961 374 | | | | | |
| BSW | | | | | | | |
| NPT | | | | | | | |
| NPTF | | | | | | | |
| EG M | 6H Mod. | | | | | | |
| MJ | 4HX | | | | | | |
| MJF | 4HX | | | | | | |
| UNJC | 3BX | | | | | | |
| UNJF | 3BX | | | | | | |
| PG | | | | | | | |
| refrigerante apropiado | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| K | hierro fundido | 300 HB | EN-GJL-150 | 0.6015 | 15 | 20 | 20 | 25 | 15 | 25 |
| | | | EN-GJL-250 | 0.6025 | | | | | | |
| | | | EN-GJL-300 | 0.6030 | | | | | | |
| | grafito de bola y fundición templada | 350 HB | EN-GJS-400-15 | 0.7040 | 10 | 15 | 15 | 20 | 10 | 20 |
| | | | EN-GJS-600-3 | 0.7060 | | | | | | |
| | | | EN-GJS-700-2 | 0.7070 | | | | | | |
| | ADI GGV | 1000 N/mm² | EN-GJS1000-5 | | 8 | 12 | 12 | 15 | 8 | 15 |
| | | 350 HB | EN-GJV250 | | | | | | | |
| | | | EN-GJV400 | | | | | | | |

## ≤3xD

| HSS-E-PM | | | | | VHM | |
|---|---|---|---|---|---|---|
| H/C | H/C | H/C | H/E | H/C | H/C | H/E |
| C | C | C | C | ○ | A | ○ |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| h9 | h9 | h9 | h9 | h6 | h6 | h6 |
| | | | | | | |
| **número de artículo/página catálogo** | | | | | | |
| | | | | | | |
| | | | | | | |
| 778<br>360 | 779<br>361 | 302/297<br>359 | 1091/4165<br>359 | 969/1883<br>362 | 2506<br>363 | 1008<br>364 |
| | | | | | | |
| | | | | | | |
| | | 1090<br>367 | 1007<br>367 | 972/974<br>368 | | 1009<br>369 |
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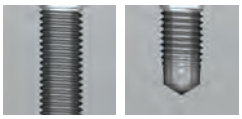
| | | | | | | |
| ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△/□ | ○/●/△ |

| velocidad de corte recomendada vc m/min | | | | | | |
|---|---|---|---|---|---|---|
| 25 | 25 | 30 | 30 | 45 | 45 | 45 |
| 20 | 20 | 20 | 20 | 35 | 35 | 35 |
| 15 | 15 | 15 | 15 | 30 | 30 | 30 |

**K**

**FUNDICIÓN GRIS/ ESFÉRICA/ TEMPLADA**



ROSCA PASANTE Y CIEGA

| | | | | | | |
|---|---|---|---|---|---|---|
| | Profundidad de la rosca | | ≤1,5xD | | | ≤3xD | |
| | Material de corte | | HSS-E | HSS-E-PM | VHM | HSS-E | |
| | Tipo/forma | | N/C | N/C | N/C | N/C | N/C |
| | Acabado | | (S) | (S) | (S) | (S) | (C) |
| | Transmisión de refrig. | | ☒ | ☒ | axialm. | ☒ | ☒ |
| | Tolerancia del mango | | h9 | h9 | h6 | h9 | h9 |
| | | | | | | | |
| | **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | |
| | **M** | 4H | | | | | |
| | | 6H | | | | | |
| | | 6HX | 921/925 376 | 1255/1256 376 | 2518 378 | 919/923 379 | 2012/2013 379 |
| | | 6GX | 920 377 | 903/952 376 | | 918/922 379 | |
| | **MF** | 6H | | | | | |
| | | 6HX | 929 391 | 1257/1258 394 | | 1275/927 395 | 2008 396 |
| | | 6GX | 928 393 | 1740 392 | | 1277/926 397 | |
| | **UNC** | 2B | | | | | |
| | | 2BX | 2273/2274 405 | | | 1582/1583 405 | |
| | **UNF** | 2B | | | | | |
| | | 2BX | 1283/2275 406 | | | 1584/1585 406 | |
| | **G** | | 966 407 | | | 1586 408 | |
| | **BSW** | | | | | | |
| | **NPT** | | | | | | |
| | **NPTF** | | | | | | |
| | **EG M** | 6H Mod. | | | | | |
| | **MJ** | 4HX | | | | | |
| | **MJF** | 4HX | | | | | |
| | **UNJC** | 3BX | | | | | |
| | **UNJF** | 3BX | | | | | |
| | **PG** | | | | | | |
| | **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **K** | hierro fundido | 300 HB | EN-GJL-150 | 0.6015 | - | - | - | - | - |
| | | | EN-GJL-250 | 0.6025 | | | | | |
| | | | EN-GJL-300 | 0.6030 | | | | | |
| | grafito de bola y fundición templada | 350 HB | EN-GJS-400-15 | 0.7040 | - | - | - | - | - |
| | | | EN-GJS-600-3 | 0.7060 | **15** | **15** | **40** | **15** | **20** |
| | | | EN-GJS-700-2 | 0.7070 | | | | | |
| | ADI GGV | 1000 N/mm² | EN-GJS1000-5 | | **15** | **15** | **40** | **15** | **20** |
| | | 350 HB | EN-GJV250 | | - | - | - | - | - |
| | | | EN-GJV400 | | | | | | |

## ≤3xD

| HSS-E | | HSS-E-PM | | | | | | | VHM | |
|---|---|---|---|---|---|---|---|---|---|---|
| N/C | N/C | N/C | N/C | N/C | N/C | N/C | N/C | N/E | N/C | N/E |
| S | C | S | S | S | S | C | A | S | C | C |
| axialm. | radialm. | ☒ | ☒ | radialm. | axialm. | radialm. | radialm. | axialm. | radialm. | radialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 |
| | | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 2442/2444<br>382 | 2446/2448<br>382 | 322/339<br>380 | 1266/1267<br>381 | 323/342<br>384 | 4143<br>388 | 1270/1271<br>385 | 1717/1719<br>385 | 1725/1727<br>385 | 1972/1931<br>389 | 1927<br>390 |
| 2443/2445<br>382 | 2447<br>383 | | | | | 1713<br>386 | 1718/1720<br>387 | 1726/1728<br>387 | | |
| | | | | | | | | | | |
| | | 333<br>399 | 1268/1269<br>398 | 338<br>400 | 4145<br>403 | 1272/1273<br>401 | 1721/1723<br>401 | 1729/1731<br>401 | 1581<br>404 | |
| | | | | | | 1715/1716<br>402 | | 1730/1732<br>402 | | |
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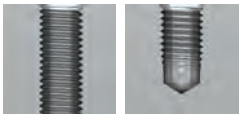
| ○/●/△ | ○/●/△/□ | ○/●/△ | ○/●/△ | ○/●/△/□ | ○/●/△ | ○/●/△/□ | ○/●/△/□ | ○/●/△ | ○/●/△/□ | ○/●/△/□ |

| velocidad de corte recomendada vc m/min | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| 15 | 20 | 15 | 15 | 15 | 15 | 25 | 25 | 15 | 40 | 40 |
| 15 | 20 | 15 | 15 | 15 | 15 | 20 | 20 | 15 | 40 | 40 |
| - | - | - | - | - | - | - | - | - | - | - |

**K**

**FUNDICIÓN GRIS/ ESFÉRICA/ TEMPLADA**



ROSCA PASANTE Y CIEGA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤2xD | | | | ≤2,5xD | | ≤1,5xD | |
| Material de corte | | Metal duro | | | | | | | |
| Tipo | | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP | TMC SP | TMC SP |
| Acabado | | C | C | C | C | C | C | C | C |
| Transmisión de refrig. | | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| Forma del mango | | HA | HB | HA | HB | HA | HB | HA | HA |
| Espiral | | 27° | 27° | 27° | 27° | 27° | 27° | 10° | 10° |
| | | | | | | | | | |
| **Tipo de rosca** | | | **número de artículo/página catálogo** | | | | | | |
| **M** | | 4132 411 | 4133 411 | 3737 410 | 3743 410 | 3735 412 | 3740 412 | 3525 413 | 3543 413 |
| **MF** | | | | 3737 410 | 3743 410 | | | 3527 416 | 3545 416 |
| **UNC** | | | | 4134 419 | 4135 419 | | | 3516 420 | 3534 420 |
| **UNF** | | | | 4136 422 | 4137 422 | | | 3518 423 | 3536 423 |
| **G** | | | | 3745 427 | 3748 427 | 3746 428 | 3750 428 | 3514 429 | 3529 429 |
| **BSW** | | | | | | | | | |
| **NPT** | | | | 3753 425 | 3754 425 | | | 3520 426 | 3538 426 |
| **NPTF** | | | | 3756 432 | 3757 432 | | | 3521 433 | 3539 433 |
| **EG M** | | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
| **MJ** | | | | | | | | | |
| **MJF** | | | | | | | | | |
| **UNJC** | | | | | | | | | |
| **UNJF** | | | | | | | | | |
| **PG** | | | | | | | | | |
| **refrigerante apropiado** | | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | dureza | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K | hierro fundido | 300 HB | EN-GJL-150 | 0.6015 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | | | EN-GJL-250 | 0.6025 | | | | | | | | |
| | | | EN-GJL-300 | 0.6030 | | | | | | | | |
| | grafito de bola y fundición templada | 350 HB | EN-GJS-400-15 | 0.7040 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | | | EN-GJS-600-3 | 0.7060 | | | | | | | | |
| | | | EN-GJS-700-2 | 0.7070 | | | | | | | | |
| | ADI GGV | 1000 N/mm² 350 HB | EN-GJS1000-5 | | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| | | | EN-GJV250 | | | | | | | | | |
| | | | EN-GJV400 | | | | | | | | | |

| ≤2xD | | ≤2,5xD | | universal | | | | ≤3xD | | ≤1,5xD | | ≤2xD | | ≤2,5xD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | | | | | | | | | |
| TMC SP | TMC SP | TMC SP | TMC SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | MTM 1 SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ | ☒ | radialm. | ☒ | radialm. | ☒ | radialm. |
| HA | HB | HA | HB | HA | HB | HA | HB | HA | HA | HA | HA | HA | HA | HA | HA |
| 10° | 10° | 27° | 27° | 15° | 15° | 15° | 15° | 15° | 15° | 27° | 27° | 27° | 27° | 27° | 27° |
| | | | | | | | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | | | | | | |
| 3526 414 | 3544 414 | 3759 415 | 3760 415 | 3541 434 | 3556 434 | 4162 435 | 4163 435 | 4226 440 | 4225 442 | 3776 443 | 3777 443 | 3780 444 | 3781 444 | 3784 445 | 3785 445 |
| 3528 417 | 3546 417 | 3762 418 | 3763 418 | 3541 434 | 3556 434 | 4162 435 | 4163 435 | | 4225 442 | 3788 446 | 3789 446 | 3792 447 | 3793 447 | | |
| 3517 421 | 3535 421 | | | 3595 436 | 3596 436 | | | | | | | | 4139 448 | | |
| 3519 424 | 3537 424 | | | 3595 436 | 3596 436 | | | | | | | | 4141 449 | | |
| 3515 430 | 3533 430 | 3765 431 | 3766 431 | 3542 437 | 3557 437 | 3542 437 | 3557 437 | 4228 441 | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | 3768 438 | 3769 438 | | | | | | | | | | |
| | | | | 3772 439 | 3773 439 | | | | | | | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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| ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

| recomendación de aplicación | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |

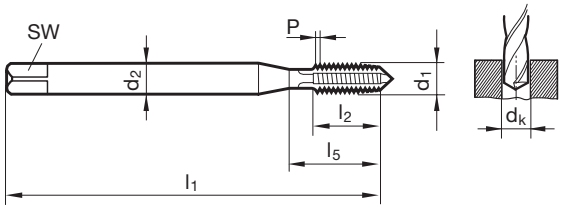
## Machos máquina para rosca métrica ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | ● | A | S |
| Tipo | GG | GG | GG |
| Forma | C | C | C |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |

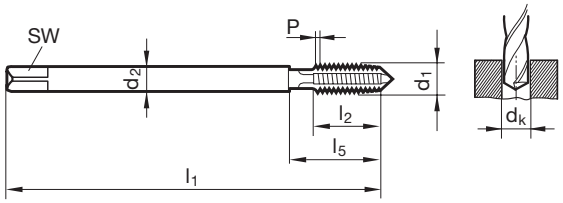
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **807** **1918** **930**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **819** **1919** **931**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 2,200 | | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |

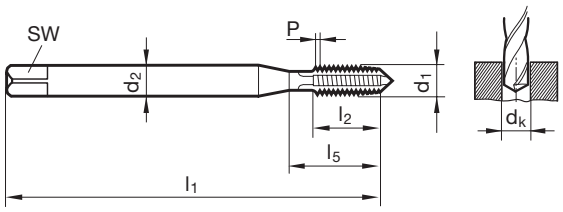
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | S |
| Tipo | GGT |
| Forma | C |
| Con refrigeración interna | |

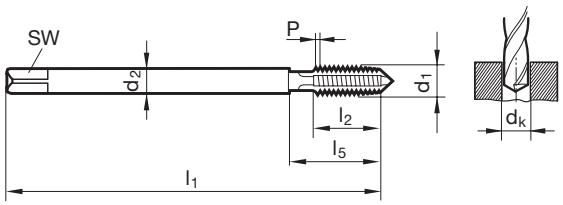
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1875**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **1876**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 2,200 | | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |

## Machos máq. refrig., rosca métr. ISO

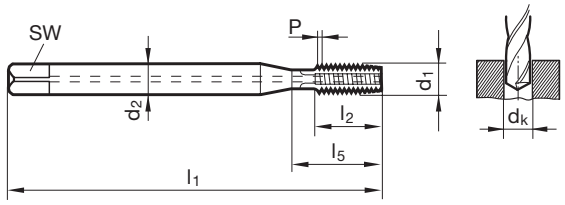
| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ● | A |
| Tipo | GG | GG |
| Forma | C | C |
| Con refrigeración interna | | |

P
M
K •
N
S
H

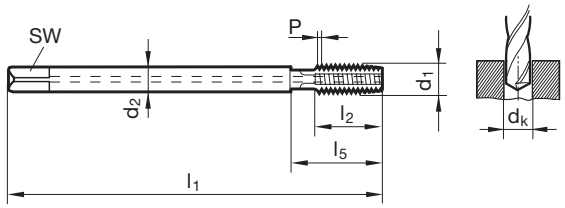
Condiciones de corte ver pág. 350



DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **1890** **318**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1897** **319**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |

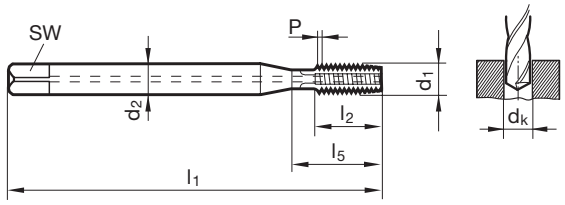
## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

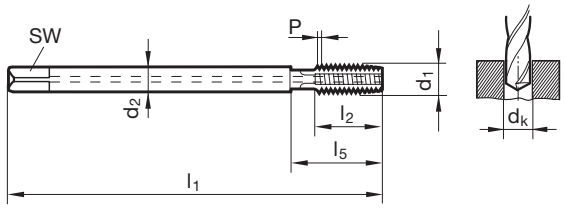
Condiciones de corte ver pág. 351

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | C |
| Tipo | H | H |
| Forma | C | E |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **302** **1091**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **297** **4165**

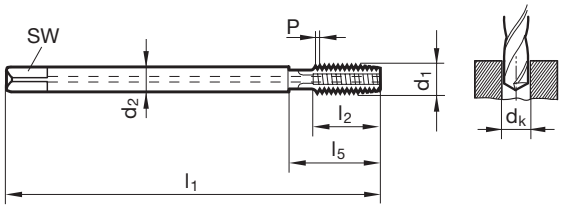
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |

## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 351



**DIN 2184-1 DIN 376** Artículo Nº **778**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 29,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 35,00 | 200,000 | 50,000 | 107,000 |

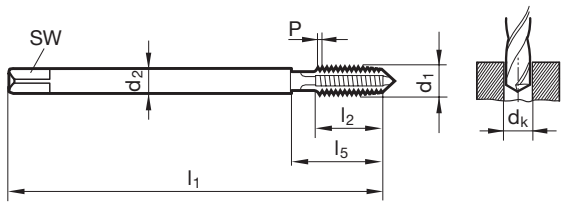
## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 351

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

NEW



**Norma de fab. ~DIN 376** Artículo Nº **779**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 160,000 | 26,000 | 100,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 180,000 | 32,000 | 120,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 200,000 | 36,000 | 120,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 225,000 | 36,000 | 145,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 250,000 | 40,000 | 160,000 |
| M33 | 3,500 | 25,000 | 20,000 | 29,50 | 275,000 | 40,000 | 170,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 300,000 | 50,000 | 180,000 |
| M39 | 4,000 | 32,000 | 24,000 | 35,00 | 325,000 | 50,000 | 210,000 |

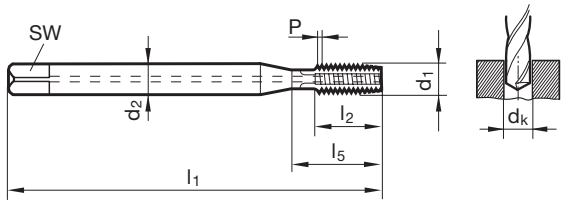
## Machos máq. refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ◯ | ◯ |
| Tipo | H | H |
| Forma | C | C |
| Con refrigeración interna | | |

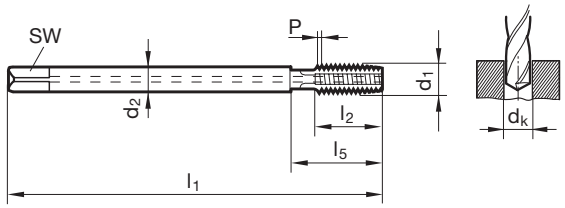
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 349/351

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **969** **1858**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 8,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 10,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1883** **1859**

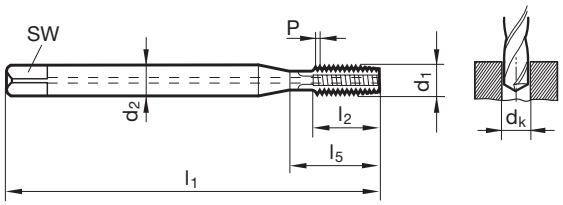
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 22,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 22,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 22,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 24,000 | 45,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 45,000 |

## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | A |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 351



**DIN 2184-1 DIN 371** Artículo Nº **2506**

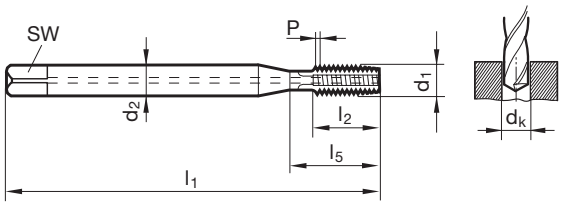
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

## Machos máq. refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | Metal duro | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | A | ○ | A |
| Tipo | H | H | N R15 |
| Forma | C | E | C |
| Con refrigeración interna | | | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/351



| DIN 2184-1 DIN 371 | Artículo Nº | 2311 | 1008 | 2510 |
|---|---|---|---|---|

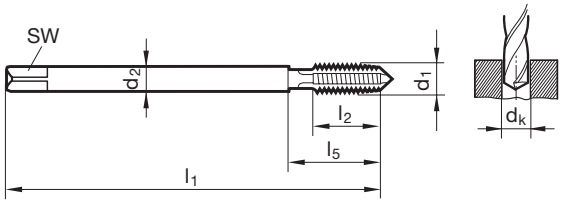
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 8,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 10,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

## Machos máquina para rosca métrica fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | ● | Ⓢ | Ⓐ |
| Tipo | GG | GG | GG |
| Forma | C | C | C |
| Con refrigeración interna | ⊠ | ⊠ | ⊠ |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350



| | | | |
|---|---|---|---|
| **DIN 2184-1 DIN 374** | Artículo Nº | **831** | **932** | **169** |

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M4 x 0,5 | 2,800 | 2,100 | 3,50 | 63,000 | 8,000 | 21,000 | 4,003 |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 150,000 | 28,000 | 53,000 | 30,007 |

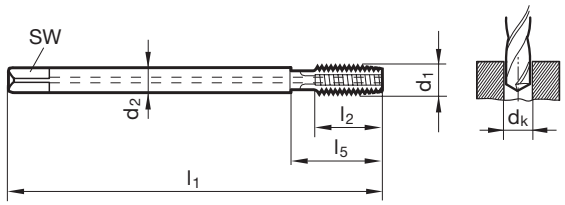
## Machos máq. refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ● | A |
| Tipo | GG | GG |
| Forma | C | C |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 350/351





| DIN 2184-1 DIN 374 | Artículo Nº | 1904 | 347 |
|---|---|---|---|

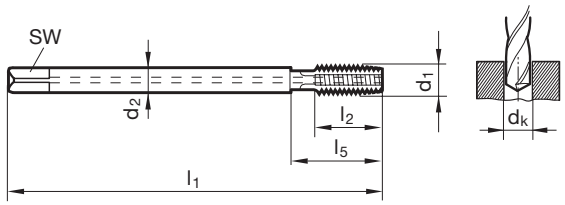
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 351

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | C |
| Tipo | H | H |
| Forma | C | E |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **1090** **1007**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 13,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

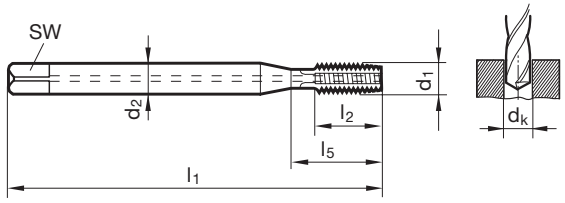
## Machos máq. refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ◯ | ◯ |
| Tipo | H | H |
| Forma | C | C |
| Con refrigeración interna | | |

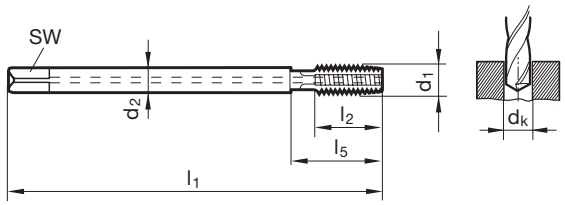
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 349/351

DIN 371




DIN 374



**DIN 2184-1 DIN 371** — Artículo Nº **972** **1861**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |

**DIN 2184-1 DIN 374** — Artículo Nº **974** **1860**

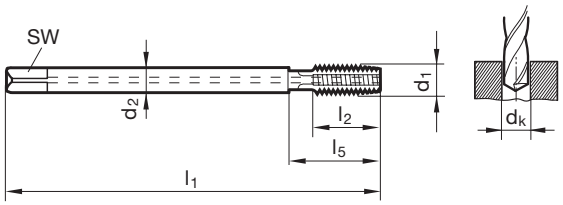
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 24,000 | 45,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 45,000 | 20,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | H |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 351



**DIN 2184-1 ~DIN 371/~DIN 374** Artículo Nº **1009**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 22,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

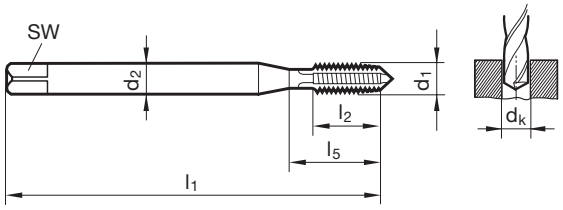
## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ● |
| Tipo | GG |
| Forma | C |
| Con refrigeración interna | ✕ |

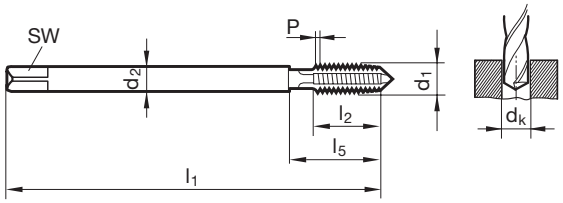
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **1979**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 9,000 | 14,500 | 2,184 |
| 3 - 48 | 2,800 | 2,100 | 2,10 | 50,000 | 9,000 | 14,500 | 2,515 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 11,000 | 18,000 | 3,175 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **1984**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |

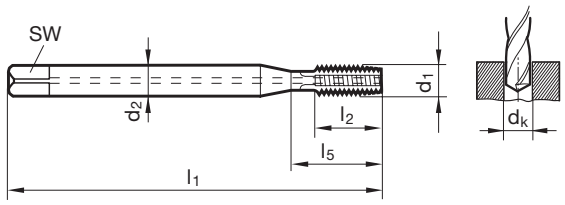
## Machos máq. refrig., roscas UNC

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | A |
| Tipo | GG |
| Forma | C |
| Con refrigeración interna | |

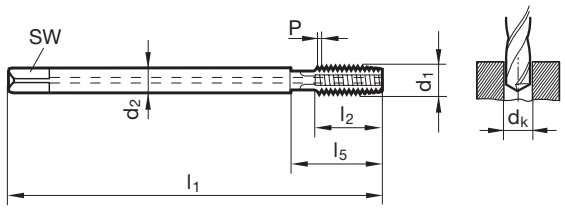
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 350

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **1085**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **1086**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 35,000 | 62,000 | 22,225 |

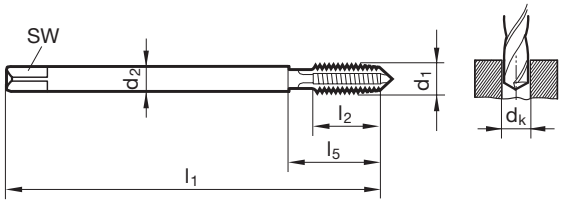
## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ● |
| Tipo | GG |
| Forma | C |
| Con refrigeración interna | ⊘ |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350





**DIN 2184-1 ~DIN 374** Artículo Nº **1989**

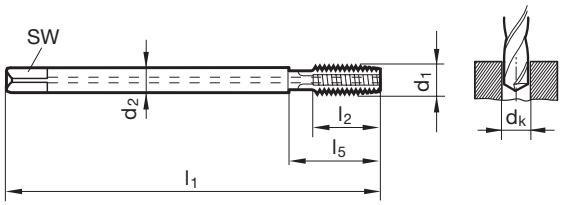
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 2,200 | | 2,40 | 56,000 | 10,000 | 18,000 | 2,845 |
| 8 - 36 | 2,800 | 2,100 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 100,000 | 22,000 | 40,000 | 14,288 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máq. refrig., roscas UNF

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | A |
| Tipo | GG |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 350



**DIN 2184-1 ~DIN 374** Artículo Nº **1082**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 25,000 | 44,000 | 22,225 |

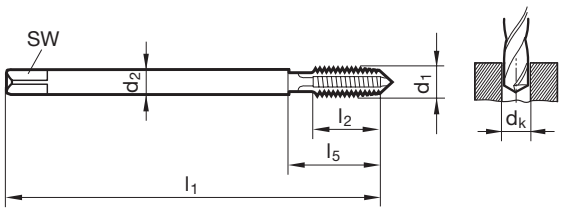
## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | ● |
| Tipo | GG |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | |
| S | |
| H | |

Condiciones de corte ver pág. 349/350





**DIN 2184-1 DIN 5156** Artículo Nº **961**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| G1/16 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G5/8 | 18,000 | 14,500 | 21,00 | 125,000 | 25,000 | 48,000 | 22,911 |
| G3/4 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |
| G1 | 25,000 | 20,000 | 30,75 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/8 | 28,000 | 22,000 | 35,50 | 170,000 | 30,000 | 56,000 | 37,897 |
| G1 1/4 | 32,000 | 24,000 | 39,50 | 170,000 | 30,000 | 57,000 | 41,910 |
| G1 3/8 | 36,000 | 29,000 | 41,75 | 180,000 | 32,000 | 60,000 | 44,323 |
| G1 1/2 | 36,000 | 29,000 | 45,25 | 190,000 | 32,000 | 60,000 | 47,803 |
| G1 3/4 | 40,000 | 32,000 | 51,00 | 190,000 | 40,000 | 93,000 | 53,746 |
| G2 | 45,000 | 35,000 | 57,00 | 220,000 | 40,000 | 95,000 | 59,614 |

Fundición gris, fund. perlítica y fund. maleable

# MACHOS MÁQ. DE LAMINACIÓN

K

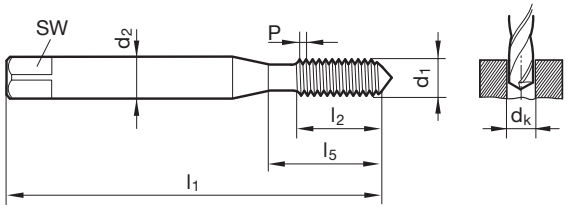
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | HSS-E | HSS-E-PM |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | S |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✕ | ✕ | ✕ |

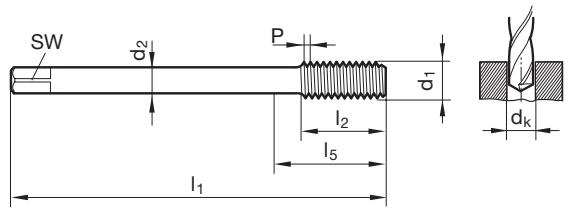
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 376



| | | | | |
|---|---|---|---|---|
| **DIN 2174 ~DIN 371** | Artículo Nº | **903** | **921** | **1255** |

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,90 | 40,000 | 4,000 | |
| M1,2 | 0,250 | 2,500 | 2,100 | 1,10 | 40,000 | 4,800 | |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,25 | 40,000 | 5,600 | |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,45 | 40,000 | 6,400 | |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,55 | 40,000 | 6,800 | |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,65 | 40,000 | 7,300 | |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

| | | | |
|---|---|---|---|
| **DIN 2174 ~DIN 376** | Artículo Nº | **952** | **925** | **1256** |

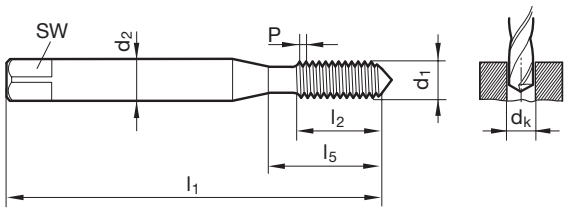
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352



**DIN 2174 ~DIN 371** Artículo Nº **920**

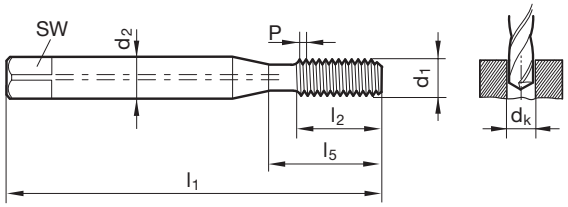
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **2518**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

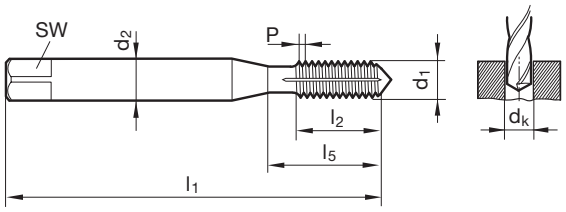
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

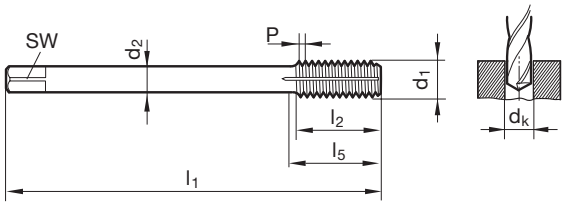
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **918** **919** **2012**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **922** **923** **2013**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 20,90 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 22,70 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 25,70 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 28,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 31,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 34,30 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 37,30 | 200,000 | 50,000 | 107,000 |

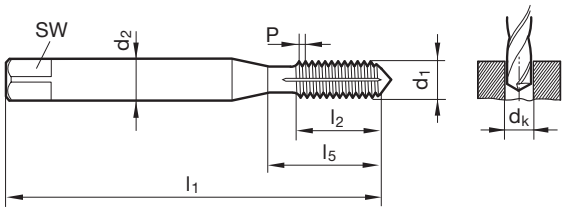
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

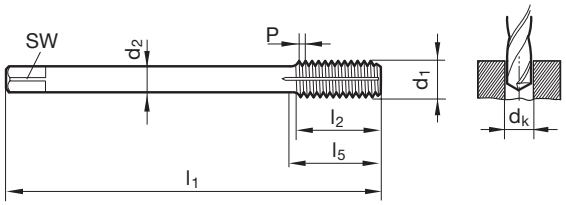
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **322**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **339**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

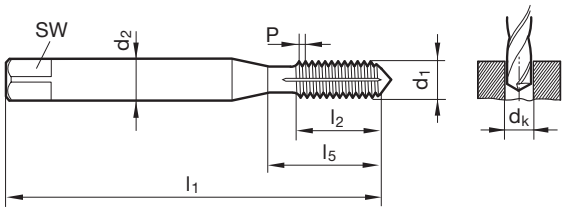
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

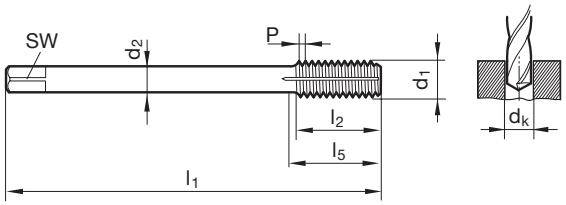
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1266**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1267**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

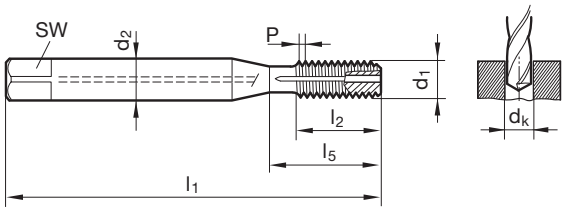
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6GX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | | | |

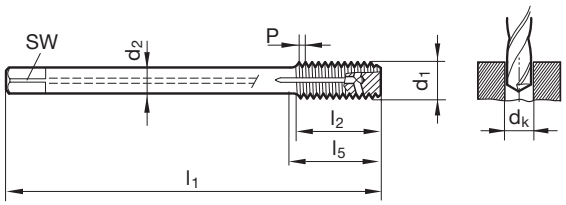
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **2442** **2443** **2446**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **2444** **2445** **2448**

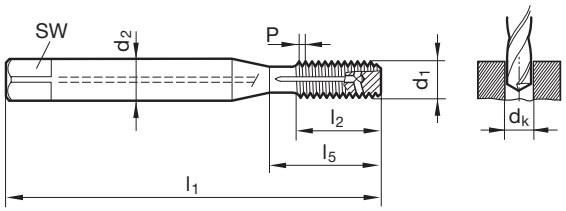
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353



**DIN 2174 ~DIN 371** Artículo Nº **2447**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

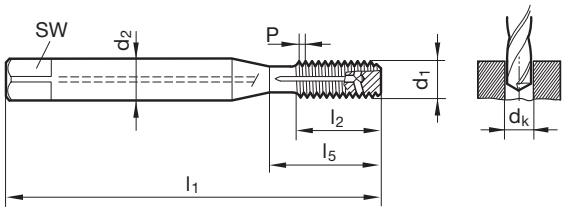
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

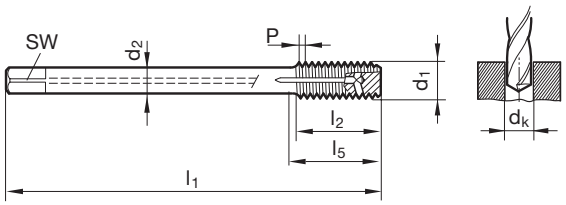
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **323**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **342**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

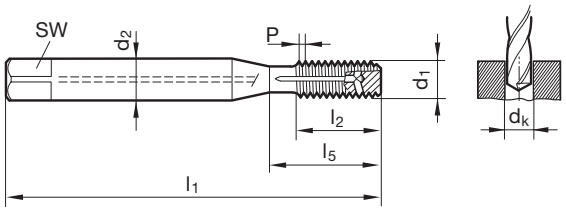
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

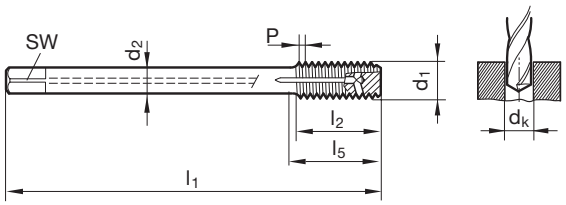
Condiciones de corte ver pág. 353

| Material de corte | HSS-E-PM | | |
|---|---|---|---|
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1270** **1717** **1725**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1271** **1719** **1727**

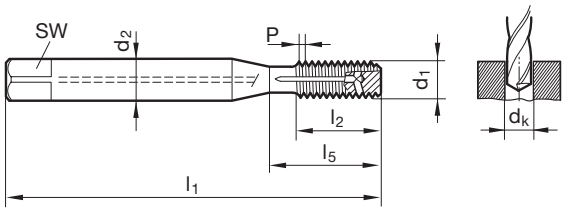
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 353



**DIN 2174 ~DIN 371** Artículo Nº **1713**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

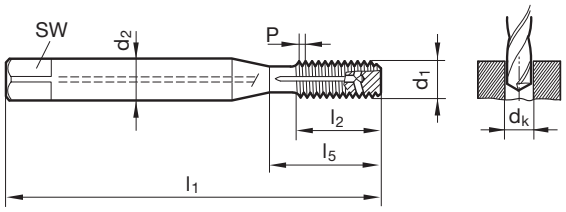
## Machos máq. laminación refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | A | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

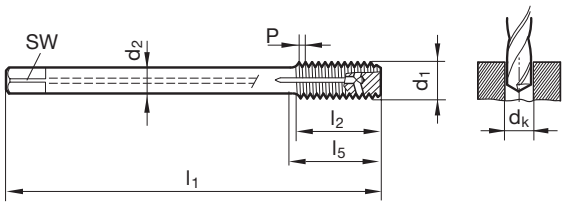
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1718** **1726**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1720** **1728**

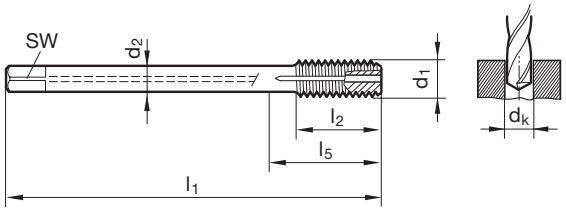
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353



**Norma de fab. Norma de fab.** Artículo Nº **4143**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 112,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,70 | 112,000 | 7,500 | 77,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,65 | 125,000 | 8,500 | 90,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 125,000 | 11,000 | 90,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 140,000 | 14,000 | 97,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 160,000 | 16,000 | 117,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 180,000 | 18,500 | 133,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 220,000 | 20,000 | 168,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 280,000 | 25,000 | 225,000 |

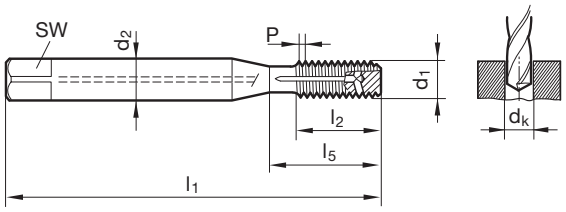
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

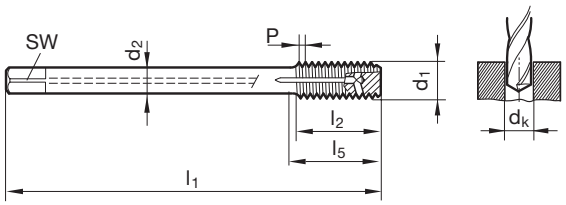
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1972**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1931**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

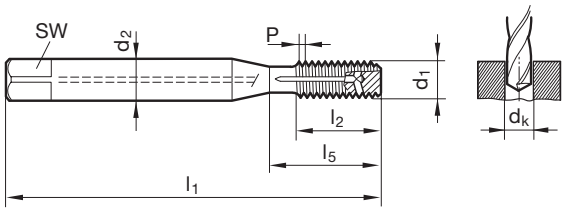
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 353





**DIN 2174 ~DIN 371** Artículo Nº **1927**

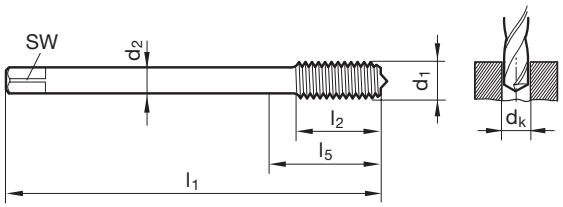
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352



**DIN 2174 ~DIN 374** Artículo Nº **929**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

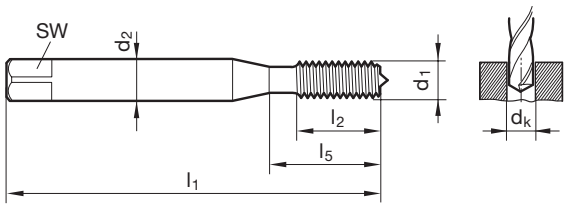
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352





**DIN 2174 ~DIN 371** Artículo Nº **1740**

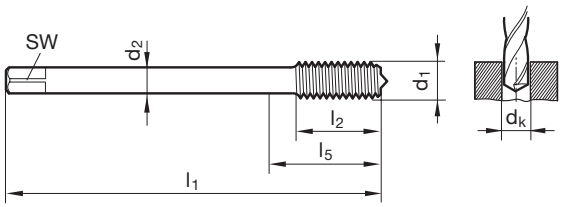
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352



**DIN 2174 ~DIN 374** — Artículo Nº **928**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |

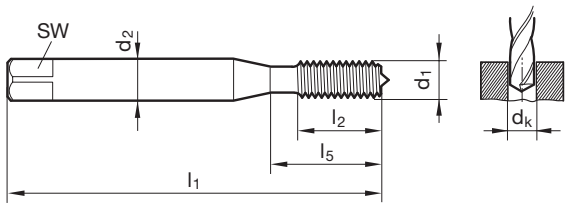
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

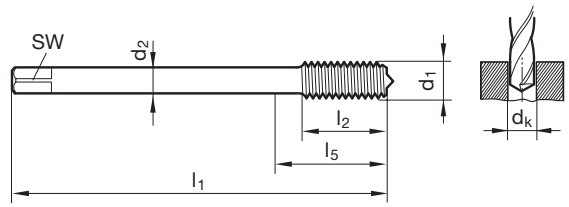
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1257**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1258**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

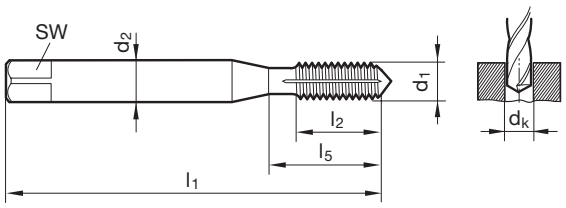
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

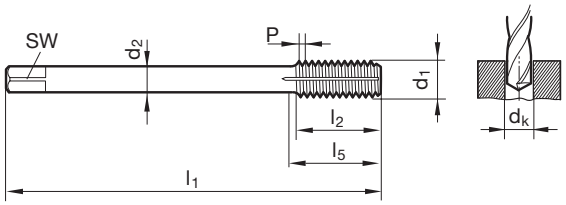
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1275**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 6,000 | 4,900 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 8,000 | 6,200 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **927**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

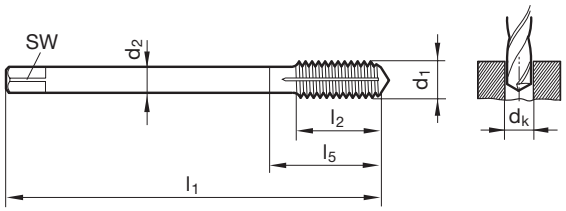
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352





**DIN 2174 ~DIN 374** Artículo Nº **2008**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

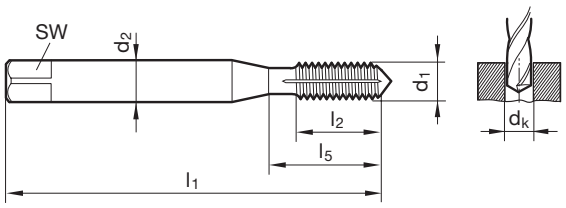
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

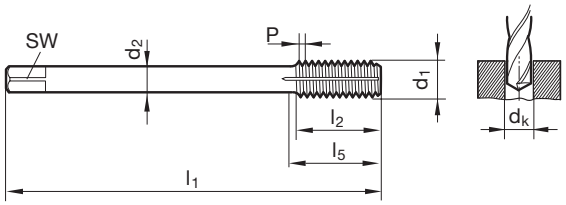
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1277**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **926**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

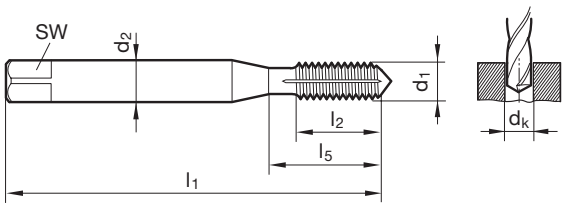
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

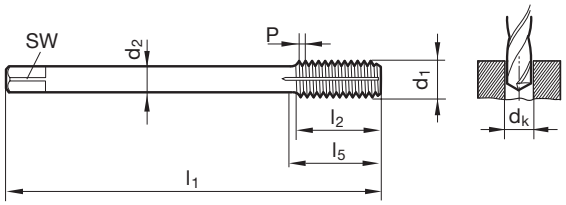
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1268**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1269**

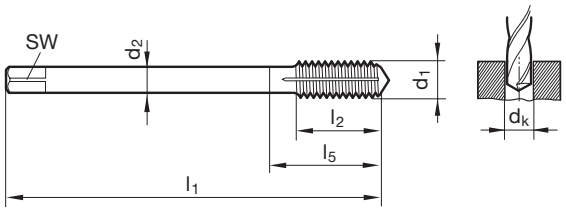
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353



**DIN 2174 ~DIN 374** — Artículo Nº **333**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 16,000 | 44,000 | 20,007 |

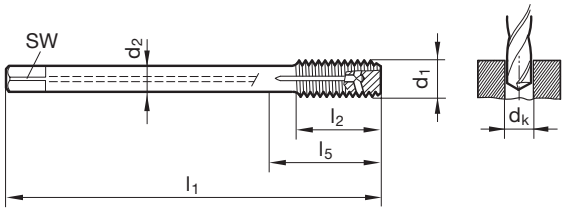
## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353





**DIN 2174 ~DIN 374** — Artículo Nº **338**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

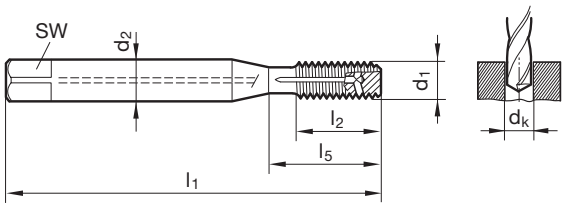
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| P | • | |
| M | • | |
| K | | |
| N | ≥ 7 | |
| S | • | |
| H | | |

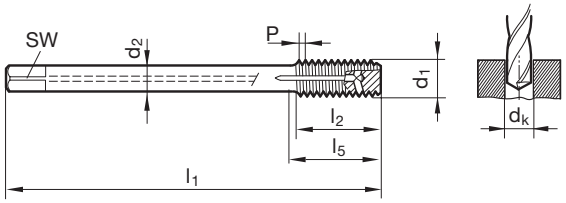
Condiciones de corte ver pág. 353

| Material de corte | HSS-E-PM | | |
|---|---|---|---|
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

~ DIN 371




~ DIN 374



| DIN 2174 ~DIN 371 | Artículo Nº | 1272 | 1721 | 1729 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

| DIN 2174 ~DIN 374 | Artículo Nº | 1273 | 1723 | 1731 |
|---|---|---|---|---|

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

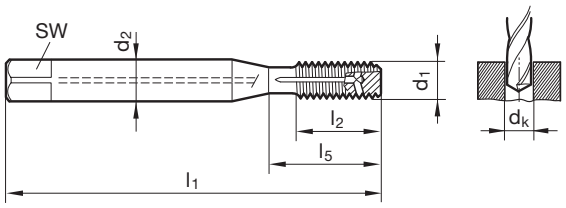
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

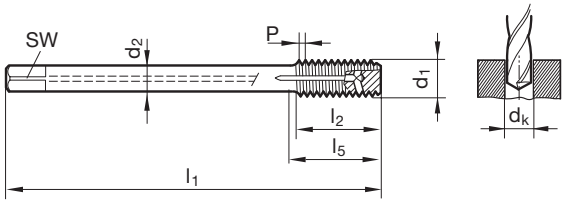
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 353

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1715** **1730**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1716** **1732**

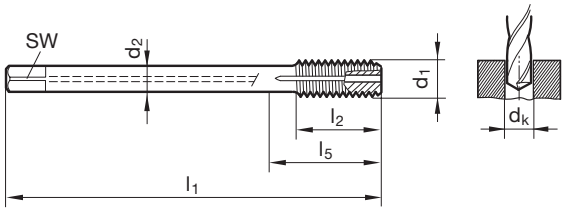
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 353



**Norma de fab. Norma de fab.** Artículo Nº **4145**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 140,000 | 14,000 | 97,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 160,000 | 16,000 | 117,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 160,000 | 16,000 | 117,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 180,000 | 18,500 | 133,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 180,000 | 18,500 | 133,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 220,000 | 20,000 | 168,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 220,000 | 20,000 | 168,000 | 16,007 |

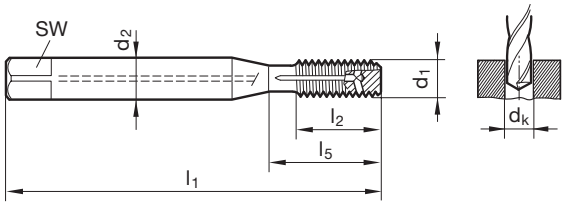
## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 353





**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **1581**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 15,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 15,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 15,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 15,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 15,000 | 48,000 | 24,007 |

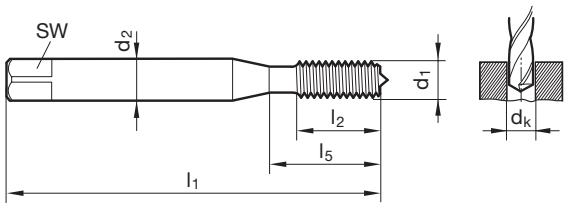
## Machos máq. de laminación para rosca UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

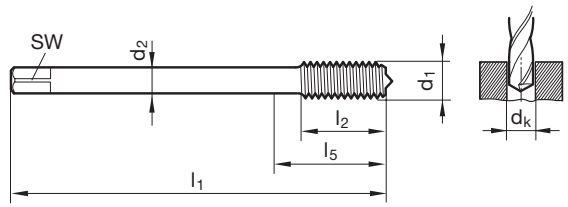
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** — Artículo Nº **2273** **1582**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,55 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,90 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 3,15 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,80 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 4,35 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,75 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 7,30 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **2274** **1583**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 10,30 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 11,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 13,30 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 14,80 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 17,90 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 21,00 | 140,000 | 35,000 | 62,000 | 22,225 |

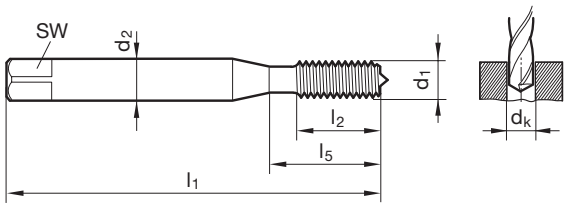
## Machos máq. de laminación para rosca UNF

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

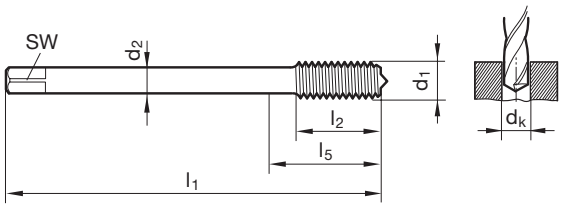
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352

~ DIN 371




~ DIN 374



**DIN 2184-1 ~DIN 371** — Artículo Nº **1283** **1584**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,90 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 3,20 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,85 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |

**DIN 2184-1 ~DIN 374** — Artículo Nº **2275** **1585**

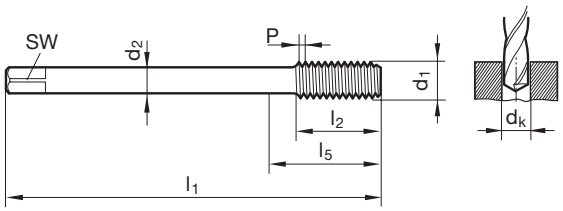
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| 10 - 32 | 0,794 | 3,500 | 2,700 | 4,45 | 70,000 | 14,000 | 25,000 |
| 1/4 - 28 | 0,907 | 4,500 | 3,400 | 5,95 | 80,000 | 16,000 | 30,000 |
| 12 - 28 | 0,907 | 4,000 | 3,000 | 5,10 | 80,000 | 16,000 | 30,000 |
| 3/8 - 24 | 1,058 | 7,000 | 5,500 | 9,05 | 90,000 | 18,000 | 35,000 |
| 5/16 - 24 | 1,058 | 6,000 | 4,900 | 7,45 | 90,000 | 18,000 | 35,000 |
| 1/2 - 20 | 1,270 | 9,000 | 7,000 | 12,10 | 100,000 | 20,000 | 40,000 |
| 5/8 - 18 | 1,411 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 |
| 7/16 - 20 | 1,270 | 8,000 | 6,200 | 10,55 | 100,000 | 22,000 | 42,000 |
| 9/16 - 18 | 1,411 | 11,000 | 9,000 | 13,65 | 100,000 | 22,000 | 40,000 |
| 3/4 - 16 | 1,587 | 14,000 | 11,000 | 18,35 | 110,000 | 25,000 | 44,000 |
| 7/8 - 14 | 1,814 | 18,000 | 14,500 | 21,40 | 125,000 | 25,000 | 44,000 |
| 1 - 12 | 2,117 | 18,000 | 14,500 | 24,45 | 140,000 | 28,000 | 50,000 |

## Machos máq. de laminación para rosca GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | X |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 352



**DIN 2184-1 DIN 2189** Artículo Nº **966**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 32,00 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 40,75 | 170,000 | 30,000 | 57,000 | 41,910 |

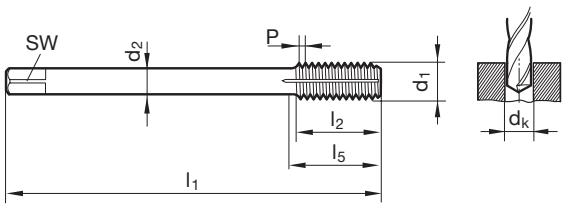
## Machos máq. de laminación para rosca GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | X |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 352





**DIN 2184-1 DIN 2189** Artículo Nº **1586**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |

Fundición gris, fund. perlítica y fund. maleable

# FRESAS DE ROSCAR

K

## Fresas de roscar sin chaflán para rosca métrica ISO

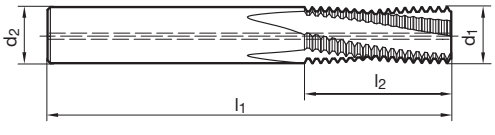
2xD

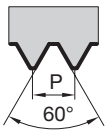
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

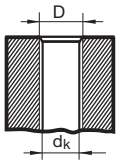
Condiciones de corte ver pág. 354

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |





| Norma de fab. | Artículo Nº | 3737 | 3743 | 3734 |
|---|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M8 x 1 | 1,000 | 6,400 | 8,000 | 7,00 | 62,000 | 17,500 | 3 | 8,005 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M10 x 1 | 1,000 | 7,950 | 10,000 | 9,00 | 74,000 | 21,500 | 3 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 10,000 | 8,80 | 74,000 | 21,900 | 3 | 10,006 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M12 x 1,5 | 1,500 | 9,950 | 10,000 | 10,50 | 74,000 | 26,300 | 4 | 12,007 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M14 x 1,5 | 1,500 | 11,200 | 12,000 | 12,50 | 90,000 | 30,800 | 4 | 14,007 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M16 x 1,5 | 1,500 | 12,800 | 14,000 | 14,50 | 90,000 | 33,800 | 4 | 16,007 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |
| M20 x 1,5 | 1,500 | 14,950 | 16,000 | 18,50 | 102,000 | 42,800 | 4 | 20,007 |

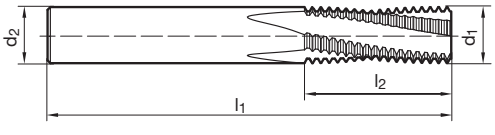
## Fresas de roscar sin chaflán para rosca métrica ISO

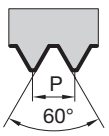
2xD

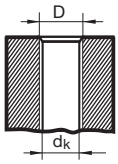
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **4132** **4133**

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |

## Fresas de roscar sin chaflán para rosca métrica ISO

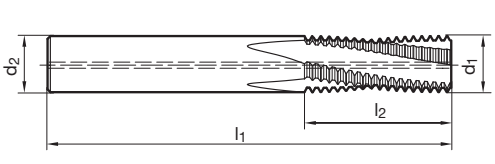
2,5xD

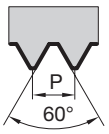
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

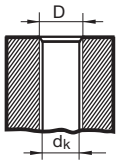
Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3735 | 3740 |
|---|---|---|---|

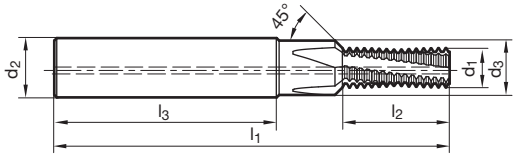
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 26,300 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 48,800 | 4 | 20,000 |

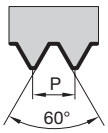
## Fresas de roscar con chaflán para rosca métrica ISO

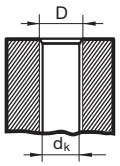
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3525 | 3543 | 3510 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

## Fresas de roscar con chaflán para rosca métrica ISO

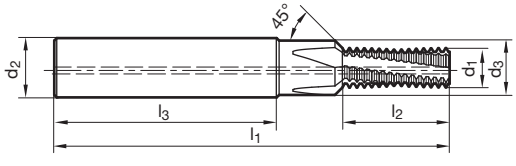
2xD

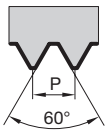
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

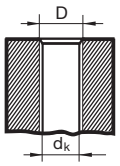
Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |





**Norma de fab.** Artículo Nº **3526** **3544** **3511**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

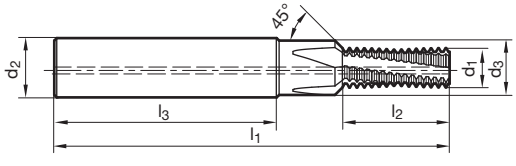
## Fresas de roscar con chaflán para rosca métrica ISO

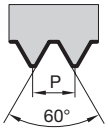
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

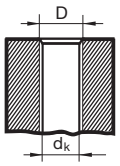
Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3759 | 3760 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 7,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 35,600 | 10,900 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 13,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 26,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 48,800 | 4 | 20,000 |

## Fresas de roscar con chaflán para rosca métrica fina ISO

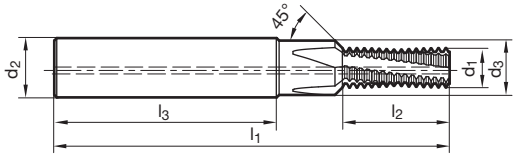
1,5xD

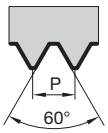
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

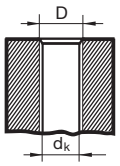
Condiciones de corte ver pág. 354

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |





| Norma de fab. | Artículo Nº | 3527 | 3545 | 3512 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

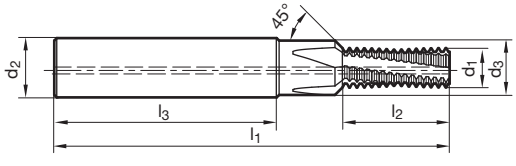
## Fresas de roscar con chaflán para rosca métrica fina ISO

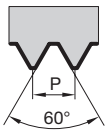
2xD

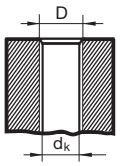
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



**Norma de fab.** Artículo Nº **3528** **3546** **3513**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

## Fresas de roscar con chaflán para rosca métrica fina ISO

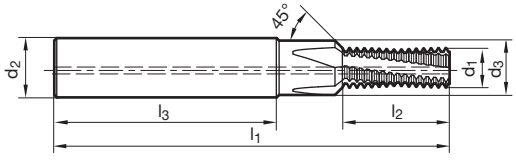
2,5xD

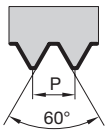
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

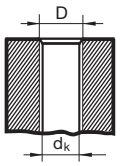
Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |





| Norma de fab. | Artículo Nº | 3762 | 3763 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 10,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 12,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 15,300 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 15,400 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 20,600 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 20,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 25,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 25,600 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 30,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 30,800 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 38,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 41,300 | 4 | 16,007 |

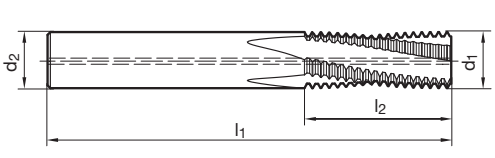
## Fresas de roscar sin chaflán para roscas UNC

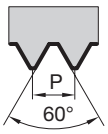
2xD

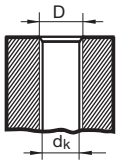
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **4134** **4135**

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 24 | 3,400 | 6,000 | 3,90 | 54,000 | 11,100 | 3 | 4,826 |
| 12 - 24 | 4,100 | 6,000 | 4,50 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 20 | 4,700 | 6,000 | 5,10 | 54,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 6,100 | 8,000 | 6,60 | 64,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,600 | 8,000 | 8,00 | 64,000 | 21,400 | 3 | 9,525 |
| 7/16 - 14 | 9,000 | 10,000 | 9,40 | 74,000 | 24,500 | 3 | 11,113 |
| 1/2 - 13 | 9,950 | 10,000 | 10,80 | 74,000 | 28,300 | 4 | 12,700 |
| 9/16 - 12 | 11,400 | 12,000 | 12,20 | 90,000 | 30,700 | 4 | 14,288 |
| 5/8 - 11 | 12,700 | 14,000 | 13,50 | 90,000 | 35,800 | 4 | 15,875 |

## Fresas de roscar con chaflán para roscas UNC

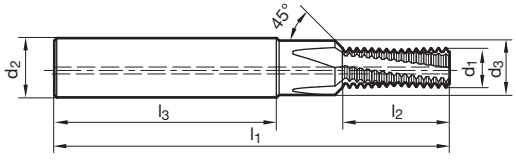
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

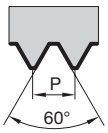
Condiciones de corte ver pág. 354

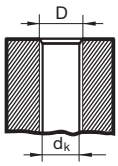
| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW





| Norma de fab. | Artículo Nº | 3516 | 3534 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

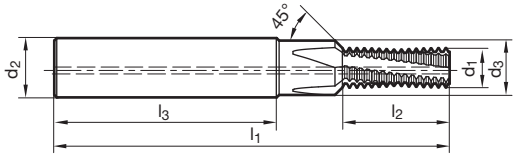
## Fresas de roscar con chaflán para roscas UNC

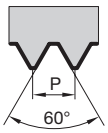
2xD

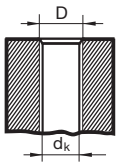
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3517 | 3535 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

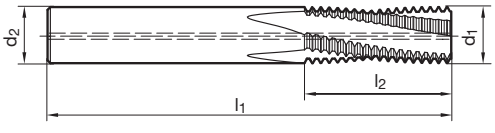
## Fresas de roscar sin chaflán para roscas UNF

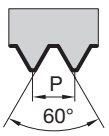
2xD

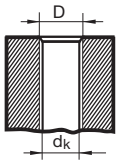
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4136 | 4137 |
|---|---|---|---|

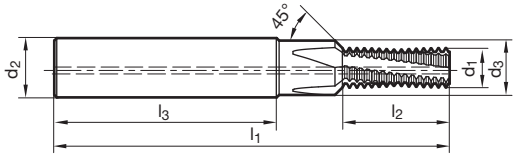
| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 32 | 3,800 | 6,000 | 4,10 | 54,000 | 11,500 | 3 | 4,826 |
| 12 - 28 | 4,300 | 6,000 | 4,60 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 28 | 5,100 | 6,000 | 5,50 | 54,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 6,300 | 8,000 | 6,90 | 64,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,800 | 8,000 | 8,50 | 64,000 | 20,600 | 3 | 9,525 |
| 7/16 - 20 | 9,400 | 10,000 | 9,90 | 74,000 | 24,800 | 3 | 11,113 |
| 1/2 - 20 | 9,950 | 10,000 | 11,50 | 74,000 | 27,300 | 4 | 12,700 |
| 9/16 - 18 | 11,400 | 12,000 | 12,90 | 90,000 | 30,300 | 4 | 14,288 |
| 5/8 - 18 | 12,700 | 14,000 | 14,50 | 90,000 | 33,200 | 4 | 15,875 |

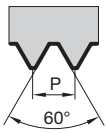
## Fresas de roscar con chaflán para roscas UNF

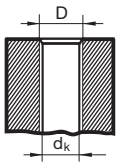
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3518 | 3536 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

## Fresas de roscar con chaflán para roscas UNF

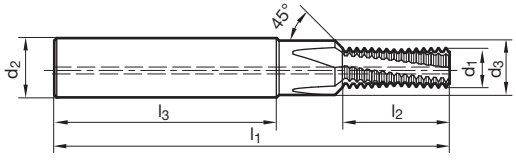
2xD

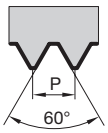
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

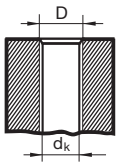
Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |





| Norma de fab. | Artículo Nº | 3519 | 3537 |
|---|---|---|---|

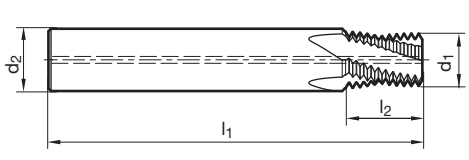
| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

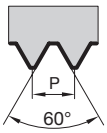
## Fresas de roscar sin chaflán para roscas NPT

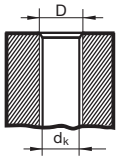
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3753 | 3754 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

## Fresas de roscar para roscas NPT con fase de avellanado

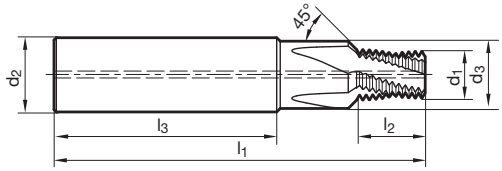
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

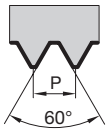
NEW

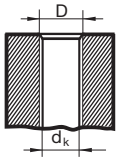
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354





| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

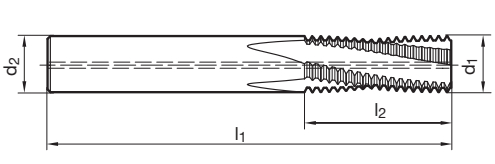
## Fresas de roscar para roscas GAS sin fase de avellanado

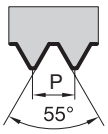
2xD

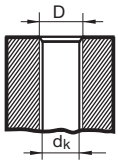
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 354

| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3745 | 3748 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 21,300 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 35,400 | 4 | 16,662 |

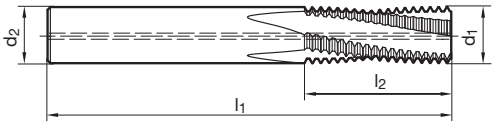
## Fresas de roscar para roscas GAS sin fase de avellanado

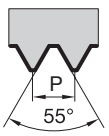
2,5xD

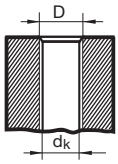
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3746 | 3750 |
|---|---|---|---|

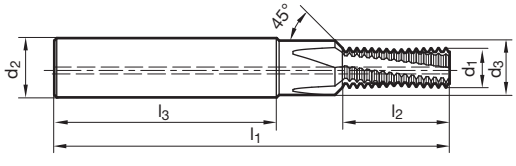
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 24,900 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 43,500 | 4 | 16,662 |

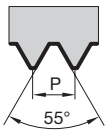
## Fresas de roscar para roscas GAS con fase de avellanado

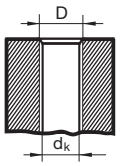
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

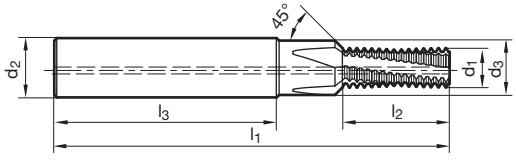
## Fresas de roscar para roscas GAS con fase de avellanado

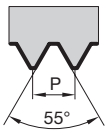
2xD

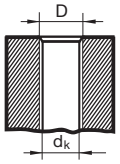
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

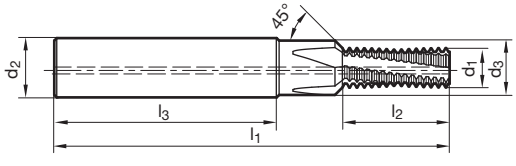
## Fresas de roscar para roscas GAS con fase de avellanado

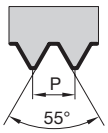
2,5xD

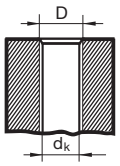
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3765 | 3766 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 24,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 43,500 | 4 | 16,662 |

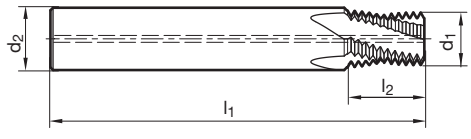
## Fresas de roscar para roscas NPTF sin fase de avellanado

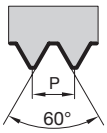
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

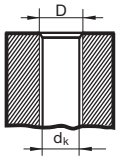
Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |





| Norma de fab. | Artículo Nº | 3756 | 3757 |
|---|---|---|---|

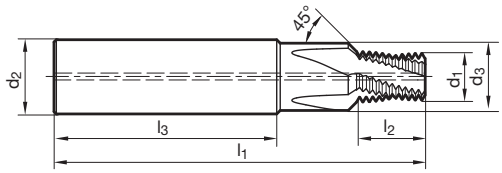
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

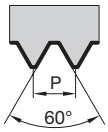
## Fresas de roscar para roscas NPTF con fase de avellanado

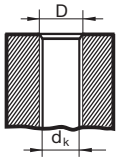
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 354

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

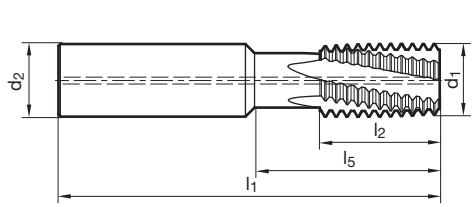
## Fresas para roscar universales para rosca métrica ISO

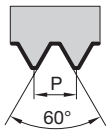
| | | | |
|---|---|---|---|
| Material de corte | Metal duro | | |
| Acabado | C | C | ○ |
| Tipo | TMU SP | TMU SP | TMU SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |

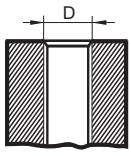
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355





| Norma de fab. | Artículo Nº | 3541 | 3556 | 3523 |
|---|---|---|---|---|

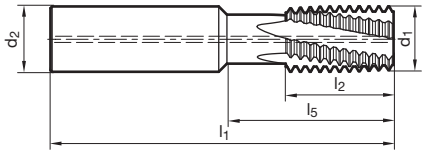
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

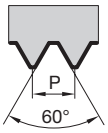
## Fresado de roscas exteriores

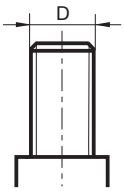
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355



| Norma de fab. | Artículo Nº | 4162 | 4163 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

## Fresas para roscar universales para roscas UN

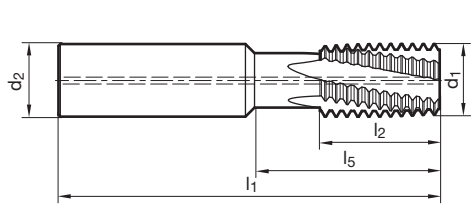
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

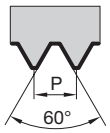
NEW

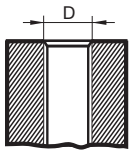
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355





| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

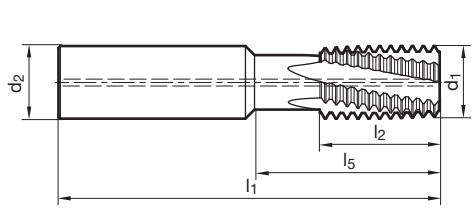
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

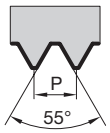
## Fresas para roscar universales para roscas GAS

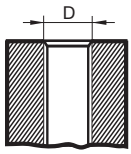
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3542 | 3557 | 3524 |
|---|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

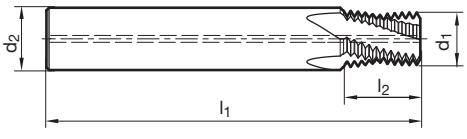
## Fresas para roscar universales para roscas NPT

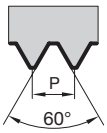
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

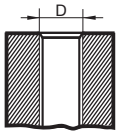
Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |





| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

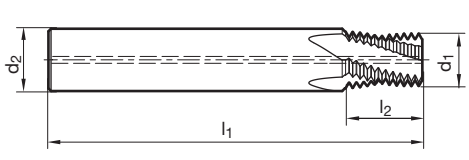
| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

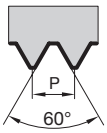
## Fresas para roscar universales para roscas NPTF

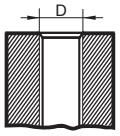
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Microfresas de roscar

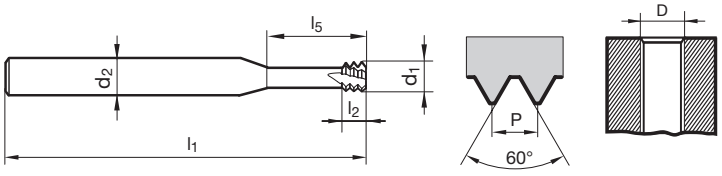
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 355

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW




**Norma de fab.** Artículo Nº **4226**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,6 | 0,350 | 1,200 | 3,000 | 39,000 | 1,100 | 4,800 | 3 | 1,600 |
| M1,8 | 0,350 | 1,400 | 3,000 | 39,000 | 1,100 | 5,400 | 3 | 1,800 |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,400 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M3,5 | 0,600 | 2,800 | 6,000 | 58,000 | 1,800 | 11,000 | 4 | 3,500 |
| M4 | 0,700 | 3,200 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 73,000 | 4,500 | 33,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 84,000 | 5,300 | 38,000 | 4 | 12,000 |
| M16 | 2,000 | 11,800 | 10,000 | 84,000 | 6,000 | 35,000 | 5 | 16,000 |

## Microfresas de roscar

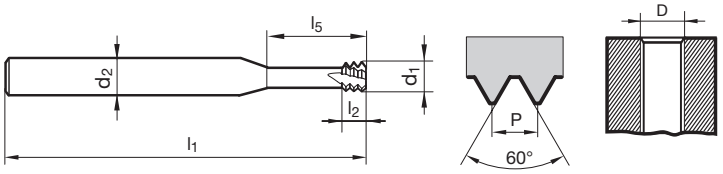
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 355

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP G |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4228**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 6,200 | 8,000 | 64,000 | 2,700 | 19,500 | 4 | 9,728 |
| G3/8 | 19,000 | 9,950 | 10,000 | 73,000 | 4,000 | 25,000 | 4 | 16,662 |
| G7/8 | 14,000 | 11,950 | 12,000 | 84,000 | 5,400 | 37,000 | 4 | 30,201 |
| G2 | 11,000 | 15,950 | 16,000 | 105,000 | 6,900 | 44,000 | 5 | 59,614 |

## Microfresas de roscar

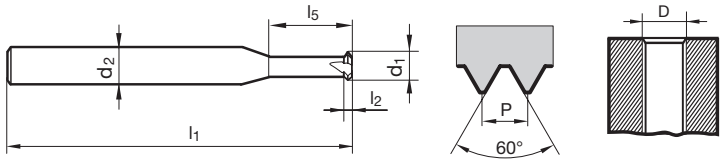
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 355

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M/MF |
| Pasos de rosca | 1,0 |
| Forma del mango | HA |

NEW




**Norma de fab.** Artículo Nº **4225**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,4 - M1,8 | 0,350 | 1,050 | 3,000 | 39,000 | 0,400 | 3,800 | 3 | 1,800 |
| M2 - M2,4 | 0,400 | 1,500 | 3,000 | 39,000 | 0,400 | 7,000 | 3 | 2,400 |
| M2,5 - M3 | 0,500 | 2,000 | 3,000 | 39,000 | 0,500 | 9,000 | 4 | 3,000 |
| M3,5 - M4,5 | 0,750 | 2,800 | 6,000 | 58,000 | 0,800 | 14,000 | 4 | 4,500 |
| M5 - M7 | 1,000 | 4,000 | 6,000 | 58,000 | 1,000 | 19,000 | 4 | 7,000 |
| M8 - M10 | 1,500 | 6,400 | 8,000 | 64,000 | 1,500 | 24,000 | 5 | 10,000 |

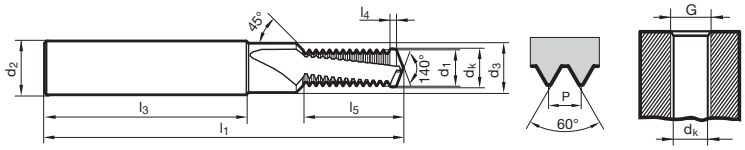
## Fresas de roscar y taladrar para rosca métrica ISO

1,5xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≈ | ✕ | ≈ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3774 | 3775 | 3776 | 3777 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,500 | 48,000 | 36,000 | 0,500 | 5,500 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,300 | 48,000 | 36,000 | 0,700 | 6,900 | 2 | 4,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 4,000 | 48,000 | 36,000 | 0,700 | 6,900 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,200 | 54,000 | 36,000 | 0,800 | 8,800 | 2 | 5,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 5,000 | 54,000 | 36,000 | 0,800 | 8,800 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,000 | 62,000 | 36,000 | 1,000 | 10,900 | 2 | 6,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 6,000 | 62,000 | 36,000 | 1,000 | 10,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,800 | 74,000 | 40,000 | 1,250 | 13,700 | 2 | 8,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 8,000 | 74,000 | 40,000 | 1,250 | 13,700 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 10,000 | 80,000 | 45,000 | 1,500 | 18,000 | 2 | 10,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,500 | 18,000 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,200 | 90,000 | 45,000 | 1,500 | 20,900 | 2 | 12,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 12,000 | 90,000 | 45,000 | 1,500 | 20,900 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,000 | 102,000 | 48,000 | 1,500 | 23,700 | 2 | 14,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 14,000 | 102,000 | 48,000 | 1,500 | 23,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 16,000 | 102,000 | 48,000 | 1,500 | 26,000 | 2 | 16,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,000 | 102,000 | 48,000 | 1,500 | 26,000 | 2 | 16,000 |

## Fresas de roscar y taladrar para rosca métrica ISO

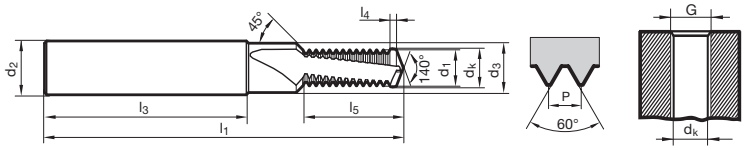
2xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≡ | ✕ | ≡ |
| Forma del mango | HA | HA | HA | HA |





| Norma de fab. | Artículo Nº | 3778 | 3779 | 3780 | 3781 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,500 | 48,000 | 36,000 | 0,500 | 7,000 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,300 | 48,000 | 36,000 | 0,700 | 9,000 | 2 | 4,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 4,000 | 48,000 | 36,000 | 0,700 | 9,000 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,200 | 54,000 | 36,000 | 0,800 | 11,200 | 2 | 5,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 5,000 | 54,000 | 36,000 | 0,800 | 11,200 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,000 | 62,000 | 36,000 | 1,000 | 13,900 | 2 | 6,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 6,000 | 62,000 | 36,000 | 1,000 | 13,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,800 | 74,000 | 40,000 | 1,250 | 18,700 | 2 | 8,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 8,000 | 74,000 | 40,000 | 1,250 | 18,700 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,500 | 22,500 | 2 | 10,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 10,000 | 80,000 | 45,000 | 1,500 | 22,500 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,200 | 90,000 | 45,000 | 1,500 | 26,100 | 2 | 12,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 12,000 | 90,000 | 45,000 | 1,500 | 26,100 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,000 | 102,000 | 48,000 | 1,500 | 31,700 | 2 | 14,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 14,000 | 102,000 | 48,000 | 1,500 | 31,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 16,000 | 102,000 | 48,000 | 1,500 | 36,000 | 2 | 16,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,000 | 102,000 | 48,000 | 1,500 | 36,000 | 2 | 16,000 |

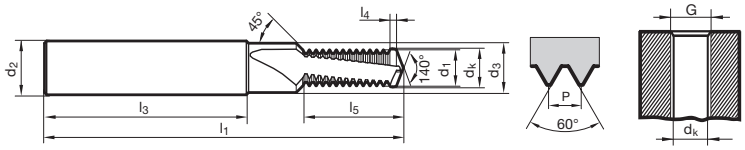
## Fresas de roscar y taladrar para rosca métrica ISO

2,5xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ◯ | ◯ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≡ | ✕ | ≡ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3782 | 3783 | 3784 | 3785 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,500 | 48,000 | 36,000 | 0,500 | 8,500 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,300 | 48,000 | 36,000 | 0,700 | 11,100 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,200 | 54,000 | 36,000 | 0,800 | 13,600 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,000 | 62,000 | 36,000 | 1,000 | 16,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,800 | 74,000 | 40,000 | 1,250 | 22,500 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,500 | 27,000 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,200 | 90,000 | 45,000 | 1,500 | 31,400 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,000 | 102,000 | 48,000 | 1,500 | 39,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,000 | 102,000 | 48,000 | 1,500 | 46,000 | 2 | 16,000 |

## Fresas de roscar y taladrar para rosca métrica fina ISO

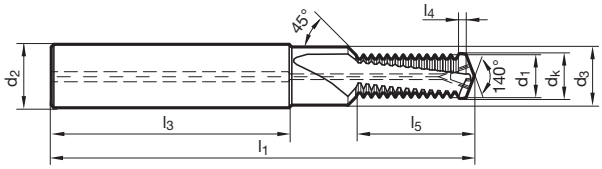
1,5xD

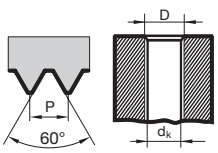
| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | ◯ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HA | HA |





| Norma de fab. | Artículo Nº | 3787 | 3788 | 3789 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,200 | 6,000 | 4,500 | 3,500 | 48,000 | 36,000 | 0,500 | 6,600 | 2 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,500 | 54,000 | 36,000 | 0,500 | 8,300 | 2 | 5,003 |
| M 6 X0,75 | 0,750 | 4,750 | 8,000 | 6,600 | 5,200 | 62,000 | 36,000 | 0,750 | 9,900 | 2 | 6,004 |
| M8 x 0,75 | 0,750 | 6,350 | 10,000 | 9,000 | 7,200 | 74,000 | 40,000 | 0,750 | 14,100 | 2 | 8,004 |
| M8 x 1 | 1,000 | 6,350 | 10,000 | 9,000 | 7,000 | 74,000 | 40,000 | 1,000 | 14,300 | 2 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,000 | 80,000 | 45,000 | 1,000 | 16,600 | 2 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,800 | 80,000 | 45,000 | 1,250 | 16,600 | 2 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,000 | 90,000 | 45,000 | 1,000 | 20,000 | 2 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,500 | 90,000 | 45,000 | 1,500 | 21,400 | 2 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,500 | 102,000 | 48,000 | 1,500 | 23,300 | 2 | 14,007 |
| M16 x 1,5 | 1,500 | 13,200 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 26,600 | 2 | 16,007 |

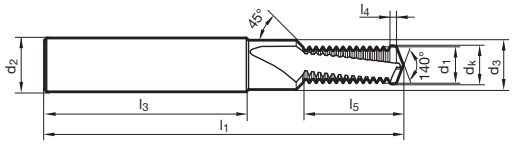
## Fresas de roscar y taladrar para rosca métrica fina ISO

2xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≡ | ✕ | ≡ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3790 | 3791 | 3792 | 3793 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,200 | 6,000 | 4,500 | 3,500 | 48,000 | 36,000 | 0,500 | 8,600 | 2 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,500 | 54,000 | 36,000 | 0,500 | 10,800 | 2 | 5,003 |
| M 6 X0,75 | 0,750 | 4,750 | 8,000 | 6,600 | 5,200 | 62,000 | 36,000 | 0,750 | 12,900 | 2 | 6,004 |
| M8 x 0,75 | 0,750 | 6,350 | 10,000 | 9,000 | 7,200 | 74,000 | 40,000 | 0,750 | 17,100 | 2 | 8,004 |
| M8 x 1 | 1,000 | 6,350 | 10,000 | 9,000 | 7,000 | 74,000 | 40,000 | 1,000 | 17,300 | 2 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,000 | 80,000 | 45,000 | 1,000 | 21,600 | 2 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,800 | 80,000 | 45,000 | 1,250 | 21,600 | 2 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,000 | 90,000 | 45,000 | 1,000 | 26,000 | 2 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,500 | 90,000 | 45,000 | 1,500 | 27,400 | 2 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,500 | 102,000 | 48,000 | 1,500 | 30,800 | 2 | 14,007 |
| M16 x 1,5 | 1,500 | 13,200 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 34,100 | 2 | 16,007 |

## Fresas de roscar y taladrar para roscas UNF

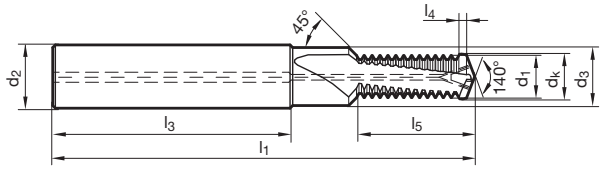
2xD

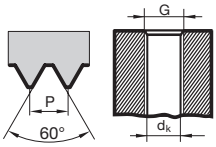
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | ○ | C |
| Tipo | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HA |





| Norma de fab. | Artículo Nº | 4138 | 4139 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 1,270 | 5,000 | 8,000 | 6,600 | 5,100 | 62,000 | 36,000 | 1,300 | 14,900 | 2 | 6,350 |
| 5/16 - 18 | 1,411 | 6,250 | 10,000 | 9,000 | 6,600 | 74,000 | 40,000 | 1,500 | 18,100 | 2 | 7,938 |
| 3/8 - 16 | 1,587 | 7,500 | 12,000 | 11,000 | 8,000 | 80,000 | 45,000 | 1,500 | 22,100 | 2 | 9,525 |
| 7/16 - 14 | 1,814 | 8,800 | 12,000 | 11,000 | 9,400 | 80,000 | 45,000 | 1,500 | 25,000 | 2 | 11,113 |
| 1/2 - 13 | 1,954 | 10,200 | 14,000 | 13,500 | 10,800 | 90,000 | 45,000 | 1,500 | 26,900 | 2 | 12,700 |
| 9/16 - 12 | 2,117 | 11,600 | 16,000 | 15,500 | 12,200 | 102,000 | 48,000 | 1,500 | 31,200 | 2 | 14,288 |
| 5/8 - 11 | 2,309 | 13,000 | 18,000 | 17,500 | 13,500 | 102,000 | 48,000 | 1,500 | 36,300 | 2 | 15,875 |

## Fresas de roscar y taladrar para roscas UNF

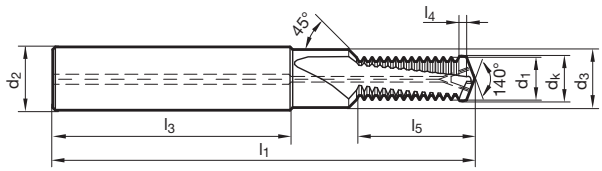
2xD

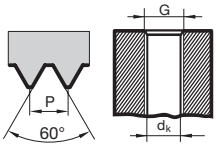
| | |
|---|---|
| P | |
| M | |
| K | • |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 355

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | ○ | C |
| Tipo | DTMC SP | DTMC SP |
| Con refrigeración interna | ⊠ | ⊟ |
| Forma del mango | HA | HA |





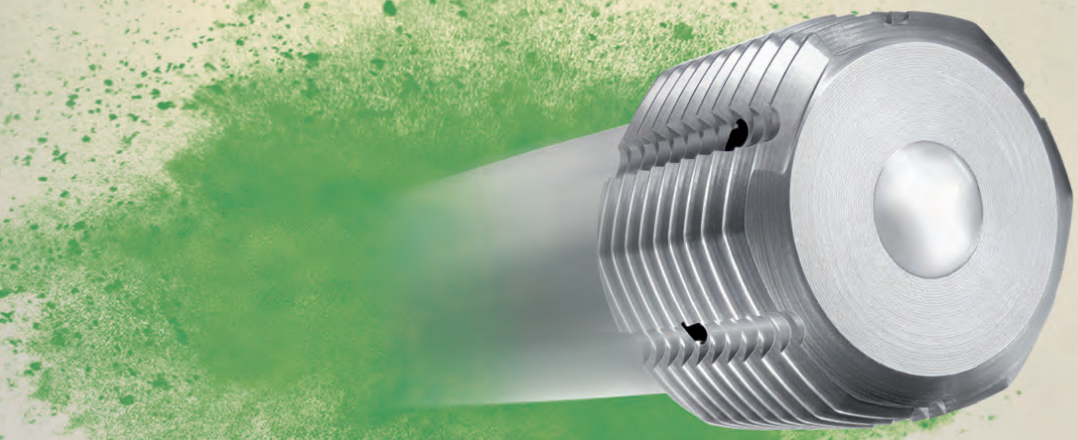



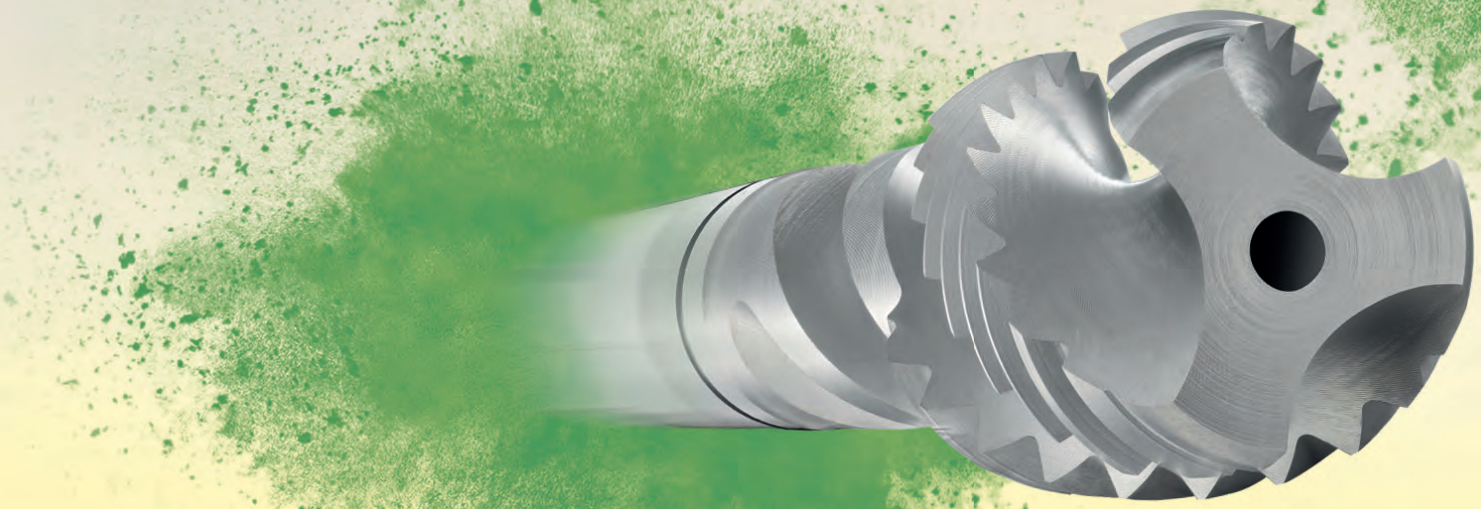
| Norma de fab. | Artículo Nº | 4140 | 4141 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 0,907 | 5,000 | 8,000 | 6,600 | 5,500 | 62,000 | 36,000 | 1,000 | 12,800 | 2 | 6,350 |
| 5/16 - 24 | 1,058 | 6,250 | 10,000 | 9,000 | 6,900 | 74,000 | 40,000 | 1,100 | 18,200 | 2 | 7,938 |
| 3/8 - 24 | 1,058 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,100 | 20,600 | 2 | 9,525 |
| 7/16 - 20 | 1,270 | 9,500 | 12,000 | 11,000 | 9,900 | 80,000 | 45,000 | 1,300 | 24,700 | 2 | 11,113 |
| 1/2 - 20 | 1,270 | 10,200 | 14,000 | 13,500 | 11,500 | 90,000 | 45,000 | 1,300 | 27,500 | 2 | 12,700 |
| 9/16 - 18 | 1,411 | 11,600 | 16,000 | 15,500 | 12,900 | 102,000 | 48,000 | 1,500 | 30,600 | 2 | 14,288 |
| 5/8 - 18 | 1,411 | 13,000 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 33,700 | 2 | 15,875 |

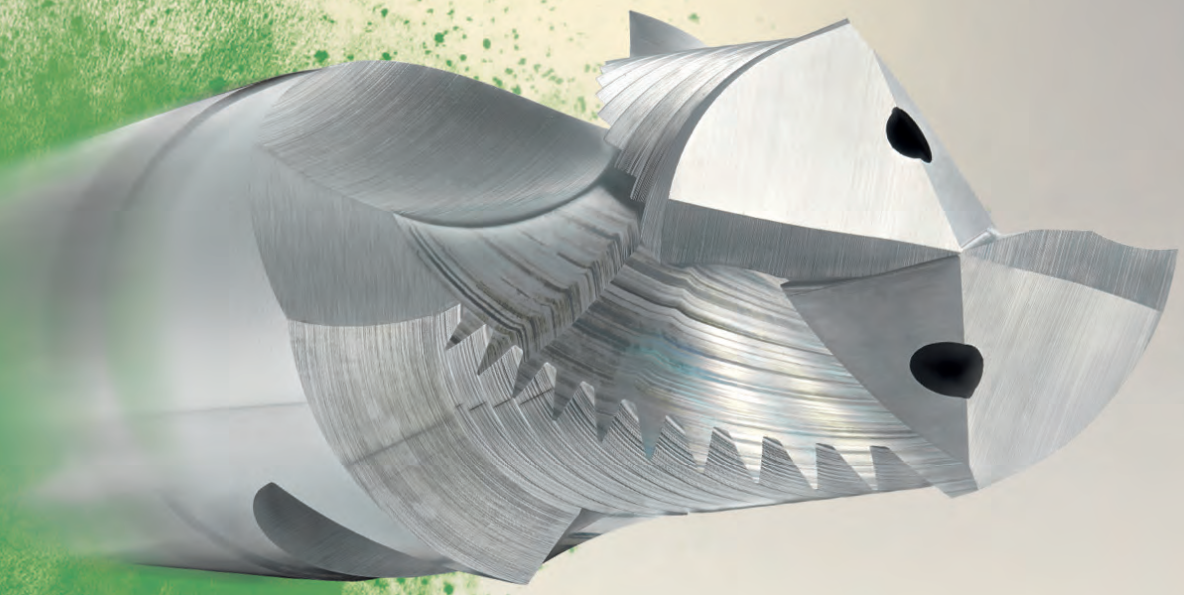
# N

Aluminios, aleaciones de fudición, aleaciones de cobre y metales no ferríticos





# ALUMINIOS





## METALES NO FERRÍTICOS PLÁSTICOS

# N ALUMINIO, NE, PLÁSTICOS

| | M | | MF | |
|---|---|---|---|---|
| | ISO 2/6H | ISO 3/6G | ISO 2/6H | ISO 3/6G |
| Aluminio ≤ 6% Si | No 1 M2 - M24 Art. N° 805/817 desde página 472 | | | |
| | M2 - M30 Art. N° 1870/1872 desde página 473 | | No 1 M5x0,5 - M24x2 Art. N° 1873 desde página 487 | |
| Aluminio ≥ 6% Si | No 1 M3 - M20 Art. N° 1858/1859 desde página 476 | | No 1 M5x0,5 - M20x1,5 Art. N° 1861/1860 desde página 491 | |
| aleaciones metales no ferrosos | No 1 M3 - M10 Art. N° 800 desde página 482 | No 1 M3 - M10 Art. N° 1084 desde página 482 | | |
| | No 1 M3 - M20 Art. N° 1858/1859 desde página 476 | | No 1 M5x0,5 - M20x1,5 Art. N° 1861/1860 desde página 491 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA **PASANTE**

HSS-E, blancas, Forma B

No 1
Nr. 4 - 1
Art. N° 1980/1985
desde página 498

No 1
Nr. 10 - 3/8
Art. N° 1990
desde página 500

No 1
G1/16 - G7/8
Art. N° 967
desde página 502

Form B, blancas

METAL DURO

Metal duro, blancas, Forma C

HSS-E, blancas, Forma E

METAL DURO

Metal duro, blancas, Forma C

Aluminio, metales no férricos y plásticos

# N ALUMINIO, NE, PLÁSTICOS

| | M | | MF | |
|---|---|---|---|---|
| | ISO 2/6H | ISO 3/6G | ISO 2/6H | ISO 3/6G |
| Aluminio ≤ 6% Si | No 1 M1,6 - M24 Art. N° 812/824 desde página 474 | | | |
| | M3 - M30 Art. N° 814/825 desde página 475 | | | |
| Aluminio ≥ 6% Si | No 1 M5 - M20 Art. N° 302/297 desde página 479 | | No 1 M5x0,5 - M16x1,5 Art. N° 1090 desde página 496 | |
| | No 1 M3 - M20 Art. N° 969/1883 desde página 476 | | No 1 M5x0,5 - M20x1,5 Art. N° 972/974 desde página 491 | |
| aleaciones metales no ferrosos | No 1 M3 - M10 Art. N° 800 desde página 482 | No 1 M3 - M10 Art. N° 1084 desde página 482 | | |
| | No 1 M3 - M20 Art. N° 969/1883 desde página 476 | | No 1 M5x0,5 - M20x1,5 Art. N° 972/974 desde página 491 | |

No 1 herramienta ideal

# QUICKFINDER

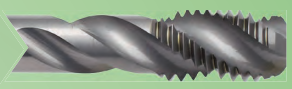
| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |

