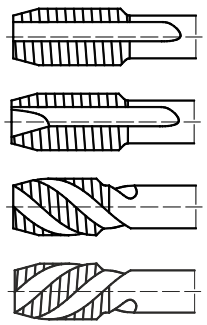
# Narzędzia do gwintów

**Katalog** - wydanie **18**

Szczegółowe informacje na stronie **www.fanar.pl**

## Wykonanie- rowki



| | |
|---|---|
| C | Rowki proste |
| B | Rowki proste ze skośną powierzchnią natarcia |
| R | Rowki śrubowe prawe |
| L | Rowki śrubowe lewe |

## Chłodziwo

| | |
|---|---|
| E | Emulsja |
| O | Olej |
| P | Pasta do gwintowania |

## Rodzaj powłoki

| | |
|---|---|
| HL | TiAlN + WC/C |
| TC | TiN + TiCN |
| TB | $TiB_2$ |
| TN2 | TiAlN + TiN |
| AT | AlTiN |

## Prędkość skrawania Vc (m/min)

| | |
|---|---|
| 10-15 | Narzędzie zalecane |
| 10-15 | Narzędzie możliwe do zastosowania |
| ✋ | Obróbka ręczna |

## Typ otworu

- Przelotowy
- Nieprzelotowy

Podane w tabeli prędkości skrawania mają charakter orientacyjny. Rzeczywiste prędkości należy dobrać doświadczalnie.