ROSCA **CIEGA**

HSS-E, blancas, Forma C

No 1
Nr. 2 - 7/8
Art. N° 1981/1986
desde página 499

No 1
Nr. 1/4 - 1
Art. N° 2867
desde página 501



HSS-E, blancas, Forma C

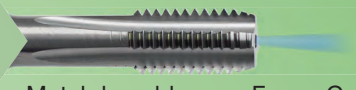
HSS-E-PM, TiCN, Forma C

METAL DURO

Metal duro, blancas, Forma C

HSS-E, blancas, Forma E

METAL DURO



Metal duro, blancas, Forma C

# N ALUMINIO, NE, PLÁSTICOS

sin ranuras de lubr.

con ranuras de lubr.

con refrigeración interna

## M

### ISO 2/6HX

No 1
M1 - M20
Art. N° 1347/1566
desde página 506

M1 - M20
Art. N° 921/925
desde página 506

M3 - M39
Art. N° 919/923
desde página 510

No 1
M3 - M39
Art. N° 2012/2013
desde página 510

No 1
M5 - M20
Art. N° 2515
desde página 517

No 1
M3 - M20
Art. N° 1725/1727
desde página 516

No 1
M3 - M20
Art. N° 1972/1931
desde página 522

### ISO 3/6GX

No 1
M2 - M20
Art. N° 1565/1567
desde página 508

M2 - M10
Art. N° 920
desde página 507

No 1
M3 - M39
Art. N° 918/922
desde página 510

No 1
M5 - M20
Art. N° 4146
desde página 520

No 1
M3 - M20
Art. N° 1726/1728
desde página 519

## MF

### ISO 2/6HX

No 1
M8x1 - M10x1
Art. N° 1568
desde página 526

M8x1 - M20x1,5
Art. N° 929
desde página 524

M6x0,75 - M24x1,5
Art. N° 1275/927
desde página 530

No 1
M6x0,75 - M20x1,5
Art. N° 2008
desde página 531

No 1
M8x1 - M16x1,5
Art. N° 4147
desde página 537

No 1
M8x1 - M24x1,5
Art. N° 1729/1731
desde página 536

No 1
M10x1 - M24x1,5
Art. N° 1581
desde página 541

### ISO 3/6GX

No 1
M8x1 - M24x1,5
Art. N° 1569/1580
desde página 529

M8x1 - M18x1,5
Art. N° 928
desde página 528

No 1
M8x1 - M20x1,5
Art. N° 1277/926
desde página 532

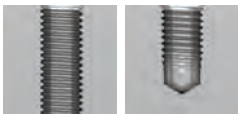
No 1
M8x1 - M16x1,5
Art. N° 4151
desde página 539

No 1
M8x1 - M24x1,5
Art. N° 1730/1732
desde página 538

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2BX | 2BX | - |



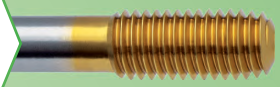
ROSCA **PASANTE**
ROSCA **CIEGA**

HSS-E-PM, Carbo, Forma C

**No 1**
Nr. 4 - 7/8
Art. N° 2273/2274
desde página 542

**No 1**
Nr. 4 - 1
Art. N° 1283/2275
desde página 543

**No 1**
G1/16 - G1 1/4
Art. N° 966
desde página 544



HSS-E, TiN, Forma C

**No 1**
Nr. 4 - 7/8
Art. N° 1582/1583
desde página 542

**No 1**
Nr. 4 - 1
Art. N° 1584/1585
desde página 543

**No 1**
G1/16 - G3/4
Art. N° 1586
desde página 545

HSS-E, TiN, Forma C

HSS-E, TiCN, Forma C

FORMA C

**No 1**
G1/16 - G1
Art. N° 4152
desde página 546

HSS-E, Carbo, Forma C

FORMA E

HSS-E-PM, TiN, Forma E

METAL DURO

Metal duro, TiAlN, Forma C

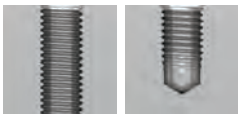
# N ALUMINIO, NE, PLÁSTICOS

| | M | MF |
|---|---|---|
| | **UNIVERSAL** | **UNIVERSAL** |
| 1,5xD | No 1<br>M3 - M20<br>Art. N° 3510<br>desde página 551 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3512<br>desde página 554 |
| 2xD | No 1<br>M3 - M20<br>Art. N° 3511<br>desde página 552 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3513<br>desde página 555 |
| 2,5xD | No 1<br>M3 - M20<br>Art. N° 3759<br>desde página 553 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3762<br>desde página 556 |
| 3xD | No 1<br>M1,6 - M16<br>Art. N° 4226<br>desde página 578 | |
| universal | No 1<br>Ø8xP0,5 - Ø20xP3,5<br>Art. N° 3523<br>desde página 572 | No 1<br>Ø8xP0,5 - Ø20xP3,5<br>Art. N° 3523<br>desde página 572 |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**



| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3516<br>desde página 558 | No 1<br>1/4 - 1/2<br>Art. N° 3518<br>desde página 561 | No 1<br>1/8 - 3/8<br>Art. N° 3514<br>desde página 565 |

Metal duro, blancas

| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3517<br>desde página 559 | No 1<br>1/4 - 1/2<br>Art. N° 3519<br>desde página 562 | No 1<br>1/8 - 3/8<br>Art. N° 3515<br>desde página 566 |

Metal duro, blancas

Metal duro, TiCN

Metal duro, TiCN

| UNC | UNF | G |
|---|---|---|
| No 1<br>Ø10xUN24 - Ø20xUN7<br>Art. N° 3595<br>desde página 574 | No 1<br>Ø10xUN24 - Ø20xUN7<br>Art. N° 3595<br>desde página 574 | No 1<br>Ø10xG19 - Ø20xG11<br>Art. N° 3542<br>desde página 575 |

Metal duro, blancas

# N ALUMINIO, NE, PLÁSTICOS

## M
### UNIVERSAL

## MF
### UNIVERSAL

**1,5xD**

No 1
M3 - M16
Art. N° 3775
desde página 581

No 1
M4x0,5 - M16x1,5
Art. N° 3787
desde página 584

M3 - M16
Art. N° 3774
desde página 581

**2xD**

No 1
M3 - M16
Art. N° 3779
desde página 582

No 1
M4x0,5 - M16x1,5
Art. N° 3791
desde página 585

M3 - M16
Art. N° 3778
desde página 582

M4x0,5 - M16x1,5
Art. N° 3790
desde página 585

**2,5xD**

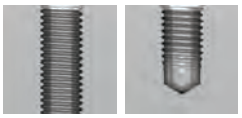
No 1
M3 - M16
Art. N° 3783
desde página 583

M3 - M16
Art. N° 3782
desde página 583

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

Metal duro, blancas

Metal duro, blancas

Metal duro, blancas

Metal duro, blancas

Metal duro, blancas

Metal duro, blancas

Aluminio, metales no férricos y plásticos

N

# COMPÁS

**N**

**ALUMINIO, METALES NO FERRÍTICOS Y PLÁSTICOS**

| | | | | | | |
|---|---|---|---|---|---|---|
| | Profundidad de la rosca | ≤3xD | | | | |
| | Material de corte | HSS-E | | | Metal duro | |
| | Tipo/forma | Al / B | VA / B | MS / E | H /C | NL15 /D |
| | Acabado | ◯ | ◯ | ◯ | ◯ | ◯ |
| | Transmisión de refrig. | ☒ | ☒ | ☒ | radialm. | radialm. |
| | Tolerancia del mango | h9 | h9 | h9 | h9 | h9 |
| ROSCA PASANTE | | | | | | |

| Tipo de rosca | tolerancia | número de artículo/página catálogo | | | | |
|---|---|---|---|---|---|---|
| M | 4H | | | | | |
| | 6H | 805/817 472 | 1870/1872 473 | 800 482 | | |
| | 6HX | | | | 1858/1859 476 | |
| | 6G | | | 1084 482 | | |
| MF | 6H | | 1873 487 | | | |
| | 6HX | | | | 1861/1860 491 | 975/976 495 |
| | 6G | | | | | |
| UNC | 2B | | 1980/1985 498 | | | |
| | 2BX | | | | | |
| UNF | 2B | | 1990 500 | | | |
| | 2BX | | | | | |
| G | | | 967 502 | | | |
| BSW | | | | | | |
| NPT | | | | | | |
| NPTF | | | | | | |
| EG M | 6H Mod. | | | | | |
| MJ | 4HX | | | | | |
| MJF | 4HX | | | | | |
| UNJC | 3BX | | | | | |
| UNJF | 3BX | | | | | |
| PG | | | | | | |
| refrigerante apropiado | | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ |

= No 1

◯ = aire
● = aceite
◯ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N | aluminio, aleaciones de aluminio | ≤450 N/mm² | Al99,5H | 3.0250 | 15 | 15 | - | - | - |
| | | | AlMgSi1 | 32315 | | | | | |
| | | | AlZn4,5Mg | 3.4335 | | | | | |
| | aleaciones de fundición de aluminio | ≤600 N/mm² | GD-AlSi5Cu1Mg | 3.2134 | - | - | - | 50 | 50 |
| | | | GD-AlSi8Cu3 | 3.2162 | | | | | |
| | | | G-AlSi9Mg | 3.2373 | | | | | |
| | | | G-AlSi12 | 3.2581 | | | | | |
| | aleaciones de magnesio | ≤500 N/mm² | GDMgAl8Zn1 | 3.5812.08 | - | - | - | 50 | 50 |
| | cobre y aleaciones de cobre | viruta larga | CuZn20 | 2.0250 | 15 | 15 | - | - | - |
| | | | CuZn37Pb0,5 | 2.0332 | | | | | |
| | | viruta corta | CuZn39Pb2 | 2.0380 | - | - | 20 | 50 | 50 |
| | | | CuZn43Pb2 | 2.0410 | | | | | |
| | Aleac. espec. de cobre | ≤1400 N/mm² | Ampco | | - | - | 2 | - | - |

**N**

**ALUMINIO, METALES NO FERRÍTICOS Y PLÁSTICOS**

ROSCA CIEGA

| | | | | | |
|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | |
| Material de corte | | HSS-E | | | |
| Tipo/forma | | Al R45 / C | NR40 / C | MS / E | NAZ / E |
| Acabado | | ○ | ○ | ○ | A+M |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | axialm. |
| Tolerancia del mango | | h9 | h9 | h9 | h9 |
| | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | |
| **M** | 4H | | | | |
| | 6H | 812/824 474 | 814/825 475 | 800 482 | 2899 484 |
| | 6HX | | | | |
| | 6G | | | 1084 482 | |
| **MF** | 6H | | 936 488 | | |
| | 6HX | | | | |
| | 6G | | | | |
| **UNC** | 2B | | 1981/1986 499 | | |
| | 2BX | | | | |
| **UNF** | 2B | | 2867 501 | | |
| | 2BX | | | | |
| **G** | | | 939 503 | | |
| **BSW** | | | | | |
| **NPT** | | | | | |
| **NPTF** | | | | | |
| **EG M** | 6H Mod. | | | | |
| **MJ** | 4HX | | | | |
| **MJF** | 4HX | | | | |
| **UNJC** | 3BX | | | | |
| **UNJF** | 3BX | | | | |
| **PG** | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabrica-ción-nº | velocidad de corte recomendada vc m/min | | | |
|---|---|---|---|---|---|---|---|---|
| N | aluminio, aleaciones de aluminio | ≤450 N/mm² | Al99,5H | 3.0250 | **15** | **15** | - | - |
| | | | AlMgSi1 | 32315 | | | | |
| | | | AlZn4,5Mg | 3.4335 | | | | |
| | aleaciones de fundición de aluminio | ≤600 N/mm² | GD-AlSi5Cu1Mg | 3.2134 | - | - | - | - |
| | | | GD-AlSi8Cu3 | 3.2162 | | | | |
| | | | G-AlSi9Mg | 3.2373 | | | | |
| | | | G-AlSi12 | 3.2581 | | | | |
| | aleaciones de magnesio | ≤500 N/mm² | GDMgAl8Zn1 | 3.5812.08 | - | - | - | **20** |
| | cobre y aleaciones de cobre | viruta larga | CuZn20 | 2.0250 | **15** | **15** | - | - |
| | | | CuZn37Pb0,5 | 2.0332 | | | | |
| | | viruta corta | CuZn39Pb2 | 2.0380 | - | - | **20** | - |
| | | | CuZn43Pb2 | 2.0410 | | | | |
| | Aleac. espec. de cobre | ≤1400 N/mm² | Ampco | | - | - | 2 | - |

# ≤3xD

| HSS-E | | HSS-E-PM | | | | | | Metal duro | | |
|---|---|---|---|---|---|---|---|---|---|---|
| H / C | H / C | H / C | H / E | NR50 / C | NR50 / C | VA R50/C | VA R50/C | H / C | H / E | HR 15 / C |
| C | C | C | C | S | C | S | C | ◯ | ◯ | ◯ |
| axialm. | axialm. | axialm. | axialm. | ☒ | axialm. | ☒ | axialm. | axialm. | axialm. | axialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 | h6 | h6 | h6 |
| | extra larga | | | | | machos de roscar Synchro | machos de roscar Synchro | | | |
| número de artículo/página catálogo | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | 767/1098<br>485 | 1152/1293<br>485 | | | | | |
| 778<br>480 | 779<br>481 | 302/297<br>479 | 1091/4165<br>479 | | | 761/763<br>486 | 1139/1142<br>486 | 969/1883<br>476 | 1008<br>477 | 971<br>478 |
| | | | | | | | | | | |
| | | | | 1100<br>489 | 1294<br>489 | | | | | |
| | | 1090<br>496 | 1007<br>497 | | | 764<br>490 | 1144<br>490 | 972/974<br>491 | 1009<br>492 | 977/978<br>493 |
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| | | | | | | 4159<br>504 | | | | |
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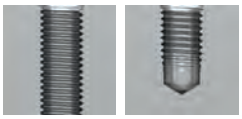
| ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ | ◯/●/△ |

| velocidad de corte recomendada vc m/min | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | - | - | - | - | - | - | - |
| 25 | 25 | 30 | 30 | 20 | 25 | 25 | 25 | 50 | 50 | 50 |
| - | - | - | - | - | - | - | - | 50 | 50 | 50 |
| - | - | - | - | 20 | 25 | 25 | 25 | - | - | - |
| - | - | - | - | - | - | - | - | 50 | 50 | 50 |
| - | - | - | - | - | - | - | - | - | - | - |

Aluminio, metales no férricos y plásticos

**N**

**ALUMINIO, METALES NO FERRÍTICOS Y PLÁSTICOS**



ROSCA PASANTE Y CIEGA

| | | | | | | |
|---|---|---|---|---|---|---|
| Profundidad de la rosca | | **1,5xD** | | | | |
| Material de corte | | **HSS-E** | **HSS-E-PM** | | Metal duro | |
| Tipo/forma | | N / C | N / C | N / C | N / C | |
| Acabado | | (S) | (S) | (Cb) | (S) | |
| Transmisión de refrig. | | ☒ | ☒ | ☒ | axialm. | |
| Tolerancia del mango | | h9 | h9 | h9 | h6 | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | | |
| **M** | 4H | | | | | |
| | 6H | | | | | |
| | 6HX | 921/925<br>506 | 1255/1256<br>506 | 1347/1556<br>506 | 2518<br>509 | |
| | 6GX | 920<br>507 | 903/952<br>508 | 1565/1567<br>508 | | |
| **MF** | 6H | | | | | |
| | 6HX | 929<br>524 | 1257/1258<br>525 | 1568<br>526 | | |
| | 6GX | 928<br>528 | 1740<br>527 | 1569/1580<br>529 | | |
| **UNC** | 2B | | | | | |
| | 2BX | 2273/2274<br>542 | | | | |
| **UNF** | 2B | | | | | |
| | 2BX | 1283/2275<br>543 | | | | |
| **G** | | 966<br>544 | | | | |
| **BSW** | | | | | | |
| **NPT** | | | | | | |
| **NPTF** | | | | | | |
| **EG M** | 6H Mod. | | | | | |
| **MJ** | 4HX | | | | | |
| **MJF** | 4HX | | | | | |
| **UNJC** | 3BX | | | | | |
| **UNJF** | 3BX | | | | | |
| **PG** | | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△ | ○/●/△ | |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | |
|---|---|---|---|---|---|---|---|---|
| N | aluminio, aleaciones de aluminio | ≤450 N/mm² | Al99,5H<br>AlMgSi1<br>AlZn4,5Mg | 3.0250<br>32315<br>3.4335 | 20 | 20 | **30** | **45** |
| | aleaciones de fundición de aluminio | ≤600 N/mm² | GD-AlSi5Cu1Mg<br>GD-AlSi8Cu3<br>G-AlSi9Mg<br>G-AlSi12 | 3.2134<br>3.2162<br>3.2373<br>3.2581 | **20** | **20** | **30** | **45** |
| | aleaciones de magnesio | ≤500 N/mm² | GDMgAl8Zn1 | 3.5812.08 | - | - | - | - |
| | cobre y aleaciones de cobre | viruta larga | CuZn20<br>CuZn37Pb0,5 | 2.0250<br>2.0332 | 20 | 20 | **30** | **45** |
| | | viruta corta | CuZn39Pb2<br>CuZn43Pb2 | 2.0380<br>2.0410 | - | - | - | - |
| | Aleac. espec. de cobre | ≤1400 N/mm² | Ampco | | - | - | - | - |

# ≤3xD

| HSS-E | | | | | HSS-E-PM | | | | | | Metal duro | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / C | N / E | N / C | N / E |
| S | C | S+ | C | Cb | S | S | S | S | C | S | C | C |
| ☒ | ☒ | axialm. | radialm. | axialm. | ☒ | ☒ | radialm. | axialm. | radialm. | axialm. | radialm. | radialm. |
| h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h9 | h6 | h6 |
| | | | | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| 919/923 510 | 2012/2013 510 | 2442/2444 513 | 2446/2448 513 | 2515 517 | 322/339 511 | 1266/1267 512 | 323/342 515 | 4143 521 | 1270/1271 516 | 1725/1727 516 | 1972/1931 522 | 1927 523 |
| 918/922 510 | | 2443/2445 513 | 2447 514 | 4146 520 | | | | | 1713 518 | 1726/1728 519 | | |
| | | | | | | | | | | | | |
| 1275/927 530 | 2008 531 | | | 4147 537 | 333 533 | 1268/1269 534 | 338 535 | 4145 540 | 1272/1273 536 | 1729/1731 536 | 1581 541 | |
| 1277/926 532 | | | | 4151 539 | | | | | 1715/1716 538 | 1730/1732 538 | | |
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| 1582/1583 542 | | | | | | | | | | | | |
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| 1584/1585 543 | | | | | | | | | | | | |
| 1586 545 | | | | 4152 546 | | | | | | | | |
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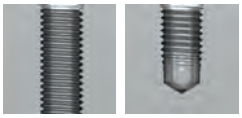
| velocidad de corte recomendada vc m/min | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | **25** | 20 | **25** | **30** | 20 | 20 | 20 | 20 | **20** | 20 | **45** | **45** |
| **20** | **25** | **20** | **25** | **30** | **20** | **20** | **20** | **20** | **25** | **20** | **45** | **45** |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| 20 | 25 | 20 | 25 | 30 | 20 | 20 | 20 | 20 | 20 | 20 | **45** | **45** |
| - | - | - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - | - | - |

**N**

**ALUMINIO, METALES NO FERRÍTICOS Y PLÁSTICOS**



ROSCA PASANTE Y CIEGA

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤2xD | | | | | ≤2,5xD | |
| Material de corte | | Metal duro | | | | | | |
| Tipo | | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP |
| Acabado | | C | C | ○ | C | C | C | C |
| Transmisión de refrig. | | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. |
| Forma del mango | | HA | HB | HA | HA | HB | HA | HB |
| Espiral | | 27° | 27° | 27° | 27° | 27° | 27° | 27° |
| | | | | | | | | |
| **Tipo de rosca** | | **número de artículo/página catálogo** | | | | | | |
| **M** | | 4132 549 | 4133 549 | 3734 548 | 3737 548 | 3743 548 | 3735 550 | 3740 550 |
| **MF** | | | | 3734 548 | 3737 548 | 3743 548 | | |
| **UNC** | | | | | 4134 557 | 4135 557 | | |
| **UNF** | | | | | 4136 560 | 4137 560 | | |
| **G** | | | | | 3745 563 | 3748 563 | 3746 564 | 3750 564 |
| **BSW** | | | | | | | | |
| **NPT** | | | | | 3753 568 | 3754 568 | | |
| **NPTF** | | | | | 3756 570 | 3757 570 | | |
| **EG M** | | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | |
| **MJ** | | | | | | | | |
| **MJF** | | | | | | | | |
| **UNJC** | | | | | | | | |
| **UNJF** | | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N | aluminio, aleaciones de aluminio | ≤450 N/mm² | Al99,5H<br>AlMgSi1<br>AlZn4,5Mg | 3.0250<br>32315<br>3.4335 | + | + | ++ | + | + | + | + |
| | aleaciones de fundición de aluminio | ≤600 N/mm² | GD-AlSi5Cu1Mg<br>GD-AlSi8Cu3<br>G-AlSi9Mg<br>G-AlSi12 | 3.2134<br>3.2162<br>3.2373<br>3.2581 | +<br>+<br>++<br>++ | +<br>+<br>++<br>++ | ++<br>++<br>+<br>+ | +<br>+<br>++<br>++ | +<br>+<br>++<br>++ | +<br>+<br>++<br>++ | +<br>+<br>++<br>++ |
| | aleaciones de magnesio | ≤500 N/mm² | GDMgAl8Zn1 | 3.5812.08 | ++ | ++ | + | ++ | ++ | ++ | ++ |
| | cobre y aleaciones de cobre | viruta larga | CuZn20<br>CuZn37Pb0,5 | 2.0250<br>2.0332 | + | + | ++ | + | + | + | + |
| | | viruta corta | CuZn39Pb2<br>CuZn43Pb2 | 2.0380<br>2.0410 | + | + | ++ | + | + | + | + |
| | Aleac. espec. de cobre | ≤1400 N/mm² | Ampco | | + | + | + | + | + | + | + |

| ≤1,5xD | | | ≤2xD | | | ≤2,5xD | |
|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | |
| TMC SP | TMC SP | TMC SP | TMC SP | TMC SP | TMC SP | TMC SP | TMC SP |
| ○ | C | C | ○ | C | C | C | C |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| HA | HA | HB | HA | HA | HB | HA | HB |
| 10° | 10° | 10° | 10° | 10° | 10° | 27° | 27° |
| | | | | | | | |
| número de artículo/página catálogo | | | | | | | |
| 3510<br>551 | 3525<br>551 | 3543<br>551 | 3511<br>552 | 3526<br>552 | 3544<br>552 | 3759<br>553 | 3760<br>553 |
| 3512<br>554 | 3527<br>554 | 3545<br>554 | 3513<br>555 | 3528<br>555 | 3546<br>555 | 3762<br>556 | 3763<br>556 |
| | 3516<br>558 | 3534<br>558 | | 3517<br>559 | 3535<br>559 | | |
| | 3518<br>561 | 3536<br>561 | | 3519<br>562 | 3537<br>562 | | |
| | 3514<br>565 | 3529<br>565 | | 3515<br>566 | 3533<br>566 | 3765<br>567 | 3766<br>567 |
| | | | | | | | |
| | 3520<br>569 | 3538<br>569 | | | | | |
| | 3521<br>571 | 3539<br>571 | | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
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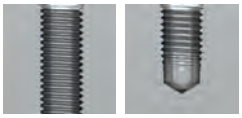
| ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

| recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|
| ++ | + | + | ++ | + | + | + | + |
| ++ | + | + | ++ | + | + | + | + |
| + | ++ | ++ | + | ++ | ++ | ++ | ++ |
| + | ++ | ++ | + | ++ | ++ | ++ | ++ |
| ++ | + | + | ++ | + | + | + | + |
| ++ | + | + | ++ | + | + | + | + |
| + | + | + | + | + | + | + | + |

**N**

**ALUMINIO, METALES NO FERRÍTICOS Y PLÁSTICOS**



ROSCA PASANTE Y CIEGA

| Profundidad de la rosca | universal | | | | | ≤3xD | |
|---|---|---|---|---|---|---|---|
| Material de corte | Metal duro | | | | | | |
| Tipo | TMU SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | MTM 1 SP |
| Acabado | ◯ | C | C | C | C | C | C |
| Transmisión de refrig. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ |
| Forma del mango | HA | HA | HB | HA | HB | HA | HA |
| Espiral | 15° | 15° | 15° | 15° | 15° | 15° | 15° |

| Tipo de rosca | número de artículo/página catálogo | | | | | | |
|---|---|---|---|---|---|---|---|
| **M** | 3523 572 | 3541 572 | 3556 572 | 4162 573 | 4163 573 | 4226 578 | 4225 580 |
| **MF** | 3523 572 | 3541 572 | 3556 572 | 4162 573 | 4163 573 | | 4225 580 |
| **UNC** | | 3595 574 | 3596 574 | | | | |
| **UNF** | | 3595 574 | 3596 574 | | | | |
| **G** | 3524 575 | 3542 575 | 3557 575 | 3542 575 | 3557 575 | 4228 579 | |
| **BSW** | | | | | | | |
| **NPT** | | 3769 576 | 3768 576 | | | | |
| **NPTF** | | 3772 577 | 3773 577 | | | | |
| **EG M** | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | |
| **MJ** | | | | | | | |
| **MJF** | | | | | | | |
| **UNJC** | | | | | | | |
| **UNJF** | | | | | | | |
| **PG** | | | | | | | |
| **refrigerante apropiado** | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● |

= No 1

◯ = aire
● = aceite
◯ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N | aluminio, aleaciones de aluminio | ≤450 N/mm² | Al99,5H<br>AlMgSi1<br>AlZn4,5Mg | 3.0250<br>32315<br>3.4335 | ++ | + | + | + | + | ++ | ++ |
| | aleaciones de fundición de aluminio | ≤600 N/mm² | GD-AlSi5Cu1Mg<br>GD-AlSi8Cu3<br>G-AlSi9Mg<br>G-AlSi12 | 3.2134<br>3.2162<br>3.2373<br>3.2581 | ++<br><br>+ | +<br><br>++ | +<br><br>++ | +<br><br>++ | +<br><br>++ | ++<br><br>++ | ++<br><br>++ |
| | aleaciones de magnesio | ≤500 N/mm² | GDMgAl8Zn1 | 3.5812.08 | + | ++ | ++ | ++ | ++ | ++ | ++ |
| | cobre y aleaciones de cobre | viruta larga | CuZn20<br>CuZn37Pb0,5 | 2.0250<br>2.0332 | ++ | + | + | + | + | ++ | ++ |
| | | viruta corta | CuZn39Pb2<br>CuZn43Pb2 | 2.0380<br>2.0410 | ++ | + | + | + | + | ++ | ++ |
| | Aleac. espec. de cobre | ≤1400 N/mm² | Ampco | | + | + | + | + | + | ++ | ++ |

| ≤1,5xD | | | | ≤2xD | | | | ≤2,5xD | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | | | | | |
| DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| ◯ | ◯ | C | C | ◯ | ◯ | C | C | ◯ | ◯ | C | C |
| ☒ | radialm. | ☒ | radialm. | ☒ | radialm. | ☒ | radialm. | ☒ | radialm. | ☒ | radialm. |
| HA | HA | HA | HA | HA | HA | HA | HA | HA | HA | HA | HA |
| 27° | 27° | 27° | 27° | 27° | 27° | 27° | 27° | 27° | 27° | 27° | 27° |
| | | | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | | | |
| 3774 581 | 3775 581 | 3776 581 | 3777 581 | 3778 582 | 3779 582 | 3780 582 | 3781 582 | 3782 583 | 3783 583 | 3784 583 | 3785 583 |
| | 3787 584 | 3788 584 | 3789 584 | 3790 585 | 3791 585 | 3792 585 | 3793 585 | | | | |
| | | | | 4138 586 | | | 4139 586 | | | | |
| | | | | 4140 587 | | | 4141 587 | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● | ◯/● |

| recomendación de aplicación | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ | + | + |
| ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ | + | + |
| + | + | ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ |
| + | + | ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ |
| ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ | + | + |
| ++ | ++ | + | + | ++ | ++ | + | + | ++ | ++ | + | + |
| + | + | + | + | + | + | + | + | + | + | + | + |

Aluminio, metales no férricos y plásticos

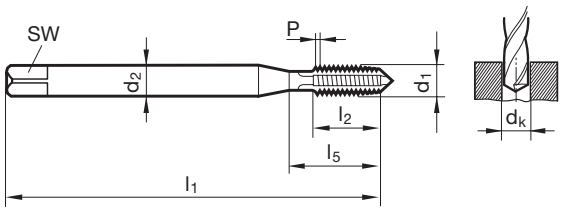
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | AI |
| Forma | B |
| Con refrigeración interna | ⊠ |

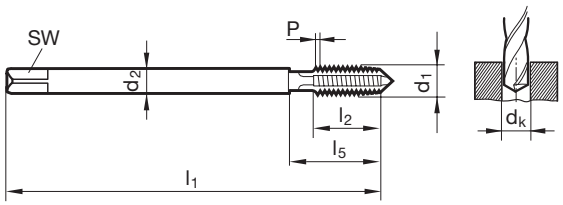
| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **805**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 45,000 | 9,000 | 14,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M2,6 | 0,450 | 2,800 | 2,100 | 2,15 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **817**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |

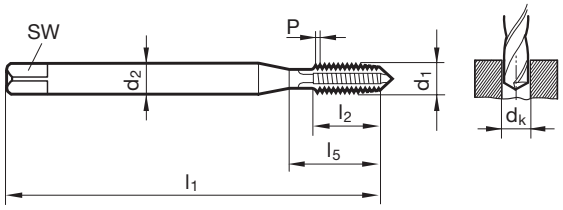
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

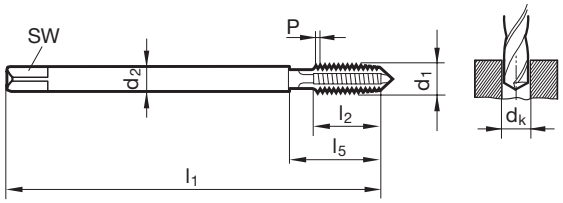
| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **1870**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **1872**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 2,200 | | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |

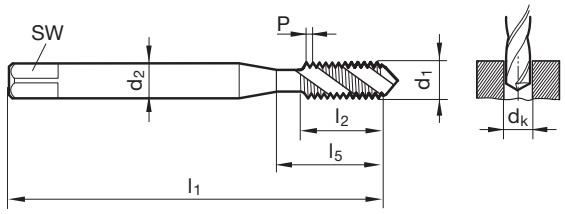
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | Al R45 |
| Forma | C |
| Con refrigeración interna | ⊠ |

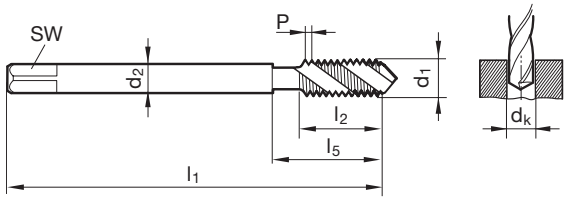
| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **812**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,25 | 40,000 | 4,500 | |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 4,500 | 13,500 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 45,000 | 5,000 | 14,500 |
| M2,3 | 0,400 | 2,800 | 2,100 | 1,90 | 45,000 | 4,500 | 14,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 5,000 | 14,500 |
| M2,6 | 0,450 | 2,800 | 2,100 | 2,15 | 50,000 | 5,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 7,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **824**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 2,200 | | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |

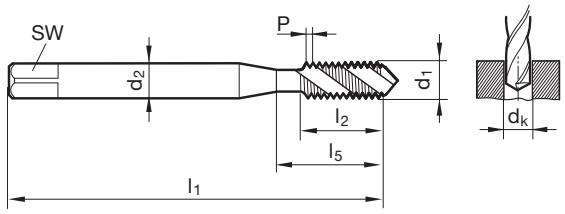
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ○ |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

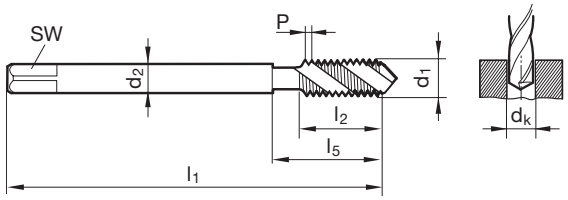
| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464

DIN 371




DIN 376



**DIN 2184-1 DIN 371** Artículo Nº **814**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

**DIN 2184-1 DIN 376** Artículo Nº **825**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 140,000 | 27,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 30,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 35,000 | 85,000 |

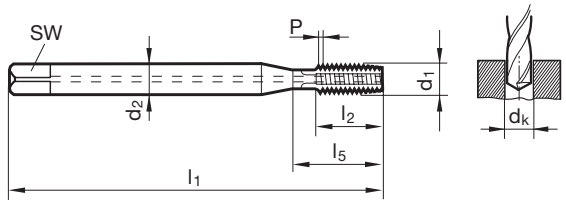
## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

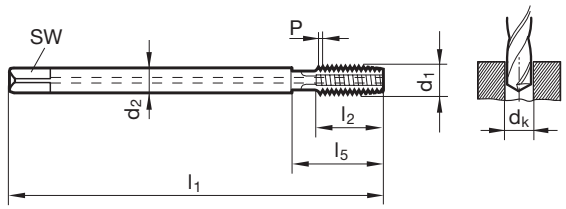
Condiciones de corte ver pág. 463/465

| Material de corte | Metal duro | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ◯ | ◯ |
| Tipo | H | H |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



| DIN 2184-1 DIN 371 | Artículo Nº | 969 | 1858 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 8,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 10,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

| DIN 2184-1 DIN 376 | Artículo Nº | 1883 | 1859 |
|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 22,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 22,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 22,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 125,000 | 24,000 | 45,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 45,000 |

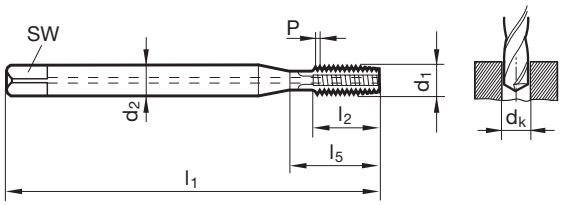
## Machos máq. refrig., rosca métr. ISO

h6

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | H |
| Forma | E |
| Con refrigeración interna | |



**DIN 2184-1 DIN 371** Artículo Nº **1008**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 8,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 10,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

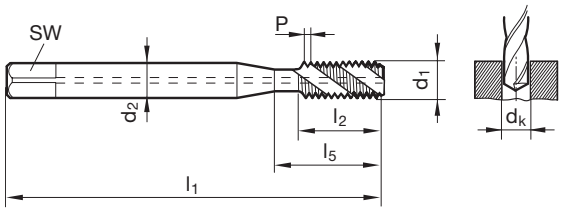
## Machos máq. refrig., rosca métr. ISO

h6

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 371** Artículo Nº **971**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 8,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 10,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 |

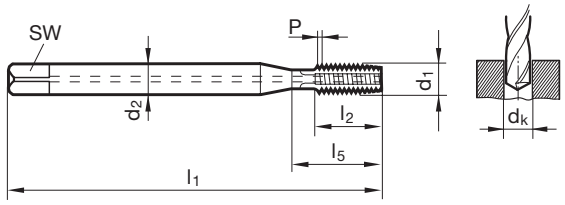
## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

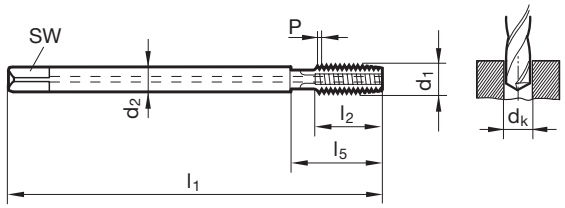
Condiciones de corte ver pág. 465

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | C |
| Tipo | H | H |
| Forma | C | E |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **302** **1091**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **297** **4165**

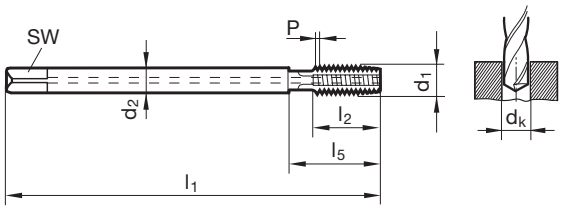
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |

## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465



**DIN 2184-1 DIN 376** — Artículo Nº **778**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 29,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 35,00 | 200,000 | 50,000 | 107,000 |

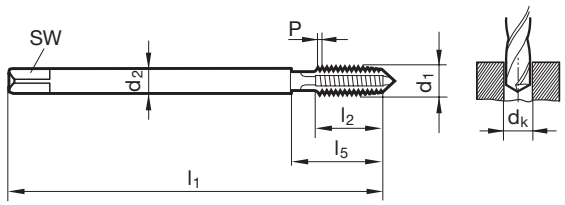
## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465

NEW



**Norma de fab.** Artículo Nº **779**

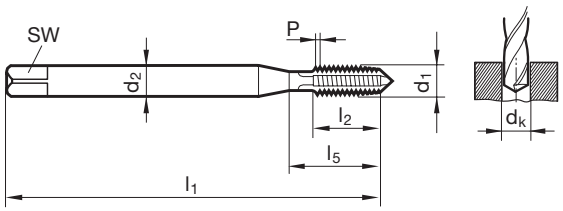
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 160,000 | 26,000 | 100,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 180,000 | 32,000 | 120,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 200,000 | 36,000 | 120,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 225,000 | 36,000 | 145,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 250,000 | 40,000 | 160,000 |
| M33 | 3,500 | 25,000 | 20,000 | 29,50 | 275,000 | 40,000 | 170,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 300,000 | 50,000 | 180,000 |
| M39 | 4,000 | 32,000 | 24,000 | 35,00 | 325,000 | 50,000 | 210,000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | ISO2/6H | ISO3/6G |
| Acabado | ◯ | ◯ |
| Tipo | Ms | Ms |
| Forma | E | E |
| Con refrigeración interna | ⊠ | ⊠ |

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 463/464



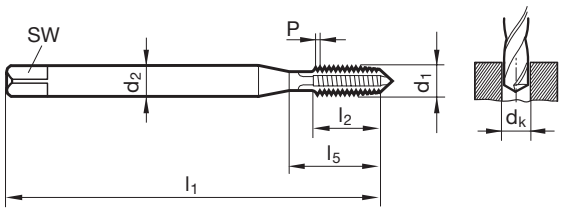
**DIN 2184-1 DIN 371** — Artículo Nº **800** **1084**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ● |
| Tipo | H AZ |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | ○ |
| S | |
| H | |



**DIN 2184-1 DIN 371** Artículo Nº **788**

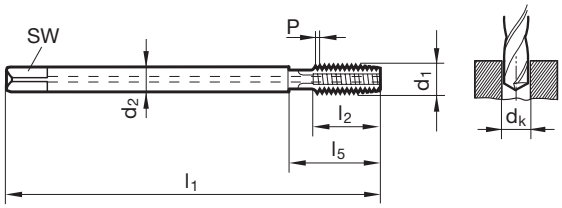
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 45,000 | 8,000 | 13,500 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 45,000 | 9,000 | 14,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |

## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | ISO2/6H |
| Acabado | A+M |
| Tipo | N AZ |
| Forma | E |
| Con refrigeración interna | |

P
M
K
N ○
S
H

Condiciones de corte ver pág. 464



**DIN 2184-1 DIN 376** Artículo Nº **2899**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 3,500 | 2,700 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |

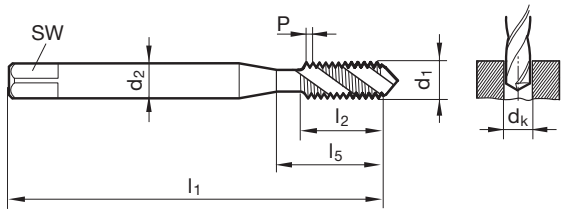
## Machos máquina para rosca métrica ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

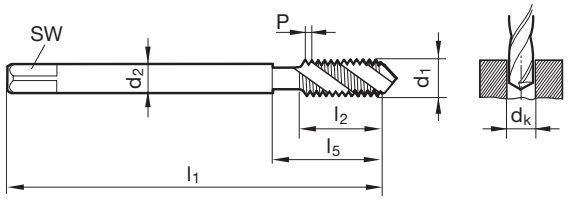
Condiciones de corte ver pág. 465

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **767** **1152**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 16,000 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **1098** **1293**

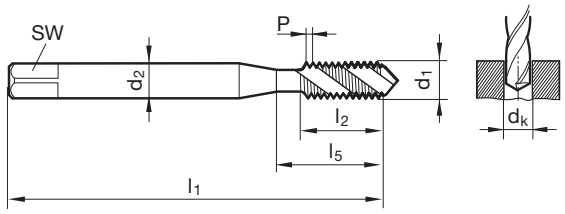
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 25,000 | 62,000 |

## Machos máquina para rosca métrica ISO

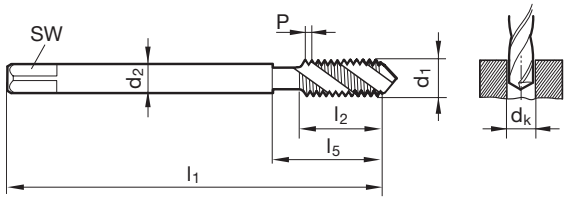
| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 465 |
| M | • | |
| K | ○ | |
| N | • | |
| S | ○ | |
| H | | |

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 376



**DIN 2184-1 DIN 371** — Artículo Nº **761** **1139**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 2,500 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 3,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 4,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 5,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 6,300 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 7,500 | 39,000 |

**DIN 2184-1 DIN 376** — Artículo Nº **763** **1142**

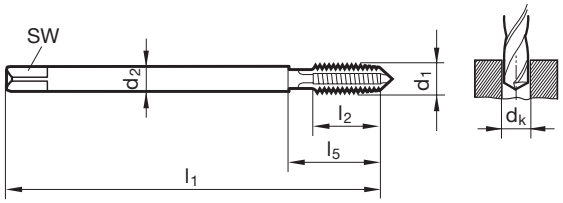
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 8,800 | 63,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 110,000 | 10,000 | 58,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 10,000 | 58,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 140,000 | 12,500 | 85,000 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ○ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463



**DIN 2184-1 DIN 374** Artículo Nº **1873**

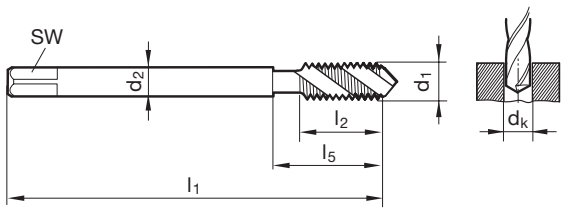
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M7 x 0,75 | 5,500 | 4,300 | 6,20 | 80,000 | 13,000 | 30,000 | 7,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | ISO2/6H |
| Acabado | ◯ |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464



**DIN 2184-1 DIN 374** — Artículo Nº **936**

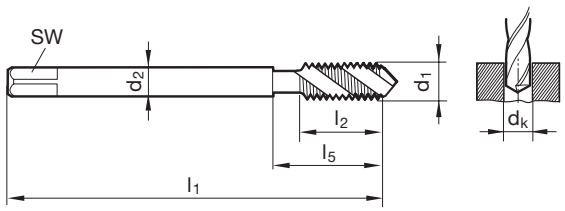
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 465

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | ISO2/6H | ISO2/6H |
| Acabado | S | C |
| Tipo | N R50 | N R50 |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **1100** **1294**

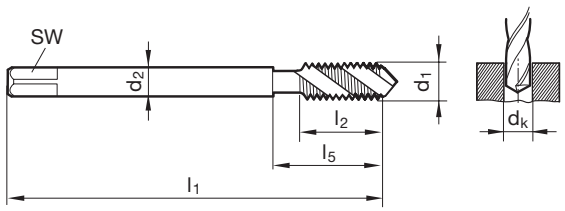
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 16,000 | 44,000 | 20,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Condiciones de corte ver pág.465

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | S | C |
| Tipo | VA R50 | VA R50 |
| Forma | C | C |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 374** — Artículo Nº **764** **1144**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 44,000 | 8,005 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 5,000 | 47,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 47,000 | 10,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 5,000 | 44,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 5,000 | 53,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 7,500 | 53,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 7,500 | 48,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 7,500 | 48,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 7,500 | 58,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 7,500 | 70,000 | 20,007 |

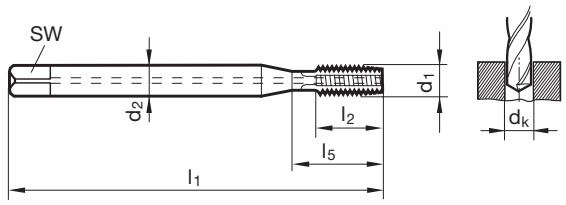
## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

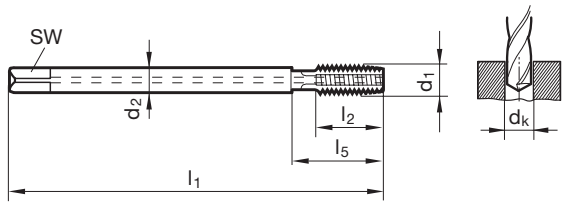
Condiciones de corte ver pág. 463/465

| Material de corte | Metal duro | |
|---|---|---|
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | ◯ | ◯ |
| Tipo | H | H |
| Forma | C | C |
| Con refrigeración interna | | |

DIN 371




DIN 374



**DIN 2184-1 DIN 371** — Artículo Nº **972** **1861**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |

**DIN 2184-1 DIN 374** — Artículo Nº **974** **1860**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 24,000 | 45,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 45,000 | 20,007 |

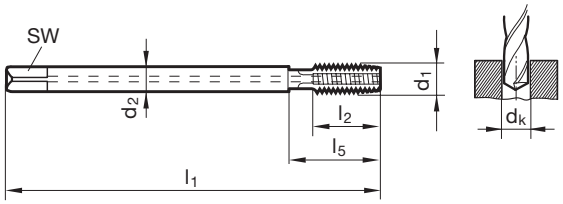
## Machos máq. refrig., rosca métr. fina ISO

h6

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | H |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465



**DIN 2184-1 ~DIN 371/~DIN 374** Artículo Nº **1009**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 22,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

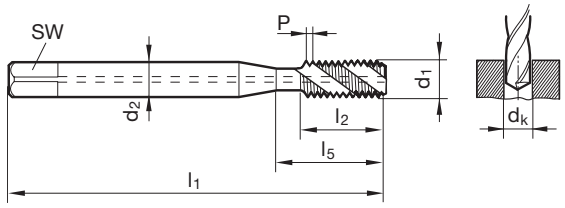
## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ≥ 7 |
| S | |
| H | |

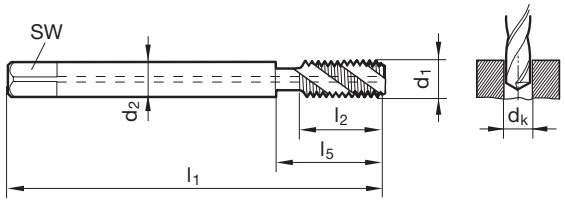
Condiciones de corte ver pág. 465

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | |

~ DIN 371




DIN 374



**DIN 2184-1 DIN 371** — Artículo Nº **977**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M4 x 0,5 | 4,500 | 3,400 | 3,50 | 63,000 | 10,000 | 21,000 | 4,003 |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 80,000 | 12,000 | 30,000 | 6,003 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |

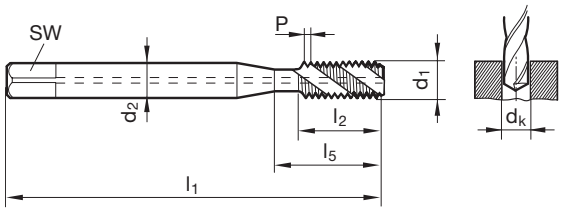
**DIN 2184-1 DIN 374** — Artículo Nº **978**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 24,000 | 45,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 125,000 | 25,000 | 45,000 | 20,007 |

## Machos máq. refrig., rosca métr. ISO

| | |
|---|---|
| P | |
| M | |
| K | |
| N | ≥ 7 |
| S | |
| H | |

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | M |
| Tipo | N R15 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 371** Artículo Nº **2516**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 | 6,000 | 4,900 | 4,20 | 70,000 | 10,000 | 25,000 | 5,000 |
| M6 | 6,000 | 4,900 | 5,00 | 80,000 | 12,000 | 30,000 | 6,000 |
| M8 | 8,000 | 6,200 | 6,80 | 90,000 | 16,000 | 35,000 | 8,000 |
| M10 | 10,000 | 8,000 | 8,50 | 100,000 | 18,000 | 39,000 | 10,000 |

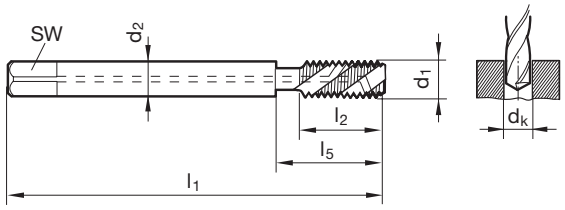
## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | ◯ |
| Tipo | N L15 |
| Forma | D |
| Con refrigeración interna | |

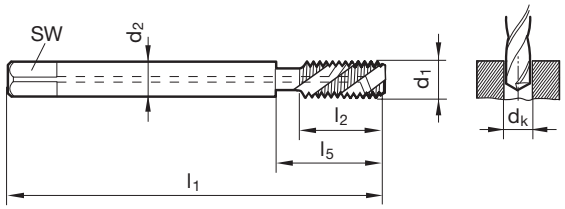
| | |
|---|---|
| P | |
| M | |
| K | |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 463

~ DIN 371




DIN 374



**DIN 2184-1 DIN 371** — Artículo Nº **975**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M4 x 0,5 | 4,500 | 3,400 | 3,50 | 63,000 | 10,000 | 21,000 | 4,003 |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 80,000 | 12,000 | 30,000 | 6,003 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 18,000 | 35,000 | 10,005 |

**DIN 2184-1 DIN 374** — Artículo Nº **976**

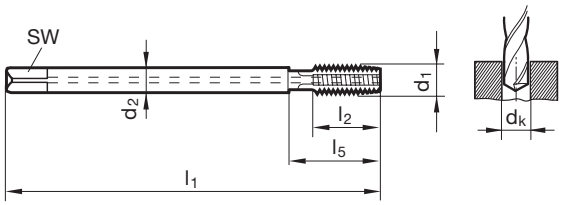
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 22,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 22,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 110,000 | 24,000 | 45,000 | 18,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465



**DIN 2184-1 DIN 374** — Artículo Nº **1090**

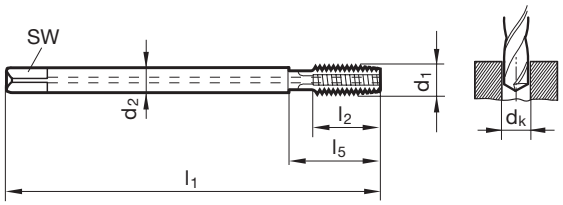
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M5 x 0,5 | 3,500 | 2,700 | 4,50 | 70,000 | 10,000 | 25,000 | 5,003 |
| M6 x 0,5 | 4,500 | 3,400 | 5,50 | 80,000 | 13,000 | 30,000 | 6,003 |
| M6 x 0,75 | 4,500 | 3,400 | 5,20 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

## Machos máq. refrig., rosca métr. fina ISO

| | |
|---|---|
| P | ≤ 1200 |
| M | |
| K | • |
| N | ≥ 7 |
| S | |
| H | |

Condiciones de corte ver pág. 465

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | E |
| Con refrigeración interna | |



**DIN 2184-1 DIN 374** — Artículo Nº **1007**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 16,007 |

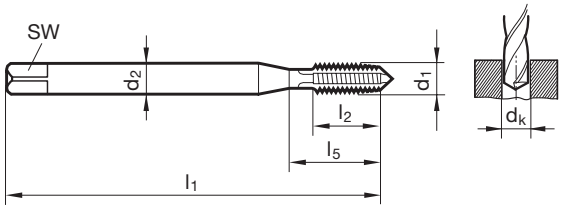
## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

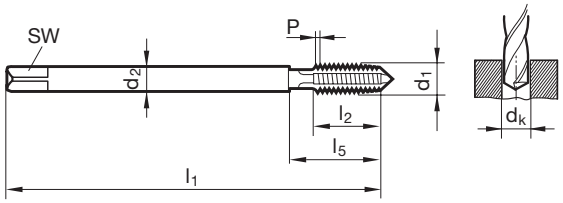
| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **1980**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 11,000 | 18,000 | 2,845 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **1985**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 35,000 | 62,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 160,000 | 38,000 | 73,000 | 25,400 |

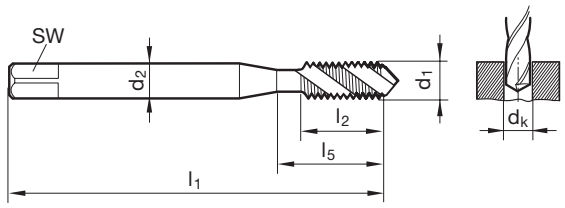
## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |

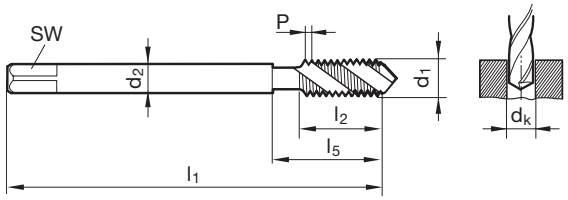
| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464

~ DIN 371




~ DIN 376



**DIN 2184-1 ~DIN 371** Artículo Nº **1981**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 45,000 | 5,000 | 14,500 | 2,184 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 7,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 7,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 8,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 8,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 11,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 11,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 13,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 14,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 16,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** Artículo Nº **1986**

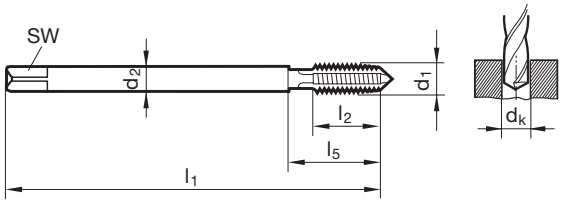
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 18,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 20,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 110,000 | 21,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 24,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 125,000 | 25,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 140,000 | 28,000 | 62,000 | 22,225 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463



**DIN 2184-1 ~DIN 374** Artículo Nº **1990**

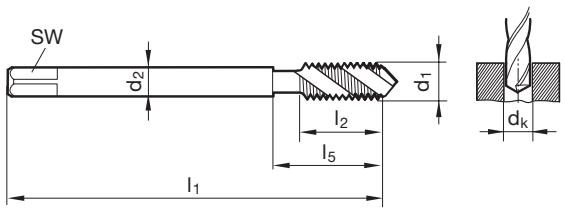
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |

## Machos máquina para roscas UNF

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 2B |
| Acabado | ◯ |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |



**DIN 2184-1 ~DIN 374** Artículo Nº **2867**

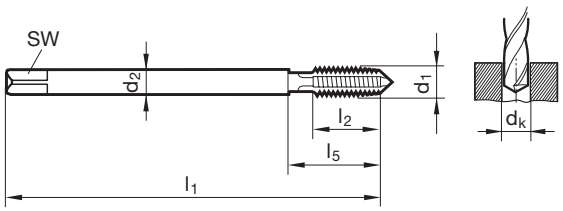
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 1/4 - 28 | 4,500 | 3,400 | 5,50 | 80,000 | 9,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 90,000 | 11,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 90,000 | 11,000 | 35,000 | 9,525 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 13,000 | 40,000 | 12,700 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 125,000 | 19,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 140,000 | 22,000 | 50,000 | 25,400 |

## Machos máquina para roscas GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | ◯ |
| Tipo | N |
| Forma | B |
| Con refrigeración interna | ⊠ |

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 463



**DIN 2184-1 DIN 5156** — Artículo Nº **967**

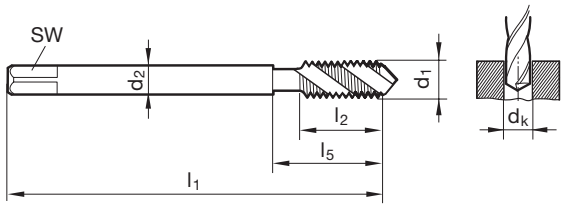
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G7/8 | 14,000 | 22,000 | 18,000 | 28,25 | 150,000 | 28,000 | 53,000 | 30,201 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | |
| M | • |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 464

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | |
| Acabado | ◯ |
| Tipo | VA R40 |
| Forma | C |
| Con refrigeración interna | ⊠ |



**DIN 2184-1 DIN 5156** Artículo Nº **939**

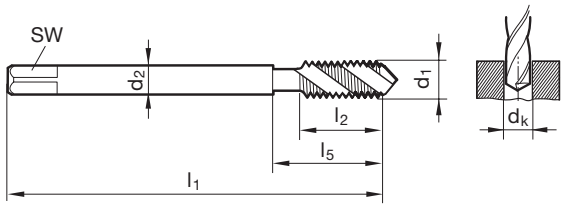
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 18,000 | 44,000 | 20,955 |

## Machos máquina para roscas GAS

| | |
|---|---|
| P | • |
| M | • |
| K | ○ |
| N | • |
| S | ○ |
| H | |

Condiciones de corte ver pág. 465

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | VA R50 |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 5156** Artículo Nº **4159**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 6,80 | 90,000 | 4,500 | 47,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 90,000 | 4,500 | 47,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 100,000 | 6,700 | 48,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 100,000 | 6,700 | 48,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 125,000 | 9,100 | 70,000 | 20,955 |

Aluminio, metales no férricos y plásticos

# MACHOS MÁQ. DE LAMINACIÓN

N

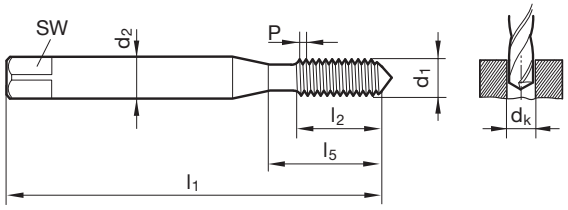
## Machos máq. de laminación para rosca metr. ISO

| | | |
|---|---|---|
| P | • | |
| M | • | |
| K | | |
| N | ○ | |
| S | | |
| H | | |

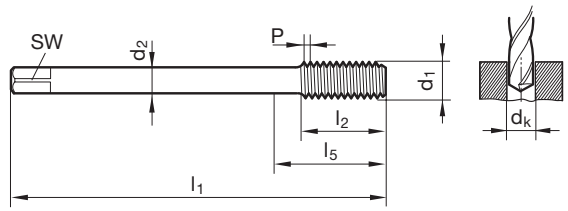
Condiciones de corte ver pág. 466

| Material de corte | HSS-E | HSS-E-PM | |
|---|---|---|---|
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | S | S | Cb |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

~ DIN 371




~ DIN 376



| DIN 2174 ~DIN 371 | Artículo Nº | 921 | 1255 | 1347 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,90 | 40,000 | 4,000 | |
| M1,2 | 0,250 | 2,500 | 2,100 | 1,10 | 40,000 | 4,800 | |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,25 | 40,000 | 5,600 | |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,45 | 40,000 | 6,400 | |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,55 | 40,000 | 6,800 | |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,65 | 40,000 | 7,300 | |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

| DIN 2174 ~DIN 376 | Artículo Nº | 925 | 1256 | 1566 |
|---|---|---|---|---|

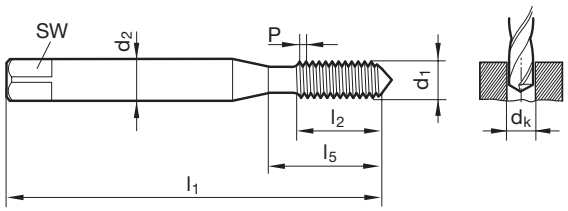
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 371** Artículo Nº **920**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

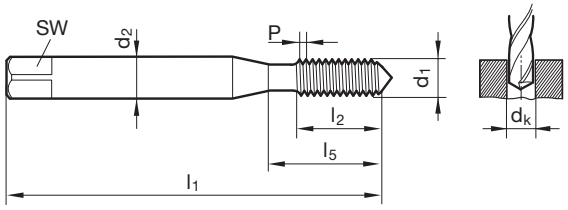
## Machos máq. de laminación para rosca metr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | S | Cb |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

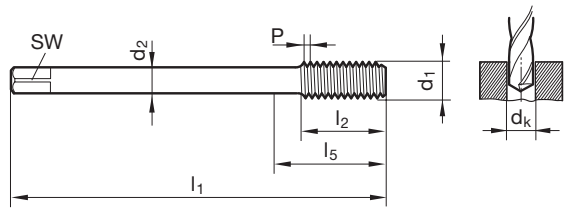
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **903** **1565**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,85 | 45,000 | 8,000 | 13,500 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,30 | 50,000 | 9,000 | 14,500 |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **952** **1567**

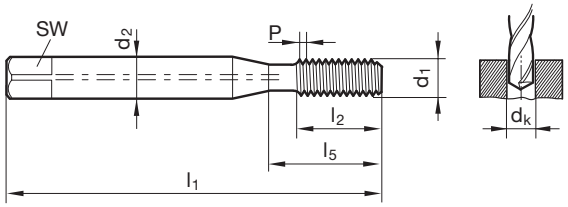
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **2518**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

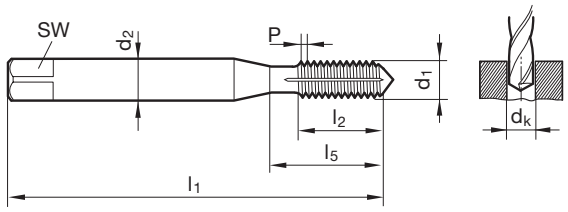
## Machos máq. de laminación para rosca metr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6GX | 6HX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | ✗ | ✗ | ✗ |

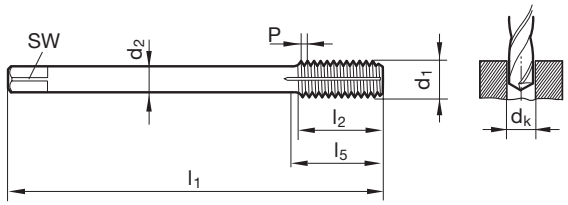
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **918** **919** **2012**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 3,25 | 56,000 | 12,000 | 20,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **922** **923** **2013**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |
| M22 | 2,500 | 18,000 | 14,500 | 20,90 | 140,000 | 32,000 | 62,000 |
| M24 | 3,000 | 18,000 | 14,500 | 22,70 | 160,000 | 36,000 | 73,000 |
| M27 | 3,000 | 20,000 | 16,000 | 25,70 | 160,000 | 36,000 | 73,000 |
| M30 | 3,500 | 22,000 | 18,000 | 28,50 | 180,000 | 40,000 | 85,000 |
| M33 | 3,500 | 25,000 | 20,000 | 31,50 | 180,000 | 40,000 | 91,000 |
| M36 | 4,000 | 28,000 | 22,000 | 34,30 | 200,000 | 50,000 | 102,000 |
| M39 | 4,000 | 32,000 | 24,000 | 37,30 | 200,000 | 50,000 | 107,000 |

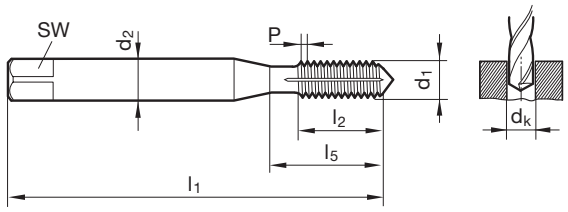
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

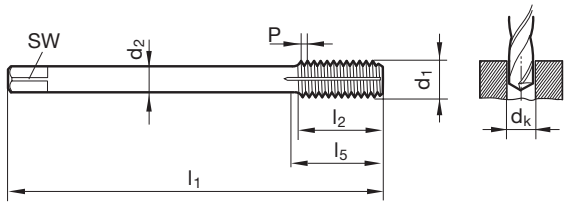
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **322**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **339**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

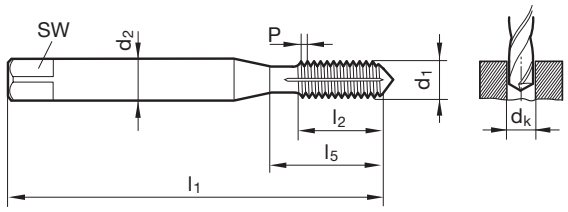
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

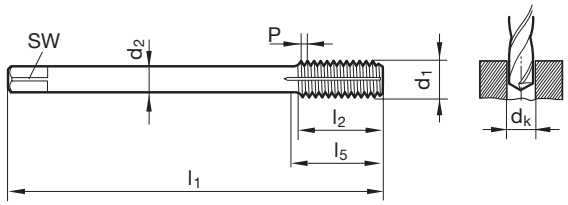
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1266**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1267**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

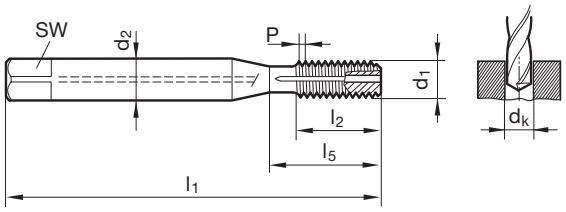
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E | | |
| Ø-Tolerancia | 6HX | 6GX | 6HX |
| Acabado | S | S | C |
| Tipo | N | N | N |
| Forma | C | C | C |
| Con refrigeración interna | | | |

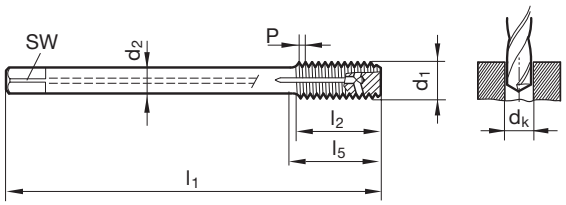
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **2442** **2443** **2446**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **2444** **2445** **2448**

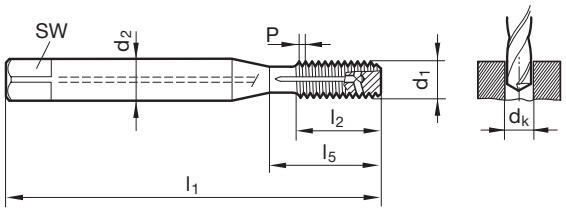
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371** Artículo Nº **2447**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

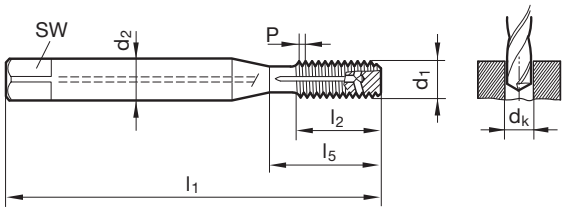
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

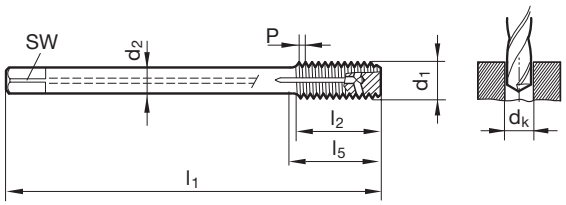
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **323**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **342**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

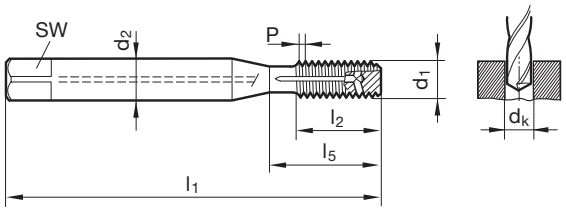
## Machos máq. laminación refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

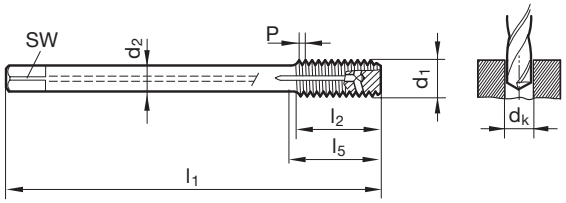
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1270** **1725**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1271** **1727**

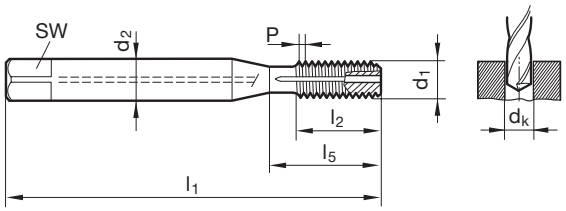
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **2515**

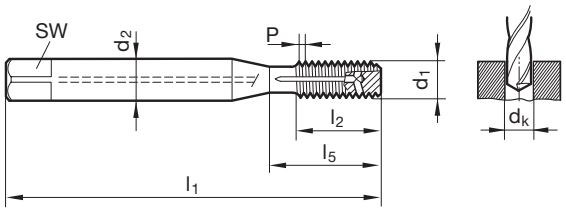
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371** Artículo Nº **1713**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

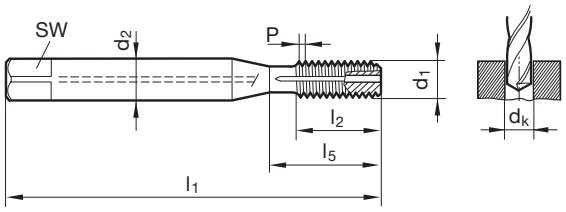
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |

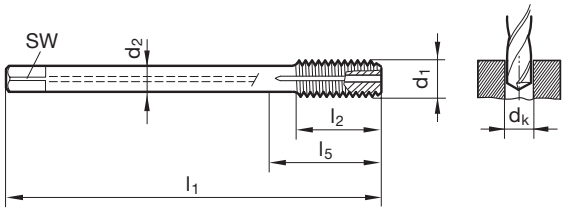
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1726**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1728**

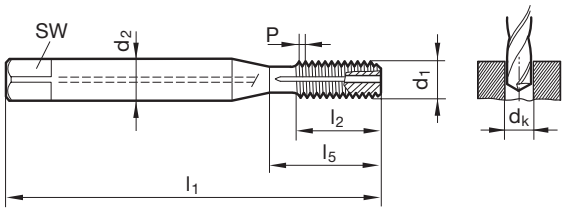
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **4146**

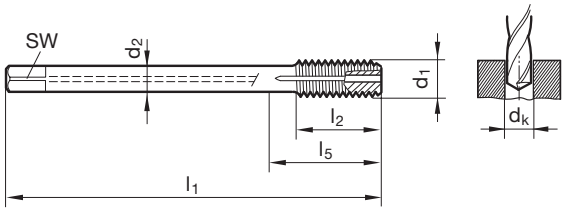
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**Norma de fab. Norma de fab.** Artículo Nº **4143**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 112,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,70 | 112,000 | 7,500 | 77,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,65 | 125,000 | 8,500 | 90,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 125,000 | 11,000 | 90,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 140,000 | 14,000 | 97,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 160,000 | 16,000 | 117,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 180,000 | 18,500 | 133,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 220,000 | 20,000 | 168,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 280,000 | 25,000 | 225,000 |

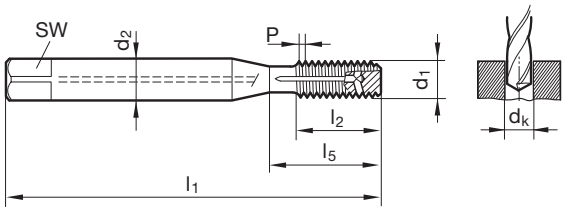
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

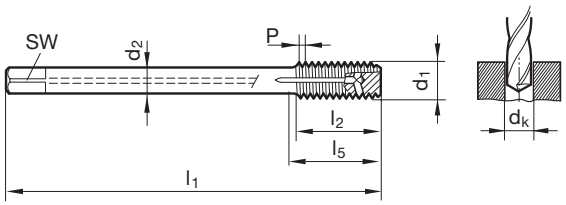
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1972**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1931**

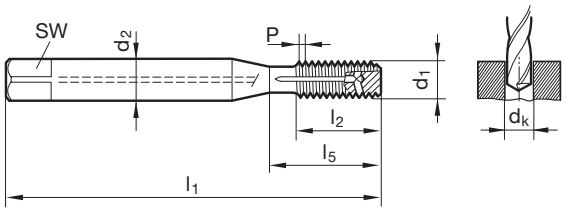
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371** Artículo Nº **1927**

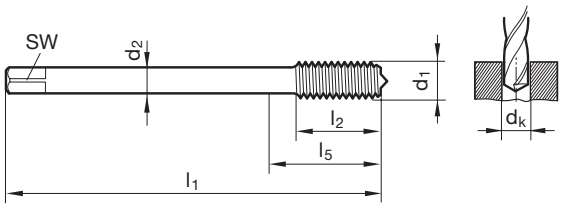
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 374** — Artículo Nº **929**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

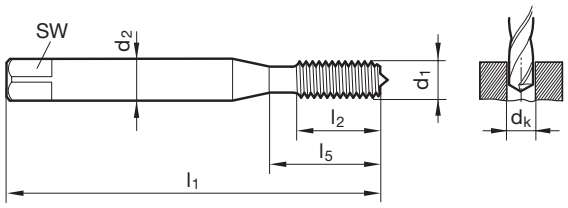
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

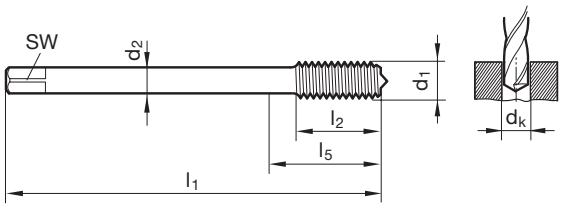
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1257**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1258**

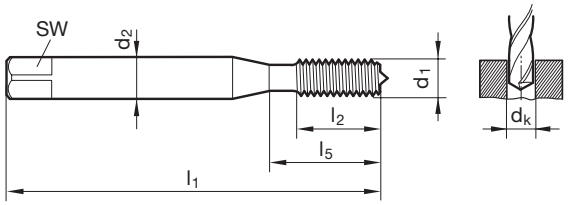
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 371** Artículo Nº **1568**

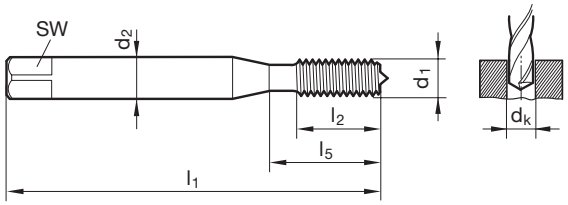
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 371** — Artículo Nº **1740**

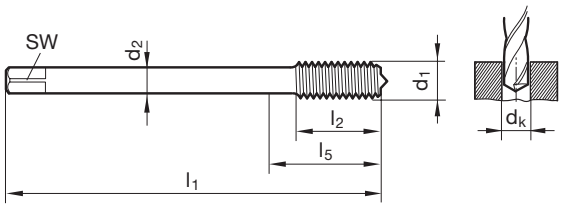
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2174 ~DIN 374** — Artículo Nº **928**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |

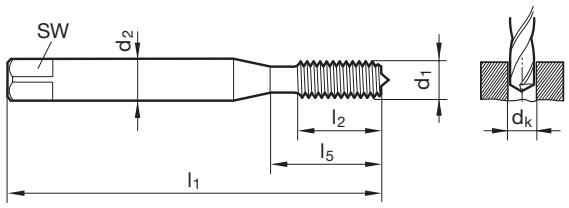
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

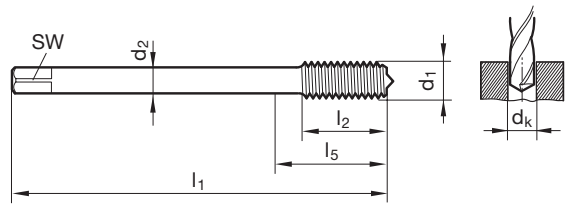
P
M
K
N •
S
H

Condiciones de corte ver pág. 466

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** Artículo Nº **1569**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** Artículo Nº **1580**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

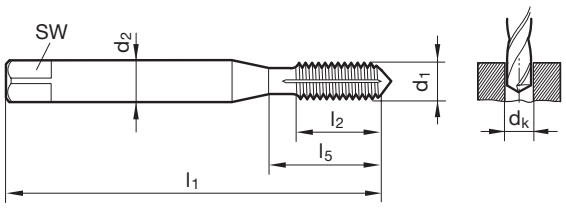
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

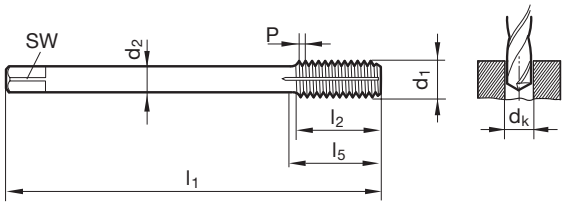
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1275**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 6,000 | 4,900 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 8,000 | 6,200 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **927**

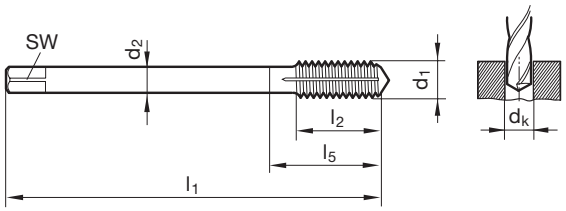
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,55 | 110,000 | 25,000 | 44,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 374** Artículo Nº **2008**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M6 x 0,75 | 4,500 | 3,400 | 5,65 | 80,000 | 13,000 | 30,000 | 6,004 |
| M8 x 0,75 | 6,000 | 4,900 | 7,65 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

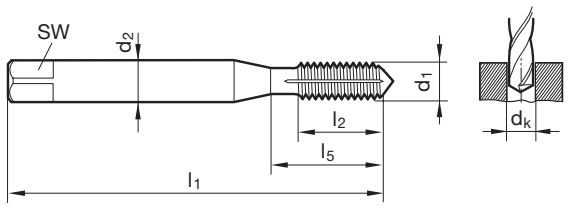
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

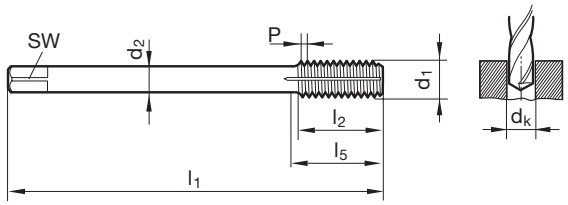
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1277**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **926**

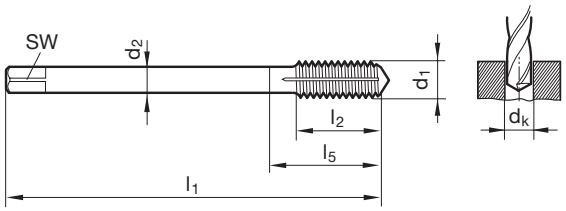
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1 | 12,000 | 9,000 | 15,55 | 100,000 | 22,000 | 44,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 374** — Artículo Nº **333**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 16,000 | 44,000 | 20,007 |

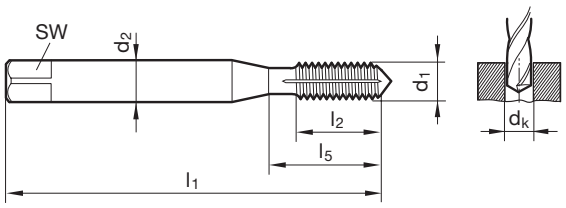
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

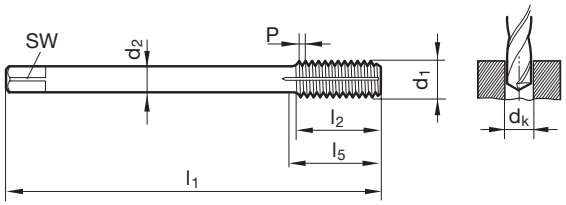
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1268**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1269**

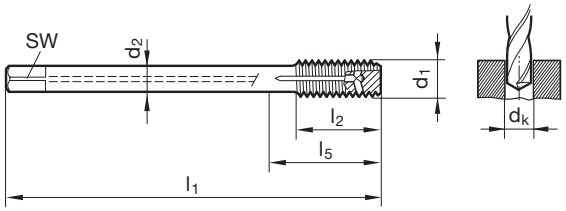
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 374** — Artículo Nº **338**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

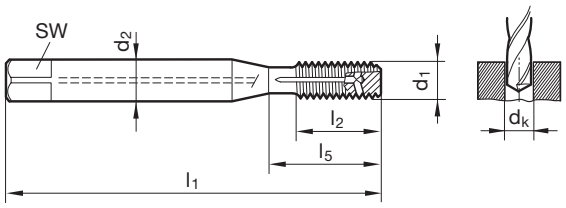
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

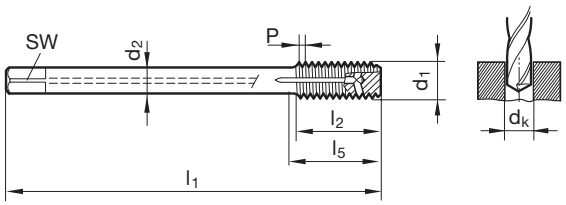
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1272** **1729**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1273** **1731**

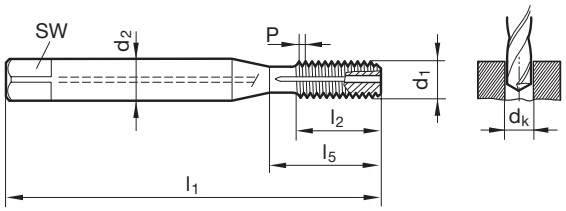
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6HX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371/~DIN 374** Artículo Nº **4147**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

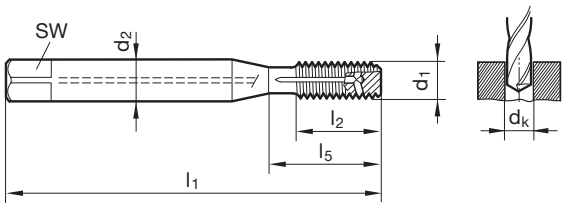
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

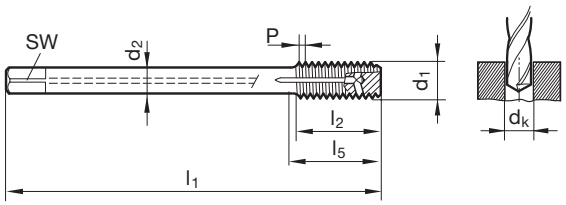
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1715** **1730**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1716** **1732**

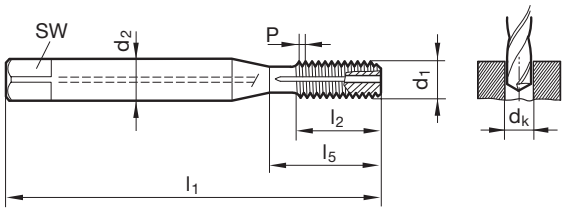
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | 6GX |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371/~DIN 374** Artículo Nº **4151**

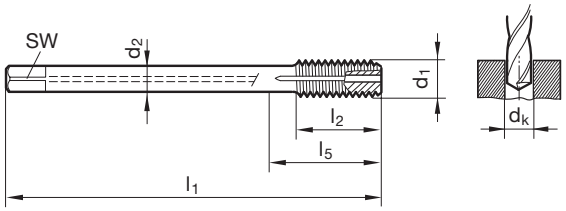
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 14,000 | 39,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467



**Norma de fab.** Artículo Nº **4145**

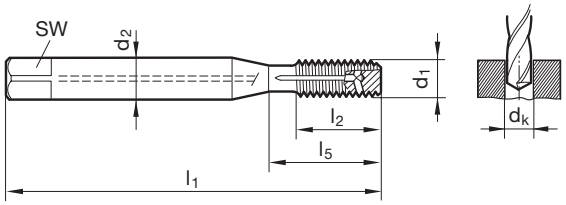
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 140,000 | 14,000 | 97,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 160,000 | 16,000 | 117,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 160,000 | 16,000 | 117,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 180,000 | 18,500 | 133,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 180,000 | 18,500 | 133,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 220,000 | 20,000 | 168,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 220,000 | 20,000 | 168,000 | 16,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 467



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **1581**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 15,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 15,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 15,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 15,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 15,000 | 48,000 | 24,007 |

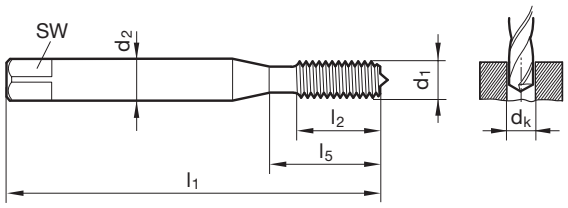
## Machos máq. de laminación para rosca UNC

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

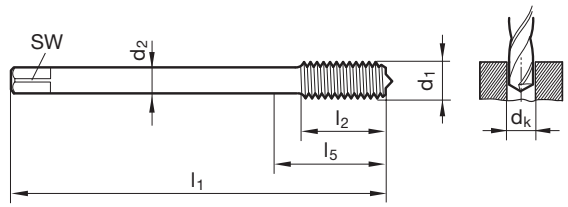
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466/467

~ DIN 371




~ DIN 374



**DIN 2184-1 ~DIN 371** — Artículo Nº **2273** **1582**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,55 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,90 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 3,15 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,80 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 4,35 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,75 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 7,30 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 9,525 |

**DIN 2184-1 ~DIN 376** — Artículo Nº **2274** **1583**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 7/16 - 14 | 8,000 | 6,200 | 10,30 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 11,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 13,30 | 110,000 | 28,000 | 53,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 14,80 | 110,000 | 30,000 | 53,000 | 15,875 |
| 3/4 - 10 | 14,000 | 11,000 | 17,90 | 125,000 | 33,000 | 62,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 21,00 | 140,000 | 35,000 | 62,000 | 22,225 |

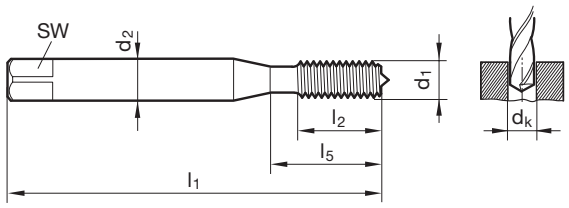
## Machos máq. de laminación para rosca UNF

| | | |
|---|---|---|
| Material de corte | HSS-E | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | S | S |
| Tipo | N | N |
| Forma | C | C |
| Con refrigeración interna | | |

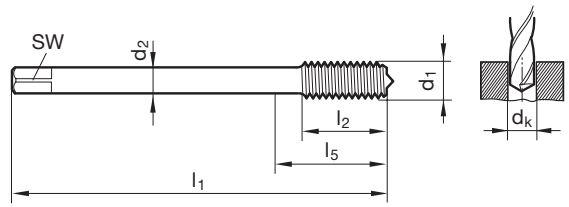
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466/467

~ DIN 371




~ DIN 374



**DIN 2184-1 ~DIN 371** — Artículo Nº **1283** **1584**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,90 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 3,20 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,85 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |

**DIN 2184-1 ~DIN 374** — Artículo Nº **1585** **2275**

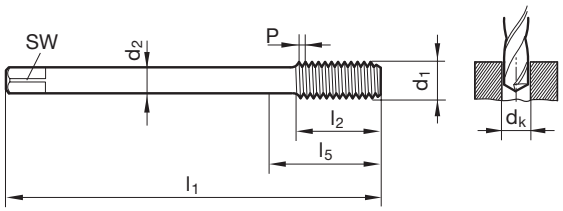
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 10 - 32 | 3,500 | 2,700 | 4,45 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 4,000 | 3,000 | 5,10 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 4,500 | 3,400 | 5,95 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 7,45 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 9,05 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 10,55 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 12,10 | 100,000 | 20,000 | 40,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 13,65 | 100,000 | 22,000 | 40,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 15,25 | 100,000 | 22,000 | 44,000 | 15,875 |
| 3/4 - 16 | 14,000 | 11,000 | 18,35 | 110,000 | 25,000 | 44,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 21,40 | 125,000 | 25,000 | 44,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 24,45 | 140,000 | 28,000 | 50,000 | 25,400 |

## Machos máq. de laminación para rosca GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | |
| H | |

Condiciones de corte ver pág. 466



**DIN 2184-1 DIN 2189** — Artículo Nº **966**

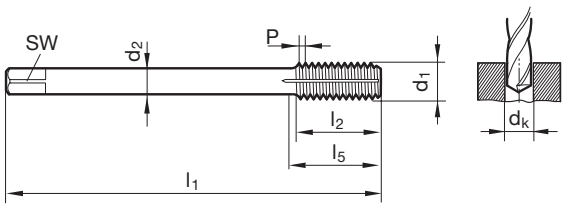
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 32,00 | 160,000 | 30,000 | 56,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 40,75 | 170,000 | 30,000 | 57,000 | 41,910 |

## Machos máq. de laminación para rosca GAS

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 467

| | |
|---|---|
| Material de corte | **HSS-E** |
| Ø-Tolerancia | |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |



**DIN 2184-1 DIN 2189** Artículo Nº **1586**

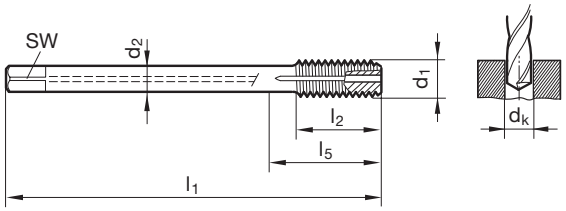
| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 18,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 18,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 20,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 22,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 25,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 28,000 | 53,000 | 26,441 |

## Machos máq. de laminación con canal de refrigeración para rosca GAS

| | |
|---|---|
| Material de corte | HSS-E |
| Ø-Tolerancia | |
| Acabado | Cb |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 467



**DIN 2184-1 DIN 2189** Artículo Nº **4152**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | |
| G1/16 | 28,000 | 6,000 | 4,900 | 7,30 | 90,000 | 11,000 | 30,000 | 7,723 |
| G1/8 | 28,000 | 7,000 | 5,500 | 9,30 | 90,000 | 11,000 | 35,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 12,50 | 100,000 | 14,000 | 40,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 16,00 | 100,000 | 14,000 | 44,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 20,00 | 125,000 | 18,000 | 44,000 | 20,955 |
| G3/4 | 14,000 | 20,000 | 16,000 | 25,50 | 140,000 | 20,000 | 53,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 32,00 | 160,000 | 24,000 | 56,000 | 33,249 |

Aluminio, metales no férricos y plásticos

# FRESAS DE ROSCAR

N

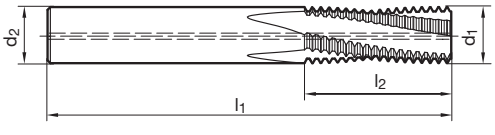
## Fresas de roscar sin chaflán para rosca métrica ISO

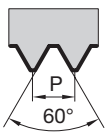
2xD

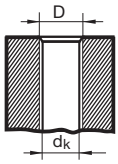
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3737 | 3743 | 3734 |
|---|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M8 x 1 | 1,000 | 6,400 | 8,000 | 7,00 | 62,000 | 17,500 | 3 | 8,005 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M10 x 1 | 1,000 | 7,950 | 10,000 | 9,00 | 74,000 | 21,500 | 3 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 10,000 | 8,80 | 74,000 | 21,900 | 3 | 10,006 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M12 x 1,5 | 1,500 | 9,950 | 10,000 | 10,50 | 74,000 | 26,300 | 4 | 12,007 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M14 x 1,5 | 1,500 | 11,200 | 12,000 | 12,50 | 90,000 | 30,800 | 4 | 14,007 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M16 x 1,5 | 1,500 | 12,800 | 14,000 | 14,50 | 90,000 | 33,800 | 4 | 16,007 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |
| M20 x 1,5 | 1,500 | 14,950 | 16,000 | 18,50 | 102,000 | 42,800 | 4 | 20,007 |

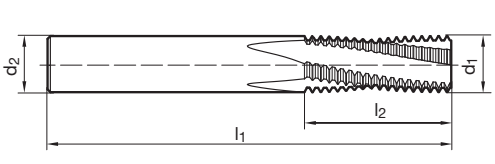
## Fresas de roscar sin chaflán para rosca métrica ISO

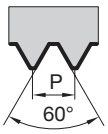
2xD

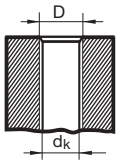
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4132 | 4133 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |

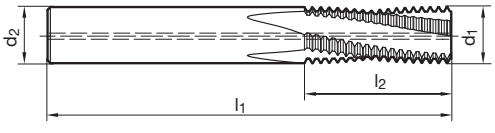
## Fresas de roscar sin chaflán para rosca métrica ISO

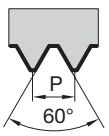
2,5xD

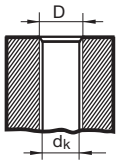
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3735 | 3740 |
|---|---|---|---|

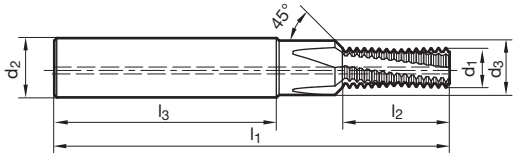
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 26,300 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 48,800 | 4 | 20,000 |

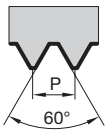
## Fresas de roscar con chaflán para rosca métrica ISO

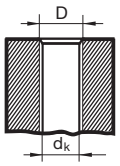
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág.469

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3525 | 3543 | 3510 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

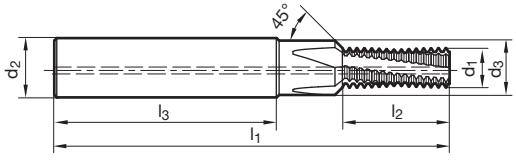
## Fresas de roscar con chaflán para rosca métrica ISO

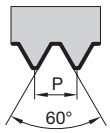
2xD

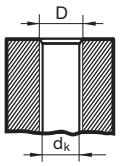
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3526 | 3544 | 3511 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

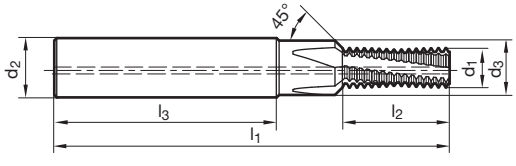
## Fresas de roscar con chaflán para rosca métrica ISO

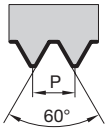
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

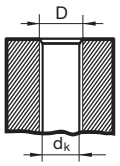
Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3759 | 3760 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 7,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 35,600 | 10,900 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 13,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 26,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 48,800 | 4 | 20,000 |

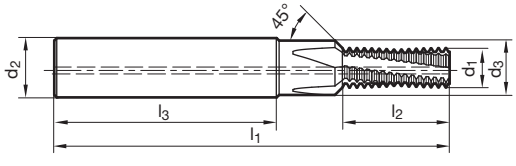
## Fresas de roscar con chaflán para rosca métrica fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |

NEW



**Norma de fab.** Artículo Nº **3527** **3545** **3512**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

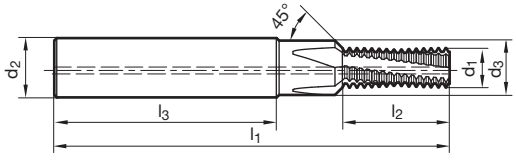
## Fresas de roscar con chaflán para rosca métrica fina ISO

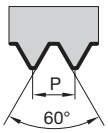
2xD

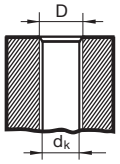
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3528 | 3546 | 3513 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

## Fresas de roscar con chaflán para rosca métrica fina ISO

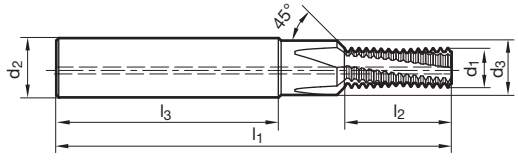
2,5xD

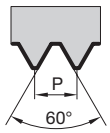
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

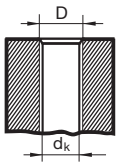
Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3762 | 3763 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 10,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 12,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 15,300 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 15,400 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 20,600 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 20,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 25,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 25,600 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 30,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 30,800 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 38,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 41,300 | 4 | 16,007 |

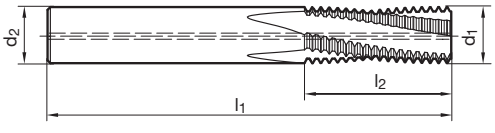
## Fresas de roscar sin chaflán para roscas UNC

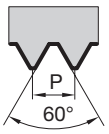
2xD

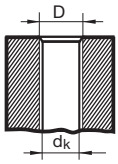
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4134 | 4135 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 24 | 3,400 | 6,000 | 3,90 | 54,000 | 11,100 | 3 | 4,826 |
| 12 - 24 | 4,100 | 6,000 | 4,50 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 20 | 4,700 | 6,000 | 5,10 | 54,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 6,100 | 8,000 | 6,60 | 64,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,600 | 8,000 | 8,00 | 64,000 | 21,400 | 3 | 9,525 |
| 7/16 - 14 | 9,000 | 10,000 | 9,40 | 74,000 | 24,500 | 3 | 11,113 |
| 1/2 - 13 | 9,950 | 10,000 | 10,80 | 74,000 | 28,300 | 4 | 12,700 |
| 9/16 - 12 | 11,400 | 12,000 | 12,20 | 90,000 | 30,700 | 4 | 14,288 |
| 5/8 - 11 | 12,700 | 14,000 | 13,50 | 90,000 | 35,800 | 4 | 15,875 |

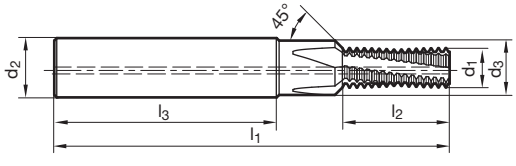
## Fresas de roscar con chaflán para roscas UNC

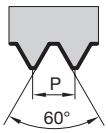
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

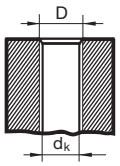
Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3516 | 3534 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

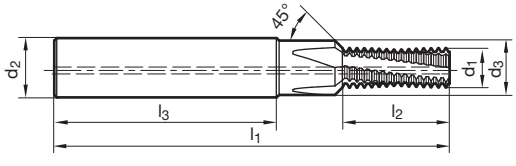
## Fresas de roscar con chaflán para roscas UNC

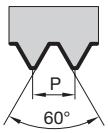
2xD

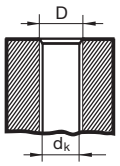
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3517** **3535**

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

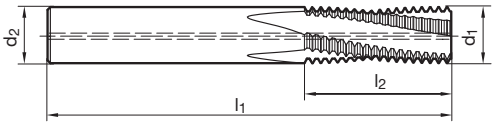
## Fresas de roscar sin chaflán para roscas UNF

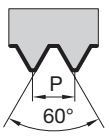
2xD

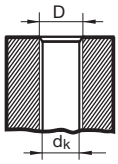
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4136 | 4137 |
|---|---|---|---|