| Przykład materiału | Nr materiału | Rodzaj wióra | | Grupa materiałowa |
|---|---|---|---|---|
| 11SMnPb30, 10SPb20, 35S20, 11SMn37 | 1.0718, 1.0722, 1.0726, 1.0736 | krótki | P1 | P |
| S235JR,S275JR, C22, C45 | 1.0038, 1.0044, 1.0402, 1.0503 | długi | P2 | P |
| C55, C60, C60E | 1.0535, 1.0601, 1.1221 | długi | P3 | P |
| C25E, C53G, G18Mo5, 16Mo5 | 1.1158, 1.1213, 1.5422, 1.5423 | długi | P4 | P |
| C55, C55E, C60E | 1.0535, 1.1203, 1.1221 | długi | P5 | P |
| 36Mn5, 107CrV3, 100Cr6, 20NiCrMo2-2, 41Cr4 | 1.1167, 1.2210, 1.3505, 1.6523, 1.7035 | długi | P6 | P |
| 34Cr4, 25CrMo4, Weldox 700, Weldox 900 | 1.7033, 1.7218 | długi | P7 | P |
| 36NiCr6, 34CrNiMo6, 55Cr3, 51CrV4 | 1.5710, 1.6582, 1.7176, 1.8159 | długi | P8 | P |
| 55Si7, 60SiCr7, 55NiCrMoV6, 40CrMoV13-9 | 1.0904, 1.0961, 1.2713, 1.8523 | długi | P9 | P |
| X210Cr12, X100CrMoV5-1, HS6-5-2-5, HS6-5-2 | 1.2080, 1.2363, 1.3243, 1.3343 | średni | P10 | P |
| HS6-5-2-5, HS18-1-2-5, HS 10-2-5-8, HS 6-5-3-8 | 1.3243, 1.3255, 1.3253, 1.3294 | średni | P11 | P |
| X30WCrV9-3 | 1.2581 | średni | P12 | P |
| X6Cr13, X12Cr13, X14CrMoS17, X6CrMo17-1 | 1.4000, 1.4006, 1.4104, 1.4113 | długi | P13 | P |
| X12Cr13, GX20Cr14, X19CrNi17-2 , X45CrSi9-3-1 | 1.4006, 1.4027, 1.4057, 1.4718 | długi | P14 | P |
| X5CrNi18-10, X5CrNiMo17-12-2, X2CrNiMo18-14-3, X12NiCrSi36-16 | 1.4301, 1.4401, 1.4435 ,1.4864 | długi | M1 | M |
| X9CrNi18-8, X53CrMnNiN21-9 | 1.4310, 1.4871 | długi | M2 | M |
| X2CrNiN23-4, X2CrNiMoN17-13-3, X2CrNiMoN22-5-3, X2CrNiMoCuN25-6-3 | 1.4362, 1.4429, 1.4462, 1.4507 | długi | M3 | M |
| EN-GJL-100 , EN-GJL-200, EN-GJL-300, EN-GJL-400 | 0.6010, 0.6020, 0.6030, 0.6040 | bardzo krótki | K1 | K |
| EN-GJV-300, EN-GJV-400, EN-GJV-500, EN-GJV-550 | - | krótki/średni | K2 | K |
| EN-GJMW-300-26, EN-GJMB-350-10, EN-GJMB-450-6 | 0.8035, 0.8135, 0.8145 | krótki/średni | K3 | K |
| EN-GJMB-550-4, EN-GJMB-700-2, EN-GJMB-800-1 | 0.8155, 0.8170, 0.8180 | krótki/średni | K4 | K |
| EN-GJS-400-15, EN-GJS-500-7, EN-GJS-700-2 | 0.7040, 0.7050, 0.7070 | krótki/średni | K5 | K |
| EN-GJS-800-8, EN-GJS-1200-2, EN-GJS-1400-1 | - | krótki/średni | K6 | K |
| ENAW-Al99.5, ENAW-AlSi1MgMn (PA4), ENAW-AlMg0.7Si (PA38), ENAW-AlMg3 (PA11) | 3.0255, 3.2315, 3.3206, 3.3535 | długi | N1 | N |
| ENAW-AlCu6BiPb, ENAW-AlCu4MgSi(A) (PA6), ENAW-AlZn5.5MgCu (PA9) ENAW-AlMg4.5Mn0.7 (PA13) | 3.1655, 3.1325, 3.4365, 3.3547 | długi | N2 | N |
| ENAC-AlSi12, ENAC-AlSi12(Fe), ENAC-AlSi12(Cu), ENAC-AlMg5 | 3.2581, 3.2582, 3.2583, 3.3561 | krótki/średni | N3 | N |
| ENAC-AlCu4MgTi, ENAC-AlSi7Mg0.3, ENAC-AlSi9Mg, ENAC-AlSi10Mg(a) | 3.1371, 3.2371, 3.2373, 3.2381 | krótki/średni | N4 | N |
| ENAC-AlSi17Cu4Mg | - | krótki | N5 | N |
| EN-MAMgMn1, EN-MCMgRE3Zn2Zr, EN-MCMgRE2Ag2Zr, EN-MCMgAl4Si | 3.5101, 3.5103, 3.3506, 3.5470 | krótki | N6 | N |
| Cu-OF, Cu-DHP, CuZn35Mn2Al1Fe1-C, CuAl10Ni5Fe4 | 2.0040, 2.0090, 2.0592, 2.0966 | bardzo długi | N7 | N |
| CuZn37 (M63), CuAl10Ni5Fe4, CuSn8P | 2.0321, 2.0966, 2.1030 | długi | N8 | N |
| CuZn40Pb2 (M58)(MO58), CuSn7Zn4Pb7-C, CuSn5Zn5Pb5-C, CuSn10Pb10-C | 2.0402, 2.1090, 2.1096, 2.1176 | krótki | N9 | N |
| AMPCO 8, AMPCO 21, AMPCO M4 | - | długi | N10 | N |
| Incoloy 909, Multimet 155, X10NiCrAlTi3220 (Incoly 800), X40CoCrNi2020 | 1.4876, 1.4977 | długi | S1 | S |
| Incoloy A-286, Unitemp 212 | - | długi | S2 | S |
| Incoloy 864, Nimocast 713 | - | długi | S3 | S |
| Inconel 718, Nimonic 80A | - | długi | S4 | S |
| GMR 235*, Jessop G81* | - | długi | S5 | S |
| Ti 99.8, TiCu2 | 3.7025, 3.7124 | bardzo długi | S6 | S |
| Ti-6Al-4V, Ti-6Al-2Mo-2Cr, Ti-6Al-6Mo-4Zr-2Sn | 3.7165 | krótki/średni | S7 | S |
| Ti-10V-2Fe-3Al, Ti-13V-11Cr-3Al | - | krótki/średni | S8 | S |
| Weldox 1100, Weldox 1300, Hardox 500 | - | krótki | H1 | H |
| Hardox 550, Hardox 600, Armox 600 T | - | krótki | H2 | H |
| Hardox Extreme | - | krótki | H3 | H |
| GX260NiCr42, GX330NiCr42, GX300CrMoNi15-2-1 | 0.9620, 0.9625, 0.9640 | krótki | H4 | H |

# Fabryka Narzędzi FANAR S.A jest wiodącym producentem narzędzi skrawających do obróbki metali.

Od wielu lat stawiamy na nowoczesne rozwiązania, wysoką jakość i ciągły rozwój. Posiadamy wiedzę i doświadczenie, które wsparte **najnowszą technologią i nowoczesnym parkiem maszynowym** pozwalają nam zaoferować nowoczesne produkty spełniające najwyższe wymagania jakościowe. Jesteśmy cenionym dostawcą w kraju i za granicą, współpracujemy z największymi światowymi producentami z branż: samochodowej, lotniczej, medycznej, AGD i innych.