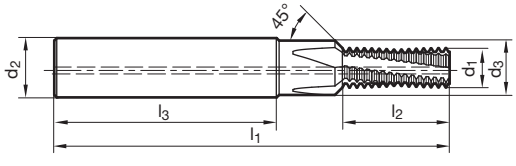
| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 32 | 3,800 | 6,000 | 4,10 | 54,000 | 11,500 | 3 | 4,826 |
| 12 - 28 | 4,300 | 6,000 | 4,60 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 28 | 5,100 | 6,000 | 5,50 | 54,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 6,300 | 8,000 | 6,90 | 64,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,800 | 8,000 | 8,50 | 64,000 | 20,600 | 3 | 9,525 |
| 7/16 - 20 | 9,400 | 10,000 | 9,90 | 74,000 | 24,800 | 3 | 11,113 |
| 1/2 - 20 | 9,950 | 10,000 | 11,50 | 74,000 | 27,300 | 4 | 12,700 |
| 9/16 - 18 | 11,400 | 12,000 | 12,90 | 90,000 | 30,300 | 4 | 14,288 |
| 5/8 - 18 | 12,700 | 14,000 | 14,50 | 90,000 | 33,200 | 4 | 15,875 |

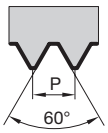
## Fresas de roscar con chaflán para roscas UNF

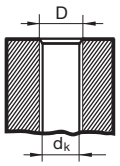
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3518 | 3536 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

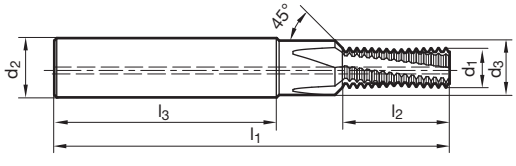
## Fresas de roscar con chaflán para roscas UNF

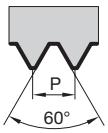
2xD

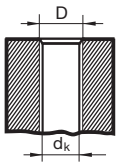
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3519 | 3537 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

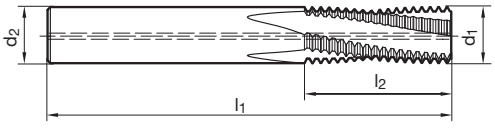
## Fresas de roscar para roscas GAS sin fase de avellanado

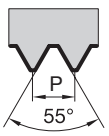
2xD

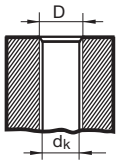
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3745** **3748**

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 21,300 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 35,400 | 4 | 16,662 |

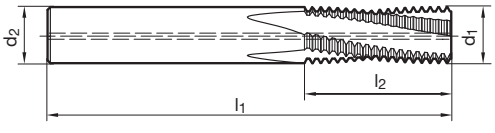
## Fresas de roscar para roscas GAS sin fase de avellanado

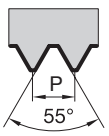
2,5xD

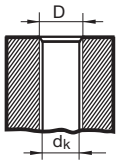
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3746 | 3750 |
|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 24,900 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 43,500 | 4 | 16,662 |

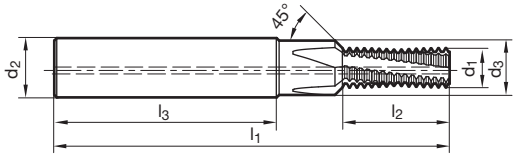
## Fresas de roscar para roscas GAS con fase de avellanado

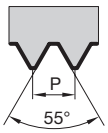
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

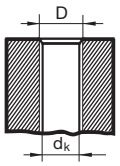
Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

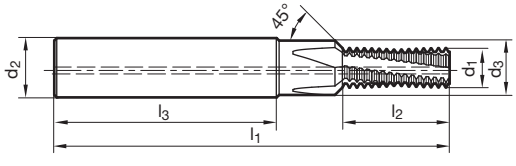
## Fresas de roscar para roscas GAS con fase de avellanado

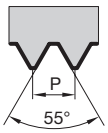
2xD

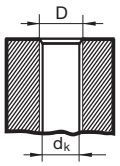
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

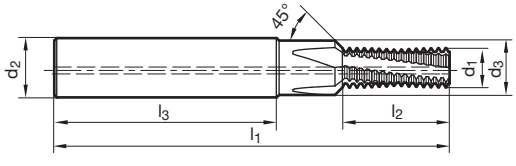
## Fresas de roscar para roscas GAS con fase de avellanado

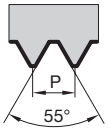
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

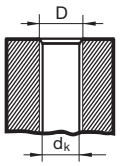
Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3765 | 3766 |
|---|---|---|---|

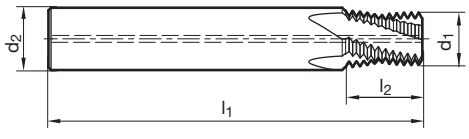
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 24,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 43,500 | 4 | 16,662 |

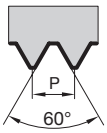
## Fresas de roscar sin chaflán para roscas NPT

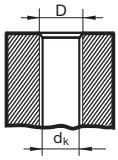
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 468

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3753 | 3754 |
|---|---|---|---|

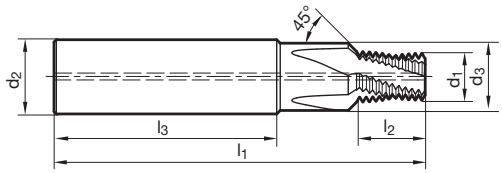
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

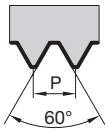
## Fresas de roscar para roscas NPT con fase de avellanado

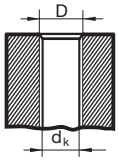
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



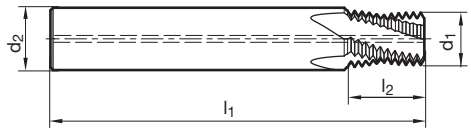
| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

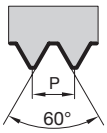
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

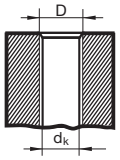
## Fresas de roscar para roscas NPTF sin fase de avellanado

| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 468 |
| M | • | |
| K | • | |
| N | • | |
| S | • | |
| H | ≤55 | |

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3756 | 3757 |
|---|---|---|---|

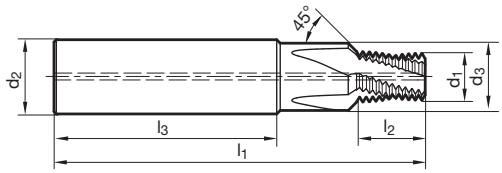
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

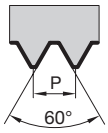
## Fresas de roscar para roscas NPTF con fase de avellanado

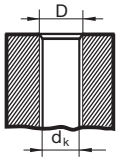
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 469

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

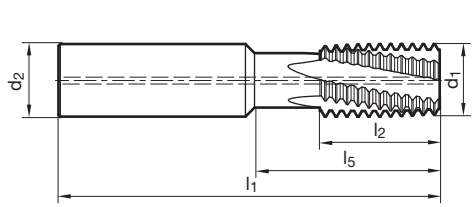
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

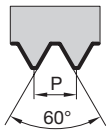
## Fresas para roscar universales para rosca métrica ISO

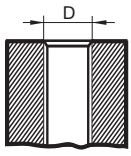
| | | | |
|---|---|---|---|
| Material de corte | Metal duro | | |
| Acabado | C | C | ○ |
| Tipo | TMU SP | TMU SP | TMU SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470



| Norma de fab. | Artículo Nº | 3541 | 3556 | 3523 |
|---|---|---|---|---|

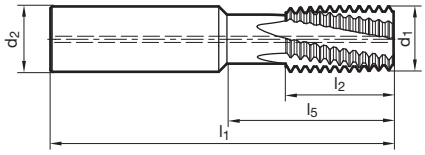
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

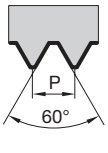
## Fresado de roscas exteriores

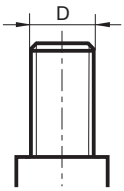
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **4162** **4163**

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

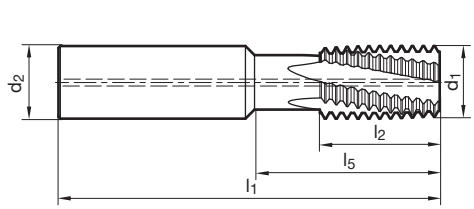
## Fresas para roscar universales para roscas UN

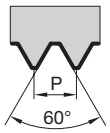
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

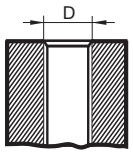
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470



| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

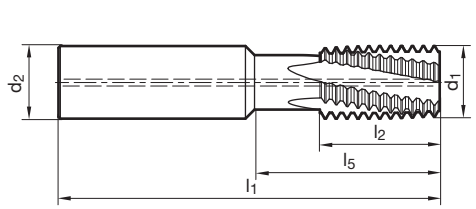
## Fresas para roscar universales para roscas GAS

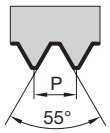
| | | | |
|---|---|---|---|
| Material de corte | Metal duro | | |
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |

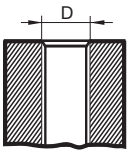
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470



| Norma de fab. | Artículo Nº | 3542 | 3557 | 3524 |
|---|---|---|---|---|

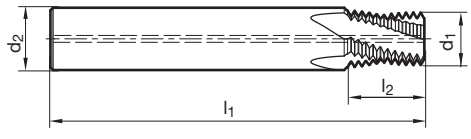
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

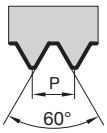
## Fresas para roscar universales para roscas NPT

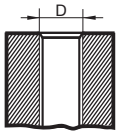
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470



| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

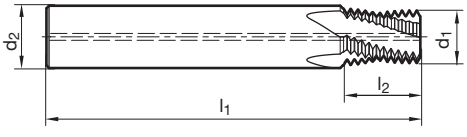
| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

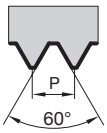
## Fresas para roscar universales para roscas NPTF

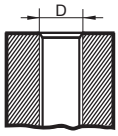
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 470

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Microfresas de roscar

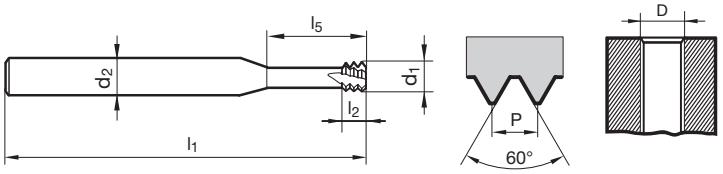
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 470

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4226**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,6 | 0,350 | 1,200 | 3,000 | 39,000 | 1,100 | 4,800 | 3 | 1,600 |
| M1,8 | 0,350 | 1,400 | 3,000 | 39,000 | 1,100 | 5,400 | 3 | 1,800 |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,400 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M3,5 | 0,600 | 2,800 | 6,000 | 58,000 | 1,800 | 11,000 | 4 | 3,500 |
| M4 | 0,700 | 3,200 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 73,000 | 4,500 | 33,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 84,000 | 5,300 | 38,000 | 4 | 12,000 |
| M16 | 2,000 | 11,800 | 10,000 | 84,000 | 6,000 | 35,000 | 5 | 16,000 |

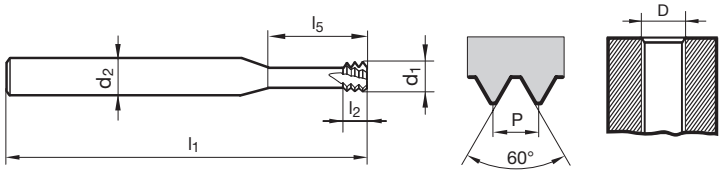
## Microfresas de roscar

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 470

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP G |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW




**Norma de fab.** Artículo Nº **4228**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 6,200 | 8,000 | 64,000 | 2,700 | 19,500 | 4 | 9,728 |
| G3/8 | 19,000 | 9,950 | 10,000 | 73,000 | 4,000 | 25,000 | 4 | 16,662 |
| G7/8 | 14,000 | 11,950 | 12,000 | 84,000 | 5,400 | 37,000 | 4 | 30,201 |
| G2 | 11,000 | 15,950 | 16,000 | 105,000 | 6,900 | 44,000 | 5 | 59,614 |

## Microfresas de roscar

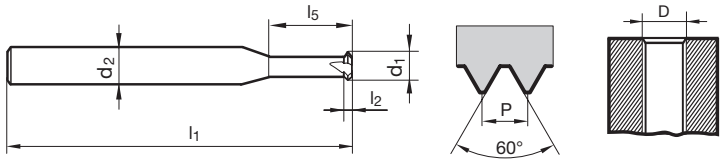
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 470

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M/MF |
| Pasos de rosca | 1,0 |
| Forma del mango | HA |

NEW




**Norma de fab.** Artículo Nº **4225**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,4 - M1,8 | 0,350 | 1,050 | 3,000 | 39,000 | 0,400 | 3,800 | 3 | 1,800 |
| M2 - M2,4 | 0,400 | 1,500 | 3,000 | 39,000 | 0,400 | 7,000 | 3 | 2,400 |
| M2,5 - M3 | 0,500 | 2,000 | 3,000 | 39,000 | 0,500 | 9,000 | 4 | 3,000 |
| M3,5 - M4,5 | 0,750 | 2,800 | 6,000 | 58,000 | 0,800 | 14,000 | 4 | 4,500 |
| M5 - M7 | 1,000 | 4,000 | 6,000 | 58,000 | 1,000 | 19,000 | 4 | 7,000 |
| M8 - M10 | 1,500 | 6,400 | 8,000 | 64,000 | 1,500 | 24,000 | 5 | 10,000 |

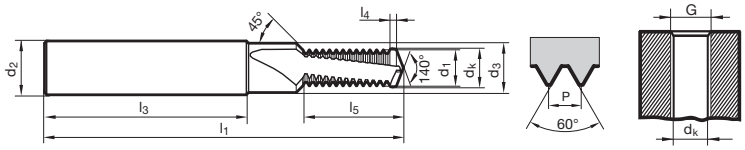
## Fresas de roscar y taladrar para rosca métrica ISO

1,5xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ◯ | ◯ | Ⓒ | Ⓒ |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ⊠ | ⊟ | ⊠ | ⊟ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3774 | 3775 | 3776 | 3777 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 0,500 | 5,500 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 0,700 | 6,900 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 0,800 | 8,800 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 1,000 | 10,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 1,250 | 13,700 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 1,500 | 18,000 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 1,500 | 20,900 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 1,500 | 23,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 1,500 | 26,000 | 2 | 16,000 |

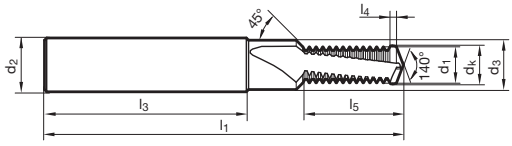
## Fresas de roscar y taladrar para rosca métrica ISO

2xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≡ | ✕ | ≡ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3778 | 3779 | 3780 | 3781 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 0,500 | 7,000 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 0,700 | 9,000 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 0,800 | 11,200 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 1,000 | 13,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 1,250 | 18,700 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 1,500 | 22,500 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 1,500 | 26,100 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 1,500 | 31,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 1,500 | 36,000 | 2 | 16,000 |

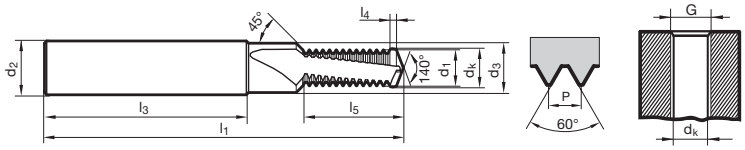
## Fresas de roscar y taladrar para rosca métrica ISO

2,5xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ◯ | ◯ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ≡ | ✕ | ≡ |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3782 | 3783 | 3784 | 3785 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,400 | 6,000 | 3,400 | 2,500 | 48,000 | 36,000 | 0,500 | 8,500 | 2 | 3,000 |
| M4 | 0,700 | 3,200 | 6,000 | 4,500 | 3,300 | 48,000 | 36,000 | 0,700 | 11,100 | 2 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,200 | 54,000 | 36,000 | 0,800 | 13,600 | 2 | 5,000 |
| M6 | 1,000 | 4,750 | 8,000 | 6,600 | 5,000 | 62,000 | 36,000 | 1,000 | 16,900 | 2 | 6,000 |
| M8 | 1,250 | 6,350 | 10,000 | 9,000 | 6,800 | 74,000 | 40,000 | 1,250 | 22,500 | 2 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,500 | 27,000 | 2 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,200 | 90,000 | 45,000 | 1,500 | 31,400 | 2 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,000 | 102,000 | 48,000 | 1,500 | 39,700 | 2 | 14,000 |
| M16 | 2,000 | 13,200 | 18,000 | 17,500 | 14,000 | 102,000 | 48,000 | 1,500 | 46,000 | 2 | 16,000 |

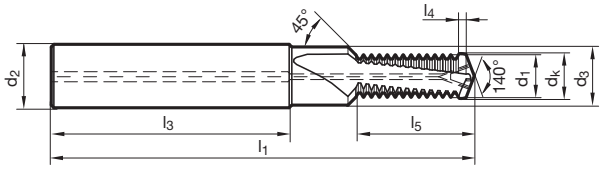
## Fresas de roscar y taladrar para rosca métrica fina ISO

1,5xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | ◯ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HA | HA |



**Norma de fab.** Artículo Nº **3787** **3788** **3789**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,200 | 6,000 | 4,500 | 3,500 | 48,000 | 36,000 | 0,500 | 6,600 | 2 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,500 | 54,000 | 36,000 | 0,500 | 8,300 | 2 | 5,003 |
| M 6 X0,75 | 0,750 | 4,750 | 8,000 | 6,600 | 5,200 | 62,000 | 36,000 | 0,750 | 9,900 | 2 | 6,004 |
| M8 x 0,75 | 0,750 | 6,350 | 10,000 | 9,000 | 7,200 | 74,000 | 40,000 | 0,750 | 14,100 | 2 | 8,004 |
| M8 x 1 | 1,000 | 6,350 | 10,000 | 9,000 | 7,000 | 74,000 | 40,000 | 1,000 | 14,300 | 2 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,000 | 80,000 | 45,000 | 1,000 | 16,600 | 2 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,800 | 80,000 | 45,000 | 1,250 | 16,600 | 2 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,000 | 90,000 | 45,000 | 1,000 | 20,000 | 2 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,500 | 90,000 | 45,000 | 1,500 | 21,400 | 2 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,500 | 102,000 | 48,000 | 1,500 | 23,300 | 2 | 14,007 |
| M16 x 1,5 | 1,500 | 13,200 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 26,600 | 2 | 16,007 |

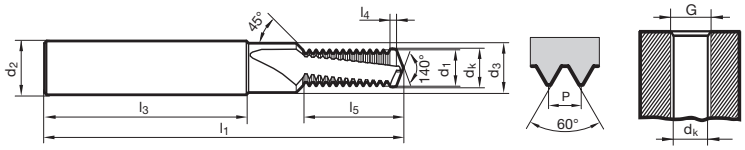
## Fresas de roscar y taladrar para rosca métrica fina ISO

2xD

| | |
|---|---|
| P | |
| M | |
| K | ○ |
| N | ● |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | C | C |
| Tipo | DTMC SP | DTMC SP | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | | ✕ | |
| Forma del mango | HA | HA | HA | HA |



| Norma de fab. | Artículo Nº | 3790 | 3791 | 3792 | 3793 |
|---|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,200 | 6,000 | 4,500 | 3,500 | 48,000 | 36,000 | 0,500 | 8,600 | 2 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,500 | 54,000 | 36,000 | 0,500 | 10,800 | 2 | 5,003 |
| M 6 X0,75 | 0,750 | 4,750 | 8,000 | 6,600 | 5,200 | 62,000 | 36,000 | 0,750 | 12,900 | 2 | 6,004 |
| M8 x 0,75 | 0,750 | 6,350 | 10,000 | 9,000 | 7,200 | 74,000 | 40,000 | 0,750 | 17,100 | 2 | 8,004 |
| M8 x 1 | 1,000 | 6,350 | 10,000 | 9,000 | 7,000 | 74,000 | 40,000 | 1,000 | 17,300 | 2 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,000 | 80,000 | 45,000 | 1,000 | 21,600 | 2 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,800 | 80,000 | 45,000 | 1,250 | 21,600 | 2 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,000 | 90,000 | 45,000 | 1,000 | 26,000 | 2 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,500 | 90,000 | 45,000 | 1,500 | 27,400 | 2 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,500 | 102,000 | 48,000 | 1,500 | 30,800 | 2 | 14,007 |
| M16 x 1,5 | 1,500 | 13,200 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 34,100 | 2 | 16,007 |

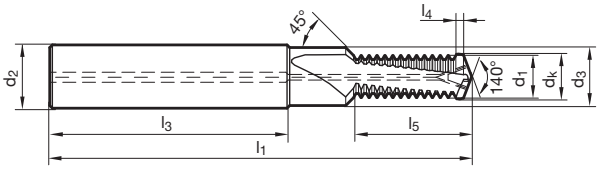
## Fresas de roscar y taladrar para roscas UNF

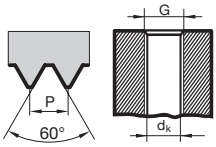
2xD

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | ◯ | C |
| Tipo | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HA |



| Norma de fab. | Artículo Nº | 4138 | 4139 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 20,000 | 5,000 | 8,000 | 6,600 | 5,100 | 62,000 | 36,000 | 1,300 | 14,900 | 2 | 6,350 |
| 5/16 - 18 | 18,000 | 6,250 | 10,000 | 9,000 | 6,600 | 74,000 | 40,000 | 1,500 | 18,100 | 2 | 7,938 |
| 3/8 - 16 | 16,000 | 7,500 | 12,000 | 11,000 | 8,000 | 80,000 | 45,000 | 1,500 | 22,100 | 2 | 9,525 |
| 7/16 - 14 | 14,000 | 8,800 | 12,000 | 11,000 | 9,400 | 80,000 | 45,000 | 1,500 | 25,000 | 2 | 11,113 |
| 1/2 - 13 | 13,000 | 10,200 | 14,000 | 13,500 | 10,800 | 90,000 | 45,000 | 1,500 | 26,900 | 2 | 12,700 |
| 9/16 - 12 | 12,000 | 11,600 | 16,000 | 15,500 | 12,200 | 102,000 | 48,000 | 1,500 | 31,200 | 2 | 14,288 |
| 5/8 - 11 | 11,000 | 13,000 | 18,000 | 17,500 | 13,500 | 102,000 | 48,000 | 1,500 | 36,300 | 2 | 15,875 |

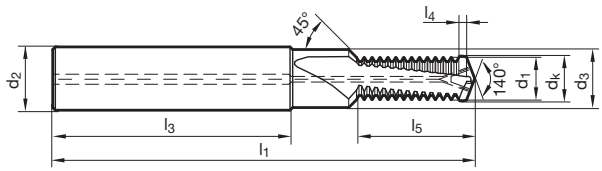
## Fresas de roscar y taladrar para roscas UNF

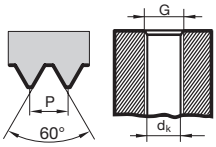
2xD

| | |
|---|---|
| P | |
| M | |
| K | • |
| N | • |
| S | |
| H | |

Condiciones de corte ver pág. 471

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | ◯ | C |
| Tipo | DTMC SP | DTMC SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HA |



| Norma de fab. | Artículo Nº | 4140 | 4141 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l4 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 28,000 | 5,000 | 8,000 | 6,600 | 5,500 | 62,000 | 36,000 | 1,000 | 12,800 | 2 | 6,350 |
| 5/16 - 24 | 24,000 | 6,250 | 10,000 | 9,000 | 6,900 | 74,000 | 40,000 | 1,100 | 18,200 | 2 | 7,938 |
| 3/8 - 24 | 24,000 | 7,950 | 12,000 | 11,000 | 8,500 | 80,000 | 45,000 | 1,100 | 20,600 | 2 | 9,525 |
| 7/16 - 20 | 20,000 | 9,500 | 12,000 | 11,000 | 9,900 | 80,000 | 45,000 | 1,300 | 24,700 | 2 | 11,113 |
| 1/2 - 20 | 20,000 | 10,200 | 14,000 | 13,500 | 11,500 | 90,000 | 45,000 | 1,300 | 27,500 | 2 | 12,700 |
| 9/16 - 18 | 18,000 | 11,600 | 16,000 | 15,500 | 12,900 | 102,000 | 48,000 | 1,500 | 30,600 | 2 | 14,288 |
| 5/8 - 18 | 18,000 | 13,000 | 18,000 | 17,500 | 14,500 | 102,000 | 48,000 | 1,500 | 33,700 | 2 | 15,875 |

# TITANIO

S

Aleaciones especiales con base de niquel, hierro, cobalto y titanio y aleaciones de titanio

# SUPERALEACIONES ALEACIONES ESPECIALES Y DE TITANIO

# S TITANIO, ALEACIONES ESPECIALES

titanio

aleaciones de niquel

## M

### ISO 2/6H

No 1
M3 - M16
Art. N° 2901
desde página 602

No 1
M3 - M16
Art. N° 2909
desde página 604

No 1
M3 - M16
Art. N° 2916
desde página 602

No 1
M3 - M16
Art. N° 2920
desde página 604

### ISO 3/6G

## MF

### ISO 2/6H

No 1
M3x0,35 - M10x1,25
Art. N° 2903
desde página 606

No 1
M3x0,35 - M10x1,25
Art. N° 2910
desde página 608

No 1
M3x0,35 - M10x1,25
Art. N° 2917
desde página 606

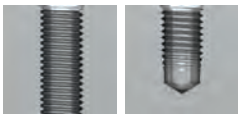
No 1
M3x0,35 - M10x1,25
Art. N° 2921
desde página 608

### ISO 3/6G

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

No 1
Nr. 6 - 3/8
Art. N° 2905
desde página 610

Rosca pasante
HSS-E-PM, TiCN, forma B

No 1
Nr. 4 - 5/8
Art. N° 2912
desde página 612

No 1
Nr. 4 - 5/8
Art. N° 2914
desde página 617

Rosca ciega
HSS-E-PM, TiCN, forma C

No 1
Nr. 6 - 3/8
Art. N° 2918
desde página 610

No 1
Nr. 6 - 3/8
Art. N° 2919
desde página 614

Rosca pasante
HSS-E-PM, TiAlN, forma B

No 1
Nr. 4 - 5/8
Art. N° 2922
desde página 612

No 1
Nr. 4 - 5/8
Art. N° 2923
desde página 616

Rosca ciega
HSS-E-PM, TiAlN, forma C

# S TITANIO, ALEACIONES ESPECIALES

con refrigeración interna

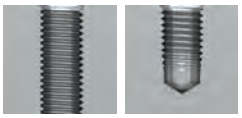
con ranuras de lubr.

| M | | MF | |
|---|---|---|---|
| 6HX | 6GX | 6HX | 6GX |
| No 1 M3 - M20 Art. N° 1270/1271 desde página 623 | No 1 M5 - M10 Art. N° 1713 desde página 624 | No 1 M8x1 - M24x1,5 Art. N° 1272/1273 desde página 632 | No 1 M8x1 - M24x1,5 Art. N° 1715/1716 desde página 633 |
| No 1 M3 - M20 Art. N° 1725/1727 desde página 623 | No 1 M3 - M20 Art. N° 1726/1728 desde página 625 | No 1 M8x1 - M24x1,5 Art. N° 1729/1731 desde página 632 | No 1 M8x1 - M24x1,5 Art. N° 1730/1732 desde página 633 |
| No 1 M3 - M20 Art. N° 1972/1931 desde página 627 | | No 1 M10x1 - M24x1,5 Art. N° 1581 desde página 635 | |
| M3 - M20 Art. N° 1266/1267 desde página 621 | | M8x1 - M24x2 Art. N° 1268/1269 desde página 630 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2BX | 2BX | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

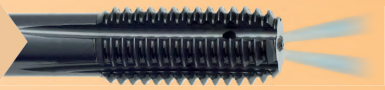
FORMA C

HSS-E-PM, TiCN, forma C

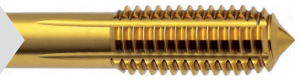
FORMA E

HSS-E-PM, TiN, forma E

METAL DURO



Metal duro, TiCN, forma C



HSS-E, TiN, forma C

# S TITANIO, ALEACIONES ESPECIALES

## M
### UNIVERSAL

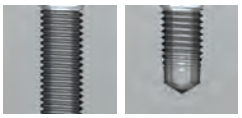
## MF
### UNIVERSAL

| | M | MF |
|---|---|---|
| 1,5xD | No 1<br>M3 - M20<br>Art. N° 3525<br>desde página 643 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3527<br>desde página 646 |
| 2xD | No 1<br>M3 - M20<br>Art. N° 3526<br>desde página 644 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3528<br>desde página 647 |
| 2,5xD | No 1<br>M3 - M20<br>Art. N° 3759<br>desde página 645 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3762<br>desde página 648 |
| 3xD | No 1<br>M1,6 - M16<br>Art. N° 4226<br>desde página 637 | |
| universal | No 1<br>Ø8xP0,5 - Ø30xP3,5<br>Art. N° 3541<br>desde página 664 | No 1<br>Ø8xP0,5 - Ø30xP3,5<br>Art. N° 3541<br>desde página 664 |

No 1 herramienta ideal

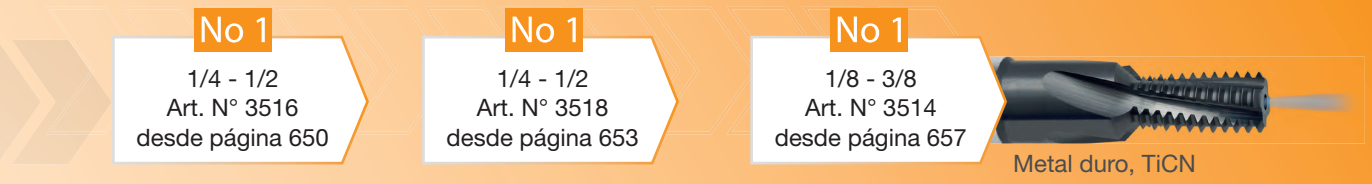
# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



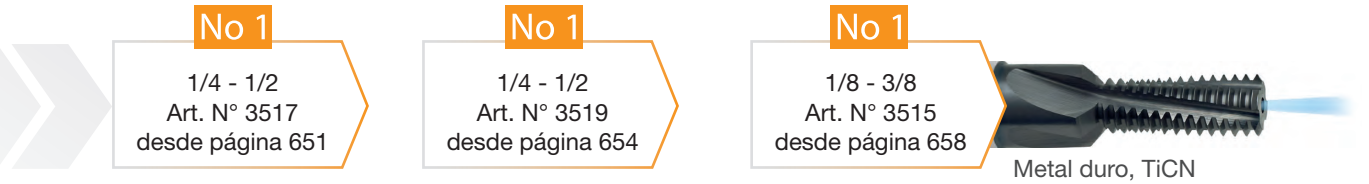
ROSCA **PASANTE**
ROSCA **CIEGA**

Aleaciones especiales, super-especiales y de Ti



| No 1 | No 1 | No 1 |
|---|---|---|
| 1/4 - 1/2<br>Art. N° 3516<br>desde página 650 | 1/4 - 1/2<br>Art. N° 3518<br>desde página 653 | 1/8 - 3/8<br>Art. N° 3514<br>desde página 657 |

Metal duro, TiCN

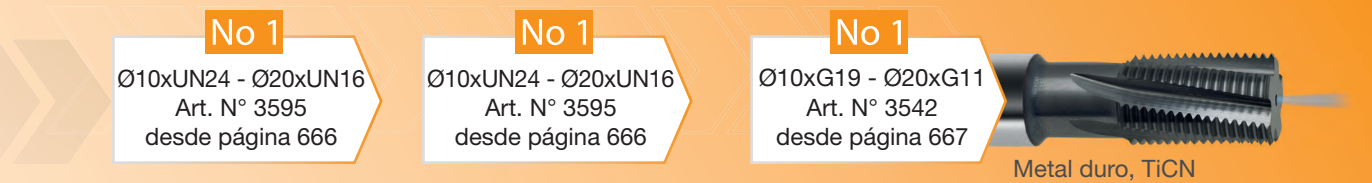


| No 1 | No 1 | No 1 |
|---|---|---|
| 1/4 - 1/2<br>Art. N° 3517<br>desde página 651 | 1/4 - 1/2<br>Art. N° 3519<br>desde página 654 | 1/8 - 3/8<br>Art. N° 3515<br>desde página 658 |

Metal duro, TiCN

Metal duro, TiCN

Metal duro, TiCN



| No 1 | No 1 | No 1 |
|---|---|---|
| Ø10xUN24 - Ø20xUN16<br>Art. N° 3595<br>desde página 666 | Ø10xUN24 - Ø20xUN16<br>Art. N° 3595<br>desde página 666 | Ø10xG19 - Ø20xG11<br>Art. N° 3542<br>desde página 667 |

Metal duro, TiCN

**S**

**SUPERALEAC., ALEAC. ESPECIALES/DE TITANIO**

| | | | |
|---|---|---|---|
| Profundidad de la rosca | ≤3xD | | |
| Material de corte | HSS-E-PM | | |
| Tipo/forma | TiNi/B | TiNi/B | |
| Acabado | C | A | |
| Transmisión de refrig. | ☒ | ☒ | |
| Tolerancia del mango | h9 | h9 | |

ROSCA PASANTE

| Tipo de rosca | tolerancia | número de artículo/página catálogo | |
|---|---|---|---|
| M | 4H | | |
| | 6H | | |
| | 6HX | 2901 602 | 2916 602 |
| | 6GX | | |
| MF | 6H | | |
| | 6HX | 2903 606 | 2917 606 |
| | 6GX | | |
| UNC | 2B | | |
| | 2BX | 2905 610 | 2918 610 |
| UNF | 2B | | |
| | 2BX | | 2919 614 |
| G | | | |
| BSW | | | |
| NPT | | | |
| NPTF | | | |
| EG M | 6H Mod. | | |
| MJ | 4HX | 1057 603 | |
| MJF | 4HX | 1058 607 | |
| UNJC | 3BX | 1059 611 | |
| UNJF | 3BX | 1060 615 | |
| PG | | | |
| refrigerante apropiado | | ●/●/△ | ●/●/△ |

= No 1

○ = aire
● = aceite
● = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | |
|---|---|---|---|---|---|---|
| S | titanio y aleaciones de titanio | ≤ 1200 N/mm² | titanio | 3.7025 | 4 | 4 |
| | | | TiAl5Sn2 | 3.7115 | | |
| | | | TiAl6V4 | 3.7165 | | |
| | aleaciones de niquel, cobalto y hierro | ≤ 1400 N/mm² | Hastelloy C4 | 2.4610 | 4 | 4 |
| | | | Inconel 718 | 2.4668 | | |
| | | | Nimonic 105 | 2.4634 | | |

**SUPERALEAC., ALEAC. ESPECIALES/DE TITANIO**

| | | | |
|---|---|---|---|
| | Profundidad de la rosca | ≤3xD | |
| | Material de corte | HSS-E-PM | |
| | Tipo/forma | Ti R15/C | Ni R10/C (K) |
| | Acabado | C | A |
| | Transmisión de refrig. | ☒ | ☒ |
| | Tolerancia del mango | h9 | h9 |

ROSCA CIEGA

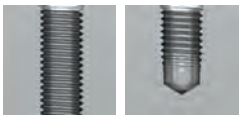
| Tipo de rosca | tolerancia | número de artículo/página catálogo | |
|---|---|---|---|
| M | 4H | | |
| | 6H | | |
| | 6HX | 2909 604 | 2920 604 |
| | 6G | | |
| MF | 6H | | |
| | 6HX | 2910 608 | 2921 608 |
| | 6G | | |
| UNC | 2B | | |
| | 2BX | 2912 612 | 2922 612 |
| UNF | 2B | | |
| | 2BX | 2914 617 | 2923 616 |
| G | | | |
| BSW | | | |
| NPT | | | |
| NPTF | | | |
| EG M | 6H Mod. | | |
| MJ | 4HX | 1061 605 | 1065 605 |
| MJF | 4HX | 1062 609 | 1066 609 |
| UNJC | 3BX | 1063 613 | 1067 613 |
| UNJF | 3BX | 1064 618 | 1068 618 |
| PG | | | |
| refrigerante apropiado | | ○/●/△ | ○/●/△ |



| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | |
|---|---|---|---|---|---|---|
| S | titanio y aleaciones de titanio | ≤ 1200 N/mm² | titanio | 3.7025 | 4 | - |
| | | | TiAl5Sn2 | 3.7115 | | |
| | | | TiAl6V4 | 3.7165 | | |
| | aleaciones de niquel, cobalto y hierro | ≤ 1400 N/mm² | Hastelloy C4 | 2.4610 | - | 4 |
| | | | Inconel 718 | 2.4668 | | |
| | | | Nimonic 105 | 2.4634 | | |

**S**

**SUPERALEAC., ALEAC. ESPECIALES/DE TITANIO**



ROSCA PASANTE Y CIEGA

| | | | | | |
|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤3xD | | | |
| Material de corte | | HSS-E-PM | | | |
| Tipo/forma | | N/C | N/C | N/C | N/C |
| Acabado | | S | S | S | S |
| Transmisión de refrig. | | ☒ | ☒ | radialm. | axialm. |
| Tolerancia del mango | | h9 | h9 | h9 | h9 |
| | | | | | |
| **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | | |
| **M** | 4H | | | | |
| | 6H | | | | |
| | 6HX | 322/339<br>620 | 1266/1267<br>621 | 323/342<br>622 | 4143<br>626 |
| | 6GX | | | | |
| **MF** | 6H | | | | |
| | 6HX | 333<br>629 | 1268/1269<br>630 | 338<br>631 | 4145<br>634 |
| | 6GX | | | | |
| **UNC** | 2B | | | | |
| | 2BX | | | | |
| **UNF** | 2B | | | | |
| | 2BX | | | | |
| **G** | | | | | |
| **BSW** | | | | | |
| **NPT** | | | | | |
| **NPTF** | | | | | |
| **EG M** | 6H Mod. | | | | |
| **MJ** | 4HX | | | | |
| **MJF** | 4HX | | | | |
| **UNJC** | 3BX | | | | |
| **UNJF** | 3BX | | | | |
| **PG** | | | | | |
| **refrigerante apropiado** | | ○/●/△ | ○/●/△ | ○/●/△/□ | ○/●/△ |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
□ = lubrificación mínima (MMS)

| | grupo de material | tenacidad | material/ ejemplo | Material fabricación-nº | velocidad de corte recomendada vc m/min | | | |
|---|---|---|---|---|---|---|---|---|
| S | titanio y aleaciones de titanio | ≤ 1200 N/mm² | titanio | 3.7025 | 4 | 4 | 4 | 4 |
| | | | TiAl5Sn2 | 3.7115 | | | | |
| | | | TiAl6V4 | 3.7165 | | | | |
| | aleaciones de níquel, cobalto y hierro | ≤ 1400 N/mm² | Hastelloy C4 | 2.4610 | 4 | 4 | 4 | 4 |
| | | | Inconel 718 | 2.4668 | | | | |
| | | | Nimonic 105 | 2.4634 | | | | |

## ≤3xD

| HSS-E-PM | | | Metal duro | |
|---|---|---|---|---|
| N/C | N/C | N/E | N/C | N/E |
| C | A | S | C | C |
| radialm. | radialm. | axialm. | radialm. | radialm. |
| h9 | h9 | h9 | h6 | h6 |
| | | | | |
| **número de artículo/página catálogo** | | | | |
| | | | | |
| | | | | |
| 1270/1271<br>623 | 1717/1719<br>623 | 1725/1727<br>623 | 1972/1931<br>627 | 1927<br>628 |
| 1713<br>624 | 1718/1720<br>625 | 1726/1728<br>625 | | |
| | | | | |
| 1272/1273<br>632 | 1721/1723<br>632 | 1729/1731<br>632 | 1581<br>635 | |
| 1715/1716<br>633 | | 1730/1732<br>633 | | |
| | | | | |
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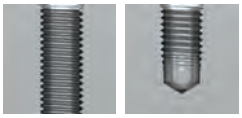
| | | | | |
| ○/●/△/□ | ○/●/△/□ | ○/●/△ | ○/●/△/□ | ○/●/△/□ |

| velocidad de corte recomendada vc m/min | | | | |
|---|---|---|---|---|
| 4 | 4 | 4 | 10 | 10 |
| 4 | 4 | 4 | 10 | 10 |

**S**

**SUPERALEAC., ALEAC. ESPECIALES/DE TITANIO**



ROSCA PASANTE Y CIEGA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Profundidad de la rosca | | ≤2xD | | | | ≤2,5xD | | ≤1,5xD | |
| Material de corte | | Metal duro | | | | | | | |
| Tipo | TM SP | TM SP | TM SP | TM SP | TM SP | TM SP | TMC SP | TMC SP |
| Acabado | C | C | C | C | C | C | C | C |
| Transmisión de refrig. | ☒ | ☒ | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. |
| Forma del mango | HA | HB | HA | HB | HA | HB | HA | HA |
| Espiral | 27° | 27° | 27° | 27° | 27° | 27° | 10° | 10° |
| | | | | | | | | |
| **Tipo de rosca** | | **número de artículo/página catálogo** | | | | | | |
| **M** | 4132 641 | 4133 641 | 3737 640 | 3743 640 | 3735 642 | 3740 642 | 3525 643 | 3543 643 |
| **MF** | | | 3737 640 | 3743 640 | | | 3527 646 | 3545 646 |
| **UNC** | | | 4134 649 | 4135 649 | | | 3516 650 | 3534 650 |
| **UNF** | | | 4136 652 | 4137 652 | | | 3518 653 | 3536 653 |
| **G** | | | 3745 655 | 3748 655 | 3746 656 | 3750 656 | 3514 657 | 3529 657 |
| **BSW** | | | | | | | | |
| **NPT** | | | 3753 660 | 3754 660 | | | 3520 661 | 3538 661 |
| **NPTF** | | | 3756 662 | 3757 662 | | | 3521 663 | 3539 663 |
| **EG M** | Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
| **MJ** | | | | | | | | |
| **MJF** | | | | | | | | |
| **UNJC** | | | | | | | | |
| **UNJF** | | | | | | | | |
| **PG** | | | | | | | | |
| **refrigerante apropiado** | ◌/● | ◌/● | ◌/● | ◌/● | ◌/● | ◌/● | ◌/● | ◌/● |

= No 1

○ = aire
● = aceite
◌ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | dureza | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S | titanio y aleaciones de titanio | ≤ 1200 N/mm² | titanio | 3.7025 | + | + | + | + | + | + | ++ | ++ |
| | | | TiAl5Sn2 | 3.7115 | | | | | | | | |
| | | | TiAl6V4 | 3.7165 | | | | | | | | |
| | aleaciones de níquel, cobalto y hierro | ≤ 1400 N/mm² | Hastelloy C4 | 2.4610 | + | + | + | + | + | + | ++ | ++ |
| | | | Inconel 718 | 2.4668 | | | | | | | | |
| | | | Nimonic 105 | 2.4634 | | | | | | | | |

| ≤2xD | | ≤2,5xD | | universal | | | | ≤3xD | |
|---|---|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | | | |
| TMC SP | TMC SP | TMC SP | TMC SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | MTM 1 SP |
| C | C | C | C | C | C | C | C | C | C |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ |
| HA | HB | HA | HB | HA | HB | HA | HB | HA | HA |
| 10° | 10° | 27° | 27° | 15° | 15° | 15° | 15° | 15° | 15° |
| | | | | | | | | | |
| número de artículo/página catálogo | | | | | | | | | |
| 3526 644 | 3544 644 | 3759 645 | 3760 645 | 3541 664 | 3556 664 | 4162 665 | 4163 665 | 4226 637 | 4225 639 |
| 3528 647 | 3546 647 | 3762 648 | 3763 648 | 3541 664 | 3556 664 | 4162 665 | 4163 665 | | 4225 639 |
| 3517 651 | 3535 651 | | | 3595 666 | 3596 666 | | | | |
| 3519 654 | 3537 654 | | | 3595 666 | 3596 666 | | | | |
| 3515 658 | 3533 658 | 3765 659 | 3766 659 | 3542 667 | 3557 667 | 3542 667 | 3557 667 | 4228 638 | |
| | | | | | | | | | |
| | | | | 3768 668 | 3769 668 | | | | |
| | | | | 3772 669 | 3773 669 | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○/● |

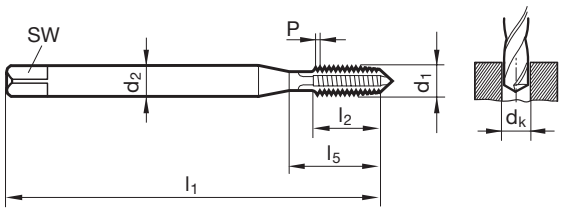
| recomendación de aplicación | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |
| ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ | ++ |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | A |
| Tipo | TiNi | TiNi |
| Forma | B | B |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 DIN 371/DIN 376** — Artículo Nº **2901** **2916**

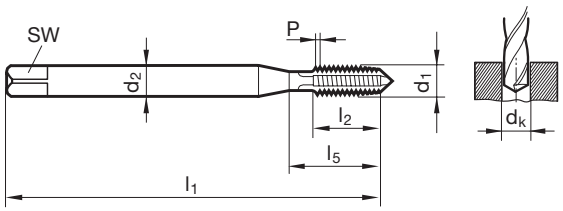
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 4HX |
| Acabado | C |
| Tipo | TiNi |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **1057**

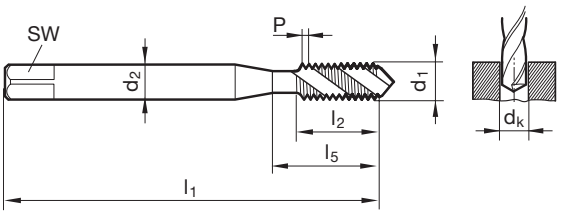
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| MJ3 x 0,5 | 0,500 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,40 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,30 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,90 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,60 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,40 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,20 | 110,000 | 26,000 | 54,000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 DIN 371/DIN 376** Artículo Nº **2909** **2920**

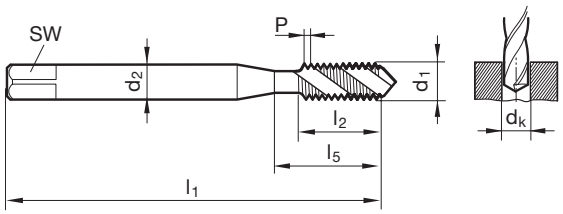
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,80 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 110,000 | 26,000 | 54,000 |

## Machos máquina para rosca métrica ISO

| | | |
|---|---|---|
| P | | |
| M | | |
| K | | |
| N | | |
| S | • | |
| H | | |

Condiciones de corte ver pág. 597

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 4HX | 4HX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 371/DIN 376** — Artículo Nº **1061** **1065**

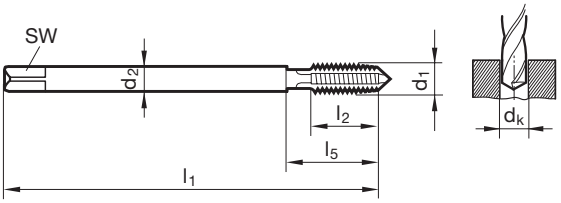
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| MJ3 x 0,5 | 0,500 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,40 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,30 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,90 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,60 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,40 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,20 | 110,000 | 26,000 | 54,000 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | A |
| Tipo | TiNi | TiNi |
| Forma | B | B |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 DIN 371** — Artículo Nº **2903** **2917**

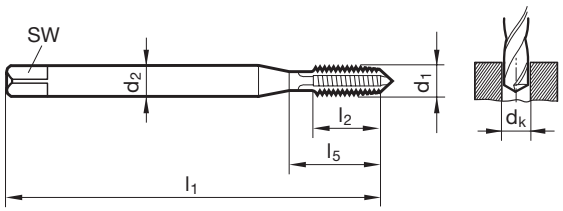
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 3,500 | 2,700 | 2,65 | 56,000 | 6,000 | 18,000 | 3,002 |
| M4 x 0,5 | 4,500 | 3,400 | 3,50 | 63,000 | 7,500 | 21,000 | 4,003 |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 8,500 | 25,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 80,000 | 11,000 | 30,000 | 6,003 |
| M6 x 0,75 | 6,000 | 4,900 | 5,20 | 80,000 | 11,000 | 30,000 | 6,004 |
| M8 x 0,5 | 8,000 | 6,200 | 7,50 | 80,000 | 14,000 | 30,000 | 8,003 |
| M8 x 0,75 | 8,000 | 6,200 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 14,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 20,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 4HX |
| Acabado | C |
| Tipo | TiNi |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 DIN 371** Artículo Nº **1058**

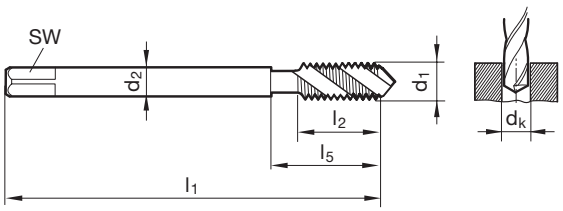
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| MJ6 x 0,5 | 6,000 | 4,900 | 5,60 | 80,000 | 11,000 | 30,000 | 6,003 |
| MJ6 x 0,75 | 6,000 | 4,900 | 5,40 | 80,000 | 11,000 | 30,000 | 6,004 |
| MJ8 x 1 | 8,000 | 6,200 | 7,10 | 90,000 | 14,000 | 35,000 | 8,005 |
| MJ10 x 1 | 10,000 | 8,000 | 9,10 | 90,000 | 20,000 | 35,000 | 10,005 |
| MJ10 x 1,25 | 10,000 | 8,000 | 8,90 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máquina para rosca métrica fina ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6HX | 6HX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 DIN 371** — Artículo Nº **2910** **2921**

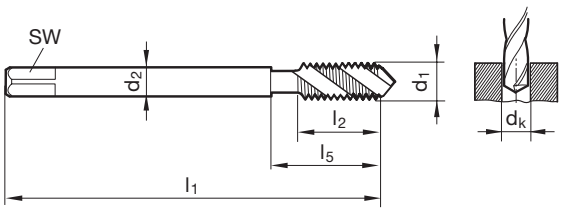
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M3 x 0,35 | 3,500 | 2,700 | 2,65 | 56,000 | 6,000 | 18,000 | 3,002 |
| M4 x 0,5 | 4,500 | 3,400 | 3,50 | 63,000 | 7,500 | 21,000 | 4,003 |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 70,000 | 8,500 | 25,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 80,000 | 11,000 | 30,000 | 6,003 |
| M6 x 0,75 | 6,000 | 4,900 | 5,20 | 80,000 | 11,000 | 30,000 | 6,004 |
| M8 x 0,5 | 8,000 | 6,200 | 7,50 | 80,000 | 14,000 | 30,000 | 8,003 |
| M8 x 0,75 | 8,000 | 6,200 | 7,20 | 80,000 | 14,000 | 30,000 | 8,004 |
| M8 x 1 | 8,000 | 6,200 | 7,00 | 90,000 | 14,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,00 | 90,000 | 20,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 8,80 | 100,000 | 20,000 | 39,000 | 10,006 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 4HX | 4HX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |



**DIN 2184-1 DIN 371** — Artículo Nº **1062** **1066**

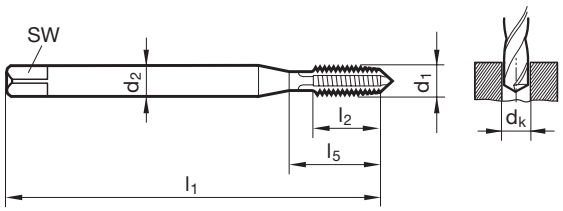
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| MJ6 x 0,5 | 6,000 | 4,900 | 5,60 | 80,000 | 11,000 | 30,000 | 6,003 |
| MJ6 x 0,75 | 6,000 | 4,900 | 5,40 | 80,000 | 11,000 | 30,000 | 6,004 |
| MJ8 x 0,5 | 8,000 | 6,200 | 7,60 | 80,000 | 14,000 | 30,000 | 8,003 |
| MJ8 x 0,75 | 8,000 | 6,200 | 7,40 | 80,000 | 14,000 | 30,000 | 8,004 |
| MJ8 x 1 | 8,000 | 6,200 | 7,10 | 90,000 | 14,000 | 35,000 | 8,005 |
| MJ10 x 1 | 10,000 | 8,000 | 9,10 | 90,000 | 16,000 | 35,000 | 10,005 |
| MJ10 x 1,25 | 10,000 | 8,000 | 8,90 | 100,000 | 16,000 | 39,000 | 10,006 |

## Machos máquina para roscas UNC

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | C | A |
| Tipo | TiNi | TiNi |
| Forma | B | B |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 ~DIN 371** — Artículo Nº **2905** **2918**

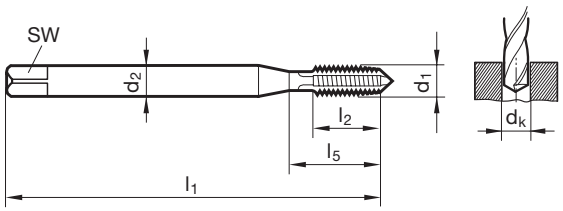
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |

## Machos máquina para roscas UNC

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 3BX |
| Acabado | C |
| Tipo | TiNi |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 ~DIN 371/~DIN 376** Artículo Nº **1059**

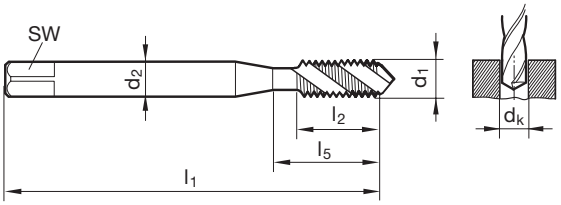
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |

## Machos máquina para roscas UNC

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 2BX | 2BX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 ~DIN 371/~DIN 376** — Artículo Nº **2912** **2922**

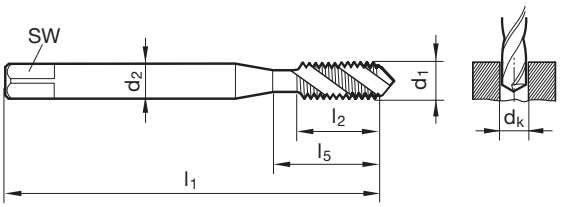
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 56,000 | 11,000 | 18,000 | 2,845 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 56,000 | 11,000 | 18,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |

## Machos máquina para roscas UNC

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 3BX | 3BX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |



**DIN 2184-1 ~DIN 371/~DIN 376** — Artículo Nº **1063** **1067**

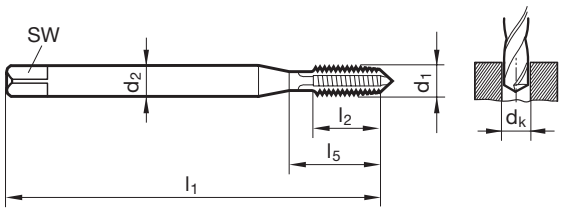
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 20 | 7,000 | 5,500 | 5,10 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 18 | 8,000 | 6,200 | 6,60 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 16 | 10,000 | 8,000 | 8,00 | 100,000 | 20,000 | 39,000 | 9,525 |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 110,000 | 25,000 | 49,000 | 12,700 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 110,000 | 30,000 | 53,000 | 15,875 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 2BX |
| Acabado | A |
| Tipo | TiNi |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 ~DIN 371** Artículo Nº **2919**

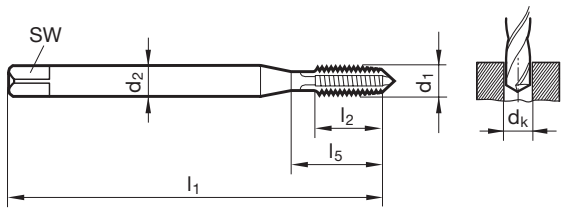
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 3BX |
| Acabado | C |
| Tipo | TiNi |
| Forma | B |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 596



**DIN 2184-1 ~DIN 371/~DIN 374** Artículo Nº **1060**

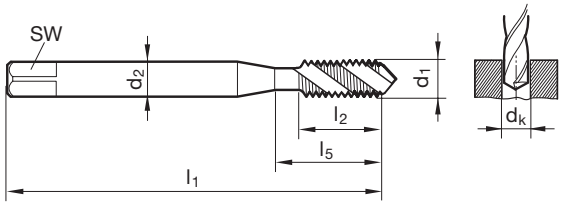
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 2BX |
| Acabado | A |
| Tipo | Ni R10 |
| Forma | C (K) |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 ~DIN 371/~DIN 374** Artículo Nº **2923**

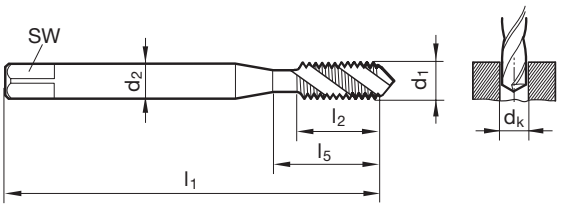
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,40 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,70 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |

## Machos máquina para roscas UNF

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 2BX |
| Acabado | C |
| Tipo | Ti R15 |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 ~DIN 371/~DIN 374** Artículo Nº **2914**

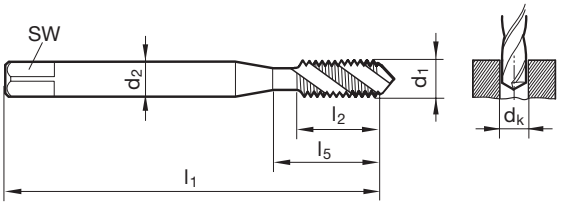
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 4 - 48 | 3,500 | 2,700 | 2,40 | 56,000 | 10,000 | 18,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,70 | 56,000 | 10,000 | 18,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 56,000 | 11,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 8,50 | 90,000 | 18,000 | 35,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |

## Machos máquina para roscas UNF

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 3BX | 3BX |
| Acabado | C | A |
| Tipo | Ti R15 | Ni R10 |
| Forma | C | C (K) |
| Con refrigeración interna | | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 597



**DIN 2184-1 ~DIN 371/~DIN 374** — Artículo Nº **1064** **1068**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 56,000 | 12,000 | 20,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 63,000 | 12,000 | 21,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 70,000 | 14,000 | 25,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 80,000 | 16,000 | 30,000 | 5,486 |
| 1/4 - 28 | 7,000 | 5,500 | 5,50 | 80,000 | 16,000 | 30,000 | 6,350 |
| 5/16 - 24 | 8,000 | 6,200 | 6,90 | 90,000 | 18,000 | 35,000 | 7,938 |
| 3/8 - 24 | 10,000 | 8,000 | 8,50 | 100,000 | 20,000 | 39,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 100,000 | 22,000 | 42,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 100,000 | 20,000 | 40,000 | 12,700 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 100,000 | 22,000 | 44,000 | 15,875 |

# MACHOS MÁQ. DE LAMINACIÓN

S

Aleaciones especiales, super-especiales y de Ti

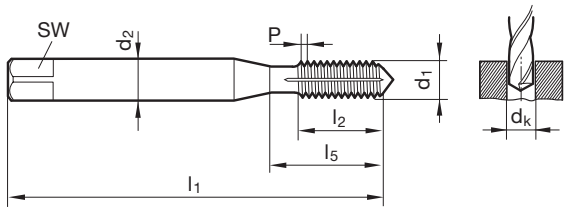
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

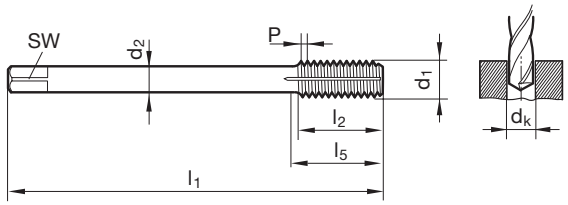
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **322**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **339**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

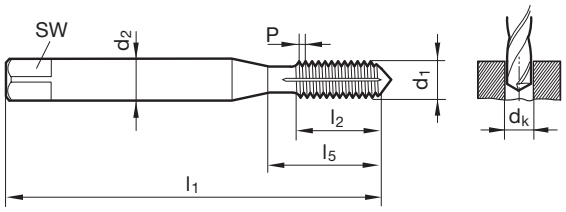
## Machos máq. de laminación para rosca metr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

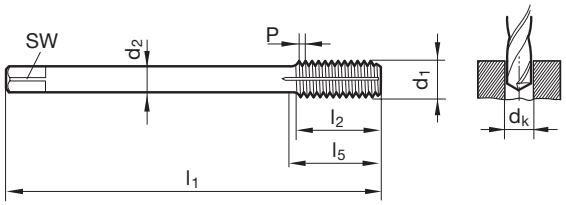
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1266**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1267**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

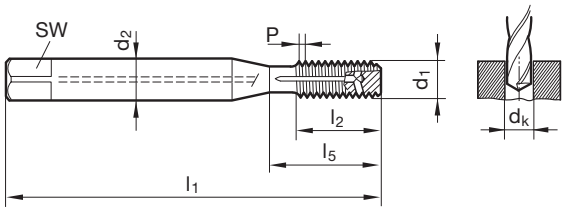
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

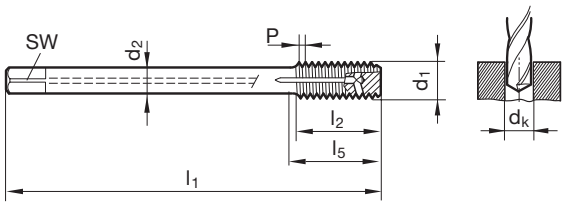
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **323**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **342**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |

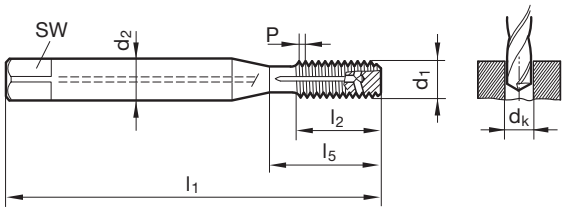
## Machos máq. laminación refrig., rosca métr. ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

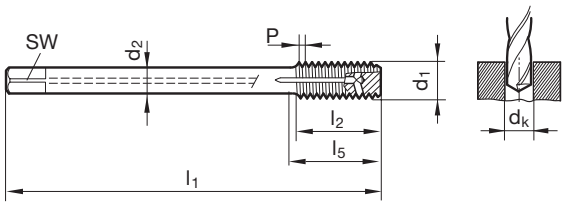
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599

~ DIN 371




~ DIN 376



### DIN 2174 ~DIN 371

| | Artículo Nº | 1270 | 1717 | 1725 |
|---|---|---|---|---|

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

### DIN 2174 ~DIN 376

| | Artículo Nº | 1271 | 1719 | 1727 |
|---|---|---|---|---|

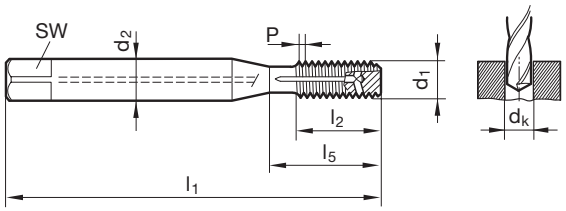
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 30,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6GX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599



**DIN 2174 ~DIN 371** Artículo Nº **1713**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

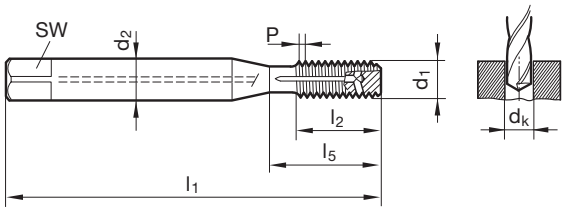
## Machos máq. laminación refrig., rosca métr. ISO

| | | |
|---|---|---|
| Material de corte | HSS-E-PM | |
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | A | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

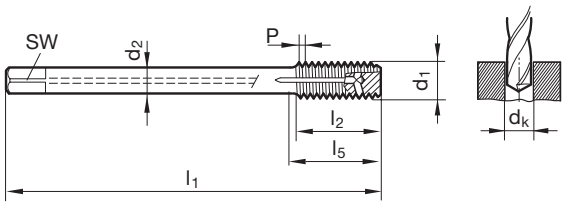
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | |
| S | • |
| H | |

Condiciones de corte ver pág. 599

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** — Artículo Nº **1718** **1726**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 20,000 | 39,000 |

**DIN 2174 ~DIN 376** — Artículo Nº **1720** **1728**

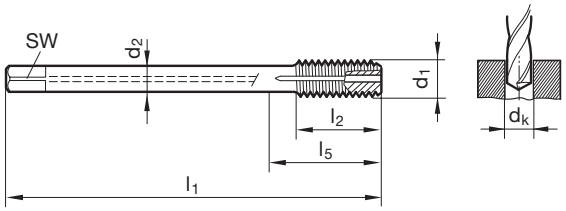
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 26,000 | 54,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 32,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598



**Norma de fab. Norma de fab.** Artículo Nº **4143**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 112,000 | 6,000 | 18,000 |
| M4 | 0,700 | 2,800 | 2,100 | 3,70 | 112,000 | 7,500 | 77,000 |
| M5 | 0,800 | 3,500 | 2,700 | 4,65 | 125,000 | 8,500 | 90,000 |
| M6 | 1,000 | 4,500 | 3,400 | 5,55 | 125,000 | 11,000 | 90,000 |
| M8 | 1,250 | 6,000 | 4,900 | 7,40 | 140,000 | 14,000 | 97,000 |
| M10 | 1,500 | 7,000 | 5,500 | 9,30 | 160,000 | 16,000 | 117,000 |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 180,000 | 18,500 | 133,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 220,000 | 20,000 | 168,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 280,000 | 25,000 | 225,000 |

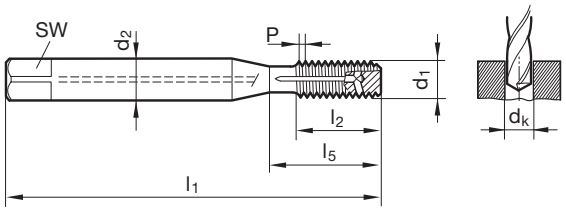
## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

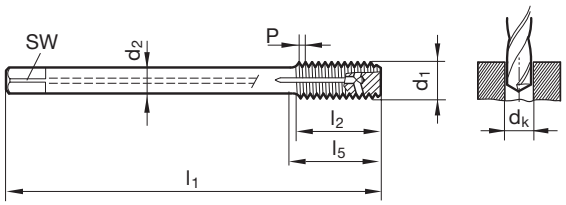
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599

~ DIN 371




~ DIN 376



**DIN 2174 ~DIN 371** Artículo Nº **1972**

| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

**DIN 2174 ~DIN 376** Artículo Nº **1931**

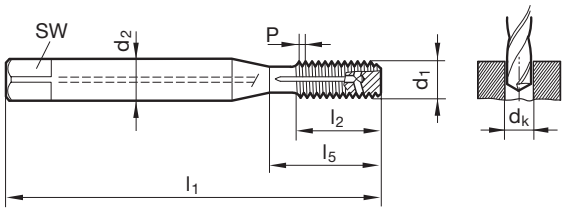
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M12 | 1,750 | 9,000 | 7,000 | 11,20 | 110,000 | 18,500 | 49,000 |
| M14 | 2,000 | 11,000 | 9,000 | 13,10 | 110,000 | 20,000 | 53,000 |
| M16 | 2,000 | 12,000 | 9,000 | 15,10 | 110,000 | 20,000 | 54,000 |
| M18 | 2,500 | 14,000 | 11,000 | 16,90 | 125,000 | 25,000 | 62,000 |
| M20 | 2,500 | 16,000 | 12,000 | 18,90 | 140,000 | 25,000 | 62,000 |

## Machos máq. laminación refrig., rosca métr. ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | E |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599



**DIN 2174 ~DIN 371** Artículo Nº **1927**

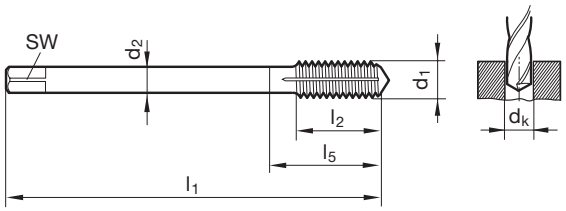
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,80 | 56,000 | 6,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,70 | 63,000 | 7,500 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,65 | 70,000 | 8,500 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,55 | 80,000 | 11,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 7,40 | 90,000 | 14,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 9,30 | 100,000 | 16,000 | 39,000 |

## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598



**DIN 2174 ~DIN 374** — Artículo Nº **333**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 11,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 16,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 16,000 | 44,000 | 20,007 |

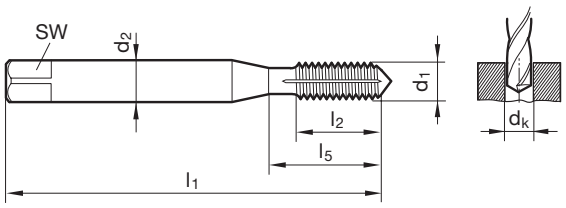
## Machos máq. de laminación p. rosca metr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

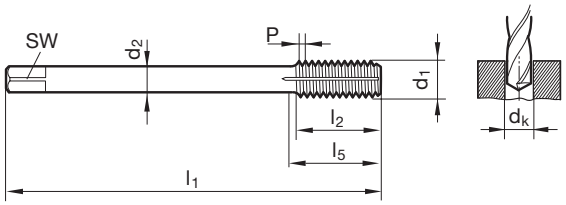
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1268**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |

**DIN 2174 ~DIN 374** — Artículo Nº **1269**

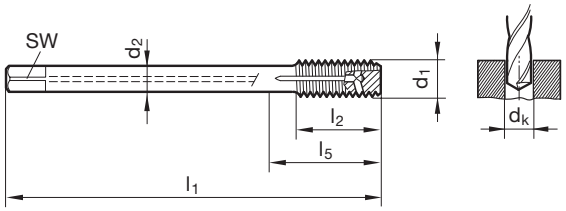
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 2 | 18,000 | 14,500 | 23,10 | 140,000 | 28,000 | 48,000 | 24,008 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598



**DIN 2174 ~DIN 374** Artículo Nº **338**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 90,000 | 11,000 | 35,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 16,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |

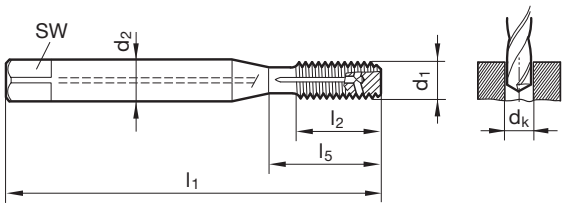
## Machos máq. laminación refrig., rosca métr. fina ISO

| | | | |
|---|---|---|---|
| Material de corte | HSS-E-PM | | |
| Ø-Tolerancia | 6HX | 6HX | 6HX |
| Acabado | C | A | S |
| Tipo | N | N | N |
| Forma | C | C | E |
| Con refrigeración interna | | | |

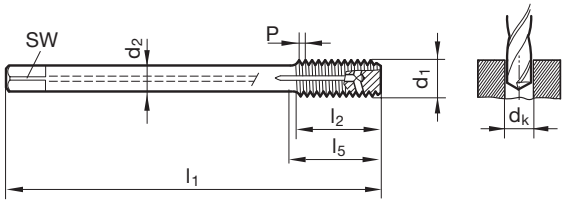
| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1272** **1721** **1729**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M9 x 1 | 9,000 | 7,000 | 8,55 | 90,000 | 16,000 | 35,000 | 9,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1273** **1723** **1731**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 11,40 | 100,000 | 20,000 | 40,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 20,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 20,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1 | 16,000 | 12,000 | 19,55 | 125,000 | 25,000 | 44,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M22 x 1,5 | 18,000 | 14,500 | 21,30 | 125,000 | 25,000 | 44,000 | 22,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

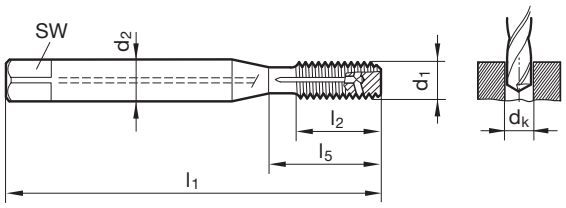
## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

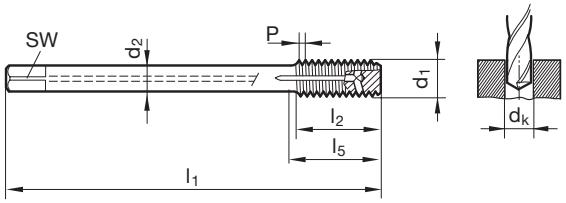
Condiciones de corte ver pág. 599

| Material de corte | HSS-E-PM | |
|---|---|---|
| Ø-Tolerancia | 6GX | 6GX |
| Acabado | C | S |
| Tipo | N | N |
| Forma | C | E |
| Con refrigeración interna | | |

~ DIN 371




~ DIN 374



**DIN 2174 ~DIN 371** — Artículo Nº **1715** **1730**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,55 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 16,000 | 35,000 | 10,005 |
| M10 x 1,25 | 10,000 | 8,000 | 9,40 | 100,000 | 20,000 | 39,000 | 10,006 |

**DIN 2174 ~DIN 374** — Artículo Nº **1716** **1732**

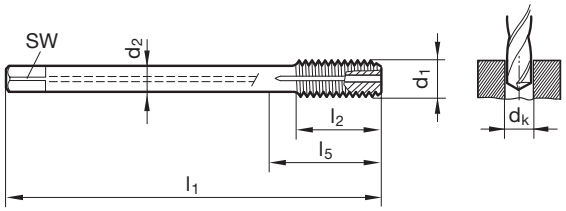
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 20,000 | 40,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 20,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 22,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 25,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 25,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 28,000 | 48,000 | 24,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | S |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ○ |
| S | ○ |
| H | |

Condiciones de corte ver pág. 598



**Norma de fab. Norma de fab.** Artículo Nº **4145**

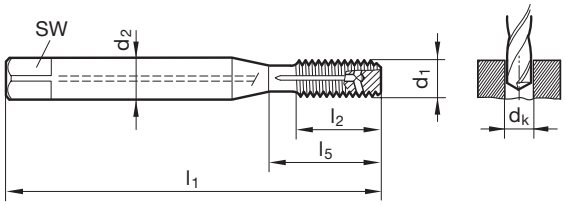
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 6,000 | 4,900 | 7,55 | 140,000 | 14,000 | 97,000 | 8,005 |
| M10 x 1 | 7,000 | 5,500 | 9,55 | 160,000 | 16,000 | 117,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 9,40 | 160,000 | 16,000 | 117,000 | 10,006 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 180,000 | 18,500 | 133,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 180,000 | 18,500 | 133,000 | 12,007 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 220,000 | 20,000 | 168,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 220,000 | 20,000 | 168,000 | 16,007 |

## Machos máq. laminación refrig., rosca métr. fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | N |
| Forma | C |
| Con refrigeración interna | |

| | |
|---|---|
| P | • |
| M | • |
| K | |
| N | ≥ 7 |
| S | • |
| H | |

Condiciones de corte ver pág. 599



**DIN 2174 ~DIN 371/~DIN 376** Artículo Nº **1581**

| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M10 x 1 | 10,000 | 8,000 | 9,55 | 90,000 | 11,000 | 35,000 | 10,005 |
| M12 x 1 | 9,000 | 7,000 | 11,55 | 100,000 | 15,000 | 40,000 | 12,005 |
| M12 x 1,5 | 9,000 | 7,000 | 11,30 | 100,000 | 15,000 | 40,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,55 | 100,000 | 15,000 | 40,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 13,40 | 100,000 | 15,000 | 40,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 13,30 | 100,000 | 15,000 | 40,000 | 14,007 |
| M16 x 1,5 | 12,000 | 9,000 | 15,30 | 100,000 | 15,000 | 44,000 | 16,007 |
| M18 x 1,5 | 14,000 | 11,000 | 17,30 | 110,000 | 15,000 | 44,000 | 18,007 |
| M20 x 1,5 | 16,000 | 12,000 | 19,30 | 125,000 | 15,000 | 44,000 | 20,007 |
| M24 x 1,5 | 18,000 | 14,500 | 23,30 | 140,000 | 15,000 | 48,000 | 24,007 |

# FRESAS DE ROSCAR S

## Microfresas de roscar

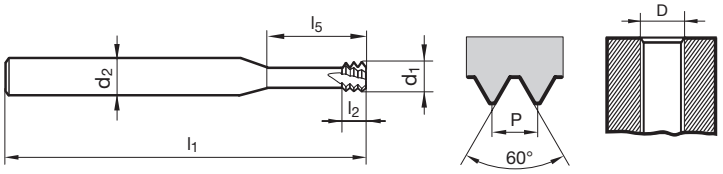
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 601

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4226**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,6 | 0,350 | 1,200 | 3,000 | 39,000 | 1,100 | 4,800 | 3 | 1,600 |
| M1,8 | 0,350 | 1,400 | 3,000 | 39,000 | 1,100 | 5,400 | 3 | 1,800 |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,400 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M3,5 | 0,600 | 2,800 | 6,000 | 58,000 | 1,800 | 11,000 | 4 | 3,500 |
| M4 | 0,700 | 3,200 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 73,000 | 4,500 | 33,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 84,000 | 5,300 | 38,000 | 4 | 12,000 |
| M16 | 2,000 | 11,800 | 10,000 | 84,000 | 6,000 | 35,000 | 5 | 16,000 |

## Microfresas de roscar

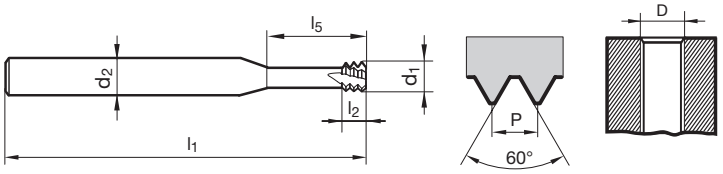
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 601

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP G |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4228**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 6,200 | 8,000 | 64,000 | 2,700 | 19,500 | 4 | 9,728 |
| G3/8 | 19,000 | 9,950 | 10,000 | 73,000 | 4,000 | 25,000 | 4 | 16,662 |
| G7/8 | 14,000 | 11,950 | 12,000 | 84,000 | 5,400 | 37,000 | 4 | 30,201 |
| G2 | 11,000 | 15,950 | 16,000 | 105,000 | 6,900 | 44,000 | 5 | 59,614 |

## Microfresas de roscar

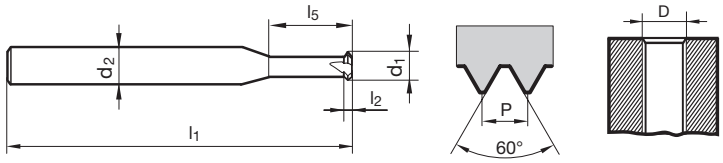
3xD

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | |

Condiciones de corte ver pág. 601

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | C |
| Tipo | SP M/MF |
| Pasos de rosca | 1,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4225**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M1,4 - M1,8 | 0,350 | 1,050 | 3,000 | 39,000 | 0,400 | 3,800 | 3 | 1,800 |
| M2 - M2,4 | 0,400 | 1,500 | 3,000 | 39,000 | 0,400 | 7,000 | 3 | 2,400 |
| M2,5 - M3 | 0,500 | 2,000 | 3,000 | 39,000 | 0,500 | 9,000 | 4 | 3,000 |
| M3,5 - M4,5 | 0,750 | 2,800 | 6,000 | 58,000 | 0,800 | 14,000 | 4 | 4,500 |
| M5 - M7 | 1,000 | 4,000 | 6,000 | 58,000 | 1,000 | 19,000 | 4 | 7,000 |
| M8 - M10 | 1,500 | 6,400 | 8,000 | 64,000 | 1,500 | 24,000 | 5 | 10,000 |

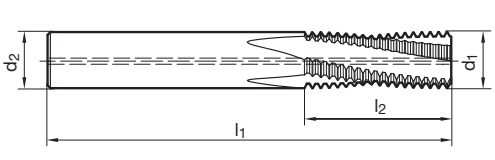
## Fresas de roscar sin chaflán para rosca métrica ISO

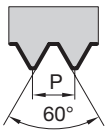
2xD

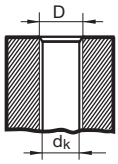
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3737 | 3743 | 3734 |
|---|---|---|---|---|

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M8 x 1 | 1,000 | 6,400 | 8,000 | 7,00 | 62,000 | 17,500 | 3 | 8,005 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M10 x 1 | 1,000 | 7,950 | 10,000 | 9,00 | 74,000 | 21,500 | 3 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 10,000 | 8,80 | 74,000 | 21,900 | 3 | 10,006 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M12 x 1,5 | 1,500 | 9,950 | 10,000 | 10,50 | 74,000 | 26,300 | 4 | 12,007 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M14 x 1,5 | 1,500 | 11,200 | 12,000 | 12,50 | 90,000 | 30,800 | 4 | 14,007 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M16 x 1,5 | 1,500 | 12,800 | 14,000 | 14,50 | 90,000 | 33,800 | 4 | 16,007 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |
| M20 x 1,5 | 1,500 | 14,950 | 16,000 | 18,50 | 102,000 | 42,800 | 4 | 20,007 |

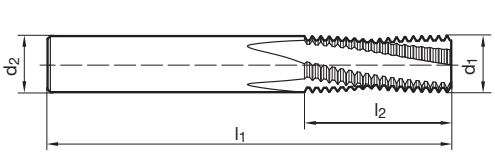
## Fresas de roscar sin chaflán para rosca métrica ISO

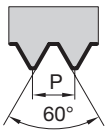
2xD

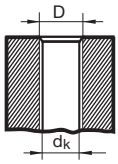
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | ✕ | ✕ |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4132 | 4133 |
|---|---|---|---|

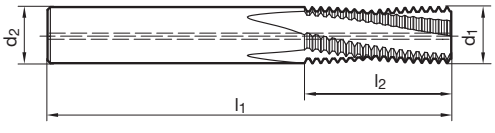
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 21,800 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 41,300 | 4 | 20,000 |

## Fresas de roscar sin chaflán para rosca métrica ISO

| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3735 | 3740 |
|---|---|---|---|

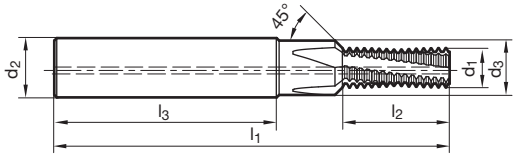
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M6 | 1,000 | 4,800 | 6,000 | 5,00 | 54,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 8,000 | 6,80 | 62,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 10,000 | 8,50 | 74,000 | 26,300 | 3 | 10,000 |
| M12 | 1,750 | 9,950 | 10,000 | 10,20 | 74,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 12,000 | 12,00 | 90,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 14,000 | 14,00 | 90,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,950 | 16,000 | 17,50 | 102,000 | 48,800 | 4 | 20,000 |

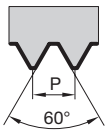
## Fresas de roscar con chaflán para rosca métrica ISO

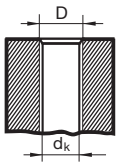
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3525 | 3543 | 3510 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

## Fresas de roscar con chaflán para rosca métrica ISO

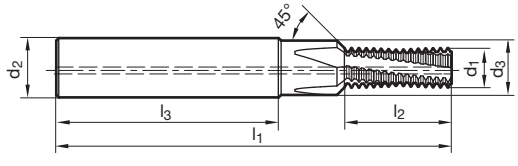
2xD

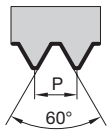
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

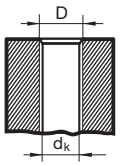
Condiciones de corte ver pág. 601

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |

NEW



| Norma de fab. | Artículo Nº | 3526 | 3544 | 3511 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

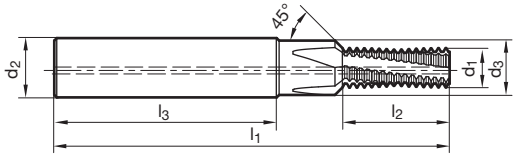
## Fresas de roscar con chaflán para rosca métrica ISO

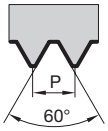
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

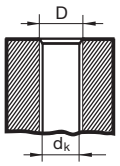
Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3759 | 3760 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 7,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 35,600 | 10,900 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 13,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 16,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 21,900 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 26,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 32,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 37,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 43,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 48,800 | 4 | 20,000 |

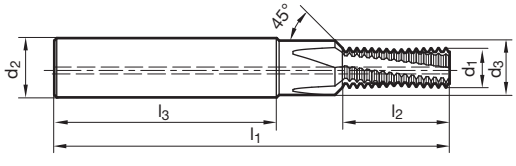
## Fresas de roscar con chaflán para rosca métrica fina ISO

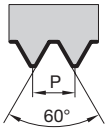
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

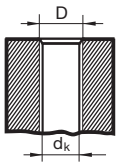
Condiciones de corte ver pág. 600

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |

NEW



| Norma de fab. | Artículo Nº | 3527 | 3545 | 3512 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

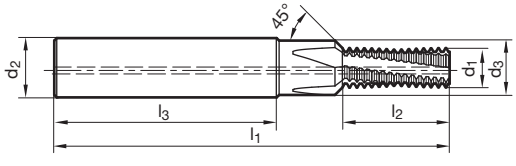
## Fresas de roscar con chaflán para rosca métrica fina ISO

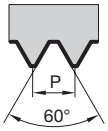
2xD

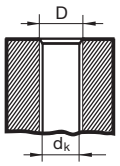
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TMC SP | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3528 | 3546 | 3513 |
|---|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

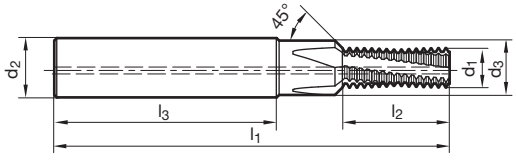
## Fresas de roscar con chaflán para rosca métrica fina ISO

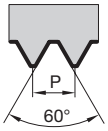
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

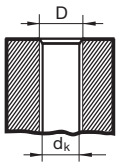
Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **3762** **3763**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 10,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 12,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 15,300 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 15,400 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 20,600 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 20,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 25,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 25,600 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 30,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 30,800 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 38,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 41,300 | 4 | 16,007 |

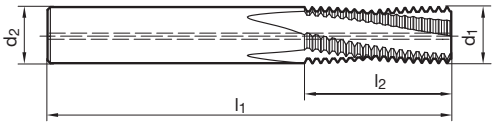
## Fresas de roscar sin chaflán para roscas UNC

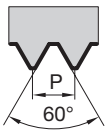
2xD

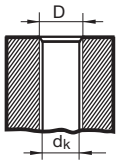
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4134 | 4135 |
|---|---|---|---|

| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 24 | 3,400 | 6,000 | 3,90 | 54,000 | 11,100 | 3 | 4,826 |
| 12 - 24 | 4,100 | 6,000 | 4,50 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 20 | 4,700 | 6,000 | 5,10 | 54,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 6,100 | 8,000 | 6,60 | 64,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,600 | 8,000 | 8,00 | 64,000 | 21,400 | 3 | 9,525 |
| 7/16 - 14 | 9,000 | 10,000 | 9,40 | 74,000 | 24,500 | 3 | 11,113 |
| 1/2 - 13 | 9,950 | 10,000 | 10,80 | 74,000 | 28,300 | 4 | 12,700 |
| 9/16 - 12 | 11,400 | 12,000 | 12,20 | 90,000 | 30,700 | 4 | 14,288 |
| 5/8 - 11 | 12,700 | 14,000 | 13,50 | 90,000 | 35,800 | 4 | 15,875 |

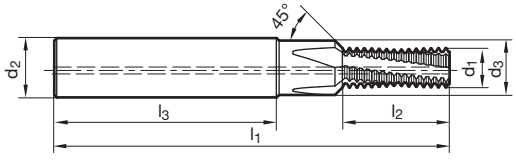
## Fresas de roscar con chaflán para roscas UNC

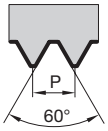
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

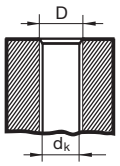
Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **3516** **3534**

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

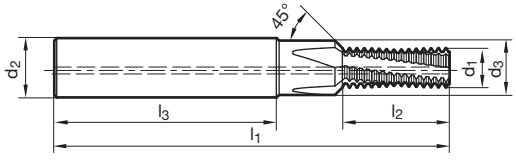
## Fresas de roscar con chaflán para roscas UNC

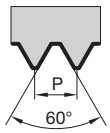
2xD

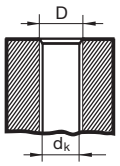
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3517 | 3535 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

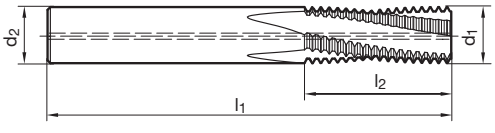
## Fresas de roscar sin chaflán para roscas UNF

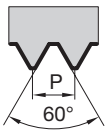
2xD

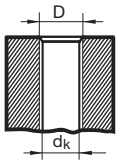
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 4136 | 4137 |
|---|---|---|---|

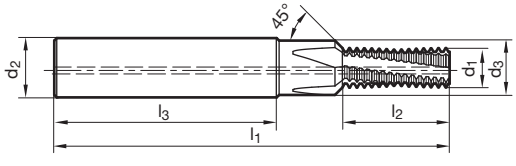
| D | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | | |
| 10 - 32 | 3,800 | 6,000 | 4,10 | 54,000 | 11,500 | 3 | 4,826 |
| 12 - 28 | 4,300 | 6,000 | 4,60 | 54,000 | 12,200 | 3 | 5,486 |
| 1/4 - 28 | 5,100 | 6,000 | 5,50 | 54,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 6,300 | 8,000 | 6,90 | 64,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,800 | 8,000 | 8,50 | 64,000 | 20,600 | 3 | 9,525 |
| 7/16 - 20 | 9,400 | 10,000 | 9,90 | 74,000 | 24,800 | 3 | 11,113 |
| 1/2 - 20 | 9,950 | 10,000 | 11,50 | 74,000 | 27,300 | 4 | 12,700 |
| 9/16 - 18 | 11,400 | 12,000 | 12,90 | 90,000 | 30,300 | 4 | 14,288 |
| 5/8 - 18 | 12,700 | 14,000 | 14,50 | 90,000 | 33,200 | 4 | 15,875 |

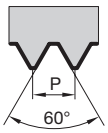
## Fresas de roscar con chaflán para roscas UNF

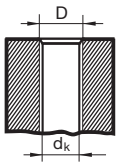
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3518 | 3536 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

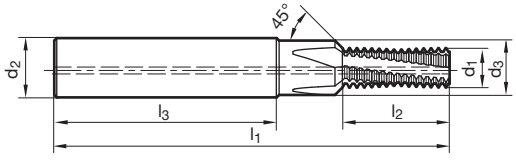
## Fresas de roscar con chaflán para roscas UNF

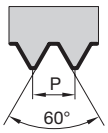
2xD

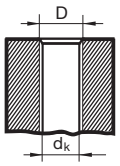
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3519 | 3537 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

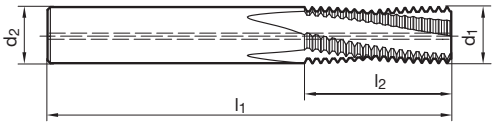
## Fresas de roscar para roscas GAS sin fase de avellanado

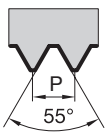
2xD

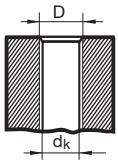
| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3745** **3748**

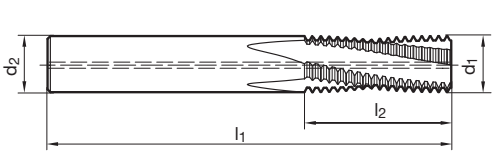
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 21,300 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 35,400 | 4 | 16,662 |

## Fresas de roscar para roscas GAS sin fase de avellanado

| | |
|---|---|
| P | • |
| M | ○ |
| K | • |
| N | • |
| S | ○ |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3746** **3750**

| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 8,000 | 8,80 | 64,000 | 24,900 | 3 | 9,728 |
| G1/4 | 19,000 | 10,500 | 12,000 | 11,80 | 90,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 14,000 | 15,25 | 90,000 | 43,500 | 4 | 16,662 |

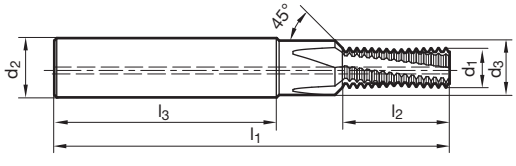
## Fresas de roscar para roscas GAS con fase de avellanado

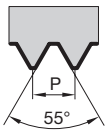
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

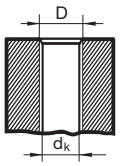
Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

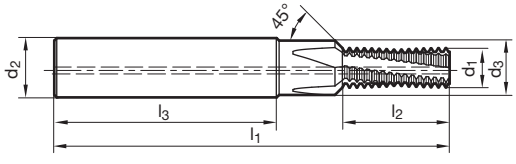
## Fresas de roscar para roscas GAS con fase de avellanado

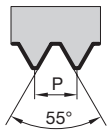
2xD

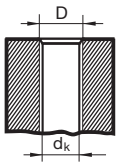
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

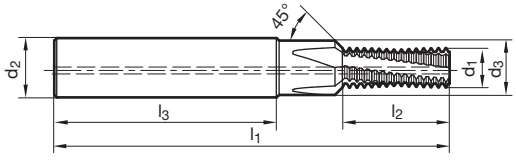
## Fresas de roscar para roscas GAS con fase de avellanado

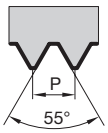
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

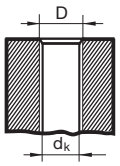
Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3765 | 3766 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 24,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 35,400 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 43,500 | 4 | 16,662 |

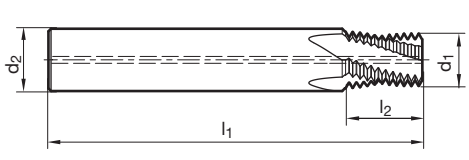
## Fresas de roscar sin chaflán para roscas NPT

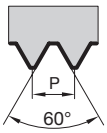
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

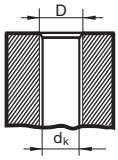
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 600



| Norma de fab. | Artículo Nº | 3753 | 3754 |
|---|---|---|---|

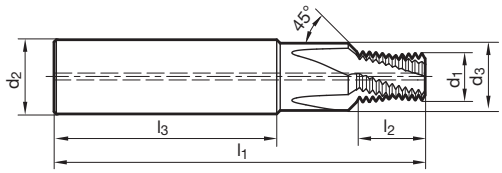
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

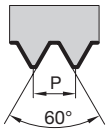
## Fresas de roscar para roscas NPT con fase de avellanado

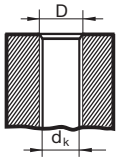
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

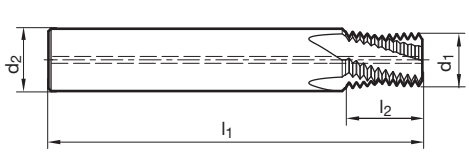
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

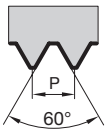
## Fresas de roscar para roscas NPTF sin fase de avellanado

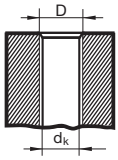
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 600

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | ✓ | ✓ |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3756 | 3757 |
|---|---|---|---|

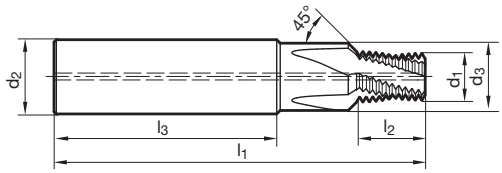
| D | P | d1 | d2 | dk | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | | |
| 1/16 | 27,000 | 5,900 | 8,000 | 6,15 | 54,000 | 9,900 | 3 | 8,190 |
| 1/8 | 27,000 | 7,300 | 8,000 | 8,40 | 64,000 | 9,900 | 3 | 10,620 |
| 1/4 | 18,000 | 9,950 | 12,000 | 11,10 | 72,000 | 19,000 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 14,000 | 14,30 | 80,000 | 14,800 | 4 | 17,570 |

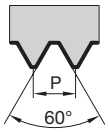
## Fresas de roscar para roscas NPTF con fase de avellanado

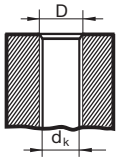
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 600



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

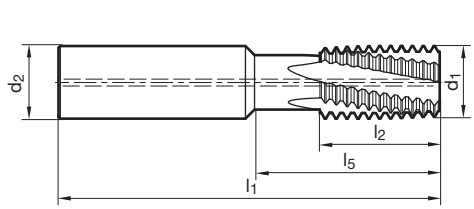
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

## Fresas para roscar universales para rosca métrica ISO

| | | | |
|---|---|---|---|
| Material de corte | Metal duro | | |
| Acabado | C | C | ◯ |
| Tipo | TMU SP | TMU SP | TMU SP |
| Con refrigeración interna | ✓ | ✓ | ✓ |
| Forma del mango | HA | HB | HA |
| | | NEW | |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601



| Norma de fab. | Artículo Nº | 3541 | 3556 | 3523 |
|---|---|---|---|---|

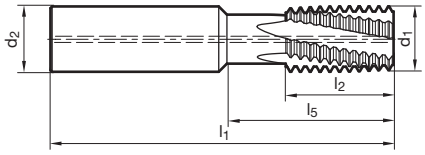
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

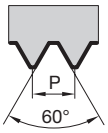
## Fresado de roscas exteriores

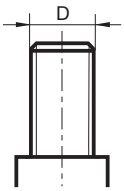
| | | |
|---|---|---|
| P | • | Condiciones de corte ver pág. 601 |
| M | • | |
| K | • | |
| N | • | |
| S | • | |
| H | ≤55 | |

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **4162** **4163**

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

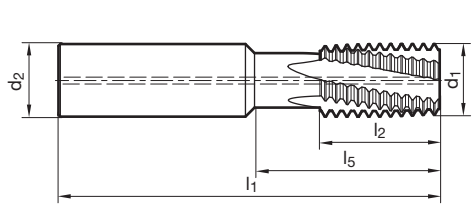
## Fresas para roscar universales para roscas UN

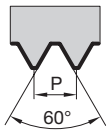
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

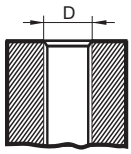
Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

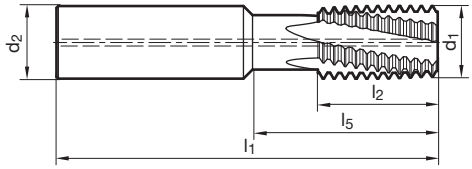
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

## Fresas para roscar universales para roscas GAS

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | | |
|---|---|---|---|
| Acabado | C | C | ○ |
| Tipo | TM SP | TM SP | TM SP |
| Con refrigeración interna | | | |
| Forma del mango | HA | HB | HA |
| | | NEW | |



| Norma de fab. | Artículo Nº | 3542 | 3557 | 3524 |
|---|---|---|---|---|

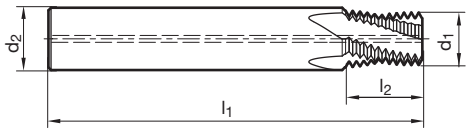
| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

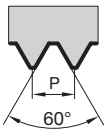
## Fresas para roscar universales para roscas NPT

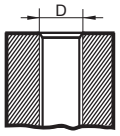
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601



| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

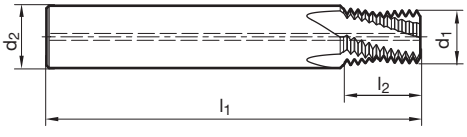
| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Fresas para roscar universales para roscas NPTF

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 601

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

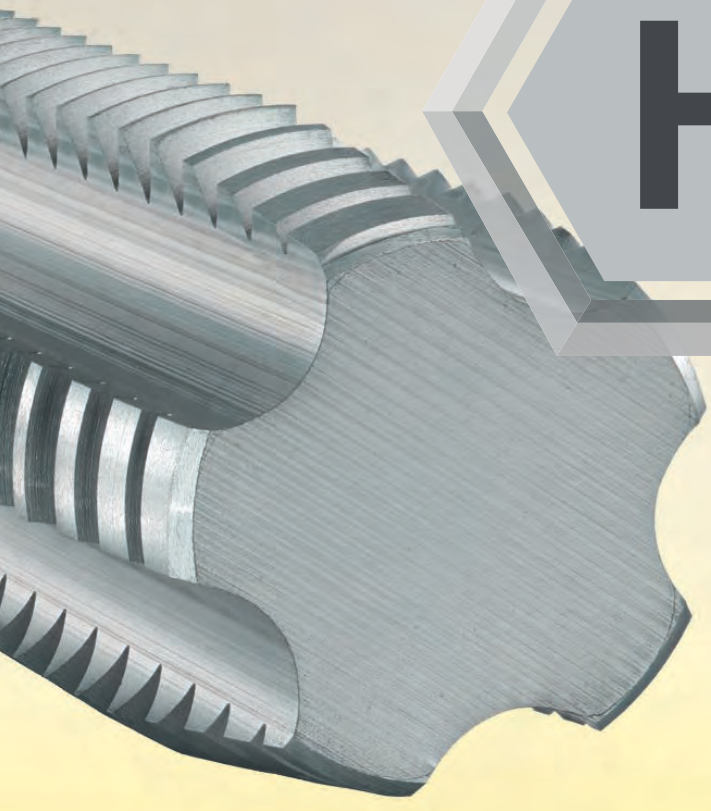
| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

# ENDU
# RECIDO

## ACERO ENDURECIDO

Aceros de alta dureza, aceros endurecidos, aceros duros

**H**



# H ACERO ENDURECIDO

| M | | MF | |
|---|---|---|---|
| ISO2/6H | ISO3/6G | ISO2/6H | ISO3/6G |

## 45 – 55 HRC

| M | | MF | |
|---|---|---|---|
| No 1<br>M3 - M16<br>Art. N° 1201<br>desde página 680 | | No 1<br>M8x1 - M12x1,5<br>Art. N° 4161<br>desde página 682 | |

## 55 – 62 HRC

| M | | MF | |
|---|---|---|---|
| No 1<br>M3 - M16<br>Art. N° 2944<br>desde página 681 | | No 1<br>M6x0,5 - M12x1,5<br>Art. N° 1161<br>desde página 683 | |

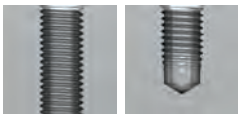
## Pretaladro

| M | | MF | |
|---|---|---|---|
| No 1<br>Art. N° 1946<br>desde página 677 | | No 1<br>Art. N° 1946<br>desde página 677 | |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| 2B | 2B | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

HSS-E-PM, TiCN, forma D

Metal duro, TiCN, forma D

Metal duro, TiAlN

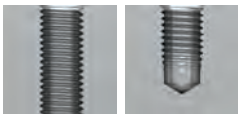
# H ACERO ENDURECIDO

| | M | MF |
|---|---|---|
| | **UNIVERSAL** | **UNIVERSAL** |
| max. 55 HRC 1.5xD | No 1<br>M3 - M20<br>Art. N° 3525<br>desde página 685 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3527<br>desde página 687 |
| max. 55 HRC 2xD | No 1<br>M3 - M20<br>Art. N° 3526<br>desde página 686 | No 1<br>M4x0,5 - M16x1,5<br>Art. N° 3528<br>desde página 688 |
| max. 65 HRC 3xD | No 1<br>M2 - M12<br>Art. N° 4227<br>desde página 703 | |
| Pretaladro | No 1<br>Art. N° 1946<br>desde página 677 | No 1<br>Art. N° 1946<br>desde página 677 |

No 1 herramienta ideal

# QUICKFINDER

| UNC | UNF | G |
|---|---|---|
| UNIVERSAL | UNIVERSAL | - |



ROSCA **PASANTE**
ROSCA **CIEGA**

| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3516<br>desde página 689 | No 1<br>1/4 - 1/2<br>Art. N° 3518<br>desde página 691 | No 1<br>1/8 - 3/8<br>Art. N° 3514<br>desde página 693 |

Metal duro, TiCN

| UNC | UNF | G |
|---|---|---|
| No 1<br>1/4 - 1/2<br>Art. N° 3517<br>desde página 690 | No 1<br>1/4 - 1/2<br>Art. N° 3519<br>desde página 692 | No 1<br>1/8 - 3/8<br>Art. N° 3515<br>desde página 694 |

Metal duro, TiCN

Metal duro, TiCN

VHM, TiAIN

| | | | | | |
|---|---|---|---|---|---|
| **H** **ACERO ENDURECIDO** | Profundidad de la rosca | | **≤1,5xD** | **≤3xD** | |
| | Material de corte | | **HSS-E** | **Metal duro** | |
| | Tipo/forma | | H/D | H/D | H |
| | Acabado | | C | C | A |
| | Transmisión de refrig. | | ☒ | ☒ | ☒ |
| | Tolerancia del mango | | h9 | h9 | HA |
| ROSCA PASANTE | | | 45 ... 55 HRC | ≤ 65 HRC | Pretaladro |
| | **Tipo de rosca** | **tolerancia** | **número de artículo/página catálogo** | | |
| | **M** | 4H | | | |
| | | 6H | | 2944 681 | 1946 677 |
| | | 6HX | 1201 680 | | 1946 677 |
| | | 6G | | | |
| | **MF** | 6H | | 1161 683 | 1946 677 |
| | | 6HX | 4161 682 | | 1946 677 |
| | | 6G | | | |
| | **UNC** | 2B | | | |
| | | 2BX | | | |
| | **UNF** | 2B | | | |
| | | 2BX | | | |
| | **G** | | | | |
| | **BSW** | | | | |
| | **NPT** | | | | |
| | **NPTF** | | | | |
| | **EG M** | 6H Mod. | | | |
| | **MJ** | 4HX | | | |
| | **MJF** | 4HX | | | |
| | **UNJC** | 3BX | | | |
| | **UNJF** | 3BX | | | |
| | **PG** | | | | |
| | **refrigerante apropiado** | | ●/△ | ●/△ | ○/● |

= No 1

○ = aire
● = aceite
○ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | dureza | material/ ejemplo | Material fabrica-ción-nº | recomendación de aplicación | | |
|---|---|---|---|---|---|---|---|
| **H** | Aceros de alta dureza, aceros endurecidos | 45 - 55 HRC | Hardox 500 | | **3** | - | |
| | | 55 - 62 HRC | | | - | **2** | |

## Diámetros especiales de núcleo para trabajar metales duros con art.nº 2944

| Ø nominal rosca | Ø pretaladro | | Ø núcleo rosca tuercas | | | |
|---|---|---|---|---|---|---|
| | | | min. | | max. | |
| | según DIN 336 mm | para Art. 2944 mm | según DIN 336 mm | para Art. 2944 mm | según DIN 336 mm | para Art. 2944 mm |
| M3 | 2,50 | 2,60 | 2,495 | 2,559 | 2,599 | 2,699 |
| M4 | 3,30 | 3,40 | 3,242 | 3,342 | 3,422 | 3,522 |
| M5 | 4,20 | 4,30 | 4,134 | 4,234 | 4,334 | 4,434 |
| M6 | 5,00 | 5,10 | 4,917 | 5,017 | 5,153 | 5,253 |
| M8 | 6,80 | 6,90 | 6,647 | 6,747 | 6,912 | 7,012 |
| M10 | 8,50 | 8,60 | 8,376 | 8,476 | 8,676 | 8,776 |
| M12 | 10,20 | 10,40 | 10,106 | 10,206 | 10,441 | 10,541 |
| M16 | 12,00 | 14,10 | 13,835 | 15,935 | 14,210 | 16,310 |

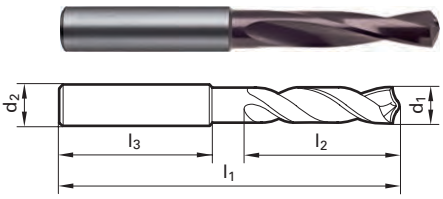
## Diámetros especiales de núcleo para trabajar metales duros con art.nº 1161

| Ø nominal rosca | Ø pretaladro | | Ø núcleo rosca tuercas | | | |
|---|---|---|---|---|---|---|
| | | | min. | | max. | |
| | según DIN 336 mm | para Art. 1161 mm | según DIN 336 mm | para Art. 1161 mm | según DIN 336 mm | para Art. 1161 mm |
| M6x0,5 | 5,50 | 5,60 | 5,459 | 5,559 | 5,599 | 5,699 |
| M8x1 | 7,00 | 7,10 | 6,917 | 7,017 | 7,153 | 7,253 |
| M10x1 | 9,00 | 9,10 | 8,917 | 9,017 | 9,153 | 9,253 |
| M12x1 | 11,00 | 11,10 | 10,917 | 11,017 | 11,153 | 11,253 |
| M12x1,5 | 10,50 | 10,60 | 10,376 | 10,476 | 10,676 | 10,776 |

| | |
|---|---|
| Artículo nº | **1946** |
| Material de corte | **MD** |
| Calidad de metal duro | K |
| Typo | H |
| Acabado | A |
| Norma | DIN 6537 |
| Forma de mango | HA |

### La broca Gühring para fabricar pretaladros en materiales duros!

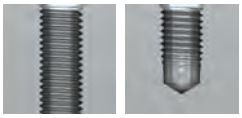
La nueva broca Gühring para taladros duros permite la fabricación racional y segura en proceso de taladros en materiales endurecidos hasta 62 HRC.
Cortes convexos le dan a la herramienta su alta estabilidad y aseguran una óptima rotura de viruta. El perfil de ranuras adaptado al tipo de mecanizado desaloja la viruta con seguridad. Con mango cilíndrico seg.DIN 6535 HA esta herramienta queda estandarizada en un campo de diámetros comprendido desde 3,0 hasta 12,0 mm.




| d1 | d2 | l1 | l2 | l3 |
|---|---|---|---|---|
| mm | mm | mm | mm | mm |
| 2,600 | 6,000 | 62,00 | 20,00 | 36,00 |
| 3,000 | 6,000 | 62,00 | 20,00 | 36,00 |
| 3,400 | 6,000 | 62,00 | 20,00 | 36,00 |
| 4,000 | 6,000 | 66,00 | 24,00 | 36,00 |
| 4,300 | 6,000 | 66,00 | 24,00 | 36,00 |
| 5,000 | 6,000 | 66,00 | 28,00 | 36,00 |
| 5,100 | 6,000 | 66,00 | 28,00 | 36,00 |
| 5,600 | 6,000 | 66,00 | 28,00 | 36,00 |
| 6,000 | 6,000 | 66,00 | 28,00 | 36,00 |
| 6,900 | 8,000 | 79,00 | 34,00 | 36,00 |
| 7,100 | 8,000 | 79,00 | 34,00 | 36,00 |
| 8,000 | 8,000 | 79,00 | 41,00 | 36,00 |
| 8,600 | 10,000 | 89,00 | 47,00 | 40,00 |
| 9,100 | 10,000 | 89,00 | 47,00 | 40,00 |
| 10,000 | 10,000 | 89,00 | 47,00 | 40,00 |
| 10,400 | 12,000 | 102,00 | 55,00 | 45,00 |
| 10,600 | 12,000 | 102,00 | 55,00 | 45,00 |
| 11,100 | 12,000 | 102,00 | 55,00 | 45,00 |
| 12,000 | 12,000 | 102,00 | 55,00 | 45,00 |
| 14,100 | 16,000 | 115,00 | 65,00 | 48,00 |

**Valores de corte en 3 x D con art.nº 1946**

| | Dureza | HRC 40…48 | HRC 48 … 62 |
|---|---|---|---|
| | Velocidad de corte $v_c$ | 40 m/min | 30 m/min |
| Ø-broca in mm | Avance | f (mm/rev): | f (mm/rev): |
| | 2,6 | 0,032 | 0,025 |
| | 3,4 | 0,040 | 0,032 |
| | 4,3 | 0,050 | 0,040 |
| | 5,1 | 0,050 | 0,040 |
| | 5,6 | 0,050 | 0,040 |
| | 6,9 | 0,070 | 0,055 |
| | 7,1 | 0,070 | 0,055 |
| | 8,6 | 0,090 | 0,070 |
| | 9,1 | 0,090 | 0,070 |
| | 10,4 | 0,110 | 0,090 |
| | 10,5 | 0,110 | 0,090 |
| | 11,0 | 0,120 | 0,100 |
| | 14,1 | 0,120 | 0,100 |

| | | | |
|---|---|---|---|
| **ACERO ENDURECIDO** | Profundidad de la rosca | **≤1,5xD** | |
| | Material de corte | | |
| | Tipo | TMC SP | TMC SP |
| | Acabado | C | C |
| | Transmisión de refrig. | axialm. | axialm. |
| | Forma del mango | HA | HA |
| | Espiral | 10° | 10° |
|  ROSCA PASANTE Y CIEGA | | | |

| Tipo de rosca | número de artículo/página catálogo | |
|---|---|---|
| **M** | 3525<br>685 | 3543<br>685 |
| **MF** | 3527<br>687 | 3545<br>687 |
| **UNC** | 3516<br>689 | 3534<br>689 |
| **UNF** | 3518<br>691 | 3536<br>691 |
| **G** | 3514<br>693 | 3529<br>693 |
| **BSW** | | |
| **NPT** | 3520<br>695 | 3538<br>695 |
| **NPTF** | 3521<br>696 | 3539<br>696 |
| **EG M** | | |
| **MJ** | | |
| **MJF** | | |
| **UNJC** | | |
| **UNJF** | | |
| **PG** | | |
| **refrigerante apropiado** | ◯/● | ◯/● |

= No 1

◯ = aire
● = aceite
◯ = emulsión
△ = pasta
☐ = lubrificación mínima (MMS)

| | grupo de material | dureza | material/ ejemplo | Material fabricación-nº | recomendación de aplicación | |
|---|---|---|---|---|---|---|
| **H** | Aceros de alta dureza, aceros endurecidos | 45 - 55 HRC | Hardox 500 | | ++ | ++ |
| | | 55 - 62 HRC | | | - | - |

| ≤2xD | | universal | | | | ≤3xD | |
|---|---|---|---|---|---|---|---|
| Metal duro | | | | | | | |
| TMC SP | TMC SP | TMU SP | TMU SP | TMU SP | TMU SP | MTM 3 SP | H |
| C | C | C | C | C | C | C | A |
| axialm. | axialm. | axialm. | axialm. | axialm. | axialm. | ☒ | ☒ |
| HA | HB | HA | HB | HA | HB | HA | HA |
| 10° | 10° | 15° | 15° | 15° | 15° | 15° | 15° |
| | | | | por fresado de roscas exteriores | por fresado de roscas exteriores | | |
| número de artículo/página catálogo | | | | | | | |
| 3526<br>686 | 3544<br>686 | 3541<br>697 | 3556<br>697 | 4162<br>698 | 4163<br>698 | 4227<br>703 | 1946<br>677 |
| 3528<br>688 | 3546<br>688 | 3541<br>697 | 3556<br>697 | 4162<br>698 | 4163<br>698 | | 1946<br>677 |
| 3517<br>690 | 3535<br>690 | 3595<br>699 | 3596<br>699 | | | | |
| 3519<br>692 | 3537<br>692 | 3595<br>699 | 3596<br>699 | | | | |
| 3515<br>694 | 3533<br>694 | 3542<br>700 | 3557<br>700 | 3542<br>700 | 3557<br>700 | | |
| | | | | | | | |
| | | 3768<br>701 | 3769<br>701 | | | | |
| | | 3772<br>702 | 3773<br>702 | | | | |
| Roscas EC se pueden fabricar básicamente con todos los tipos y medidas de fresas | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| ○/● | ○/● | ○/● | ○/● | ○/● | ○/● | ○ | ○/● |

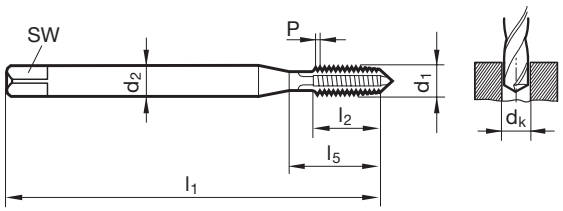
| recomendación de aplicación | | | | | | | |
|---|---|---|---|---|---|---|---|
| ++ | ++ | + | + | + | + | ++ | ++ |
| - | - | - | - | - | - | ++ | ++ |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | D |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | |
| H | 45-55 |

Condiciones de corte ver pág. 676



**DIN 2184-1 DIN 371** Artículo Nº **1201**

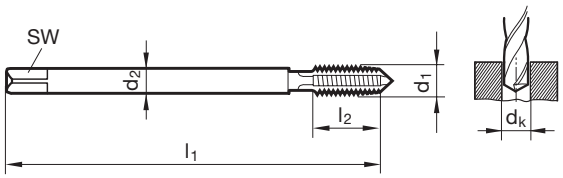
| d1 | P | d2 | SW | dk | l1 | l2 | l5 |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,60 | 56,000 | 10,000 | 18,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,40 | 63,000 | 12,000 | 21,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,30 | 70,000 | 14,000 | 25,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,10 | 80,000 | 16,000 | 30,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,90 | 90,000 | 17,000 | 35,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,60 | 100,000 | 20,000 | 39,000 |
| M12 | 1,750 | 12,000 | 9,000 | 10,40 | 110,000 | 24,000 | 49,000 |
| M14 | 2,000 | 11,000 | 11,000 | 12,10 | 110,000 | 26,000 | 53,000 |
| M16 | 2,000 | 12,000 | 12,000 | 14,10 | 110,000 | 26,000 | 54,000 |

## Machos máquina para rosca métrica ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | C |
| Tipo | H |
| Forma | D |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | |
| H | ≤62 |

Condiciones de corte ver pág. 676



**Norma de fab. ~DIN 371** Artículo Nº **2944**

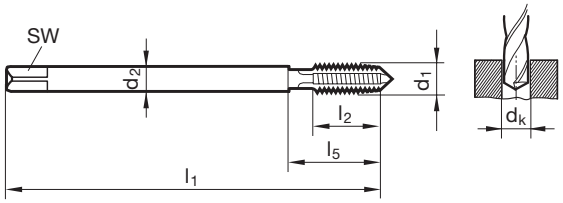
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,60 | 56,000 | 12,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,40 | 63,000 | 14,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,30 | 70,000 | 17,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,10 | 80,000 | 20,000 |
| M8 | 1,250 | 8,000 | 6,200 | 6,90 | 90,000 | 20,000 |
| M10 | 1,500 | 10,000 | 8,000 | 8,60 | 100,000 | 24,000 |
| M12 | 1,750 | 12,000 | 9,000 | 10,40 | 110,000 | 28,000 |
| M16 | 2,000 | 16,000 | 12,000 | 14,10 | 110,000 | 40,000 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | HSS-E-PM |
| Ø-Tolerancia | 6HX |
| Acabado | C |
| Tipo | H |
| Forma | D |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | |
| H | 45-55 |

Condiciones de corte ver pág. 676



**DIN 2184-1 DIN 371** Artículo Nº **4161**

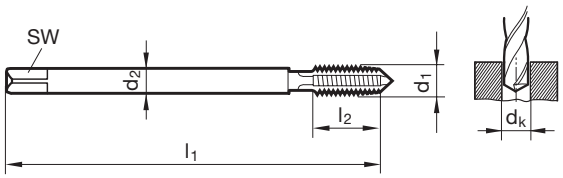
| d1 | d2 | SW | dk | l1 | l2 | l5 | Código Nº |
|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | |
| M8 x 1 | 8,000 | 6,200 | 7,10 | 90,000 | 16,000 | 35,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,10 | 90,000 | 16,000 | 35,000 | 10,005 |
| M12 x 1 | 12,000 | 9,000 | 11,10 | 100,000 | 20,000 | 40,000 | 12,005 |
| M12 x 1,5 | 12,000 | 9,000 | 10,60 | 100,000 | 20,000 | 40,000 | 12,007 |

## Machos máquina para rosca métrica fina ISO

| | |
|---|---|
| Material de corte | **Metal duro** |
| Ø-Tolerancia | ISO2/6H |
| Acabado | C |
| Tipo | H |
| Forma | D |
| Con refrigeración interna | |

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | |
| H | ≤62 |

Condiciones de corte ver pág. 676



**Norma de fab. ~DIN 371** Artículo Nº **1161**

| d1 | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | |
| M6 x 0,5 | 6,000 | 4,900 | 5,60 | 80,000 | 15,000 | 6,003 |
| M8 x 1 | 8,000 | 6,200 | 7,10 | 90,000 | 18,000 | 8,005 |
| M10 x 1 | 10,000 | 8,000 | 9,10 | 90,000 | 22,000 | 10,005 |
| M12 x 1 | 12,000 | 9,000 | 11,10 | 100,000 | 25,000 | 12,005 |
| M12 x 1,5 | 12,000 | 9,000 | 10,60 | 100,000 | 28,000 | 12,007 |

# FRESAS DE ROSCAR H

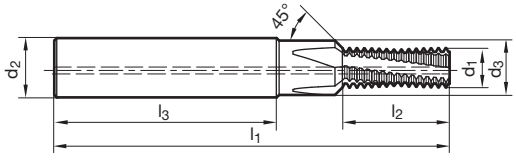
## Fresas de roscar con chaflán para rosca métrica ISO

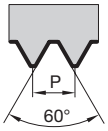
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

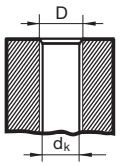
Condiciones de corte ver pág. 678

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | ✓ | ✓ |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3525 | 3543 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 5,300 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 7,400 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 9,200 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 10,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 13,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 17,300 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 20,100 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 25,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 27,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 33,800 | 4 | 20,000 |

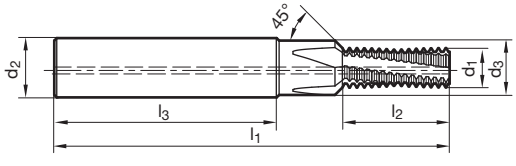
## Fresas de roscar con chaflán para rosca métrica ISO

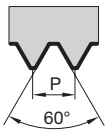
2xD

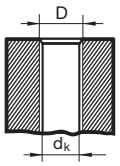
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** Artículo Nº **3526** **3544**

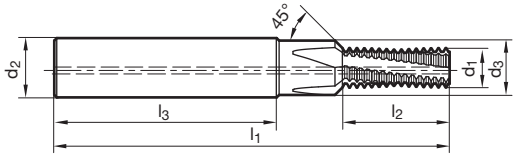
| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M3 | 0,500 | 2,300 | 6,000 | 3,400 | 2,50 | 48,000 | 36,000 | 6,800 | 3 | 3,000 |
| M4 | 0,700 | 3,000 | 6,000 | 4,500 | 3,30 | 48,000 | 36,000 | 8,800 | 3 | 4,000 |
| M5 | 0,800 | 4,000 | 6,000 | 5,500 | 4,20 | 54,000 | 36,000 | 10,800 | 3 | 5,000 |
| M6 | 1,000 | 4,800 | 8,000 | 6,600 | 5,00 | 62,000 | 36,000 | 13,500 | 3 | 6,000 |
| M8 | 1,250 | 6,400 | 10,000 | 9,000 | 6,80 | 74,000 | 40,000 | 18,100 | 3 | 8,000 |
| M10 | 1,500 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 21,800 | 4 | 10,000 |
| M12 | 1,750 | 9,950 | 14,000 | 13,500 | 10,20 | 90,000 | 45,000 | 25,400 | 4 | 12,000 |
| M14 | 2,000 | 11,200 | 16,000 | 15,500 | 12,00 | 102,000 | 48,000 | 31,000 | 4 | 14,000 |
| M16 | 2,000 | 12,800 | 18,000 | 17,500 | 14,00 | 102,000 | 48,000 | 35,000 | 4 | 16,000 |
| M20 | 2,500 | 14,500 | 20,000 | 21,500 | 17,50 | 125,000 | 50,000 | 41,300 | 4 | 20,000 |

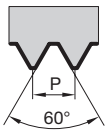
## Fresas de roscar con chaflán para rosca métrica fina ISO

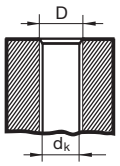
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 678

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3527 | 3545 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 7,300 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 8,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 9,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 10,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 13,100 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 13,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 16,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 16,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 19,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 20,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 23,300 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 26,300 | 4 | 16,007 |

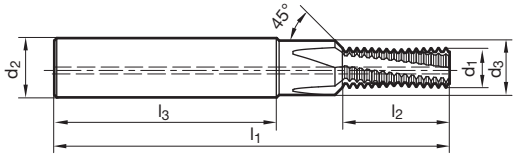
## Fresas de roscar con chaflán para rosca métrica fina ISO

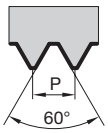
2xD

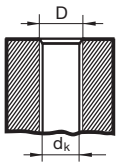
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



**Norma de fab.** | Artículo Nº | **3528** | **3546**

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | mm | | |
| M4 x 0,5 | 0,500 | 3,000 | 6,000 | 4,500 | 3,50 | 48,000 | 36,000 | 8,800 | 3 | 4,003 |
| M5 x 0,5 | 0,500 | 4,000 | 6,000 | 5,500 | 4,50 | 54,000 | 36,000 | 10,800 | 3 | 5,003 |
| M6 x 0,5 | 0,500 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 12,800 | 3 | 6,003 |
| M6 x 0,75 | 0,750 | 4,800 | 8,000 | 6,600 | 5,20 | 62,000 | 36,000 | 13,100 | 3 | 6,004 |
| M8 x 0,75 | 0,750 | 6,400 | 10,000 | 9,000 | 7,20 | 74,000 | 40,000 | 16,900 | 3 | 8,004 |
| M8 x 1 | 1,000 | 6,400 | 10,000 | 9,000 | 7,00 | 74,000 | 40,000 | 17,500 | 3 | 8,005 |
| M10 x 1 | 1,000 | 7,950 | 12,000 | 11,000 | 9,00 | 80,000 | 45,000 | 21,500 | 4 | 10,005 |
| M10 x 1,25 | 1,250 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,900 | 4 | 10,006 |
| M12 x 1 | 1,000 | 9,950 | 14,000 | 13,500 | 11,00 | 90,000 | 45,000 | 25,500 | 4 | 12,005 |
| M12 x 1,5 | 1,500 | 9,950 | 14,000 | 13,500 | 10,50 | 90,000 | 45,000 | 26,300 | 4 | 12,007 |
| M14 x 1,5 | 1,500 | 11,200 | 16,000 | 15,500 | 12,50 | 102,000 | 48,000 | 30,800 | 4 | 14,007 |
| M16 x 1,5 | 1,500 | 12,800 | 18,000 | 17,500 | 14,50 | 102,000 | 48,000 | 33,800 | 4 | 16,007 |

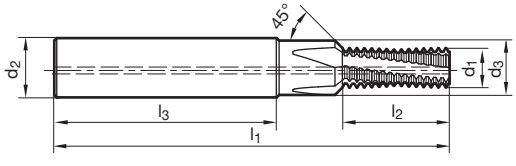
## Fresas de roscar con chaflán para roscas UNC

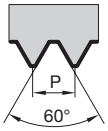
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

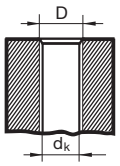
Condiciones de corte ver pág. 678

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3516 | 3534 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 12,100 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 14,800 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 16,700 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 19,000 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 22,500 | 4 | 12,700 |

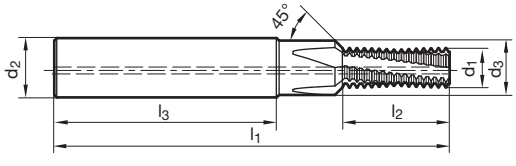
## Fresas de roscar con chaflán para roscas UNC

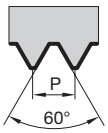
2xD

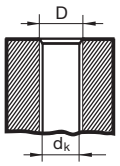
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3517 | 3535 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 20 | 4,800 | 8,000 | 6,600 | 5,10 | 62,000 | 36,000 | 14,600 | 3 | 6,350 |
| 5/16 - 18 | 5,950 | 10,000 | 9,000 | 6,60 | 74,000 | 40,000 | 17,600 | 3 | 7,938 |
| 3/8 - 16 | 7,100 | 12,000 | 11,000 | 8,00 | 80,000 | 45,000 | 21,400 | 4 | 9,525 |
| 7/16 - 14 | 7,950 | 12,000 | 11,000 | 9,40 | 80,000 | 45,000 | 24,500 | 4 | 11,113 |
| 1/2 - 13 | 9,950 | 14,000 | 13,500 | 10,80 | 90,000 | 45,000 | 28,300 | 4 | 12,700 |

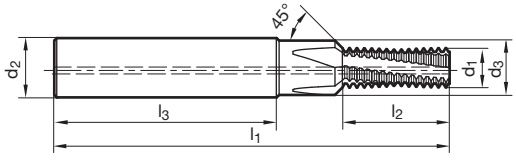
## Fresas de roscar con chaflán para roscas UNF

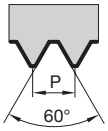
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

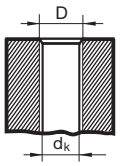
Condiciones de corte ver pág. 678

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3518 | 3536 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 11,300 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 13,200 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 16,400 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 18,400 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 21,000 | 4 | 12,700 |

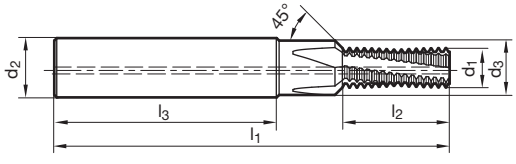
## Fresas de roscar con chaflán para roscas UNF

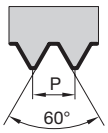
2xD

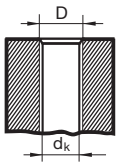
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3519 | 3537 |
|---|---|---|---|

| D | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | mm | | |
| 1/4 - 28 | 4,800 | 8,000 | 6,600 | 5,50 | 62,000 | 36,000 | 14,100 | 3 | 6,350 |
| 5/16 - 24 | 5,950 | 10,000 | 9,000 | 6,90 | 74,000 | 40,000 | 17,500 | 3 | 7,938 |
| 3/8 - 24 | 7,950 | 12,000 | 11,000 | 8,50 | 80,000 | 45,000 | 20,600 | 4 | 9,525 |
| 7/16 - 20 | 7,950 | 12,000 | 11,000 | 9,90 | 80,000 | 45,000 | 24,800 | 4 | 11,113 |
| 1/2 - 20 | 9,950 | 14,000 | 13,500 | 11,50 | 90,000 | 45,000 | 27,300 | 4 | 12,700 |

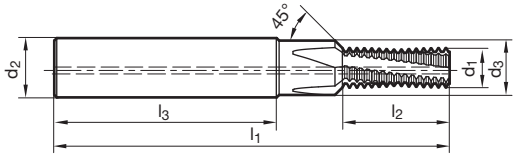
## Fresas de roscar para roscas GAS con fase de avellanado

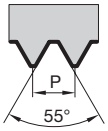
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

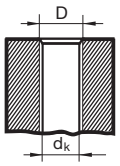
Condiciones de corte ver pág. 678

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3514 | 3529 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 15,900 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 22,100 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 27,400 | 4 | 16,662 |

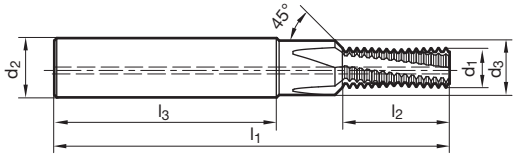
## Fresas de roscar para roscas GAS con fase de avellanado

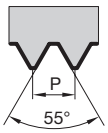
2xD

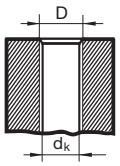
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |
| | | NEW |



| Norma de fab. | Artículo Nº | 3515 | 3533 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| G1/8 | 28,000 | 7,950 | 12,000 | 11,000 | 8,80 | 80,000 | 45,000 | 21,300 | 4 | 9,728 |
| G1/4 | 19,000 | 9,950 | 14,000 | 13,900 | 11,80 | 90,000 | 45,000 | 28,700 | 4 | 13,157 |
| G3/8 | 19,000 | 13,600 | 18,000 | 17,500 | 15,25 | 102,000 | 48,000 | 35,400 | 4 | 16,662 |

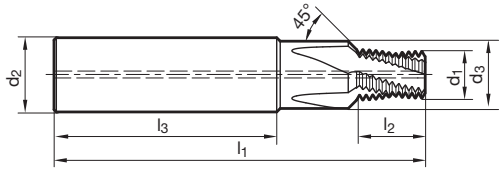
## Fresas de roscar para roscas NPT con fase de avellanado

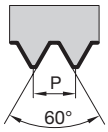
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

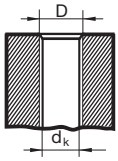
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 678



| Norma de fab. | Artículo Nº | 3520 | 3538 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

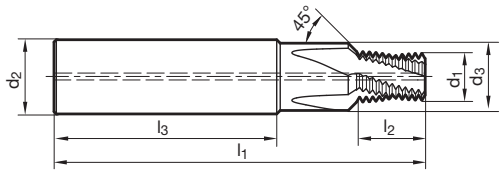
## Fresas de roscar para roscas NPTF con fase de avellanado

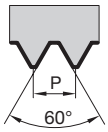
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMC SP | TMC SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

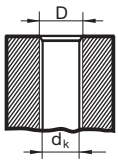
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 678



| Norma de fab. | Artículo Nº | 3521 | 3539 |
|---|---|---|---|

| D | P | d1 | d2 | d3 | dk | l1 | l3 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | mm | mm | | |
| 1/8 | 27,000 | 7,300 | 12,000 | 11,000 | 8,40 | 70,000 | 45,000 | 9,900 | 4 | 10,620 |
| 1/4 | 18,000 | 9,950 | 16,000 | 14,500 | 11,10 | 80,000 | 48,000 | 14,800 | 4 | 14,140 |
| 3/8 | 18,000 | 12,500 | 18,000 | 17,500 | 14,30 | 80,000 | 48,000 | 14,800 | 4 | 17,570 |

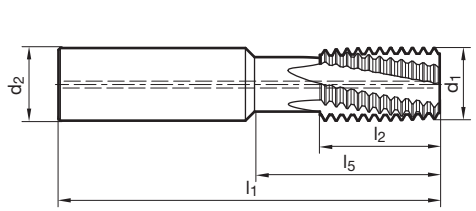
## Fresas para roscar universales para rosca métrica ISO

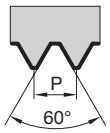
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

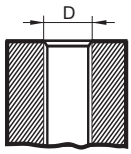
Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



**Norma de fab.** Artículo Nº **3541** **3556**

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 10 | 7,950 | 8,000 | 64,000 | | 20,000 | 4 | 8,050 |
| 1,000 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,100 |
| 1,250 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,125 |
| 1,500 | ≥ 12 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,150 |
| 1,000 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 14 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,100 |
| 1,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 3,000 | ≥ 24 | 17,950 | 18,000 | 102,000 | 50,000 | 33,000 | 5 | 18,300 |
| 1,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,100 |
| 1,500 | ≥ 26 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,150 |
| 2,000 | ≥ 27 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,200 |
| 2,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,250 |
| 3,000 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |
| 3,500 | ≥ 30 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,350 |

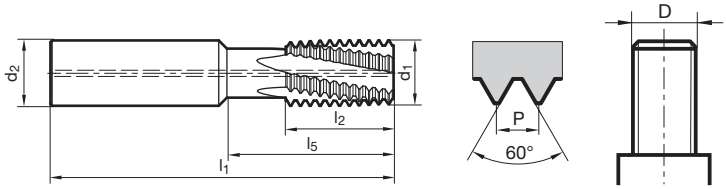
## Fresado de roscas exteriores

| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU SP | TMU SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679



**Norma de fab.** Artículo Nº **4162** **4163**

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| mm | | mm | mm | mm | mm | mm | | |
| 0,500 | ≥ 3 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,050 |
| 0,750 | ≥ 5 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,075 |
| 1,000 | ≥ 6 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 1,250 | ≥ 8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,125 |
| 1,500 | ≥ 10 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,150 |
| 1,500 | ≥ 10 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,150 |
| 2,000 | ≥ 14 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 2,500 | ≥ 18 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,250 |
| 3,000 | ≥ 24 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,300 |

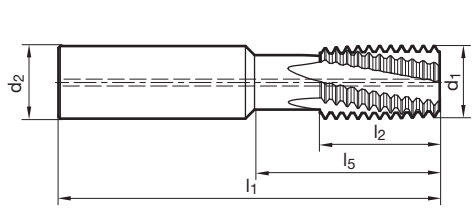
## Fresas para roscar universales para roscas UN

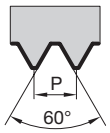
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TMU UN | TMU UN |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

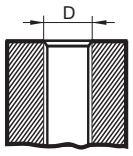
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679



| Norma de fab. | Artículo Nº | 3595 | 3596 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 24,000 | ≥ 1/2 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,240 |
| 10,000 | ≥ 3/4 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,100 |
| 16,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,160 |
| 18,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,180 |
| 20,000 | ≥ 11/16 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,200 |
| 24,000 | ≥ 5/8 | 11,950 | 12,000 | 80,000 | 31,000 | 20,000 | 4 | 12,240 |
| 12,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,120 |
| 14,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 16,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,160 |
| 18,000 | ≥ 7/8 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,180 |
| 20,000 | ≥ 13/16 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,200 |
| 7,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,070 |
| 8,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,080 |
| 12,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,120 |
| 14,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,140 |
| 16,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,160 |

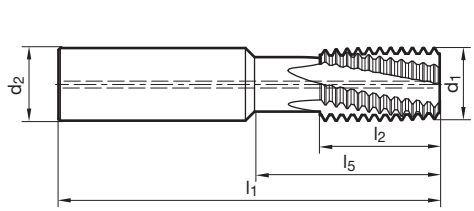
## Fresas para roscar universales para roscas GAS

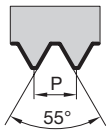
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

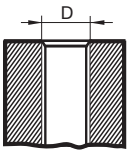
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679



| Norma de fab. | Artículo Nº | 3542 | 3557 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l5 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | mm | | |
| 19,000 | ≥ 1/4 | 9,950 | 10,000 | 70,000 | 25,000 | 16,000 | 4 | 10,190 |
| 14,000 | ≥ 1/2 | 15,950 | 16,000 | 90,000 | 40,000 | 25,000 | 5 | 16,140 |
| 11,000 | ≥ 1 | 19,950 | 20,000 | 105,000 | 50,000 | 33,000 | 5 | 20,110 |

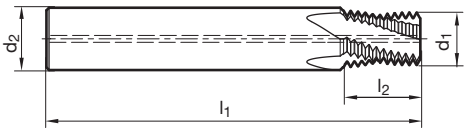
## Fresas para roscar universales para roscas NPT

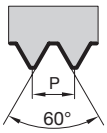
| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

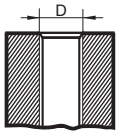
Condiciones de corte ver pág. 679

| Material de corte | Metal duro | |
|---|---|---|
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

NEW



| Norma de fab. | Artículo Nº | 3768 | 3769 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

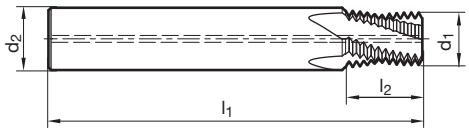
## Fresas para roscar universales para roscas NPTF

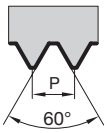
| | | |
|---|---|---|
| Material de corte | Metal duro | |
| Acabado | C | C |
| Tipo | TM SP | TM SP |
| Con refrigeración interna | | |
| Forma del mango | HA | HB |

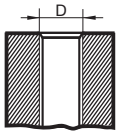
NEW

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | • |
| H | ≤55 |

Condiciones de corte ver pág. 679



| Norma de fab. | Artículo Nº | 3772 | 3773 |
|---|---|---|---|

| P | D | d1 | d2 | l1 | l2 | Z | Código Nº |
|---|---|---|---|---|---|---|---|
| G/inch | | mm | mm | mm | mm | | |
| 14,000 | ≥ 1/2 | 14,500 | 16,000 | 90,000 | 19,050 | 5 | 21,900 |
| 11,500 | ≥ 1 | 18,500 | 20,000 | 90,000 | 23,190 | 5 | 34,180 |

## Microfresas de roscar

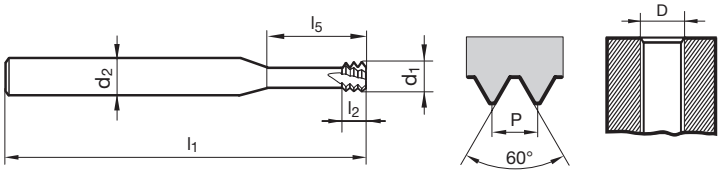
3xD

| | |
|---|---|
| P | |
| M | |
| K | |
| N | |
| S | ○ |
| H | ● |

Condiciones de corte ver pág. 679

| | |
|---|---|
| Material de corte | **Metal duro** |
| Acabado | A |
| Tipo | SP M |
| Pasos de rosca | 3,0 |
| Forma del mango | HA |

NEW



**Norma de fab.** Artículo Nº **4227**

| D | P | d1 | d2 | l1 | l2 | l5 | Z | Código Nº |
|---|---|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm | | |
| M2 | 0,400 | 1,550 | 3,000 | 39,000 | 1,200 | 6,000 | 4 | 2,000 |
| M2,5 | 0,450 | 1,950 | 3,000 | 39,000 | 1,400 | 7,500 | 4 | 2,500 |
| M3 | 0,500 | 2,350 | 6,000 | 58,000 | 1,500 | 9,500 | 4 | 3,000 |
| M4 | 0,700 | 3,100 | 6,000 | 58,000 | 2,100 | 12,500 | 4 | 4,000 |
| M5 | 0,800 | 3,800 | 6,000 | 58,000 | 2,400 | 16,000 | 4 | 5,000 |
| M6 | 1,000 | 4,800 | 6,000 | 58,000 | 3,000 | 20,000 | 4 | 6,000 |
| M8 | 1,250 | 5,950 | 6,000 | 58,000 | 3,800 | 24,000 | 4 | 8,000 |
| M10 | 1,500 | 7,800 | 8,000 | 64,000 | 4,500 | 23,000 | 4 | 10,000 |
| M12 | 1,750 | 9,000 | 10,000 | 73,000 | 5,300 | 26,000 | 5 | 12,000 |

COJ

JUEGO
DE
MACH

# INETES

# S

# OS

Cojinetes
Machos para roscar a mano

| Grupo de Materiales | Resistencia MPa (N/mm2) | Dureza HB | Velocidad de corte vc m/min | |
|---|---|---|---|---|
| | | | HSS | HSS-E |
| Aceros de construcción generales | ≤ 800 | – | 8 - 12 | – |
| Aceros p. tornos automáticos | ≤ 1000 | – | 10 - 14 | – |
| Aceros de cementación no aleados | ≤ 750 | – | 6 - 10 | – |
| Aceros bonificados no aleados | ≤ 850 | – | 6 - 10 | – |
| Aceros de cementación aleados | ≥ 850 … 1200 | – | – | 5 - 8 |
| Aceros bonificados aleados | ≥ 850 … 1200 | – | – | 5 - 8 |
| Aceros para herramientas aleados | ≤ 1000 | – | – | 5 - 8 |
| Aceros rápido | ≥ 650 … 1000 | – | – | 5 - 8 |
| Aceros inoxidables y resist. al ácido, sulfurado | ≤ 850 | – | – | 4 - 6 |
| austenítico | ≤ 850 | – | – | 4 - 6 |
| martensítico | ≤ 850 | – | – | 4 - 6 |
| Aceros de construcción generales | ≤ 800 | – | 8 - 12 | – |
| Aceros p. tornos automáticos | ≤ 1000 | – | 10 - 14 | – |
| Aceros de cementación | ≤ 1000 | – | 6 - 10 | – |
| Aceros para bonificar | ≤ 1200 | – | 6 - 10 | – |
| Aceros nitrurados | ≤ 1200 | – | – | 5 - 8 |
| Fundición esférica | – | ≤ 240 | 5 - 8 | – |
| Aluminio y aleaciones Al | ≤ 400 | – | 10 - 20 | – |
| Aleaciones de Al maleables | ≤ 400 | – | 10 - 20 | – |
| Aleaciones Al ≤ 10 % Si | ≤ 600 | – | 10 - 15 | – |
| > 10 % Si | ≤ 600 | – | 10 - 12 | – |
| Hierro fundido | – | ≤ 240 | 5 - 8 | – |
| Fundición esférica | – | ≤ 240 | 5 - 8 | – |
| Fundición maleable | – | < 300 | 5 - 8 | – |
| Latón viruta corta | ≤ 600 | – | 5 - 8 | – |
| Latón viruta larga | ≤ 600 | – | 20 - 30 | – |
| Plásticos | – | – | 12 - 18 | – |
| Aleaciones de magnesio | ≤ 450 | – | 10 - 20 | – |
| Aleaciones de titanio y de Ti | ≤ 1200 | – | – | 2 - 6 |
| Aleaciones de Ni | ≤ 1200 | – | – | 2 - 6 |

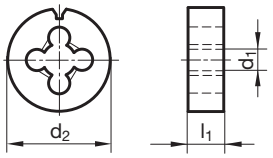
| Grupo de materiales | Ejemplos de material | Ángulo de desalojo de viruta | Lubricante/refrigerador |
|---|---|---|---|
| Aceros de construcción generales | St 37-2, St 50-2 usw. | 17 - 22° | aceite de corte |
| Aceros p. tornos automáticos | 9 S Mn 28, 9 S MnPb 28 usw. | 17 - 22° | aceite de corte |
| Aceros de cementación | C 15, Ck 15, 16 MnCr 5 usw. | 17 - 22° | aceite de corte, ac. corte esp. |
| Aceros para bonificar | C 35 Pb, C 45 usw. | 13 - 18° | aceite de corte, ac. corte esp. |
| Aceros inox. y resist. al ácido | x12 CrMoS 17, x12 CrNiS 188 usw. | 13 - 18° | aceite de corte esp. |
| Fundición gris | GG 15, GG25 | 8 - 12° | aceite de corte, petróleo |
| Latón viruta corta,, Ms58 | CuZn 39 Pb 2, CuZn 40 Pb 2 | 10 - 12° | aceite de corte |
| Latón viruta larga,, Ms60 | CuZn 20, CuZn 37 | 3 - 7° | aceite de corte |
| Aleaciones de Al, viruta larga | AlCuMg 1, AlMg 3 Si | 23 - 28° | aceite de corte, petróleo |
| Aleaciones de Al, viruta corta | GD-AlSI 8 Cu 3, GD AlSi 12 | 13 - 18° | aceite de corte, petróleo |

## Cojinetes de roscar para rosca metrica ISO

6g | R | WN | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| | > M 2,6 |
| Longitut de entrada | 1,75xP |



**Norma de fab.** Artículo Nº **121**

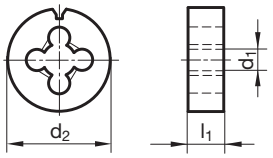
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M3 | 0,500 | 16,000 | 5,000 | 2,92 | 3,010 |
| M4 | 0,700 | 20,000 | 5,000 | 3,91 | 4,020 |
| M5 | 0,800 | 16,000 | 5,000 | 4,90 | 5,010 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,020 |
| M6 | 1,000 | 16,000 | 5,000 | 5,88 | 6,010 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,020 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 38,000 | 14,000 | 11,83 | 12,000 |

## Cojinetes de roscar para rosca metrica ISO

6g | R | WN | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| | > M 2,6 |
| Longitut de entrada | 1,75xP |



**Norma de fab.** Artículo Nº **125**

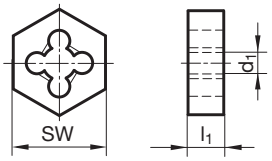
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M2 | 0,400 | 16,000 | 3,500 | 1,94 | 2,000 |
| M3 | 0,500 | 20,000 | 3,500 | 2,92 | 3,000 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,000 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |

## Cojinetes para rosca métrica ISO

6g | R | DIN 382

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| Longitut de entrada | 1,75xP |



**DIN 382** Artículo Nº **139**

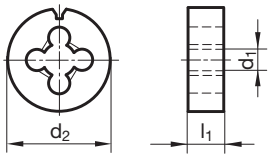
| d1 | P | SW | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M5 | 0,800 | 18,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 18,000 | 7,000 | 5,88 | 6,000 |
| M8 | 1,250 | 21,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 27,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 36,000 | 14,000 | 11,83 | 12,000 |
| M16 | 2,000 | 41,000 | 18,000 | 15,82 | 16,000 |
| M20 | 2,500 | 41,000 | 18,000 | 19,79 | 20,000 |
| M24 | 3,000 | 50,000 | 22,000 | 23,77 | 24,000 |
| M52 | 5,000 | 85,000 | 36,000 | 51,66 | 52,000 |

## Cojinetes para rosca métrica ISO

6g | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| Material de corte | HSS | |
|---|---|---|
| Acabado | ◯ | ◯ |
| | | > M 2,6 |
| Longitut de entrada | 1,75xP | 1,75xP |



**DIN EN 22568** — Artículo Nº **151** **153**

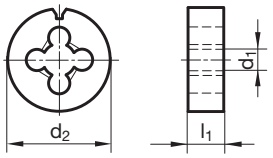
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M1 | 0,250 | 16,000 | 5,000 | 0,97 | 1,000 |
| M1,2 | 0,250 | 16,000 | 5,000 | 1,17 | 1,200 |
| M1,4 | 0,300 | 16,000 | 5,000 | 1,36 | 1,400 |
| M1,6 | 0,350 | 16,000 | 5,000 | 1,54 | 1,600 |
| M2 | 0,400 | 16,000 | 5,000 | 1,94 | 2,000 |
| M2,3 | 0,400 | 16,000 | 5,000 | 2,25 | 2,300 |
| M2,5 | 0,450 | 16,000 | 5,000 | 2,43 | 2,500 |
| M2,6 | 0,450 | 16,000 | 5,000 | 2,54 | 2,600 |
| M3 | 0,500 | 20,000 | 5,000 | 2,92 | 3,000 |
| M3,5 | 0,600 | 20,000 | 5,000 | 3,41 | 3,500 |
| M4 | 0,700 | 20,000 | 5,000 | 3,91 | 4,000 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,000 |
| M7 | 1,000 | 25,000 | 9,000 | 6,88 | 7,000 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 38,000 | 14,000 | 11,83 | 12,000 |
| M14 | 2,000 | 38,000 | 14,000 | 13,82 | 14,000 |
| M16 | 2,000 | 45,000 | 18,000 | 15,82 | 16,000 |
| M18 | 2,500 | 45,000 | 18,000 | 17,79 | 18,000 |
| M20 | 2,500 | 45,000 | 18,000 | 19,79 | 20,000 |
| M24 | 3,000 | 55,000 | 22,000 | 23,77 | 24,000 |
| M30 | 3,500 | 65,000 | 25,000 | 29,73 | 30,000 |

## Cojinetes para rosca métrica ISO

6g | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| | > M 2,6 |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **152**

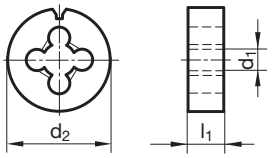
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M3 | 0,500 | 20,000 | 5,000 | 2,92 | 3,000 |
| M3,5 | 0,600 | 20,000 | 5,000 | 3,41 | 3,500 |
| M4 | 0,700 | 20,000 | 5,000 | 3,91 | 4,000 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,000 |
| M7 | 1,000 | 25,000 | 9,000 | 6,88 | 7,000 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M9 | 1,250 | 25,000 | 9,000 | 8,87 | 9,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 38,000 | 14,000 | 11,83 | 12,000 |
| M14 | 2,000 | 38,000 | 14,000 | 13,82 | 14,000 |
| M16 | 2,000 | 45,000 | 18,000 | 15,82 | 16,000 |
| M18 | 2,500 | 45,000 | 18,000 | 17,79 | 18,000 |
| M20 | 2,500 | 45,000 | 18,000 | 19,79 | 20,000 |
| M22 | 2,500 | 55,000 | 22,000 | 21,79 | 22,000 |
| M24 | 3,000 | 55,000 | 22,000 | 23,77 | 24,000 |
| M27 | 3,000 | 65,000 | 25,000 | 26,77 | 27,000 |
| M30 | 3,500 | 65,000 | 25,000 | 29,73 | 30,000 |

## Cojinetes para rosca métrica ISO

6g | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1200 |
| M | • |
| K | |
| N | |
| S | |
| H | |

| | |
|---|---|
| Material de corte | **HSS-E** |
| Acabado | ● |
| | > M 2,6 |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **130**

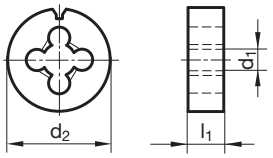
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M2 | 0,400 | 16,000 | 3,500 | 1,94 | 2,000 |
| M2,2 | 0,450 | 16,000 | 3,500 | 2,13 | 2,200 |
| M2,5 | 0,450 | 16,000 | 5,000 | 2,43 | 2,500 |
| M3 | 0,500 | 16,000 | 5,000 | 2,92 | 3,010 |
| M3 | 0,500 | 20,000 | 5,000 | 2,92 | 3,020 |
| M4 | 0,700 | 16,000 | 5,000 | 3,91 | 4,010 |
| M4 | 0,700 | 20,000 | 5,000 | 3,91 | 4,020 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,000 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 38,000 | 14,000 | 11,83 | 12,000 |
| M14 | 2,000 | 38,000 | 14,000 | 13,82 | 14,000 |
| M16 | 2,000 | 45,000 | 18,000 | 15,82 | 16,000 |
| M20 | 2,500 | 45,000 | 18,000 | 19,79 | 20,000 |

## Cojinetes para rosca métrica ISO

6g | L | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | **HSS** |
| Acabado | ◯ |
| | > M 2,6 |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **156**

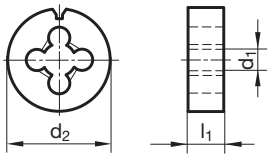
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | mm | mm | mm | mm | |
| M3 | 0,500 | 20,000 | 5,000 | 2,92 | 3,000 |
| M4 | 0,700 | 20,000 | 5,000 | 3,91 | 4,000 |
| M5 | 0,800 | 20,000 | 7,000 | 4,90 | 5,000 |
| M6 | 1,000 | 20,000 | 7,000 | 5,88 | 6,000 |
| M8 | 1,250 | 25,000 | 9,000 | 7,87 | 8,000 |
| M10 | 1,500 | 30,000 | 11,000 | 9,85 | 10,000 |
| M12 | 1,750 | 38,000 | 14,000 | 11,83 | 12,000 |
| M14 | 2,000 | 38,000 | 14,000 | 13,82 | 14,000 |
| M16 | 2,000 | 45,000 | 18,000 | 15,82 | 16,000 |
| M20 | 2,500 | 45,000 | 18,000 | 19,79 | 20,000 |

## Cojinetes para rosca métrica fina ISO

6g | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| Material de corte | HSS | |
|---|---|---|
| Acabado | ◯ | ◯ |
| | | > M 2,6 |
| Longitut de entrada | 1,75xP | 1,75xP |



**DIN EN 22568** — Artículo Nº **161** **162**

| d1 | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|
| | mm | mm | mm | |
| M3 x 0,35 | 20,000 | 5,000 | 2,94 | 3,002 |
| M4 x 0,5 | 20,000 | 5,000 | 3,92 | 4,003 |
| M5 x 0,5 | 20,000 | 5,000 | 4,92 | 5,003 |
| M6 x 0,5 | 20,000 | 5,000 | 5,92 | 6,003 |
| M6 x 0,75 | 20,000 | 7,000 | 5,91 | 6,004 |
| M7 x 0,5 | 25,000 | 9,000 | 6,92 | 7,003 |
| M7 x 0,75 | 25,000 | 9,000 | 6,91 | 7,004 |
| M8 x 0,5 | 25,000 | 9,000 | 7,92 | 8,003 |
| M8 x 0,75 | 25,000 | 9,000 | 7,91 | 8,004 |
| M8 x 1 | 25,000 | 9,000 | 7,88 | 8,005 |
| M9 x 0,75 | 25,000 | 9,000 | 8,91 | 9,004 |
| M9 x 1 | 25,000 | 9,000 | 8,88 | 9,005 |
| M10 x 0,75 | 30,000 | 11,000 | 9,91 | 10,004 |
| M10 x 1 | 30,000 | 11,000 | 9,88 | 10,005 |
| M10 x 1,25 | 30,000 | 11,000 | 9,87 | 10,006 |
| M11 x 1 | 30,000 | 11,000 | 10,88 | 11,005 |
| M12 x 0,75 | 38,000 | 10,000 | 11,91 | 12,004 |
| M12 x 1 | 38,000 | 10,000 | 11,88 | 12,005 |
| M12 x 1,25 | 38,000 | 10,000 | 11,87 | 12,006 |
| M12 x 1,5 | 38,000 | 10,000 | 11,85 | 12,007 |
| M13 x 1 | 38,000 | 10,000 | 12,88 | 13,005 |
| M14 x 1 | 38,000 | 10,000 | 13,88 | 14,005 |
| M14 x 1,25 | 38,000 | 10,000 | 13,87 | 14,006 |
| M14 x 1,5 | 38,000 | 10,000 | 13,85 | 14,007 |
| M15 x 1 | 38,000 | 10,000 | 14,88 | 15,005 |
| M16 x 1 | 45,000 | 14,000 | 15,88 | 16,005 |
| M16 x 1,5 | 45,000 | 14,000 | 15,85 | 16,007 |
| M17 x 1 | 45,000 | 14,000 | 16,88 | 17,005 |
| M18 x 1 | 45,000 | 14,000 | 17,88 | 18,005 |
| M18 x 1,5 | 45,000 | 14,000 | 17,85 | 18,007 |
| M20 x 1 | 45,000 | 14,000 | 19,88 | 20,005 |
| M20 x 1,5 | 45,000 | 14,000 | 19,85 | 20,007 |
| M20 x 2 | 45,000 | 14,000 | 19,82 | 20,008 |
| M22 x 1 | 55,000 | 16,000 | 21,88 | 22,005 |
| M22 x 1,5 | 55,000 | 16,000 | 21,85 | 22,007 |
| M24 x 1,5 | 55,000 | 16,000 | 23,85 | 24,007 |

**DIN EN 22568** Artículo Nº **161** **162**

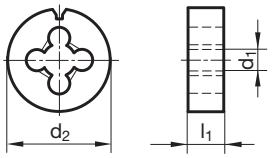
| d1 | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|
| | mm | mm | mm | |
| M24 x 2 | 55,000 | 16,000 | 23,82 | 24,008 |
| M25 x 1,5 | 55,000 | 16,000 | 24,85 | 25,007 |
| M26 x 1,5 | 55,000 | 16,000 | 25,85 | 26,007 |
| M27 x 1,5 | 65,000 | 18,000 | 26,85 | 27,007 |
| M27 x 2 | 65,000 | 18,000 | 26,82 | 27,008 |
| M28 x 1,5 | 65,000 | 18,000 | 27,85 | 28,007 |
| M30 x 1,5 | 65,000 | 18,000 | 29,85 | 30,007 |
| M30 x 2 | 65,000 | 18,000 | 29,82 | 30,008 |

## Cojinetes para rosca UNC

2a | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **182**

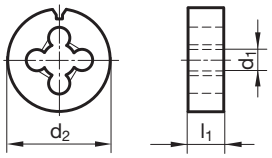
| d1 | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|
| | mm | mm | mm | |
| 8 - 32 | 20,000 | 7,000 | 4,07 | 4,166 |
| 10 - 24 | 20,000 | 7,000 | 4,71 | 4,826 |
| 1/4 - 20 | 20,000 | 7,000 | 6,22 | 6,350 |
| 5/16 - 18 | 25,000 | 9,000 | 7,80 | 7,938 |
| 3/8 - 16 | 30,000 | 11,000 | 9,37 | 9,525 |
| 7/16 - 14 | 30,000 | 11,000 | 10,95 | 11,113 |
| 1/2 - 13 | 38,000 | 14,000 | 12,52 | 12,700 |
| 5/8 - 11 | 45,000 | 18,000 | 15,68 | 15,875 |
| 3/4 - 10 | 45,000 | 18,000 | 18,84 | 19,050 |

## Cojinetes para rosca UNF

2a | R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ○ |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **185**

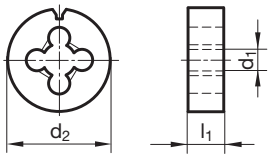
| d1 | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|
| | mm | mm | mm | |
| 10 - 32 | 20,000 | 7,000 | 4,73 | 4,826 |
| 1/4 - 28 | 20,000 | 7,000 | 6,24 | 6,350 |
| 5/16 - 24 | 25,000 | 9,000 | 7,82 | 7,938 |
| 3/8 - 24 | 30,000 | 11,000 | 9,41 | 9,525 |
| 7/16 - 20 | 30,000 | 11,000 | 10,98 | 11,113 |
| 1/2 - 20 | 38,000 | 10,000 | 12,56 | 12,700 |
| 9/16 - 18 | 38,000 | 10,000 | 14,14 | 14,288 |
| 5/8 - 18 | 45,000 | 14,000 | 15,73 | 15,875 |
| 3/4 - 16 | 45,000 | 14,000 | 18,89 | 19,050 |
| 7/8 - 14 | 55,000 | 16,000 | 22,05 | 22,225 |

## Cojinetes para rosca GAS

R | DIN EN 24231 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| Material de corte | HSS | |
|---|---|---|
| Acabado | ◯ | ◯ |
| Longitut de entrada | 1,75xP | 1,75xP |



**DIN EN 24231** Artículo Nº **175** **176**

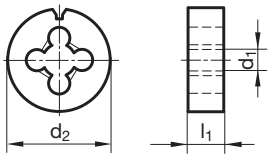
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | |
| G1/8 | 28,000 | 30,000 | 11,000 | 9,62 | 9,728 |
| G1/4 | 19,000 | 38,000 | 10,000 | 13,03 | 13,157 |
| G3/8 | 19,000 | 45,000 | 14,000 | 16,54 | 16,662 |
| G1/2 | 14,000 | 45,000 | 14,000 | 20,81 | 20,955 |
| G5/8 | 14,000 | 55,000 | 16,000 | 22,77 | 22,911 |
| G3/4 | 14,000 | 55,000 | 16,000 | 26,30 | 26,441 |
| G1 | 11,000 | 65,000 | 18,000 | 33,07 | 33,249 |
| G1 1/4 | 11,000 | 75,000 | 20,000 | 41,73 | 41,910 |
| G1 1/2 | 11,000 | 90,000 | 22,000 | 47,62 | 47,803 |

## Cojinetes para rosca R BSPT

R | DIN EN 24230 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| Longitut de entrada | 1,75xP |



**DIN EN 24230** Artículo Nº **198**

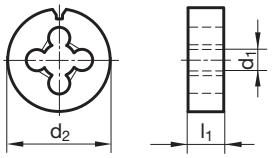
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | |
| R1/8 | 28 | 30,000 | 11,000 | 9,48 | 9,728 |
| R1/4 | 19 | 38,000 | 14,000 | 12,78 | 13,157 |
| R3/8 | 19 | 45,000 | 14,000 | 16,26 | 16,662 |
| R1/2 | 14 | 45,000 | 18,000 | 20,44 | 20,955 |

## Cojinetes para rosca NPT

R | DIN EN 22568 | B

| | |
|---|---|
| P | ≤ 1000 |
| M | |
| K | • |
| N | • |
| S | |
| H | |

| | |
|---|---|
| Material de corte | HSS |
| Acabado | ◯ |
| Longitut de entrada | 1,75xP |



**DIN EN 22568** Artículo Nº **191**

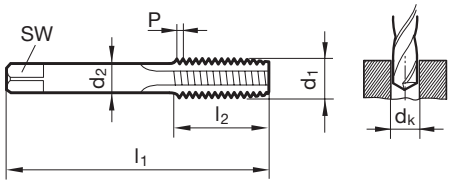
| d1 | P | d2 | l1 | Diámetro pieza | Código Nº |
|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | |
| 1/8 | 27,000 | 30,000 | 11,000 | 9,93 | 10,620 |
| 1/4 | 18,000 | 38,000 | 14,000 | 13,18 | 14,140 |
| 3/8 | 18,000 | 45,000 | 14,000 | 16,60 | 17,570 |
| 1/2 | 14,000 | 45,000 | 18,000 | 20,63 | 21,900 |
| 3/4 | 14,000 | 55,000 | 22,000 | 25,95 | 27,230 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H | R

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| Material de corte | HSS | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | ○ | ○ |
| Tipo | N | N | N | N |
| Descripción | Juego | V | M | F |



**DIN 352** — Artículo Nº **861** **862** **863** **864**

| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,75 | 32,000 | 5,500 |
| M1,1 | 0,250 | 2,500 | 2,100 | 0,85 | 32,000 | 5,500 |
| M1,2 | 0,250 | 2,500 | 2,100 | 0,95 | 32,000 | 5,500 |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,10 | 32,000 | 7,000 |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,25 | 32,000 | 8,000 |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,35 | 32,000 | 8,000 |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,45 | 32,000 | 8,000 |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 8,000 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 36,000 | 9,000 |
| M2,3 | 0,400 | 2,800 | 2,100 | 1,90 | 36,000 | 9,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 9,000 |
| M2,6 | 0,450 | 2,800 | 2,100 | 2,15 | 40,000 | 9,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 45,000 | 12,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M4,5 | 0,750 | 6,000 | 4,900 | 3,70 | 50,000 | 14,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M7 | 1,000 | 6,000 | 4,900 | 6,00 | 56,000 | 16,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M9 | 1,250 | 7,000 | 5,500 | 7,80 | 63,000 | 17,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M11 | 1,500 | 8,000 | 6,200 | 9,50 | 70,000 | 20,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 80,000 | 26,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 26,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 95,000 | 30,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 95,000 | 32,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 100,000 | 32,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 110,000 | 36,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 110,000 | 36,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 125,000 | 40,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 150,000 | 50,000 |
| M42 | 4,500 | 32,000 | 24,000 | 37,50 | 150,000 | 56,000 |
| M45 | 4,500 | 36,000 | 29,000 | 40,50 | 160,000 | 58,000 |
| M60 | 5,500 | 45,000 | 35,000 | 54,50 | 200,000 | 70,000 |

**DIN 352** Artículo Nº **861** **862** **863** **864**

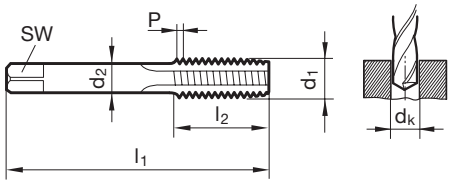
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M64 | 6,000 | 50,000 | 39,000 | 58,00 | 220,000 | 75,000 |
| M68 | 6,000 | 50,000 | 39,000 | 62,00 | 220,000 | 75,000 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H | R

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| | | | |
|---|---|---|---|
| Material de corte | HSS | | |
| Acabado | ◯ | ◯ | ◯ |
| Tipo | N | N | N |
| Descripción | Juego | V | F |



**DIN 352** — Artículo Nº **882** **883** **864**

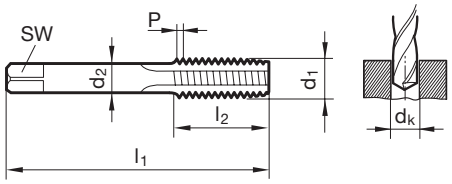
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M1 | 0,250 | 2,500 | 2,100 | 0,75 | 32,000 | 5,500 |
| M1,1 | 0,250 | 2,500 | 2,100 | 0,85 | 32,000 | 5,500 |
| M1,2 | 0,250 | 2,500 | 2,100 | 0,95 | 32,000 | 5,500 |
| M1,4 | 0,300 | 2,500 | 2,100 | 1,10 | 32,000 | 7,000 |
| M1,6 | 0,350 | 2,500 | 2,100 | 1,25 | 32,000 | 8,000 |
| M1,7 | 0,350 | 2,500 | 2,100 | 1,35 | 32,000 | 8,000 |
| M1,8 | 0,350 | 2,500 | 2,100 | 1,45 | 32,000 | 8,000 |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 8,000 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 36,000 | 9,000 |
| M2,3 | 0,400 | 2,800 | 2,100 | 1,90 | 36,000 | 9,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 9,000 |
| M2,6 | 0,450 | 2,800 | 2,100 | 2,15 | 40,000 | 9,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 45,000 | 12,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M4,5 | 0,750 | 6,000 | 4,900 | 3,70 | 50,000 | 14,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M7 | 1,000 | 6,000 | 4,900 | 6,00 | 56,000 | 16,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M9 | 1,250 | 7,000 | 5,500 | 7,80 | 63,000 | 17,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M11 | 1,500 | 8,000 | 6,200 | 9,50 | 70,000 | 20,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 80,000 | 26,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 26,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 95,000 | 30,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 95,000 | 32,000 |
| M22 | 2,500 | 18,000 | 14,500 | 19,50 | 100,000 | 32,000 |
| M24 | 3,000 | 18,000 | 14,500 | 21,00 | 110,000 | 36,000 |
| M27 | 3,000 | 20,000 | 16,000 | 24,00 | 110,000 | 36,000 |
| M30 | 3,500 | 22,000 | 18,000 | 26,50 | 125,000 | 40,000 |
| M36 | 4,000 | 28,000 | 22,000 | 32,00 | 150,000 | 50,000 |
| M42 | 4,500 | 32,000 | 24,000 | 37,50 | 150,000 | 56,000 |
| M45 | 4,500 | 36,000 | 29,000 | 40,50 | 160,000 | 58,000 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H | L

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| Material de corte | HSS | | | |
|---|---|---|---|---|
| Acabado | ◯ | ◯ | ◯ | ◯ |
| Tipo | N | N-LH | N-LH | N-LH |
| Descripción | Juego | V | M | F |



**DIN 352** — Artículo Nº **904** **905** **906** **907**

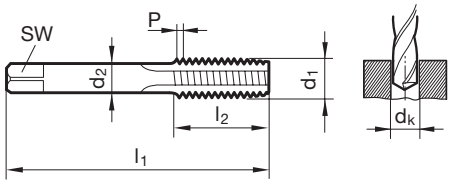
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 8,000 |
| M2,2 | 0,450 | 2,800 | 2,100 | 1,75 | 36,000 | 9,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 9,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 80,000 | 26,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 26,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 95,000 | 30,000 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H R

| | |
|---|---|
| P | ≤ 1000 |
| M | • |
| K | • |
| N | • |
| S | |
| H | |

| | | | | |
|---|---|---|---|---|
| Material de corte | HSS-E | | | |
| Acabado | ◯ | ◯ | ◯ | ◯ |
| Tipo | VA | VA | VA | VA |
| Descripción | Juego | V | M | F |



**DIN 352** Artículo Nº **853** **854** **855** **856**

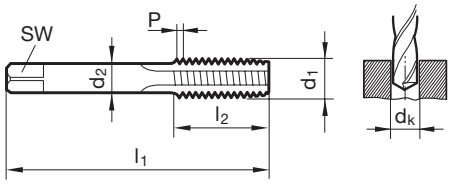
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 8,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 9,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 26,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 95,000 | 32,000 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H | R

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | |
| H | |

| Material de corte | HSS-E | | | |
|---|---|---|---|---|
| Acabado | ● | ● | ● | ● |
| Tipo | H | H | H | H |
| Descripción | Juego | V | M | F |



**DIN 352** — Artículo Nº **857** **858** **859** **860**

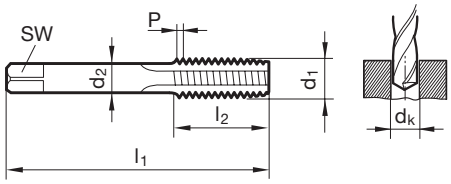
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 6,400 |
| M2 | 0,400 | 2,800 | 2,100 | 1,60 | 36,000 | 8,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 7,000 |
| M2,5 | 0,450 | 2,800 | 2,100 | 2,05 | 40,000 | 9,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 8,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M3,5 | 0,600 | 4,000 | 3,000 | 2,90 | 45,000 | 12,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 9,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 11,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 12,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 11,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 14,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 18,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 80,000 | 26,000 |
| M14 | 2,000 | 11,000 | 9,000 | 12,00 | 80,000 | 19,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 26,000 |
| M16 | 2,000 | 12,000 | 9,000 | 14,00 | 80,000 | 18,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 95,000 | 30,000 |
| M18 | 2,500 | 14,000 | 11,000 | 15,50 | 95,000 | 21,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 95,000 | 32,000 |
| M20 | 2,500 | 16,000 | 12,000 | 17,50 | 95,000 | 22,000 |

## Juegos de machos mano para rosca metr. ISO

ISO2/6H R

| | |
|---|---|
| P | • |
| M | • |
| K | • |
| N | • |
| S | |
| H | |

| Material de corte | HSS-E-PM | | | |
|---|---|---|---|---|
| Acabado | ● | ● | ● | ● |
| Tipo | H | H | H | H |
| Descripción | Juego | V | M | F |



**DIN 352** Artículo Nº **1818** **1819** **1820** **1821**

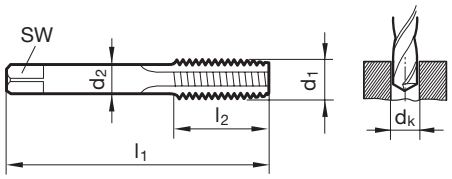
| d1 | P | d2 | SW | dk | l1 | l2 |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | mm |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 8,000 |
| M3 | 0,500 | 3,500 | 2,700 | 2,50 | 40,000 | 10,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 12,000 |
| M4 | 0,700 | 4,500 | 3,400 | 3,30 | 45,000 | 9,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 14,000 |
| M5 | 0,800 | 6,000 | 4,900 | 4,20 | 50,000 | 11,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 16,000 |
| M6 | 1,000 | 6,000 | 4,900 | 5,00 | 56,000 | 12,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 17,000 |
| M8 | 1,250 | 6,000 | 4,900 | 6,80 | 63,000 | 11,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 20,000 |
| M10 | 1,500 | 7,000 | 5,500 | 8,50 | 70,000 | 14,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 24,000 |
| M12 | 1,750 | 9,000 | 7,000 | 10,20 | 75,000 | 18,000 |

## Juegos de machos mano para rosca metr. fina ISO

ISO2/6H R

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| | | | |
|---|---|---|---|
| Material de corte | HSS | | |
| Acabado | ◯ | ◯ | ◯ |
| Tipo | N | N | N |
| Descripción | Juego | V | F |



**DIN 2181** — Artículo Nº **884** **885** **886**

| d1 | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | |
| M2 x 0,25 | 2,800 | 2,100 | 1,75 | 36,000 | 8,000 | 2,001 |
| M2,2 x 0,25 | 2,800 | 2,100 | 1,95 | 36,000 | 9,000 | 2,201 |
| M2,3 x 0,25 | 2,800 | 2,100 | 2,05 | 36,000 | 9,000 | 2,301 |
| M2,6 x 0,35 | 2,800 | 2,100 | 2,25 | 40,000 | 9,000 | 2,602 |
| M3 x 0,35 | 3,500 | 2,700 | 2,65 | 40,000 | 8,000 | 3,002 |
| M4 x 0,35 | 4,500 | 3,400 | 3,65 | 45,000 | 9,000 | 4,002 |
| M4 x 0,5 | 4,500 | 3,400 | 3,50 | 45,000 | 9,000 | 4,003 |
| M5 x 0,5 | 6,000 | 4,900 | 4,50 | 50,000 | 11,000 | 5,003 |
| M6 x 0,5 | 6,000 | 4,900 | 5,50 | 56,000 | 12,000 | 6,003 |
| M6 x 0,75 | 6,000 | 4,900 | 5,20 | 56,000 | 12,000 | 6,004 |
| M7 x 0,75 | 6,000 | 4,900 | 6,20 | 56,000 | 14,000 | 7,004 |
| M8 x 0,5 | 6,000 | 4,900 | 7,50 | 56,000 | 14,000 | 8,003 |
| M8 x 0,75 | 6,000 | 4,900 | 7,20 | 56,000 | 14,000 | 8,004 |
| M8 x 1 | 6,000 | 4,900 | 7,00 | 63,000 | 17,000 | 8,005 |
| M9 x 1 | 7,000 | 5,500 | 8,00 | 63,000 | 17,000 | 9,005 |
| M10 x 0,75 | 7,000 | 5,500 | 9,20 | 63,000 | 18,000 | 10,004 |
| M10 x 1 | 7,000 | 5,500 | 9,00 | 63,000 | 18,000 | 10,005 |
| M10 x 1,25 | 7,000 | 5,500 | 8,80 | 70,000 | 20,000 | 10,006 |
| M11 x 1 | 8,000 | 6,200 | 10,00 | 63,000 | 18,000 | 11,005 |
| M12 x 1 | 9,000 | 7,000 | 11,00 | 70,000 | 18,000 | 12,005 |
| M12 x 1,25 | 9,000 | 7,000 | 10,80 | 70,000 | 20,000 | 12,006 |
| M12 x 1,5 | 9,000 | 7,000 | 10,50 | 70,000 | 20,000 | 12,007 |
| M14 x 1 | 11,000 | 9,000 | 13,00 | 70,000 | 20,000 | 14,005 |
| M14 x 1,25 | 11,000 | 9,000 | 12,80 | 70,000 | 20,000 | 14,006 |
| M14 x 1,5 | 11,000 | 9,000 | 12,50 | 70,000 | 20,000 | 14,007 |
| M15 x 1 | 12,000 | 9,000 | 14,00 | 70,000 | 20,000 | 15,005 |
| M15 x 1,5 | 12,000 | 9,000 | 13,50 | 70,000 | 20,000 | 15,007 |
| M16 x 1 | 12,000 | 9,000 | 15,00 | 70,000 | 20,000 | 16,005 |
| M16 x 1,5 | 12,000 | 9,000 | 14,50 | 70,000 | 20,000 | 16,007 |
| M18 x 1 | 14,000 | 11,000 | 17,00 | 80,000 | 22,000 | 18,005 |
| M18 x 1,5 | 14,000 | 11,000 | 16,50 | 80,000 | 22,000 | 18,007 |
| M18 x 2 | 14,000 | 11,000 | 16,00 | 80,000 | 22,000 | 18,008 |
| M20 x 1 | 16,000 | 12,000 | 19,00 | 80,000 | 22,000 | 20,005 |
| M20 x 1,5 | 16,000 | 12,000 | 18,50 | 80,000 | 22,000 | 20,007 |
| M20 x 2 | 16,000 | 12,000 | 18,00 | 80,000 | 22,000 | 20,008 |
| M22 x 1 | 18,000 | 14,500 | 21,00 | 80,000 | 22,000 | 22,005 |

**DIN 2181** Artículo Nº **884** **885** **886**

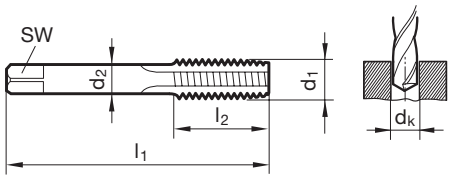
| d1 | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | |
| M22 x 1,5 | 18,000 | 14,500 | 20,50 | 80,000 | 22,000 | 22,007 |
| M22 x 2 | 18,000 | 14,500 | 20,00 | 80,000 | 22,000 | 22,008 |
| M24 x 1 | 18,000 | 14,500 | 23,00 | 90,000 | 22,000 | 24,005 |
| M24 x 1,5 | 18,000 | 14,500 | 22,50 | 90,000 | 22,000 | 24,007 |
| M24 x 2 | 18,000 | 14,500 | 22,00 | 90,000 | 22,000 | 24,008 |
| M26 x 1,5 | 18,000 | 14,500 | 24,50 | 90,000 | 22,000 | 26,007 |
| M27 x 1,5 | 20,000 | 16,000 | 25,50 | 90,000 | 22,000 | 27,007 |
| M27 x 2 | 20,000 | 16,000 | 25,00 | 90,000 | 22,000 | 27,008 |
| M30 x 1 | 22,000 | 18,000 | 29,00 | 90,000 | 22,000 | 30,005 |
| M30 x 1,5 | 22,000 | 18,000 | 28,50 | 90,000 | 22,000 | 30,007 |
| M30 x 2 | 22,000 | 18,000 | 28,00 | 90,000 | 22,000 | 30,008 |
| M32 x 1,5 | 22,000 | 18,000 | 30,50 | 90,000 | 22,000 | 32,007 |
| M34 x 1,5 | 28,000 | 22,000 | 32,50 | 100,000 | 25,000 | 34,007 |
| M35 x 1,5 | 28,000 | 22,000 | 33,50 | 100,000 | 25,000 | 35,007 |
| M36 x 1,5 | 28,000 | 22,000 | 34,50 | 100,000 | 25,000 | 36,007 |
| M38 x 1,5 | 28,000 | 22,000 | 36,50 | 100,000 | 25,000 | 38,007 |
| M45 x 1,5 | 36,000 | 29,000 | 43,50 | 110,000 | 25,000 | 45,007 |
| M52 x 1,5 | 40,000 | 32,000 | 50,50 | 140,000 | 32,000 | 52,007 |

## Machos mano para roscas UNC

2B R

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| Material de corte | HSS | | | |
|---|---|---|---|---|
| Acabado | ○ | ○ | ○ | ○ |
| Tipo | N | N | N | N |
| Descripción | Juego | V | M | F |



~DIN 352 — Artículo Nº 981 982 983 984

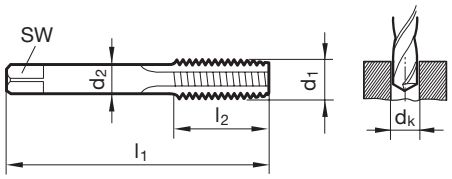
| d1 | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | |
| 1 - 64 | 2,800 | 2,100 | 1,55 | 36,000 | 8,000 | 1,854 |
| 2 - 56 | 2,800 | 2,100 | 1,85 | 36,000 | 9,000 | 2,184 |
| 3 - 48 | 2,800 | 2,100 | 2,10 | 40,000 | 9,000 | 2,515 |
| 4 - 40 | 3,500 | 2,700 | 2,35 | 40,000 | 11,000 | 2,845 |
| 5 - 40 | 4,000 | 2,700 | 2,65 | 40,000 | 11,000 | 3,175 |
| 5 - 40 | 3,500 | 2,700 | 2,65 | 40,000 | 11,000 | 3,175 |
| 6 - 32 | 4,000 | 3,000 | 2,85 | 45,000 | 12,000 | 3,505 |
| 8 - 32 | 4,500 | 3,400 | 3,50 | 45,000 | 12,000 | 4,166 |
| 10 - 24 | 6,000 | 4,900 | 3,90 | 50,000 | 14,000 | 4,826 |
| 12 - 24 | 6,000 | 4,900 | 4,50 | 56,000 | 16,000 | 5,486 |
| 1/4 - 20 | 6,000 | 4,900 | 5,10 | 56,000 | 16,000 | 6,350 |
| 5/16 - 18 | 6,000 | 4,900 | 6,60 | 63,000 | 18,000 | 7,938 |
| 3/8 - 16 | 7,000 | 5,500 | 8,00 | 70,000 | 20,000 | 9,525 |
| 7/16 - 14 | 8,000 | 6,200 | 9,40 | 70,000 | 22,000 | 11,113 |
| 1/2 - 13 | 9,000 | 7,000 | 10,80 | 75,000 | 25,000 | 12,700 |
| 9/16 - 12 | 11,000 | 9,000 | 12,20 | 80,000 | 28,000 | 14,288 |
| 5/8 - 11 | 12,000 | 9,000 | 13,50 | 80,000 | 30,000 | 15,875 |
| 3/4 - 10 | 16,000 | 11,000 | 16,50 | 95,000 | 33,000 | 19,050 |
| 3/4 - 10 | 14,000 | 11,000 | 16,50 | 95,000 | 33,000 | 19,050 |
| 7/8 - 9 | 18,000 | 14,500 | 19,50 | 100,000 | 35,000 | 22,225 |
| 1 - 8 | 18,000 | 14,500 | 22,25 | 110,000 | 38,000 | 25,400 |
| 1 1/8 - 7 | 22,000 | 18,000 | 25,00 | 125,000 | 44,000 | 28,575 |
| 1 1/4 - 7 | 22,000 | 18,000 | 28,00 | 125,000 | 44,000 | 31,750 |
| 1 3/8 - 6 | 28,000 | 22,000 | 30,75 | 150,000 | 50,000 | 34,925 |
| 1 1/2 - 6 | 32,000 | 22,000 | 34,00 | 150,000 | 50,000 | 38,100 |
| 1 3/4 - 5 | 36,000 | 29,000 | 39,50 | 160,000 | 58,000 | 44,450 |
| 2 - 4 1/2 | 40,000 | 32,000 | 45,00 | 180,000 | 65,000 | 50,800 |

## Machos mano para roscas UNF

2B R

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| Material de corte | HSS | | |
|---|---|---|---|
| Acabado | ◯ | ◯ | ◯ |
| Tipo | N | N | N |
| Descripción | Juego | V | F |



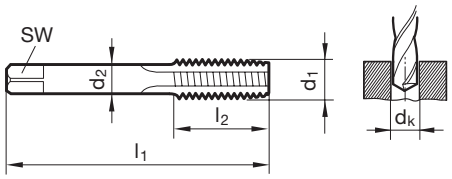
**~DIN 2181** — Artículo Nº **985** **986** **987**

| d1 | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|
| | mm | mm | mm | mm | mm | |
| 1 - 72 | 2,800 | 2,100 | 1,55 | 36,000 | 8,000 | 1,854 |
| 2 - 64 | 2,800 | 2,100 | 1,85 | 36,000 | 9,000 | 2,184 |
| 3 - 56 | 2,800 | 2,100 | 2,15 | 40,000 | 9,000 | 2,515 |
| 4 - 48 | 3,500 | 2,700 | 2,40 | 40,000 | 8,000 | 2,845 |
| 5 - 44 | 3,500 | 2,700 | 2,70 | 40,000 | 8,000 | 3,175 |
| 5 - 44 | 4,000 | 2,700 | 2,70 | 40,000 | 8,000 | 3,175 |
| 6 - 40 | 4,000 | 3,000 | 2,95 | 45,000 | 9,000 | 3,505 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 45,000 | 10,000 | 4,166 |
| 8 - 36 | 4,500 | 3,400 | 3,50 | 45,000 | 12,000 | 4,166 |
| 10 - 32 | 6,000 | 4,900 | 4,10 | 50,000 | 14,000 | 4,826 |
| 12 - 28 | 6,000 | 4,900 | 4,60 | 56,000 | 16,000 | 5,486 |
| 1/4 - 28 | 6,000 | 4,900 | 5,50 | 56,000 | 17,000 | 6,350 |
| 5/16 - 24 | 6,000 | 4,900 | 6,90 | 63,000 | 17,000 | 7,938 |
| 3/8 - 24 | 7,000 | 5,500 | 8,50 | 63,000 | 18,000 | 9,525 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 70,000 | 20,000 | 11,113 |
| 7/16 - 20 | 8,000 | 6,200 | 9,90 | 70,000 | 18,000 | 11,113 |
| 1/2 - 20 | 9,000 | 7,000 | 11,50 | 70,000 | 20,000 | 12,700 |
| 9/16 - 18 | 11,000 | 9,000 | 12,90 | 70,000 | 20,000 | 14,288 |
| 5/8 - 18 | 12,000 | 9,000 | 14,50 | 70,000 | 20,000 | 15,875 |
| 3/4 - 16 | 16,000 | 11,000 | 17,50 | 80,000 | 22,000 | 19,050 |
| 3/4 - 16 | 14,000 | 11,000 | 17,50 | 80,000 | 22,000 | 19,050 |
| 7/8 - 14 | 18,000 | 14,500 | 20,40 | 80,000 | 22,000 | 22,225 |
| 1 - 12 | 18,000 | 14,500 | 23,25 | 90,000 | 22,000 | 25,400 |

## Machos mano para roscas BSW

| | | | | |
|---|---|---|---|---|
| Material de corte | HSS | | | |
| Acabado | ◯ | ◯ | ◯ | ◯ |
| Tipo | N | N | N | N |
| Descripción | Juego | V | M | F |

| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |



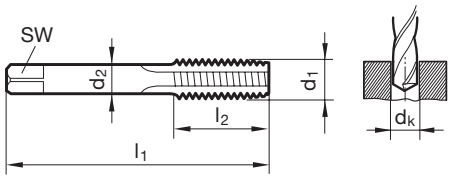
**~DIN 352** Artículo Nº **954** **955** **956** **957**

| d1 | P | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | |
| W3/32 | 48,000 | 2,800 | 2,100 | 1,80 | 40,000 | 9,000 | 2,381 |
| W1/8 | 40,000 | 3,500 | 2,700 | 2,50 | 40,000 | 11,000 | 3,175 |
| W1/8 | 40,000 | 4,000 | 2,700 | 2,50 | 40,000 | 11,000 | 3,175 |
| W5/32 | 32,000 | 4,500 | 3,400 | 3,20 | 45,000 | 12,000 | 3,969 |
| W3/16 | 24,000 | 6,000 | 4,900 | 3,60 | 50,000 | 14,000 | 4,762 |
| W7/32 | 24,000 | 6,000 | 4,900 | 4,50 | 56,000 | 16,000 | 5,556 |
| W1/4 | 20,000 | 6,000 | 4,900 | 5,10 | 56,000 | 16,000 | 6,350 |
| W5/16 | 18,000 | 6,000 | 4,900 | 6,50 | 63,000 | 18,000 | 7,938 |
| W3/8 | 16,000 | 7,000 | 5,500 | 7,90 | 70,000 | 20,000 | 9,525 |
| W7/16 | 14,000 | 8,000 | 6,200 | 9,20 | 70,000 | 22,000 | 11,113 |
| W1/2 | 12,000 | 9,000 | 7,000 | 10,50 | 75,000 | 25,000 | 12,700 |
| W9/16 | 12,000 | 11,000 | 9,000 | 12,00 | 80,000 | 28,000 | 14,287 |
| W5/8 | 11,000 | 12,000 | 9,000 | 13,50 | 80,000 | 30,000 | 15,876 |
| W3/4 | 10,000 | 16,000 | 11,000 | 16,25 | 95,000 | 33,000 | 19,051 |
| W1 | 8,000 | 18,000 | 14,500 | 22,00 | 110,000 | 38,000 | 25,401 |
| W1 1/2 | 6,000 | 32,000 | 22,000 | 33,50 | 150,000 | 50,000 | 38,101 |
| W1 5/8 | 5,000 | 32,000 | 24,000 | 35,50 | 150,000 | 58,000 | 41,277 |
| W1 3/4 | 5,000 | 36,000 | 29,000 | 39,00 | 160,000 | 58,000 | 44,452 |
| W2 | 4,500 | 40,000 | 32,000 | 44,50 | 180,000 | 65,000 | 50,802 |

## Machos mano para roscas GAS

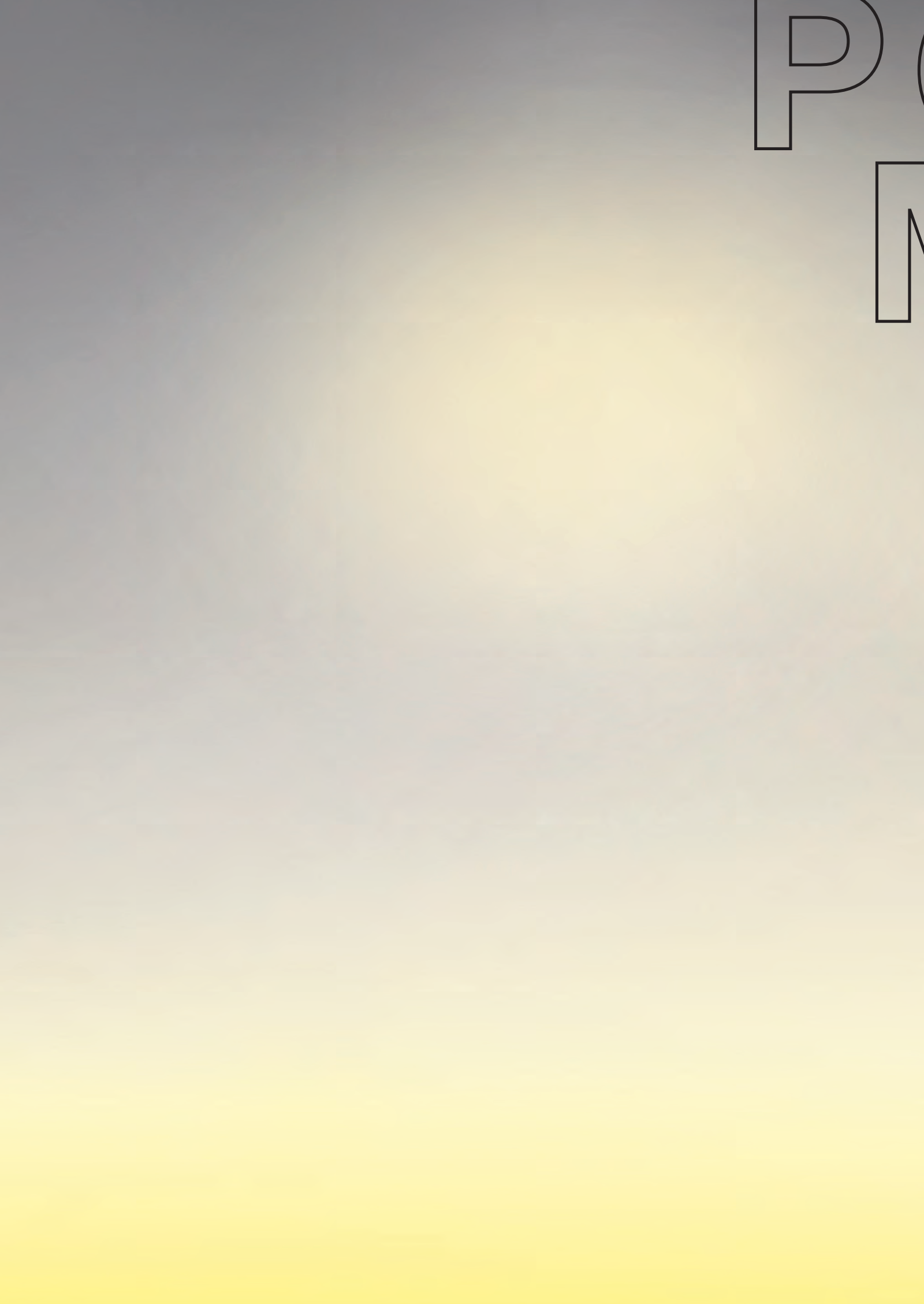
| | |
|---|---|
| P | ≤ 800 |
| M | |
| K | |
| N | ○ |
| S | |
| H | |

| Material de corte | HSS | | |
|---|---|---|---|
| Acabado | ◯ | ◯ | ◯ |
| Tipo | N | N | N |
| Descripción | Juego | V | F |



**DIN 5157** — Artículo Nº **958** **959** **960**

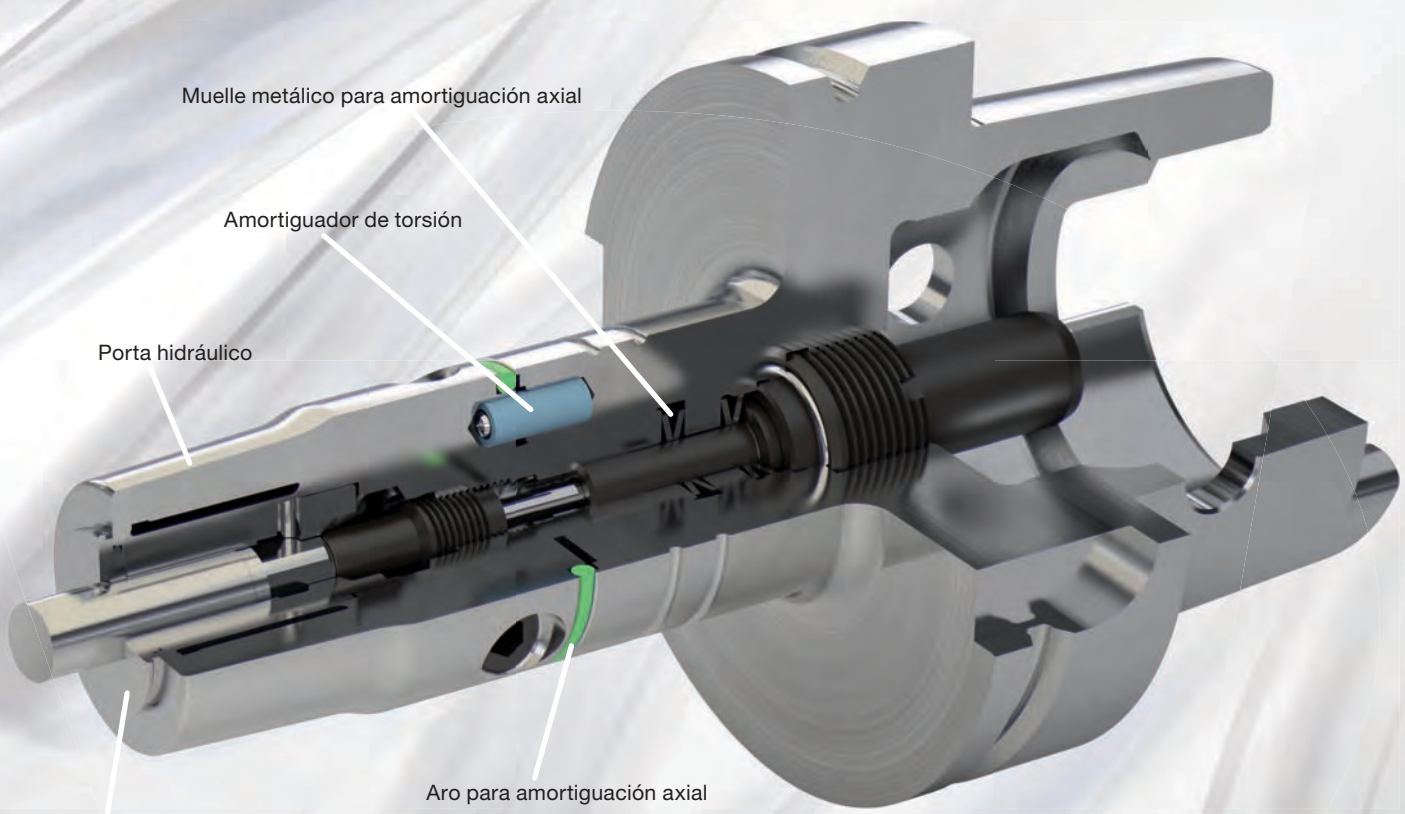
| d1 | P | d2 | SW | dk | l1 | l2 | Código Nº |
|---|---|---|---|---|---|---|---|
| | G/inch | mm | mm | mm | mm | mm | |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 63,000 | 20,000 | 9,728 |
| G1/8 | 28,000 | 7,000 | 5,500 | 8,80 | 63,000 | 18,000 | 9,728 |
| G1/4 | 19,000 | 11,000 | 9,000 | 11,80 | 70,000 | 20,000 | 13,157 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 70,000 | 20,000 | 16,662 |
| G3/8 | 19,000 | 12,000 | 9,000 | 15,25 | 70,000 | 22,000 | 16,662 |
| G1/2 | 14,000 | 16,000 | 12,000 | 19,00 | 80,000 | 22,000 | 20,955 |
| G5/8 | 14,000 | 18,000 | 14,500 | 21,00 | 80,000 | 22,000 | 22,911 |
| G3/4 | 14,000 | 20,000 | 16,000 | 24,50 | 90,000 | 22,000 | 26,441 |
| G1 | 11,000 | 25,000 | 20,000 | 30,75 | 100,000 | 25,000 | 33,249 |
| G1 1/4 | 11,000 | 32,000 | 24,000 | 39,50 | 125,000 | 40,000 | 41,910 |
| G1 3/8 | 11,000 | 36,000 | 29,000 | 41,75 | 125,000 | 40,000 | 44,323 |
| G1 1/2 | 11,000 | 36,000 | 29,000 | 45,25 | 140,000 | 40,000 | 47,803 |
| G1 3/4 | 11,000 | 40,000 | 32,000 | 51,00 | 140,000 | 40,000 | 53,746 |
| G2 | 11,000 | 45,000 | 35,000 | 57,00 | 160,000 | 40,000 | 59,614 |



# ORTA
# MACHOS

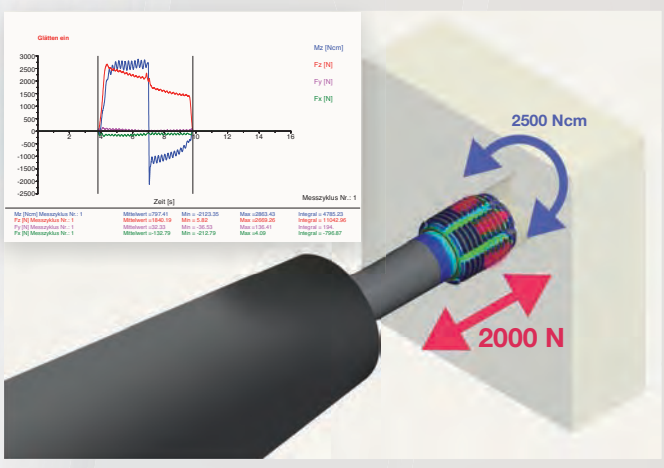
# GÜHROSYNC

## EL CAMINO FÁCIL HACIA LA ROSCA PERFECTA

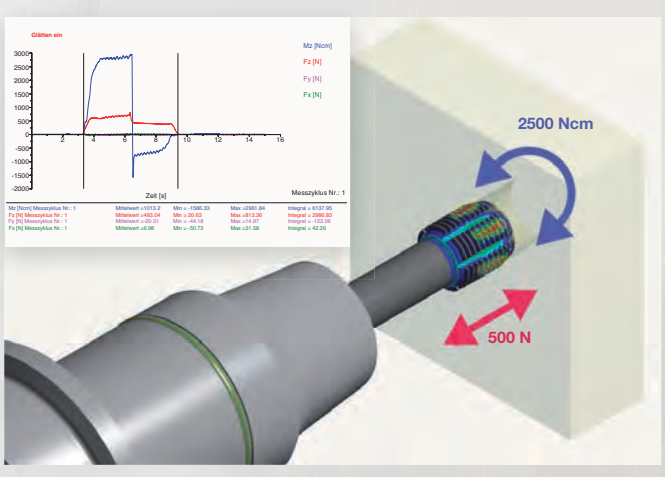



**Construcción inteligente:**
En el porta GühroSync se encuentran además de los elementos de amortiguación y suavización de las fuerzas axiales y radiales para el roscado el set de transmisión MMS o la refrigeración convencional y la.