Szeroka oferta produktowa wsparta serwisem, doradztwem technicznym oraz nowymi rozwiązaniami informatycznymi w obsłudze klienta zapewniają wysoki poziom zadowolenia klientów.

## Jesteśmy producentem o zasięgu globalnym.

Nasze narzędzia są dystrybuowane do ponad **40 krajów**. Coraz bardziej rozpoznawalna marka producenta o najwyższej jakości pozwala na dalszą ekspansję międzynarodową. Poszukując **narzędzi do gwintów najwyższej jakości** skorzystajcie z naszej globalnej sieci dystrybucji. Aktualna lista oficjalnych dystrybutorów dostępna na stronie **www.fanar.pl**.

# Informacje techniczne

## Grupy zastosowania narzędzi wysokowydajnych i ich przeznaczenie

**MASTERTAP** — Grupa gwintowników przeznaczona do wysokowydajnego gwintowania szerokiego spektrum materiałów takich jak **stale, stale nierdzewne, żeliwa, metale nieżelazne oraz stopy żaroodporne i stopy tytanu.**

**800X** — Rozwojowa odmiana gwintownika 800, przeznaczona również do **obróbki stali nierdzewnej**. Wykorzystane innowacyjne technologie produkcji gwarantują nawet dwukrotnie wyższą od dotychczasowej trwałość oraz wydajność obróbki.

**800** — Do stali konstrukcyjnych węglowych, automatowych i niskostopowych, o wytrzymałości Rm ≤ 800 Mpa

**FAN-1200** — Do stali narzędziowych i trudnoobrabialnych o wytrzymałości 800 MPa ≤ Rm ≤ 1200 MPa oraz ulepszanych cieplnie do 38 HRC

**1400** — Do stali trudnoobrabialnych i żaroodpornych o wytrzymałości 1200 MPa ≤ Rm ≤ 1400 MPa oraz ulepszanych cieplnie do 44 HRC

**INOX** — Do stali wysokostopowych, nierdzewnych i kwasoodpornych o wytrzymałości Rm ≤ 1000 MPa

**GG** — Do obróbki żeliwa szarego i sferoidalnego

**GAL** — Do odlewniczych stopów aluminium o zawartości Si max 12%

**HRC** — Do materiałów w stanie zahartowanym. Liczba obok symbolu oznacza maksymalną twardość materiału obrabianego w skali HRC

**S-NC** — Do gwintowania synchronicznego na obrabiarkach CNC z funkcją „rigid tapping" szerokiej gamy materiałów z dużymi prędkościami skrawania

**Ms** — Do mosiądzu i brązu krótkowiórowego

**WGN** — Wygniataki do obróbki materiałów o ograniczonej ciągliwości

| | Oznaczenie | Cena | Dostępność |
|---|---|---|---|
| W katalogu | ● | w cenniku | z magazynu |
| | ○ | w cenniku | na zapytanie |
| | - | brak | brak możliwości wykonania |
| Poza katalogiem | indeks standardowy<br>indeks specjalny | na zapytanie | na zapytanie |

| | | | | |
|---|---|---|---|---|
| Wyżarzana | A | | | |
| Ulepszana cieplnie | QT | | | |
| Hartowana i odpuszczana | HT | | | |
| Utwardzana wydzieleniowo | PH | | | |