La combinación óptima entre el muelle metálico de larga duración y los elementos de amortiguación reducen las fuerzas axiales y radiales considerablemente




Porta rígido




GühroSync

*MÁS CANTIDAD DE PIEZAS*

*EXCELENTE CALIDAD DE ROSCA*

*ALTA SEGURIDAD DE PROCESO*

**Hecho visible:**
El simbolo del muelle en el GÜHROSync muestra los efectos de las fuerzas axiales y radiales.

- *REDUCCIÓN DE FUERZAS AXIALES Y RADIALES*
- *COMPENSA ERRORES DE SINCRONIZACIÓN*
- *RÁPIDA Y PRECISA REGULACIÓN LONGITUDINAL DE HERRAMIENTAS*
- *DISEÑO MODULAR PARA DIFERENTES DISEÑOS ESTÁNDAR Y ESPECIALES*
- *MÁS VIDA ÚTIL*
- *TIEMPOS DE CICLO REDUCIDOS*
- *CALIDAD DE ROSCA MEJORADA*
- *PROCESOS MEJORADOS*

# LO MEJOR DE LOS DOS SISTEMAS

LAS VENTAJAS DE LOS PORTAHERRAMIENTAS HIDRÁULICOS & SINCRONIZADOS PARA TENSAR HERRAMIENTAS

**GUHROSync** Porta-machos Synchro

**4949** Set de transmisión de refrigerante HSK-A para refrigeración convencional

**4925** Punzón de apriete para
**4926** SK

**4927** Punzón de apriete para
**4928** MAS / BT

Porta herramientas térmico

**4736** HSK-A
**4726** TSG 3000 HSK-A
**4758** HSK-C
**4738** SK

Portas hidráulicos con más fuerza tensora

**4221** MAS-BT
**4299** HSK-A
**4267** HSK-C
**4213** SK

Porta herramientas Hidor-Syncro

**4601** HSK-A

Porta herramientas Hidor-Syncro

**4576** SK

Porta herramientas Hidor-Syncro

**4577** MAS-BT

**4525**
Hidor 12 / 20 porta Syncro con mango cilíndrico para refrigeración interna

**4364**
Tornillos reguladores para portas Syncro con refrigeración convencional

**4605** Casquillo reductor estanco
**4606** GÜHROJET Casquillo reductor

Herramienta de roscar:
Diámetro mango x cuadradillo

**4949**
Juego transmisor de refrigerante HSK-A para refrigeración convencional (cambio rápido de herramienta)

**4927**
**4928**
Punzón de tensión BT

**4925**
**4926**
Punzón de tensión SK

**4949**
Unidad de transmisión de refrigerante HSK-A para refrigeración convencional (cambio de herramienta automático)

**4949**
Unidad de transmisión de refrigerante HSK-A para refrigeración convencional (cambio de herramienta automático)

**4328**
Portamachos HSK-A con refrigeración interna

**4233**
Porta para mango cilíndrico Whistle-Notch MAS/BT

**4322**
Porta para mango cilíndrico Whistle-Notch SK

**4329**
Weldon
**4334**
Whistle-Notch
Porta para mango cilíndrico HSK-A
**4343**
Porta básico HSK-A

**4327**
Portamachos sincronizado HSK-A con refrigeración interna

**4340**
Portamachos de cambiio rápido sin refrigeración

**4342**
Portamachos de cambio rápido con refrigeración interna

**4326**
Porta sincronizado mango cilíndrico con refrigeración interna

**4206**
Encaje para portamachos de cambio rápido

**4364**
Tornillo regulador para porta sincronizado con refrigeración interna

**4308**
Pinza para machos de roscar

**4335**
Junta para tuercas de tensión

Herramienta de roscar

Herramienta de roscar

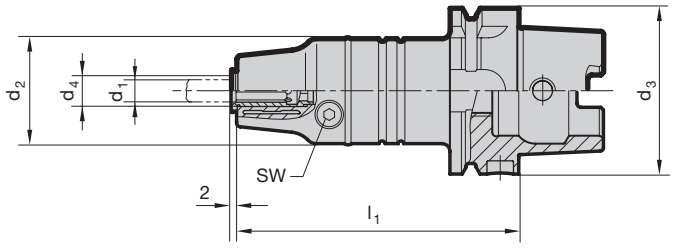
**Información sobre el producto**

- HSK-A según ISO 12164-1/DIN 69893-1
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3 mm
- adecuado para refrigeración interna, aro negro
- Presión de refrigerante max. 80 bares

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluida llave de regulación para tornillos de regulación

- Tornillos de regulación art.nº 4364 se piden por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado
- Set de transmisión de refrigerante art.nº 4949 convencional




GÜHROSync

**Artículo Nº** 4601

| HSK-A $d_3$ | $d_4$ mm | para diá. de mango $d_1$ x VKT | para roscas | $d_2$ mm | $l_1$ mm | Tiro/ presión ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| 63 | 12.00 | 2.8-10 | M3-M12 | 40 | 106.5 | 0.3 | 4 | 1.5 | 12.063 |
| 63 | 20.00 | 6-16 | M8-M20 | 40 | 120.5 | 0.3 | 5 | 1.6 | 20.063 |
| 100 | 12.00 | 2.8-10 | M3-M12 | 40 | 113.0 | 0.3 | 4 | 2.8 | 12.100 |
| 100 | 20.00 | 6-16 | M8-M20 | 40 | 127.0 | 0.3 | 5 | 2.9 | 20.100 |

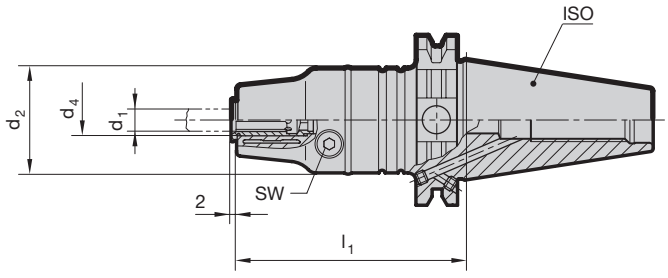
**Información sobre el producto**

- SK30 según DIN ISO 7388-1 forma AD sin transmisión por lo brida
- SK40 según DIN ISO 7388-1 forma AD/AF (AD/B)
- taladro para fomra B sellado en caso de suministro con punzones roscados
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- tornillo de regulación permite cuna regulación longitudinal de 3mm
- adecuado para refrigeración interna, aro negro
- presión de refrigerante max. 80 bares

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluida llave de regulación para tornillos de regulación

- Tornillos de regulación art.nº 4364 se piden por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado
- Punzón tensor art.nº 4925 o 4926 pedir por separado




GÜHROSync

**Artículo Nº** **4576**

| SK | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | Tiro/ presión ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| 30 | 12.00 | 2.8-10 | M3-M12 | 40 | 81 | 0.3 | 4 | 0.8 | 12,030 |
| 30 | 20.00 | 6-16 | M8-M20 | 40 | 95 | 0.3 | 5 | 0.9 | 20,030 |
| 40 | 12.00 | 2.8-10 | M3-M12 | 40 | 85 | 0.3 | 4 | 1.3 | 12,040 |
| 40 | 20.00 | 6-16 | M8-M20 | 40 | 99 | 0.3 | 5 | 1.4 | 20,040 |

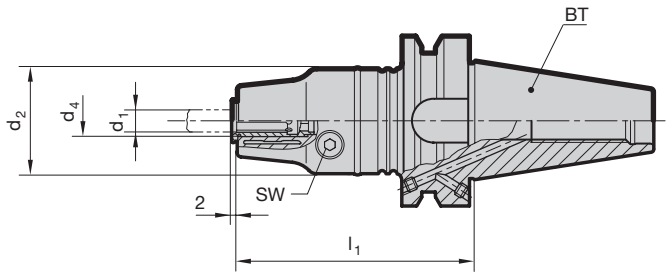
**Información sobre el producto**

- MAS/BT30 según DIN ISO 7388-2 forma JD sin transmisión de refrigerante por la periferia
- MAS/BT40 según DIN ISO 7388-2 forma JD/JF (Forma AD/B)
- Taladro para fomra B sellado en caso de suministro con punzones roscados
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3mm
- adecuado para refrigeración interna, aro negro
- Presión de refrigerante max. 80 bares

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluida llave de regulación para tornillos de regulación

- Tornillos de regulación art.nº 4364 se piden por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado
- Punzón tensor art.nº 4925 o 4926 pedir por separado




GÜHROSync

**Artículo Nº** **4577**

| BT | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | Tiro/ presión ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| 30 | 12.00 | 2.8-10 | M3-M12 | 40 | 81 | 0.3 | 4 | 0.8 | 12,030 |
| 30 | 20.00 | 6-16 | M8-M20 | 40 | 95 | 0.3 | 5 | 0.9 | 20,030 |
| 40 | 12.00 | 2.8-10 | M3-M12 | 40 | 85 | 0.3 | 4 | 1.3 | 12,040 |
| 40 | 20.00 | 6-16 | M8-M20 | 40 | 99 | 0.3 | 5 | 1.4 | 20,040 |

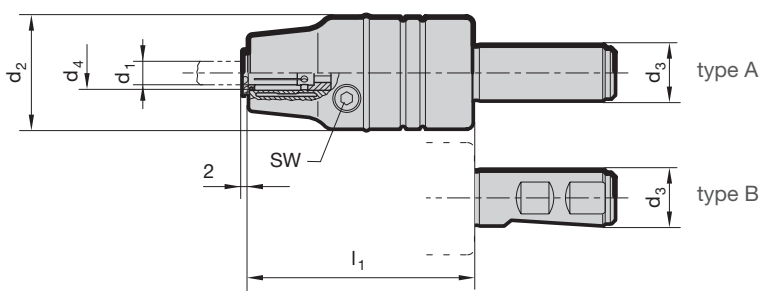
**Información sobre el producto**

- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3 mm
- Mango según DIN 1835-A para tensar en portas de precisión (portas hidráulicos, térmicos o de grandes fuerzas)
- adecuado para refrigeración interna, aro negro
- Presión de refrigerante max. 80 bares

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluida llave de regulación para tornillos de regulación

- Tornillos de regulación art.nº 4364 se piden por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado




**GÜHROSync**

**Artículo Nº** **4525**

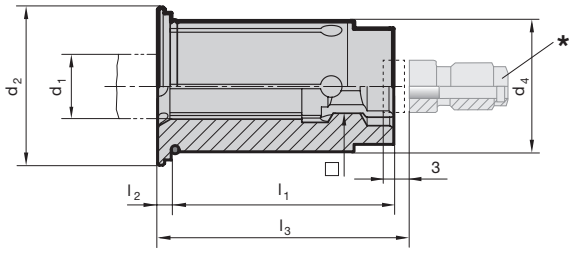
| $d_3$ h6 mm | $d_4$ mm | tipo | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | Tiro/ presión ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 12.00 | A | 2.8-10 | M3-M12 | 40 | 80 | 0.3 | 4 | 0.7 | 12,020 |
| 20 | 20.00 | A | 6-16 | M8-M20 | 40 | 94 | 0.3 | 5 | 0.8 | 20,020 |
| 25 | 12.00 | B | 2.8-10 | M3-M12 | 40 | 80 | 0.3 | 4 | 0.7 | 12,025 |
| 25 | 20.00 | B | 6-16 | M8-M20 | 40 | 94 | 0.3 | 5 | 0.8 | 20,025 |

**Información sobre el producto**

- para tensar mangos de herramientas de roscar con cuadradillo en GühroSync Syncro-portamachos
- Diámetro de tensado para mangos con tolerancia h6-h9
- Parte frontal cerrada para estanqueidad del refrigerante para herramientas de roscar con refrigeración interna
- tetilla de arrastre positiva
- Enroscar tornillo de regulación hasta tocar el mango del macho
- Tornillo de regulación permite cuna regulación longitudinal de 3mm

**Contenido de suministro**

- Tornillo regulador refrig. Int. Art.nº 4364 pedir por separado
- Tornillo regulador MMS Art.nº 4305 pedir por separado



**Artículo Nº** **4605**

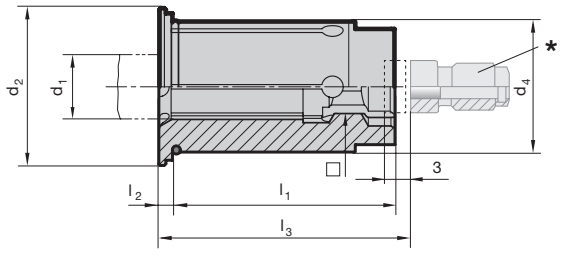
| $d_4$ mm | $d_1$ mm | □ mm | Norma | $d_1$ inch | □ inch | $d_2$ mm | $l_1$ mm | $l_2$ mm | $l_3$ mm | * para tornillo ajuste | para rosca | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.00 | 2.800 | 2.100 | DIN | - | - | 16.50 | 29.00 | 2.00 | - | - | M2 / M4 | 2,812 |
| 12.00 | 3.500 | 2.700 | DIN | - | - | 16.50 | 29.00 | 2.00 | - | - | M3 / M4.5 / M5 | 3,512 |
| 12.00 | 4.000 | 3.200 | JIS | - | - | 16.50 | 29.00 | 2.00 | - | - | M3 | 4,012 |
| 12.00 | 4.500 | 3.400 | DIN | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | M4 / M6 | 4,512 |
| 12.00 | 4.928 | 3.861 | ANSI | 0.194 | 0.152 | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | 10-24 & 10-32 | 4,912 |
| 12.00 | 5.000 | 4.000 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | M4 | 5,012 |
| 12.00 | 5.500 | 4.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | M5 | 5,512 |
| 12.00 | 5.588 | 4.191 | ANSI | 0.220 | 0.165 | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | 12-24 & 12-28 | 15,512 |
| 12.00 | 6.000 | 4.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 5.020 | M6 | 16,012 |
| 12.00 | 6.000 | 4.900 | DIN | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 6.020 | M4.5 / M5 / M6 / M8 | 6,012 |
| 12.00 | 6.200 | 5.000 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 6.020 | M7 / M8 | 6,212 |
| 12.00 | 6.477 | 4.851 | ANSI | 0.255 | 0.191 | 16.50 | 29.00 | 2.00 | 26.00 | 4364 6.020 | 1/4-20 & 1/4-28 | 6,412 |
| 12.00 | 7.000 | 5.500 | DIN / JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 4364 7.020 | M7 / M9 / M10 | 7,012 |
| 12.00 | 7.938 | 5.944 | ANSI | 0.3125 | 0.234 | 16.50 | 29.00 | 2.00 | 31.00 | 4364 7.020 | 1/16-27 | 7,912 |
| 12.00 | 8.000 | 6.200 | DIN | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 4364 8.020 | M8 / M11 | 8,012 |
| 12.00 | 8.000 | 6.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 4364 8.020 | M11 | 18,012 |
| 12.00 | 8.077 | 6.045 | ANSI | 0.318 | 0.238 | 16.50 | 29.00 | 2.00 | 31.00 | 4364 7.020 | 5/16-18 & 5/16-24 | 28,012 |
| 12.00 | 8.204 | 6.147 | ANSI | 0.323 | 0.242 | 16.50 | 29.00 | 2.00 | 31.00 | 4364 7.020 | 7/16-14 & 7/16-20 | 8,212 |
| 12.00 | 8.500 | 6.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 4364 8.020 | M12 | 8,512 |
| 12.00 | 9.000 | 7.000 | DIN | - | - | 16.50 | 29.00 | 2.00 | 32.00 | 4364 9.020 | M9 / M12 | 9,012 |
| 12.00 | 9.322 | 6.985 | ANSI | 0.367 | 0.275 | 16.50 | 29.00 | 2.00 | 32.00 | 4364 9.020 | 1/2-13 & 1/2-20 | 9,312 |
| 12.00 | 9.677 | 7.264 | ANSI | 0.381 | 0.286 | 16.50 | 29.00 | 2.00 | 33.00 | 4364 9.020 | 3/8-16 & 3/8-24 | 9,612 |
| 12.00 | 10.000 | 8.000 | DIN | - | - | 16.50 | 29.00 | 2.00 | 36.00 | 4364 10.020 | M10 | 10,012 |

**Información sobre el producto**

- para tensar mangos de herramientas de roscar con cuadradillo en GühroSync Syncro-portamachos
- Diámetro de tensado para mangos con tolerancia h6-h9
- Parte frontal cerrada para estanqueidad del refrigerante para herramientas de roscar con refrigeración interna
- tetilla de arrastre positiva
- Enroscar tornillo de regulación hasta tocar el mango del macho
- Tornillo de regulación permite cuna regulación longitudinal de 3mm

**Contenido de suministro**

- Tornillo regulador refrig. Int. Art.nº 4364 pedir por separado
- Tornillo regulador MMS Art.nº 4305 pedir por separado




**Artículo Nº** **4605**

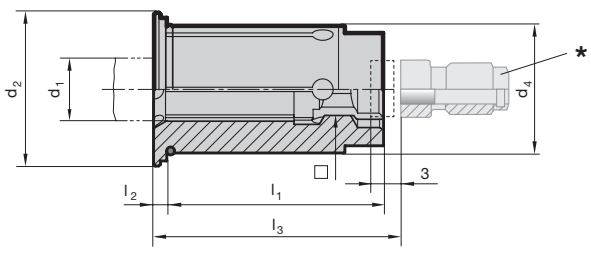
| $d_4$ mm | $d_1$ mm | □ mm | Norma | $d_1$ inch | □ inch | $d_2$ mm | $l_1$ mm | $l_2$ mm | $l_3$ mm | * para tornillo ajuste | para rosca | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.00 | 6.000 | 4.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 4364 6.032 | M6 | 26,020 |
| 20.00 | 6.000 | 4.900 | DIN | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 4364 6.032 | M4.5/M5/M6/M8 | 6,020 |
| 20.00 | 6.200 | 5.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 4364 6.032 | M7 / M8 | 6,220 |
| 20.00 | 6.477 | 4.851 | ANSI | 0.255 | 0.191 | 24.10 | 34.00 | 2.00 | 26.00 | 4364 6.032 | 1/4-20 & 1/4-28 | 6,420 |
| 20.00 | 7.000 | 5.500 | DIN / JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 4364 7.032 | M7 / M9 / M10 | 7,020 |
| 20.00 | 7.938 | 5.944 | ANSI | 0.3125 | 0.234 | 24.10 | 34.00 | 2.00 | 31.00 | 4364 7.032 | 1/16-27 | 7,920 |
| 20.00 | 8.000 | 6.200 | DIN | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 4364 8.032 | M8 / M11 | 8,020 |
| 20.00 | 8.000 | 6.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 4364 8.032 | M11 | 18,020 |
| 20.00 | 8.077 | 6.045 | ANSI | 0.318 | 0.238 | 24.10 | 34.00 | 2.00 | 31.00 | 4364 8.032 | 5/16-18 & 5/16-24 | 28,020 |
| 20.00 | 8.204 | 6.147 | ANSI | 0.323 | 0.242 | 24.10 | 34.00 | 2.00 | 31.00 | 4364 8.032 | 7/16-14 & 7/16-20 | 8,220 |
| 20.00 | 8.500 | 6.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 4364 8.032 | M12 | 8,520 |
| 20.00 | 9.000 | 7.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 32.00 | 4364 9.032 | M9 / M12 | 9,020 |
| 20.00 | 9.322 | 6.985 | ANSI | 0.367 | 0.275 | 24.10 | 34.00 | 2.00 | 32.00 | 4364 8.032 | 1/2-13 & 1/2-20 | 9,320 |
| 20.00 | 9.677 | 7.264 | ANSI | 0.381 | 0.286 | 24.10 | 34.00 | 2.00 | 33.00 | 4364 9.032 | 3/8-16 & 3/8-24 | 9,620 |
| 20.00 | 10.000 | 8.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 36.00 | 4364 10.032 | M10 | 10,020 |
| 20.00 | 10.500 | 8.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 36.00 | 4364 10.032 | M14 | 10,520 |
| 20.00 | 10.897 | 8.179 | ANSI | 0.4290 | 0.3220 | 24.10 | 34.00 | 2.00 | 35.00 | 4364 10.032 | 9/16-12 & 9/16-18 | 10,820 |
| 20.00 | 11.000 | 9.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 37.00 | 4364 11.032 | M14 | 11,020 |
| 20.00 | 12.000 | 9.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 37.00 | 4364 11.032 | M12 / M16 | 12,020 |
| 20.00 | 12.192 | 9.144 | ANSI | 0.480 | 0.36 | 24.10 | 34.00 | 2.00 | 36.00 | 4364 11.032 | 5/8-11 & 5/8-18 | 12,120 |
| 20.00 | 12.500 | 10.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 38.00 | 4364 11.032 | M16 | 12,520 |
| 20.00 | 13.000 | 10.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 38.00 | 4364 11.032 | M17 | 13,020 |
| 20.00 | 14.000 | 11.000 | DIN / JIS | - | - | 24.10 | 34.00 | 2.00 | 39.00 | 4364 11.032 | M18 | 14,020 |
| 20.00 | 14.288 | 10.693 | ANSI | 0.5625 | 0.421 | 24.10 | 34.00 | 2.00 | 38.00 | 4364 11.032 | 1/4-18 | 14,220 |
| 20.00 | 14.986 | 11.227 | ANSI | 0.590 | 0.442 | 24.10 | 34.00 | 2.00 | 39.00 | 4364 11.032 | 3/4-10 & 3/4-16 | 14,920 |
| 20.00 | 15.000 | 12.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 40.00 | 4364 16.032 | M20 | 15,020 |
| 20.00 | 16.000 | 12.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 41.00 | 4364 16.032 | M20 | 16,020 |

**Información sobre el producto**

- para tensar mangos de herramientas de roscar con cuadradillo en GühroSync Syncro-portamachos
- Diámetro de tensado para mangos con tolerancia h6-h9
- tetilla de arrastre positiva del casquillo en el Gührosync
- con ranuras de refrigeración para refrigeración periférica para mejora del proceso y el rendimiento
- Virutas angulares se expulsan con seguridad
- Enroscar tornillo de regulación hasta tocar el mango del macho
- Tornillo de regulación permite cuna regulación longitudinal de 3 mm

**Contenido de suministro**

- Tornillo regulador MMS Art.nº 4305 pedir por separado
- Tornillo regulador MMS Art.nº 4305 pedir por separado




**GÜHROJET**

**Artículo Nº** **4606**

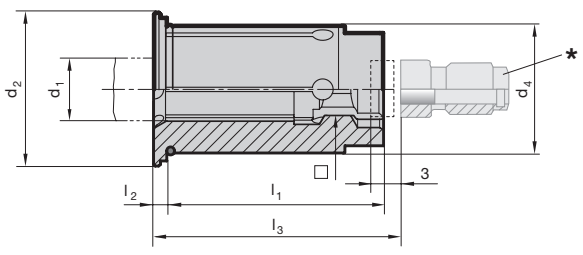
| $d_4$ mm | $d_1$ mm | □ mm | Norma | $d_1$ inch | □ inch | $d_2$ mm | $l_1$ mm | $l_2$ mm | $l_3$ mm | * para tornillo ajuste | para rosca | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.00 | 2.800 | 2.100 | DIN | - | - | 16.50 | 29.00 | 2.00 | - | - | M2 / M4 | 2.812 |
| 12.00 | 3.500 | 2.700 | DIN | - | - | 16.50 | 29.00 | 2.00 | - | - | M3 / M4.5 / M5 | 3.512 |
| 12.00 | 4.000 | 3.200 | JIS | - | - | 16.50 | 29.00 | 2.00 | - | - | M3 | 4.012 |
| 12.00 | 4.500 | 3.400 | DIN | - | - | 16.50 | 29.00 | 2.00 | - | - | M4 / M6 | 4.512 |
| 12.00 | 4.928 | 3.861 | ANSI | 0.194 | 0.152 | 16.50 | 29.00 | 2.00 | - | - | 10-24 & 10-32 | 4.912 |
| 12.00 | 5.000 | 4.000 | JIS | - | - | 16.50 | 29.00 | 2.00 | - | - | M4 | 5.012 |
| 12.00 | 5.500 | 4.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | - | - | M5 | 5.512 |
| 12.00 | 5.588 | 4.191 | ANSI | 0.220 | 0.165 | 16.50 | 29.00 | 2.00 | - | - | 12-24 & 12-28 | 15.512 |
| 12.00 | 6.000 | 4.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 6.020 | M6 | 16.012 |
| 12.00 | 6.000 | 4.900 | DIN | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 6.020 | M4.5/M5/M6/M8 | 6.012 |
| 12.00 | 6.200 | 5.000 | JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 6.020 | M7 / M8 | 6.212 |
| 12.00 | 6.477 | 4.851 | ANSI | 0.255 | 0.191 | 16.50 | 29.00 | 2.00 | 26.00 | 6.020 | 1/4-20 & 1/4-28 | 6.412 |
| 12.00 | 7.000 | 5.500 | DIN / JIS | - | - | 16.50 | 29.00 | 2.00 | 26.00 | 7.020 | M7 / M9 / M10 | 7.012 |
| 12.00 | 7.938 | 5.944 | ANSI | 0.3125 | 0.234 | 16.50 | 29.00 | 2.00 | 31.00 | 7.020 | 1/16-27 | 7.912 |
| 12.00 | 8.000 | 6.200 | DIN | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 8.020 | M8 / M11 | 8.012 |
| 12.00 | 8.000 | 6.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 8.020 | M11 | 18.012 |
| 12.00 | 8.077 | 6.045 | ANSI | 0.318 | 0.238 | 16.50 | 29.00 | 2.00 | 31.00 | 7.020 | 5/16-18 & 5/16-24 | 28.012 |
| 12.00 | 8.204 | 6.147 | ANSI | 0.323 | 0.242 | 16.50 | 29.00 | 2.00 | 31.00 | 8.020 | 7/16-14 & 7/16-20 | 8.212 |
| 12.00 | 8.500 | 6.500 | JIS | - | - | 16.50 | 29.00 | 2.00 | 31.00 | 8.020 | M12 | 8.512 |
| 12.00 | 9.000 | 7.000 | DIN | - | - | 16.50 | 29.00 | 2.00 | 32.00 | 9.020 | M9 / M12 | 9.012 |
| 12.00 | 9.322 | 6.985 | ANSI | 0.367 | 0.275 | 16.50 | 29.00 | 2.00 | 32.00 | 9.020 | 1/2-13 & 1/2-20 | 9.312 |
| 12.00 | 9.677 | 7.264 | ANSI | 0.381 | 0.286 | 16.50 | 29.00 | 2.00 | 33.00 | 9.020 | 3/8-16 & 3/8-24 | 9.612 |
| 12.00 | 10.000 | 8.000 | DIN | - | - | 16.50 | 29.00 | 2.00 | 36.00 | 10.020 | M10 | 10.012 |

**Información sobre el producto**

- para tensar mangos de herramientas de roscar con cuadradillo en GühroSync Syncro-portamachos
- Diámetro de tensado para mangos con tolerancia h6-h9
- tetilla de arrastre positiva del casquillo en el Gührosync
- con ranuras de refrigeración para refrigeración periférica para mejora del proceso y el rendimiento
- Virutas angulares se expulsan con seguridad
- Enroscar tornillo de regulación hasta tocar el mango del macho
- Tornillo de regulación permite cuna regulación longitudinal de 3 mm

**Contenido de suministro**

- Tornillo regulador MMS Art.nº 4305 pedir por separado
- Tornillo regulador MMS Art.nº 4305 pedir por separado



**GÜHROJET**

**Artículo Nº** **4606**

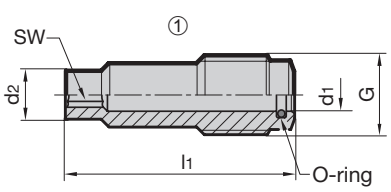
| $d_4$ mm | $d_1$ mm | □ mm | Norma | $d_1$ inch | □ inch | $d_2$ mm | $l_1$ mm | $l_2$ mm | $l_3$ mm | * para tornillo ajuste | para rosca | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.00 | 6.000 | 4.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 6.032 | M6 | 26,020 |
| 20.00 | 6.000 | 4.900 | DIN | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 6.032 | M4.5/M5/M6/M8 | 6,020 |
| 20.00 | 6.200 | 5.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 6.032 | M7 / M8 | 6,220 |
| 20.00 | 6.477 | 4.851 | ANSI | 0.255 | 0.191 | 24.10 | 34.00 | 2.00 | 26.00 | 6.032 | 1/4-20 & 1/4-28 | 6,420 |
| 20.00 | 7.000 | 5.500 | DIN / JIS | - | - | 24.10 | 34.00 | 2.00 | 26.00 | 7.032 | M7 / M9 / M10 | 7,020 |
| 20.00 | 7.938 | 5.944 | ANSI | 0.3125 | 0.234 | 24.10 | 34.00 | 2.00 | 31.00 | 7.032 | 1/16-27 | 7,920 |
| 20.00 | 8.000 | 6.200 | DIN | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 8.032 | M8 / M11 | 8,020 |
| 20.00 | 8.000 | 6.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 8.032 | M11 | 18,020 |
| 20.00 | 8.077 | 6.045 | ANSI | 0.318 | 0.238 | 24.10 | 34.00 | 2.00 | 31.00 | 8.032 | 5/16-18 & 5/16-24 | 28,020 |
| 20.00 | 8.204 | 6.147 | ANSI | 0.323 | 0.242 | 24.10 | 34.00 | 2.00 | 31.00 | 8.032 | 7/16-14 & 7/16-20 | 8,220 |
| 20.00 | 8.500 | 6.500 | JIS | - | - | 24.10 | 34.00 | 2.00 | 31.00 | 8.032 | M12 | 8,520 |
| 20.00 | 9.000 | 7.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 32.00 | 9.032 | M9 / M12 | 9,020 |
| 20.00 | 9.322 | 6.985 | ANSI | 0.367 | 0.275 | 24.10 | 34.00 | 2.00 | 32.00 | 9.032 | 1/2-13 & 1/2-20 | 9,320 |
| 20.00 | 9.677 | 7.264 | ANSI | 0.381 | 0.286 | 24.10 | 34.00 | 2.00 | 33.00 | 9.032 | 3/8-16 & 3/8-24 | 9,620 |
| 20.00 | 10.000 | 8.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 36.00 | 10.032 | M10 | 10,020 |
| 20.00 | 10.500 | 8.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 36.00 | 10.032 | M14 | 10,520 |
| 20.00 | 10.897 | 8.179 | ANSI | 0.4290 | 0.3220 | 24.10 | 34.00 | 2.00 | 35.00 | 10.032 | 9/16-12 & 9/16-18 | 10,820 |
| 20.00 | 11.000 | 9.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 37.00 | 11.032 | M14 | 11,020 |
| 20.00 | 12.000 | 9.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 37.00 | 11.032 | M12 / M16 | 12,020 |
| 20.00 | 12.192 | 9.144 | ANSI | 0.480 | 0.36 | 24.10 | 34.00 | 2.00 | 36.00 | 11.032 | 5/8-11 & 5/8-18 | 12,120 |
| 20.00 | 12.500 | 10.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 38.00 | 11.032 | M16 | 12,520 |
| 20.00 | 13.000 | 10.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 38.00 | 11.032 | M17 | 13,020 |
| 20.00 | 14.000 | 11.000 | DIN / JIS | - | - | 24.10 | 34.00 | 2.00 | 39.00 | 14.032 | M18 | 14,020 |
| 20.00 | 14.288 | 10.693 | ANSI | 0.5625 | 0.421 | 24.10 | 34.00 | 2.00 | 38.00 | 11.032 | 1/4-18 | 14,220 |
| 20.00 | 14.986 | 11.227 | ANSI | 0.590 | 0.442 | 24.10 | 34.00 | 2.00 | 39.00 | 11.032 | 3/4-10 & 3/4-16 | 14,920 |
| 20.00 | 15.000 | 12.000 | JIS | - | - | 24.10 | 34.00 | 2.00 | 40.00 | 16.032 | M20 | 15,020 |
| 20.00 | 16.000 | 12.000 | DIN | - | - | 24.10 | 34.00 | 2.00 | 41.00 | 16.032 | M20 | 16,020 |

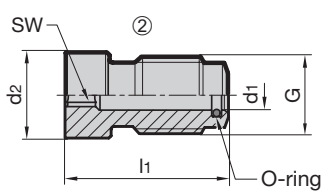
**Información sobre el producto**

- para portas Hidro-Syncro Art.nº 4601,4576,4577 y 4525
- para portas Syncro Art.nº 4326 y 4327
- para refrigeración convencional
- con tope plano para mangos normales
- Enroscar tornillo de regulación hasta tocar el mango del macho
- Tornillo de regulación permite cuna regulación longitudinal de 3 mm

**Contenido de suministro**

- con Joint torique para cerrar con seguridad



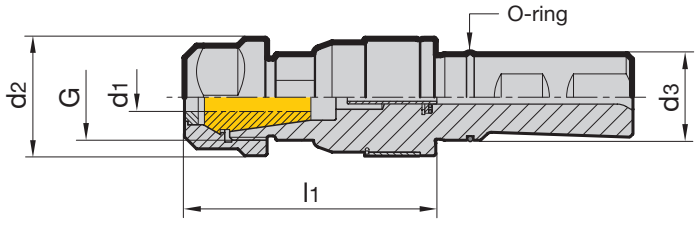




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Artículo Nº** | **4364** |
| para Nominal-Tamaño | para rosca de mango-Ø x □ | G | $d_1$ mm | $d_2$ mm | $l_1$ mm | SW | Anillo en O | Dibu-jo | **Código Nº** |
| ER20 / Hydro12 | < Ø6 | M8x1 | 3.6 | 3.3 | 28.0 | 2.0 | 3.5x1 | 1 | 5,020 |
| ER20 / Hydro12 | 6x4.9 | M8x1 | 3.6 | 4.8 | 26.0 | 2.5 | 3.5x1 | 1 | 6,020 |
| ER20 / Hydro12 | 7x5.5 | M8x1 | 3.6 | 5.4 | 25.8 | 2.5 | 3.5x1 | 1 | 7,020 |
| ER20 / Hydro12 | 8x6.2 | M8x1 | 3.6 | 6.1 | 20.9 | 2.5 | 3.5x1 | 1 | 8,020 |
| ER20 / Hydro12 | 9x7 | M8x1 | 3.6 | 6.9 | 20.3 | 2.5 | 3.5x1 | 1 | 9,020 |
| ER20 / Hydro12 | 10x8 | M8x1 | 3.6 | 7.8 | 15.8 | 2.5 | 3.5x1 | 2 | 10,020 |
| ER20 / Hydro12 | 11x9 | M8x1 | 3.6 | 8.8 | 14.8 | 2.5 | 3.5x1 | 2 | 11,020 |
| ER32 / Hydro20 | < Ø6 | M10x1 | 4.1 | 3.3 | 33.0 | 2.0 | 4x1 | 1 | 5,032 |
| ER32 / Hydro20 | 6x4.9 | M10x1 | 4.1 | 4.8 | 34.0 | 3.0 | 4x1 | 1 | 6,032 |
| ER32 / Hydro20 | 7x5.5 | M10x1 | 4.1 | 5.4 | 33.8 | 3.0 | 4x1 | 1 | 7,032 |
| ER32 / Hydro20 | 8x6.2 | M10x1 | 4.1 | 6.1 | 28.8 | 3.0 | 4x1 | 1 | 8,032 |
| ER32 / Hydro20 | 9x7 | M10x1 | 4.1 | 6.9 | 28.3 | 3.0 | 4x1 | 1 | 9,032 |
| ER32 / Hydro20 | 10x8 | M10x1 | 4.1 | 7.8 | 23.8 | 3.0 | 4x1 | 1 | 10,032 |
| ER32 / Hydro20 | 11x9 & 12x9 | M10x1 | 4.1 | 8.8 | 22.9 | 3.0 | 4x1 | 1 | 11,032 |
| ER32 / Hydro20 | 14x11 | M10x1 | 4.1 | 10.8 | 20.7 | 3.0 | 4x1 | 2 | 14,032 |
| ER32 / Hydro20 | 16x12 | M10x1 | 4.1 | 11.8 | 19.7 | 3.0 | 4x1 | 2 | 16,032 |
| ER32 / Hydro20 | 18x14.5 & 20x16 | M10x1 | 4.1 | 14.3 | 18.0 | 3.0 | 4x1 | 2 | 18,032 |

**Información sobre el producto**
- compensa errores de sincronización
- la compensación mínima longitudinal en dirección de la presión y el tiro entre el husillo sincronizado y el macho de roscar reduce altas fuerzas de fricción en los flancos de rosca y aumenta la calidad de rosca y la vida del macho
- el tornillo de regulación permite 2 - 3 mm de reajuste
- apropiado para refrigeración interna
- presión del refrigerante máx. 50 bares

**Contenido de suministro**
- incluido tuerca estanca IC/ER Art.Nº 4306 (*ver momento de tensión)
- incluida llave de regulación para tornillos de ajuste

- tornillos de regulación Art.Nº 4364, portapinzas de roscar Art.Nº 4308, junta Art.Nº 4335 y llave de tensión Art.Nº 4913 se debe pedir por separado



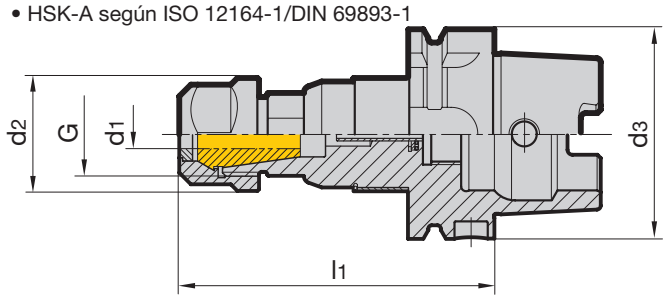

| Artículo Nº | | | | | | | | | | 4326 |
|---|---|---|---|---|---|---|---|---|---|---|
| $d_3$ ~DIN 1835 mm | Tamaño nominal | para roscas | $d_1$ mm | $d_2$ mm | $l_1$ mm | Tiro/ presión mm | Momento de tensión* Nm | G | kg | Código Nº |
| 25 | ER20 | M3.5-M14 | 4-11.0 | 34 | 73 | 0.15 | 40 | M25x1.5 | 0.50 | 20,025 |
| 25 | ER32 | M3.5-M28 | 4-20.0 | 50 | 88 | 0.15 | 170 | M40x1.5 | 1.30 | 32,025 |

## PORTA SINCRONIZADO PARA MANGO CIL. CON REFRIGERACIÓN INTERNA

**Información sobre el producto**
- compensan errores de sincronización
- garantizan con machos de roscar convencionales la mejor calidad de rosca y una vida óptima del macho
- compensación mínima longitudinal en dirección a la presión y el tiro entre el husillo sincronizado y el macho reduce las fuerzas de fricción en los flancos demasiado altas
- reduce al mínimo un posible incremento de la fuerza axial durante el ciclo de corte
- el tornillo de regulación permite 2 - 3 mm de reajuste
- apropiado para refrigeración interna
- presión del refrigerante máx. 50 bares
- HSK-A según ISO 12164-1/DIN 69893-1

**Contenido de suministro**
- incluido tuerca estanca IC/ER Art.Nº 4306 (*ver momento de tensión)
- incluida llave de regulación para tornillos de ajuste

- tornillos de regulación Art.Nº 4364, pinza portamachos Art.Nº 4308, junta Art.Nº 4335 y llave de tensión Art.Nº 4913 se debe pedir por separado
- para refrigeración convencional juego de transmisión de refrigerante Art.Nº 4949 se debe pedir por separado

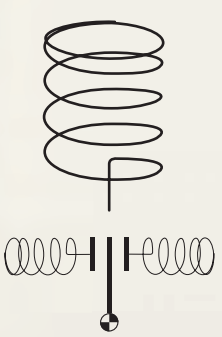



| Artículo Nº | | | | | | | | | | 4327 |
|---|---|---|---|---|---|---|---|---|---|---|
| HSK-A $d_3$ mm | Tamaño nominal | para roscas | $d_1$ mm | $d_2$ mm | $l_1$ mm | Tiro/ presión mm | Momento de tensión* Nm | G | kg | Código Nº |
| 63 | ER20 | M3.5-M14 | 4-11.0 | 34 | 95.5 | 0.15 | 40 | M25x1.5 | 1.00 | 20,063 |
| 63 | ER20 | M3.5-M14 | 4-11.0 | 34 | 160.0 | 0.15 | 40 | M25x1.5 | 1.50 | 20,163 |
| 63 | ER32 | M3.5-M28 | 4-20.0 | 50 | 109.0 | 0.15 | 170 | M40x1.5 | 1.70 | 32,063 |
| 100 | ER20 | M3.5-M14 | 4-11.0 | 34 | 102.0 | 0.15 | 40 | M25x1.5 | 2.50 | 20,100 |
| 100 | ER32 | M3.5-M28 | 4-20.0 | 50 | 115.5 | 0.15 | 170 | M40x1.5 | 2.70 | 32,100 |

# Portas GÜHROSync para roscar + machos de roscar VA

## El camino fácil hacia la rosca perfecta

El portamachos GÜHROSync ofrece con su sistema de tensión de herramientas óptimo y en combinación con los machos VA una evacuación de viruta excelente y mas rendimiento.

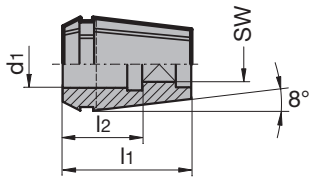


**Hecho visible:**
El simbolo del muelle en el GÜHROSync muestra los efectos de las fuerzas axiales y radiales.

**GÜHRO**Sync

**Información sobre el producto**

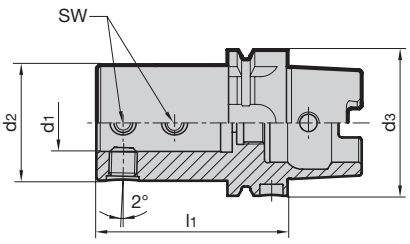
- para tensar herramientas de roscar con cuadradillo en portas sincronizados o portapinzas
- inferior a diámetro 4mm se sujetan con pinzas Art.Nº 4307 sin cuadradillo
- Par de tensión ver tuercas tensoras art.-nº. 4306




| | | | | | Artículo Nº | 4308 |
|---|---|---|---|---|---|---|
| Nominal-Tamaño | para diámetro de mango $d_1$ mm | Cuadradillo SW | $l_1$ mm | $l_2$ mm | Código Nº | |
| ER16 | 4.5 | 3.4 | 27.5 | 18 | 4,516 | |
| ER16 | 5.5 | 4.3 | 27.5 | 18 | 5,516 | |
| ER16 | 6.0 | 4.9 | 27.5 | 18 | 6,016 | |
| ER16 | 7.0 | 5.5 | 27.5 | 18 | 7,016 | |
| ER16 | 8.0 | 6.2 | 27.5 | 22 | 8,016 | |
| ER20 | 4.0 | 3.0 | 31.5 | 15 | 4,020 | |
| ER20 | 4.5 | 3.4 | 31.5 | 18 | 4,520 | |
| ER20 | 5.5 | 4.3 | 31.5 | 18 | 5,520 | |
| ER20 | 6.0 | 4.9 | 31.5 | 18 | 6,020 | |
| ER20 | 7.0 | 5.5 | 31.5 | 18 | 7,020 | |
| ER20 | 8.0 | 6.2 | 31.5 | 22 | 8,020 | |
| ER20 | 9.0 | 7.0 | 31.5 | 22 | 9,020 | |
| ER20 | 10.0 | 8.0 | 31.5 | 25 | 10,020 | |
| ER20 | 11.0 | 9.0 | 31.5 | 25 | 11,020 | |
| ER25 | 4.5 | 3.4 | 34.0 | 18 | 4,525 | |
| ER25 | 5.5 | 4.3 | 34.0 | 18 | 5,525 | |
| ER25 | 6.0 | 4.9 | 34.0 | 18 | 6,025 | |
| ER25 | 7.0 | 5.5 | 34.0 | 18 | 7,025 | |
| ER25 | 8.0 | 6.2 | 34.0 | 22 | 8,025 | |
| ER25 | 9.0 | 7.0 | 34.0 | 22 | 9,025 | |
| ER25 | 10.0 | 8.0 | 34.0 | 25 | 10,025 | |
| ER25 | 11.0 | 9.0 | 34.0 | 25 | 11,025 | |
| ER25 | 12.0 | 9.0 | 34.0 | 25 | 12,025 | |
| ER32 | 4.0 | 3.0 | 40.0 | 15 | 4,032 | |
| ER32 | 4.5 | 3.4 | 40.0 | 18 | 4,532 | |
| ER32 | 5.5 | 4.3 | 40.0 | 18 | 5,532 | |
| ER32 | 6.0 | 4.9 | 40.0 | 18 | 6,032 | |
| ER32 | 7.0 | 5.5 | 40.0 | 18 | 7,032 | |
| ER32 | 8.0 | 6.2 | 40.0 | 22 | 8,032 | |
| ER32 | 9.0 | 7.0 | 40.0 | 22 | 9,032 | |
| ER32 | 10.0 | 8.0 | 40.0 | 25 | 10,032 | |
| ER32 | 11.0 | 9.0 | 40.0 | 25 | 11,032 | |
| ER32 | 12.0 | 9.0 | 40.0 | 25 | 12,032 | |
| ER32 | 14.0 | 11.0 | 40.0 | 25 | 14,032 | |
| ER32 | 16.0 | 12.0 | 40.0 | 25 | 16,032 | |
| ER32 | 18.0 | 14.5 | 40.0 | 25 | 18,032 | |
| ER32 | 20.0 | 16.0 | 40.0 | 28 | 20,032 | |
| ER40 | 7.0 | 5.5 | 46.0 | 18 | 7,040 | |
| ER40 | 8.0 | 6.2 | 46.0 | 22 | 8,040 | |
| ER40 | 9.0 | 7.0 | 46.0 | 22 | 9,040 | |
| ER40 | 10.0 | 8.0 | 46.0 | 25 | 10,040 | |
| ER40 | 11.0 | 9.0 | 46.0 | 25 | 11,040 | |
| ER40 | 12.0 | 9.0 | 46.0 | 25 | 12,040 | |
| ER40 | 14.0 | 11.0 | 46.0 | 25 | 14,040 | |
| ER40 | 16.0 | 12.0 | 46.0 | 25 | 16,040 | |
| ER40 | 18.0 | 14.5 | 46.0 | 25 | 18,040 | |
| ER40 | 20.0 | 16.0 | 46.0 | 28 | 20,040 | |
| ER40 | 22.0 | 18.0 | 46.0 | 28 | 22,040 | |

**Información sobre el producto**
- para portas de cambio rápido y portamachos sincronizados con mango cilíndrico (excepto art.-nº. 4342)
- HSK-A según ISO 12164-1/DIN 69893-1

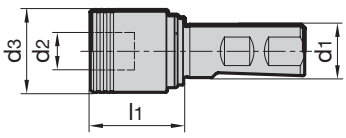
**Contenido de suministro**
- incluidos tornillos de tensión Art.Nº 4903, Código-Nº 12.001
- juego de transmisión de refrigerante Art. Nº 4949 se debe pedir por separado




| | | | | | | Artículo Nº | 4343 |
|---|---|---|---|---|---|---|---|
| HSK-A $d_3$ | $d_1$ mm | $d_2$ mm | $l_1$ mm | SW | kg | Código Nº | |
| 50 | 25 | 50 | 80 | 6 | 0.89 | 25,050 | |
| 63 | 25 | 50 | 82 | 6 | 1.26 | 25,063 | |
| 80 | 25 | 50 | 87 | 6 | 3.10 | 25,080 | |
| 100 | 25 | 50 | 89 | 6 | 4.08 | 25,100 | |

## PORTAMACHOS DE CAMBIO RÁPIDO SIN REFRIGERACIÓN INTERNA

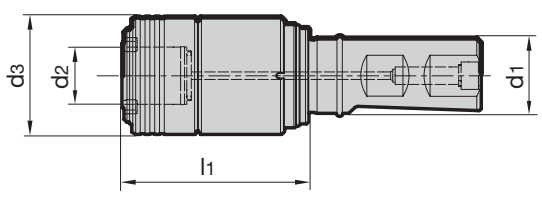
**Información sobre el producto**
- los portamachos de cambio rápido están provistos de un compensador longitudinal sobre rodamientos que compensa las diferencias entre el avance del husillo y el paso de rosca




| | | | | | | | Artículo Nº | 4340 |
|---|---|---|---|---|---|---|---|---|
| para roscas | $d_1$ mm | $d_2$ mm | $d_3$ mm | $l_1$ mm | Tiro/presión mm | kg | Código Nº | |
| M3-M12 | 25 | 19 | 36 | 39 | ± 7.5 | 0.4 | 19,025 | |
| M8-M20 | 25 | 31 | 53 | 63 | ±10.0 | 0.9 | 31,025 | |

**Información sobre el producto**

- los portamachos de cambio rápido están provistos de un compensador longitudinal sobre rodamientos que compensa las diferencias entre el avance del husillo y el paso de rosca
- el refrigerante se transporta por el portamachos hasta el mango de la herramienta Los elementos funcionales están estancos
- presión del refrigerante máx. 50 bares

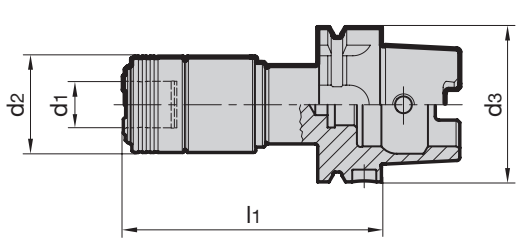



| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | **Artículo Nº** | **4342** |
| para roscas | $d_1$ mm | $d_2$ mm | $d_3$ mm | $l_1$ mm | Tiro/presión mm | kg | **Código Nº** |
| M3-M12 | 25 | 19 | 39 | 62 | 7.5/7.5 | 0.6 | 19,025 |
| M8-M20 | 25 | 31 | 60 | 88 | 10/10 | 1.0 | 31,025 |

## PORTA DE CAMBIO RÁPIDO HSK-A CON REFRIGERACIÓN INTERIOR

**Información sobre el producto**

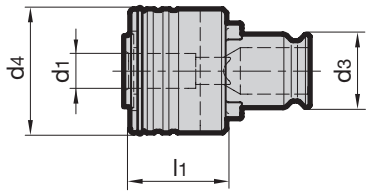
- los portamachos de cambio rápido están provistos de un compensador longitudinal sobre rodamientos que compensa las diferencias entre el avance del husillo y el paso de rosca
- garantizan con machos de roscar convencionales la mejor calidad de rosca y una vida óptima del macho
- presión de refrigerante máx. 50 bares
- HSK-A según ISO 12164-1/DIN 69893-1




| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | **Artículo Nº** | **4328** |
| HSK-A $d_3$ mm | para roscas | $d_1$ mm | $d_2$ mm | $l_1$ mm | Tiro/presión ± mm | kg | **Código Nº** |
| 63 | M3-M12 | 19 | 39 | 105 | 7.5 | 1.13 | 19,063 |
| 63 | M8-M20 | 31 | 60 | 140 | 10.0 | 2.28 | 31,063 |

**Información sobre el producto**

- con embrague de seguridad
- apropiado para herramientas de roscar de HSS
- se precisa una ranura de sujeción en el mango en el caso de herramientas de roscar de VHM para garantizar una tensión óptima
- apropiado para transmisión de refrigeración interna máx. 50 bares




| | | | | | Artículo Nº | 4206 |
|---|---|---|---|---|---|---|
| para roscas | Diámetro de mango x cuadradillo $d_1$ mm | $d_3$ mm | $d_4$ mm | $l_1$ mm | Código Nº | |
| M3-M12 | 2.2 | 19 | 32 | 25 | 19,022 | |
| M3-M12 | 2.5 x 2.1 | 19 | 32 | 25 | 19,025 | |
| M3-M12 | 2.8 x 2.1 | 19 | 32 | 25 | 19,028 | |
| M3-M12 | 3.5 x 2.7 | 19 | 32 | 25 | 19,035 | |
| M3-M12 | 4 x 3 | 19 | 32 | 25 | 19,040 | |
| M3-M12 | 4.5 x 3.4 | 19 | 32 | 25 | 19,045 | |
| M3-M12 | 5.5 x 4.5 | 19 | 32 | 25 | 19,055 | |
| M3-M12 | 6 x 4.9 | 19 | 32 | 25 | 19,060 | |
| M3-M12 | 7 x5.5 | 19 | 32 | 25 | 19,070 | |
| M3-M12 | 8 x 6.2 | 19 | 32 | 25 | 19,080 | |
| M3-M12 | 9 x 7 | 19 | 32 | 25 | 19,090 | |
| M3-M12 | 10 x 8 | 19 | 32 | 25 | 19,100 | |
| M8-M20 | 6 x 4.9 | 31 | 50 | 34 | 31,060 | |
| M8-M20 | 7 x 5.5 | 31 | 50 | 34 | 31,070 | |
| M8-M20 | 8 x 6.2 | 31 | 50 | 34 | 31,080 | |
| M8-M20 | 9 x 7 | 31 | 50 | 34 | 31,090 | |
| M8-M20 | 10 x 8 | 31 | 50 | 34 | 31,100 | |
| M8-M20 | 11 x 9 | 31 | 50 | 34 | 31,110 | |
| M8-M20 | 12 x 9 | 31 | 50 | 34 | 31,120 | |
| M8-M20 | 14 x 11 | 31 | 50 | 34 | 31,140 | |
| M8-M20 | 16 x 12 | 31 | 50 | 34 | 31,160 | |

# SISTEMAS MMS DE GÜHRING

## SOLAMENTE LA CANTIDAD DE ACEITE REALMENTE NECESARIA

Como uno de los pioneros de la tecnología MMS se nos conoce por nuestro “know-how” de hace años en la lubrificación mínima. Nuestros portaherramientas MMS, utilizados miles de veces y con nuestra norma de fabrica reconocida en la industria del automóvil, se pueden comprar como solución confeccionada lista para su aplicación para sistemas de uno y de dos canales MMS.

Se consiguen gracias a la refrigeración adaptada, mejores rendimientos y mayores velocidades de corte, de la misma forma que se crean calidades máximas de acabado por el lubricante tan puro. ¡Las piezas y las virutas se mantienen secas!

### 1 MQL BY GÜHRING

Nuestros productos para la técnica MMS de un canal están marcadas con este símbolo.

**Símbolo óptico para el sistema de un canal es el tornillo MMS** para la regulación longitudinal de color oro.

### 2 MQL BY GÜHRING

Nuestros productos para la técnica MMS de dos canales están marcados con este símbolo

**Símbolo óptico para el sistema de dos canales es el tornillo MMS** para la regulación longitudinal de color negro.

**4508** 1 MQL
MQL 1-canal-juego transmisor de refrigerante HSK-A

**4511** 2 MQL
MQL 2-canales-juego transmisor de refrigerante HSK-A

**4513** 1 MQL 2 MQL
MQL juego transmisor de refrigerante HSK-A (pieza de llenado)

MQL porta térmico HSK-A para el cambio de herramienta automático

**4741** 1 MQL
**4614** 2 MQL
manual

**4735** 1 MQL
**4613** 2 MQL

MMS porta hidráulico HSK-A para cambio de herramienta automático

**4210** 1 MQL
**4612** 2 MQL
manual

**4209** 1 MQL
**4611** 2 MQL

MQL 1- canal porta hidráulico synchro HSK-A (para cambio de hta. automático)

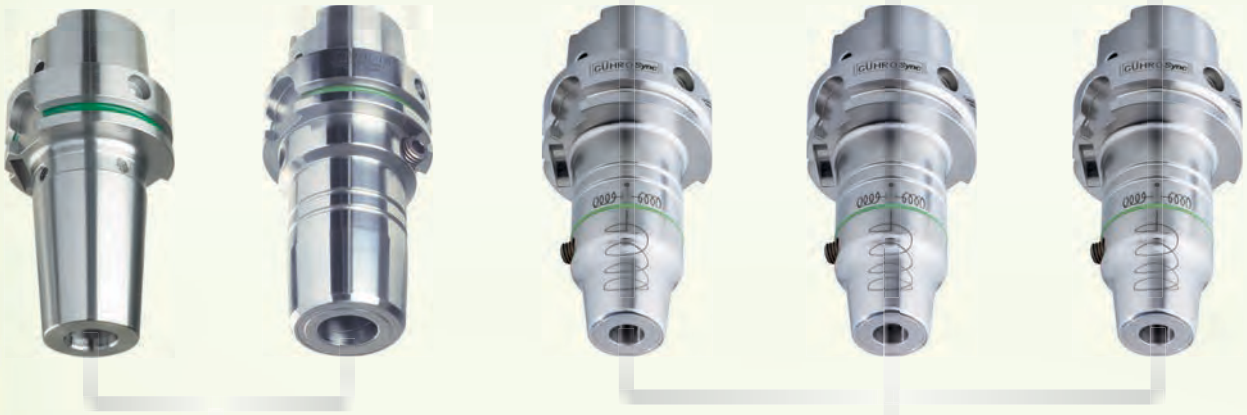
**4602** 1 MQL

MQL 2- canales porta hidráulico synchro HSK-A (para cambio de hta. automático)

**4603** 2 MQL

MQL porta hidráulico synchro HSK-A (p. cambio de hta. manual)

**4604** 1 MQL 2 MQL



**4524** 1 MQL 2 MQL
MQL hidr-Ø 12 / Ø 20
MQL porta hidráulico synchro con mango cilíndrico Ø 20

**4305**
Tornillo transmisor para porta-machos sincronizados para MQL

**4605**
Casquillo reductor estanco

**4606**
Casquillo reductor GÜHROJET

Herramienta de roscar con mango MQL:
dia. mango x quadrillo

Set transmisor MQL de refrigerante para cambio manual

Set transmisor de refrigerante para cambio automático

Set transmisor MQL de refrigerante para cambio automático

**4298**

Porta-machos Synchro para cambio manual para MQL con canal de refrigeración simple y doble

**4330**

Porta-machos Synchro HSK-A para cambio automático MQL con canal de refrigeración simple y doble

**4341**

Porta machos Synchor HSK-A para cambio automático MQL con canal de refrigeración doble

**4305**

Tornillo transmisor para porta-machos sincronizados para MQL

**4308**

Pinza para machos

**4335**

Junta selladora

Herramienta de roscar

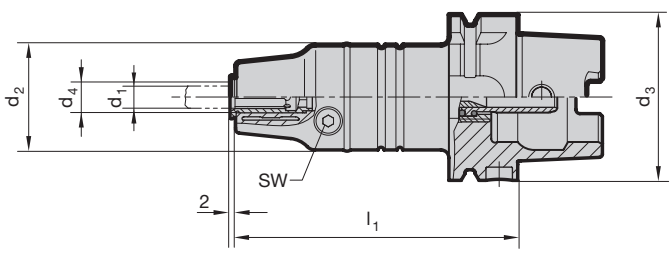
**Información sobre el producto**

- para sistemas MQL de canal simple
- presión MQL hasta max. 16 bares
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3mm
- Gühring MQL identificado con aro verde

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- Incluido set transmisor de refrigerante MQL para cambio automático Art.nº 4508
- Incluida llave de regulación para tornillo MQL

- Art.nº 4305 tornillo de ajuste MQL, pedir por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado




1 MQL BY GÜHRING

GÜHROSync

**Artículo Nº** **4602**

| HSK-A $d_3$ | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| 63 | 12.00 | 2.8-10 | M3-M12 | 40 | 106.5 | 0.3 | 4 | 1.5 | 12.063 |
| 63 | 20.00 | 6-16 | M8-M20 | 40 | 120.5 | 0.3 | 5 | 1.6 | 20.063 |
| 100 | 12.00 | 2.8-10 | M3-M12 | 40 | 113.0 | 0.3 | 4 | 2.8 | 12.100 |
| 100 | 20.00 | 6-16 | M8-M20 | 40 | 127.0 | 0.3 | 5 | 2.9 | 20.100 |

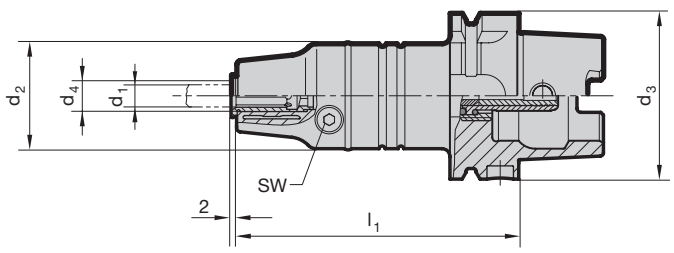
**Información sobre el producto**

- para MQL sistemas de 2 canales
- presión MQL hasta max. 16 bares
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3mm
- Gühring MQL identificado con aro verde

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluido ser transmisor de refrigerante MQL Art.nº 4511
- incluida llave de regulación tornillos MQL

- Art.nº 4305 tornillo de ajuste MQL, pedir por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado




2 MQL BY GÜHRING

GÜHROSync

| Artículo Nº | | | | | | | | | 4603 |
|---|---|---|---|---|---|---|---|---|---|
| HSK-A $d_3$ | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | SW | kg | Código Nº |
| 63 | 12.00 | 2.8-10 | M3-M12 | 40 | 106.5 | 0.3 | 4 | 1.5 | 12,063 |
| 63 | 20.00 | 6-16 | M8-M20 | 40 | 120.5 | 0.3 | 5 | 1.6 | 20,063 |
| 100 | 12.00 | 2.8-10 | M3-M12 | 40 | 113.0 | 0.3 | 4 | 2.8 | 12,100 |
| 100 | 20.00 | 6-16 | M8-M20 | 40 | 127.0 | 0.3 | 5 | 2.9 | 20,100 |

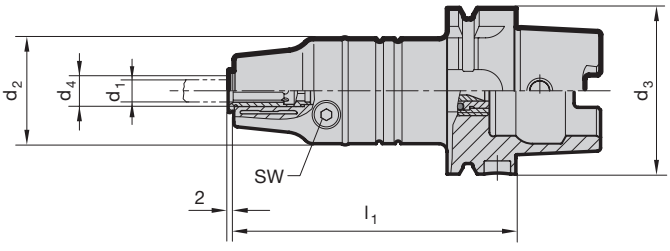
**Información sobre el producto**

- para sistemas MQL de un canal y de doble canal
- presión MQL hasta max. 16 bares
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- Compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- Tornillo de regulación permite cuna regulación longitudinal de 3mm
- Gühring MQL identificado con aro verde

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluido set transmisor de refrigerante MQL para cambio automático (pieza llenado) Art.nº 4513
- incluida llave de regulación para tornillos de regulación MQL

- Art.nº 4305 tornillo de ajuste MQL, pedir por separado
- Casquillos reductores art.nº 4605 o 4606 se piden separado




1 MQL BY GÜHRING

2 MQL BY GÜHRING

GÜHROSync

| Artículo Nº | | | | | | | | | 4604 |
|---|---|---|---|---|---|---|---|---|---|
| HSK-A $d_3$ | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | SW | kg | Código Nº |
| 63 | 12.00 | 2.8-10 | M3-M12 | 40 | 106.5 | 0.3 | 4 | 1.5 | 12,063 |
| 63 | 20.00 | 6-16 | M8-M20 | 40 | 120.5 | 0.3 | 5 | 1.6 | 20,063 |
| 100 | 12.00 | 2.8-10 | M3-M12 | 40 | 113.0 | 0.3 | 4 | 2.8 | 12,100 |
| 100 | 20.00 | 6-16 | M8-M20 | 40 | 127.0 | 0.3 | 5 | 2.9 | 20,100 |

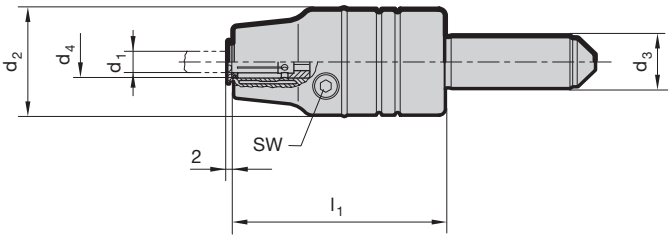
**Información sobre el producto**

- para sistemas MQL de un canal y de doble canal
- presión MQL hasta max. 16 bares
- compensa los fallos de sincronización
- garantiza la mejor calidad de rosca y un buen rendimiento
- compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos
- reduce el aumento de la fuerza axial durante el ciclo de corte al mínimo
- tensión hidráulica comfortable con casquillo reductor con tetilla de arrastre activa
- tornillo de regulación permite cuna regulación longitudinal de 3mm
- mango para DIN 1835-A o para portas de precisión (hidráulicos o portas con fuerza tensora reforzada)
- Gühring MQL identificado con aro verde

**Contenido de suministro**

- incluida llave tensora art.nº 4912
- incluida llave de regulación para tornillos de regulación MQL

- Art.nº 4305 tornillo de ajuste MQL, pedir por separado
- Art.nº 4605 y 4606, casquillos reductores, pedir por separado



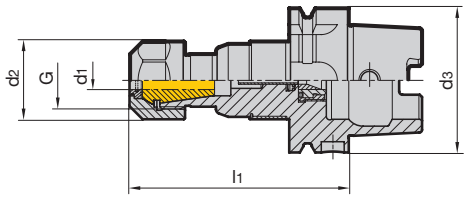

1 MQL BY GÜHRING
2 MQL BY GÜHRING
GÜHROSync

**Artículo Nº** 4524

| $d_3$ h6 mm | $d_4$ mm | para diá. de mango $d_1$ | para roscas | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | SW | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| 20 | 12.00 | 2.8-10 | M3-M12 | 40 | 80 | 0.3 | 4 | 0.7 | 12,020 |
| 20 | 20.00 | 6-16 | M8-M20 | 40 | 94 | 0.3 | 5 | 0.8 | 20,020 |

**Información sobre el producto**
- para sistemas MQL de un canal y de doble canal
- compensa errores de sincronización
- compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos, que pueden ocasionar altas fuerzas de fricción en los flancos de rosca y mejorar la calidad de rosca y vida útil del macho
- tornillo de compensación lateral permite 2 a 3 mm de reajuste
- presión MQL hasta max. 10 bares
- transmisor de refrigerante MQL montado
- Gühring MQL identificado con aro verde

**Contenido de suministro**
- incluido juego de transmisión de refrigerante MQL para cambio de herramienta manual (pieza de llenado)
- incluida tuerca tensora, estanca IC/ER Art.Nº 4306 (*ver momento de tensión)
- incluida llave de regulación para tornillo de ajuste MQL
- tornillo de regulación MQL Art.Nº 4305 se debe pedir por separado
- junta Art.Nº 4335 se debe pedir por separado
- pinza para machos de roscar Art.Nº 4308 se debe pedir por separado
- llave tensora Art.Nº 4913 para tuerca-ER se debe pedir por separado




1 MQL BY GÜHRING 2 MQL BY GÜHRING

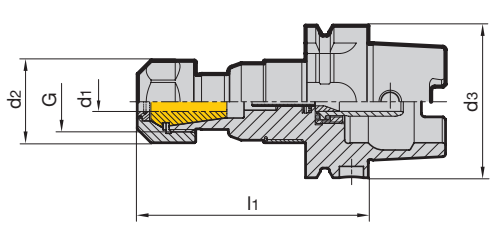
| Artículo Nº | 4298 |
|---|---|

| HSK-A $d_3$ | Tamaño nominal | para roscas | G | $d_1$ mm | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | torque* Nm | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| 63 | ER20 | M3.5-M14 | M25x1.5 | 4.5-11 | 34 | 95.5 | 0.15 | 40 | 1.00 | 20,063 |
| 63 | ER32 | M3.5-M28 | M40x1.5 | 4.5-20 | 50 | 109.0 | 0.15 | 170 | 1.50 | 32,063 |

## MMS 1-CANAL-PORTA SYNCHRO HSK-A PARA EL CAMBIO DE HERRAMIENTA AUTOMÁTICO

**Información sobre el producto**
- para sistemas MQL de canal simple
- compensa errores de sincronización
- compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos, que pueden ocasionar altas fuerzas de fricción en los flancos de rosca y mejorar la calidad de rosca y vida útil del macho
- tornillo de compensación lateral permite 2 a 3 mm de reajuste
- presión MQL hasta max. 10 bares
- transmisor de refrigerante MQL montado
- Gühring MQL identificado con aro verde

**Contenido de suministro**
- incluido juego de transmisión de refrigerante MQL para cambio de herramienta automático
- incluida tuerca tensora, estanca IC/ER Art.Nº 4306 (*ver momento de tensión)
- incluida llave de regulación para tornillo de ajuste MQL
- tornillo de regulación MQL Art.Nº 4305 se debe pedir por separado
- junta Art.Nº 4335 se debe pedir por separado
- pinza para machos de roscar Art.Nº 4308 se debe pedir por separado
- llave tensora Art.Nº 4913 para tuerca-ER se debe pedir por separado




1 MQL BY GÜHRING

| Artículo Nº | 4330 |
|---|---|

| HSK-A $d_3$ | Tamaño nominal | para roscas | G | $d_1$ mm | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | torque* Nm | kg | Código Nº |
|---|---|---|---|---|---|---|---|---|---|---|
| 63 | ER20 | M3.5-M14 | M25x1.5 | 4.5-11 | 34 | 95.5 | 0.15 | 40 | 1.00 | 20,063 |
| 63 | ER32 | M3.5-M28 | M40x1.5 | 4.5-20 | 50 | 109.0 | 0.15 | 170 | 1.50 | 32,063 |
| 100 | ER20 | M3.5-M14 | M25x1.5 | 4.5-11 | 34 | 102.0 | 0.15 | 40 | 2.40 | 20,100 |
| 100 | ER32 | M3.5-M28 | M40x1.5 | 4.5-20 | 50 | 115.5 | 0.15 | 170 | 3.00 | 32,100 |

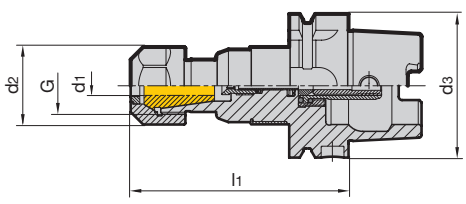
**Información sobre el producto**

- para sistemas MQL de doble canal
- compensa errores de sincronización
- compensación longitudinal en dirección de apriete y de tiro entre el husillo sincronizado y la herramienta de roscar reduciendo fuerzas de fricción en los flancos, que pueden ocasionar altas fuerzas de fricción en los flancos de rosca y mejorar la calidad de rosca y vida útil del macho
- tornillo de compensación lateral permite 2 a 3 mm de reajuste
- presión MQL hasta max. 10 bares
- transmisor de refrigerante MQL montado
- Gühring MQL identificado con aro verde

**Contenido de suministro**

- incluido juego de transmisión de refrigerante MQL para cambio de herramienta automático
- incluida tuerca tensora, estanca IC/ER Art.Nº 4306 (*ver momento de tensión)
- incluida llave de regulación para tornillo de ajuste MQL

- tornillo de regulación MQL Art.Nº 4305 se debe pedir por separado
- junta Art.Nº 4335 se debe pedir por separado
- pinza para machos de roscar Art.Nº 4308 se debe pedir por separado
- llave tensora Art.Nº 4913 para tuerca-ER se debe pedir por separado




2 MQL BY GÜHRING

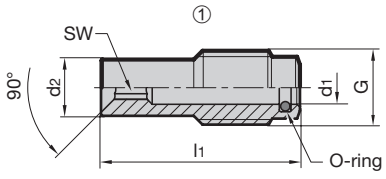
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Artículo Nº** | | **4341** |
| HSK-A $d_3$ | Tamaño nominal | para roscas | G | $d_1$ mm | $d_2$ mm | $l_1$ mm | tension/ compr. ± mm | torque* Nm | kg | **Código Nº** |
| 63 | ER20 | M3.5-M14 | M25x1.5 | 4.5-11 | 34 | 95.5 | 0.15 | 40 | 1.00 | 20,063 |
| 63 | ER32 | M3.5-M28 | M40x1.5 | 4.5-20 | 50 | 109.0 | 0.15 | 170 | 1.50 | 32,063 |
| 100 | ER20 | M3.5-M14 | M25x1.5 | 4.5-11 | 34 | 102.0 | 0.15 | 40 | 2.40 | 20,100 |
| 100 | ER32 | M3.5-M28 | M40x1.5 | 4.5-20 | 50 | 115.5 | 0.15 | 170 | 3.00 | 32,100 |

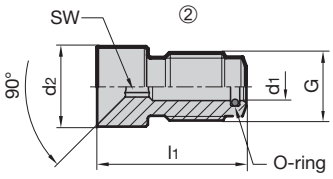
**Información sobre el producto**

- MQL tornillo de ajuste con cono interior
- para sistemas MQL de un canal y de doble canal
- para machos MQL con cono exterior
- para portas MQL sincronizados Art.nº 4602, 4603 y 4604
- tornillo de posicionamiento sobre el mango del macho
- tornillo de regulación permite cuna regulación longitudinal de 3 mm

**Contenido de suministro**

- con junta para asegurar estanqueidad




1 MQL BY GÜHRING

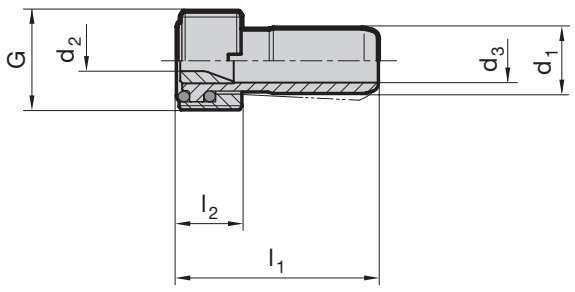
2 MQL BY GÜHRING

| Artículo Nº | 4305 |
|---|---|

| for nom. size | para diá. de mango x □ | G | $d_1$ mm | $d_2$ mm | $l_1$ mm | SW | Anillo | Dibujo | Código Nº |
|---|---|---|---|---|---|---|---|---|---|
| ER20 / Hydro12 | 6x4.9 | M8x1 | 3.6 | 4.8 | 26.5 | 2.5 | 3.5x1 | 1 | 6,020 |
| ER20 / Hydro12 | 7x5.5 | M8x1 | 3.6 | 5.4 | 26.5 | 2.5 | 3.5x1 | 1 | 7,020 |
| ER20 / Hydro12 | 8x6.2 | M8x1 | 3.6 | 6.1 | 21.5 | 2.5 | 3.5x1 | 1 | 8,020 |
| ER20 / Hydro12 | 9x7 | M8x1 | 3.6 | 6.9 | 21.0 | 2.5 | 3.5x1 | 1 | 9,020 |
| ER20 / Hydro12 | 10x8 | M8x1 | 3.6 | 7.8 | 17.0 | 2.5 | 3.5x1 | 2 | 10,020 |
| ER20 / Hydro12 | 11x9 | M8x1 | 3.6 | 8.8 | 16.0 | 2.5 | 3.5x1 | 2 | 11,020 |
| ER32 / Hydro20 | 6x4.9 | M10x1 | 4.1 | 4.8 | 34.5 | 3.0 | 4x1 | 1 | 6,032 |
| ER32 / Hydro20 | 7x5.5 | M10x1 | 4.1 | 5.4 | 34.5 | 3.0 | 4x1 | 1 | 7,032 |
| ER32 / Hydro20 | 8x6.2 | M10x1 | 4.1 | 6.1 | 29.5 | 3.0 | 4x1 | 1 | 8,032 |
| ER32 / Hydro20 | 9x7 | M10x1 | 4.1 | 6.9 | 29.0 | 3.0 | 4x1 | 1 | 9,032 |
| ER32 / Hydro20 | 10x8 | M10x1 | 4.1 | 7.8 | 25.0 | 3.0 | 4x1 | 1 | 10,032 |
| ER32 / Hydro20 | 11x9 & 12x9 | M10x1 | 4.1 | 8.8 | 24.0 | 3.0 | 4x1 | 1 | 11,032 |
| ER32 / Hydro20 | 14x11 | M10x1 | 4.1 | 10.8 | 22.5 | 3.0 | 4x1 | 2 | 14,032 |
| ER32 / Hydro20 | 16x12 | M10x1 | 4.1 | 11.8 | 22.0 | 3.0 | 4x1 | 2 | 16,032 |
| ER32 / Hydro20 | 18x14.5 & 20x16 | M10x1 | 4.1 | 14.3 | 20.5 | 3.0 | 4x1 | 2 | 18,032 |

**Información sobre el producto**

- para MQL estándar
- versión similar al DIN 69895
- para sistemas MQL de un solo canal
- para porta-herramientas con tensor de herramientas automático
- dimensiones d2 y d1 basadas en situación instalada



1 MQL BY GÜHRING

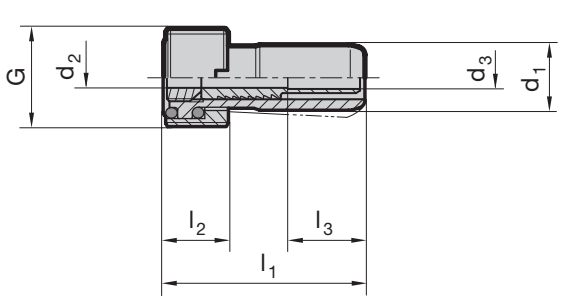
**Artículo Nº** **4508**

| para HSK-A | $d_1$ mm | $d_2$ mm | $d_3$ mm | $l_1$ mm | $l_2$ mm | G | Código Nº |
|---|---|---|---|---|---|---|---|
| 32 | 6.00 | 3.00 | 4.00 | 26.00 | 5.50 | M10x1 | 10,032 |
| 40 | 8.00 | 3.80 | 5.40 | 29.50 | 7.50 | M12x1 | 12,040 |
| 50 | 10.00 | 3.80 | 6.40 | 33.00 | 9.50 | M16x1 | 16,050 |
| 63 | 12.00 | 3.80 | 8.00 | 36.50 | 11.50 | M18x1 | 18,063 |
| 80 | 14.00 | 3.80 | 10.00 | 40.00 | 13.50 | M20x1.5 | 20,080 |
| 100 | 16.00 | 3.80 | 12.00 | 44.00 | 15.50 | M24x1.5 | 24,100 |

## MMS 2-CANALES-JUEGO TRANSMISOR DE REFRIGERANTE HSK-A

**Información sobre el producto**

- para MQL estándar
- versión similar al DIN 69895
- para sistemas MQL de doble canal
- para porta-herramientas con tensor de herramientas automático
- Crashsafe=Versión anti-roturas similar al DIN 69090-2 diseño del lomo
- dimensiones d2 y d1 basadas en situación instalada



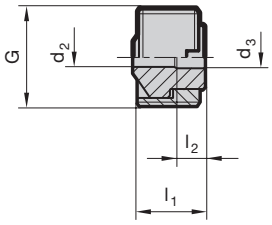
2 MQL BY GÜHRING

**Artículo Nº** **4511**

| para HSK-A | $d_1$ mm | $d_2$ mm | $d_3$ mm | $l_1$ mm | $l_2$ mm | $l_3$ mm | G | Código Nº |
|---|---|---|---|---|---|---|---|---|
| 32 | 6.00 | 3.00 | 4.00 | 26.00 | 5.50 | - | M10x1 | 10,032 |
| 40 | 8.00 | 3.80 | 5.40 | 29.50 | 7.50 | - | M12x1 | 12,040 |
| 50 | 10.00 | 3.60 | 4.00 | 33.00 | 9.50 | 21.00 | M16x1 | 16,050 |
| 63 | 12.00 | 3.60 | 4.00 | 36.50 | 11.50 | 13.80 | M18x1 | 18,063 |
| 80 | 14.00 | 3.60 | 4.00 | 40.00 | 13.50 | 14.00 | M20x1.5 | 20,080 |
| 100 | 16.00 | 3.60 | 4.00 | 44.00 | 15.50 | 14.00 | M24x1.5 | 24,100 |

**Información sobre el producto**

- para MQL estándar
- para sistemas de refrigeración MQL de un solo canal y de doble canal
- para porta-herramientas con sujeción manual de herramientas
- sellado óptimo para set tensor MQL
- dimensiones d2 y d1 basadas en situación instalada




1 MQL BY GÜHRING

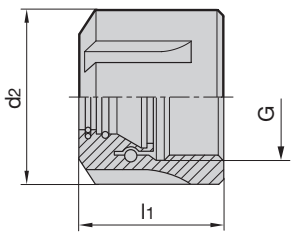
2 MQL BY GÜHRING

| Artículo Nº | 4513 |
|---|---|

| para HSK-A | $d_2$ mm | $d_3$ mm | $l_1$ mm | $l_2$ mm | G | Código Nº |
|---|---|---|---|---|---|---|
| 32 | 3.00 | 3.00 | 6.30 | - | M10x1 | 10,032 |
| 40 | 3.60 | 4.00 | 8.30 | 5.00 | M12x1 | 12,040 |
| 50 | 3.60 | 4.00 | 10.30 | 5.00 | M16x1 | 16,050 |
| 50 | 5.00 | 5.00 | 10.30 | - | M16x1 | 16,150 |
| 63 | 3.60 | 4.00 | 12.30 | 5.00 | M18x1 | 18,063 |
| 63 | 6.00 | 6.00 | 12.30 | - | M18x1 | 18,163 |
| 80 | 3.60 | 4.00 | 14.40 | 5.00 | M20x1.5 | 20,080 |
| 80 | 8.00 | 8.00 | 14.40 | - | M20x1.5 | 20,180 |
| 100 | 3.60 | 4.00 | 16.40 | 5.00 | M24x1.5 | 24,100 |
| 100 | 8.00 | 8.00 | 16.40 | - | M24x1.5 | 24,101 |

**Información sobre el producto**
- para pinza DIN ISO 15488
- para aplicación con refrigeración interna versionesIC/ER para juntas
- para versiones con mayor fuerza tensora ER o IC/ER con aro deslizante

**Contenido de suministro**
- para versiones con mayor fuerza de sujeción incluido aro deslizante
- versiones IC/ER junta Art.Nº 4335 se debe pedir por separado



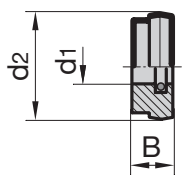

| | | | | | | Artículo Nº | 4306 |
|---|---|---|---|---|---|---|---|
| para disco de junta Art.Nº 4335 | con aro deslizante | Tamaño nominal | $d_2$ mm | $l_1$ mm | G | Momento tensor máx. | **Código Nº** |
| – | – | ER16 mini | 22 | 18.4 | M19x1.0 | 55 | 16,200 |
| – | – | ER20 mini | 28 | 19.0 | M24x1.0 | 75 | 20,200 |
| – | – | ER25 mini | 35 | 20.0 | M30x1.0 | 100 | 25,200 |
| – | – | ER11 (4008E) | 19 | 11.3 | M14x0.75 | 25 | 11,000 |
| – | – | ER16 (426E) | 28 | 17.5 | M22x1.5 | 55 | 16,000 |
| – | – | ER20 (428E) | 34 | 19.0 | M25x1.5 | 75 | 20,000 |
| – | – | ER25 (430E) | 42 | 20.0 | M32x1.5 | 100 | 25,000 |
| – | – | ER32 (470E) | 50 | 22.5 | M40x1.5 | 140 | 32,000 |
| – | – | ER40 (472E) | 63 | 25.5 | M50x1.5 | 200 | 40,000 |
| x | – | IC/ER16 mini | 22 | 22.0 | M19x1.0 | 55 | 16,300 |
| x | – | IC/ER20 mini | 28 | 24.0 | M24x1.0 | 75 | 20,300 |
| x | – | IC/ER25 mini | 35 | 25.0 | M30x1.0 | 100 | 25,300 |
| x | – | IC/ER16 | 28 | 22.5 | M22x1.5 | 55 | 16,600 |
| x | – | IC/ER20 | 34 | 24.0 | M25x1.5 | 75 | 20,600 |
| x | – | IC/ER25 | 42 | 25.0 | M32x1.5 | 100 | 25,600 |
| x | – | IC/ER32 | 50 | 27.5 | M40x1.5 | 140 | 32,600 |
| x | – | IC/ER40 | 63 | 30.5 | M50x1.5 | 200 | 40,600 |
| – | x | ER16 | 28 | 20.3 | M22x1.5 | 55 | 16,400 |
| – | x | ER20 | 34 | 21.8 | M25x1.5 | 75 | 20,400 |
| – | x | ER25 | 42 | 22.4 | M32x1.5 | 100 | 25,400 |
| – | x | ER32 | 50 | 25.0 | M40x1.5 | 140 | 32,400 |
| – | x | ER40 | 63 | 28.3 | M50x1.5 | 200 | 40,400 |
| x | x | IC/ER16 | 28 | 22.7 | M22x1.5 | 55 | 16,500 |
| x | x | IC/ER20 | 34 | 24.2 | M25x1.5 | 75 | 20,500 |
| x | x | IC/ER25 | 42 | 25.2 | M32x1.5 | 100 | 25,500 |
| x | x | IC/ER32 | 50 | 27.4 | M40x1.5 | 140 | 32,500 |
| x | x | IC/ER40 | 63 | 30.7 | M50x1.5 | 200 | 40,500 |

**Información sobre el producto**

- el campo de aplicación de un disco de junta Art.Nº 4335 llega desde dia. nominal d1 hasta la siguiente medida por debajo es decir para un dia. 6.3 mm (con tamaño nominal ER20) se debe utilizar un disco de junta con d1 = 6.5 mm (Código Nº 06,520)

**Ejemplo de pedido**

| | |
|---|---|
| dia. d1 | = 3.5 |
| Tamaño nominal | = ER 20 |
| Art.Nº Código Nº | = 4335 03,520 |



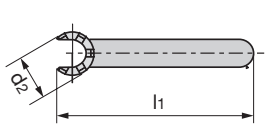

| | | | | Artículo Nº | 4335 |
|---|---|---|---|---|---|
| Tamaño nominal | $d_1$ mm | $d_2$ mm | B mm | Código Nº | |
| ER16 | 3.0…10 um 0.5 mm stg. | 13 | 4 | 3,016 - 10,016 | |
| ER20 | 3.0…13 um 0.5 mm stg. | 16 | 4 | 3,020 - 13,020 | |
| ER25 | 3.0…16 um 0.5 mm stg. | 21 | 4 | 3,025 - 16,025 | |
| ER32 | 3.0…20 um 0.5 mm stg. | 27 | 4 | 3,032 - 20,032 | |
| ER40 | 3.5…26 um 0.5 mm stg. | 33.5 | 4 | 3,540 - 26,040 | |

## LLAVE TENSORA

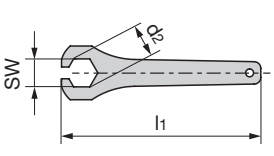
**Información sobre el producto**

- para tuercas tensoras
- Tipo A llave de gancho especial para tuercas tensoras Sistema DIN 6499 versión mini
- Tipo B para tuercas tensoras en versión hexagonal
- Tipo C para tuercas tensoras para ranuras exteriores

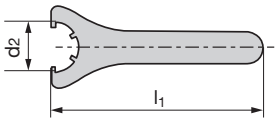
Tipo A




Tipo B




Tipo C




| | | | | | Artículo Nº | 4913 |
|---|---|---|---|---|---|---|
| Tamaño nominal mm | Tipo | $l_1$ mm | para ER $d_2$ mm | SW | Código Nº | |
| ER16 mini | A | 122 | 22 | - | 16,200 | |
| ER20 mini | A | 139 | 28 | - | 20,200 | |
| ER25 mini | A | 143 | 35 | - | 25,200 | |
| ER11 | B | 141 | 19 | 17 | 11,000 | |
| ER16 | B | 178 | 28 | 25 | 16,000 | |
| ER16 | C | 161 | 32 | - | 16,032 | |
| ER20 | B | 200 | 34 | 30 | 20,000 | |
| ER20 | C | 183 | 35 | - | 20,100 | |
| ER25 | C | 210 | 42 | - | 25,000 | |
| ER32 | C | 250 | 50 | - | 32,000 | |
| ER40 | C | 290 | 63 | - | 40,000 | |

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# PARTE TÉCNICA

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# Diámetros de pretaladro para el fresado de roscas

## Roscas métrica normalizada ISO DIN 13

| Diá. nom. | Paso P mm | Ø d. pretal. roscas p. taladr. DIN 336 mm | Diámetro pretaladro roscas de tuercas 6H* min. mm | max. mm |
|---|---|---|---|---|
| M 1 | 0,25 | **0,75** | 0,729 | 0,785 |
| M 1,1 | 0,25 | **0,85** | 0,829 | 0,885 |
| M 1,2 | 0,25 | **0,95** | 0,929 | 0,985 |
| M 1,4 | 0,30 | **1,10** | 1,075 | 1,142 |
| M 1,6 | 0,35 | **1,25** | 1,221 | 1,321 |
| M 1,8 | 0,35 | **1,45** | 1,421 | 1,521 |
| M 2 | 0,40 | **1,60** | 1,567 | 1,679 |
| M 2,2 | 0,45 | **1,75** | 1,713 | 1,838 |
| M 2,5 | 0,45 | **2,05** | 2,013 | 2,138 |
| M 3 | 0,50 | **2,50** | 2,459 | 2,599 |
| M 3,5 | 0,60 | **2,90** | 2,850 | 3,010 |
| M 4 | 0,70 | **3,30** | 3,242 | 3,422 |
| M 4,5 | 0,75 | **3,70** | 3,688 | 3,878 |
| M 5 | 0,80 | **4,20** | 4,134 | 4,334 |
| M 6 | 1,00 | **5,00** | 4,917 | 5,153 |
| M 7 | 1,00 | **6,00** | 5,917 | 6,153 |
| M 8 | 1,25 | **6,80** | 6,647 | 6,912 |
| M 9 | 1,25 | **7,80** | 7,647 | 7,912 |
| M 10 | 1,50 | **8,50** | 8,376 | 8,676 |
| M 11 | 1,50 | **9,50** | 9,376 | 9,676 |
| M 12 | 1,75 | **10,20** | 10,106 | 10,441 |
| M 14 | 2,00 | **12,00** | 11,835 | 12,210 |
| M 16 | 2,00 | **14,00** | 13,835 | 14,210 |
| M 18 | 2,50 | **15,50** | 15,294 | 15,744 |
| M 20 | 2,50 | **17,50** | 17,294 | 17,744 |
| M 22 | 2,50 | **19,50** | 19,294 | 19,744 |
| M 24 | 3,00 | **21,00** | 20,752 | 21,252 |
| M 27 | 3,00 | **24,00** | 23,752 | 24,252 |
| M 30 | 3,50 | **26,50** | 26,211 | 26,771 |
| M 33 | 3,50 | **29,50** | 29,211 | 29,771 |
| M 36 | 4,00 | **32,00** | 31,670 | 32,270 |
| M 39 | 4,00 | **35,00** | 34,670 | 35,270 |
| M 42 | 4,50 | **37,50** | 37,129 | 37,799 |
| M 45 | 4,50 | **40,50** | 40,129 | 40,799 |
| M 48 | 5,00 | **43,00** | 42,587 | 43,297 |
| M 52 | 5,00 | **47,00** | 46,587 | 47,297 |
| M 56 | 5,50 | **50,50** | 50,046 | 50,796 |

* M 1,1 hasta M 1,4 Ø-pretaladro roscas de tuerca 5 H

## Roscas métrica fina DIN 13

| Diá. x nom. | Paso P mm | Ø d. pretal. roscas p. taladr. DIN 336 mm | Diámetro pretaladro roscas de tuercas 6H* min. mm | max. mm |
|---|---|---|---|---|
| M 2,5 x | 0,35 | **2,15** | 2,121 | 2,221 |
| M 3,0 x | 0,35 | **2,65** | 2,621 | 2,721 |
| M 3,5 x | 0,35 | **3,15** | 3,121 | 3,221 |
| M 4,0 x | 0,50 | **3,50** | 3,459 | 3,599 |
| M 4,5 x | 0,50 | **4,00** | 3,959 | 4,099 |
| M 5,0 x | 0,50 | **4,50** | 4,459 | 4,599 |
| M 5,5 x | 0,50 | **5,00** | 4,959 | 5,099 |
| M 6,0 x | 0,75 | **5,20** | 5,188 | 5,378 |
| M 7,0 x | 0,75 | **6,20** | 6,188 | 6,378 |
| M 8,0 x | 0,50 | **7,50** | 7,459 | 7,599 |
| M 8,0 x | 0,75 | **7,20** | 7,188 | 7,378 |
| M 8,0 x | 1,00 | **7,00** | 6,917 | 7,153 |
| M 9,0 x | 0,75 | **8,20** | 8,188 | 8,378 |
| M 9,0 x | 1,00 | **8,00** | 7,917 | 8,153 |
| M 10 x | 0,75 | **9,20** | 9,188 | 9,378 |
| M 10 x | 1,00 | **9,00** | 8,917 | 9,153 |
| M 10 x | 1,25 | **8,80** | 8,647 | 8,912 |
| M 11 x | 0,75 | **10,20** | 10,188 | 10,378 |
| M 11 x | 1,00 | **10,00** | 9,917 | 10,153 |
| M 12 x | 1,00 | **11,00** | 10,917 | 11,153 |
| M 12 x | 1,25 | **10,80** | 10,647 | 10,912 |
| M 12 x | 1,50 | **10,50** | 10,376 | 10,676 |
| M 14 x | 1,00 | **13,00** | 12,917 | 13,153 |
| M 14 x | 1,25 | **12,80** | 12,647 | 12,912 |
| M 14 x | 1,50 | **12,50** | 12,376 | 12,676 |
| M 15 x | 1,00 | **14,00** | 13,917 | 14,153 |
| M 15 x | 1,50 | **13,50** | 13,376 | 13,676 |
| M 16 x | 1,00 | **15,00** | 14,917 | 15,153 |
| M 16 x | 1,25 | **14,80** | 14,647 | 14,912 |
| M 16 x | 1,50 | **14,50** | 14,376 | 14,676 |
| M 17 x | 1,00 | **16,00** | 15,917 | 16,153 |
| M 17 x | 1,50 | **15,50** | 15,376 | 15,676 |
| M 18 x | 1,00 | **17,00** | 16,917 | 17,153 |
| M 18 x | 1,50 | **16,50** | 16,376 | 16,676 |
| M 20 x | 1,00 | **19,00** | 18,917 | 19,153 |
| M 20 x | 1,50 | **18,50** | 18,376 | 18,676 |
| M 20 x | 2,00 | **18,00** | 17,835 | 18,210 |
| M 22 x | 1,00 | **21,00** | 20,917 | 21,153 |
| M 22 x | 1,50 | **20,50** | 20,376 | 20,676 |
| M 22 x | 2,00 | **20,00** | 19,835 | 20,210 |
| M 24 x | 1,00 | **23,00** | 22,917 | 23,153 |
| M 24 x | 1,50 | **22,50** | 22,376 | 22,676 |
| M 24 x | 2,00 | **22,00** | 21,835 | 22,210 |
| M 25 x | 1,00 | **24,00** | 23,917 | 24,153 |
| M 25 x | 1,50 | **23,50** | 23,376 | 23,676 |
| M 25 x | 2,00 | **23,00** | 22,835 | 23,210 |
| M 27 x | 1,00 | **26,00** | 25,917 | 26,153 |
| M 27 x | 1,50 | **25,50** | 25,376 | 25,676 |
| M 27 x | 2,00 | **25,00** | 24,835 | 25,210 |
| M 28 x | 1,00 | **27,00** | 26,917 | 27,153 |
| M 28 x | 1,50 | **26,50** | 26,376 | 26,676 |
| M 28 x | 2,00 | **26,00** | 25,835 | 26,210 |
| M 30 x | 1,00 | **29,00** | 28,917 | 29,153 |
| M 30 x | 1,50 | **28,50** | 28,376 | 28,676 |
| M 30 x | 2,00 | **28,00** | 27,835 | 28,210 |
| M 30 x | 3,00 | **27,00** | 26,752 | 27,252 |
| M 32 x | 1,50 | **30,50** | 30,376 | 30,676 |
| M 32 x | 2,00 | **30,00** | 29,835 | 30,210 |
| M 33 x | 1,50 | **31,50** | 31,376 | 31,676 |
| M 33 x | 2,00 | **31,00** | 30,835 | 31,210 |
| M 33 x | 3,00 | **30,00** | 29,752 | 30,252 |
| M 35 x | 1,50 | **33,50** | 33,376 | 33,676 |
| M 36 x | 1,50 | **34,50** | 34,376 | 34,676 |

## Roscas UNC ASME B1.1

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. DIN 336 mm | Diámetro pretaladro roscas de tuercas 2B min. mm | max. mm |
|---|---|---|---|---|
| Nr. 1 - | 64 | **1,55** | 1,425 | 1,580 |
| Nr. 2 - | 56 | **1,85** | 1,694 | 1,872 |
| Nr. 3 - | 48 | **2,10** | 1,941 | 2,146 |
| Nr. 4 - | 40 | **2,35** | 2,157 | 2,385 |
| Nr. 5 - | 40 | **2,65** | 2,487 | 2,698 |
| Nr. 6 - | 32 | **2,85** | 2,642 | 2,896 |
| Nr. 8 - | 32 | **3,50** | 3,302 | 3,531 |
| Nr. 10 - | 24 | **3,90** | 3,683 | 3,937 |
| Nr. 12 - | 24 | **4,50** | 4,343 | 4,597 |
| 1/4 - | 20 | **5,10** | 4,978 | 5,258 |
| 5/16 - | 18 | **6,60** | 6,401 | 6,731 |
| 3/8 - | 16 | **8,00** | 7,798 | 8,153 |
| 7/16 - | 14 | **9,40** | 9,144 | 9,550 |
| 1/2 - | 13 | **10,80** | 10,592 | 11,024 |
| 9/16 - | 12 | **12,20** | 11,989 | 12,446 |
| 5/8 - | 11 | **13,50** | 13,386 | 13,868 |
| 3/4 - | 10 | **16,50** | 16,307 | 16,840 |
| 7/8 - | 9 | **19,50** | 19,177 | 19,761 |
| 1 - | 8 | **22,25** | 21,971 | 22,606 |
| 1 1/8 - | 7 | **25,00** | 24,638 | 25,349 |
| 1 1/4 - | 7 | **28,00** | 27,813 | 28,524 |
| 1 3/8 - | 6 | **30,75** | 30,353 | 31,115 |
| 1 1/2 - | 6 | **34,00** | 33,528 | 34,290 |
| 1 3/4 - | 5 | **39,50** | 38,938 | 39,802 |
| 2 - | 4,5 | **45,00** | 44,679 | 45,593 |

## Roscas MJ DIN ISO 5855

| Diá. nom. | x | Paso P mm | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas 5H* min. mm | max. mm |
|---|---|---|---|---|---|
| MJ 3 | x | 0,50 | **2,60** | 2,513 | 2,653 |
| MJ 4 | x | 0,70 | **3,40** | 3,318 | 3,498 |
| MJ 5 | x | 0,80 | **4,30** | 4,221 | 4,421 |
| MJ 6 | x | 0,50 | **5,55** | 5,513 | 5,625 |
| MJ 6 | x | 0,75 | **5,35** | 5,269 | 5,419 |
| MJ 6 | x | 1,00 | **5,10** | 5,026 | 5,216 |
| MJ 8 | x | 0,50 | **7,55** | 7,513 | 7,625 |
| MJ 8 | x | 0,75 | **7,35** | 7,269 | 7,419 |
| MJ 8 | x | 1,00 | **7,10** | 7,026 | 7,216 |
| MJ 8 | x | 1,25 | **6,90** | 6,782 | 6,994 |
| MJ 10 | x | 1,00 | **9,10** | 9,026 | 9,216 |
| MJ 10 | x | 1,25 | **8,90** | 8,782 | 8,994 |
| MJ 10 | x | 1,50 | **8,60** | 8,539 | 8,775 |
| MJ 12 | x | 1,75 | **10,40** | 10,295 | 10,560 |
| MJ 16 | x | 2,00 | **14,20** | 14,051 | 14,351 |

* MJ3 x0,50 hasta MJ 5 x 0,80 Ø-pretaladro rosca de tuerca 6H

## Roscas UNC ISO 3161

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas 3B min. mm | max. mm |
|---|---|---|---|---|
| Nr. 6 - | 32 | **2,85** | 2,733 | 2,939 |
| Nr. 8 - | 32 | **3,55** | 3,393 | 3,599 |
| Nr. 10 - | 24 | **4,00** | 3,795 | 4,064 |
| Nr. 12 - | 24 | **4,60** | 4,455 | 4,704 |
| 1/4 - | 20 | **5,30** | 5,113 | 5,387 |
| 5/16 - | 18 | **6,75** | 6,563 | 6,833 |
| 3/8 - | 16 | **8,20** | 7,978 | 8,255 |
| 7/16 - | 14 | **9,60** | 9,346 | 9,639 |
| 1/2 - | 13 | **11,00** | 10,798 | 11,095 |
| 9/16 - | 12 | **12,40** | 12,228 | 12,482 |
| 5/8 - | 11 | **13,80** | 13,627 | 13,904 |

## Roscas UNF ISO 3161

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas 3B min. mm | max. mm |
|---|---|---|---|---|
| Nr. 6 - | 40 | **3,00** | 2,888 | 3,053 |
| Nr. 8 - | 36 | **3,60** | 3,480 | 3,663 |
| Nr. 10 - | 32 | **4,20** | 4,054 | 4,255 |
| Nr. 12 - | 28 | **4,75** | 4,602 | 4,816 |
| 1/4 - | 28 | **5,60** | 5,466 | 5,662 |
| 5/16 - | 24 | **7,00** | 6,906 | 7,109 |
| 3/8 - | 24 | **8,60** | 8,494 | 8,679 |
| 7/16 - | 20 | **10,00** | 9,876 | 10,084 |
| 1/2 - | 20 | **11,60** | 11,463 | 11,661 |
| 9/16 - | 18 | **13,00** | 12,913 | 13,122 |
| 5/8 - | 18 | **14,60** | 14,501 | 14,702 |

# Diámetros de pretaladro para el fresado de roscas

## Roscas UNF ASME B1.1

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. DIN 336 mm | Diámetro pretaladro roscas de tuercas 2B min. mm | max. mm |
|---|---|---|---|---|
| Nr. 1 - | 72 | **1,55** | 1,473 | 1,610 |
| Nr. 2 - | 64 | **1,85** | 1,755 | 1,910 |
| Nr. 3 - | 56 | **2,15** | 2,024 | 2,197 |
| Nr. 4 - | 48 | **2,40** | 2,271 | 2,459 |
| Nr. 5 - | 44 | **2,70** | 2,550 | 2,741 |
| Nr. 6 - | 40 | **2,95** | 2,819 | 3,023 |
| Nr. 8 - | 36 | **3,50** | 3,404 | 3,607 |
| Nr. 10 - | 32 | **4,10** | 3,962 | 4,166 |
| Nr. 12 - | 28 | **4,60** | 4,496 | 4,724 |
| 1/4 - | 28 | **5,50** | 5,359 | 5,588 |
| 5/16 - | 24 | **6,90** | 6,782 | 7,036 |
| 3/8 - | 24 | **8,50** | 8,382 | 8,636 |
| 7/16 - | 20 | **9,90** | 9,728 | 10,033 |
| 1/2 - | 20 | **11,50** | 11,328 | 11,608 |
| 9/16 - | 18 | **12,90** | 12,751 | 13,081 |
| 5/8 - | 18 | **14,50** | 14,351 | 14,681 |
| 3/4 - | 16 | **17,50** | 17,323 | 17,678 |
| 7/8 - | 14 | **20,40** | 20,269 | 20,650 |
| 1 - | 12 | **23,25** | 23,114 | 23,571 |
| 1 1/8 - | 12 | **26,50** | 26,289 | 26,746 |
| 1 1/4 - | 12 | **29,50** | 29,464 | 29,921 |
| 1 3/8 - | 12 | **32,75** | 32,639 | 33,096 |
| 1 1/2 - | 12 | **36,00** | 35,814 | 36,271 |

## Roscas BSW-(Whitworth) BS84

| Diá. nom. pulg. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| W 1/16 | 60 | **1,20** | 1,045 | 1,230 |
| W 3/32 | 48 | **1,80** | 1,704 | 1,912 |
| W 1/8 | 40 | **2,50** | 2,362 | 2,591 |
| W 5/32 | 32 | **3,20** | 2,952 | 3,214 |
| W 3/16 | 24 | **3,60** | 3,407 | 3,745 |
| W 7/32 | 24 | **4,50** | 4,201 | 4,539 |
| W 1/4 | 20 | **5,10** | 4,724 | 5,156 |
| W 5/16 | 18 | **6,50** | 6,130 | 6,590 |
| W 3/8 | 16 | **7,90** | 7,492 | 7,987 |
| W 7/16 | 14 | **9,20** | 8,789 | 9,330 |
| W 1/2 | 12 | **10,50** | 9,989 | 10,591 |
| W 9/16 | 12 | **12,00** | 11,577 | 12,179 |
| W 5/8 | 11 | **13,50** | 12,918 | 13,558 |
| W 3/4 | 10 | **16,25** | 15,797 | 16,483 |
| W 7/8 | 9 | **19,25** | 18,611 | 19,353 |
| W 1 | 8 | **22,00** | 21,334 | 22,147 |
| W 1 1/8 | 7 | **24,50** | 23,928 | 24,832 |
| W 1 1/4 | 7 | **27,75** | 27,103 | 28,007 |
| W 1 3/8 | 6 | **30,50** | 29,504 | 30,528 |
| W 1 1/2 | 6 | **33,50** | 32,679 | 33,703 |
| W 1 5/8 | 5 | **35,50** | 34,769 | 35,963 |
| W 1 3/4 | 5 | **39,00** | 37,944 | 39,138 |
| W 2 | 4,5 | **44,50** | 43,571 | 44,877 |

## Roscas withworth para tubos (según DIN-ISO 228-1)

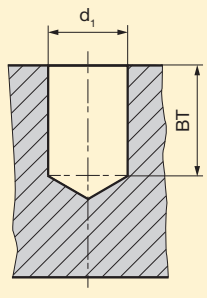
| Diá. nom. pulg. | hilos por pulgada | Ø d. pretal. roscas p. taladr. DIN 336 mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| G 1/16 | 28 | **6,80** | 6,561 | 6,843 |
| G 1/8 | 28 | **8,80** | 8,566 | 8,848 |
| G 1/4 | 19 | **11,80** | 11,445 | 11,890 |
| G 3/8 | 19 | **15,25** | 14,950 | 15,395 |
| G 1/2 | 14 | **19,00** | 18,631 | 19,172 |
| G 5/8 | 14 | **21,00** | 20,587 | 21,128 |
| G 3/4 | 14 | **24,50** | 24,117 | 24,658 |
| G 7/8 | 14 | **28,25** | 27,877 | 28,418 |
| G 1 | 11 | **30,75** | 30,291 | 30,931 |
| G 1 1/8 | 11 | **35,50** | 34,939 | 35,579 |
| G 1 1/4 | 11 | **39,50** | 38,952 | 39,592 |
| G 1 1/2 | 11 | **45,25** | 44,845 | 45,485 |
| G 1 3/4 | 11 | **51,00** | 50,788 | 51,428 |
| G 2 | 11 | **57,00** | 56,656 | 57,296 |

## Roscas para tubos de blindaje de acero según DIN 40430

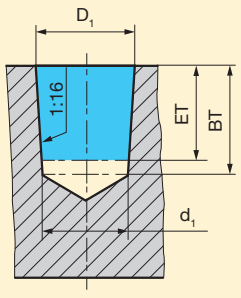
| Diá. nom. pulg. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| Pg 7 | 20 | **11,40** | 11,280 | 11,430 |
| Pg 9 | 18 | **14,00** | 13,860 | 14,010 |
| Pg 11 | 18 | **17,30** | 17,260 | 17,410 |
| Pg 13,5 | 18 | **19,00** | 19,060 | 19,210 |
| Pg 16 | 18 | **21,30** | 21,160 | 21,310 |
| Pg 21 | 16 | **26,90** | 26,780 | 27,030 |
| Pg 29 | 16 | **35,50** | 35,480 | 35,730 |
| Pg 36 | 16 | **45,50** | 45,480 | 45,730 |
| Pg 42 | 16 | **52,50** | 52,480 | 52,730 |
| Pg 48 | 16 | **57,80** | 57,780 | 58,030 |

## NPT ANSI B 2.1
## Roscas americana, cónica para tubos 1:16

Versión A (evitar a ser posible)




Versión B




| Diá. nom. | Hilos por pulgada | Pretaladro cilíndr. (A) $d_1$ | Pretaladro cónico (B) $D_1$ | Profundidad de entrada ET mm | Prof. de taladro BT (min) mm |
|---|---|---|---|---|---|
| 1/16 - | 27 | **6,15** | 6,39 | 9,29 | 10,7 |
| 1/8 - | 27 | **8,40** | 8,74 | 9,32 | 10,8 |
| 1/4 - | 18 | **11,10** | **11,36** | 13,52 | 15,6 |
| 3/8 - | 18 | **14,30** | **14,80** | 13,83 | 16,0 |
| 1/2 - | 14 | **17,90** | **18,32** | 18,07 | 20,8 |
| 3/4 - | 14 | **23,30** | **23,67** | 18,55 | 21,3 |
| 1 - | 11,5 | **29,00** | **29,69** | 22,29 | 25,6 |
| 1 1/4 - | 11,5 | **37,70** | **38,45** | 22,80 | 26,1 |
| 1 1/2 - | 11,5 | **43,70** | **44,52** | 22,80 | 26,1 |
| 2 - | 11,5 | **55,60** | **56,56** | 23,20 | 26,5 |
| 2 1/2 - | 8 | **66,30** | **67,62** | 31,75 | 36,3 |
| 3 - | 8 | **82,30** | **83,52** | 33,74 | 38,5 |

## Roscas-EG métr./métr.fino (EG M 14x1,25) para injertos roscados de hilo según DIN 8140

| Diá. nom. | x Paso P mm | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| EG M 4 | 0,70 | **4,20** | 4,152 | 4,292 |
| EG M 5 | 0,80 | **5,25** | 5,174 | 5,334 |
| EG M 6 | 1,00 | **6,30** | 6,217 | 6,407 |
| EG M 8 | 1,25 | **8,40** | 8,271 | 8,483 |
| EG M10 | 1,50 | **10,50** | 10,324 | 10,560 |
| EG M12 | 1,75 | **12,50** | 12,379 | 12,644 |
| EG M14 x | 1,25 | **14,40** | 14,271 | 14,483 |
| EG M16 | 2,00 | **16,50** | 16,433 | 16,733 |

## Roscas EG UNC ((UNC-STI) para injertos roscados de hilo ASME B18.29.1

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| EG Nr. 6 - | 32 | **3,80** | 3,678 | 3,879 |
| EG Nr. 8 - | 32 | **4,40** | 4,338 | 4,524 |
| EG Nr. 10 - | 24 | **5,20** | 5,055 | 5,283 |
| EG Nr. 12 - | 24 | **5,80** | 5,715 | 5,944 |
| EG 1/4 - | 20 | **6,70** | 6,624 | 6,868 |
| EG 5/16 - | 18 | **8,40** | 8,242 | 8,489 |
| EG 3/8 - | 16 | **10,00** | 9,868 | 10,127 |
| EG 7/16 - | 14 | **11,60** | 11,506 | 11,783 |
| EG 1/2 - | 13 | **13,30** | 13,122 | 13,393 |
| EG 9/16 - | 12 | **14,90** | 14,747 | 15,032 |
| EG 5/8 - | 11 | **16,50** | 16,375 | 16,673 |

## Roscas EG UNF (UNF-STI) para injertos roscados de hilo ASME B18.29.1

| Diá. nom. | hilos por pulgada | Ø d. pretal. roscas p. taladr. mm | Diámetro pretaladro roscas de tuercas min. mm | max. mm |
|---|---|---|---|---|
| EG Nr. 6 - | 40 | **3,70** | 3,644 | 3,818 |
| EG Nr. 8 - | 36 | **4,40** | 4,321 | 4,498 |
| EG Nr. 10 - | 32 | **5,10** | 4,999 | 5,184 |
| EG Nr. 12 - | 28 | **5,70** | 5,682 | 5,809 |
| EG 1/4 - | 28 | **6,60** | 6,546 | 6,721 |
| EG 5/16 - | 24 | **8,25** | 8,166 | 8,352 |
| EG 3/8 - | 24 | **9,80** | 9,754 | 9,931 |
| EG 7/16 - | 20 | **11,50** | 11,389 | 11,585 |
| EG 1/2 - | 20 | **13,10** | 12,974 | 13,172 |
| EG 9/16 - | 18 | **14,70** | 14,592 | 14,798 |
| EG 5/8 - | 18 | **16,25** | 16,180 | 16,386 |

# Taladros recomendados para la laminación de roscas

## Roscas métrica normalizada ISO DIN 13

| Diá. nom. | Paso P | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas 7H* | |
|---|---|---|---|---|---|---|
| | | | min. | max. | min. | max. |
| mm | | mm | mm | mm | mm | mm |
| M1 | 0,25 | **0,90** | 0,89 | 0,92 | 0,729 | 0,819 |
| M1,2 | 0,25 | **1,10** | 1,09 | 1,12 | 0,929 | 1,019 |
| M1,4 | 0,30 | **1,28** | 1,27 | 1,30 | 1,075 | 1,181 |
| M1,6 | 0,35 | **1,46** | 1,45 | 1,48 | 1,221 | 1,346 |
| M1,7 | 0,35 | **1,56** | 1,55 | 1,58 | 1,321 | 1,446 |
| M1,8 | 0,35 | **1,66** | 1,65 | 1,68 | 1,421 | 1,546 |
| M 2 | 0,40 | **1,85** | 1,84 | 1,88 | 1,567 | 1,679 |
| M 2,2 | 0,45 | **2,00** | 2,01 | 2,05 | 1,713 | 1,838 |
| M 2,5 | 0,45 | **2,30** | 2,28 | 2,32 | 2,013 | 2,138 |
| M 3 | 0,50 | **2,80** | 2,78 | 2,85 | 2,459 | 2,639 |
| M 3,5 | 0,60 | **3,25** | 3,23 | 3,30 | 2,850 | 3,050 |
| M 4 | 0,70 | **3,70** | 3,68 | 3,76 | 3,242 | 3,466 |
| M 4,5 | 0,75 | **4,20** | | | | |
| M 5 | 0,80 | **4,65** | 4,62 | 4,71 | 4,134 | 4,384 |
| M 6 | 1,00 | **5,55** | 5,52 | 5,62 | 4,917 | 5,217 |
| M 7 | 1,00 | **6,55** | 6,52 | 6,62 | 5,917 | 6,217 |
| M 8 | 1,25 | **7,40** | 7,36 | 7,47 | 6,647 | 6,982 |
| M 9 | 1,25 | **8,40** | 8,36 | 8,47 | 7,647 | 7,982 |
| M 10 | 1,50 | **9,30** | 9,26 | 9,38 | 8,376 | 8,751 |
| M 11 | 1,50 | **10,30** | 10,26 | 10,38 | 9,376 | 9,751 |
| M 12 | 1,75 | **11,20** | 11,15 | 11,29 | 10,106 | 10,531 |
| M 14 | 2,00 | **13,10** | 13,05 | 13,20 | 11,835 | 12,310 |
| M 16 | 2,00 | **15,10** | 15,05 | 15,20 | 13,835 | 14,310 |
| M 18 | 2,50 | **16,90** | 16,83 | 17,02 | 15,294 | 15,854 |
| M 20 | 2,50 | **18,90** | 18,83 | 19,02 | 17,294 | 17,854 |
| M 22 | 2,50 | **20,90** | 20,83 | 21,02 | 19,294 | 19,854 |
| M 24 | 3,00 | **22,70** | 22,62 | 22,80 | 20,752 | 21,382 |
| M 27 | 3,00 | **25,70** | 25,62 | 25,80 | 23,752 | 24,382 |
| M 30 | 3,50 | **28,50** | 28,40 | 28,60 | 26,211 | 26,921 |
| M 33 | 3,50 | **31,50** | 31,40 | 31,60 | 29,211 | 29,921 |
| M 36 | 4,00 | **34,30** | 34,17 | 34,40 | 31,670 | 32,420 |
| M 39 | 4,00 | **37,30** | 37,17 | 37,40 | 34,670 | 35,420 |
| M 42 | 4,50 | **40,10** | 39,95 | 40,20 | 37,129 | 37,979 |

* M 1,1 hasta M 1,4 Ø-pretaladro roscas de tuerca 5 H

## Roscas métrica fina DIN 13

| Diá. x Paso nom. P | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas 7H* | |
|---|---|---|---|---|---|
| | | min. | max. | min. | max. |
| mm | mm | mm | mm | mm | mm |
| M 2,5 x 0,35 | **2,35** | 2,35 | 2,38 | 2,121 | 2,221 |
| M 3 x 0,35 | **2,85** | 2,85 | 2,88 | 2,621 | 2,721 |
| M 4 x 0,35 | **3,85** | 3,85 | 3,88 | 3,621 | 3,721 |
| M 4 x 0,50 | **3,80** | 3,78 | 3,83 | 3,459 | 3,639 |
| M 5 x 0,50 | **4,80** | 4,78 | 4,83 | 4,459 | 4,639 |
| M 5,5 x 0,50 | **5,30** | 5,28 | 5,33 | 4,959 | 5,139 |
| M 6 x 0,75 | **5,65** | 5,62 | 5,70 | 5,188 | 5,424 |
| M 7 x 0,75 | **6,65** | 6,62 | 6,70 | 6,188 | 6,424 |
| M 8 x 0,75 | **7,65** | 7,62 | 7,70 | 7,188 | 7,424 |
| M 8 x 1,00 | **7,55** | 7,52 | 7,62 | 6,917 | 7,217 |
| M 9 x 0,75 | **8,65** | 8,62 | 8,70 | 8,188 | 8,424 |
| M 9 x 1,00 | **8,55** | 8,52 | 8,62 | 7,917 | 8,217 |
| M 10 x 0,75 | **9,65** | 9,62 | 9,70 | 9,188 | 9,424 |
| M 10 x 1,00 | **9,55** | 9,52 | 9,62 | 8,917 | 9,217 |
| M 10 x 1,25 | **9,40** | 9,36 | 9,47 | 8,647 | 8,982 |
| M 11 x 0,75 | **10,65** | 10,62 | 10,70 | 10,188 | 10,424 |
| M 11 x 1,00 | **10,55** | 10,52 | 10,62 | 9,917 | 10,217 |
| M 12 x 1,00 | **11,55** | 11,52 | 11,62 | 10,917 | 11,217 |
| M 12 x 1,25 | **11,40** | 11,36 | 11,47 | 10,647 | 10,982 |
| M 12 x 1,50 | **11,30** | 11,26 | 11,38 | 10,376 | 10,751 |
| M 14 x 1,00 | **13,55** | 13,52 | 13,62 | 12,917 | 13,217 |
| M 14 x 1,25 | **13,40** | 13,36 | 13,47 | 12,647 | 12,982 |
| M 14 x 1,50 | **13,30** | 13,26 | 13,38 | 12,376 | 12,751 |
| M 15 x 1,00 | **14,55** | 14,52 | 14,62 | 13,917 | 14,217 |
| M 15 x 1,50 | **14,30** | 14,26 | 14,38 | 13,376 | 13,751 |
| M 16 x 1,00 | **15,55** | 15,52 | 15,62 | 14,917 | 15,217 |
| M 16 x 1,50 | **15,30** | 15,26 | 15,38 | 14,376 | 14,751 |
| M 17 x 1,00 | **16,55** | 16,52 | 16,62 | 15,917 | 16,217 |

* M 2,5 x 0,35 hasta M 4 x 0,35 Ø-pretaladro rosca de tuerca 6H

| Diá. x Paso nom. P | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas 7H* | |
|---|---|---|---|---|---|
| | | min. | max. | min. | max. |
| mm | mm | mm | mm | mm | mm |
| M 17 x 1,50 | **16,30** | 16,26 | 16,38 | 15,376 | 15,751 |
| M 18 x 1,00 | **17,55** | 17,52 | 17,62 | 16,917 | 17,217 |
| M 18 x 1,50 | **17,30** | 17,26 | 17,38 | 16,376 | 16,751 |
| M 18 x 2,00 | **17,10** | 17,05 | 17,20 | 15,835 | 16,310 |
| M 20 x 1,00 | **19,55** | 19,52 | 19,62 | 18,917 | 19,217 |
| M 20 x 1,50 | **19,30** | 19,26 | 19,38 | 18,376 | 19,751 |
| M 24 x 1,00 | **23,55** | 23,52 | 23,62 | 22,917 | 23,217 |
| M 24 x 1,50 | **23,30** | 23,26 | 23,38 | 22,376 | 22,751 |
| M 24 x 2,00 | **23,10** | 23,05 | 23,20 | 21,835 | 22,310 |
| M 27 x 1,50 | **26,30** | 26,26 | 26,38 | 25,376 | 25,751 |
| M 30 x 1,50 | **29,30** | 29,26 | 29,38 | 28,376 | 28,751 |
| M 33 x 1,50 | **32,30** | 32,26 | 32,38 | 31,376 | 31,751 |
| M 36 x 1,50 | **35,30** | 35,26 | 35,38 | 34,376 | 34,751 |
| M 39 x 1,50 | **38,30** | 38,26 | 38,38 | 37,376 | 37,751 |
| M 42 x 1,50 | **41,30** | 41,26 | 41,38 | 42,376 | 42,751 |

**Campo de tolerancias para pretaladros en el laminado de roscas (según DIN 13, Parte 50)**
Por razones de tenacidad no es necesario cumplir con las tolerancias de pretaladros de las tolerancias 6H; la tolerancia 7H es suficiente para cumplir el que se compenetren las roscas macho y hembra no menos de 0.32xP. Además las roscas laminadas suelen tener una tenacidad más alta que las roscas cortadas por el fluido del material regular y el endurecimiento térmico.

## Roscas UNC ASME B1.1

| Diá. nom. | hilos por pulg. | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas 2B | |
|---|---|---|---|---|---|---|
| | | | min. | max. | min. | max. |
| | | mm | mm | mm | mm | mm |
| Nr. 1 | - 64 | **1,68** | 1,67 | 1,70 | 1,425 | 1,580 |
| Nr. 2 | - 56 | **1,98** | 1,97 | 2,01 | 1,694 | 1,872 |
| Nr. 3 | - 48 | **2,28** | 2,27 | 2,32 | 1,941 | 2,146 |
| Nr. 4 | - 40 | **2,55** | 2,54 | 2,59 | 2,157 | 2,385 |
| Nr. 5 | - 40 | **2,90** | 2,89 | 2,94 | 2,487 | 2,698 |
| Nr. 6 | - 32 | **3,15** | 3,14 | 3,19 | 2,642 | 2,896 |
| Nr. 8 | - 32 | **3,80** | 3,78 | 3,82 | 3,302 | 3,531 |
| Nr. 10 | - 24 | **4,35** | 4,33 | 4,39 | 3,683 | 3,937 |
| Nr. 12 | - 24 | **5,00** | 4,97 | 5,03 | 4,343 | 4,597 |
| 1/4 | - 20 | **5,75** | 5,72 | 5,80 | 4,978 | 5,258 |
| 5/16 | - 18 | **7,30** | 7,26 | 7,37 | 6,401 | 6,731 |
| 3/8 | - 16 | **8,80** | 8,77 | 8,88 | 7,798 | 8,153 |
| 7/16 | - 14 | **10,30** | 10,27 | 10,37 | 9,144 | 9,550 |
| 1/2 | - 13 | **11,80** | 11,77 | 11,88 | 10,592 | 11,024 |
| 9/16 | - 12 | **13,30** | 13,28 | 13,39 | 11,989 | 12,446 |
| 5/8 | - 11 | **14,80** | 14,78 | 14,90 | 13,386 | 13,868 |
| 3/4 | - 10 | **17,90** | 17,85 | 17,97 | 16,307 | 16,840 |
| 7/8 | - 9 | **21,00** | 20,95 | 21,10 | 19,177 | 19,761 |
| 1 | - 8 | **24,00** | 23,95 | 24,12 | 21,971 | 22,606 |

## Roscas UNF ASME B1.1

| Diá. nom. | hilos por pulg. | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas 2B | |
|---|---|---|---|---|---|---|
| | | | min. | max. | min. | max. |
| | | mm | mm | mm | mm | mm |
| Nr. 1 | - 72 | **1,70** | 1,69 | 1,72 | 1,473 | 1,610 |
| Nr. 2 | - 64 | **2,00** | 1,99 | 2,03 | 1,755 | 1,910 |
| Nr. 3 | - 56 | **2,30** | 2,29 | 2,34 | 2,024 | 2,197 |
| Nr. 4 | - 48 | **2,60** | 2,59 | 2,63 | 2,271 | 2,459 |
| Nr. 5 | - 44 | **2,90** | 2,89 | 2,93 | 2,550 | 2,741 |
| Nr. 6 | - 40 | **3,20** | 3,19 | 3,24 | 2,819 | 3,023 |
| Nr. 8 | - 36 | **3,85** | 3,83 | 3,88 | 3,404 | 3,607 |
| Nr. 10 | - 32 | **4,45** | 3,43 | 4,49 | 3,962 | 4,166 |
| Nr. 12 | - 28 | **5,10** | 5,07 | 5,13 | 4,496 | 4,724 |
| 1/4 | - 28 | **5,95** | 5,92 | 5,99 | 5,359 | 5,588 |
| 5/16 | - 24 | **7,45** | 7,42 | 7,50 | 6,782 | 7,036 |
| 3/8 | - 24 | **9,05** | 9,02 | 9,10 | 8,838 | 8,636 |
| 7/16 | - 20 | **10,55** | 10,48 | 10,58 | 9,728 | 10,033 |
| 1/2 | - 20 | **12,10** | 12,08 | 12,18 | 11,328 | 11,608 |
| 9/16 | - 18 | **13,65** | 13,61 | 13,72 | 12,751 | 13,081 |
| 5/8 | - 18 | **15,25** | 15,21 | 15,32 | 14,351 | 14,681 |
| 3/4 | - 16 | **18,35** | 15,30 | 18,41 | 17,323 | 17,678 |
| 7/8 | - 14 | **21,40** | 21,35 | 21,49 | 20,269 | 20,650 |
| 1 | - 12 | **24,45** | 24,40 | 24,54 | 23,114 | 23,571 |

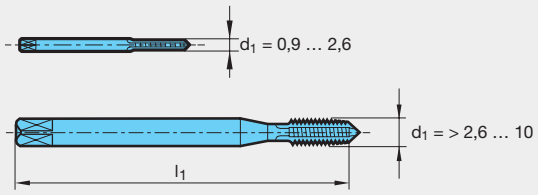
## Roscas withworth para tubos DIN EN ISO 228-1

| Diá. nom. | hilos por pulg. | Diá. taladro | Diá. taladro | | Diámetro pretaladro roscas de tuercas | |
|---|---|---|---|---|---|---|
| | | | min. | max. | min. | max. |
| pulg. | | mm | mm | mm | mm | mm |
| G 1/16 | 28 | **7,30** | 7,28 | 7,35 | 6,561 | 6,843 |
| G 1/8 | 28 | **9,30** | 9,28 | 9,35 | 8,566 | 8,848 |
| G 1/4 | 19 | **12,50** | 12,48 | 12,55 | 11,445 | 11,890 |
| G 3/8 | 19 | **16,00** | 15,98 | 16,05 | 14,950 | 15,395 |
| G 1/2 | 14 | **20,00** | 19,98 | 20,12 | 18,631 | 19,172 |
| G 5/8 | 14 | **22,00** | 21,98 | 22,12 | 20,587 | 21,128 |
| G 3/4 | 14 | **25,50** | 25,48 | 25,62 | 24,117 | 24,658 |
| G 7/8 | 14 | **29,25** | 29,23 | 29,37 | 27,877 | 28,418 |
| G 1 | 11 | **32,00** | 31,98 | 32,15 | 30,291 | 30,931 |
| G 1 1/4 | 11 | **40,75** | 40,70 | 40,85 | 38,952 | 39,592 |

# Referencias de las diferentes Normas

## DIN 371

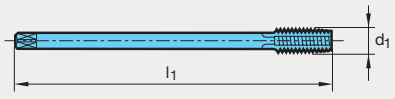
En Plano General DIN 2184-**1**




Norma para machos máquina para rosca métrica ISO normalizada y rosca métrica fina ISO con mango reforzado. Tipo largo.
Tipo de mango según los campos de diámetros al lado (mm)

## DIN 376

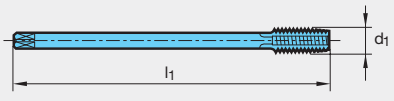
En Plano General DIN 2184-**1**




Norma para machos máquina para rosca métrica normalizada ISO con mango rebajado. Tipo largo.
Campo de diámetro d1 = 1,6 … 68 mm
( Ø M3, tipo de mango sin cuadrado)

## DIN 374

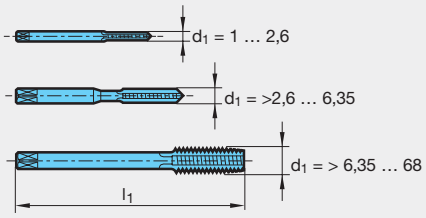
En Plano General DIN 2184-**1**




Norma para machos máquina para rosca métrica fina ISO con mango rebajado.
Tipo largo.
Campos de diámetro d1 = 3 … 52 mm

## DIN 352

En Plano General DIN 2184-**2**

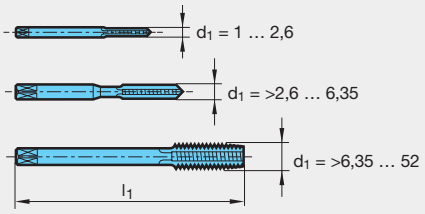



Norma para machos mano y máquina para rosca métrica normalizada ISO. Tipo corto.
Tipo de mango según campos de diámetros al lado (mm)

# Referencias de las diferentes Normas

## DIN 2181

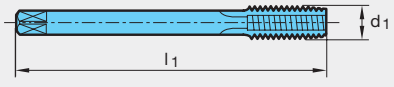
En Plano General DIN 2184-**2**




Norma para machos mano y máquina para rosca métrica fina ISO. Tipo corto.
Tipo de mango según campos de diámetros (mm) al lado.

## DIN 5156

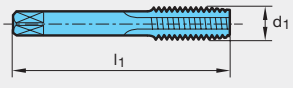
En Plano General DIN 2184-**1**




Norma para machos máquina para rosca G según DIN ISO 228 y para rosca Whitworth según DIN 2999. tipo corto.
Campo de diámetros:
Roscas G G 1/16“ ... G 4“
Roscas Whitworth Rp 1/16“... Rp 4“

## DIN 5157

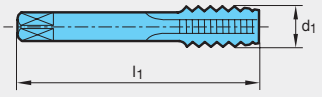
En Plano General DIN 2184-**2**




Norma para machos máquina para rosca G según DIN ISO 228 y para rosca Whitworth según DIN EN 10 226-1. Tipo corto.
Campo de diámetros:
Roscas G G 1/16“ ... G 4“
Roscas Whitworth Rp 1/16“... Rp 4“

## DIN 40 432

En Plano General DIN 2184-**2**

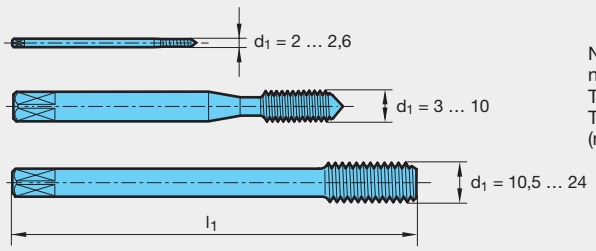



Norma para machos máquina para rosca PG según DIN 40 430. Tipo corto.
Campo de diámetro:
Pg 7 (12,5 mm) ... Pg 48 (59,3 mm)
Se sustituye por DIN 374 ISO 3 6G.

# Referencias de las diferentes Normas

## DIN 2174

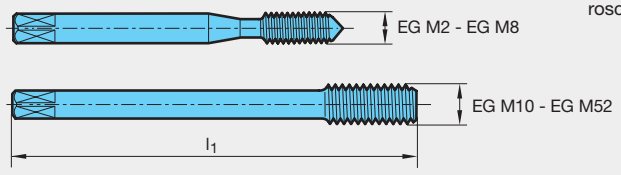
En Plano General DIN 2184-**1**




Norma para machos de laminación para rosca normalizada ISO y métrico fino-ISO.
Tipo largo.
Tipo de mango según campo de diámetros (mm) al lado.

## DIN 40 435

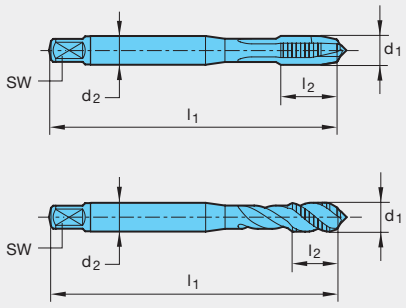
En Plano General DIN 2184-**1**




Norma para machos máquina para la rosca (EG) para injertos roscados de hilo con roscas métricas-ISO según DIN 8140.
Rosca normalizada EG M 2 hasta EG M52 y
rosca normalizada EG M 8 x 1 hasta EG M 48 x 3

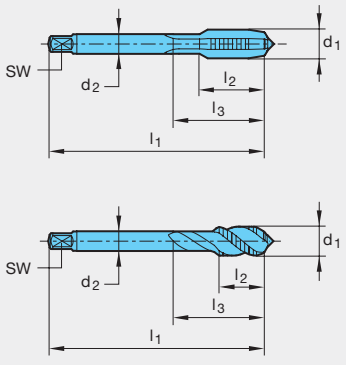
# DIN – estándares internacionales

## DIN 2184-1
## DIN 2184-2

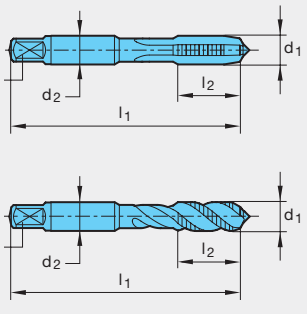



## JIS B 4430

Japan Industrial Standard

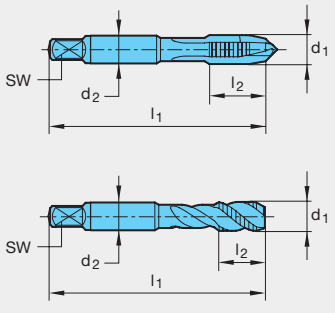


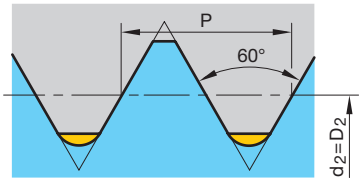
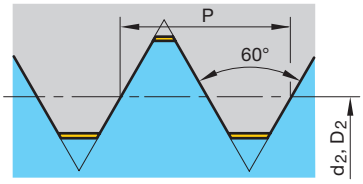
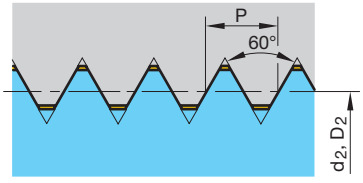
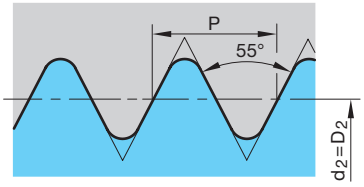
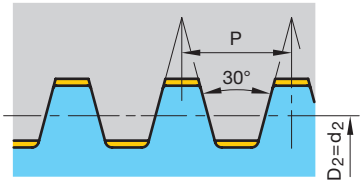
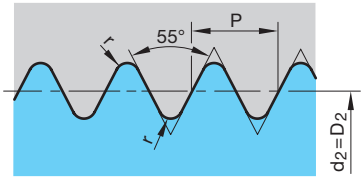
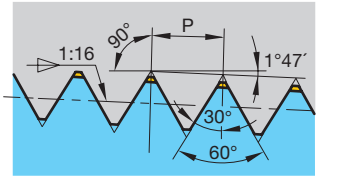

## ISO 529

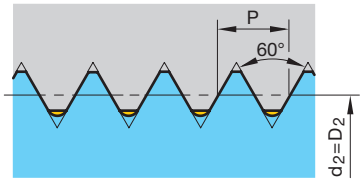
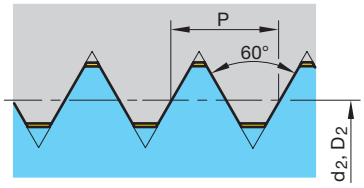
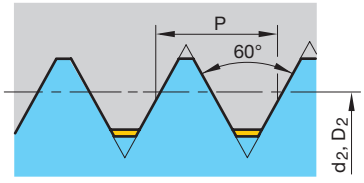
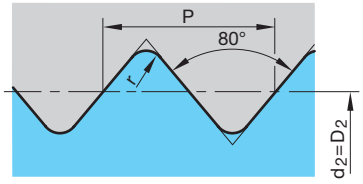
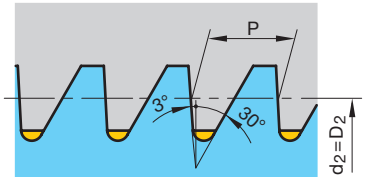
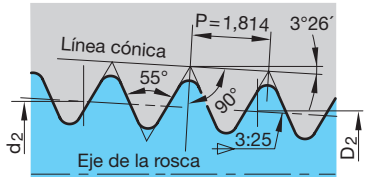
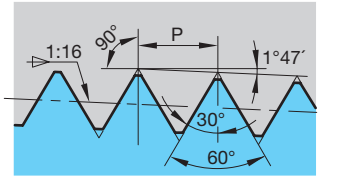


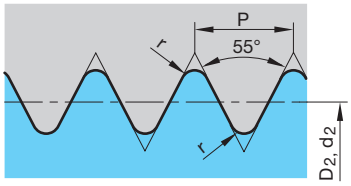
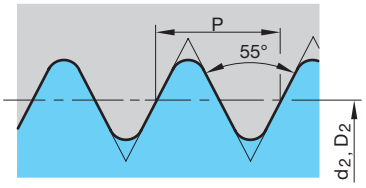
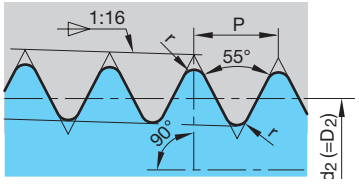
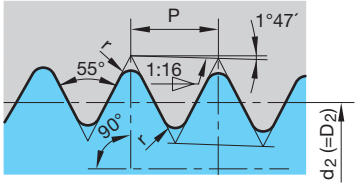
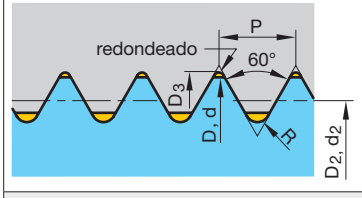
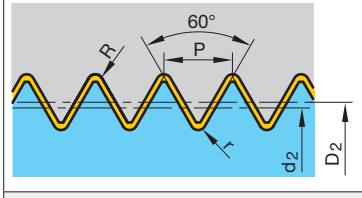
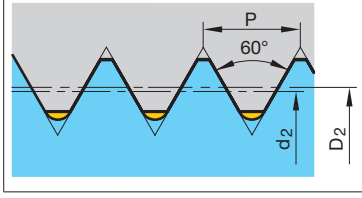

## ASME B94.9

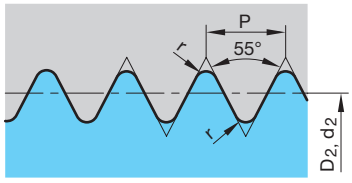
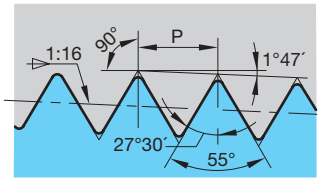
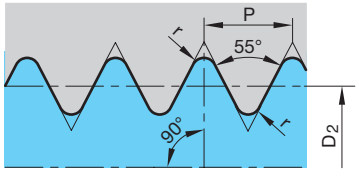
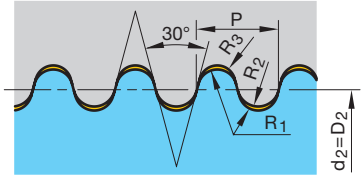
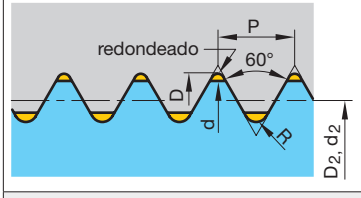
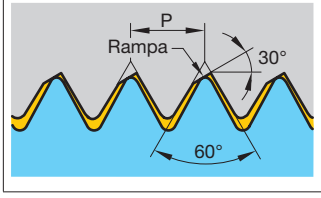
The American Society of Mechanical Engineers



| Croquis del perfil | Norma | Aplicación |
|---|---|---|
| **M Rosca Métrica ISO** | | |
|  | DIN 13-1 | Rosca normalizada |
| **UNC Unified Coarse Rosca en pulgadas** | | |
|  | ASME B1.1 | Rosca UN normalizada |
| **UNEF Unified Extra Fine Thread Rosca en pulgadas** | | |
|  | ASME B1.1 | Un Extra normalizada rosca fina |
| **G rosca ciíndrica para tubos para juntas no estancas en rosca** | | |
|  | DIN EN ISO 228-1 | Roscas para tubos , uniones de tubos y Griferías |
| **TR Rosca métrica ISO Trapezoidal** | | |
|  | DIN 103 | Pinzas tensoras normalizadas Vehículos sobre railes |
| **W Rosca Whitworth cilíndrica** | | |
|  | DIN 477 | Soportes laterales y accesorios para válvulas de botellas de gas |
| **NPT Rosca americana estandarizada para tubos en pulgadas cónica con sellador** | | |
|  | ANSI/ ASME B1.20.1 | Tubos roscados y juntas |

| Croquis del perfil | Norma | Aplicación |
|---|---|---|
| **MF Rosca métrica fina** | | |
|  | DIN 13-2 hasta DIN 13-11 | Rosca fina normalizada |
| **UNF Unified Fine Thread Rosca en pulgadas** | | |
|  | ASME B1.1 Rosca trapezoidal métrica ISO | Rosca fina UN normalizada |
| **UNS Unified Special Thread Rosca en pulgada** | | |
|  | ASME B1.1 | Rosca UN generalizada. Rosca especial |
| **PG Rosca para tubos de acero** | | |
|  | DIN 40430 rosca redonda cilíndirca | Técnicas eléctricas |
| **S Rosca de sierra métrica** | | |
|  | DIN 513 | Al sujetar desde un lado Fuerzas generadas |
| **W rosca cónica Whitworth** | | |
|  | DIN 477 | Perno enroscable y Cuello de botella de gas para Válvulas de botellas de gas |
| **NPTF rosca americana en pulgadas estandarizadas para tubos cónico seco estanco** | | |
|  | ANSI B1.20.3 | Tubos roscados y juntas |

| Croquis del perfil | Norma | Aplicación |
|---|---|---|
| **BSW Whitworth rosca cilíndirca** | | |
|  | B.S. 84 British estandar | Rosca para tubos, Uniones de tubos y Griferías |
| **BSP Rosca cilíndrica para tubos (idéntica a G)** | | |
|  | B.S. 93 British estandar | Rosca para tubos, Uniones de tubos y Griferías |
| **R Whitworth Rosca para tubos cónica exterior** | | |
|  | DIN EN 10226 1 basado en ISO 7-1 Suple la DIN 2999 1 | Rosca exterior para Tubos roscados y juntas para roscas que juntan en las uniones |
| **Rc Whitworth rosca cónica interior** | | |
|  | DIN EN 10226 2 (casi en deshuso en Europa, sustituible con roscas para tubos según ISO 7 1 | Roscas interiores para Tubos roscados y juntas para roscas que juntan en las uniones |
| **MJ Roscas Rosca métrica** | | |
|  | DIN ISO 5855-1 | Para la industria aeronáutica y espacial |
| **Vg roscas de valvulería** | | |
|  | DIN 7756 | Válvulas para neumáticos Caja de distribución |
| **MFS** | | |
|  | DIN 8141 | Central en Aleaciones de aluminio y fundición |

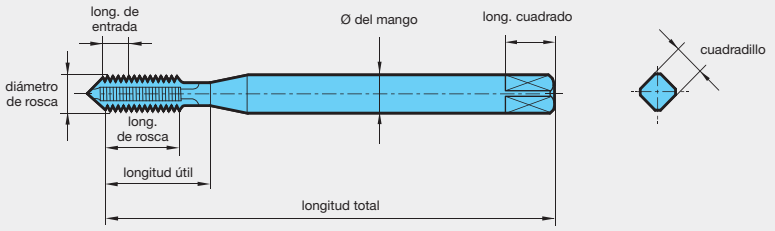
| Croquis del perfil | Norma | Aplicación |
|---|---|---|
| **BSF Whitworth roscas finas cilíndricas** | | |
|  | B.S. 84 British estandar Fine | Rosca para tubos, Uniones de tubos y Griferías |
| **BSPT Roscas cónicas para tubos (idénticas a Rc)** | | |
|  | B.S. 93 British estandar | Roscas interioires para tubos roscados y juntas |
| **Rp Whitworth Rosca para tubos cilíndrica interior** | | |
|  | DIN EN 10226 1 basado en ISO 7-1 Suple la DIN 2999 1 | Roscas interioires para tubos roscados y juntas para roscas que juntan en las uniones |
| **RD rosca cilíndrica redonda** | | |
|  | DIN 405 | General, gancho para peso Minería, industria alimenticia |
| **UNJ rosca en pulgadas** | | |
|  | ISO 3161 | Para la industria aeronáutica y espacial |
| **MSG Rosca de cierre para tuercas** | | |
|  | Norma de fabrica | Rosca autobloqueante Cajas de cambio etc. |

Pasador

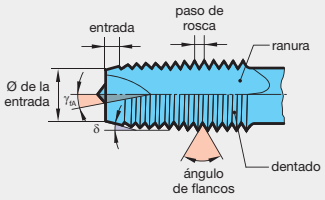
Tuerca

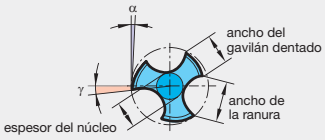
Juego

# Conceptos y ángulos, centrajes y tipos de ranura




$\delta$ = ángulo de tope
$\gamma_{fA}$ = ángulo de la entrada corregida
$\alpha$ = ángulo de incisión
$\gamma$ = ángulo de desalojo




## Tipos de ranura

Ranura recta, forma C **sin** entrada corregida

Ranura recta, forma B **con** entrada corregida

ángulo de espiral **15°**

ángulo de espiral **40°**

## Tipos de centrado (Normalmente según DIN 2197/DIN 2175)

| Capacidad del diámetro mm | Centrado en la sección de corte | | Centrado en el mango |
|---|---|---|---|
| | con forma de corte inicial A, C, D, E | con forma de corte inicial B | |
| ≤ 4,2 | ① | ① | ④⑤⑥ |
| > 4,2 … 5,6 | ①② | ① | ④⑤⑥ |
| > 5,6 … 10,0 | ①②③ | ①②③ | ④⑤⑥ |
| > 10,0 | ③ | ③ | ⑥ |

## Geometrías de los canales de refrigeración

Aportación de refrigerante axial con salida axial

Aportación de refrigerante axial con salida radial en las ranuras en la zona de entrada

# Formas de la entrada destalonada, selección y aplicación

En el caso de roscas interiores, el trabajo de mecanizado completo lo realizan los dientes de la entrada destalonada. Por ello, la decisión sobre la forma del corte inicial apropiada se ha de tomar con mucho detenimiento, ya que de ello dependerán, en gran medida, la duración del macho y la calidad de la rosca a realizar.

Hablando en general, la forma y longitud de la entrada dependen del tipo de taladro que se tenga que roscar. El roscado de taladros pasantes no necesita generalmente mayor definición, mientras que, por taladro ciego, se designan todos aquellos taladros que, al mecanizar la rosca, extraen la viruta en la dirección contraria a la del avance, es decir, hacia las ranuras de la herramienta de roscar, y después la cortan cuando la herramienta de roscar se saca fuera del taladro.

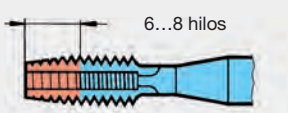
La longitud de la entrada se determina mediante diferentes factores opuestos. Para evitar sobrecargas, mellado prematuro y roscas demasiado grandes, el número de hilos de entrada no debera ser demasiado pequeño. Sin embargo, un corte inicial demasiado largo eleva el par de torsión y con ello el peligro de rotura. La entrada corregida forma B garantiza que la salida de viruta se realice siempre en el sentido del avance.

**agujero pasante**

**agujero ciego**

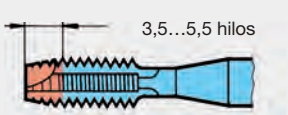
## Formas de entrada según DIN 2197

**Forma A**



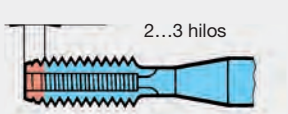

larga, 6 - 8 hilos
para taladros pasantes
cortes

**Forma B**



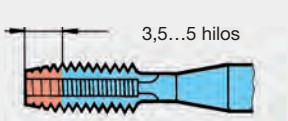

media, 3,5 - 5 hilos
Con entrada corregida, para todos
los taladros pasantes y roscas profundas
en materiales de viruta media y larga

**Forma C**



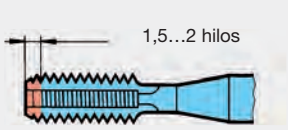

corta, 2 - 3 hilos
para taladros ciegos y, en general,
para aluminio, fundición gris y latón

**Forma D**



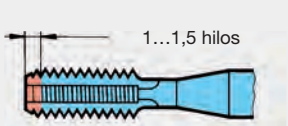

media, 3,5 - 5 hilos
para taladros pasantes cortes

**Forma E**




extracorta, 1,5-2 hilos
para taladros ciegos con máximo
aprovechamiento de rosca útil.

**Forma F**

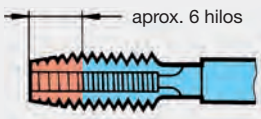



extracorta, 1-1,5 hilos,
para taladros ciegos con máximo
aprovechamiento de rosca útil.
Evitar siempre que sea posible

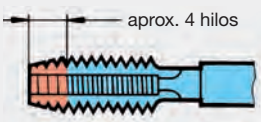
# Formas de la entrada destalonada, selección y aplicación

**Longitudes de corte inicial para juegos de 3 machos**

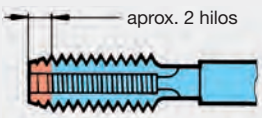
**Forma A**
para desbaste




**Forma D**
para semi-acabado

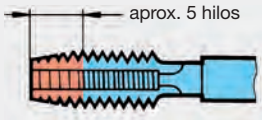



**Forma C**
para acabado

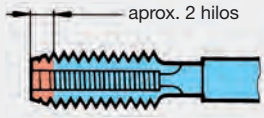



**Longitudes de corte inicial para juegos de 2 machos**

**Forma D**
para desbaste




**Forma C**
para acabado




**Recomendación de empleo**

Mientras que, en el primer ejemplo, el tipo de núcleo del taladro requerido determina la entrada, por lo general, la geometría del macho de roscar (es decir, forma, número y sentido de las ranuras, ángulo de corte, etc.) depende del material a mecanizar y de la aplicación. Básicamente, los machos de hasta M16 para la mecanización de roscas métricas ISO o para la mecanización de roscas métricas ISO o para la mecanización de roscas métricas ISO o para la industria de ingeniería civil en general, tienen 3 ranuras y, a partir de este tamaño, 4 ranuras o más.

Los machos de ranuras a izquierdas y los machos con entrada corregida empujan las virutas en el sentido de corte o en el sentido del avance y, por ello, son particularmente apropiados para el mecanizado de taladros pasantes. Los machos con ranuras rectas y con entrada larga (Forma D) también tienen aquí buenos resultados.

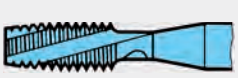
En cuanto a los taladros ciegos, recomendamos machos con ranuras a derechas o machos con ranuras rectas con una longitud de entrada corta. Las herramientas con ranu-ras a derecha llevan la viruta hacia atrás, es decir, hacia el mango. La longitud de la entrada está diseñada de tal manera que, al invertir el giro, las virutas no se pegan, sino que se cortan de modo fiable.

Para el mecanizado de aluminio, fundición gris y latón se requieren machos con una longitud corta de la entrada, siendo indiferente si se necesitan taladros pasantes o taladros ciegos. En estos materiales, una longitud larga de entrada se comportaría como una broca avellanadora con ranura rompevirutas y sólo taladraría el núcleo del agujero al diámetro normal de la rosca en vez de cortar la rosca.

Los machos de ranura recta sin entrada corregida son herramientas de uso universal y tienen la desventaja de no obtener resultados óptimos en determinados materiales. Merece la pena el esfuerzo de escoger la herramienta más adecuada para la tarea concreta de mecanizado.

**agujero pasante**

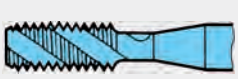
Macho con ranura recta y entrada corregida



Macho con ranura a izquierdas

Macho con ranura recta y entrada larga

**agujero ciego**

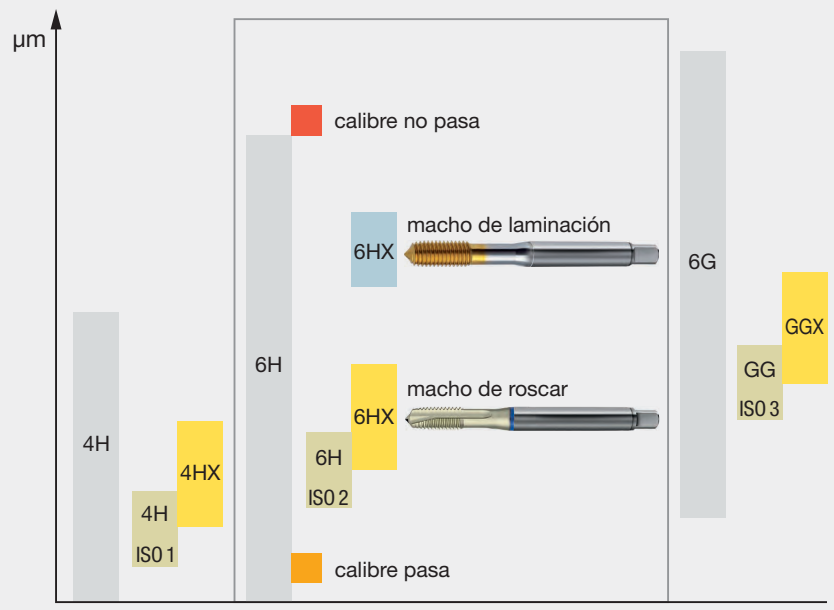


Macho con ranura a derechas

Macho con ranura recta y entrada corta

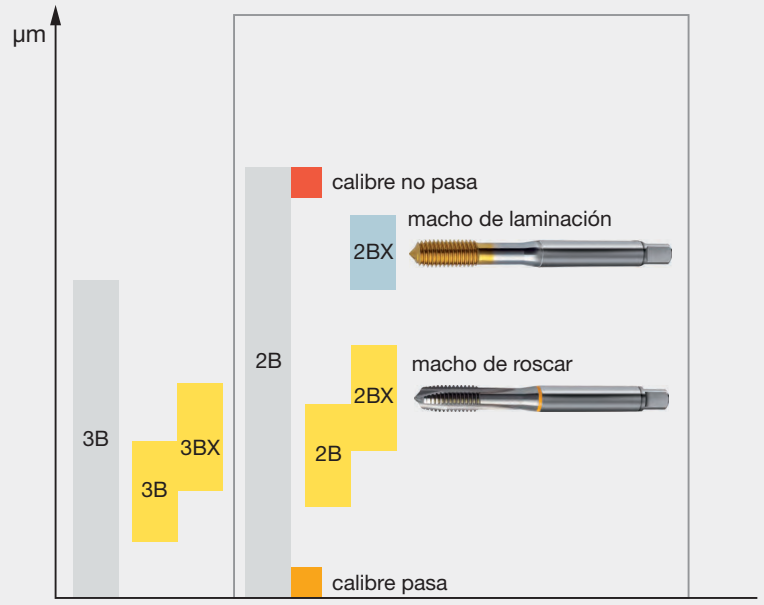
# Campos de tolerancia
# Según DIN EN 22857

**Rosca métrica**




- Campo de tolerancias roscas interiores según DIN ISO 965-1
- Clase de tolerancia machos de roscar según DIN EN 22857
- Clase de tolerancia machos de roscar según Gühring estándar
- Clase de tolerancia machos de laminación Gühring estándar
- Clase de tolerancia calibre no pasa según DIN ISO 1502
- Clase de tolerancia calibre pasa según DIN ISO 1502

**Roscas Unified**




- Campo de tolerancias roscas interiores según ASME B1.1
- Clase de tolerancia machos de roscar según Gühring estándar
- Clase de tolerancia machos de laminación Gühring estándar
- Clase de tolerancia calibre no pasa según ANSI/ASME B1.2
- Clase de tolerancia calibre pasa según ANSI/ASME B1.2

# Machos de roscar para roscas métricas ISO DIN EN 22857 (Extracto)

**La adaptación entre roscas**
Uniones entre roscas interiores y exteriores se separan con una barra inclinada, por ejemplo 6H/6g (tuerca/pasador).
La adaptación se debe elegir según la necesidad de unir cada una de las roscas.
Los campos de tolerancia de los tipos medio, fino, grueso, se asignan a los tres largos de enroscado normal (N), corto (S) y largo (S). En general son válidas las siguientes reglas para la elección del tipo de rosca:

**Tipo de tolerancia fino (S):**
Para roscas de precisión cuando solamente se permiten pequeñas variaciones en la adaptación entre roscas.

**Tipo de tolerancia medio (N):**
Aplicaciones generales

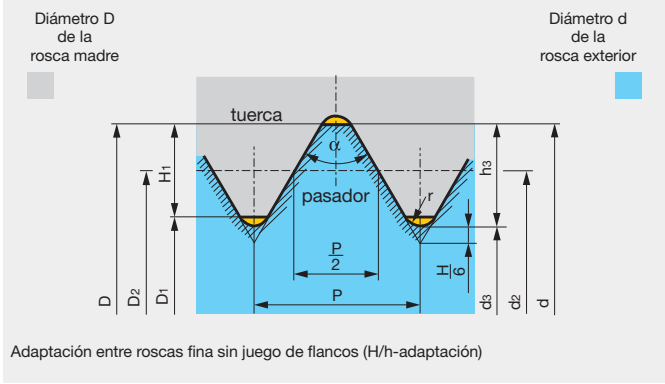
**Tipo de tolerancia grueso (L):**
Cuando no existen exigencias específicas en exactitud y en los casos en los que se puedan producir problemas de fabricación como por ejemplo en roscados de barras cilindradas en caliente, roscas en agujeros profundos o en roscas en piezas de plástico.

**Los largos de enroscado**
Los largos de enroscado también influyen sobre la calidad de la unión entre roscas. El sistema de tolerancias ISO se estipuló especialmente para el diámetro de flancos sobre tres largos de enroscado.

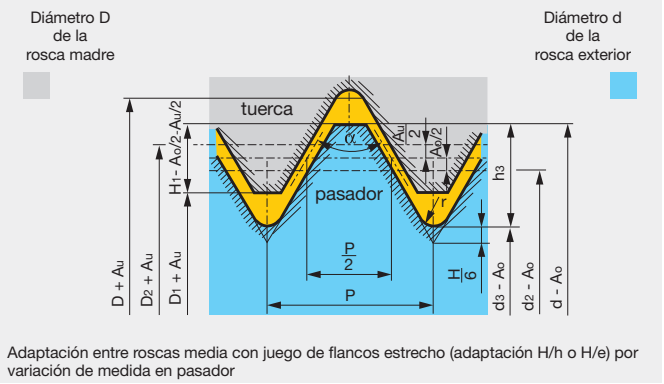
| | | |
|---|---|---|
| S | (Short) | = enroscado corto |
| N | (Normal) | = enroscado normal |
| L | (Long) | = enroscado largo |

Se pueden elegir las siguientes uniones con el largo normal N de enroscado:
Para soportar más carga en la unión de roscas , aconsejamos escoger adaptaciones estrechas en longitudes de roscas cortas. En longitudes de roscas largas se deben utilizar uniones con mayor tolerancia de adaptación para compensar posibles desviaciones del paso de rosca.

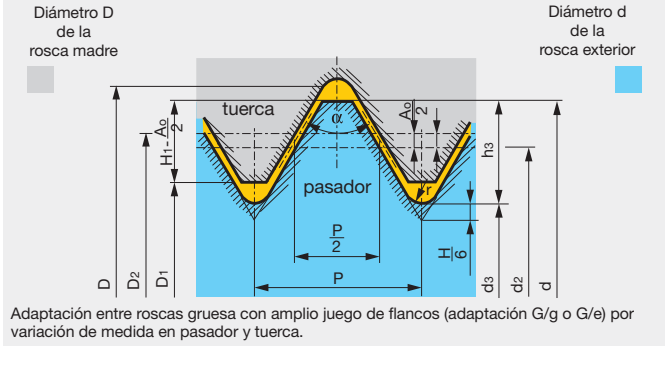
**Las adaptaciones de rosca con diferente juego de flancos**



Adaptación entre roscas fina sin juego de flancos (H/h-adaptación)



Adaptación entre roscas media con juego de flancos estrecho (adaptación H/h o H/e) por variación de medida en pasador



Adaptación entre roscas gruesa con amplio juego de flancos (adaptación G/g o G/e) por variación de medida en pasador y tuerca.

Explicación
de las nomenclaturas

| | | |
|---|---|---|
| D | = | diámetro nominal rosca madre |
| $D_1$ | = | diámetro de núcleo rosca madre |
| $D_2$ | = | diámetro de flancos rosca madre |
| d | = | diámetro nominal rosca pasador |
| $d_2$ | = | diámetro de flancos rosca pasador |
| $d_3$ | = | diámetro de núcleo rosca pasador |
| P | = | paso de rosca |
| α | = | ángulo de flancos |
| H | = | altura del perfil de rosca |
| $A_o$ | = | medida excedente superior |
| $A_u$ | = | medida excedente inferior |

## Machos de roscar para el mecanizado de acero endurecido (45 – 55 HRC)

Para roscar en materiales con una tenacidad superior a 1200 N/mm² hemos desarrollado un macho HSS-E-PM con recubrimiento TiCN

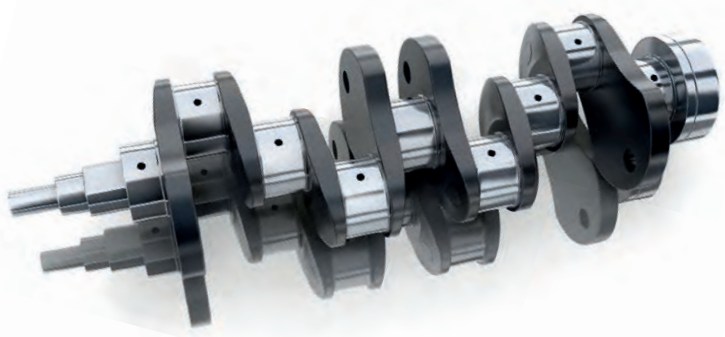
El diseño especial permite fabricar roscas con un proceso seguro y muy buenas condiciones de corte en materiales duros.

Apropiado para la aplicación en el mecanizado de herramientas y moldes y también en diversos componentes de maquinaria y automóvil después del tratamiento térmico.

Velocidad de corte recomendada vc = 2 – 8 m/min., dependiendo de la tenacidad de la pieza.

## Fabricación de roscas con un proceso seguro gracias a viruta corta

Para conseguir grandes rendimientos y un proceso seguro en la producción en serie en aceros con mayor tenacidad (850 – 1250 N/mm2), como por ejemplo un cigüeñal, es importante conseguir virutas cortas. Esto solo es posible con ranuras blancas o correcciones. Aquí Gühring ofrece la solución estándar ideal con sus artículos nº 1188, 1194 y 1200.



## Machos de roscar universales con canales de refrigeración para materiales de viruta corta (GG,Al,acero)

Un macho de roscar habitualmente evacua la viruta de un agujero ciego mediante las ranuras. Fundición de hierro, aleaciones AlSi, latón y aleaciones de cobre son materiales de viruta corta. Aquí se aplican machos de roscar con ranuras rectas. En el caso de machos de roscar con canales de refrigeración es el lubricante el que evacua la viruta del agujero ciego.

Los machos de roscar rectos con canales de refrigeración en M (Art.nº 302,297,1091,4165) y MF (Art.nº 1007,1090), son especialmente adecuados para materiales de viruta corta.

El transporte de las virutas largas en aceros de construcción mediante las ranuras es un problema cada vez más grande. El objetivo es crear virutas cortas con machos de roscar rectos y evacuarlas mediante el lubrificante.

El machos de roscar con refrigeración interna en el husillo de la máquina consigue un mayor rendimiento y una mejor calidad superficial de rosca.

Una aplicación típica es el mecanizado de cajas de cambio, bloques de cilindro y cilindros, cigüeñales o piezas hidráulicas.

## Superficie blanca

Nuestras herramientas de aceros rápido o de nuestra propia fabricación de metal duro Ofrecen buenas características básicas para diversos materiales.

## Superficie vaporizada

Con el vaporizado las zonas del borde y la superficie de acero se transforman químicamente y en milésimas creando una capa milesimal de óxido de hierro (3-10 um). Estas superficies mejoran el comportamiento tribológico de las herramientas. Con esta transformación de la superficie, el lubrificante y refrigerante se adhiere mejor a la herramienta. Este tratamiento se aplica generalmente para el mecanizado de aceros al carbono que con velocidades de corte bajas tienden a crear soldaduras de material. Un nitrurado adicional de las herramientas blancas ayuda con nitrógeno a endurecerlas mas y así poder aplicarlas en el caso de materiales abrasivos.

## Recubrimiento TIN

Temperatura max. de aplicación: < 600ºC
Color: amarillo oro
Dureza: 2300 HV0.05

El recubrimiento TIN que Gühring ya introdujo en los años 1980 muestra buenas cualidades de aplicación en el roscado. En este campo se aplica como capa universal comprobada.

## Recubrimiento TiCN

Temperatura max. de aplicación: < 40ºC
Color: gris violeta
Dureza: 3000 HV0.05

Una introducción de carbono en el TiCN incrementa la tenacidad y dureza y reduce el coeficiente de fricción en comparación al recubrimiento TIN. Gracias a su gran resistencia al desgaste es una capa muy apropiada para materiales abrasivos.

**Recubrimiento TiAlN**

Temperatura max. de aplicación: < 800ºC
Color: violeta
Dureza: 3300 HV0.05

El recubrimiento clásico TiAlN proporciona niveles más altos de dureza y mayor resistencia
Térmica en comparación al TIN y TiCN y es muy apropiada para la aplicación en fundición y aceros generales.

**Recubrimiento SIRIUS**

Temperatura max. de aplicación: < 900º
Color: oro pálido
Dureza: 3400 HV0.05

El recubrimiento Sirius es un recubrimiento multicapa. Gracias al componente TiAlN proporciona una mayor resistencia al desgaste. Es expresamente apropiada para el roscado de agujeros pasantes en aceros inoxidables.

**Recubrimiento Carbo**

Temperatura max. de aplicación: < 500ºC
Color: negro-gris
Dureza: 5000 HV0.05

Con la capa amorfa de carbono (ta.C) se consigue un amplio campo de aplicaciones en metales no ferríticos. Este recubrimiento se puede utilizar tanto para roscar como para laminar roscas en fundición de aluminio (<12% Si) como en aleaciones de aluminio, cobre, latón y bronce.

**Recubrimiento AlCrN**

Temperatura max. de aplicación: <1100ºC
Color: gris-azul
Dureza: 3200 HV0.05

AlCrN puede ser una alternativa al TIN y TiCN para laminar roscas en aceros. Este recubrimiento sin Ti destaca por su gran resistencia térmica y dureza.

| | roscar | | | fresar roscas | | laminar | | |
|---|---|---|---|---|---|---|---|---|
| | metal duro | | HSS | metal duro | | metal duro | | HSS |
| | convencional | MMS | | convencional | MMS | convencional | MMS | |
| **Aceros-C,** | - | - | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **aceros automáticos,** | - | - | TiAlN | - | - | TiN | TiN | TiN |
| **Aceros-Mn** | - | - | TiN | - | - | - | - | - |
| | - | - | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Acero, bajo aleado** | - | - | TiAlN | - | - | TiN | TiN | TiN |
| | - | - | TiN | - | - | - | - | AlCrN |
| | - | - | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Acero aleado** | - | - | TiAlN | - | - | TiN | TiN | TiN |
| | - | - | TiN | - | - | - | - | AlCrN |
| | - | - | TiCN | TiAlN | TiAlN | - | - | - |
| **Acero, endurecido <55 HRC** | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | TiCN | - | - | TiAlN | TiAlN | - | - | - |
| **Acero, endurecido 55-65 HRC** | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | - | - | Sirius[1]/TiAlN[2] | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Acero, corrosión y resistente a los ácidos** | - | - | TiN | - | - | TiN | - | TiN |
| | - | - | - | - | - | - | - | - |
| | TiAlN | TiAlN | TiAlN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Hierro fundido** | TiCN | - | TiCN | - | - | TiN | TiN | TiN |
| | - | - | TiN | - | - | - | - | - |
| | brillante | brillante | brillante | brillante | brillante | Carbo | Carbo | Carbo |
| **Aleaciones maleables de aluminio** | Carbo | Carbo | Carbo | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Aleación de aluminio fundido (< 12% silicio)** | - | - | - | brillante | brillante | Carbo | Carbo | Carbo |
| | - | - | - | - | - | - | - | - |
| | TiCN | TiCN | TiCN | TiCN | TiCN | - | - | - |
| **Aleación de aluminio fundido (≥ 12% silicio)** | Cristall | - | - | Cristall | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | - | - | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Aleaciones de níquel (p.e. Inconel)** | - | - | TiAlN | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | - | - | TiCN | TiCN | TiCN | TiCN | TiCN | TiCN |
| **Titanio y aleaciones de titanio** | - | - | TiAlN | - | - | - | - | - |
| | brillante | brillante | brillante | brillante | - | Carbo | Carbo | Carbo |
| **Cobre/Bronces/Latón** | Carbo | Carbo | Carbo | - | - | - | - | - |
| | brillante | - | brillante | TiCN | TiCN | - | - | - |
| **Cobalto-cromo aleaciones** | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| **Metales preciosos** | - | - | - | - | - | - | - | - |
| **Cerámica** | - | - | - | - | - | - | - | - |
| **Materiales sintéticos, no reforzada** | brillante | - | brillante | brillante | brillante | - | - | - |
| | TiCN | TiCN | - | TiCN | TiCN | - | - | - |
| **Materiales sintéticos, reforzado con fibra** | - | - | - | - | - | - | - | - |

[1]... en agujeros pasantes [2]... en agujeros ciegos

**Nota:**

La tabla muestra las recomendaciones generales de aplicación de los recubrimientos Gühring.La prioridad es de arriba hacia abajo.

# Errores y dificultades con nuevos machos de roscar

| Error | Causas | Soluciones |
|---|---|---|
| **1. Superficie de rosca sucia** | Geometría no idónea para la aplicación | Utilizar el macho correcto para el material a trabajar |
| | Velocidad de corte demasiado alta | Reducir la velocidad de corte<br>Optimizar la lubricación |
| | Lubricante refrigerante o su transporte insuficiente | Preocuparse de que haya suficiente y buen lubricante refrigerante |
| | Acumulación de viruta | Utilizar un tipo de macho adecuado |
| | Diámetro del pretaladro demasiado pequeño | Realizar un pretaladro con el diámetro correcto, ver tabla de pretaladros para roscas |
| | En materiales duros o tenaces demasiada fatiga para la herramienta o paso muy grande | Utilizar juegos de machos de roscar |
| | Material sobre los cortes | Utilizar machos de roscar con tratamiento superficial |
| | Soldaduras de material en frío | Optimizar lubricante refrigerante |
| **2. Poco rendimiento** | Superficie del pretaladro endurecida | Comprobar desgaste de la broca (afilado),<br>Hacer tratamiento térmico o superficial después del roscado |
| | Ver todas las causas bajo superficie de rosca sucia | Ver todas las causas bajo superficie de rosca sucia |
| | acumulación de viruta | utilizar el macho correcto |
| **3. Rotura de herramienta al entrar o salir** | Diámetro del pretaladro demasiado pequeño | Fabricar diámetro de pretaladro correctamente, ver tabla de pretaladros |
| | Dientes de entrada sobrecargados | Tener en cuenta una entrada más larga (agujero ciego o pasante)<br>Aumenta número de dientes de entrada con más ranuras<br>Utilizar juegos de machos de roscar |
| | Macho toca al final sobre la base del pretaladro | Comprobar profundidad del pretaladro<br>Utilizar porta-machos con compensación longitudinal o embrague de par de fuerzas |
| | Falta avellanado en el pretaladro o esta equivocado<br>Error en el ángulo o posicionamiento del pretaladro | Avellanar el pretaladro con el ángulo correcto<br>Comprobar un buen agarre de la pieza<br>Utilizar porta-machos con oscilación paralela al eje<br>Comprobar la broca del pretaladro |
| | Dureza de la herramienta no idónea para el mecanizado<br>Geometría de los cortes no idónea para la aplicación | Utilizar el macho de roscar idóneo para la aplicación. |

# Errores y dificultades con machos de roscar reafilados

| Error | Causas | Soluciones |
|---|---|---|
| **1. Rosca sale demasiado grande** | rebaba del rectificado | Eliminar rebaba de rectificado |
| | Geometrías de corte (entrada, ángulo de desalojo, ángulo de incisión o entrada corregida) mal reafiladas | Tener en cuenta los datos técnicos al reafilar<br>Tener en cuenta instrucciones de reafilado |
| **2. Rosca sale demasiado estrecha** | Parte gastada mal reafilada | Volver a reafilar o utilizar un macho nuevo.<br>Tener en cuenta el límite máx. de reafilado |
| | Macho de roscar reafilado demasiadas veces y muy pequeño | Llegado al límite máx. de reafilado utilizar herramienta nueva |
| **3. Superficie de rosca sucia** | rebaba del rectificado | Eliminar rebaba de rectificado |
| | Geometrías de corte (entrada, ángulo de desalojo, ángulo de incisión o entrada corregida) mal reafiladas | Tener en cuenta los datos técnicos al reafilar<br>Tener en cuenta instrucciones de reafilado |
| | Profundidad en superficie de machos demasiado grande | Volver a reafilar o utilizar un macho nuevo.<br>Tener en cuenta el límite máx. de reafilado |
| | Soldaduras en frío en los flancos de rosca | Eliminar soldaduras en frío |
| **4. Poco rendimeinto** | Geometrías de corte (entrada, ángulo de desalojo, ángulo de incisión y entrada corregida) mal reafiladas | Tener en cuenta los datos técnicos al reafilar<br>Tener en cuenta instrucciones de reafilado |
| | Pérdida de dureza del macho por influencia térmica en el reafilado | Comprobar calidad de muela<br>Comprobar aportación de refrigerante |
| | Pérdida del tratamiento superficial | Volver a recubrir<br>Comprobar el recubrimiento de cara al material a mecanizar |

# Fabricación de roscas de laminación

Los machos de laminación, son herramientas para la fabricación de roscas interiores sin virutas. Al contrario del roscado por corte en el que se saca material cortando, en el macho de laminación se deforma y presiona el material en frío y sin interrumpir el fluido de dicho material.

La laminación se define según DIN 8583 como un prensado de una rosca en una pieza con un plano de influencia en forma de tornillo. La parte roscante con forma de tornillo y un polígono se “atornilla” con un avance equivalente al paso de rosca, dentro de la pieza pretaladrada. Durante este proceso el perfil de rosca se prensa escalonadamente a través del la entrada de rosca en el material. De esta manera la tensión sobrepasa los límites y el material se deforma. El material se desvía radialmente y fluye a lo largo del perfil de rosca hasta el final de la cresta y crea así el núcleo de la rosca madre. Mediante el proceso de fluido se crean en el final de las crestas las formas de laminación (gárras).

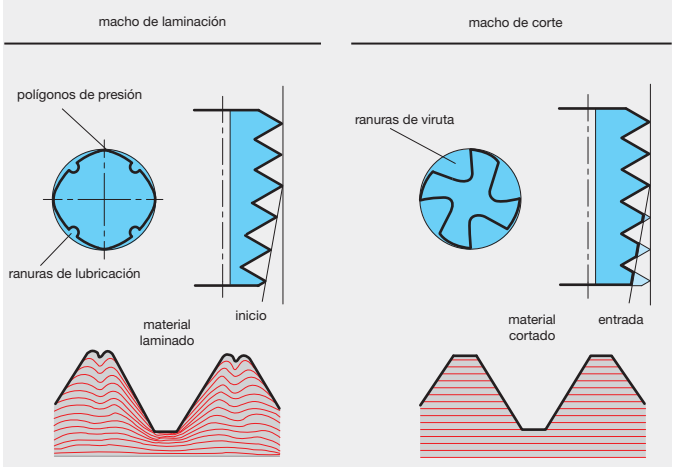
El pretaladro depende mucho de la deformabilidad del material, de la geometría de la pieza y del la fuerza requerida a la rosca. En relación al roscado de corte se debe elegir un pretaladro mayor. Con un diámetro de pretaladro mayor, la fatiga de la herramienta se reduce y el rendimiento aumenta. La fuerza de la rosca sigue siendo suficiente incluso con un 50% de profundidad gracias al fluido de material uniforme y la deformación en frío. Las puntas de rosca sin completar son una identificación típica del laminado. Con un flanco claramente identificado no existe influencia sobre la tenacidad de la rosca. La calidad de formación de rosca se debe determinar con pruebas previamente.

En la laminación, la lubricación es muy importante. Ella evita que se pegue material en los flancos de rosca y asegura que el par de fuerzas necesario no aumente demasiado. ¡Por esta razón la lubricación no debe fallar! Lubricantes con grafito o aceites como los que se utilizan cuando se trabaja con rodillos, son ideales para la laminación de roscas. ¡Trabaje siempre pensando que una buena lubricación ya supone media laminación!

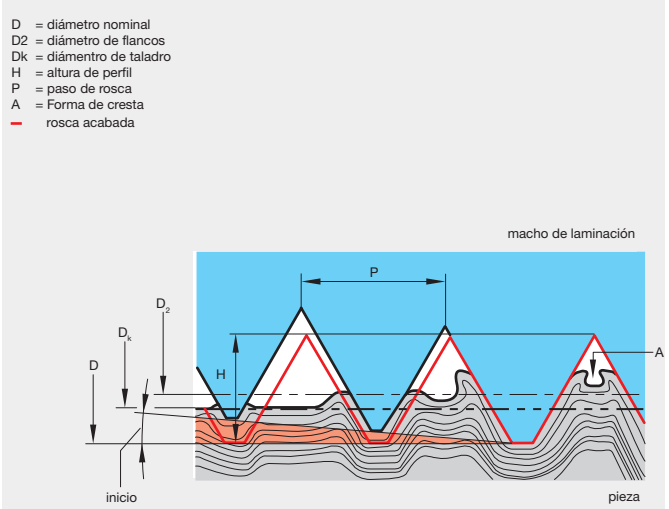
**Las ventajas de la laminación**

- No se crea viruta.
- Se pueden fabricar roscas ciegas y pasantes con la misma herramienta.
- Se puede mecanizar muchos materiales distintos.
- No se puede cortar mal una rosca.
- No existen fallos de paso de rosca o ángulo de flancos como pasa en el corte.
- Las roscas interiores laminadas tienen más rigidez gracias al fluido no interrumpido del material y el endurecimiento en frío.
- La rosca obtiene un mejor acabado.
- Los machos de laminación se pueden aplicar con más velocidad de corte, ya que la mala deformabilidad de muchos materiales mejora con la velocidad. Esto no influye sobre el rendimiento.
- Mínimo riesgo de rotura por una herramienta muy rígida.

Forma de trabajar
La fabricación de roscas por laminación en comparación a la fabricación por corte




El comportamiento del fluido de material en la laminación



# Machos de laminación „Profile“ Gühring
# Características y ventajas

Solamente machos de laminación fabricados por rectificado reflejan más o menos marcas microscópicas y finas del rectificado en su superficie. Esto también vale para la parte de la rosca que deberá efectuar el trabajo de deformación.

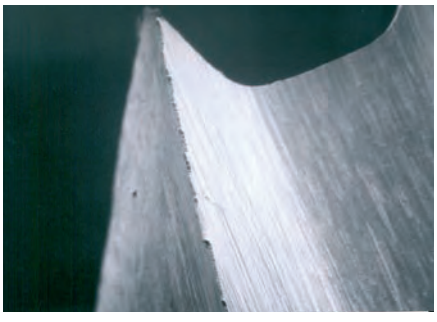
Esta topografía (estructura) superficial incide negativamente sobre la fricción entre la herramienta y la pieza a mecanizar así como sobre la creación de calor consecuente, sobre el par de fuerzas requerido y también sobre el desgaste de los polígonos del macho de laminación. Además estas marcas de rectificado favorecen el que se peguen restos del material a deformar en los flancos de rosca del macho. En estos casos se habla de material soldado.

Mediante un método especial para mejora de la topografía superficial estas marcas de rectificado ya no existen en los nuevos machos de laminación Profile. Esto lo demuestran análisis y tests de rendimiento efectuados bajo condiciones de producción y en diferentes materiales.

El usuario se beneficia gracias a este método especial de machos con más rendimiento y condiciones de corte más elevadas. La vida de la herramienta se alarga considerablemente según el material a trabajar y su aplicación. Rendimientos dobles no son ninguna rareza.

La topografía superficial mejorada no solamente beneficia a herramientas blancas. Precisamente herramientas recubiertas le sacan provecho al nuevo método. Perfil exterior y entrada definen en gran parte el rendimiento del macho de laminación.

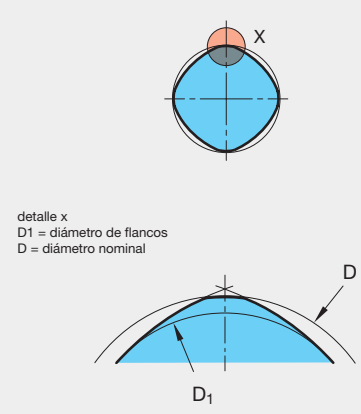
Así se ha demostrado con múltiples pruebas que nuestros machos de laminación Profile con una geometría y número de polígonos de laminación óptima consiguen altos rendimientos y exactitud. Conseguimos otro avance en calidad gracias a que la geometría completa de los machos de laminación se rectifica de una sola vez con una muela que se prepara con un rodillo especial. Errores en el paso de rosca como ocurrían con los rectificados convencionales se evitan por completo.



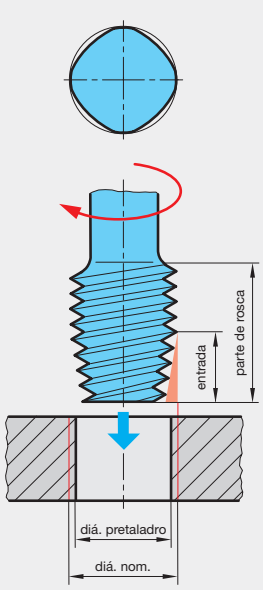
Diente de un macho de laminación convencional

Superficie optimizada de un macho Gühring Profile

Sección de un macho de laminación




El principio de funcionamiento




Los tipos de taladro

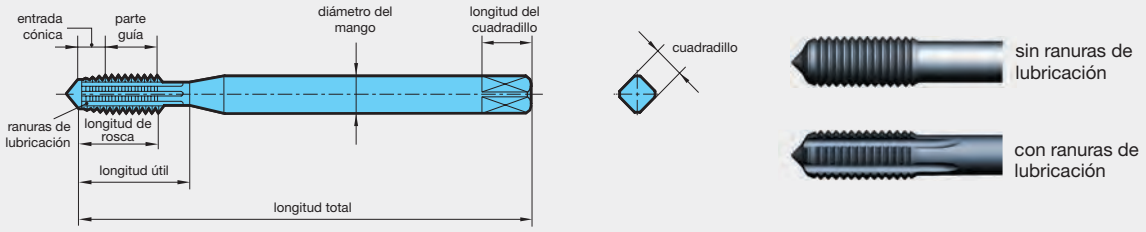
machos de laminación sin ranuras de lubricación
profundidad de rosca ≤ 1 x D

profundidad de rosca ≥ 1 x D

machos de laminación con ranuras de lubricación
todas las profundidades de rosca

# Conceptos y ángulos, centrados y adaptaciones de roscas

## Parte de rosca




## Centrados (Normalmente según DIN 2197/DIN 2175)

| Campo de diámetros de los machos de laminación mm | Tipo de centraje en la cuña de corte | | tipo de centrado en el mango |
|---|---|---|---|
| | con entrada forma A, C, D, E | con entrada forma B | |
| ≤ 5,6 | ① | ① | ④⑤⑥ |
| > 5,6 … 12,8 | ①②③ | ①②③ | ④⑤⑥ |
| > 12,8 | ③ | ③ | ⑥ |

## Adaptaciones de roscas

Uniones entre roscas interiores y exteriores se separan con una barra inclinada, por ejemplo 6H/6g (tuerca/pasador).
La adaptación se debe elegir según la necesidad de unir cada una de las roscas.
Los campos de tolerancia de los tipos medio, fino, grueso, se asignan a los tres largos de enroscado normal (N), corto (S) y largo (S). En general son válidas las siguientes reglas para la elección del tipo de rosca:

**Tipo de tolerancia fino (S):**
Para roscas de precisión cuando solamente se permiten pequeñas variaciones en la adaptación entre roscas.

**Tipo de tolerancia medio (N):**
Aplicaciones generales

**Tipo de tolerancia grueso (L):**
Cuando no existen exigencias específicas en exactitud y en los casos en los que se puedan producir problemas de fabricación como por ejemplo en roscados de barras cilindradas en caliente, roscas en agujeros profundos o en roscas en piezas de plástico.

**Los largos de enroscado**
Los largos de enroscado también influyen sobre la calidad de la unión entre roscas. El sistema de tolerancias ISO se estipuló especialmente para el diámetro de flancos sobre tres largos de enroscado.

S (Short) = enroscado corto
N (Normal) = enroscado normal
L (Long) = enroscado largo

Se pueden elegir las siguientes uniones con el largo normal N de enroscado:
Para soportar más carga en la unión de roscas , aconsejamos escoger adaptaciones estrechas en longitudes de roscas cortas. En longitudes de roscas largas se deben utilizar uniones con mayor tolerancia de adaptación para compensar posibles desviaciones del paso de rosca.

## Diámetro del pretaladro

En la laminación el diámetro del pretaladro incide sobre la rosca laminada resultante. Un diámetro demasiado pequeño conlleva una deformación de la rosca y debe ser evitado, ya que también puede ocasionar una rotura de la herramienta.Un diámetro de pretaladro demasiado grande se puede aceptar en algunas tolerancias, ya que las roscas laminadas ya muestran una fuerza suficiente con una profundidad laminada del 50%.

Con el ejemplo de una rosca M18x1,5mm se demuestra la importancia de la elección del diámetro del pretaladro

| | | | | | |
|---|---|---|---|---|---|
| **M 18 x 1,00** | **17,55** | **17,52** | **17,62** | **16,917** | **17,217** |
| **M 18 x 1,50** | **17,30** | **17,26** | **17,38** | **16,376** | **16,751** |
| **M 18 x 2,00** | **17,10** | **17,05** | **17,20** | **15,835** | **16,310** |

Diámetro del pretaladro 17,1 mm

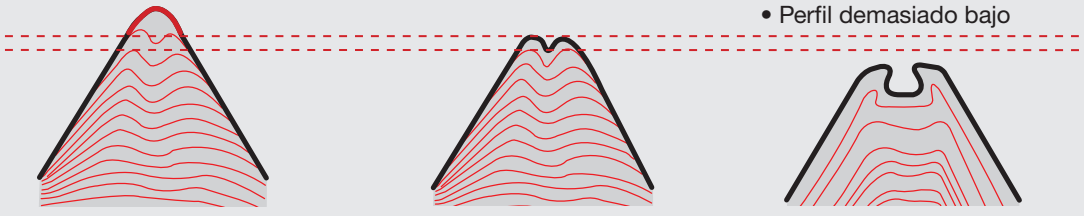
Diámetro del pretaladro 17,3 mm

Diámetro del pretaladro 17,4 mm

**Diámetro de pretaladro demasiado pequeño:**
- Rosca deformada
- Sin formas en las crestas
- Perfil demasiado alto

**Diámetro de pretaladro óptimo:**
- Rosca completamente formada
- Formas pequeñas en las crestas (garras)
- Perfil perfecto

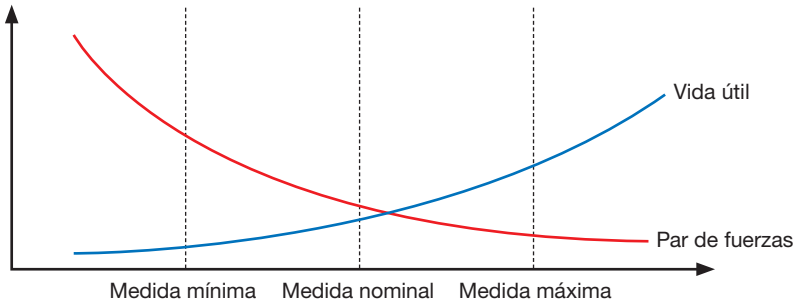
**Diámetro de pretaladro demasiado grande:**
- Rosca no está bien formada
- Grandes forma en las crestas (garras)
- Perfil demasiado bajo




Diámetro del núcleo-campo de tolerancia según DIN 13, parte 50

## Influencia del pretaladro en la vida útil de la herramienta, el par de fuerzas y la seguridad del proceso

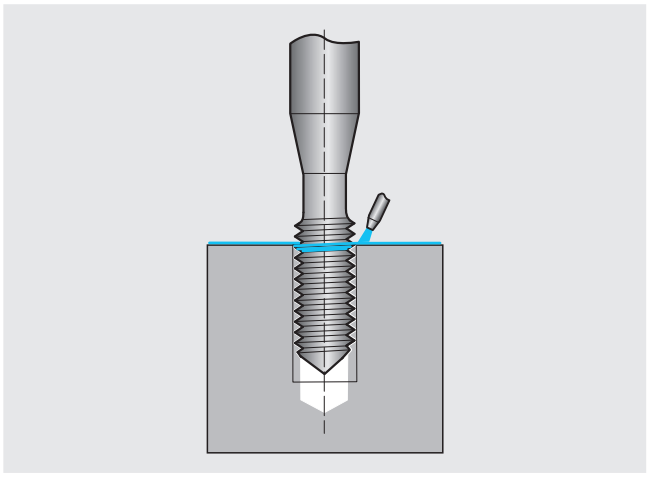
Merece mucho la pena en la producción en serie optimizar el diámetro del pretaladro. Cuanto más grande es, mayor será el rendimiento y menor el par de fuerzas necesario. El gráfico explica la relación.



# Lubrificación para laminar roscas

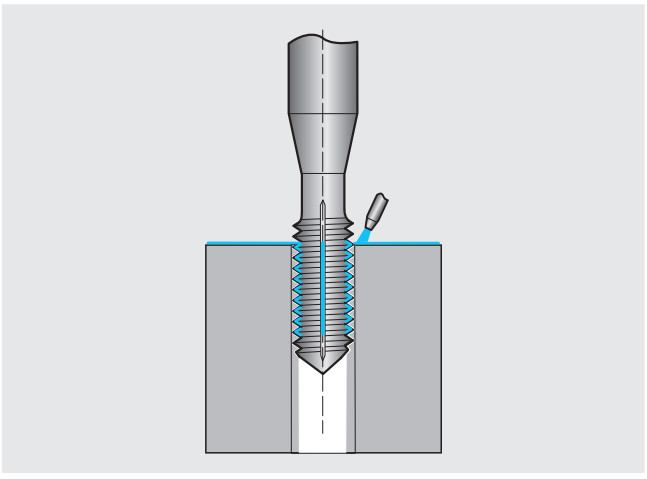
Para determinar la herramienta se debe diferenciar entre 4 casos diferentes

**Mecanizado vertical del pretaladro**



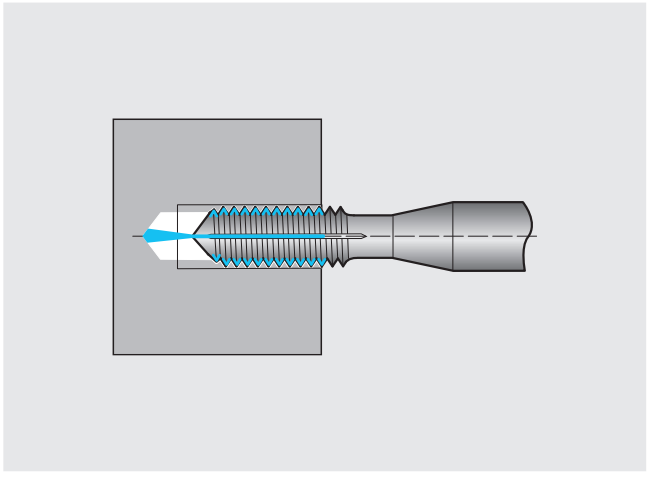
Ranuras de lubrificación y refrigeración interna no necesarios; lubrificación externa es suficiente
(en roscas muy profundas se recomienda KA)

**Mecanizado vertical de agujero pasante (> 1,5x$D_N$)**



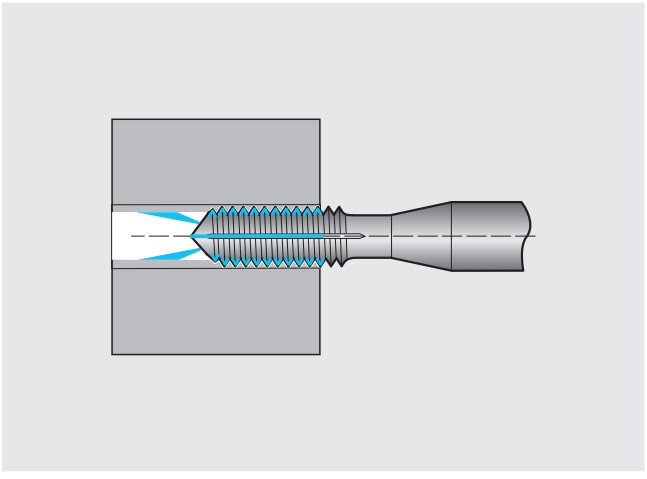
Ranuras de lubrificación son necesarias; refrigeración interna no es necesaria. Por las ranuras de lubrificación el lubrificante puede acceder a los cantos de laminar.
(en roscas muy profundas se recomienda KR)

**Mecanizado horizontal del pretaladro**



Ranuras de lubrificación y refrigeración interna son necesarias. Salida axial de lubrificante es suficiente.