| Grupa materiałowa | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | **Stal** | | | | | |
| P | P1 | Stal węglowa | Stal automatowa | A | 750 | 220 | |
| | P2 | | C ≤ 0,55 % wyżarzona | A | 650 | 190 | - |
| | P3 | | C > 0,55 % wyżarzona | A | 650 | 190 | - |
| | P4 | | C ≤ 0,55 % ulepszana cieplnie | QT | 700 | 210 | - |
| | P5 | | C > 0,55 % ulepszana cieplnie | QT | 1000 | 300 | 32 |
| | P6 | Stal niskostopowa | | A | 600 | 175 | - |
| | P7 | | | QT | 1000 | 300 | 32 |
| | P8 | | | QT | 1200 | 380 | 41 |
| | P9 | | | QT | 1400 | 420 | 45 |
| | P10 | Stal wysokostopowa i wysokostopowa stal narzędziowa | | A | 700 | 210 | - |
| | P11 | | | A | 1000 | 300 | 32 |
| | P12 | | | HT | 1400 | 420 | 45 |
| | P13 | Stal nierdzewna | Ferrytyczna/Martenz. | A | 700 | 210 | - |
| | P14 | | Martenzytyczna | QT | 1100 | 330 | 34 |
| | | **Stal nierdzewna** | | | | | |
| M | M1 | Stal nierdzewna | Austenityczna | | 700 | 210 | - |
| | M2 | | Austenityczna | PH | 1000 | 300 | 32 |
| | M3 | | Duplex | | 800 | 240 | 23 |
| | | **Żeliwo** | | | | | |
| K | K1 | Żeliwo szare (GJL) | | | 400 | 120 | - |
| | K2 | Żeliwo wermikularne (GJV) CGI | | | 550 | 160 | - |
| | K3 | Żeliwo ciągliwe(GJMW / GJMB) | | | 500 | 150 | - |
| | K4 | Żeliwo ciągliwe (GJMB) | | | 800 | 240 | - |
| | K5 | Żeliwo sferoidalne (GJS) | | | 700 | 210 | - |
| | K6 | Żeliwo sferoidalne (GJS) ADI | | | 1400 | 420 | 45 |
| | | **Metale nieżelazne** | | | | | |
| N | N1 | Stopy aluminium do obróbki plastycznej | | | 200 | - | - |
| | N2 | | | PH | 500 | 152 | - |
| | N3 | Stopy aluminium odlewnicze | Si ≤ 12% | | 250 | 75 | - |
| | N4 | | Si ≤ 12% | PH | 300 | 90 | - |
| | N5 | | Si> 12 % | | 450 | 130 | - |
| | N6 | Stopy magnezu | | | 250 | 70 | - |
| | N7 | Miedz i jej stopy | czysta miedz, niestopowa | | 350 | 100 | - |
| | N8 | | Stopy miedzi długowiórowe | | 600 | 180 | - |
| | N9 | | stopy miedzi krótkowiórowe (mosiądz, brąz) | | 400 | 120 | - |
| | N10 | | wysoka wytrzymałość | | 1000 | 300 | 32 |
| | | **Stopy zaroodporne i stopy tytanu** | | | | | |
| S | S1 | Stopy żaroodporne | Na bazie Fe | A | 675 | 200 | - |
| | S2 | | | PH | 950 | 280 | 29 |
| | S3 | | Na bazie Ni/Co | A | 850 | 250 | 25 |
| | S4 | | | PH | 1200 | 350 | 38 |
| | S5 | | | C | 1100 | 320 | 34 |
| | S6 | Stopy tytanu | Czysty tytan | | 675 | 200 | - |
| | S7 | | Stopy α- i β | | 1250 | 375 | 40 |
| | S8 | | Stopy β | | 1400 | 410 | 44 |
| | | **Materiały twarde** | | | | | |
| H | H1 | Stal hartowana | | HT | | | 50 |
| | H2 | | | HT | | | 55 |
| | H3 | | | HT | | | 60 |
| | H4 | Żeliwo utwardzone i hartowane | | HT | | | 55 |

| MasterTAP | | | | | | 800X | | | 800 | | | FAN-1200 | | Nazwa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL | C-TN2 | B-TN2 | C-R40-TN2 | C | B | C-R40 | B-TC | C-R40-TC | |
| | | | | | | | | | | | | |  | |
| 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 17 / 18 | 17 / 18 | 17 / 18 | 19 / 20 | 19 / 20 / 23 | 21 / 22 / 23 | 24 | 24 | M |
| 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 37 / 38 / 39 | 37 / 38 / 39 | 37 / 38 / 39 | 40 / 41 | 40 / 41 / 42 | 40 / 41 / 42 | 43 /44 | 43 / 44 | MF |
| 58 | | 58 | | | | | 59 | 59 | | 60 | 60 | | | UNC |
| 62 | | 62 | | | | | 63 | 63 | | 64 | 64 | | | UNF |
| | | | | | | | | | | | | | | UN-8 |
| | | | | | | | 66 | 66 | | 67 | 67 | | | UNEF |
| 68 | | 68 | | | | 69 | 69 | 69 | 70 | 70 | 70 | | | G |
| | | | | | | | | | 74 | | | | | Rp |
| | | | | | | | | | | 74 | | | | RC |
| | | | | | | | | | 75 | | | | | NPT |
| | | | | | | | | | 76 | | | | | NPTF |
| | | | | | | | | | 77 | | | | | NPSF |
| | | | | | | | | | | 78 | | | | BSW |
| | | | | | | | | | | | | | | BSF |
| 79 | | | | 79 | | | | | | | | | | EG M |
| 80 | | | | 80 | | | | | | | | | | EG UNC |
| 81 | | | | 81 | | | | | | | | | | EG UNF |
| | | | | | | | | | | | | | | Pg |
| | | | | | | | | | | | | | | Tr |
| HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | Materiał |
| B/4-5P | B/4-5P | C/2-3P | C/2-3P | E/1,5-2P | E/1,5-2P | C/2-3P | B/4-5P | C/2-3P | C/2-3P | B/4-5P | C/2-3P | B/4-5P | C/2-3P | Nakrój |
| < 3xD | < 3xD | < 2,5xD | < 2,5xD | < 2,5xD | < 2,5xD | < 1,5xD | < 3xD | < 2,5xD | < 1,5xD | < 3xD | < 2,5xD | < 3xD | < 2,5xD | Typ otworu |
| E/O/P | E/O/MQL | E/O/P | E/O/MQL | E/O/P | E/O/MQL | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | Chłodziwo |
| | | | | | | | Vc (m/min) | | | | | | | |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P1 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P2 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P3 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P4 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 5-20 | 5-20 | 5-20 | | | | 5-20 | 5-20 | P5 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P6 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 5-20 | 5-20 | 5-20 | | | | 5-20 | 5-20 | P7 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | | | | | | | 5-20 | 5-20 | P8 |
| 5-15[1] | 5-15[1] | | | | | | | | | | | | | P9 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P10 |
| 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | | | | | | | 5-20 | 5-20 | P11 |
| 5-15[1] | 5-15[1] | | | | | | | | | | | | | P12 |
| 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-15 | 5-15 | P13 |
| 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-15 | 5-15 | P14 |
| 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | | | M1 |
| 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-10 | 5-10 | M2 |
| 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-10 | 5-10 | M3 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 5-15 | 5-15 | | 5-15 | 5-15 | | 5-15 | 5-15 | K1 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 5-15 | 5-15 | | 5-15 | 5-15 | | 5-15 | 5-15 | K2 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K3 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K4 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K5 |
| 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | | | | | | | | | K6 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N1 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N2 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 10-25 | 10-25 | | 10-30 | 10-30 | N3 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 10-25 | 10-25 | | 10-30 | 10-30 | N4 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 5-20 | 5-20 | | 10-30 | 10-30 | N5 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N6 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | 10-30 | 5-20 | 5-20 | 5-20 | 10-30 | 10-30 | N7 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | 10-30 | 5-20 | 5-20 | 5-20 | 10-30 | 10-30 | N8 |
| 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N9 |
| 5-25 | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 | | | | | | | 10-30 | 10-30 | N10 |
| 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S1 |
| 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S2 |
| | | | | | | | | | | | | | | S3 |
| | | | | | | | | | | | | | | S4 |
| | | | | | | | | | | | | | | S5 |
| 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S6 |
| | | | | | | | | | | | | | | S7 |
| | | | | | | | | | | | | | | S8 |
| | | | | | | | | | | | | | | H1 |
| | | | | | | | | | | | | | | H2 |
| | | | | | | | | | | | | | | H3 |
| | | | | | | | | | | | | | | H4 |