**Mecanizado horizontal de agujero pasante**



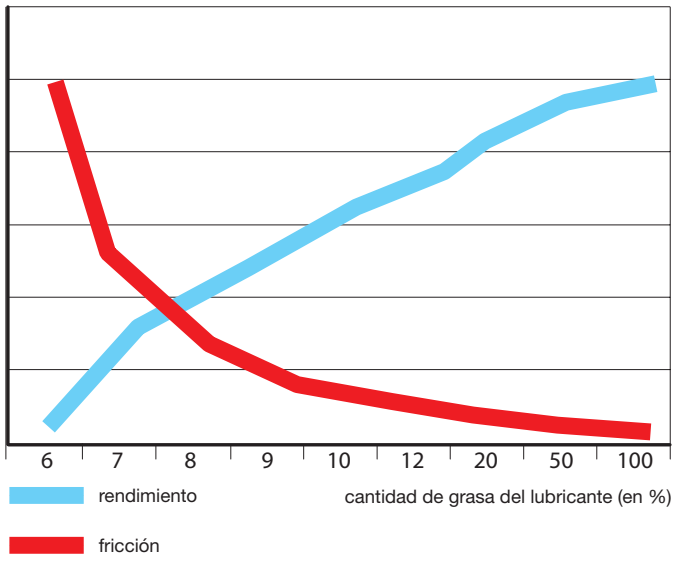
Ranuras de lubrificación son necesarias. Se recomienda refrigeración interna con salidas radiales.

## Lubricantes refrigerantes p. los machos de laminación

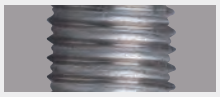
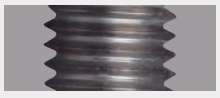
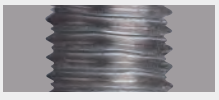
En la laminación la función principal del lubricante refrigerante es la lubricación. Cuanto más lubricante con mayor cantidad de grasa se utilice mas vida tendrá la herramienta. Se diferencia entre dos tipos de lubricantes:

**Lubricante refrigerante no mezclable con agua**
Esto son aceites minerales con las mejores cualidades de lubricación. Disminuyen la fricción y consiguen los mejores rendimientos en la herramienta.

**Lubricante refrigerante mezclable con agua**
Estos lubricantes se diluyen con agua y crean una emulsión. La parte de grasa en estos casos no debe bajar del 6%. Ideal es un a parte mayor del 12% para conseguir una buena lubricación y así un alto rendimiento.



# Errores y dificultades con nuevos machos de roscar

| Error | Causas | Soluciones |
|---|---|---|
| **1. Rosca poco formada**  | Diámetro del pretaladro demasiado grande | Elegir correctamente el diámetro de núcleo del pretaladro según la tabla |
| **2. Rosca laminada deformada**  | Diámetro del pretaladro demasiado pequeño | Elegir correctamente el diámetro de núcleo del pretaladro según la tabla |
| **3. Superficie de la rosca deficiente**  | Adhesión de material en la herramienta | Aumentar la parte de grasa en el lubricante o utilizar aceite |
| | Lubricante de refrigeración con demasiado poca grasa | Aumentar la parte de grasa en el lubricante o utilizar aceite |
| **4. Poco rendimiento** | Lubricante de refrigeración con demasiado poca grasa | Aumentar la parte de grasa en el lubricante o utilizar aceite |
| | Diámetro de pretaladro demasiado pequeño | Elegir correctamente el diámetro de núcleo del pretaladro según la tabla |
| | Velocidad de corte demasiado alta | Adecuar la velocidad de corte |
| | Suciedad en el lubrificante | Comprobar la filtración |
| **5. Rotura de herramienta** | Lubricante con demasiado poca grasa | Aumentar la parte de grasa en el lubricante o utilizar aceite |
| | Diámetro de pretaladro demasiado pequeño | Elegir correctamente el diámetro de núcleo del pretaladro según la tabla |
| | Sujeción de la herramienta no correcta | Comprobar la sujeción de la herramienta |

# ¿Cuáles son las ventajas de fresar roscas en vez de roscarlas o laminarlas?

- Se pueden mecanizar diversos materiales con una herramienta (Al, acero, fundición, titanio, inconel, max. HRC 65).
- Se pueden realizar distintos diámetros y tolerancias con una sola herramienta (por ejemplo: 6H+0.1,7G, EG)
- Una sola herramienta para agujeros pasantes y ciegos y también roscas izquierdas y derechas
- La profundidad de rosca puede llegar hasta el fondo del agujero (0.5xP))
- No se puede estropear la rosca por empuje axial
- Ahorro de herramientas en el cargador (Tipo TMC, tipo DTMC)
- Sin problemas de viruta, por crear virutas cortas de fresado
- Bajos costes de herramientas con los mismos tamaños y pasos de rosca (Tipo TMU)
- Tiempos principales cortos gracias a velocidades de corte y avances altos
- Gran seguridad de proceso incluso en el caso de rotura de herramienta, ya que las fresas de roscar se pueden sacar completamente de la pieza y de la máquina
- Alta rentabilidad gracias al servicio de reafilado y recubrimiento de Gühring

# Tipos de corte Gühring

**TM SP – Fresas de roscar sin fase de avellanar**

- Variante sencilla y económica para el fresado de roscas interiores
- 2 – 3 tamaños de rosca con el mismo paso se pueden fabricar con la medida nominal indicada
- Aplicación únicamente en materiales ≤ 1000 N/mm²
- Disponible con y sin refrigeración interna

**Tipos de rosca: M, MF, UNC, UNF, G, NPT, NPTF**

**TMC SP – Fresas de roscar con fase de avellanar 45º**

- Avellanar y fresar roscas con una sola herramienta
- Suavidad de trabajo y poca fuerza radial
- Predestinada para aplicar en materiales de difícil mecanización también sin avellanado
- 2 – 3 tamaños de rosca con el mismo paso se pueden fabricar con la medida nominal indicada
- Solamente disponible con refrigeración interna

**Tipos de rosca: M, MF,UNC, UNF,G, NPT, NPTF**

**TMU SP – Fresas de roscar con rebaje en el cuello**

- Posibilidades de aplicación universal
- Para distintos tamaños de rosca con el mismo paso,
- p.ej. rosca M-30x1.5 con fresa diámetro 12xM1.5, dia. 16xM1.5 o dia.20xM1.5
- Únicamente disponible con refrigeración interna

**Tipos de rosca: M, MF, G, UN, NPT, NPTF**
**y roscas exteriores M, MF, G**

**DTMC SP - Fresa de taladrar y roscar con 2 cortes y fase de 45º**

- Taladrar, avellanar y fresar roscas con una sola herramienta
- Gracias a esto se reducen tiempos de mecanizado y costes de herramientas y sitio para trabajar
- Aplicación solamente en aluminio, hierro fundido, latón y plástico
- Disponible con y sin refrigeración interna

**Tipos de rosca: M, MF, UNC, UNF**

**MTM 3 SP – micro-fresas de roscar (variante en 3 cortes)**

- Tamaño de rosca y paso son fijos
- Comportamiento extraordinario en materiales muy duros como titanio, VA, etc.
- Apropiado para aceros endurecidos 45HRC-65HRC
- Roscas hasta 3xD
- Disponible con y sin refrigeración interna

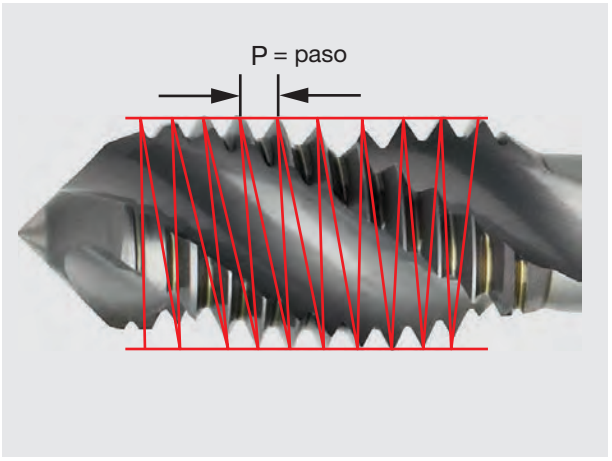
**Tipos de rosca: M, MF, G, UNC, UNF, MJ, UNJC, UNJF**

**MTM 1 SP – Micro-fresas de roscar) (Variante de 1 corte)**

- Fabricación universal de diámetros de rosca hasta un paso de rosca máximo
- Solamente disponible sin refrigeración interna

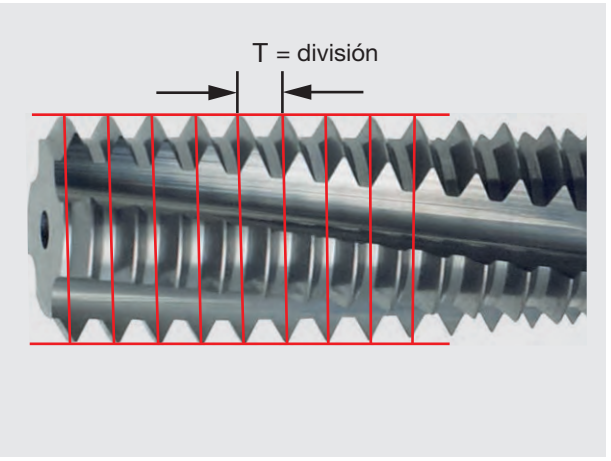
**Tipos de rosca: M, MF**

## Machos de corte/laminación



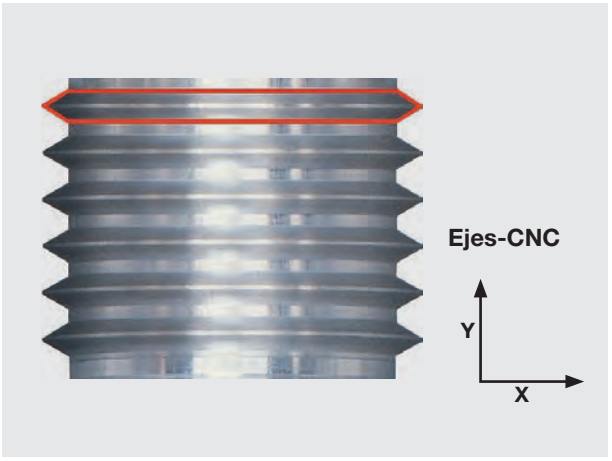

Las líneas rojas muestran el ángulo del paso de rosca, que lléva la herramienta. Esto quiere decir que el paso se corta en la pieza con la herramienta

## Fresa de roscar

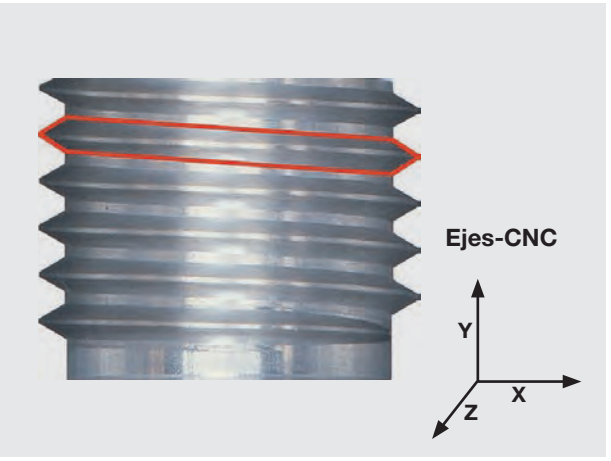



Las líneas rojas muestran que la herramienta no dispone de ángulo de paso. El paso lo realiza el eje Z de una máquina CNC.

## Creación de la rosca fresándola




Perfil de rosca sin aproximación axial (eje-Z) de la máquina. Se fabrica un perfil de ranuras sin paso. Así no se consigue ninguna rosca útil.

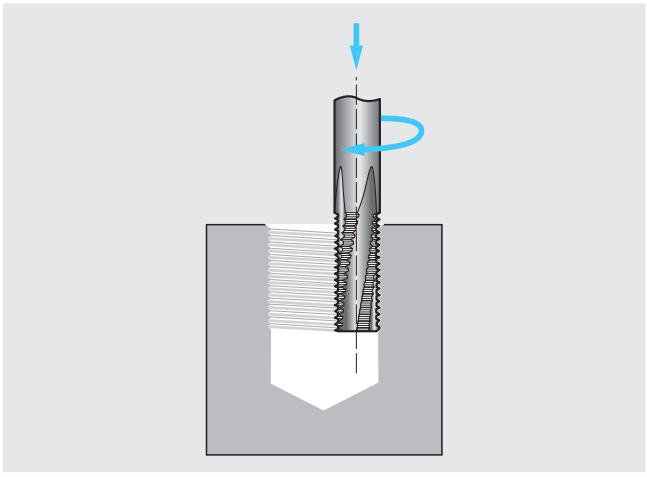



Con la programación adicional del eje-Z se crea el paso de rosca.

**Nota:**
A causa del fresado diagonal en el ángulo de paso de rosca (eje-Z) el perfil de rosca se transmite estirado a la pieza. Cuanto mas se acerca el diámetro de la fresa (80% del diámetro nominal) al diámetro nominal de la rosca y cuanto más alto sea el paso, mas se estira el perfil.

### Fresar en sentido contrario

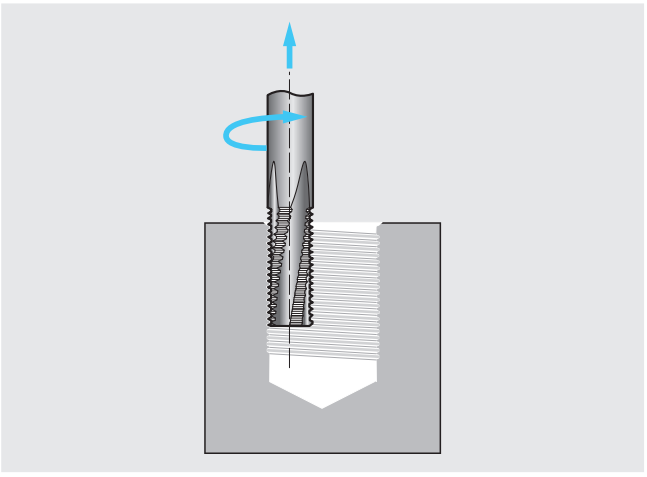
En el sentido de las manecillas del reloj, con G02



Se prefiere el fresado en sentido contrario en el mecanizado de materiales más duros o para roscas cónicas.

### Fresado en el mismo sentido

Contra el sentido de las manecillas del reloj, con G03

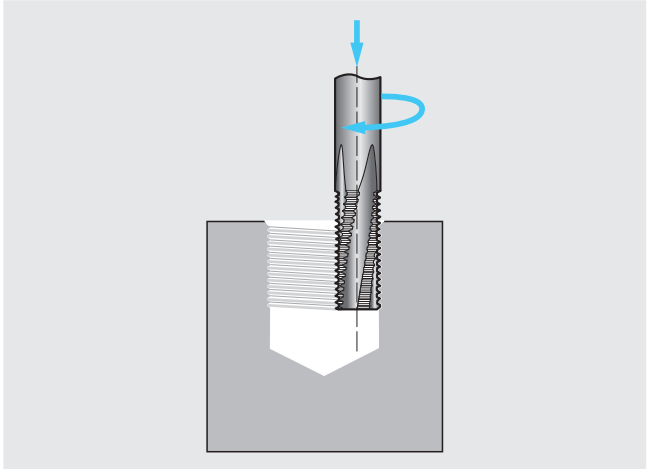


El fresado en el mismo sentido se utiliza en profundidades de rosca más pequeñas de 1.5xd. Ventaja: se consigue una mejor calidad superficial

## Fabricación de roscas con una sola herramienta

### Rosca a derechas

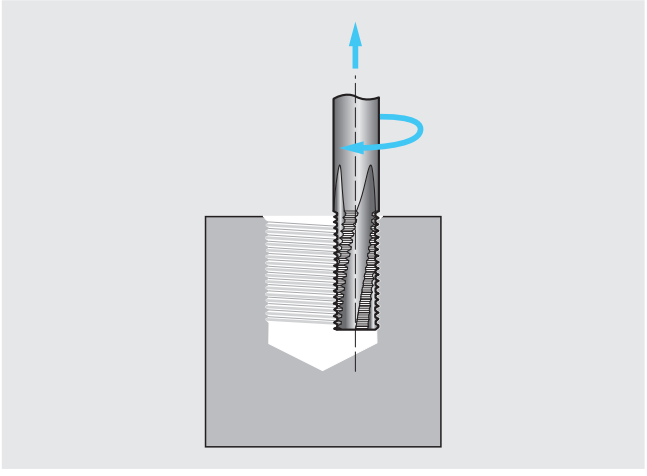
Fresar en sentido contrario



De arriba hacia abajo y la herramienta gira a la derecha

### Rosca a izquierdas

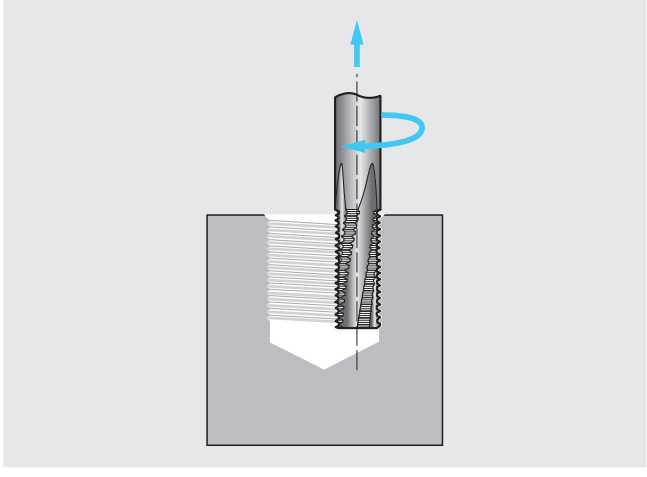
Fresar en sentido contrario



De abajo a arriba y la herramienta gira a la derecha

### Rosca a derechas

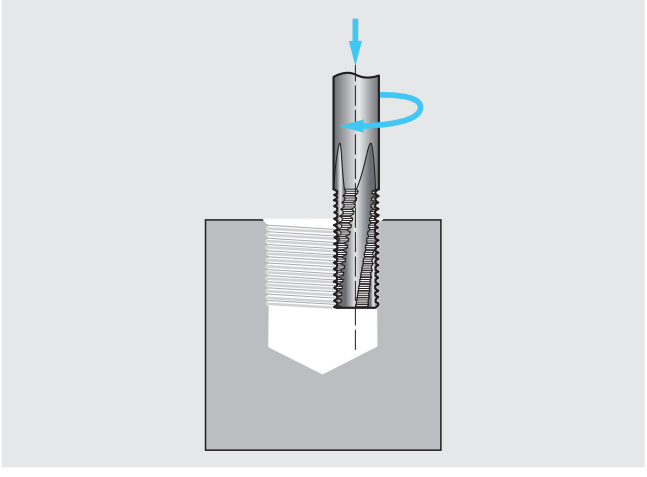
Fresar en el mismo sentido



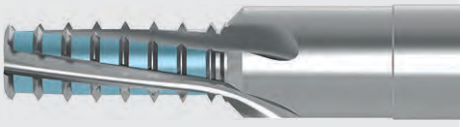
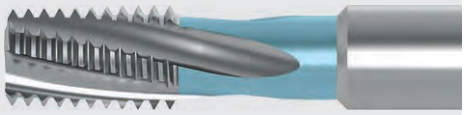
De abajo hacia arriba y la herramienta gira a la derecha

### Rosca a izquierdas

Fresar en el mismo sentido



De arriba hacia abajo y la herramienta gira a la derecha

| Imagen | Modificación | Efecto |
|---|---|---|
| | Ranuras de lubrificación en el mango | Refrigeración específica sin debilitar la herramienta en el corte |
| | Salidas radiales de refrigerante | Refrigeración específica en el caso de roscas pasantes |
|  | Dientes de rosca alternos | Fuerzas de corte reducidas pero más tiempo de mecanizado ya que se requieren dos pasadas |
| | Corte para rebarbar | Se consigue quitar un paso de rosca incompleto en la entrada sin un paso ciclo más de trabajo |
| | Primer perfil de rosca alargado por el frente | Para avellanar el pre-taladro |
|  | Rectificado del cuello | Permite repartir el corte axialmente – lógico en el caso de roscas profundas |

## Datos sobre la programación

### Funktionen für das Gewindefräsen

| | | | |
|---|---|---|---|
| **G00** | Funcionamiento rápido | **G90** | Indicar la medida absoluta |
| **G01** | Avance | **G91** | Indicar la medida en incremento |
| **G02** | Interpolación circular (en sentido de las manecillas del reloj) | **M03** | Husillo en marcha (giro a derechas) |
| **G03** | Interpolación (en contra del sentido de las manecillas del reloj) | **M05** | Paro husillo |
| **G17** | Selección de campo Eje x-y | **M08** | Refrigerante en marcha |
| **G18** | Selección de campo Eje z-x | **X** | Eje |
| **G19** | Selección de campo Eje y-z | **Y** | Eje |
| **G40** | Anular la corrección de la herramienta | **Z** | Eje |
| **G41** | Corrección de la carrera de la herramienta (a la izquierda de la contura) | **I** | Paso de rosca en paralelo al eje X |
| **G42** | Corrección de la carrera de la herramienta (a la derecha de la contura) | **J** | Paso de rosca en paralelo al eje Y |
| **G43** | Compensación longitudinal de la herramienta (marcar) | **S** | Revoluciones husillo |
| **G49** | Compensación longitudinal de la herramienta (seleccionar) | **F** | Avance |
| **G54** | Desplazar el punto cero | | |

## fresado de rosca interior CNC

**1.** Mover a posición de inicio
**2.** Mover a profundidad de rosca en el taladro
**3.** 180° de figura de entrada en el perfil
**4.** 360° giro total de la fresa de roscar
**5.** 180° figura de salida al centro del taladro
**6.** Carrera rápida de salida del taladro a posición de inicio

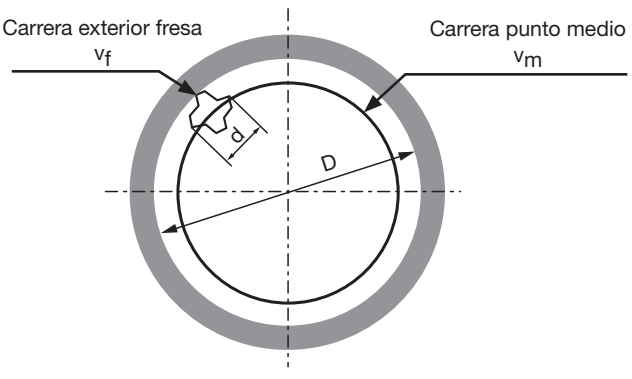
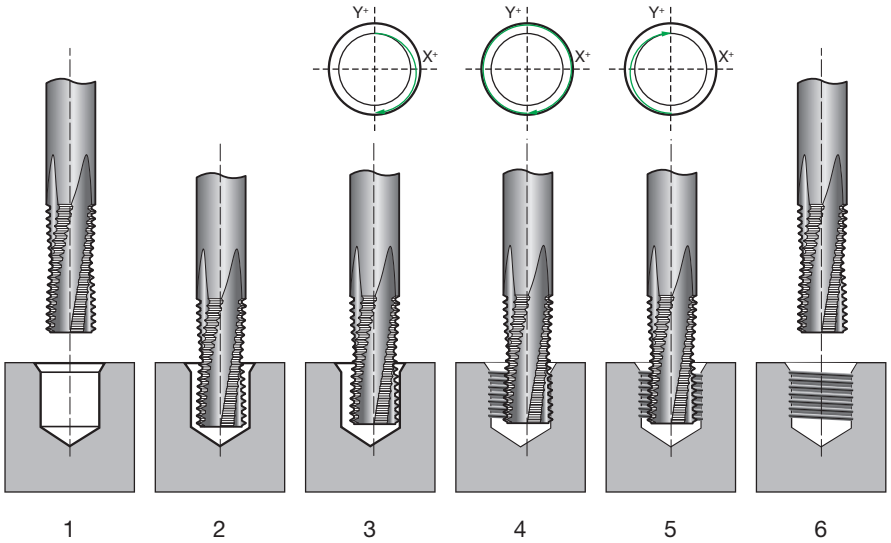



Figura de entrada 180°
(siempre a la mitad del avance)




### Fórmulas de cálculo

$$v_c = \frac{d \cdot \pi \cdot n}{1000}$$

$$n = \frac{v_c \cdot 1000}{d \cdot \pi}$$

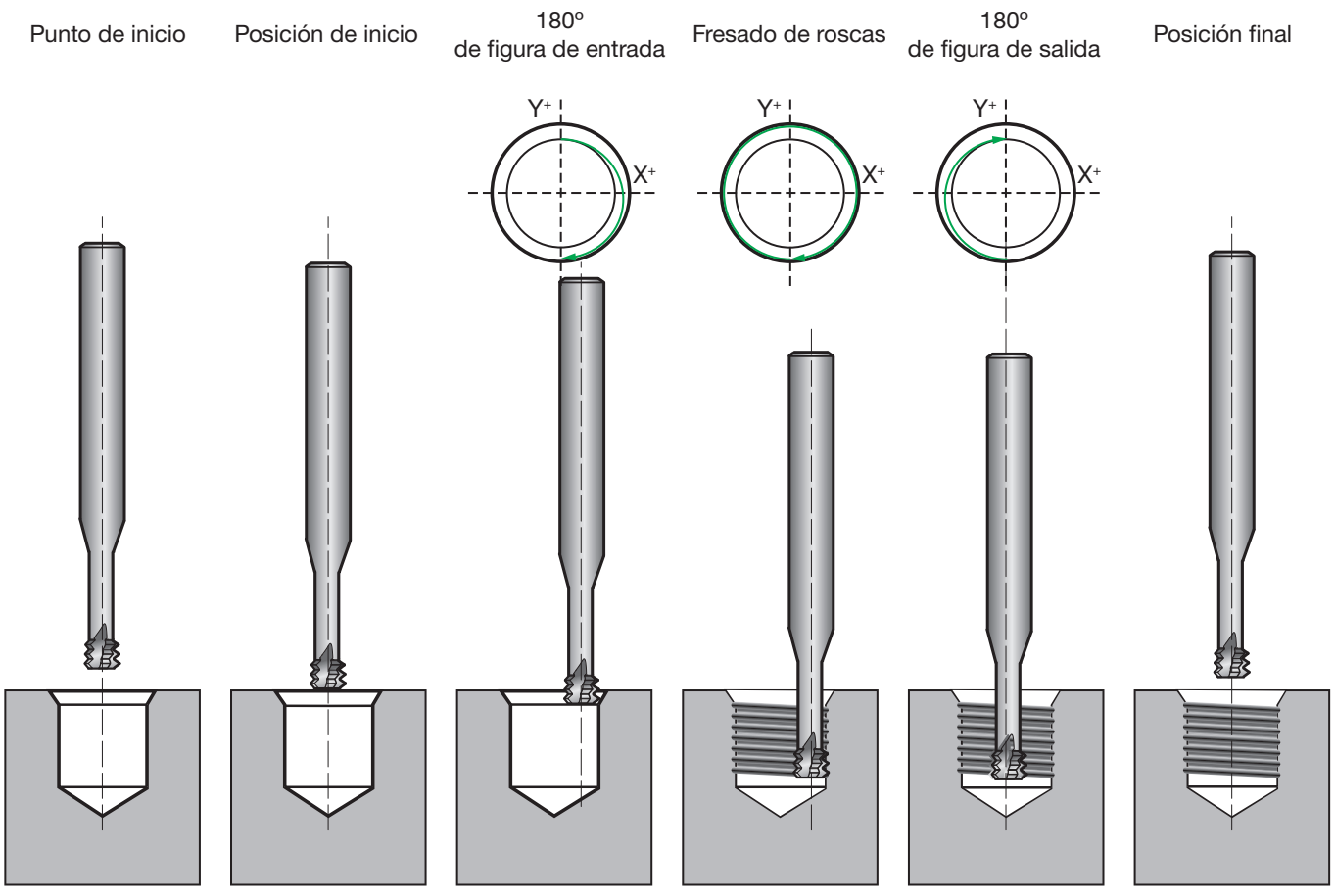
$$v_f = n \cdot z \cdot f_z$$

$$v_m = \frac{v_f \cdot (D - d)}{D}$$

$$v_b = n \cdot f_b$$

$v_c$ = Velocidad de corte
$v_f$ = Avance contura
$v_m$ = Avance en mitad de carrera
n = Revoluciones
z = número de cortes
$f_z$ = Avance por corte
$f_b$ = Avance de taladrado por revolución*
$v_b$ = Velocidad de avance de taladrado*
D = Diámetro nominal rosca [mm]
d = Diámetros exterior de la fresa [mm]
*Para el fresado y taladrado de roscas

## Secuencia de la programación en el micro-roscado de roscas (roscar a derechas en sentido contrario)



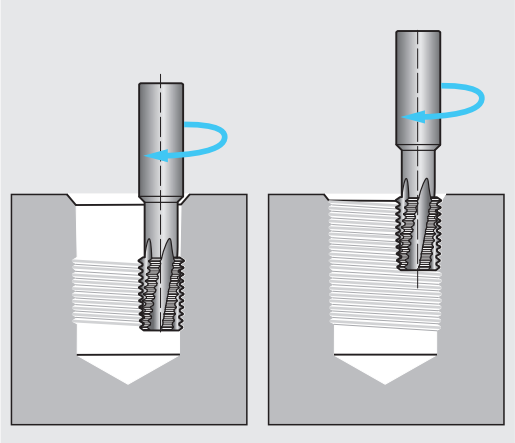

## Posibilidades para reducir las fuerzas radiales

Para reducir las fuerzas radiales se pueden realizar divisiones de corte:

**Ventaja:**
- Para mayores profundidades de roscado
- Ayuda en el caso de roscas cónicas
- Para sujeciones poco seguras

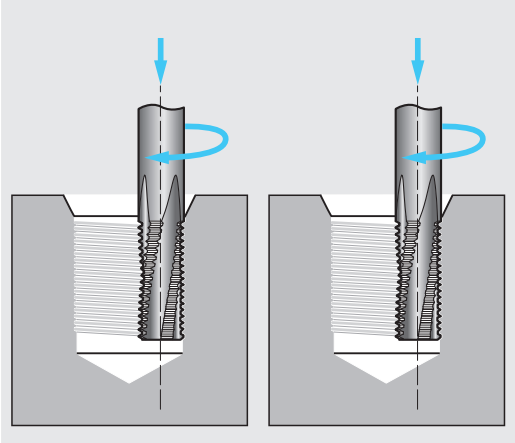
**Desventaja:**
- Mayor desgaste de herramienta
- Mayor tiempo de mecanizado

### División de corte axial

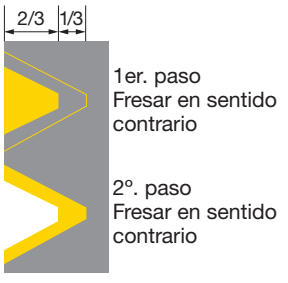


1. Corte  2. Corte

### División de corte radial



1. Corte  2. Corte



# Elección del porta-herramientas correcto

La sujeción de la herramienta también es muy importante en el fresado de roscas. Las fresas de roscar siempre se deberían tensar con un voladizo tan corto como sea posible. Se debe conseguir una fuerza tensora compacta y mecánica. El salto no debería superar los 0.02 milímetros.

**Porta-herramientas de fuerza**

salto máximo permitido: 0.003mm

Este porta-herramientas de fuerza destaca por su sato tan exacto. Las altas fuerzas tensoras y el giro suave son las mejores condiciones para la fabricación de roscas con grandes pasos en todo tipo de materiales.

**Porta-herramientas para mangos cilíndricos**

salto máximo permitido: 0.02mm

El porta-herramientas cilíndrico para mangos HB y HE es un porta robusto, económico con máxima fuerza tensora. El plano de tensión evita que se mueva la herramienta durante el mecanizado. Este porta-herramientas para mangos cilíndricos es apropiado para la fabricación de roscas con grandes pasos en todo tipo de materiales.

**Porta-herramientas térmico**

salto máximo permitido: 0.005mm

El porta térmico crea mediante la inducción una unión muy rígida con la herramienta. En el caso de no tensar correctamente la herramienta o que el porta sea viejo, podría salirse la herramienta del porta. Esto supondría la rotura de la herramienta e incluso la pérdida de la pieza. Por esta razón el porta térmico solamente es apropiado para pasos de rosca < P=1.5mm.

**Porta-herramientas hidráulico**

salto máximo permitido: 0.005mm

El porta hidráulico, igual que el porta térmico no siempre es adecuado para fresar roscas. Este tipo de porta llega a sus límites cuando precisamente se generan fuerzas radiales altas. Por esta razón el porta hidráulico se recomienda para pasos < P=1.5mm en materiales más blandos como el aluminio.

**Porta-pinzas**

salto máximo permitido: 0.01mm

El porta-pinzas es muy apropiado para el micro-fresado de roscas ya que en este caso solamente se crean fuerzas axiales. Las pequeñas fuerzas de tensión solamente permiten fresar materiales blandos. Por esta razón el porta-pinzas no es adecuado para fresar roscas.

# La fresa de roscar en la práctica

**1.) Tensar la herramienta:**

Poco salto es importante por lo que se debe tensar la herramienta de forma corta y tan estable como se pueda .

**2.) Introducir los datos de la herramienta en la máquina**

1.) Longitud de la herramienta desde el plano delantero, fresa de roscar y taladrar (DTMC) desde la punta.

2.) Medir el radio de la herramienta en la máquina de presetting.
Regla general es: Radio medido – 0.022 x paso no dará el valor a introducir en máquina.

**3.) Introducir el programa CNC en el control**

(preferentemente integrarlo como subprograma en las posiciones pertinentes)

a) Solicitar un ciclo propio del control (los procesos deben ser conocidos)

b) Introducir los datos de nuestro software para fresas de roscar (DIN o Heidenhain).

**4.) Carrera de prueba sobre la pieza**

a) Valor de medida longitudinal de la herramienta en la máquina, se debe alargar según longitud de ataque con un valor redondo (p.ej. 30mm) o desplazar el punto cero.

b) Ir realizando punto por punto el programa y controlar visualmente la carrera de la herramienta.

c) Dejar funcionar el programa en modo automático.

**Atención:**

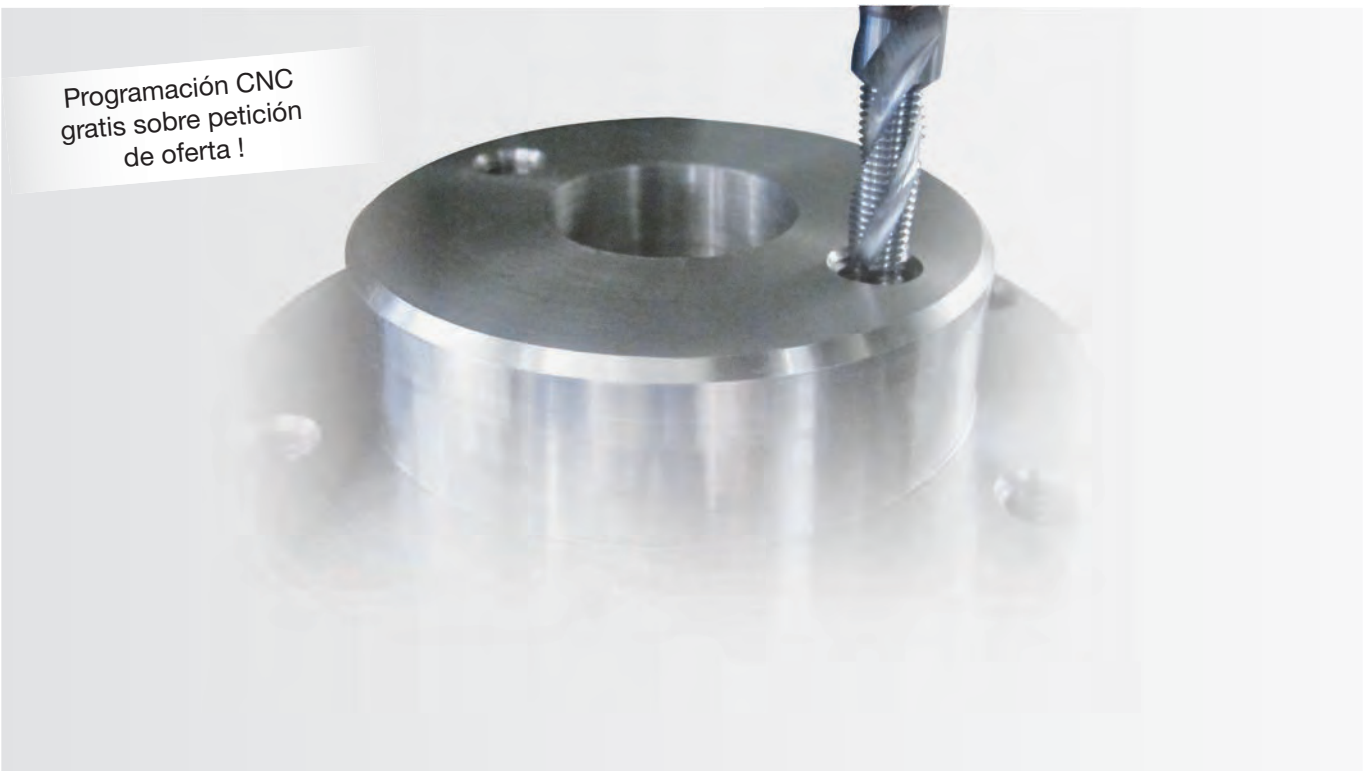
En controles en los que no se ve claramente la carrera de la fresa se debe aclarar si el avance esta en la carrera exterior $V_f$ o en el punto central $V_m$. Normalmente siempre indicamos la carrera del punto central.

**5.) Aplicación en la pieza**

Tirar hacia atrás el alargo de la herramienta o retroceder el punto cero. Después hacer funcionar el programa en la pieza. El control de avance tiene que estar activado al 100%. En caso de que la rosca no salga bien se deberá corregir el radio de la herramienta en los datos de herramienta: Ejemplo:

- Rosca demasiado estrecha: introducir corrección de radio –
- Rosca demasiado grande: introducir corrección de radio +

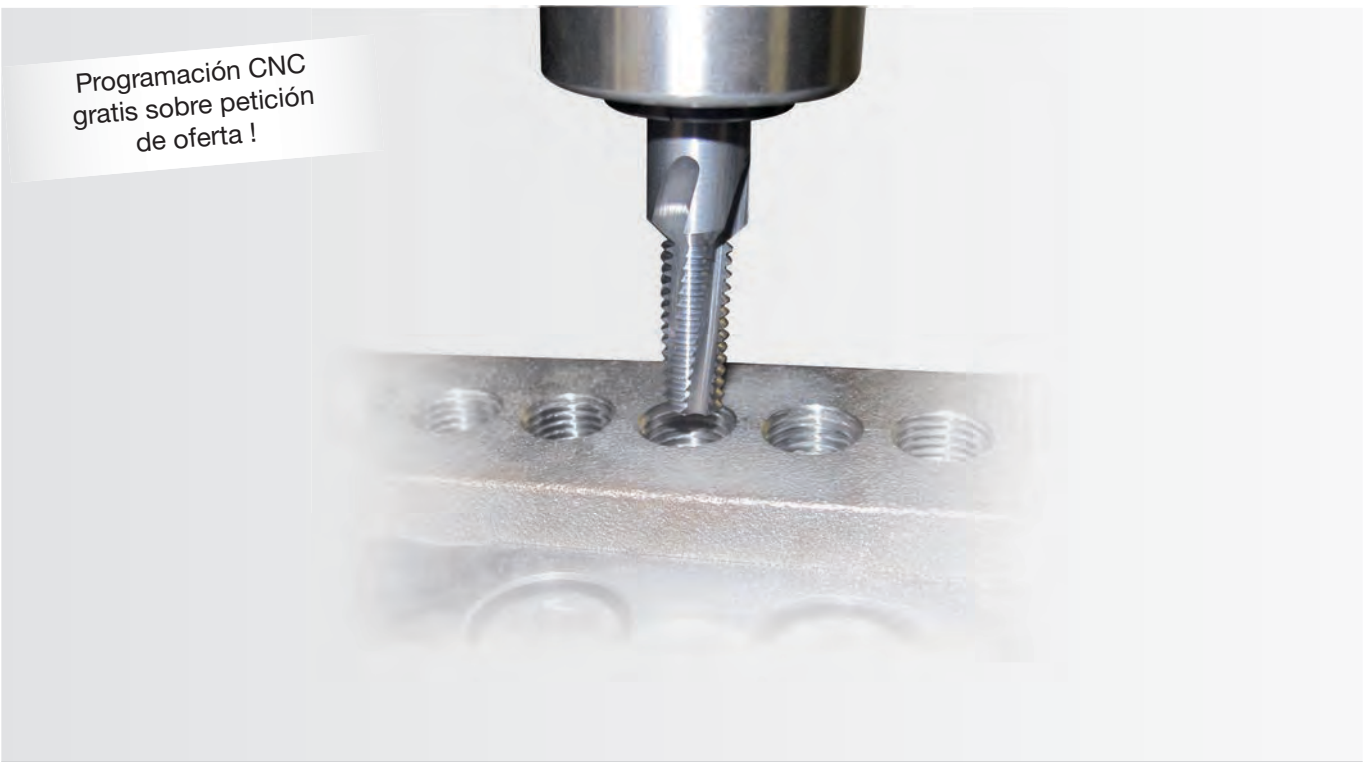
# TM SP – Fresas de roscar sin fase de avellanar




| Ejemplo de aplicación tipo TM | | | |
|---|---|---|---|
| **Artículo nº:** | 3737 TiCN | **Velocidad de corte [$v_c$]:** | 80 m/min |
| **Medida de rosca:** | M10x(1) | **Avance por diente:** | 0,05 mm |
| **Profundidad de rosca:** | 20 mm / agujero ciego | **Proceso de mecanizado:** | Fresar en sentido contrario |
| **Material:** | St- 37 | **Tiempo de mecanizado:** | 6,9 sec. |

| Programa CNC | |
|---|---|
| N10 M6 T1 | |
| N20 G90 G54 G00 X0 Y0 | |
| N30 Z2 S3203 M3 M8 | Preparación sobre pieza |
| N40 Z-18.70 | Preparación profundidad de roscado |
| N50 G91 | Incremental |
| N60 G42 G01 X0 Y3.975 F50 | Compensación de radio |
| N70 G02 X0 Y-9.005 I0 J-4.503 Z-0.150 | Figura de entrada 180° |
| N80 G02 X0 Y0 I0 J5.030 Z-1.000 F101 | Paso de rosca 360° |
| N90 G02 X0 Y9.005 I0 J4.503 Z-0.150 | Figura de salida 180° |
| N100 G40 G01 X0 Y-3.975 | Marcar compensación de radio |
| N110 G90 | Cambiar a absoluto |
| N120 G00 Z2 M9 | Carrera rápida a posición de inicio |
| N130 M30 | |

# TMC SP – fresa de roscar con fase de avellanar 45°




| Ejemplo de aplicación tipo TMC | | | |
|---|---|---|---|
| **Artículo nº:** | 3528 TiCN | **Velocidad de corte [$v_c$]:** | 100 m/min |
| **Medida de rosca:** | M12x(1,5) | **Avance por diente:** | 0,075 mm |
| **Profundidad de rosca:** | 18 mm / agujero ciego | **Proceso de mecanizado:** | Fresar en sentido contrario |
| **Material:** | 42CrMo4 | **Tiempo de mecanizado:** | 4,15 sec. |

| Programa CNC | |
|---|---|
| N10 M6 T1 | |
| N20 G90 G54 G00 X0 Y0 | |
| N30 Z2 S1600 M3 M8 | Preparación sobre pieza |
| N40 Z-26.20 | Preparación avellanado 45º |
| N50 G01 Z-27.57 F85 | Avellanar 45º |
| N60 G00 Z-16.05 S3199 | Preparación profundidad de roscado |
| N70 G91 | Incremental |
| N80 G42 G01 X0 Y4.975 F85 | Compensación de radio |
| N90 G02 X0 Y-11.015 I0 J-5.508 Z-0.225 | Figura de entrada 180º |
| N100 G02 X0 Y0 I0 J6.040 Z-1.5 F169 | Paso de rosca 360º |
| N110 G02 X0 Y11.015 I0 J5.508 Z-0.225 | Figura de salida 180º |
| N120 G40 G01 X0 Y-4.975 | Marcar compensación de radio |
| N130 G90 | Cambiar a absoluto |
| N140 G00 Z2 M9 | Carrera rápida a posición de inicio |
| N150 M30 | |

# TMU SP – fresa de roscar universal

| Ejemplo de aplicación tipo TMU | | | |
|---|---|---|---|
| **Artículo nº:** | 3541 Ø 12xM1 TiCN | **Velocidad de corte [$v_c$]:** | 60 m/min |
| **Medida de rosca:** | M28x1 | **Avance por diente:** | 0,05 mm |
| **Profundidad de rosca:** | 12 mm / agujero ciego | **Proceso de mecanización:** | Fresar en sentido contrario |
| **Material:** | VA [1.4301] | **Tiempo de mecanizado:** | 28,96 sec. |

| Programa CNC | |
|---|---|
| N10 M6 T1 | |
| N20 G90 G54 G00 X0 Y0 | |
| N30 Z2 S1598 M3 M8 | Preparación sobre pieza |
| N40 Z-10.70 | Preparación profundidad de rosca |
| N50 G91 | Incremental |
| N60 G42 G01 X0 Y5.975 F92 | Compensación de radio |
| N70 G02 X0 Y-20.015 I0 J-10.008 Z-0.150 | Figura de entrada 180° |
| N80 G02 X0 Y0 I0 J14.040 Z-1.000 F184 | Paso de rosca 360° |
| N90 G02 X0 Y20.015 I0 J10.008 Z-0.150 | Figura de salida 180° |
| N100 G40 G01 X0 Y-5.975 | Compensación de radio |
| N110 G90 | Cambiar a absoluto |
| N120 G00 Z2 M9 | Carrera rápida a posición de inicio |
| N130 M30 | |

# DTMC SP – fresas de roscar y taladrar

## Ejemplo de aplicación tipo DTMC

| | | | |
|---|---|---|---|
| **Artículo nº:** | 3779 blank | **Velocidad de corte [$v_c$]:** | 230 m/min |
| **Medida de rosca:** | M8x(1,25) | **Avance de taladrado:** | 0,1 mm / rev. |
| **Profundidad de rosca:** | 15 mm / agujero ciego | **Avance por diente:** | 0,05 mm |
| **Material:** | AlSi 10% | **Proceso de mecanización:** | Fresar en sentido contrario |
| | | **Tiempo de mecanizado:** | 3,44 sec. |

## Programa CNC

| | |
|---|---|
| N10 M6 T1 | |
| N20 G90 G54 G00 X0 Y0 | |
| N30 Z2 S11529 M3 M8 | Preparación sobre pieza |
| N40 G01 Z-1 F577 | Centrar (mejor centrado) |
| N50 G01 Z-19.86 F1153 | Taladrar a profundidad de pre-taladro 45° |
| N60 G00 Z2 S11529 | Carrera rápida de salida del taladro para desalojar la viruta |
| N70 Z-13.38 | Preparación profundidad de rosca |
| N80 G91 | Incremental |
| N90 G42 G01 X0 Y3.175 F122 | Compensación de radio |
| N100 G02 X0 Y-7.205 I0 J-3.603 Z-0.188 | Figura de entrada 180° |
| N110 G02 X0 Y0 I0 J4.030 Z-1.250 F245 | Paso de rosca 360° |
| N120 G02 X0 Y7.205 I0 J3.603 Z-0.188 | Figura de salida 180° |
| N130 G40 G01 X0 Y-3.175 | Compensación de radio |
| N140 G90 | Cambiar a absoluto |
| N150 G00 Z2 M9 | Carrera rápida a posición de inicio |
| N160 M30 | |

# TMU SP – fresas de roscar universales para roscas externas

Programación CNC gratis sobre petición de oferta !

## Ejemplo de programación M14x1.5 – 6g (rosca exterior)

| | | |
|---|---|---|
| **Tipo de herramienta:** | TMU D12x20xM1.5-A TICN Z=4 (diámetro herramienta 11.95 mm) | |
| | (Alternativamente se puede utilizar TMU D16x25xM1.5-A TICN Z=5) | |
| **Material:** | 38MnSiV5 | |
| **Parameter:** | $v_c$ = 130 m/min, $f_z$ = 0,06 (Fresar en sentido contrario) $v_f$ = 831 mm/min, $v_m$ = 1548 mm/min | |
| N10 M6 T1 | | |
| N20 G90 G54 G00 X0 Y0 | | |
| N30 Z2 S3463 M3 M8 | | Carrera céntrica sobre el eje |
| N40 G91 | | Incremental |
| N50 X7.033 Y11.99 | | Posición de inicio lateralmente sobre el eje |
| N60 G01 Z-14.5 | | Carrera a profundidad de inicio |
| N70 G42 G01 X0 Y-5.975 | | Compensación de radio |
| N80 G01 X-7.033 Y0.000 F774 | | Carrera de entrada lineal |
| N90 G03 X0.000 Y0.000 Z1.5 I0 J-6.015 F1548 | | Paso de rosca 360° |
| N100 G01 X-7.033 Y0.000 | | Carrera de salida lineal |
| N110 G40 G01 X0.000 Y5.975 | | Solicitar compensación de radio |
| N120 G90 | | Cambiar a absoluto |
| N130 G80 G00 Z2 M9 | | Posición final sobre el eje |
| N140 M30 | | |

# TYP TM SP – para roscas NPT (cónica, cono 1:16)

Programación CNC gratis sobre petición de oferta !

| Ejemplo de programación NPT ¼ - 18: (cónica, cono 1:16) | |
|---|---|
| **Tipo de herramienta:** | TM D 9,95x19,05xNPT18 IK (4 cortes) |
| **Diá. herramienta:** | d1 = 9,95 mm (medido en el primer diente) |
| **Long. herramienta:** | Medida tomada el plano frontal |
| **Diá. del pre-taladro:** | 11.10mm cilíndrico (preferentemente preparado cónico D1 = 11,36 mm / d1 = 11,10 mm) |
| **Material:** | 16 Mn Cr 5 |
| **Parámetros:** | $v_c$ = 70 m/min, $f_z$ = 0,05 (Fresar en sentido contrario) $v_f$ = 447 mm/min, $v_m$ = 102 mm/min |
| N10 M6 T1 | |
| N20 G90 G54 G00 X0.000 Y0.000 | |
| N30 Z2.000 S2239 M3 D1 | Preparación sobre pieza |
| N40 G00 Z-10.016 | Entrar con la herramienta en el taladro |
| N50 G91 | Incremental |
| N60 G42 G01 X0.000 Y4.975 F1000 | Compensación de radio |
| N70 G02 X0.000 Y-11.432 I0.000 J-5.716 Z-0.212 F51 | Figura de entrada 180° |
| N80 G02 X-6.457 Y6.457 I0.000 J6.457 Z-0.353 F102 | ¼ de hilo, sin corrección |
| N90 G02 X6.445 Y6.445 I6.445 J0.000 Z-0.353 | ¼ de hilo, con corrección |
| N100 G02 X6.434 Y-6.434 I0.000 J-6.434 Z-0.353 | ¼ de hilo, con corrección |
| N110 G02 X-6.423 Y-6.423 I-6.423 J0.000 Z-0.353 | ¼ de hilo, con corrección |
| N120 G02 X0.000 Y11.387 I0.000 J5.694 Z-0.212 | Figura de salida 180° |
| N130 G40 G01 X0.000 Y-4.975 F1000 | Solicitar compensación de radio |
| N140 G90 | Cambiar a absoluto |
| N150 G53 G00 Z2.000 | Carrera rápida a posición de inicio |
| N160 M30 | |

# MTM 3 SP Micro-fresas de roscar

Programación CNC gratis sobre petición de oferta !

**Micro-fresas de roscar**

Las micro-fresas de roscar de metal duro se han desarrollado especialmente para roscas pequeñas:

- Muy buenas características en materiales muy duros (p.ej. aleaciones de titanio, aceros inoxidables, etc.)
- Roscas ciegas y pasantes hasta 3xD
- Poca presión de corte
- Excelente calidad de rosca
- Tiempos cortos de mecanizado
- También apropiado para materiales más blandos (p.ej. aluminio o plástico)

| **Ejemplo de programación: M3x(0.5) MTM 3 SP** | |
|---|---|
| **Material:** | TiAl6V4 |
| **Rosca:** | M3, Tiefe 7,0 mm / agujero ciego |
| **Herramienta:** | MTM 3 SP M3x(0,5) diámetro herramienta 2,4 mm Z=3 |
| **Parámetros:** | $v_c$ = 40 m/min, $f_z$ = 0,025 (Fresar en sentido contrario) $v_f$ = 398 mm/min, $v_m$ = 84 mm/min |
| N10 M6 T1 | |
| N20 G90 G54 G00 X0 Y0 | |
| N30 Z2 S5305 M3 M8 | |
| N40 Z0.1 | |
| N50 G91 | |
| N60 G42 G01 X0 Y1.200 F42 | |
| N70 G02 X0 Y-2.720 I0 J-1.360 Z-0.075 | |
| N80 G02 X0 Y0 I0 J1.520 Z-0.500 F84 | |
| | |
| **Cantidad de repeticiones del juego N80 = 15** | |
| N90 G02 X0 Y2.720 I0 J1.360 Z-0.075 | |
| N100 G40 G01 X0 Y-1.200 | |
| N110 G90 | |
| N120 G00 Z2 M9 | |
| N130 M30 | |

## Condiciones de corte recomendadas para fresas de roscar

| Tipo | TM | TMC | TMU |
|---|---|---|---|
| | | | |

| ISO | grupo de materiales | velocidad de corte $v_c$ (m/min) | Avance mm / diente fz en diámetro (**fresar en sentido opuesto**) diámetro partido de fresado | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø2 mm | Ø3 mm | Ø4 mm | Ø5 mm | Ø6 mm | Ø7 mm | Ø8 mm | Ø9 mm | Ø10 mm | Ø12 mm | Ø14 mm | Ø16 mm | Ø18 mm | Ø20 mm | | | |
| P | Aceros de construcción generales<br>Aceros para autómatas<br>Aceros cementación no aleados<br>Aceros de bonificación no aleados | 110 | 0,02 | 0,02 | 0,025 | 0,03 | 0,035 | 0,045 | 0,05 | 0,055 | 0,06 | 0,06 | 0,065 | 0,065 | 0,07 | 0,08 | ++ | ++ | ++ |
| P | Aceros cementación aleados<br>Aceros de bonificación aleados<br>Aceros para herramientas aleados | 90 | 0,015 | 0,015 | 0,02 | 0,025 | 0,03 | 0,035 | 0,04 | 0,045 | 0,05 | 0,05 | 0,05 | 0,055 | 0,06 | 0,07 | + | ++ | ++ |
| M | Aceros inox.,<br>sulfurados<br>austeníticos<br>martensíticos | 60 | 0,01 | 0,01 | 0,015 | 0,02 | 0,025 | 0,03 | 0,03 | 0,035 | 0,04 | 0,045 | 0,05 | 0,05 | 0,055 | 0,06 | + | ++ | ++ |
| K | Hierro fundido, Fundición de grafito y fundición maleable | 120 | 0,02 | 0,02 | 0,025 | 0,03 | 0,035 | 0,045 | 0,05 | 0,055 | 0,06 | 0,06 | 0,065 | 0,07 | 0,08 | 0,1 | ++ | ++ | ++ |
| N | Metales no ferrosos: Aluminio y el otro metales no ferrosos aleación de cobre | 250 | 0,03 | 0,035 | 0,04 | 0,045 | 0,05 | 0,055 | 0,06 | 0,065 | 0,07 | 0,08 | 0,085 | 0,09 | 0,1 | 0,12 | ++ | ++ | ++ |
| N | Plástica | 350 | 0,03 | 0,04 | 0,045 | 0,05 | 0,055 | 0,055 | 0,06 | 0,07 | 0,075 | 0,085 | 0,09 | 0,1 | 0,12 | 0,15 | ++ | ++ | ++ |
| S | Aleaciones especiales y Titanio | 35 | 0,01 | 0,01 | 0,015 | 0,02 | 0,025 | 0,03 | 0,03 | 0,035 | 0,04 | 0,045 | 0,05 | 0,05 | 0,055 | 0,06 | + | ++ | ++ |
| H | Aceros templados [max. 55 HRC] | 25 | - | 0,005 | 0,005 | 0,01 | 0,012 | 0,014 | 0,018 | 0,02 | 0,02 | 0,022 | 0,025 | 0,03 | 0,035 | 0,04 | + | ++ | + |

**Observación: ¡En aceros endurecidos hasta max. 55 HRC se debe programar con 3 pasadas en el diámetro!**

## Condiciones de corte recomendadas para fresas de taladrar y roscar 2xD, 2.5xD

| Tipo | DTMC |
|---|---|
| | |

| ISO | grupo de materiales | velocidad de corte $v_c$ (m/min)) | Avance mm / diente fz en diámetro (**fresar en sentido opuesto**) diámetro partido de fresado | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M3 | | M4 | | M5 | | M6 | | M8 | | M10 | | M12 | | |
| | | | fb mm/U | fz mm | fb mm/U | fz mm | fb mm/U | fz mm | fb mm/U | fz mm | fb mm/U | fz mm | fb mm/U | fz mm | fb mm/U | fz mm | |
| K | Hierro fundido, Fundición de grafito y fundición maleable | 100 | 0,05 | 0,01 | 0,06 | 0,02 | 0,07 | 0,025 | 0,08 | 0,035 | 0,1 | 0,04 | 0,12 | 0,055 | 0,14 | 0,065 | + |
| N | Metales no ferrosos: Aluminio y el otro metales no ferrosos aleación de cobre | 230 | 0,06 | 0,015 | 0,07 | 0,025 | 0,08 | 0,03 | 0,1 | 0,04 | 0,12 | 0,05 | 0,15 | 0,07 | 0,18 | 0,08 | ++ |
| N | Plástica | 300 | 0,07 | 0,02 | 0,08 | 0,03 | 0,09 | 0,04 | 0,12 | 0,05 | 0,13 | 0,06 | 0,18 | 0,09 | 0,2 | 0,12 | ++ |

## Condiciones de corte recomendadas para micro-fresas de roscar

| Tipo | MTM 3 | MTM 1 | MTMH 3 |
|---|---|---|---|
| | | | |

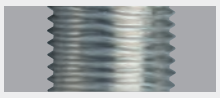
| ISO | grupo de materiales | velocidad de corte $v_c$ (m/min)) | Avance mm / diente fz en diámetro (**fresar en sentido opuesto**) diámetro partido de fresado | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Ø1 mm | Ø1.5 mm | Ø2 mm | Ø3 mm | Ø4 mm | Ø5 mm | Ø6 mm | Ø7 mm | Ø8 mm | Ø9 mm | Ø10 mm | Ø12 mm | Ø14 mm | | | |
| P | Aceros de construcción generales<br>Aceros para autómatas<br>Aceros cementación no aleados<br>Aceros de bonificación no aleados | 70 - 120 | 0,04 | 0,04 | 0,05 | 0,05 | 0,06 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | 0,09 | 0,1 | 0,12 | ++ | ++ | - |
| P | Aceros cementación aleados<br>Aceros de bonificación aleados<br>Aceros para herramientas aleados | 60-90 | 0,03 | 0,03 | 0,04 | 0,04 | 0,05 | 0,05 | 0,06 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | 0,1 | ++ | ++ | - |
| M | Aceros inox.,<br>sulfurados<br>austeníticos | 40-80 | 0,02 | 0,02 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,05 | 0,05 | 0,06 | 0,06 | 0,06 | 0,07 | ++ | ++ | - |
| M | martensíticos | 40-80 | 0,02 | 0,03 | 0,03 | 0,04 | 0,04 | 0,05 | 0,05 | 0,05 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | ++ | ++ | - |
| K | Hierro fundido, Fundición de grafito y fundición maleable | 60-80 | 0,04 | 0,04 | 0,05 | 0,05 | 0,06 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | 0,09 | 0,1 | 0,12 | ++ | ++ | - |
| N | Metales no ferrosos: Aluminio y el otro metales no ferrosos aleación de cobre | 80 - 150 | 0,04 | 0,05 | 0,05 | 0,06 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | 0,1 | 0,11 | 0,12 | 0,14 | ++ | ++ | - |
| N | Plástica | 60 - 200 | 0,05 | 0,05 | 0,06 | 0,07 | 0,07 | 0,08 | 0,09 | 0,09 | 0,1 | 0,11 | 0,12 | 0,13 | 0,15 | ++ | ++ | - |
| S | Aleaciones especiales y Titanio | 20-40 | 0,02 | 0,02 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,05 | 0,05 | 0,06 | 0,06 | 0,06 | 0,07 | ++ | ++ | + |
| H | Aceros templados (max. 65 HRC) | 40-50 | 0,01 | 0,02 | 0,02 | 0,03 | 0,03 | 0,035 | 0,035 | 0,04 | 0,045 | 0,045 | 0,05 | 0,055 | 0,06 | - | - | ++ |

**Por favor tener en cuenta:**
Los parámetros recomendados en cada caso son orientativos y se deberán adaptar según las condiciones de trabajo (material, lubrificación, sujeción de herramienta, máquina, etc.)
**Según la aplicación las condiciones de corte pueden variar +/- un 30% con respecto a la tabla.**

++ muy apropiado + apropiado

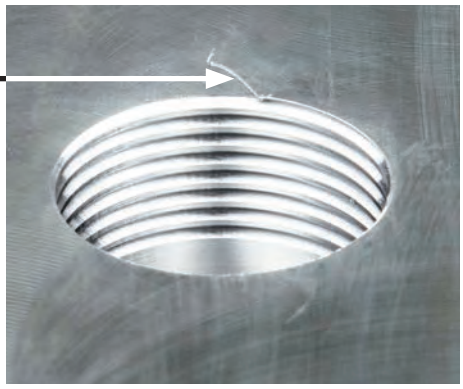
**GühroThreadmill**
programación CNC hecha fácil) El software GühroThreadmill facilita mucho la programación CNC. Con la ayuda de un menú cómodo de manejar el usuario entrará todos los datos como por ejemplo. El tipo de fresa de roscar, tipo de rosca, diámetro, parámetros de máquina, etc y consigue rápidamente el programa CNC correspondiente
**El software se puede conseguir gratis sobre petición de oferta, para controles DIN o Heidenhain**

# Errores y dificultades con fresas de roscar nuevas

| Errores | Causas | Medidas en contra |
|---|---|---|
| **1. Rosca resulta demasiado grande o pequeña** | Radio erróneo en el programa CNC y mal fresado del círculo | Corregir el radio del círculo fresado hasta que la rosca haga la medida |
| **2. Rosca no está cilíndrica** | Avance demasiado alto<br>Fresado en una sola dirección en roscas largas | Reducir avance<br>Modificar dirección de roscado en sentido opuesto |
| **3. Rosca tiene mala calidad superficial, vibraciones marcadas**  | Velocidad de corte demasiado alta<br>Herramienta o sujeción de herramienta insuficiente | Adaptar velocidad de corte<br>Comprobar herramienta y sujeción |
| **4. Rotura de herramienta** | Error en el programa-CNC<br>Parámetros demasiado altos | Comprobar el programa CNC<br>Adaptar parámetros |
| **5. Rendimiento demasiado bajo** | Parámetros demasiado altos<br>Herramienta sin recubrir<br>Mala lubrificación y mala evacuación de viruta | Adaptar parámetros<br>Utilizar herramienta recubierta<br>Mejorar lubrificación, refrigerar a través del husillo |
| **6. Rotura de herramienta con Fresa de roscar y taladrar** | Problemas de viruta al taladrar<br>Avances demasiado altos al taladrar | Utilizar herramienta con refrigeración central<br>Introducir ciclos de desalojo de viruta |

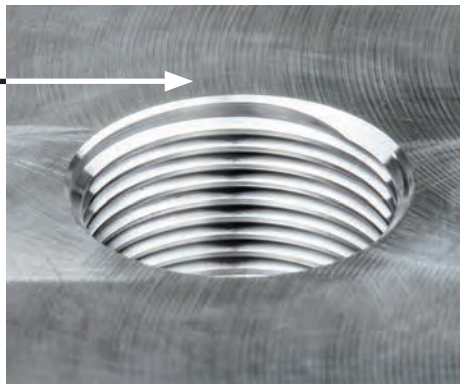
# Mecanizado con fresas de roscar – ningún problema para fresas de roscar Gühring

**Problema:**
Rebaba en la entrada de rosca



**Solución:**
**Herramienta especial**
con corte de rebarbado destalonado

**Resultado:**
Durante el fresado de la rosca se fresa
la entrada mal acabada y se elimina la rebaba



**Gustosamente le diseñaremos una solución especial basada en nuestros conocimientos técnicos.**

# Fresas de roscar especiales

¿Ud. no encuentra la fresa de roscar adecuada en nuestro amplio programa?
Le podemos ofrecer la solución especial óptima para su caso específico de mecanizado.
Por favor contacte con nosotros.

# Reafilar y volver a recubrir

Gühring ofrece un servicio para reafilar y volver a recubrir las fresas de roscar. Reafilando profesionalmente las herramientas con su geometría original y volviendo a recubrirlas con su recubrimiento también original, Gühring recupera el 100% del rendimiento de la herramienta.

## Servicio de reafilado

En nuestros centros de reafilado las herramientas se reafilan en el plano de viruta. Según el desgaste de la herramienta se podrán realizar dos a tres reafilados. Desde diámetro partido de fresa d1>5.0 mm).

Para definir nuevamente el diámetro partido de la fresa d1, se marca el final del mango con una muesca. Así cada muesca se referencia con un diámetro y se vuelve a marcar.

## Volver a recubrir

Si una fresa de roscar estaba recubierta con una capa anteriormente, se volverá a recubrir después del reafilado. Así se alarga la vida de la herramienta y además se recompone la resistencia al desgaste y la condición anti-gripante.

# INDICE

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | WN | N | D | ISO2/6H | HSS-E | ○ | M3 - M12 | 1839 | 18 | 87 |
| ≤ 800 | | | | | | | WN | N | B | ISO2/6H | HSS-E | ○ | M3 - M20 | 998 | 19 | 86 |
| ≤ 800 | | | | | | | WN | N R40 | C | ISO2/6H | HSS-E | ○ | M3 - M20 | 888 | 23 | 88 |
| ≤ 1000 | ○ | ○ | | | | | WN | N R40 | C | 6HX | HSS-E | Ⓢ | M3 - M20 | 4153 | 25 | 67 |
| ≤ 800 | | | | | | | DIN 352 | N | C | ISO2/6H | HSS-E | ○ | M2,2 - M16 | 995 | 22 | 53 |
| ≤ 800 | | | | | | | DIN 352 | N | B | ISO2/6H | HSS-E | ○ | M2 - M24 | 991 | 19 | 35 |
| ≤ 800 | | | | | | | DIN 352 | N R15 | C | ISO2/6H | HSS-E | ○ | M3 - M20 | 992 | 22 | 58 |
| ≤ 800 | | | | | | | DIN 352 | N R40 | C | ISO2/6H | HSS-E | ○ | M2 - M22 | 993 | 23 | 65 |
| ≤ 800 | | | | | | | DIN 357 | N | | ISO2/6H | HSS-E | ○ | M3 - M30 | 851 | 18 | 85 |
| | | • | | | | | DIN 371 | GGT | C | ISO2/6H | HSS-E | Ⓢ | M3 - M10 | 1875 | 349 | 357 |
| ≤ 800 | | | | | | | DIN 371 | N | C | ISO2/6H | HSS-E | ○ | M1 - M10 | 806 | 18 | 50 |
| ≤ 800 | | | | | | | DIN 371 | N | C | ISO3/6G | HSS-E | ○ | M2 - M10 | 795 | 22 | 52 |
| ≤ 800 | | | | | | | DIN 371 | N | D | ISO2/6H | HSS-E | ○ | M2 - M10 | 801 | 18 | 49 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO1/4H | HSS-E | ○ | M2 - M10 | 794 | 18 | 36 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | Ⓢ | M2 - M10 | 313 | 20 | 33 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ○ | M2 - M10 | 802 | 19 | 55 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ○ | M1 - M10 | 803 | 19 | 30 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ○ | M1,2 - M10 | 838 | 19 | 54 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ○ | M1,2 - M10 | 839 | 19 | 54 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | Ⓢ | M1 - M10 | 912 | 19 | 30 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ● | M1 - M10 | 945 | 19 | 30 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | Ⓒ | M1 - M10 | 1246 | 19 | 30 |
| ≤ 1000 | • | | • | | | | DIN 371 | N | B | ISO2/6H | HSS-E | ○ | M2 - M10 | 1870 | 229 | 236 |
| ≤ 1000 | • | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | Ⓢ | M2 - M10 | 2086 | 229 | 236 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | A | M2 - M10 | 2427 | 20 | 33 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | A | M5 - M10 | 2517 | 20 | 34 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E | | M2 - M10 | 2876 | 20 | 33 |
| ≤ 1000 | ● | | ○ | | | | DIN 371 | N | B | ISO2/6H | HSS-E-PM | | M2 - M10 | 877 | 229 | 237 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E-PM | S | M2 - M10 | 1285 | 20 | 39 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO2/6H | HSS-E-PM | C | M3 - M20 | 1287 | 20 | 40 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | | M2 - M10 | 796 | 19 | 56 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | | M2 - M10 | 797 | 19 | 56 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | | M1,4 - M10 | 837 | 19 | 37 |
| ≤ 800 | | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | | M2 - M10 | 869 | 19 | 56 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | | M2 - M10 | 2990 | 20 | 41 |
| ≤ 1000 | ○ | | | | | | DIN 371 | N | B | ISO3/6G | HSS-E | S | M2 - M10 | 2991 | 20 | 41 |
| ≤ 800 | | | | | | | DIN 371 | N-LH | B | ISO2/6H | HSS-E | | M3 - M10 | 789 | 19 | 32 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO2/6H | HSS-E | | M2 - M10 | 809 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO2/6H | HSS-E | S | M2 - M10 | 913 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO2/6H | HSS-E | | M2 - M10 | 946 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO2/6H | HSS-E | | M5 - M10 | 1891 | 22 | 59 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO2/6H | HSS-E | S | M5 - M10 | 2436 | 23 | 59 |
| | | ○ | ≥ 7 | | | | DIN 371 | N R15 | C | 6HX | VHM | | M3 - M10 | 971 | 465 | 478 |
| | | ● | | | | | DIN 371 | N R15 | C | 6HX | VHM | A | M3 - M10 | 2510 | - | 364 |
| ≤ 800 | | | | | | | DIN 371 | N R15 | C | ISO3/6G | HSS-E | | M2 - M10 | 799 | 22 | 52 |
| ≤ 800 | | | | | | | DIN 371 | N L15 | D | ISO2/6H | HSS-E | | M3 - M10 | 808 | 19 | 89 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 371 | N R40 | E | ISO2/6H | HSS-E | | M3 - M10 | 2790 | 24 | 69 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | S | M5 - M10 | 174 | 25 | 70 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | ● | M2 - M10 | 783 | 23 | 60 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | ○ | M2 - M10 | 810 | 23 | 60 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | ● | M2 - M10 | 836 | 24 | 66 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | ○ | M2 - M10 | 889 | 24 | 66 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | S | M2 - M10 | 914 | 23 | 60 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | C | M2 - M10 | 1252 | 24 | 60 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | ○ | M5 - M10 | 1893 | 24 | 63 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | ○ N R40 | C | ISO2/6H | HSS-E | A | M2 - M10 | 2425 | - | 66 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | S | M5 - M10 | 2438 | 24 | 64 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | S | M2 - M10 | 2440 | 24 | 66 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E | A | M5 - M10 | 2514 | - | 68 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E-PM | S | M2 - M10 | 1288 | 25 | 72 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO2/6H | HSS-E-PM | C | M2 - M20 | 1290 | 25 | 73 |
| ≤ 800 | | | | | | | DIN 371 | N R40 | C | ISO3/6G | HSS-E | ○ | M3 - M10 | 844 | 23 | 61 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO3/6G | HSS-E | ● | M2 - M20 | 2994 | 24 | 73 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371 | N R40 | C | ISO3/6G | HSS-E | S | M2 - M20 | 2995 | 24 | 73 |
| ≤ 800 | | | | | | | DIN 371 | N L40 LH | C | ISO2/6H | HSS-E | ○ | M3 - M10 | 786 | 24 | 62 |
| ● | ● | ○ | ● | ○ | | | DIN 371 | N R50 | C | ISO2/6H | HSS-E-PM | S | M3 - M10 | 767 | 25 | 74 |
| ● | ● | ○ | ● | ○ | | | DIN 371 | N R50 | C | ISO2/6H | HSS-E-PM | C | M3 - M10 | 1152 | 25 | 74 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 371 | H | E | 6HX | HSS-E-PM | C | M5 - M10 | 1091 | 23 | 78 |
| | | ● | ≥ 7 | | | | DIN 371 | H | E | 6HX | VHM | ○ | M3 - M10 | 1008 | 351 | 364 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 371 | H | C | 6HX | HSS-E-PM | C | M5 - M10 | 302 | 23 | 78 |
| | | ● | ≥ 7 | | | | DIN 371 | H | C | 6HX | VHM | ○ | M3 - M10 | 969 | 351 | 362 |
| | | ● | ≥ 7 | | | | DIN 371 | H | C | 6HX | VHM | ○ | M3 - M10 | 1858 | 349 | 362 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | • | | | 45/55 | | DIN 371 | H | C | 6HX | VHM | A | M3 - M10 | 2311 | 349 | 364 |
| | | • | | | | | DIN 371 | H | C | 6HX | VHM | A | M5 - M10 | 2506 | 351 | 363 |
| | | | | | | | DIN 371 | H | D | 6HX | HSS-E-PM | C | M3 - M16 | 1201 | 676 | 680 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E | | M2 - M10 | 733 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E | | M2 - M10 | 804 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E | C | M2 - M10 | 1914 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E | | M2 - M10 | 2941 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E-PM | S | M3 - M10 | 57 | 21 | 47 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E-PM | | M3 - M10 | 875 | 21 | 46 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO2/6H | HSS-E-PM | A | M3 - M10 | 1575 | 21 | 47 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO3/6G | HSS-E | | M2 - M10 | 2465 | 21 | 45 |
| ≤ 1200 | | | | | | | DIN 371 | H | B | ISO3/6G | HSS-E | S | M2 - M10 | 2710 | 21 | 45 |
| ≤ 1200 | | | | | | | DIN 371 | H R15 | C | ISO2/6H | HSS-E-PM | | M3 - M10 | 872 | 23 | 76 |
| ≤ 1200 | | | | | | | DIN 371 | H R15 | C | ISO2/6H | HSS-E-PM | A | M3 - M10 | 1577 | 23 | 76 |
| ≤ 1200 | | | | | | | DIN 371 | H R15 | C | 6HX | HSS-E-PM | C | M6 - M10 | 1188 | 23 | 77 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | S | M2 - M10 | 361 | 25 | 82 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | | M2 - M10 | 811 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | | M2 - M10 | 947 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | | M5 - M10 | 1894 | 25 | 83 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | C | M2 - M10 | 1916 | 25 | 82 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO2/6H | HSS-E | | M2 - M10 | 2850 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO3/6G | HSS-E | | M2 - M10 | 2985 | 25 | 84 |
| ≤ 1200 | | | | | | | DIN 371 | H R40 | C | ISO3/6G | HSS-E | S | M2 - M10 | 2986 | 25 | 84 |
| | | | ○ | | | | DIN 371 | H AZ | C | ISO2/6H | HSS-E | | M2 - M10 | 788 | - | 483 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1200 | | | | | | | DIN 371 | H AZ | B | ISO2/6H | HSS-E | ○ | M2 - M10 | 791 | 21 | 44 |
| ≤ 1000 | • | | | | | | DIN 371 | VA | B | ISO2/6H | HSS-E | ● | M2 - M10 | 2869 | 229 | 236 |
| | • | | | | | | DIN 371 | VA R15 | C | ISO2/6H | HSS-E | ● | M2 - M10 | 843 | 230 | 241 |
| | • | | | | | | DIN 371 | VA R15 | C | ISO2/6H | HSS-E | S | M2 - M10 | 2896 | 230 | 241 |
| | • | | • | | | | DIN 371 | VA R40 | C | ISO2/6H | HSS-E | ○ | M3 - M10 | 814 | 231 | 243 |
| | • | | • | | | | DIN 371 | VA R40 | C | ISO2/6H | HSS-E | ○ | M3 - M10 | 1892 | 231 | 243 |
| | • | | | | | | DIN 371 | VA R40 | C | ISO2/6H | HSS-E | ● | M3 - M10 | 2862 | 231 | 243 |
| | • | | | | | | DIN 371 | VA R40 | C | ISO2/6H | HSS-E-PM | S | M3 - M10 | 59 | 231 | 246 |
| | • | | ○ | | | | DIN 371 | VA R40 | C | ISO2/6H | HSS-E-PM | ○ | M3 - M10 | 909 | 231 | 246 |
| • | • | ○ | • | ○ | | | DIN 371 | VA R50 | C | 6HX | HSS-E-PM | S | M3 - M10 | 761 | 25 | 75 |
| • | • | ○ | • | ○ | | | DIN 371 | VA R50 | C | 6HX | HSS-E-PM | C | M3 - M10 | 1139 | 25 | 75 |
| ≤ 1000 | • | | ○ | | | | DIN 371 | VA AZ | B | ISO2/6H | HSS-E | ○ | M3 - M10 | 1871 | 229 | 240 |
| | | | • | | | | DIN 371 | AI | B | ISO2/6H | HSS-E | ○ | M2 - M10 | 805 | 463 | 472 |
| | | | • | | | | DIN 371 | AI R45 | C | ISO2/6H | HSS-E | ○ | M1,6 - M10 | 812 | 464 | 474 |
| | | • | | | | | DIN 371 | GG | C | 6HX | HSS-E | A | M5 - M10 | 318 | 350 | 358 |
| | | • | | | | | DIN 371 | GG | C | 6HX | HSS-E | ● | M3 - M10 | 807 | 349 | 356 |
| | | • | | | | | DIN 371 | GG | C | 6HX | HSS-E | S | M3 - M10 | 930 | 349 | 356 |
| | | • | | | | | DIN 371 | GG | C | 6HX | HSS-E | ● | M5 - M10 | 1890 | 350 | 358 |
| | | • | | | | | DIN 371 | GG | C | 6HX | HSS-E | A | M3 - M10 | 1918 | 349 | 356 |
| | | ○ | ≥ 7 | | | | DIN 371 | Ms | E | ISO2/6H | HSS-E | ○ | M3 - M10 | 800 | 463 | 482 |
| | | ○ | ≥ 7 | | | | DIN 371 | Ms | E | ISO3/6G | HSS-E | ○ | M3 - M10 | 1084 | 463 | 482 |
| ≤ 1000 | | | | | | | ~DIN 371 | N | B | 6HX | VHM | C | M5 - M12 | 942 | 21 | 42 |
| | | | | | ≤ 62 | | ~DIN 371 | H | D | ISO2/6H | VHM | C | M3 - M16 | 2944 | 676 | 681 |
| | | • | | | | | DIN 376 | GGT | C | ISO2/6H | HSS-E | S | M3 - M16 | 1876 | 349 | 357 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | DIN 376 | N | C | ISO2/6H | HSS-E | ○ | M1,6 - M48 | 818 | 22 | 51 |
| ≤ 800 | | | | | | | DIN 376 | N | D | ISO2/6H | HSS-E | ○ | M2 - M30 | 813 | 18 | 49 |
| ≤ 1000 | ○ | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | S | M3 - M36 | 315 | 20 | 33 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ○ | M1,6 - M52 | 815 | 19 | 31 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ○ | M3 - M16 | 846 | 19 | 54 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ○ | M3 - M16 | 847 | 19 | 54 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | S | M1,6 - M52 | 915 | 19 | 31 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ● | M1,6 - M52 | 948 | 19 | 31 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | C | M1,6 - M52 | 1249 | 19 | 31 |
| ≤ 1000 | ● | | ● | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ○ | M3 - M30 | 1872 | 229 | 236 |
| ≤ 1000 | ○ | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | A | M3 - M36 | 2428 | 20 | 33 |
| ≤ 1000 | ○ | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E | ● | M3 - M36 | 2877 | 20 | 33 |
| ≤ 1000 | ● | | ○ | | | | DIN 376 | N | B | ISO2/6H | HSS-E-PM | ○ | M12 - M20 | 879 | 229 | 237 |
| ≤ 1000 | ○ | | | | | | DIN 376 | N | B | ISO2/6H | HSS-E-PM | S | M12 - M20 | 1286 | 20 | 39 |
| ≤ 1000 | ● | | | | | | DIN 376 | N | B | 6HX | HSS-E | S | M3 - M30 | 2087 | 229 | 236 |
| ≤ 800 | | | | | | | DIN 376 | N | B | ISO3/6G | HSS-E | ○ | M2 - M20 | 845 | 19 | 37 |
| ≤ 800 | | | | | | | DIN 376 | N-LH | B | ISO2/6H | HSS-E | ○ | M12 - M20 | 790 | 19 | 32 |
| ≤ 800 | | | | | | | DIN 376 | N R15 | C | ISO2/6H | HSS-E | ○ | M3 - M30 | 821 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 376 | N R15 | C | ISO2/6H | HSS-E | S | M3 - M30 | 916 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 376 | N R15 | C | ISO2/6H | HSS-E | ● | M3 - M30 | 949 | 22 | 57 |
| ≤ 800 | | | | | | | DIN 376 | N R15 | C | ISO2/6H | HSS-E | ○ | M12 - M20 | 1898 | 22 | 59 |
| ≤ 800 | | | | | | | DIN 376 | N R15 | C | ISO2/6H | HSS-E | S | M12 - M20 | 2437 | 23 | 59 |
| ≤ 800 | | | | | | | DIN 376 | N L15 | D | ISO2/6H | HSS-E | ○ | M3 - M16 | 820 | 19 | 89 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 376 | N R40 | E | ISO2/6H | HSS-E | ○ | M4 - M16 | 2791 | 24 | 69 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1000 | ○ | ○ | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | S | M5 - M30 | 196 | 25 | 70 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | ○ | M3 - M30 | 784 | 23 | 60 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | ○ | M3 - M30 | 822 | 23 | 60 |
| ≤ 1000 | ○ | ○ | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | ○ | M3 - M36 | 826 | 24 | 66 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | ○ | M3 - M36 | 890 | 24 | 66 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | S | M3 - M30 | 917 | 23 | 60 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | C | M3 - M30 | 1254 | 24 | 60 |
| ≤ 1000 | ○ | ○ | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | A | M3 - M36 | 2426 | - | 66 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E | S | M12 - M20 | 2439 | 24 | 64 |
| ≤ 1000 | ○ | ○ | | | | | DIN 376 | N R40 | C | ISO2/6H | HSS-E-PM | S | M12 - M20 | 1289 | 25 | 72 |
| ≤ 1000 | ○ | ○ | | | | | DIN 376 | N R40 | C | 6HX | HSS-E | S | M3 - M36 | 2441 | 24 | 66 |
| ≤ 800 | | | | | | | DIN 376 | N R40 | C | ISO3/6G | HSS-E | ○ | M3 - M24 | 848 | 23 | 61 |
| ≤ 800 | | | | | | | DIN 376 | N L40 LH | C | ISO2/6H | HSS-E | ○ | M12 - M20 | 787 | 24 | 62 |
| ● | ● | ○ | ○ | ○ | | | DIN 376 | N R50 | C | ISO2/6H | HSS-E-PM | S | M12 - M20 | 1098 | 25 | 74 |
| ● | ● | ○ | ● | ○ | | | DIN 376 | N R50 | C | ISO2/6H | HSS-E-PM | C | M12 - M20 | 1293 | 25 | 74 |
| | | | ○ | | | | DIN 376 | N AZ | E | ISO2/6H | HSS-E | A | M5 - M12 | 2899 | 464 | 484 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 376 | H | E | 6HX | HSS-E-PM | C | M10 - M20 | 4165 | 351 | 359 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 376 | H | C | 6HX | HSS-E | C | M16 - M39 | 778 | 23 | 79 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 376 | H | C | 6HX | HSS-E-PM | C | M10 - M20 | 297 | 23 | 78 |
| | | ● | ≥ 7 | | | | DIN 376 | H | C | 6HX | VHM | ○ | M12 - M20 | 1859 | 349 | 362 |
| | | ● | ≥ 7 | | | | DIN 376 | H | C | 6HX | VHM | ○ | M12 - M20 | 1883 | 351 | 362 |
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E | S | M3 - M24 | 734 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E | ○ | M3 - M24 | 816 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E | C | M3 - M24 | 1915 | 21 | 43 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E | ● | M3 - M24 | 2942 | 21 | 43 |
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E-PM | S | M12 - M30 | 58 | 21 | 47 |
| ≤ 1200 | | | | | | | DIN 376 | H | B | ISO2/6H | HSS-E-PM | A | M12 - M30 | 1576 | 21 | 47 |
| ≤ 1200 | | | | | | | DIN 376 | H R15 | C | ISO2/6H | HSS-E-PM | ○ | M12 - M20 | 935 | 23 | 76 |
| ≤ 1200 | | | | | | | DIN 376 | H R15 | C | ISO2/6H | HSS-E-PM | A | M12 - M20 | 1578 | 23 | 76 |
| ≤ 1200 | | | | | | | DIN 376 | H R15 | C | 6HX | HSS-E-PM | C | M12 - M24 | 1194 | 23 | 77 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | S | M3 - M30 | 362 | 25 | 82 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | ○ | M3 - M30 | 823 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | ● | M3 - M30 | 950 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | ○ | M12 - M20 | 1901 | 25 | 83 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | C | M3 - M30 | 1917 | 25 | 82 |
| ≤ 1200 | | | | | | | DIN 376 | H R40 | C | ISO2/6H | HSS-E | ● | M3 - M30 | 2851 | 25 | 81 |
| ≤ 1200 | | | | | | | DIN 376 | H AZ | B | ISO2/6H | HSS-E | ○ | M12 - M16 | 849 | 21 | 44 |
| ≤ 1000 | ● | | | | | | DIN 376 | VA | B | ISO2/6H | HSS-E | ● | M3 - M30 | 2870 | 229 | 236 |
| | ● | | | | | | DIN 376 | VA R15 | C | ISO2/6H | HSS-E | ● | M12 - M24 | 785 | 230 | 241 |
| | ● | | | | | | DIN 376 | VA R15 | C | ISO2/6H | HSS-E | S | M12 - M24 | 2895 | 230 | 241 |
| | ● | | ● | | | | DIN 376 | VA R40 | C | ISO2/6H | HSS-E | ○ | M12 - M30 | 825 | 231 | 243 |
| | ● | | ● | | | | DIN 376 | VA R40 | C | ISO2/6H | HSS-E | ○ | M12 - M30 | 1899 | 231 | 243 |
| | ● | | | | | | DIN 376 | VA R40 | C | ISO2/6H | HSS-E | ● | M12 - M30 | 2863 | 231 | 243 |
| | ● | | | | | | DIN 376 | VA R40 | C | ISO2/6H | HSS-E-PM | S | M12 - M24 | 60 | 231 | 246 |
| | ● | | ● | | | | DIN 376 | VA R40 | C | ISO2/6H | HSS-E-PM | ○ | M12 - M24 | 910 | 231 | 246 |
| ● | ● | ○ | ● | ○ | | | DIN 376 | VA R50 | C | 6HX | HSS-E-PM | S | M12 - M20 | 763 | 25 | 75 |
| ● | ● | ○ | ● | ○ | | | DIN 376 | VA R50 | C | 6HX | HSS-E-PM | C | M12 - M20 | 1142 | 25 | 75 |
| ≤ 1000 | ● | | ○ | | | | DIN 376 | VA AZ | B | ISO2/6H | HSS-E | ○ | M12 - M16 | 792 | 229 | 240 |

# Machos máquina para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | • | | | | DIN 376 | AI | B | ISO2/6H | HSS-E | ○ | M12 - M24 | 817 | 463 | 472 |
| | | | • | | | | DIN 376 | AI R45 | C | ISO2/6H | HSS-E | ○ | M3 - M24 | 824 | 464 | 474 |
| | | • | | | | | DIN 376 | GG | C | 6HX | HSS-E | A | M12 - M20 | 319 | 350 | 358 |
| | | • | | | | | DIN 376 | GG | C | 6HX | HSS-E | ● | M3 - M30 | 819 | 349 | 356 |
| | | • | | | | | DIN 376 | GG | C | 6HX | HSS-E | S | M3 - M30 | 931 | 349 | 356 |
| | | • | | | | | DIN 376 | GG | C | 6HX | HSS-E | ● | M12 - M20 | 1897 | 350 | 358 |
| | | • | | | | | DIN 376 | GG | C | 6HX | HSS-E | A | M3 - M30 | 1919 | 349 | 356 |
| ≤ 1200 | | • | ≥ 7 | | | | ~DIN 376 | H | C | 6HX | HSS-E | C | M16 - M39 | 779 | 23 | 80 |
| ≤ 1000 | • | | | | | | DIN 371/376 | N | B | ISO2/6H | HSS-E-PM | S | M2 - M12 | 1002 | 229 | 238 |
| • | • | ○ | ○ | ○ | | | DIN 371/376 | N | B | 6HX | HSS-E | S | M2 - M30 | 4218 | 21 | 38 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371/376 | N R15 | E | ISO2/6H | HSS-E | C | M3 - M20 | 4155 | 23 | 48 |
| ≤ 1000 | ○ | ○ | | | | | DIN 371/376 | N R15 | C | ISO2/6H | HSS-E | C | M3 - M20 | 4154 | 23 | 48 |
| • | • | ○ | ○ | ○ | | | DIN 371/376 | VA R45 | C | 6HX | HSS-E | A | M2 - M30 | 393 | 25 | 71 |
| | | | | • | | | DIN 371/376 | Ti R15 | C | 4HX | HSS-E-PM | C | MJ3 x 0,5 - M16 | 1061 | 597 | 605 |
| | | | | • | | | DIN 371/376 | Ti R15 | C | 6HX | HSS-E-PM | C | M3 - M16 | 2909 | 597 | 604 |
| | | | | • | | | DIN 371/376 | Ni R10 | C | 4HX | HSS-E-PM | A | MJ3 x 0,5 - M16 | 1065 | 597 | 605 |
| | | | | • | | | DIN 371/376 | Ni R10 | C | 6HX | HSS-E-PM | A | M3 - M16 | 2920 | 597 | 604 |
| | | | | • | | | DIN 371/376 | Ti Ni | B | 4HX | HSS-E-PM | C | MJ3 x 0,5 - M16 | 1057 | 596 | 603 |
| | | | | • | | | DIN 371/376 | Ti Ni | B | 6HX | HSS-E-PM | C | M3 - M16 | 2901 | 596 | 602 |
| | | | | • | | | DIN 371/376 | Ti Ni | B | 6HX | HSS-E-PM | A | M3 - M16 | 2916 | 596 | 602 |

# Machos máquina para rosca métrica fina ISO

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | DIN 2180 | N R40 | C | ISO2/6H | HSS-E | ○ | M 6 X0,75 - M12 X1,5 | 1970 | 23 | 106 |
| ≤ 800 | | | | | | | DIN 374 | N | C | ISO2/6H | HSS-E | ○ | M 3 X0,35 - M63 X1,5 | 830 | 18 | 100 |
| ≤ 800 | | | | | | | DIN 374 | N | C | ISO3/6G | HSS-E | ○ | M 3 X0,35 - M63 X1,5 | 829 | 18 | 100 |

# Machos máquina para rosca métrica fina ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E | ○ | M 3 X0,35 - M40 X1,5 | 827 | 19 | 91 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E | S | M 3 X0,35 - M40 X1,5 | 832 | 19 | 91 |
| ≤ 1000 ≤ 1000 | ○ | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E | A + M | M 5 X0,5 - M50 X1,5 | 2878 | 20 | 94 |
| ≤ 1000 ≤ 1000 | ○ | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E | ● | M 5 X0,5 - M50 X1,5 | 2879 | 20 | 94 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E | ● | M 3 X0,35 - M40 X1,5 | 2888 | 19 | 91 |
| ≤ 1000 ≤ 1000 | ● | | | | | | DIN 374 | N | B | ISO2/6H | HSS-E-PM | S | M 6 X0,75 - M24 X2 | 1291 | 20 | 98 |
| ● | ● | ○ | ○ | ○ | | | DIN 374 | N | B | 6HX | HSS-E | S | M 6 X0,75 - M24 X1,5 | 4219 | 21 | 90 |
| ≤ 1000 ≤ 1000 | | | | | | | DIN 374 | N | B | 6HX | VHM | C | M14 X1,25 - M16 X1,5 | 944 | 21 | 96 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N | B | ISO3/6G | HSS-E | ○ | M 6 X0,75 - M20 X1,5 | 316 | 19 | 93 |
| ≤ 1000 ≤ 1000 | ○ | | | | | | DIN 374 | N | B | ISO3/6G | HSS-E | S | M 6 X0,75 - M20 X1,5 | 2993 | 20 | 93 |
| ≤ 1000 ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R15 | E | ISO2/6H | HSS-E | C | M 8 X1 - M16 X1,5 | 4157 | 23 | 103 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R15 | C | ISO2/6H | HSS-E | ○ | M 4 X0,5 - M30 X2 | 833 | 22 | 102 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R15 | C | ISO2/6H | HSS-E | ○ | M 5 X0,5 - M20 X1,5 | 1905 | 22 | 104 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R15 | C | ISO2/6H | HSS-E | S | M 4 X0,5 - M30 X2 | 1971 | 22 | 102 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R15 | C | ISO2/6H | HSS-E | ● | M 4 X0,5 - M30 X2 | 2838 | 22 | 102 |
| ≤ 1000 ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R15 | C | ISO2/6H | HSS-E | C | M 8 X1 - M16 X1,5 | 4156 | 23 | 103 |
| | | ○ | ≥ 7 | | | | DIN 374 | N R15 | C | 6HX | VHM | ○ | M12 X1,5 - M20 X1,5 | 978 | 465 | 493 |
| | | | ≥ 7 | | | | DIN 374 | N L15 | D | 6HX | VHM | ○ | M12 X1,5 - M18 X1,5 | 976 | 463 | 495 |
| ≤ 1000 ≤ 1000 | ○ | ○ | ○ | | | | DIN 374 | N R40 | E | ISO2/6H | HSS-E | ○ | M 5 X0,5 - M30 X2 | 2792 | 24 | 107 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E | ○ | M 3 X0,35 - M30 X2 | 834 | 23 | 105 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E | S | M 3 X0,35 - M30 X2 | 852 | 23 | 105 |
| ≤ 1000 ≤ 1000 | ○ | ○ | ○ | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E | ○ | M 5 X0,5 - M30 X2 | 2424 | 24 | 107 |
| ≤ 800 ≤ 1000 | | | | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E | ● | M 3 X0,35 - M30 X2 | 2843 | 23 | 105 |
| ≤ 1000 ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E | ● | M 5 X0,5 - M30 X2 | 2853 | 24 | 107 |

# Machos máquina para rosca métrica fina ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R40 | C | ISO2/6H | HSS-E-PM | S | M 6 X0,75 - M24 X2 | 1292 | 25 | 109 |
| ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R40 | C | ISO3/6G | HSS-E | S | M 8 X1 - M20 X1,5 | 1049 | 24 | 108 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 374 | N R40 | C | ISO3/6G | HSS-E | ○ | M 8 X1 - M20 X1,5 | 2998 | 24 | 108 |
| ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R40 | C | ISO3/6G | HSS-E | ● | M 8 X1 - M20 X1,5 | 2999 | 24 | 108 |
| ≤ 1000 | ○ | ○ | | | | | DIN 374 | N R40 | C(K) | ISO2/6H | HSS-E | S | M 6 X0,75 - M24 X2 | 273 | 25 | 109 |
| ● | ● | ○ | ○ | ○ | | | DIN 374 | N R50 | C | ISO2/6H | HSS-E-PM | S | M 8 X1 - M20 X1,5 | 1100 | 25 | 110 |
| ● | ● | ○ | ● | ○ | | | DIN 374 | N R50 | C | ISO2/6H | HSS-E-PM | C | M 8 X1 - M20 X1,5 | 1294 | 25 | 110 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 374 | H | E | 6HX | HSS-E-PM | C | M 5 X0,5 - M16 X1,5 | 1007 | 23 | 113 |
| | | ● | ≥ 7 | | | | DIN 374 | H | E | 6HX | VHM | ○ | M10 X1 - M16 X1,5 | 1009 | 351 | 369 |
| ≤ 1200 | | ● | ≥ 7 | | | | DIN 374 | H | C | 6HX | HSS-E-PM | C | M 5 X0,5 - M16 X1,5 | 1090 | 23 | 113 |
| | | ● | ≥ 7 | | | | DIN 374 | H | C | 6HX | VHM | ○ | M12 X1,5 - M20 X1,5 | 974 | 351 | 368 |
| | | ● | ≥ 7 | | | | DIN 374 | H | C | 6HX | VHM | ○ | M12 X1,5 - M20 X1,5 | 1860 | 349 | 368 |
| ≤ 1200 | | | | | | | DIN 374 | H | B | ISO2/6H | HSS-E | ○ | M 3 X0,35 - M24 X1,5 | 828 | 21 | 97 |
| ≤ 1200 | | | | | | | DIN 374 | H | B | ISO2/6H | HSS-E | ● | M 3 X0,35 - M24 X1,5 | 2943 | 21 | 97 |
| ≤ 1200 | | | | | | | DIN 374 | H | B | ISO3/6G | HSS-E | S | M 8 X1 - M20 X1,5 | 2983 | 21 | 99 |
| ≤ 1200 | | | | | | | DIN 374 | H R15 | C | ISO2/6H | HSS-E-PM | ○ | M 6 X0,75 - M24 X1,5 | 874 | 23 | 112 |
| ≤ 1200 | | | | | | | DIN 374 | H R15 | C | 6HX | HSS-E-PM | C | M 6 X0,75 - M24 X1,5 | 1200 | 23 | 112 |
| ≤ 1200 | | | | | | | DIN 374 | H R40 | C | ISO2/6H | HSS-E | ○ | M 6 X0,75 - M24 X1,5 | 835 | 25 | 114 |
| ≤ 1200 | | | | | | | DIN 374 | H R40 | C | ISO2/6H | HSS-E | ● | M 6 X0,75 - M24 X1,5 | 2852 | 25 | 114 |
| ≤ 1200 | | | | | | | DIN 374 | H R40 | C | ISO2/6H | HSS-E | ● | M 6 X0,75 - M24 X1,5 | 2940 | 25 | 114 |
| ≤ 1200 | | | | | | | DIN 374 | H R40 | C | ISO3/6G | HSS-E | ● | M 8 X1 - M20 X1,5 | 2988 | 25 | 116 |
| ≤ 1200 | | | | | | | DIN 374 | H R40 | C | ISO3/6G | HSS-E | S | M 8 X1 - M20 X1,5 | 2989 | 25 | 116 |
| ≤ 1000 | ● | | | | | | DIN 374 | VA | B | ISO2/6H | HSS-E | S | M 3 X0,35 - M24 X1,5 | 1001 | 229 | 257 |
| ≤ 1000 | ● | | ● | | | | DIN 374 | VA | B | ISO2/6H | HSS-E | ○ | M 5 X0,5 - M24 X2 | 1873 | 229 | 256 |

# Machos máquina para rosca métrica fina ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1000 | • | | | | | | DIN 374 | VA | B | ISO2/6H | HSS-E | ● | M 3 X0,35 - M24 X1,5 | 2871 | 229 | 257 |
| ≤ 1000 | • | | | | | | DIN 374 | VA | B | ISO2/6H | HSS-E-PM | ○ | M 5 X0,5 - M24 X2 | 887 | 229 | 256 |
| | • | | | | | | DIN 374 | VA R15 | C | ISO2/6H | HSS-E | ● | M 4 X0,5 - M24 X1,5 | 1874 | 230 | 249 |
| | • | | | | | | DIN 374 | VA R15 | C | ISO2/6H | HSS-E | S | M 4 X0,5 - M24 X1,5 | 2897 | 230 | 249 |
| | • | | | | | | DIN 374 | VA R40 | C | ISO2/6H | HSS-E | ● | M 3 X0,35 - M24 X1,5 | 2864 | 231 | 251 |
| | • | | • | | | | DIN 374 | VA R40 | C | ISO2/6H | HSS-E-PM | ○ | M 8 X1 - M20 X1,5 | 936 | 231 | 253 |
| | • | | | | | | DIN 374 | VA R40 | C | ISO2/6H | HSS-E-PM | S | M 8 X1 - M20 X1,5 | 1004 | 231 | 253 |
| • | • | ○ | ○ | ○ | | | DIN 374 | VA R45 | C | 6HX | HSS-E | A | M 6 X0,75 - M24 X1,5 | 394 | 25 | 115 |
| • | • | ○ | • | ○ | | | DIN 374 | VA R50 | C | 6HX | HSS-E-PM | S | M 8 X1 - M20 X1,5 | 764 | 25 | 111 |
| • | • | ○ | • | ○ | | | DIN 374 | VA R50 | C | 6HX | HSS-E-PM | C | M 8 X1 - M20 X1,5 | 1144 | 25 | 111 |
| | | • | | | | | DIN 374 | GG | C | 6HX | HSS-E | A | M 4 X0,5 - M30 X1,5 | 169 | 349 | 365 |
| | | • | | | | | DIN 374 | GG | C | 6HX | HSS-E | A | M 8 X1 - M24 X1,5 | 347 | 350 | 366 |
| | | • | | | | | DIN 374 | GG | C | 6HX | HSS-E | ● | M 4 X0,5 - M30 X1,5 | 831 | 349 | 365 |
| | | • | | | | | DIN 374 | GG | C | 6HX | HSS-E | S | M 4 X0,5 - M30 X1,5 | 932 | 349 | 365 |
| | | • | | | | | DIN 374 | GG | C | 6HX | HSS-E | ● | M 8 X1 - M24 X1,5 | 1904 | 350 | 366 |
| | | ○ | ≥ 7 | | | | DIN 371 | N R15 | C | 6HX | VHM | ○ | M 4 X0,5 - M10 X1 | 977 | 465 | 493 |
| | | | ≥ 7 | | | | DIN 371 | N R15 | C | 6HX | VHM | M | M 5 - M10 | 2516 | - | 494 |
| | | | ≥ 7 | | | | DIN 371 | N L15 | D | 6HX | VHM | ○ | M 4 X0,5 - M10 X1 | 975 | 463 | 495 |
| | | • | ≥ 7 | | | | DIN 371 | H | C | 6HX | VHM | ○ | M 5 X0,5 - M10 X1 | 972 | 351 | 368 |
| | | • | ≥ 7 | | | | DIN 371 | H | C | 6HX | VHM | ○ | M 5 X0,5 - M10 X1 | 1861 | 349 | 368 |
| | | | | | 45-55 | | DIN 371 | H | D | 6HX | HSS-E-PM | C | M 8 X1 - M12 X1,5 | 4161 | 676 | 682 |
| | | | | • | | | DIN 371 | Ti R15 | C | 4HX | HSS-E-PM | C | MJ 6 X0,5 - MJ10 X1,25 | 1062 | 597 | 609 |
| | | | | • | | | DIN 371 | Ti R15 | C | 6HX | HSS-E-PM | C | M 3 X0,35 - M10 X1,25 | 2910 | 597 | 608 |
| | | | | • | | | DIN 371 | Ni R10 | C(K) | 4HX | HSS-E-PM | A | MJ 6 X0,5 - MJ10 X1,25 | 1066 | 597 | 609 |

## Machos máquina para rosca métrica fina ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | • | | | DIN 371 | Ni R10 | C(K) | 6HX | HSS-E-PM | A | M 3 X0,35 - M10 X1,25 | 2921 | 597 | 608 |
| | | | | • | | | DIN 371 | Ti Ni | B | 4HX | HSS-E-PM | C | MJ 6 X0,5 - MJ10 X1,25 | 1058 | 596 | 607 |
| | | | | • | | | DIN 371 | Ti Ni | B | 6HX | HSS-E-PM | C | M 3 X0,35 - M10 X1,25 | 2903 | 596 | 606 |
| | | | | • | | | DIN 371 | Ti Ni | B | 6HX | HSS-E-PM | A | M 3 X0,35 - M10 X1,25 | 2917 | 596 | 606 |
| ≤ 1000 | | | | | | | ~DIN 371 | N | B | 6HX | VHM | C | M 5 X0,5 - M12 X1,5 | 943 | 21 | 95 |
| | | | | | ≤ 62 | | ~DIN 371 | H | D | ISO2/6H | VHM | C | M 6 X0,5 - M12 X1,5 | 1161 | 676 | 683 |

## Machos máquina para roscas UNC

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | ~DIN 371 | N | C | 2B | HSS-E | ○ | 3 - 48 - 3/8 - 16 | 1977 | 18 | 121 |
| ≤ 800 | | | | | | | ~DIN 371 | N | B | 2B | HSS-E | ○ | 1 - 64 - 3/8 - 16 | 873 | 19 | 117 |
| ≤ 1000 | • | | • | | | | ~DIN 371 | N | B | 2B | HSS-E | ○ | 4 - 40 - 3/8 - 16 | 1980 | 229 | 258 |
| ≤ 1000 | ○ | | | | | | ~DIN 371 | N | B | 2B | HSS-E | ● | 4 - 40 - 3/8 - 16 | 2881 | 20 | 118 |
| ≤ 800 | | | | | | | ~DIN 371 | N | B | 2B | HSS-E | ● | 1 - 64 - 3/8 - 16 | 2889 | 19 | 117 |
| ≤ 800 | | | | | | | ~DIN 371 | N R15 | C | 2B | HSS-E | ○ | 4 - 40 - 3/8 - 16 | 1978 | 22 | 119 |
| ≤ 800 | | | | | | | ~DIN 371 | N R15 | C | 2B | HSS-E | ● | 4 - 40 - 10 - 24 | 2839 | 22 | 120 |
| ≤ 800 | | | | | | | ~DIN 371 | N R40 | C | 2B | HSS-E | ○ | 2 - 56 - 3/8 - 16 | 876 | 23 | 122 |
| ≤ 1000 | ○ | ○ | | | | | ~DIN 371 | N R40 | C | 2B | HSS-E | S | 10 - 24 - 3/8 - 16 | 1837 | 25 | 124 |
| ≤ 800 | | | | | | | ~DIN 371 | N R40 | C | 2B | HSS-E | ● | 2 - 56 - 3/8 - 16 | 2844 | 23 | 122 |
| ≤ 1000 | ○ | ○ | ○ | | | | ~DIN 371 | N R40 | C | 2B | HSS-E | ○ | 2 - 56 - 3/8 - 16 | 2854 | 24 | 123 |
| ≤ 1000 | ○ | ○ | | | | | ~DIN 371 | N R40 | C | 2B | HSS-E | ● | 2 - 56 - 3/8 - 16 | 2855 | 24 | 123 |
| ≤ 1000 | • | | | | | | ~DIN 371 | VA | B | 2B | HSS-E | ● | 4 - 40 - 3/8 - 16 | 2872 | 229 | 258 |
| | • | | • | | | | ~DIN 371 | VA R40 | C | 2B | HSS-E | ○ | 2 - 56 - 3/8 - 16 | 1981 | 231 | 259 |
| | • | | | | | | ~DIN 371 | VA R40 | C | 2B | HSS-E | ● | 2 - 56 - 3/8 - 16 | 2865 | 231 | 259 |
| | | • | | | | | ~DIN 371 | GG | C | 2B | HSS-E | A | 10 - 24 - 3/8 - 16 | 1085 | 350 | 371 |
| | | • | | | | | ~DIN 371 | GG | C | 2B | HSS-E | ● | 2 - 56 - 3/8 - 16 | 1979 | 349 | 370 |

# Machos máquina para roscas UNC

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | • | | | ~DIN 371 | Ti Ni | B | 2BX | HSS-E-PM | C | 6 - 32 - 3/8 - 16 | 2905 | 596 | 610 |
| | | | | • | | | ~DIN 371 | Ti Ni | B | 2BX | HSS-E-PM | A | 6 - 32 - 3/8 - 16 | 2918 | 596 | 610 |
| ≤ 800 N/mm² | | | | | | | ~DIN 376 | N | B | 2B | HSS-E | | 7/16 - 14 - 1 1/2 - 6 | 878 | 19 | 117 |
| ≤ 1000 N/mm² | • | | • | | | | ~DIN 376 | N | B | 2B | HSS-E | | 1/2 - 13 - 1 - 8 | 1985 | 229 | 258 |
| ≤ 1000 N/mm² | ○ | | | | | | ~DIN 376 | N | B | 2B | HSS-E | | 7/16 - 14 - 1 - 8 | 2883 | 20 | 118 |
| ≤ 800 N/mm² | | | | | | | ~DIN 376 | N | B | 2B | HSS-E | | 7/16 - 14 - 1 1/2 - 6 | 2890 | 19 | 117 |
| ≤ 800 N/mm² | | | | | | | ~DIN 376 | N R15 | C | 2B | HSS-E | | 1/2 - 13 - 1 - 8 | 2840 | 22 | 120 |
| ≤ 800 N/mm² | | | | | | | ~DIN 376 | N R40 | C | 2B | HSS-E | | 7/16 - 14 - 1 - 8 | 881 | 23 | 122 |
| ≤ 800 N/mm² | | | | | | | ~DIN 376 | N R40 | C | 2B | HSS-E | | 7/16 - 14 - 1 - 8 | 2845 | 23 | 122 |
| ≤ 1000 N/mm² | ○ | ○ | ○ | | | | ~DIN 376 | N R40 | C | 2B | HSS-E | | 7/16 - 14 - 1 - 8 | 2856 | 24 | 123 |
| ≤ 1000 N/mm² | ○ | ○ | | | | | ~DIN 376 | N R40 | C | 2B | HSS-E | | 7/16 - 14 - 1 - 8 | 2857 | 24 | 123 |
| ≤ 1000 N/mm² | • | | | | | | ~DIN 376 | VA | B | 2B | HSS-E | | 1/2 - 13 - 1 - 8 | 2873 | 229 | 258 |
| | • | | • | | | | ~DIN 376 | VA R40 | C | 2B | HSS-E | | 7/16 - 14 - 7/8 - 9 | 1986 | 231 | 259 |
| | • | | | | | | ~DIN 376 | VA R40 | C | 2B | HSS-E | | 7/16 - 14 - 7/8 - 9 | 2866 | 231 | 259 |
| | | • | | | | | ~DIN 376 | GG | C | 2B | HSS-E | A | 7/16 - 14 - 7/8 - 9 | 1086 | 350 | 371 |
| | | • | | | | | ~DIN 376 | GG | C | 2B | HSS-E | | 7/16 - 14 - 3/4 - 10 | 1984 | 349 | 370 |
| | | | | • | | | ~DIN 371/376 | Ti R15 | C | 2BX | HSS-E-PM | C | 4 - 40 - 5/8 - 11 | 2912 | 597 | 612 |
| | | | | • | | | ~DIN 371/376 | Ti R15 | C | 3BX | HSS-E-PM | C | 6 - 32 - 5/8 - 11 | 1063 | 597 | 613 |
| | | | | • | | | ~DIN 371/376 | Ni R10 | C | 2BX | HSS-E-PM | A | 4 - 40 - 5/8 - 11 | 2922 | 597 | 612 |
| | | | | • | | | ~DIN 371/376 | Ni R10 | C | 3BX | HSS-E-PM | A | 6 - 32 - 5/8 - 11 | 1067 | 597 | 613 |
| | | | | • | | | ~DIN 371/376 | Ti Ni | B | 3BX | HSS-E-PM | C | 6 - 32 - 5/8 - 11 | 1059 | 596 | 611 |

# Machos máquina para roscas UNF

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 N/mm² | | | | | | | ~DIN 374 | N | C | 2B | HSS-E | | 3 - 56 - 1 - 12 | 1987 | 18 | 126 |
| ≤ 800 N/mm² | | | | | | | ~DIN 374 | N | B | 2B | HSS-E | | 3 - 56 - 1 1/4 - 12 | 908 | 18 | 125 |

# Machos máquina para roscas UNF

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 1000 | • | | • | | | | ~DIN 374 | N | B | 2B | HSS-E | ○ | 10 - 32 - 3/8 - 24 | 1990 | 229 | 260 |
| ≤ 1000 | ○ | | | | | | ~DIN 374 | N | B | 2B | HSS-E | ● | 6 - 40 - 1 - 12 | 2885 | 20 | 130 |
| ≤ 800 | | | | | | | ~DIN 374 | N | B | 2B | HSS-E | ● | 3 - 56 - 1 1/4 - 12 | 2891 | 19 | 125 |
| ≤ 800 | | | | | | | ~DIN 374 | N R15 | C | 2B | HSS-E | ○ | 3 - 56 - 1 - 12 | 1988 | 22 | 127 |
| ≤ 800 | | | | | | | ~DIN 374 | N R15 | C | 2B | HSS-E | ● | 3 - 56 - 1 - 12 | 2841 | 22 | 127 |
| ≤ 800 | | | | | | | ~DIN 374 | N R40 | C | 2B | HSS-E | ○ | 3 - 56 - 1 - 12 | 911 | 23 | 128 |
| ≤ 1000 | ○ | ○ | | | | | ~DIN 374 | N R40 | C | 2B | HSS-E | S | 10 - 32 - 1 - 12 | 1838 | 25 | 131 |
| ≤ 800 | | | | | | | ~DIN 374 | N R40 | C | 2B | HSS-E | ● | 3 - 56 - 1 - 12 | 2846 | 23 | 128 |
| ≤ 1000 | ○ | ○ | | | | | ~DIN 374 | N R40 | C | 2B | HSS-E | ● | 10 - 32 - 7/8 - 14 | 2859 | 24 | 129 |
| ≤ 1000 | • | | | | | | ~DIN 374 | VA | B | 2B | HSS-E | ● | 4 - 48 - 1 - 12 | 2874 | 229 | 260 |
| | • | | | | | | ~DIN 374 | VA R15 | C | 2B | HSS-E | ● | 5 - 44 - 1 - 12 | 1991 | 230 | 261 |
| | • | | | | | | ~DIN 374 | VA R15 | C | 2B | HSS-E | S | 5 - 44 - 1 - 12 | 2898 | 230 | 261 |
| | • | | • | | | | ~DIN 374 | VA R40 | C | 2B | HSS-E | ○ | 1/4 - 28 - 1 - 12 | 2867 | 231 | 262 |
| | • | | | | | | ~DIN 374 | VA R40 | C | 2B | HSS-E | ● | 10 - 32 - 1 - 12 | 2868 | 231 | 262 |
| | | • | | | | | ~DIN 374 | GG | C | 2B | HSS-E | A | 10 - 32 - 7/8 - 14 | 1082 | 350 | 373 |
| | | • | | | | | ~DIN 374 | GG | C | 2B | HSS-E | ■ | 4 - 48 - 1 - 12 | 1989 | 349 | 372 |
| | | | | • | | | ~DIN 371 | Ti Ni | B | 2BX | HSS-E-PM | A | 6 - 40 - 3/8 - 24 | 2919 | 596 | 614 |
| | | | | • | | | ~DIN 371-374 | Ti R15 | C | 2BX | HSS-E-PM | C | 4 - 48 - 5/8 - 18 | 2914 | 597 | 617 |
| | | | | • | | | ~DIN 371-374 | Ti R15 | C | 3BX | HSS-E-PM | C | 6 - 40 - 5/8 - 18 | 1064 | 597 | 618 |
| | | | | • | | | ~DIN 371-374 | Ni R10 | C | 2BX | HSS-E-PM | A | 4 - 48 - 5/8 - 18 | 2923 | 597 | 616 |
| | | | | • | | | ~DIN 371-374 | Ni R10 | C | 3BX | HSS-E-PM | A | 6 - 40 - 5/8 - 18 | 1068 | 597 | 618 |
| | | | | • | | | ~DIN 371-374 | Ti Ni | B | 3BX | HSS-E-PM | C | 6 - 40 - 5/8 - 18 | 1060 | 596 | 615 |
| | | • | | | | | DIN 5156 | GG | C | | HSS-E | ■ | G1/16 - G2 | 961 | 349 | 374 |

# Machos máquina para roscas GAS

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | DIN 5156 | N | C | | HSS-E | ○ | G 1/16 - G2 | 963 | 18 | 133 |
| ≤ 800 | | | | | | | DIN 5156 | N | B | | HSS-E | ○ | G 1/16 - G2 | 962 | 19 | 132 |
| ≤ 1000 | ● | | ● | | | | DIN 5156 | N | B | | HSS-E | ○ | G 1/16 - G1 | 967 | 229 | 263 |
| ≤ 1000 | ○ | | | | | | DIN 5156 | N | B | | HSS-E | A | G 1/8 - G2 | 2886 | 20 | 140 |
| ≤ 1000 | ○ | | | | | | DIN 5156 | N | B | | HSS-E | ● | G 1/8 - G2 | 2887 | 20 | 140 |
| ≤ 800 | | | | | | | DIN 5156 | N | B | | HSS-E | ● | G 1/16 - G2 | 2894 | 19 | 132 |
| ● | ● | ○ | ○ | ○ | | | DIN 5156 | N | B | | HSS-E | S | G 1/16 - G1 | 4220 | 21 | 134 |
| ≤ 1000 | ○ | ○ | | | | | DIN 5156 | N R15 | E | | HSS-E | C | G 1/16 - G1 | 4158 | 23 | 135 |
| ≤ 800 | | | | | | | DIN 5156 | N R15 | C | | HSS-E | ○ | G 1/16 - G1 | 964 | 22 | 135 |
| ≤ 800 | | | | | | | DIN 5156 | N R15 | C | | HSS-E | ● | G 1/16 - G1 | 2842 | 22 | 135 |
| ≤ 1000 | ○ | ○ | | | | | DIN 5156 | N R40 | C | | HSS-E | S | G 1/8 - G1 | 937 | 25 | 141 |
| ≤ 800 | | | | | | | DIN 5156 | N R40 | C | | HSS-E | ○ | G 1/16 - G1 1/2 | 965 | 23 | 136 |
| ≤ 800 | | | | | | | DIN 5156 | N R40 | C | | HSS-E | ● | G 1/16 - G1 1/2 | 2849 | 23 | 136 |
| ≤ 1000 | ○ | ○ | ○ | | | | DIN 5156 | N R40 | C | | HSS-E | ○ | G 1/8 - G2 | 2860 | 24 | 137 |
| ≤ 1000 | ○ | ○ | | | | | DIN 5156 | N R40 | C | | HSS-E | ● | G 1/8 - G2 | 2861 | 24 | 137 |
| ≤ 1000 | ● | | | | | | DIN 5156 | VA | B | | HSS-E | ● | G 1/16 - G1 | 2875 | 229 | 263 |
| | ● | | | | | | DIN 5156 | VA R40 | C | | HSS-E | ● | G 1/16 - G1 1/2 | 968 | 231 | 265 |
| | ● | | ● | | | | DIN 5156 | VA R40 | C | | HSS-E-PM | ○ | G 1/16 - G1 1/2 | 939 | 231 | 265 |
| ● | ● | ○ | ○ | ○ | | | DIN 5156 | VA R45 | C | | HSS-E | A | G 1/16 - G1 | 395 | 25 | 139 |
| ● | ● | ○ | ● | ○ | | | DIN 5156 | VA R50 | C | | HSS-E-PM | S | G 1/16 - G 1/2 | 4159 | 25 | 138 |

# Machos máquina para roscas BSW

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | | | | | ~DIN 371 | N | B | | HSS-E | ● | W 1/8 - W 3/8 | 2892 | 19 | 142 |
| ≤ 800 | | | | | | | ~DIN 371 | N R40 | C | | HSS-E | ● | W 1/8 - W 3/8 | 2847 | 23 | 143 |
| ≤ 800 | | | | | | | ~DIN 376 | N | B | | HSS-E | ● | W 7/16 - W1 | 2893 | 19 | 142 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Machos máquina para roscas BSW** | | | | | | | | | | | | | | | | |
| ≤ 800 | | | | | | | ~DIN 376 | N R40 | C | | HSS-E | | W 3/8 - W1 | 2848 | 23 | 143 |
| **Machos máquina para roscas EG** | | | | | | | | | | | | | | | | |
| ≤ 1000 | ○ | | | | | | DIN 40435 | N | B | | HSS-E | S | EG M 4 - EG M16 | 1010 | 20 | 144 |
| ≤ 1000 | ○ | ○ | | | | | DIN 40435 | N R40 | C | | HSS-E | S | EG M 4 - EG M16 | 1011 | 24 | 145 |
| **Machos máquina para roscas NPT** | | | | | | | | | | | | | | | | |
| ≤ 800 | | | | | | | WN | N | C | | HSS-E | | 1/16 - 2 | 973 | 18 | 146 |
| | ● | ○ | ○ | | | | WN | N | C | | HSS-E | | 1/16 - 1 | 1087 | 230 | 268 |
| | ● | ○ | ○ | | | | WN | N | C | | HSS-E | S | 1/16 - 1 | 1088 | 230 | 268 |
| **Machos máquina para roscas NPTF** | | | | | | | | | | | | | | | | |
| | ● | ○ | ○ | | | | WN | N | C | | HSS-E | S | 1/16 - 1 | 4127 | 230 | 269 |
| **Machos máquina para roscas PG** | | | | | | | | | | | | | | | | |
| ≤ 800 | | | | | | | DIN 40432 | N | C | | HSS-E | | PG7 - PG29 | 979 | 18 | 147 |
| ≤ 800 | | | | | | | DIN 40432 | N | B | | HSS-E | | PG7 - PG29 | 980 | 19 | 147 |
| **Machos máq. de laminación para rosca metr. ISO** | | | | | | | | | | | | | | | | |
| ● | ● | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 3 - M10 | 322 | 27 | 154 |
| ● | ● | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 5 - M10 | 323 | 27 | 158 |
| ● | ● | | ○ | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | S | M12 - M16 | 339 | 27 | 154 |
| ● | ● | | ○ | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | S | M12 - M16 | 342 | 27 | 158 |
| ● | ● | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E | S | M 3 - M10 | 919 | 26 | 152 |
| ● | ● | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 3 - M10 | 1266 | 27 | 155 |
| ● | ● | | ○ | ○ | | | ~DIN 371 | N | C | 6GX | HSS-E | S | M 3 - M10 | 918 | 26 | 153 |
| ● | ● | | ○ | | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 1 - M10 | 1255 | 26 | 149 |
| ● | ● | | ○ | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | S | M 1 - M10 | 903 | 26 | 149 |
| ● | ● | | ○ | | | | ~DIN 371 | N | C | 6GX | HSS-E | S | M 2 - M10 | 920 | 26 | 150 |
| ● | ● | | ○ | | | | ~DIN 371 | N | C | 6HX | HSS-E | S | M 1 - M10 | 921 | 26 | 149 |

# Machos máq. de laminación para rosca metr. ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E | S | M 6 - M39 | 923 | 26 | 152 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 6GX | HSS-E | S | M 6 - M39 | 922 | 26 | 153 |
| • | • | | ○ | | | | ~DIN 376 | N | C | 6HX | HSS-E | S | M12 - M20 | 925 | 26 | 149 |
| • | • | | ○ | | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | S | M12 - M20 | 1256 | 26 | 149 |
| • | • | | ○ | | | | ~DIN 376 | N | C | 6GX | HSS-E-PM | S | M12 - M20 | 952 | 26 | 149 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | S | M12 - M20 | 1267 | 27 | 155 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | C | M 3 - M10 | 1270 | 27 | 159 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | C | M 5 - M10 | 1713 | 27 | 160 |
| • | • | | ≥ 7 | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | C | M12 - M20 | 1271 | 27 | 159 |
| | | | • | | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | Cb | M 1 - M10 | 1347 | 466 | 506 |
| | | | • | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | Cb | M 2 - M10 | 1565 | 466 | 508 |
| | | | • | | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | Cb | M12 - M20 | 1566 | 466 | 506 |
| | | | • | | | | ~DIN 376 | N | C | 6GX | HSS-E-PM | Cb | M12 - M20 | 1567 | 466 | 508 |
| • | • | | ≥ 7 | • | | | ~DIN 376 | N | C | 6HX | VHM | C | M12 - M20 | 1931 | 27 | 163 |
| • | | | | | | | ~DIN 371 | N | C | 6HX | HSS-E | P | M 3 - M10 | 1587 | 26 | 152 |
| • | | | | | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | P | M 3 - M10 | 1599 | 27 | 155 |
| • | | | | | | | ~DIN 371 | N | C | 6GX | HSS-E | P | M 3 - M10 | 1588 | 26 | 153 |
| • | | | | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | P | M 3 - M10 | 1705 | 27 | 153 |
| • | | | | | | | ~DIN 376 | N | C | 6HX | HSS-E | P | M 6 - M39 | 1589 | 26 | 152 |
| • | | | | | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | P | M12 - M20 | 1707 | 27 | 155 |
| • | | | | | | | ~DIN 376 | N | C | 6GX | HSS-E | P | M 6 - M20 | 1590 | 26 | 153 |
| • | | | | | | | ~DIN 376 | N | C | 6GX | HSS-E-PM | P | M 6 - M20 | 1708 | 27 | 153 |
| • | • | | | • | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | A | M 3 - M10 | 1717 | 27 | 159 |
| • | • | | | • | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | A | M 3 - M10 | 1718 | 27 | 161 |

# Machos máq. de laminación para rosca metr. ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | | | • | | | ~DIN 376 | N | C | 6HX | HSS-E-PM | A | M12 - M20 | 1719 | 27 | 159 |
| • | • | | | • | | | ~DIN 376 | N | C | 6GX | HSS-E-PM | A | M12 - M20 | 1720 | 27 | 161 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E | S | M 5 - M10 | 2442 | 27 | 156 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 6GX | HSS-E | S | M 5 - M10 | 2443 | 27 | 156 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | E | 6HX | HSS-E-PM | S | M 3 - M10 | 1725 | 27 | 159 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | E | 6GX | HSS-E-PM | S | M 3 - M10 | 1726 | 27 | 161 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E | S | M12 - M16 | 2444 | 27 | 156 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 6GX | HSS-E | S | M12 - M16 | 2445 | 27 | 156 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | E | 6HX | HSS-E-PM | S | M12 - M20 | 1727 | 27 | 159 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | E | 6GX | HSS-E-PM | S | M12 - M20 | 1728 | 27 | 161 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | E | 6HX | VHM | C | M 3 - M10 | 1927 | 27 | 164 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | C | 6HX | VHM | C | M 3 - M10 | 1972 | 27 | 163 |
| • | • | | ≥ 7 | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E | C | M 6 - M39 | 2013 | 26 | 152 |
| • | • | | ≥ 7 | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E | C | M 3 - M10 | 2012 | 26 | 152 |
| • | • | | ≥ 7 | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E | C | M 5 - M10 | 2446 | 27 | 156 |
| • | • | | ≥ 7 | ○ | | | ~DIN 371 | N | C | 6GX | HSS-E | C | M 5 - M10 | 2447 | 27 | 157 |
| • | • | | ≥ 7 | ○ | | | ~DIN 376 | N | C | 6HX | HSS-E | C | M12 - M16 | 2448 | 27 | 156 |
| | | | • | | | | ~DIN 371/376 | N | C | 6HX | HSS-E | Cb | M 5 - M20 | 2515 | 467 | 517 |
| • | • | | ≥ 7 | ○ | | | ~DIN 371/376 | N | C | 6HX | VHM | S | M 5 - M16 | 2518 | 26 | 151 |
| • | • | | ○ | ○ | | ≤M5 | | N | C | 6HX | HSS-E-PM | S | M 3 - M20 | 4143 | 27 | 162 |
| | | | • | | | | ~DIN 371/376 | N | C | 6GX | HSS-E | Cb | M 5 - M20 | 4146 | 467 | 520 |

# Machos máq. de laminación p. rosca metr. fina ISO

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | S | M 8 X1 - M20 X1,5 | 333 | 27 | 173 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | S | M 8 X1 - M16 X1,5 | 338 | 27 | 177 |

# Machos máq. de laminación p. rosca metr. fina ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tolerancia | Material de corte | Acabado | d1/mm | Artículo Nº | Condiciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E | S | M 6 X0,75 - M10 X1,25 | 1275 | 26 | 169 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 6GX | HSS-E | S | M 8 X1 - M10 X1 | 1277 | 26 | 172 |
| • | • | | ○ | | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 8 X1 - M10 X1 | 1257 | 26 | 166 |
| • | • | | ○ | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | S | M 8 X1 - M10 X1,25 | 1740 | 26 | 167 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 6HX | HSS-E | S | M 6 X0,75 - M24 X1,5 | 927 | 26 | 169 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 6GX | HSS-E | S | M 8 X1 - M20 X1,5 | 926 | 26 | 172 |
| • | • | | ○ | | | | ~DIN 374 | N | C | 6HX | HSS-E | S | M 8 X1 - M20 X1,5 | 929 | 26 | 165 |
| • | • | | ○ | | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | S | M12 X1 - M24 X2 | 1258 | 26 | 166 |
| • | • | | ○ | | | | ~DIN 374 | N | C | 6GX | HSS-E | S | M 8 X1 - M18 X1,5 | 928 | 26 | 168 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | S | M12 X1,25 - M24 X2 | 1269 | 27 | 174 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | S | M 8 X1 - M10 X1 | 1268 | 27 | 174 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | C | M 8 X1 - M10 X1,25 | 1272 | 27 | 178 |
| • | • | | ≥ 7 | • | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | C | M 8 X1 - M10 X1,25 | 1715 | 27 | 179 |
| • | • | | ≥ 7 | • | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | C | M12 X1 - M24 X1,5 | 1273 | 27 | 178 |
| | | | • | | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | Cb | M 8 X1 - M10 X1 | 1568 | 466 | 526 |
| | | | • | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | Cb | M 8 X1 - M10 X1 | 1569 | 466 | 529 |
| | | | • | | | | ~DIN 374 | N | C | 6GX | HSS-E-PM | Cb | M12 X1 - M24 X1,5 | 1580 | 466 | 529 |
| • | • | | ≥ 7 | • | | | ~DIN 371/376 | N | C | 6HX | VHM | C | M10 X1 - M24 X1,5 | 1581 | 27 | 181 |
| • | | | | | | | ~DIN 374 | N | C | 6HX | HSS-E | P | M 6 X0,75 - M24 X1,5 | 1593 | 26 | 169 |
| • | | | | | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | P | M12 X1 - M24 X1,5 | 1711 | 27 | 175 |
| • | | | | | | | ~DIN 374 | N | C | 6GX | HSS-E-PM | P | M12 X1 - M24 X1,5 | 1712 | 27 | 176 |
| • | | | | | | | ~DIN 371 | N | C | 6HX | HSS-E | P | M 6 X0,75 - M10 X1,25 | 1591 | 26 | 169 |
| • | | | | | | | ~DIN 371 | N | C | 6GX | HSS-E | P | M 8 X1 - M10 X1 | 1592 | 26 | 171 |
| • | | | | | | | ~DIN 371 | N | C | 6GX | HSS-E-PM | P | M 8 X1 - M10 X1 | 1710 | 27 | 176 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Machos máq. de laminación p. rosca metr. fina ISO** | | | | | | | | | | | | | | | | |
| • | • | | ≥ 7 | • | | | ~DIN 374 | N | C | 6GX | HSS-E-PM | C | M12 X1 - M24 X1,5 | 1716 | 27 | 179 |
| • | • | | | • | | | ~DIN 371 | N | C | 6HX | HSS-E-PM | A | M 8 X1 - M10 X1,25 | 1721 | 27 | 178 |
| • | • | | | • | | | ~DIN 374 | N | C | 6HX | HSS-E-PM | A | M12 X1 - M24 X1,5 | 1723 | 27 | 178 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | E | 6HX | HSS-E-PM | S | M 8 X1 - M10 X1,25 | 1729 | 27 | 178 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | E | 6GX | HSS-E-PM | S | M 8 X1 - M10 X1,25 | 1730 | 27 | 179 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | E | 6HX | HSS-E-PM | S | M12 X1 - M24 X1,5 | 1731 | 27 | 178 |
| • | • | | ○ | ○ | | | ~DIN 374 | N | E | 6GX | HSS-E-PM | S | M12 X1 - M24 X1,5 | 1732 | 27 | 179 |
| • | • | | ≥ 7 | ○ | | | ~DIN 374 | N | C | 6HX | HSS-E | C | M 6 X0,75 - M20 X1,5 | 2008 | 26 | 170 |
| • | • | | ○ | ○ | | | | N | C | 6HX | HSS-E-PM | S | M 8 X1 - M16 X1,5 | 4145 | 27 | 180 |
| | | | • | | | | ~DIN 371-374 | N | C | 6HX | HSS-E | Cb | M 8 X1 - M16 X1,5 | 4147 | 467 | 537 |
| | | | • | | | | ~DIN 371-374 | N | C | 6GX | HSS-E | Cb | M 8 X1 - M16 X1,5 | 4151 | 467 | 539 |
| **Machos máq. de laminación para rosca UNC** | | | | | | | | | | | | | | | | |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 2BX | HSS-E | S | 4 - 40 - 3/8 - 16 | 1582 | 26 | 182 |
| • | • | | ○ | | | | ~DIN 371 | N | C | 2BX | HSS-E | S | 4 - 40 - 3/8 - 16 | 2273 | 26 | 182 |
| • | • | | ○ | ○ | | | ~DIN 376 | N | C | 2BX | HSS-E | S | 7/16 - 14 - 7/8 - 9 | 1583 | 26 | 182 |
| • | • | | ○ | | | | ~DIN 376 | N | C | 2BX | HSS-E | S | 7/16 - 14 - 7/8 - 9 | 2274 | 26 | 182 |
| **Machos máq. de laminación para rosca UNF** | | | | | | | | | | | | | | | | |
| • | • | | ○ | ○ | | | ~DIN 374 | N | C | 2BX | HSS-E | S | 10 - 32 - 1 - 12 | 1585 | 26 | 183 |
| • | • | | ○ | | | | ~DIN 374 | N | C | 2BX | HSS-E | S | 10 - 32 - 1 - 12 | 2275 | 26 | 183 |
| • | • | | ○ | | | | ~DIN 371 | N | C | 2BX | HSS-E | S | 4 - 48 - 3/8 - 24 | 1283 | 26 | 183 |
| • | • | | ○ | ○ | | | ~DIN 371 | N | C | 2BX | HSS-E | S | 4 - 48 - 3/8 - 24 | 1584 | 26 | 183 |
| **Machos máq. de laminación para rosca GAS** | | | | | | | | | | | | | | | | |
| • | • | | ○ | | | | DIN 2189 | N | C | | HSS-E | S | G 1/16 - G1 1/4 | 966 | 26 | 184 |
| • | • | | ○ | ○ | | | DIN 2189 | N | C | | HSS-E | S | G 1/16 - G 3/4 | 1586 | 26 | 184 |
| | | | • | | | | DIN 2189 | N | C | | HSS-E | Cb | G 1/16 - G1 | 4152 | 467 | 546 |

## Fresas de roscar sin chaflán para rosca métrica ISO

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ● | ● | | | | WN | TM SP | | | VHM | ◯ | M 6 - M20 X1,5 | 3734 | 468 | 548 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 | 3735 | 28 | 187 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 X1,5 | 3737 | 28 | 186 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 | 3740 | 28 | 187 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 X1,5 | 3743 | 28 | 186 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 | 4132 | 28 | 186 |
| ● | ○ | ● | ● | ○ | ≤55 | | WN | TM SP | | | VHM | C | M 6 - M20 | 4133 | 28 | 186 |
| ○ | ○ | ● | ● | ○ | | | WN | TMC SP | | | VHM | ◯ | M 3 - M20 | 3510 | 469 | 551 |
| ○ | ○ | ● | ● | ○ | | | WN | TMC SP | | | VHM | ◯ | M 3 - M20 | 3511 | 469 | 552 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3525 | 28 | 188 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3526 | 29 | 189 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3543 | 28 | 188 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3544 | 29 | 189 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3759 | 29 | 190 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 3 - M20 | 3760 | 29 | 190 |

## Fresas de roscar con chaflán para rosca métrica fina ISO

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | ● | ● | ○ | | | WN | TMC SP | | | VHM | ◯ | M 4 X0,5 - M16 X1,5 | 3512 | 469 | 554 |
| ○ | | ● | ● | | | | WN | TMC SP | | | VHM | ◯ | M 4 X0,5 - M16 X1,5 | 3513 | 469 | 555 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3527 | 28 | 191 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3528 | 29 | 192 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3545 | 28 | 191 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3546 | 29 | 192 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3762 | 29 | 193 |
| ● | ● | ● | ● | ● | ≤55 | | WN | TMC SP | | | VHM | C | M 4 X0,5 - M16 X1,5 | 3763 | 29 | 193 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Fresas de roscar sin chaflán para roscas UNC

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | 10 - 24 - 5/8 - 11 | 4134 | 28 | 194 |
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | 10 - 24 - 5/8 - 11 | 4135 | 28 | 194 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 20 - 1/2 - 13 | 3516 | 28 | 195 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 20 - 1/2 - 13 | 3517 | 29 | 196 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 20 - 1/2 - 13 | 3534 | 28 | 195 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 20 - 1/2 - 13 | 3535 | 29 | 196 |

## Fresas de roscar sin chaflán para roscas UNF

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | 10 - 32 - 5/8 - 18 | 4136 | 28 | 197 |
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | 10 - 32 - 5/8 - 18 | 4137 | 28 | 197 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 28 - 1/2 - 20 | 3518 | 28 | 198 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 28 - 1/2 - 20 | 3519 | 29 | 199 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 28 - 1/2 - 20 | 3536 | 28 | 198 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/4 - 28 - 1/2 - 20 | 3537 | 29 | 199 |

## Fresas de roscar para roscas GAS sin fase de avellanado

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | G 1/8 - G 3/8 | 3745 | 28 | 200 |
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | G 1/8 - G 3/8 | 3746 | 28 | 201 |
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | G 1/8 - G 3/8 | 3748 | 28 | 200 |
| • | ○ | • | • | ○ | ≤55 | | WN | TM SP | | | VHM | C | G 1/8 - G 3/8 | 3750 | 28 | 201 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3514 | 28 | 202 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3515 | 29 | 203 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3529 | 28 | 202 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3533 | 29 | 203 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3765 | 29 | 204 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | G 1/8 - G 3/8 | 3766 | 29 | 204 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Fresas de roscar sin chaflán para roscas NPT

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | • | • | • | ≤55 | | WN | TM SP | | | VHM | C | 1/16 - 3/8 | 3753 | 28 | 205 |
| • | • | • | • | • | ≤55 | | WN | TM SP | | | VHM | C | 1/16 - 3/8 | 3754 | 28 | 205 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/8 - 3/8 | 3520 | 28 | 206 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/8 - 3/8 | 3538 | 28 | 206 |

## Fresas de roscar sin chaflán para roscas NPTF

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| • | • | • | • | • | ≤55 | | WN | TM SP | | | VHM | C | 1/16 - 3/8 | 3756 | 28 | 207 |
| • | • | • | • | • | ≤55 | | WN | TM SP | | | VHM | C | 1/16 - 3/8 | 3757 | 28 | 207 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/8 - 3/8 | 3521 | 28 | 208 |
| • | • | • | • | • | ≤55 | | WN | TMC SP | | | VHM | C | 1/8 - 3/8 | 3539 | 28 | 208 |

## Fresas para roscar universales para roscas GAS

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ○ | ○ | • | • | ○ | | | WN | TM SP | BSP | | VHM | ○ | ≥ 1/4 - ≥ 1 | 3524 | 470 | 575 |
| • | • | • | • | • | ≤55 | | WN | TM SP | BSP | | VHM | C | ≥ 1/4 - ≥ 1 | 3542 | 29 | 212 |
| • | • | • | • | • | ≤55 | | WN | TM SP | BSP | | VHM | C | ≥ 1/4 - ≥ 1 | 3557 | 29 | 212 |
| • | • | • | • | • | ≤55 | | WN | TM SP | NPT | | VHM | C | ≥ 1/2 - ≥ 1 | 3768 | 69 | 213 |
| • | • | • | • | • | ≤55 | | WN | TM SP | NPT | | VHM | C | ≥ 1/2 - ≥ 1 | 3769 | 69 | 213 |
| • | • | • | • | • | ≤55 | | WN | TM SP | NPTF | | VHM | C | ≥ 1/2 - ≥ 1 | 3772 | 29 | 214 |
| • | • | • | • | • | ≤55 | | WN | TM SP | NPTF | | VHM | C | ≥ 1/2 - ≥ 1 | 3773 | 29 | 214 |
| ○ | ○ | • | • | ○ | | | WN | TMU SP | M | | VHM | ○ | ≥ 10 - ≥ 30 | 3523 | 470 | 572 |
| • | • | • | • | • | ≤55 | | WN | TMU SP | M | | VHM | C | ≥ 10 - ≥ 30 | 3541 | 29 | 209 |
| • | • | • | • | • | ≤55 | | WN | TMU SP | M | | VHM | C | ≥ 10 - ≥ 30 | 3556 | 29 | 209 |
| • | • | • | • | • | ≤55 | | WN | TMU SP | M | | VHM | C | ≥ 3 - ≥ 24 | 4162 | 29 | 210 |
| • | • | • | • | • | ≤55 | | WN | TMU SP | M | | VHM | C | ≥ 3 - ≥ 24 | 4163 | 29 | 210 |
| • | • | • | • | • | ≤55 | | WN | TMU UN | UN | | VHM | C | ≥ 1/2 - ≥ 1 | 3595 | 29 | 211 |
| • | • | • | • | • | ≤55 | | WN | TMU UN | UN | | VHM | C | ≥ 1/2 - ≥ 1 | 3596 | 29 | 211 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Microfresas de roscar** | | | | | | | | | | | | | | | | |
| • | • | • | • | • | | | WN | SP G | BSP | | VHM | C | G 1/8 - G2 | 4228 | 29 | 216 |
| • | • | • | • | • | | | WN | SP M | M | | VHM | C | M 1,6 - M16 | 4226 | 29 | 215 |
| | | | | ○ | • | | WN | SP M | M | | VHM | A | M 2 - M12 | 4227 | 679 | 703 |
| • | • | • | • | • | | | WN | SP M/MF | M | | VHM | C | M1,4 - M1,8 - M8 - M10 | 4225 | 29 | 217 |
| **Fresas de roscar y taladrar para rosca métrica ISO** | | | | | | | | | | | | | | | | |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3774 | 471 | 581 |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3775 | 471 | 581 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3776 | 471 | 581 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3777 | 471 | 581 |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3778 | 471 | 582 |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3779 | 471 | 582 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3780 | 471 | 582 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3781 | 471 | 582 |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3782 | 471 | 583 |
| | | ○ | • | | | | WN | DTMC SP | M | | VHM | | M3 - M16 | 3783 | 471 | 583 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3784 | 471 | 583 |
| | | • | • | | | | WN | DTMC SP | M | | VHM | C | M3 - M16 | 3785 | 471 | 583 |
| | | ○ | • | | | | WN | DTMC SP | MF | | VHM | | M4 x 0,5 - M16 x 1,5 | 3787 | 471 | 584 |
| | | • | • | | | | WN | DTMC SP | MF | | VHM | C | M4 x 0,5 - M16 x 1,5 | 3788 | 471 | 584 |
| | | • | • | | | | WN | DTMC SP | MF | | VHM | C | M4 x 0,5 - M16 x 1,5 | 3789 | 471 | 584 |
| | | ○ | • | | | | WN | DTMC SP | MF | | VHM | | M4 x 0,5 - M16 x 1,5 | 3790 | 471 | 585 |
| | | ○ | • | | | | WN | DTMC SP | MF | | VHM | | M4 x 0,5 - M16 x 1,5 | 3791 | 471 | 585 |
| | | • | • | | | | WN | DTMC SP | MF | | VHM | C | M4 x 0,5 - M16 x 1,5 | 3792 | 471 | 585 |
| | | • | • | | | | WN | DTMC SP | MF | | VHM | C | M4 x 0,5 - M16 x 1,5 | 3793 | 471 | 585 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fresas de roscar y taladrar para rosca métrica ISO** | | | | | | | | | | | | | | | | |
| | | • | • | | | | WN | DTMC SP | UNC | | VHM | ○ | 1/4 - 20 - 5/8 - 11 | 4138 | 471 | 586 |
| | | • | • | | | | WN | DTMC SP | UNC | | VHM | C | 1/4 - 20 - 5/8 - 11 | 4139 | 471 | 586 |
| | | • | • | | | | WN | DTMC SP | UNF | | VHM | ○ | 1/4 - 28 - 5/8 - 18 | 4140 | 471 | 587 |
| | | • | • | | | | WN | DTMC SP | UNF | | VHM | C | 1/4 - 28 - 5/8 - 18 | 4141 | 471 | 587 |
| **Cojinetes de roscar para rosca metrica ISO** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | WN | | B | 6g | HSS | ○ | M 3 - M12 | 121 | 706 | 707 |
| ≤ 1000 ≤ | | • | • | | | | WN | | B | 6g | HSS | ○ | M 2 - M10 | 125 | 706 | 708 |
| **Cojinetes para rosca métrica ISO** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 1 - M30 | 151 | 706 | 710 |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 3 - M30 | 152 | 706 | 711 |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 1 - M30 | 153 | 706 | 710 |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 3 - M20 | 156 | 706 | 713 |
| ≤ 1000 ≤ | | • | • | | | | DIN 382 | | | 6g | HSS | ○ | M 5 - M52 | 139 | 706 | 709 |
| ≤ 1200 ≤ | • | | | | | | DIN EN 22568 | | B | 6g | HSS-E | ● | M 2 - M20 | 130 | 706 | 712 |
| **Cojinetes para rosca métrica fina ISO** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 3 X0,35 - M30 X2 | 161 | 706 | 714 |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 6g | HSS | ○ | M 3 X0,35 - M30 X2 | 162 | 706 | 714 |
| **Cojinetes para rosca UNC** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 2a | HSS | ○ | 8 -32 - 3/4 -10 | 182 | 706 | 716 |
| **Cojinetes para rosca UNF** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 22568 | | B | 2a | HSS | ○ | 10 - 32 - 7/8 - 14 | 185 | 706 | 717 |
| **Cojinetes para rosca GAS** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 24231 | | B | | HSS | ○ | G 1/8 - G1 1/2 | 175 | 706 | 718 |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 24231 | | B | | HSS | ○ | G 1/8 - G1 1/2 | 176 | 706 | 718 |
| **Cojinetes para rosca R BSPT** | | | | | | | | | | | | | | | | |
| ≤ 1000 ≤ | | • | • | | | | DIN EN 24230 | | B | | HSS | ○ | R 1/8 - R 1/2 | 198 | 706 | 719 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Cojinetes para rosca NPT

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| □1000 | | • | • | | | | DIN EN 22568 | | B | | HSS | ○ | 1/8 - 3/4 | 191 | 706 | 720 |

## Juegos de machos mano para rosca metr. ISO

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ≤ 800 | | | ○ | | | | DIN 352 | N | | ISO2/6H | HSS | ○ | M 1 - M68 | 861 | | 721 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | A | ISO2/6H | HSS | ○ | M 1 - M68 | 862 | | 721 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | D | ISO2/6H | HSS | ○ | M 1 - M68 | 863 | | 721 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | C | ISO2/6H | HSS | ○ | M 1 - M45 | 864 | | 721 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | | ISO2/6H | HSS | ○ | M 1 - M45 | 882 | | 723 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | D | ISO2/6H | HSS | ○ | M 1 - M45 | 883 | | 723 |
| ≤ 800 | | | ○ | | | | DIN 352 | N | | ISO2/6H | HSS | ○ | M 2 - M18 | 904 | | 724 |
| ≤ 800 | | | ○ | | | | DIN 352 | N-LH | A | ISO2/6H | HSS | ○ | M 2 - M18 | 905 | | 724 |
| ≤ 800 | | | ○ | | | | DIN 352 | N-LH | D | ISO2/6H | HSS | ○ | M 2 - M18 | 906 | | 724 |
| ≤ 800 | | | ○ | | | | DIN 352 | N-LH | C | ISO2/6H | HSS | ○ | M 2 - M18 | 907 | | 724 |
| • | • | • | • | | | | DIN 352 | H | | ISO2/6H | HSS-E | ● | M 2 - M20 | 857 | | 726 |
| • | • | • | • | | | | DIN 352 | H | A | ISO2/6H | HSS-E | ● | M 2 - M20 | 858 | | 726 |
| • | • | • | • | | | | DIN 352 | H | D | ISO2/6H | HSS-E | ● | M 2 - M20 | 859 | | 726 |
| • | • | • | • | | | | DIN 352 | H | C | ISO2/6H | HSS-E | ● | M 2 - M20 | 860 | | 726 |
| ≤ 1000 | • | • | • | | | | DIN 352 | VA | | ISO2/6H | HSS-E | ○ | M 2 - M20 | 853 | | 725 |
| ≤ 1000 | • | • | • | | | | DIN 352 | VA | A | ISO2/6H | HSS-E | ○ | M 2 - M20 | 854 | | 725 |
| ≤ 1000 | • | • | • | | | | DIN 352 | VA | D | ISO2/6H | HSS-E | ○ | M 2 - M20 | 855 | | 725 |
| ≤ 1000 | • | • | • | | | | DIN 352 | VA | C | ISO2/6H | HSS-E | ○ | M 2 - M20 | 856 | | 725 |
| • | • | • | • | | | | DIN 352 | H | | ISO2/6H | HSS-E-PM | ● | M 3 - M12 | 1818 | | 727 |
| • | • | • | • | | | | DIN 352 | H | A | ISO2/6H | HSS-E-PM | ● | M 3 - M12 | 1819 | | 727 |
| • | • | • | • | | | | DIN 352 | H | D | ISO2/6H | HSS-E-PM | ● | M 3 - M12 | 1820 | | 727 |
| • | • | • | • | | | | DIN 352 | H | C | ISO2/6H | HSS-E-PM | ● | M 3 - M12 | 1821 | | 727 |

| P | M | K | N | S | H | Presentación de herramientas | Normaa | Tipo | Forma | Ø-Tole-rancia | Material de corte | Acaba-do | d1/mm | Artículo Nº | Condi-ciones de corte ver pág. | Página |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Juegos de machos mano para rosca metr. fina ISO

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 800 VI | | | ○ | | | | DIN 2180 | N | | ISO2/6H | HSS | ◯ | M 2 X0,25 - M52 X1,5 | 884 | | 728 |
| 800 VI | | | ○ | | | | DIN 2180 | N | D | ISO2/6H | HSS | ◯ | M 2 X0,25 - M52 X1,5 | 885 | | 728 |
| 800 VI | | | ○ | | | | DIN 2180 | N | C | ISO2/6H | HSS | ◯ | M 2 X0,25 - M52 X1,5 | 886 | | 728 |

## Machos mano para roscas UNC

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 800 VI | | | ○ | | | | ~DIN 352 | N | | 2B | HSS | ◯ | 1 -64 - 2- 4 1/2 | 981 | | 730 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | A | 2B | HSS | ◯ | 1 -64 - 2- 4 1/2 | 982 | | 730 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | D | 2B | HSS | ◯ | 1 -64 - 2- 4 1/2 | 983 | | 730 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | C | 2B | HSS | ◯ | 1 -64 - 2- 4 1/2 | 984 | | 730 |

## Machos mano para roscas UNF

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 800 VI | | | ○ | | | | ~DIN 2181 | N | | 2B | HSS | ◯ | 1 -72 - 1 -12 | 985 | | 731 |
| 800 VI | | | ○ | | | | ~DIN 2181 | N | D | 2B | HSS | ◯ | 1 -72 - 1 -12 | 986 | | 731 |
| 800 VI | | | ○ | | | | ~DIN 2181 | N | C | 2B | HSS | ◯ | 1 -72 - 1 -12 | 987 | | 731 |

## Machos mano para roscas BSW

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 800 VI | | | ○ | | | | ~DIN 352 | N | | | HSS | ◯ | W 3/32 - W2 | 954 | | 732 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | A | | HSS | ◯ | W 3/32 - W2 | 955 | | 732 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | D | | HSS | ◯ | W 3/32 - W2 | 956 | | 732 |
| 800 VI | | | ○ | | | | ~DIN 352 | N | C | | HSS | ◯ | W 3/32 - W2 | 957 | | 732 |

## Machos mano para roscas GAS

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 800 VI | | | ○ | | | | DIN 5157 | N | | | HSS | ◯ | G 1/8 - G2 | 958 | | 733 |
| 800 VI | | | ○ | | | | DIN 5157 | N | D | | HSS | ◯ | G 1/8 - G2 | 959 | | 733 |
| 800 VI | | | ○ | | | | DIN 5157 | N | C | | HSS | ◯ | G 1/8 - G2 | 960 | | 733 |

# Portas sincronizados con refrigeración interna


| Presentación de herramientas | Forma del mango | Diámetro de sujeción (mm) | Artículo Nº | Página |
|---|---|---|---|---|
| Porta hidráulico sincronizado HSK-A con refrigeración interna | HSK-A | HSK-A 63 - HSK-A 100 | **4601** | 742 |
| Porta hidráulico sincronizado SK con refrigeración interna | SK | SK 30 - SK 40 | **4576** | 743 |
| Porta hidráulico sincronizado MAS/BT con refrigeración interna | BT | BT 30 - BT 40 | **4577** | 744 |
| Porta hidráulico sincronizado con mango cilíndrico con refrigeración interna | cyl. | 20,000 - 25,000 | **4525** | 745 |
| Casquillo reductor estanco para porta hidráulico sincronizado | | 12,000 / 20,000 | **4605** | 746 |
| Casquillo reductor Gührojet para porta hidráulico sincronizado | | 12,000 / 20,000 | **4606** | 748 |
| Tornillos de regulación “Plano” para porta sincronizado con refrigeración interna | | ER20 - ER32 | **4364** | 750 |
| Porta sincronizado mango cilíndrico con refrigeración interna | cyl. | 25,000 | **4326** | 751 |
| Porta sincronizado HSK-A con refrigeración interna | HSK-A | HSK-A 63 - HSK-A 100 | **4327** | 751 |
| Pinzas para machos | | ER16 - ER40 | **4308** | 753 |
| Porta básico HSK-A para porta-machos | HSK-A | HSK-A 50 - HSK-A 100 | **4343** | 754 |
| Porta-machos de cambio rápido sin refrigeración interna | | M3 - M20 | **4340** | 754 |
| Porta-machos de cambio rápido con refrigeración interna | | M3 - M20 | **4342** | 755 |
| Porta-machos de cambio rápido HSK-A con refrigeración interna | HSK-A | HSK-A 63 | **4328** | 755 |
| Encajes para porta-machos de cambio rápido | | M3 - M20 | **4206** | 756 |

# Portas lubrificación mínima MMS

| | Presentación de herramientas | Forma del mango | Diámetro de sujeción (mm) | Artículo Nº | Página |
|---|---|---|---|---|---|
| | Porta herramientas hidráulico HSK-A MMS de 1 canal para cambio de herramienta automático | HSK-A | HSK-A 63 - HSK-A 100 | **4602** | 760 |
| | Porta herramientas hidráulico HSK-A MMS de 2 canales para cambio de herramienta automático | HSK-A | HSK-A 63 - HSK-A 100 | **4603** | 761 |
| | Porta herramientas hidráulico MMS HSK-A para cambio de herramienta manual | HSK-A | HSK-A 63 - HSK-A 100 | **4604** | 762 |
| | Porta sincronizado MMS mango cilíndrico | cyl. | 20,000 | **4524** | 763 |
| | Porta sincronizado MMS HSK-A para cambio de herramientas manual | HSK-A | HSK-A 63 | **4298** | 764 |
| | Porta herramientas sincronizado MMS HSK-A de 1 canal para cambio de herramienta automático | HSK-A | HSK-A 63 - HSK-A 100 | **4330** | 764 |
| | Porta herramientas sincronizado MMS HSK-A de 2 canales para cambio de herramienta automático | HSK-A | HSK-A 63 - HSK-A 100 | **4341** | 765 |
| | Tornillos de regulación MMS con cono interior para porta sincronizado MMS | | ER20 - ER32 | **4305** | 766 |
| | Set de transmisión de refrigerante HSK-A MMS de 1 canal | HSK-A | HSK-A 32 - HSK-A 100 | **4508** | 767 |
| | Set de transmisión de refrigerante HSK-A MMS de 2 canales | HSK-A | HSK-A 32 - HSK-A 100 | **4511** | 767 |
| | Set de transmisión de refrigerante MMS HSK-A (pieza de relleno) | HSK-A | HSK-A 32 - HSK-A 100 | **4513** | 768 |
| | Tuercas tensoras, sistema DIN ISO 15488 | | ER16 - ER40 | **4306** | 769 |
| | Juntas | | ER16 - ER40 | **4335** | 770 |
| | Llave tensora | | ER16 mini - ER40 | **4913** | 770 |

| Artículo Nº | Página | Profundidad | Norma | Descripción | Material de corte | Tipo | Forma |
|---|---|---|---|---|---|---|---|
| 57 | 47 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | B |
| 58 | 47 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | B |
| 59 | 246 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R40 | C |
| 60 | 246 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R40 | C |
| 121 | 707 | | | Cojinetes de roscar para rosca metrica ISO | HSS | | B |
| 125 | 708 | | | Cojinetes de roscar para rosca metrica ISO | HSS | | B |
| 130 | 712 | | | Cojinetes para rosca métrica ISO | HSS-E | | B |
| 139 | 709 | | | Cojinetes para rosca métrica ISO | HSS | | |
| 151 | 710 | | | Cojinetes para rosca métrica ISO | HSS | | B |
| 152 | 711 | | | Cojinetes para rosca métrica ISO | HSS | | B |
| 153 | 710 | | | Cojinetes para rosca métrica ISO | HSS | | B |
| 156 | 713 | | | Cojinetes para rosca métrica ISO | HSS | | B |
| 161 | 714 | | | Cojinetes para rosca métrica fina ISO | HSS | | B |
| 162 | 714 | | | Cojinetes para rosca métrica fina ISO | HSS | | B |
| 169 | 365 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | GG | C |
| 174 | 70 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C(K) |
| 175 | 718 | | | Cojinetes para rosca GAS | HSS | | B |
| 176 | 718 | | | Cojinetes para rosca GAS | HSS | | B |
| 182 | 716 | | | Cojinetes para rosca UNC | HSS | | B |
| 185 | 717 | | | Cojinetes para rosca UNF | HSS | | B |
| 191 | 720 | | | Cojinetes para rosca NPT | HSS | | B |
| 196 | 70 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C(K) |
| 198 | 719 | | | Cojinetes para rosca R BSPT | HSS | | B |
| 273 | 109 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C(K) |
| 297 | 78, 359, 479 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H | C |
| 302 | 78, 359, 479 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H | C |
| 313 | 33 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 315 | 33 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 316 | 93 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 318 | 358 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | GG | C |
| 319 | 358 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | GG | C |
| 322 | 154, 275, 380, 511, 620 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 323 | 158, 279, 384, 515, 622 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 333 | 173, 294, 399, 533, 629 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 338 | 177, 295, 400, 535, 631 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 339 | 154, 275, 380, 511, 620 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 342 | 158, 279, 384, 515, 622 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 347 | 366 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E | GG | C |
| 361 | 82 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 362 | 82 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 393 | 71, 244 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA R45 | C |
| 394 | 115, 252 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA R45 | C |
| 395 | 139, 267 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | VA R45 | C |
| 733 | 43 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 734 | 43 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 761 | 75, 247, 486 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R50 | C |
| 763 | 75, 247, 486 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R50 | C |
| 764 | 111, 255, 490 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | VA R50 | C |
| 767 | 74, 245, 485 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | N R50 | C |
| 778 | 79, 360, 480 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | H | C |
| 779 | 80, 361, 481 | | | Machos máq. refrig., rosca métr. ISO | HSS-E | H | C |
| 783 | 60 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 784 | 60 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 785 | 241 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA R15 | C |
| 786 | 62 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N L40-LH | C |
| 787 | 62 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N L40-LH | C |
| 788 | 483 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H AZ | C |
| 789 | 32 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N-LH | B |
| 790 | 32 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N-LH | B |
| 791 | 44 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H AZ | B |
| 792 | 240 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA AZ | B |
| 794 | 36 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 795 | 52 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | C |
| 796 | 56 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 797 | 56 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 799 | 52 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 800 | 482 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | Ms | E |
| 801 | 49 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | D |
| 802 | 55 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 803 | 30 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 804 | 43 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 805 | 472 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | Al | B |

| Artículo Nº | Página | Profundidad | Norma | Descripción | Material de corte | Tipo | Forma |
|---|---|---|---|---|---|---|---|
| 806 | 50 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | C |
| 807 | 356 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 808 | 89 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N L15 | D |
| 809 | 57 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 810 | 60 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 811 | 81 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 812 | 474 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | Al R45 | C |
| 813 | 49 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | D |
| 814 | 243, 475 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA R40 | C |
| 815 | 31 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 816 | 43 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 817 | 472 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | Al | B |
| 818 | 51 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | C |
| 819 | 356 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 820 | 89 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N L15 | D |
| 821 | 57 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 822 | 60 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 823 | 81 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 824 | 474 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | Al R45 | C |
| 825 | 243, 475 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA R40 | C |
| 826 | 66 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 827 | 91 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 828 | 97 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H | B |
| 829 | 100 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | C |
| 830 | 100 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | C |
| 831 | 365 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | GG | C |
| 832 | 91 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 833 | 102 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R15 | C |
| 834 | 105 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 835 | 114 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H R40 | C |
| 836 | 66 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 837 | 37 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 838 | 54 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 839 | 54 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 843 | 241 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA R15 | C |
| 844 | 61 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 845 | 37 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 846 | 54 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 847 | 54 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 848 | 61 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 849 | 44 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H AZ | B |
| 851 | 85 | | | Machos máquina para tuercas para rosca metrica ISO | HSS-E | N | |
| 852 | 105 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 853 | 725 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | VA | |
| 854 | 725 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | VA | A |
| 855 | 725 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | VA | D |
| 856 | 725 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | VA | C |
| 857 | 726 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | H | |
| 858 | 726 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | H | A |
| 859 | 726 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | H | D |
| 860 | 726 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E | H | C |
| 861 | 721 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | |
| 862 | 721 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | A |
| 863 | 721 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | D |
| 864 | 721, 723 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | C |
| 869 | 56 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 872 | 76 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | H R15 | C |
| 873 | 117 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N | B |
| 874 | 112 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | H R15 | C |
| 875 | 46 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | B |
| 876 | 122 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 877 | 237 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA | B |
| 878 | 117 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N | B |
| 879 | 237 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA | B |
| 881 | 122 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 882 | 723 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | |
| 883 | 723 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N | D |
| 884 | 728 | | DIN 2181 | Juegos de machos mano para rosca metr. fina ISO | HSS | N | |
| 885 | 728 | | DIN 2181 | Juegos de machos mano para rosca metr. fina ISO | HSS | N | D |
| 886 | 728 | | DIN 2181 | Juegos de machos mano para rosca metr. fina ISO | HSS | N | C |
| 887 | 256 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | VA | B |
| 888 | 88 | | | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |

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|---|---|---|---|---|---|---|---|
| 889 | 66 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 890 | 66 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 903 | 149, 271, 376, 508 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 904 | 724 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N-LH | |
| 905 | 724 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N-LH | A |
| 906 | 724 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N-LH | D |
| 907 | 724 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS | N-LH | C |
| 908 | 125 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N | B |
| 909 | 246 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R40 | C |
| 910 | 246 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA R40 | C |
| 911 | 128 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R40 | C |
| 912 | 30 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 913 | 57 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 914 | 60 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 915 | 31 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 916 | 57 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 917 | 60 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 918 | 153, 274, 379, 510 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 919 | 152, 274, 379, 510 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 920 | 150, 272, 377, 507 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 921 | 149, 271, 376, 506 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 922 | 153, 274, 379, 510 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 923 | 152, 274, 379, 510 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 925 | 149, 271, 376, 506 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 926 | 172, 292, 397, 532 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 927 | 169, 288, 395, 530 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 928 | 168, 290, 393, 528 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 929 | 165, 286, 391, 524 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 930 | 356 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 931 | 356 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 932 | 365 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | GG | C |
| 935 | 76 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | H R15 | C |
| 936 | 253, 488 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | VA R40 | C |
| 937 | 141 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R40 | C(K) |
| 939 | 265, 503 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E-PM | VA R40 | C |
| 942 | 42 | | ~DIN 371 | Machos máquina para rosca métrica ISO | Metal duro | N | B |
| 943 | 95 | | ~DIN 371 | Machos máquina para rosca métrica fina ISO | Metal duro | N | B |
| 944 | 96 | | DIN 374 | Machos máquina para rosca métrica fina ISO | Metal duro | N | B |
| 945 | 30 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 946 | 57 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 947 | 81 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 948 | 31 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 949 | 57 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 950 | 81 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 952 | 149, 271, 376, 508 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 954 | 732 | | ~DIN 352 | Machos mano para roscas BSW | HSS | N | |
| 955 | 732 | | ~DIN 352 | Machos mano para roscas BSW | HSS | N | A |
| 956 | 732 | | ~DIN 352 | Machos mano para roscas BSW | HSS | N | D |
| 957 | 732 | | ~DIN 352 | Machos mano para roscas BSW | HSS | N | C |
| 958 | 733 | | DIN 5157 | Machos mano para roscas GAS | HSS | N | |
| 959 | 733 | | DIN 5157 | Machos mano para roscas GAS | HSS | N | D |
| 960 | 733 | | DIN 5157 | Machos mano para roscas GAS | HSS | N | C |
| 961 | 374 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | GG | C |
| 962 | 132 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | B |
| 963 | 133 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | C |
| 964 | 135 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R15 | C |
| 965 | 136 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R40 | C |
| 966 | 184, 302, 407, 544 | | DIN 2189 | Machos máq. de laminación para rosca GAS | HSS-E | N | C |
| 967 | 263, 502 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | VA | B |
| 968 | 265 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | VA R40 | C |
| 969 | 362, 476 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 971 | 478 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | N R15 | C |
| 972 | 368, 491 | | DIN 371 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | H | C |
| 973 | 146 | | | Machos máquina para roscas NPT | HSS-E | N | C |
| 974 | 368, 491 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | H | C |
| 975 | 495 | | DIN 371 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | N L15 | D |
| 976 | 495 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | N L15 | D |
| 977 | 493 | | DIN 371 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | N R15 | C |
| 978 | 493 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | N R15 | C |
| 979 | 147 | | DIN 40432 | Machos máquina para roscas PG | HSS-E | N | C |
| 980 | 147 | | DIN 40432 | Machos máquina para roscas PG | HSS-E | N | B |
| 981 | 730 | | ~DIN 352 | Machos mano para roscas UNC | HSS | N | |

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| 982 | 730 | | ~DIN 352 | Machos mano para roscas UNC | HSS | N | A |
| 983 | 730 | | ~DIN 352 | Machos mano para roscas UNC | HSS | N | D |
| 984 | 730 | | ~DIN 352 | Machos mano para roscas UNC | HSS | N | C |
| 985 | 731 | | ~DIN 2181 | Machos mano para roscas UNF | HSS | N | |
| 986 | 731 | | ~DIN 2181 | Machos mano para roscas UNF | HSS | N | D |
| 987 | 731 | | ~DIN 2181 | Machos mano para roscas UNF | HSS | N | C |
| 991 | 35 | | DIN 352 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 992 | 58 | | DIN 352 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 993 | 65 | | DIN 352 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 995 | 53 | | DIN 352 | Machos máquina para rosca métrica ISO | HSS-E | N | C |
| 998 | 86 | | | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 1001 | 257 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA | B |
| 1002 | 238 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | VA | B |
| 1004 | 253 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | VA R40 | C |
| 1007 | 113, 367, 497 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E-PM | H | E |
| 1008 | 364, 477 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | E |
| 1009 | 369, 492 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | H | E |
| 1010 | 144 | | | Machos para roscas EG | HSS-E | N | B |
| 1011 | 145 | | | Machos para roscas EG | HSS-E | N R40 | C |
| 1049 | 108 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 1057 | 603 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | TiNi | B |
| 1058 | 607 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | TiNi | B |
| 1059 | 611 | | ~DIN 371/~DIN 376 | Machos máquina para roscas UNC | HSS-E-PM | TiNi | B |
| 1060 | 615 | | ~DIN 371/~DIN 374 | Machos máquina para roscas UNF | HSS-E-PM | TiNi | B |
| 1061 | 605 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | Ti R15 | C |
| 1062 | 609 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | Ti R15 | C |
| 1063 | 613 | | ~DIN 371/~DIN 376 | Machos máquina para roscas UNC | HSS-E-PM | Ti R15 | C |
| 1064 | 618 | | ~DIN 371/~DIN 374 | Machos máquina para roscas UNF | HSS-E-PM | Ti R15 | C |
| 1065 | 605 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | Ni R10 | C(K) |
| 1066 | 609 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | Ni R10 | C(K) |
| 1067 | 613 | | ~DIN 371/~DIN 376 | Machos máquina para roscas UNC | HSS-E-PM | Ni R10 | C(K) |
| 1068 | 618 | | ~DIN 371/~DIN 374 | Machos máquina para roscas UNF | HSS-E-PM | Ni R10 | C(K) |
| 1082 | 373 | | ~DIN 374 | Machos máq. refrig., roscas UNF | HSS-E | GG | C |
| 1084 | 482 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | Ms | E |
| 1085 | 371 | | ~DIN 371 | Machos máq. refrig., roscas UNC | HSS-E | GG | C |
| 1086 | 371 | | ~DIN 376 | Machos máq. refrig., roscas UNC | HSS-E | GG | C |
| 1087 | 268 | | | Machos máquina para roscas NPT | HSS-E | VA R25 | C |
| 1088 | 268 | | | Machos máquina para roscas NPT | HSS-E | VA R25 | C |
| 1090 | 113, 367, 496 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E-PM | H | C |
| 1091 | 78, 359, 479 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H | E |
| 1098 | 74, 245, 485 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | N R50 | C |
| 1100 | 110, 254, 489 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | N R50 | C |
| 1139 | 75, 247, 486 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | VA R50 | C |
| 1142 | 75, 247, 486 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | VA R50 | C |
| 1144 | 111, 255, 490 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E-PM | VA R50 | C |
| 1152 | 74, 245, 485 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | N R50 | C |
| 1161 | 683 | | ~DIN 371 | Machos máquina para rosca métrica fina ISO | Metal duro | H | D |
| 1188 | 77 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H R15 | C |
| 1194 | 77 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H R15 | C |
| 1200 | 112 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E-PM | H R15 | C |
| 1201 | 680 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | D |
| 1246 | 30 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 1249 | 31 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 1252 | 60 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 1254 | 60 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 1255 | 149, 271, 376, 506 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1256 | 149, 271, 376, 506 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1257 | 166, 287, 394, 525 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1258 | 166, 287, 394, 525 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1266 | 155, 276, 381, 512, 621 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1267 | 155, 276, 381, 512, 621 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1268 | 174, 293, 398, 534, 630 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1269 | 174, 293, 398, 534, 630 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1270 | 159, 280, 385, 516, 623 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1271 | 159, 280, 385, 516, 623 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1272 | 178, 296, 401, 536, 632 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1273 | 178, 296, 401, 536, 632 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1275 | 169, 288, 395, 530 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 1277 | 172, 292, 397, 532 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 1283 | 183, 301, 406, 543 | | ~DIN 371 | Machos máq. de laminación para rosca UNF | HSS-E | N | C |
| 1285 | 39 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | N | B |
| 1286 | 39 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | N | B |

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| 1287 | 40 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | N | B |
| 1288 | 72 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | N R40 | C |
| 1289 | 72 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | N R40 | C |
| 1290 | 73 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | N R40 | C |
| 1291 | 98, 248 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | N | B |
| 1292 | 109 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | N R40 | C |
| 1293 | 74, 245, 485 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | N R50 | C |
| 1294 | 110, 254, 489 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E-PM | N R50 | C |
| 1347 | 506 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1565 | 508 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1566 | 506 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1567 | 508 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1568 | 526 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1569 | 529 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1575 | 47 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | B |
| 1576 | 47 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | H | B |
| 1577 | 76 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E-PM | H R15 | C |
| 1578 | 76 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | H R15 | C |
| 1580 | 529 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1581 | 181, 299, 404, 541, 635 | | ~DIN 371/~DIN 376 | Machos máq. laminación refrig., rosca métr. fina ISO | Metal duro | N | C |
| 1582 | 182, 300, 405, 542 | | ~DIN 371 | Machos máq. de laminación para rosca UNC | HSS-E | N | C |
| 1583 | 182, 300, 405, 542 | | ~DIN 376 | Machos máq. de laminación para rosca UNC | HSS-E | N | C |
| 1584 | 183, 301, 406, 543 | | ~DIN 371 | Machos máq. de laminación para rosca UNF | HSS-E | N | C |
| 1585 | 183, 301, 406, 543 | | ~DIN 374 | Machos máq. de laminación para rosca UNF | HSS-E | N | C |
| 1586 | 184, 302, 408, 545 | | DIN 2189 | Machos máq. de laminación para rosca GAS | HSS-E | N | C |
| 1587 | 152 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 1588 | 153 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 1589 | 152 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 1590 | 153 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 1591 | 169 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 1592 | 171 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 1593 | 169 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 1599 | 155 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1705 | 153 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1707 | 155 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1708 | 153 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E-PM | N | C |
| 1710 | 176 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1711 | 175 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1712 | 176 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1713 | 160, 281, 386, 518, 624 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1715 | 179, 297, 402, 538, 633 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1716 | 179, 297, 402, 538, 633 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1717 | 159, 280, 385, 623 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1718 | 161, 282, 387, 625 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1719 | 159, 280, 385, 623 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1720 | 161, 282, 387, 625 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 1721 | 178, 296, 401, 632 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1723 | 178, 296, 401, 632 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 1725 | 159, 280, 385, 516, 623 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | E |
| 1726 | 161, 282, 387, 519, 625 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | E |
| 1727 | 159, 280, 385, 516, 623 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | E |
| 1728 | 161, 282, 387, 519, 625 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | E |
| 1729 | 178, 296, 401, 536, 632 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | E |
| 1730 | 179, 297, 402, 538, 633 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | E |
| 1731 | 178, 296, 401, 536, 632 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | E |
| 1732 | 179, 297, 402, 538, 633 | | ~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | E |
| 1740 | 167, 289, 392, 527 | | ~DIN 371 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E-PM | N | C |
| 1818 | 727 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E-PM | H | |
| 1819 | 727 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E-PM | H | A |
| 1820 | 727 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E-PM | H | D |
| 1821 | 727 | | DIN 352 | Juegos de machos mano para rosca metr. ISO | HSS-E-PM | H | C |
| 1837 | 124 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R40 | C(K) |
| 1838 | 131 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R40 | C(K) |
| 1839 | 87 | | | Machos combinados para rosca métrica ISO | HSS-E | N | D |
| 1858 | 362, 476 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 1859 | 362, 476 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 1860 | 368, 491 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | H | C |
| 1861 | 368, 491 | | DIN 371 | Machos máq. refrig., rosca métr. fina ISO | Metal duro | H | C |
| 1870 | 236, 473 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 1871 | 240 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA AZ | B |
| 1872 | 236, 473 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 1873 | 256, 487 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA | B |

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|---|---|---|---|---|---|---|---|
| 1874 | 249 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA R15 | C |
| 1875 | 357 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | GGT | C |
| 1876 | 357 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | GGT | C |
| 1883 | 362, 476 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 1890 | 358 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | GG | C |
| 1891 | 59 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R15 | C |
| 1892 | 243 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | VA R40 | C |
| 1893 | 63 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R40 | C |
| 1894 | 83 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | H R40 | C |
| 1897 | 358 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | GG | C |
| 1898 | 59 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R15 | C |
| 1899 | 243 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | VA R40 | C |
| 1901 | 83 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | H R40 | C |
| 1904 | 366 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E | GG | C |
| 1905 | 104 | | DIN 374 | Machos máq. refrig., rosca métr. fina ISO | HSS-E | N R15 | C |
| 1914 | 43 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 1915 | 43 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 1916 | 82 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 1917 | 82 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 1918 | 356 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 1919 | 356 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | GG | C |
| 1927 | 164, 285, 390, 523, 628 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | Metal duro | N | E |
| 1931 | 163, 284, 389, 522, 627 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | Metal duro | N | C |
| 1970 | 106 | | DIN 2181 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 1971 | 102 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R15 | C |
| 1972 | 163, 284, 389, 522, 627 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | Metal duro | N | C |
| 1977 | 121 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N | C |
| 1978 | 119 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R15 | C |
| 1979 | 370 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | GG | C |
| 1980 | 258, 498 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | VA | B |
| 1981 | 259, 499 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | VA R40 | C |
| 1984 | 370 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | GG | C |
| 1985 | 258, 498 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | VA | B |
| 1986 | 259, 499 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | VA R40 | C |
| 1987 | 126 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N | C |
| 1988 | 127 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R15 | C |
| 1989 | 372 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | GG | C |
| 1990 | 260, 500 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA | B |
| 1991 | 261 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA R15 | C |
| 2008 | 170, 291, 396, 531 | | ~DIN 374 | Machos máq. de laminación p. rosca metr. fina ISO | HSS-E | N | C |
| 2012 | 152, 274, 379, 510 | | ~DIN 371 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 2013 | 152, 274, 379, 510 | | ~DIN 376 | Machos máq. de laminación para rosca metr. ISO | HSS-E | N | C |
| 2086 | 236 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 2087 | 236 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 2273 | 182, 300, 405, 542 | | ~DIN 371 | Machos máq. de laminación para rosca UNC | HSS-E | N | C |
| 2274 | 182, 300, 405, 542 | | ~DIN 376 | Machos máq. de laminación para rosca UNC | HSS-E | N | C |
| 2275 | 183, 301, 406, 543 | | ~DIN 374 | Machos máq. de laminación para rosca UNF | HSS-E | N | C |
| 2311 | 364 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 2424 | 107 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 2425 | 66 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2426 | 66 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2427 | 33 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2428 | 33 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2436 | 59 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R15 | C |
| 2437 | 59 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R15 | C |
| 2438 | 64 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R40 | C |
| 2439 | 64 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R40 | C |
| 2440 | 66 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2441 | 66 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2442 | 156, 277, 382, 513 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2443 | 156, 277, 382, 513 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2444 | 156, 277, 382, 513 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2445 | 156, 277, 382, 513 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2446 | 156, 277, 382, 513 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2447 | 157, 278, 383, 514 | | ~DIN 371 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2448 | 156, 277, 382, 513 | | ~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2465 | 45 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 2506 | 363 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | H | C |
| 2510 | 364 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | N R15 | C |
| 2514 | 68 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N R40 | C |
| 2515 | 517 | | ~DIN 371/~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 2516 | 494 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | Metal duro | N R15 | C |

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|---|---|---|---|---|---|---|---|
| 2517 | 34 | | DIN 371 | Machos máq. refrig., rosca métr. ISO | HSS-E | N | B |
| 2518 | 151, 273, 378, 509 | | ~DIN 371/~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | Metal duro | N | C |
| 2710 | 45 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 2790 | 69 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | E |
| 2791 | 69 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | E |
| 2792 | 107 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | E |
| 2838 | 102 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R15 | C |
| 2839 | 120 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R15 | C |
| 2840 | 120 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N R15 | C |
| 2841 | 127 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R15 | C |
| 2842 | 135 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R15 | C |
| 2843 | 105 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 2844 | 122 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2845 | 122 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2846 | 128 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R40 | C |
| 2847 | 143 | | ~DIN 371 | Machos máquina para roscas BSW | HSS-E | N R40 | C |
| 2848 | 143 | | ~DIN 376 | Machos máquina para roscas BSW | HSS-E | N R40 | C |
| 2849 | 136 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R40 | C |
| 2850 | 81 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 2851 | 81 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 2852 | 114 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H R40 | C |
| 2853 | 107 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 2854 | 123 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2855 | 123 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2856 | 123 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2857 | 123 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N R40 | C |
| 2859 | 129 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N R40 | C |
| 2860 | 137 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R40 | C |
| 2861 | 137 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R40 | C |
| 2862 | 243 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA R40 | C |
| 2863 | 243 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA R40 | C |
| 2864 | 251 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA R40 | C |
| 2865 | 259 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | VA R40 | C |
| 2866 | 259 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | VA R40 | C |
| 2867 | 262, 501 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA R40 | C |
| 2868 | 262 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA R40 | C |
| 2869 | 236 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 2870 | 236 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA | B |
| 2871 | 257 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA | B |
| 2872 | 258 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | VA | B |
| 2873 | 258 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | VA | B |
| 2874 | 260 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA | B |
| 2875 | 263 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | VA | B |
| 2876 | 33 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2877 | 33 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2878 | 94 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 2879 | 94 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 2881 | 118 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N | B |
| 2883 | 118 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N | B |
| 2885 | 130 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N | B |
| 2886 | 140 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | B |
| 2887 | 140 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | B |
| 2888 | 91 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 2889 | 117 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E | N | B |
| 2890 | 117 | | ~DIN 376 | Machos máquina para roscas UNC | HSS-E | N | B |
| 2891 | 125 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | N | B |
| 2892 | 142 | | ~DIN 371 | Machos máquina para roscas BSW | HSS-E | N | B |
| 2893 | 142 | | ~DIN 376 | Machos máquina para roscas BSW | HSS-E | N | B |
| 2894 | 132 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | B |
| 2895 | 241 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | VA R15 | C |
| 2896 | 241 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | VA R15 | C |
| 2897 | 249 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | VA R15 | C |
| 2898 | 261 | | ~DIN 374 | Machos máquina para roscas UNF | HSS-E | VA R15 | C |
| 2899 | 484 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E | N AZ | E |
| 2901 | 602 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | TiNi | B |
| 2903 | 606 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | TiNi | B |
| 2905 | 610 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E-PM | TiNi | B |
| 2909 | 604 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | Ti R15 | C |
| 2910 | 608 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | Ti R15 | C |
| 2912 | 612 | | ~DIN 371/~DIN 376 | Machos máquina para roscas UNC | HSS-E-PM | Ti R15 | C |
| 2914 | 617 | | ~DIN 371/~DIN 374 | Machos máquina para roscas UNF | HSS-E-PM | Ti R15 | C |
| 2916 | 602 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | TiNi | B |

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| 2917 | 606 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | TiNi | B |
| 2918 | 610 | | ~DIN 371 | Machos máquina para roscas UNC | HSS-E-PM | TiNi | B |
| 2919 | 614 | | ~DIN 371 | Machos máquina para roscas UNF | HSS-E-PM | TiNi | B |
| 2920 | 604 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E-PM | Ni R10 | C(K) |
| 2921 | 608 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | Ni R10 | C(K) |
| 2922 | 612 | | ~DIN 371/~DIN 376 | Machos máquina para roscas UNC | HSS-E-PM | Ni R10 | C(K) |
| 2923 | 616 | | ~DIN 371/~DIN 374 | Machos máquina para roscas UNF | HSS-E-PM | Ni R10 | C(K) |
| 2940 | 114 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H R40 | C |
| 2941 | 43 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 2942 | 43 | | DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | H | B |
| 2943 | 97 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H | B |
| 2944 | 681 | | ~DIN 371 | Machos máquina para rosca métrica ISO | Metal duro | H | D |
| 2983 | 99 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H | B |
| 2985 | 84 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 2986 | 84 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | H R40 | C |
| 2988 | 116 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H R40 | C |
| 2989 | 116 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | H R40 | C |
| 2990 | 41 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2991 | 41 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 2993 | 93 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 2994 | 73 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2995 | 73 | | DIN 371 | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 2998 | 108 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 2999 | 108 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R40 | C |
| 3510 | 413, 551, 643 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3511 | 414, 552, 644 | 2xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3512 | 416, 554, 646 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3513 | 417, 555, 647 | 2xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3514 | 202, 320, 429, 565, 657, 693 | 1,5xD | | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3515 | 203, 321, 430, 566, 658, 694 | 2xD | | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3516 | 195, 313, 420, 558, 650, 689 | 1,5xD | | Fresas de roscar con chaflán para roscas UNC | Metal duro | TMC SP | |
| 3517 | 196, 314, 421, 559, 651, 690 | 2xD | | Fresas de roscar con chaflán para roscas UNC | Metal duro | TMC SP | |
| 3518 | 198, 316, 423, 561, 653, 691 | 1,5xD | | Fresas de roscar con chaflán para roscas UNF | Metal duro | TMC SP | |
| 3519 | 199, 317, 424, 562, 654, 692 | 2xD | | Fresas de roscar con chaflán para roscas UNF | Metal duro | TMC SP | |
| 3520 | 206, 324, 426, 569, 661, 695 | | | Fresas de roscar para roscas NPT con fase de avellanado | Metal duro | TMC SP | |
| 3521 | 208, 326, 433, 571, 663, 696 | | | Fresas de roscar para roscas NPTF con fase de avellanado | Metal duro | TMC SP | |
| 3523 | 434, 572, 664 | | | Fresas para roscar universales para rosca métrica ISO | Metal duro | TMU SP | |
| 3524 | 437, 575, 667 | | | Fresas para roscar universales para roscas GAS | Metal duro | TMU SP | |
| 3525 | 188, 306, 413, 551, 643, 685 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3526 | 189, 307, 414, 552, 644, 686 | 2xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3527 | 191, 309, 416, 554, 646, 687 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3528 | 192, 310, 417, 555, 647, 688 | 2xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3529 | 202, 320, 429, 565, 657, 693 | 1,5xD | | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3533 | 203, 321, 430, 566, 658, 694 | 2xD | | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3534 | 195, 313, 420, 558, 650, 689 | 1,5xD | | Fresas de roscar con chaflán para roscas UNC | Metal duro | TMC SP | |
| 3535 | 196, 314, 421, 559, 651, 690 | 2xD | | Fresas de roscar con chaflán para roscas UNC | Metal duro | TMC SP | |
| 3536 | 198, 316, 423, 561, 653, 691 | 1,5xD | | Fresas de roscar con chaflán para roscas UNF | Metal duro | TMC SP | |
| 3537 | 199, 317, 424, 562, 654, 692 | 2xD | | Fresas de roscar con chaflán para roscas UNF | Metal duro | TMC SP | |
| 3538 | 206, 324, 426, 569, 661, 695 | | | Fresas de roscar para roscas NPT con fase de avellanado | Metal duro | TMC SP | |
| 3539 | 208, 326, 433, 571, 663, 696 | | | Fresas de roscar para roscas NPTF con fase de avellanado | Metal duro | TMC SP | |
| 3541 | 209, 327, 434, 572, 664, 697 | | | Fresas para roscar universales para rosca métrica ISO | Metal duro | TMU SP | |
| 3542 | 212, 330, 437, 575, 667, 700 | | | Fresas para roscar universales para roscas GAS | Metal duro | TMU SP | |
| 3543 | 188, 306, 413, 551, 643, 685 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3544 | 189, 307, 414, 552, 644, 686 | 2xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3545 | 191, 309, 416, 554, 646, 687 | 1,5xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3546 | 192, 310, 417, 555, 647, 688 | 2xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3556 | 209, 327, 434, 572, 664, 697 | | | Fresas para roscar universales para rosca métrica ISO | Metal duro | TMU SP | |
| 3557 | 212, 330, 437, 575, 667, 700 | | | Fresas para roscar universales para roscas GAS | Metal duro | TMU SP | |
| 3595 | 211, 329, 436, 574, 666, 699 | | | Fresas para roscar universales para roscas UN | Metal duro | TMU UN | |
| 3596 | 211, 329, 436, 574, 666, 699 | | | Fresas para roscar universales para roscas UN | Metal duro | TMU UN | |
| 3734 | 410, 548, 640 | 2xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 3735 | 187, 305, 412, 550, 642 | 2,5xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 3737 | 186, 304, 410, 548, 640 | 2xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 3740 | 187, 305, 412, 550, 642 | 2,5xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 3743 | 186, 304, 410, 548, 640 | 2xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 3745 | 200, 318, 427, 563, 655 | 2xD | | Fresas de roscar para roscas GAS sin fase de avellanado | Metal duro | TM SP | |
| 3746 | 201, 319, 428, 564, 656 | 2,5xD | | Fresas de roscar para roscas GAS sin fase de avellanado | Metal duro | TM SP | |
| 3748 | 200, 318, 427, 563, 655 | 2xD | | Fresas de roscar para roscas GAS sin fase de avellanado | Metal duro | TM SP | |
| 3750 | 201, 319, 428, 564, 656 | 2,5xD | | Fresas de roscar para roscas GAS sin fase de avellanado | Metal duro | TM SP | |
| 3753 | 205, 323, 425, 568, 660 | | | Fresas de roscar sin chaflán para roscas NPT | Metal duro | TM SP | |
| 3754 | 205, 323, 425, 568, 660 | | | Fresas de roscar sin chaflán para roscas NPT | Metal duro | TM SP | |
| 3756 | 207, 325, 432, 570, 662 | | | Fresas de roscar para roscas NPTF sin fase de avellanado | Metal duro | TM SP | |

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| 3757 | 207, 325, 432, 570, 662 | | | Fresas de roscar para roscas NPTF sin fase de avellanado | Metal duro | TM SP | |
| 3759 | 190, 308, 415, 553, 645 | 2,5xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3760 | 190, 308, 415, 553, 645 | 2,5xD | | Fresas de roscar con chaflán para rosca métrica ISO | Metal duro | TMC SP | |
| 3762 | 193, 311, 418, 556, 648 | 2,5xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3763 | 193, 311, 418, 556, 648 | 2,5xD | | Fresas de roscar con chaflán para rosca métrica fina ISO | Metal duro | TMC SP | |
| 3765 | 204, 322, 431, 567, 659 | 2,5xD | | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3766 | 204, 322, 431, 567, 659 | 2,5xD | Norma de fab. | Fresas de roscar para roscas GAS con fase de avellanado | Metal duro | TMC SP | |
| 3768 | 213, 331, 438, 576, 668, 701 | | | Fresas para roscar universales para roscas NPT | Metal duro | TMU SP | |
| 3769 | 213, 331, 438, 576, 668, 701 | | | Fresas para roscar universales para roscas NPT | Metal duro | TMU SP | |
| 3772 | 214, 332, 439, 577, 669, 702 | | | Fresas para roscar universales para roscas NPTF | Metal duro | TMU SP | |
| 3773 | 214, 332, 439, 577, 669, 702 | | | Fresas para roscar universales para roscas NPTF | Metal duro | TMU SP | |
| 3774 | 443, 581 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3775 | 443, 581 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3776 | 443, 581 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3777 | 443, 581 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3778 | 444, 582 | 2xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3779 | 444, 582 | 2xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3780 | 444, 582 | 2xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3781 | 444, 582 | 2xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3782 | 445, 583 | 2,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3783 | 445, 583 | 2,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3784 | 445, 583 | 2,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3785 | 445, 583 | 2,5xD | | Fresas de roscar y taladrar para rosca métrica ISO | Metal duro | DTMC SP | |
| 3787 | 446, 584 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3788 | 446, 584 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3789 | 446, 584 | 1,5xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3790 | 447, 585 | 2xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3791 | 447, 585 | 2xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3792 | 447, 585 | 2xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 3793 | 447, 585 | 2xD | | Fresas de roscar y taladrar para rosca métrica fina ISO | Metal duro | DTMC SP | |
| 4127 | 269 | | | Machos para roscas NPTF | HSS-E | VA R25 | C |
| 4132 | 186, 304, 411, 549, 641 | 2xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 4133 | 186, 304, 411, 549, 641 | 2xD | | Fresas de roscar sin chaflán para rosca métrica ISO | Metal duro | TM SP | |
| 4134 | 194, 312, 419, 557, 649 | 2xD | | Fresas de roscar sin chaflán para roscas UNC | Metal duro | TM SP | |
| 4135 | 194, 312, 419, 557, 649 | 2xD | | Fresas de roscar sin chaflán para roscas UNC | Metal duro | TM SP | |
| 4136 | 197, 315, 422, 560, 652 | 2xD | | Fresas de roscar sin chaflán para roscas UNF | Metal duro | TM SP | |
| 4137 | 197, 315, 422, 560, 652 | 2xD | | Fresas de roscar sin chaflán para roscas UNF | Metal duro | TM SP | |
| 4138 | 448, 586 | 2xD | | Fresas de roscar y taladrar para roscas UNF | Metal duro | DTMC SP | |
| 4139 | 448, 586 | 2xD | | Fresas de roscar y taladrar para roscas UNF | Metal duro | DTMC SP | |
| 4140 | 449, 587 | 2xD | | Fresas de roscar y taladrar para roscas UNF | Metal duro | DTMC SP | |
| 4141 | 449, 587 | 2xD | | Fresas de roscar y taladrar para roscas UNF | Metal duro | DTMC SP | |
| 4143 | 162, 283, 388, 521, 626 | | | Machos máq. laminación refrig., rosca métr. ISO | HSS-E-PM | N | C |
| 4145 | 180, 298, 403, 540, 634 | | | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E-PM | N | C |
| 4146 | 520 | | ~DIN 371/~DIN 376 | Machos máq. laminación refrig., rosca métr. ISO | HSS-E | N | C |
| 4147 | 537 | | ~DIN 371/~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E | N | C |
| 4151 | 539 | | ~DIN 371/~DIN 374 | Machos máq. laminación refrig., rosca métr. fina ISO | HSS-E | N | C |
| 4152 | 546 | | | Machos máq. de laminación con canal de refrig. para rosca GAS | HSS-E | N | C |
| 4153 | 67 | | | Machos máquina para rosca métrica ISO | HSS-E | N R40 | C |
| 4154 | 48, 242 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | C |
| 4155 | 48, 242 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N R15 | E |
| 4156 | 103, 250 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R15 | C |
| 4157 | 103, 250 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N R15 | E |
| 4158 | 135 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N R15 | E |
| 4159 | 138, 266, 504 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E-PM | VA R40 | C |
| 4161 | 682 | | DIN 371 | Machos máquina para rosca métrica fina ISO | HSS-E-PM | H | D |
| 4162 | 210, 328, 435, 573, 665, 698 | | | Fresado de roscas exteriores | Metal duro | TMU SP | |
| 4163 | 210, 328, 435, 573, 665, 698 | | | Fresado de roscas exteriores | Metal duro | TMU SP | |
| 4165 | 78, 359, 479 | | DIN 376 | Machos máq. refrig., rosca métr. ISO | HSS-E-PM | H | E |
| 4218 | 38, 239 | | DIN 371/DIN 376 | Machos máquina para rosca métrica ISO | HSS-E | N | B |
| 4219 | 90, 248 | | DIN 374 | Machos máquina para rosca métrica fina ISO | HSS-E | N | B |
| 4220 | 134, 264 | | DIN 5156 | Machos máquina para roscas GAS | HSS-E | N | B |
| 4225 | 217, 335, 442, 580, 639 | 3xD | | Microfresas de roscar | Metal duro | SP M/MF | |
| 4226 | 215, 333, 440, 578, 637 | 3xD | | Microfresas de roscar | Metal duro | SP M | |
| 4227 | 703 | 3xD | | Microfresas de roscar | Metal duro | SP M | |
| 4228 | 216, 334, 441, 579, 638 | 3xD | | Microfresas de roscar | Metal duro | SP G | |

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| 4298 | 764 | | | Porta sincronizado MMS HSK-A para cambio de herramientas manual | | HSK-A | |
| 4305 | 766 | | | Tornillos de regulación MMS con cono interior para porta sincronizado MMS | | | |
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| 4308 | 753 | | | Pinzas para machos | | | |
| 4326 | 751 | | | Porta sincronizado mango cilíndrico con refrigeración interna | | cil. | |
| 4327 | 751 | | | Porta sincronizado HSK-A con refrigeración interna | | HSK-A | |
| 4328 | 755 | | | Porta-machos de cambio rápido HSK-A con refrigeración interna | | HSK-A | |
| 4330 | 764 | | | Porta herramientas sincronizado MMS HSK-A de 1 canal | | HSK-A | |
| 4335 | 770 | | | Juntas | | | |
| 4340 | 754 | | | Porta-machos de cambio rápido sin refrigeración interna | | | |
| 4341 | 765 | | | Porta herramientas sincronizado MMS HSK-A de 2 canales | | HSK-A | |
| 4342 | 755 | | | Porta-machos de cambio rápido con refrigeración interna | | | |
| 4343 | 754 | | | Porta básico HSK-A para porta-machos | | HSK-A | |
| 4364 | 750 | | | Tornillos de regulación "Plano" para porta sincronizado con refrigeración interna | | | |
| 4508 | 767 | | | Set de transmisión de refrigerante HSK-A MMS de 1 canal | | HSK-A | |
| 4511 | 767 | | | Set de transmisión de refrigerante HSK-A MMS de 2 canales | | HSK-A | |
| 4513 | 768 | | | Set de transmisión de refrigerante MMS HSK-A (pieza de relleno) | | HSK-A | |
| 4524 | 763 | | | Porta sincronizado MMS mango cilíndrico | | cil. | |
| 4525 | 745 | | | Porta hidráulico sincronizado con mango cilíndrico con refrigeración interna | | cil. | |
| 4576 | 743 | | | Porta hidráulico sincronizado SK con refrigeración interna | | SK | |
| 4577 | 744 | | | Porta hidráulico sincronizado MAS/BT con refrigeración interna | | BT | |
| 4601 | 742 | | | Porta hidráulico sincronizado HSK-A con refrigeración interna | | HSK-A | |
| 4602 | 760 | | | Porta herramientas hidráulico HSK-A MMS de 1 canal | | HSK-A | |
| 4603 | 761 | | | Porta herramientas hidráulico HSK-A MMS de 2 canales | | HSK-A | |
| 4604 | 762 | | | Porta herramientas hidráulico MMS HSK-A para cambio de herramienta manual | | HSK-A | |
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| 4913 | 770 | | | Llave tensora | | | |

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114 974/1647-V-21 | Printed in Germany | 2016

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