Nr strony

P

M

K

N

S

H

1) - Dotyczy gwintowników ≥ M3

| Nazwa | I400 | | | INOX | | | | GG | | | | | GAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C-TC | B-TC | C-R15-TC | B | B-HL | C-R40 | C-R40-HL | C-TC | C-IK-TC | E-TC | E-IK-TC | E-IKR-TC | C-R15-TC | E-R15-IK-TC |
| | | | | | | | | | | | | | | |
| Nr strony: M | 24 | 24 | 24 | 25 / 26 | 25 / 26 | 25 / 26 | 25 / 26 | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| MF | 43 / 44 | 43 / 44 | 43 / 44 | 45 / 46 /47 | 45 / 46 /47 | 45 / 46 /47 | 45 / 46 /47 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| UNC | | | | | | | | | | | | | | |
| UNF | | | | | | | | | | | | | | |
| UN-8 | | | | | | | | | | | | | | |
| UNEF | | | | | | | | | | | | | | |
| G | | | | | | | | | | | | | | |
| Rp | | | | | | | | | | | | | | |
| RC | | | | | | | | | | | | | | |
| NPT | | | | | | | | | | | | | | |
| NPTF | | | | | | | | | | | | | | |
| NPSF | | | | | | | | | | | | | | |
| BSW | | | | | | | | | | | | | | |
| BSF | | | | | | | | | | | | | | |
| EG M | | | | | | | | | | | | | | |
| EG UNC | | | | | | | | | | | | | | |
| EG UNF | | | | | | | | | | | | | | |
| Pg | | | | | | | | | | | | | | |
| Tr | | | | | | | | | | | | | | |
| Materiał | HSSE-PM | HSSE-PM | HSSE-PM | HSSE | HSSE | HSSE | HSSE | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Nakrój | C/2-3P | B/4-5P | C/2-3P | B/4-5P | B/4-5P | C/2-3P | C/2-3P | C/2-3P | C/2-3P | E/1,5-2P | E/1,5-2P | E/1,5-2P | C/2-3P | E/1,5-2P |
| Typ otworu | < 1,5xD | < 2,5xD | < 1,5xD | < 3xD | < 3xD | < 2,5xD | < 2,5xD | < 2xD | < 2,5xD | < 2xD | < 2,5xD | < 2,5xD | < 2,5xD | < 2,5xD |
| Chłodziwo | E/O/P | E/O | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O | E/O/MQL | E/O | E/O/MQL | E/O/MQL | E/O/P | E/O/MQL |
| | Vc (m/min) | | | | | | | | | | | | | |
| P: P1 | | | | | | | | | | | | | | |
| P2 | | | | | | | | | | | | | | |
| P3 | | | | | | | | | | | | | | |
| P4 | | | | | | | | | | | | | | |
| P5 | 5-20 | 5-20 | 5-20 | | | | | | | | | | | |
| P6 | | | | | | | | | | | | | | |
| P7 | 5-20 | 5-20 | 5-20 | | | | | | | | | | | |
| P8 | 5-20 | 5-20 | 5-20 | | | | | | | | | | | |
| P9 | 1-5 | 1-5 | 1-5 | | | | | | | | | | | |
| P10 | | | | | | | | | | | | | | |
| P11 | 5-20 | 5-20 | 5-20 | | | | | | | | | | | |
| P12 | 1-5 | 1-5 | 1-5 | | | | | | | | | | | |
| P13 | | | | | | | | | | | | | | |
| P14 | | | | | | | | | | | | | | |
| M: M1 | | | | 5-15 | 5-25 | 5-15 | 5-25 | | | | | | | |
| M2 | 5-10 | 5-10 | 5-10 | 5-15 | 5-25 | 5-15 | 5-25 | | | | | | | |
| M3 | 1-8 | 1-8 | 1-8 | 5-10 | 5-10 | 5-10 | 5-10 | | | | | | | |
| K: K1 | 10-20 | 10-20 | 10-20 | | | | | 20-60 | 20-60 | 20-60 | 20-60 | 20-60 | | |
| K2 | | | | | | | | 15-30 | 15-30 | 15-30 | 15-30 | 15-30 | | |
| K3 | 10-20 | 10-20 | 10-20 | | | | | 15-30 | 15-30 | 15-30 | 15-30 | 15-30 | | |
| K4 | 10-20 | 10-20 | 10-20 | | | | | 15-30 | 15-30 | 15-30 | 15-30 | 15-30 | | |
| K5 | 10-20 | 10-20 | 10-20 | | | | | 15-30 | 15-30 | 15-30 | 15-30 | 15-30 | | |
| K6 | 1-5 | 1-5 | 1-5 | | | | | 5-10 | 5-10 | 5-10 | 5-10 | 5-10 | | |
| N: N1 | | | | | | | | | | | | | | |
| N2 | | | | | | | | | | | | | | |
| N3 | | | | | | | | | | | | | 10-30 | 10-30 |
| N4 | | | | | | | | | | | | | 10-30 | 10-30 |
| N5 | | | | | | | | | | | | | 10-30 | 10-30 |
| N6 | | | | | | | | | | | | | | |
| N7 | | | | | | | | | | | | | | |
| N8 | | | | | | | | | | | | | | |
| N9 | 10-20 | 10-20 | 10-20 | | | | | | | | | | | |
| N10 | | | | | | | | | | | | | | |
| S: S1 | | | | | | | | | | | | | | |
| S2 | | | | | | | | | | | | | | |
| S3 | | | | | | | | | | | | | | |
| S4 | | | | | | | | | | | | | | |
| S5 | | | | | | | | | | | | | | |
| S6 | | | | | | | | | | | | | | |
| S7 | | | | | | | | | | | | | | |
| S8 | | | | | | | | | | | | | | |
| H: H1 | | | | | | | | | | | | | | |
| H2 | | | | | | | | | | | | | | |
| H3 | | | | | | | | | | | | | | |
| H4 | | | | | | | | | | | | | | |

| | HRC60 | | | | S-NC | | | DIN-352 | Ms | NUTAP | NGMF | NGST | KOMBI | BIT | Nazwa | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C-HM-TC | C-IK-HM-TC | D-HM-TC | D-IK-HM-TC | B-TC | C-R45-TC | C-R45-IK-TC | | | | | TRAPEZ | | | | |
| | | | | | | | | | | | | | | | | |
| | 28 | 28 | 28 | 28 | 29 | 29 | 29 | 30 | | 31 | 32 | | 33 | 34 | M | Nr strony |
| | | | | | 50 / 51 | 50 / 51 | 50 / 51 | 52 / 53 / 54 | | 55 | 56 / 57 | | | | MF | |
| | | | | | | | | 61 | | | | | | | UNC | |
| | | | | | | | | 65 | | | | | | | UNF | |
| | | | | | | | | | | | | | | | UN-8 | |
| | | | | | | | | | | | | | | | UNEF | |
| | | | | | | | | 72 | 71 | | | | | | G | |
| | | | | | | | | | | | | | | | Rp | |
| | | | | | | | | | | | | | | | RC | |
| | | | | | | | | | | | | | | | NPT | |
| | | | | | | | | | | | | | | | NPTF | |
| | | | | | | | | | | | | | | | NPSF | |
| | | | | | | | | | | | | | | | BSW | |
| | | | | | | | | | | | | | | | BSF | |
| | | | | | | | | | | | | | | | EG M | |
| | | | | | | | | | | | | | | | EG UNC | |
| | | | | | | | | | | | | | | | EG UNF | |
| | | | | | | | | | | | | | | | Pg | |
| | | | | | | | | | | | | 82 | | | Tr | |
| | VHM | VHM | VHM | VHM | HSSE-PM | HSSE-PM | HSSE-PM | HSS | HSSE | HSSE | HSS | HSS | HSS | HSS | Materiał | |
| | C/2-3P | C/2-3P | D/3,5-5P | D/3,5-5P | B/4-5P | C/2-3P | C/2-3P | ~3P | F/1P | 12P | 12P | 24P | D/4P | D/4P | Nakrój | |
| | | | | | | | | | | | | | | | Typ otworu | |
| | < 1,5xD | < 1,5xD | < 1,5xD | < 1,5xD | < 2,5xD | < 3xD | < 3xD | < 1,5xD | < 2xD | < 1,5xD | < 1,5xD | < 2xD | < 1,5xD | < 1,5xD | | |
| | E/O/P | E/O/MQL | E/O/P | E/O/MQL | E/O/P | E/O/P | E/O/MQL | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | Chłodziwo | |
| | | | | | | | Vc (m/min) | | | | | | | | | |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P1 | P |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P2 | |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P3 | |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P4 | |
| | | | | | 10-50 | 10-50 | 20-60 | | | 5-15 | | | | | P5 | |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P6 | |
| | | | | | 10-50 | 10-50 | 20-60 | | | 5-15 | | | | | P7 | |
| | | | | | 10-50 | 10-50 | 20-60 | | | 5-10 | | | | | P8 | |
| | | | | | 5-15[1] | | | | | | | | | | P9 | |
| | | | | | 10-50 | 10-50 | 20-60 | 5-20 | | 5-20 | 5-20 | 5-20 | 5-15 | 5-15 | P10 | |
| | | | | | 10-50 | 10-50 | 20-60 | | | 5-15 | | | | | P11 | |
| | | | | | 5-15[1] | | | | | | | | | | P12 | |
| | | | | | 5-20 | 5-20 | 5-30 | | | | | | | | P13 | |
| | | | | | 5-15 | 5-15 | 5-25 | | | | | | | | P14 | |
| | | | | | 5-20 | 5-20 | 5-30 | | | | | | | | M1 | M |
| | | | | | 5-15 | 5-15 | 5-25 | | | | | | | | M2 | |
| | | | | | 5-20 | 5-20 | 5-30 | | | | | | | | M3 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | 6-15 | 6-15 | | | K1 | K |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | K2 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | K3 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | K4 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | K5 | |
| | | | | | 5-15[1] | 5-15[1] | 5-15[1] | | | | | | | | K6 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N1 | N |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N2 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N3 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N4 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N5 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N6 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N7 | |
| | | | | | 10-40 | 10-40 | 10-60 | | | | | | | | N8 | |
| | | | | | 10-40 | 10-40 | 10-60 | | 10-25 | | 6-15 | 6-15 | 6-15 | 6-15 | N9 | |
| | | | | | 5-25 | 5-25 | 5-30 | | | | | | | | N10 | |
| | | | | | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | S1 | S |
| | | | | | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | S2 | |
| | | | | | | | | | | | | | | | S3 | |
| | | | | | | | | | | | | | | | S4 | |
| | | | | | | | | | | | | | | | S5 | |
| | | | | | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | S6 | |
| | | | | | | | | | | | | | | | S7 | |
| | | | | | | | | | | | | | | | S8 | |
| | 1-4 | 1-4 | 1-4 | 1-4 | | | | | | | | | | | H1 | H |
| | 1-4 | 1-4 | 1-4 | 1-4 | | | | | | | | | | | H2 | |
| | 1-4 | 1-4 | 1-4 | 1-4 | | | | | | | | | | | H3 | |
| | 1-4 | 1-4 | 1-4 | 1-4 | | | | | | | | | | | H4 | |

1) - Dotyczy gwintowników ≥ M3

| Nazwa | | WGN | | | | | | CTM |
|---|---|---|---|---|---|---|---|---|
| | | C-TN2 | C-SR-TN2 | C-SR-TC | E-SR-TC | E-SR-IK-TC | E-SR-IKR-TC | |
| | | | | | | | | |
| Nr strony | M | 85 | 85 | 85 | 85 | 85 | 85 | 92 |
| | MF | | 86 | 86 | | | | 92 |
| | UNC | | 87 | | | | | |
| | UNF | | 88 | | | | | |
| | UNEF | | | | | | | |
| | G | | 89 | | | | | |
| Material | | PM/HSSE | PM/HSSE | PM/HSSE | PM/HSSE | PM/HSSE | PM/HSSE | VHM |
| Nakrój | | C/2-3P | C/2-3P | C/2-3P | E/1,5-2P | E/1,5-2P | E/1,5-2P | - |
| Typ otworu | | < 3xD | < 3xD | < 3xD | < 3xD | < 3xD | < 3xD | |
| Chłodziwo | | E/O | E/O | E/O | E/O | E/O/MQL | E/O/MQL | E/O |
| | | Vc (m/min) | | | | | | |
| P | P1 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 100-250 |
| | P2 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 100-250 |
| | P3 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 100-250 |
| | P4 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 100-250 |
| | P5 | 10-25 | 10-25 | 10-25 | 10-25 | 10-30 | 10-30 | 100-250 |
| | P6 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 110-180 |
| | P7 | 10-25 | 10-25 | 10-25 | 10-25 | 10-30 | 10-30 | 110-180 |
| | P8 | | | | | | | 110-180 |
| | P9 | | | | | | | 110-180 |
| | P10 | 10-30 | 10-30 | 10-30 | 10-30 | 15-50 | 15-50 | 90-160 |
| | P11 | | | 10-25 | 10-25 | 10-30 | 10-30 | 90-160 |
| | P12 | | | | | | | 90-160 |
| | P13 | | | 10-25 | 10-25 | 10-30 | 10-30 | 60-160 |
| | P14 | | | | | | | 60-160 |
| M | M1 | 10-25 | 10-25 | 10-25 | 10-25 | 10-25 | 10-25 | 60-120 |
| | M2 | 10-25 | 10-25 | 10-25 | 10-25 | 10-25 | 10-25 | 60-120 |
| | M3 | | | 10-25 | 10-25 | 10-25 | 10-25 | 60-120 |
| K | K1 | | | | | | | 70-150 |
| | K2 | | | | | | | 70-150 |
| | K3 | | | | | | | 70-150 |
| | K4 | | | | | | | 70-150 |
| | K5 | | | | | | | 70-150 |
| | K6 | | | | | | | 70-150 |
| N | N1 | 20-40 | 20-40 | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N2 | 20-40 | 20-40 | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N3 | 20-40 | 20-40 | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N4 | | | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N5 | | | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N6 | | | | | | | 150-350 |
| | N7 | 20-40 | 20-40 | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N8 | 20-40 | 20-40 | 20-60 | 20-60 | 20-60 | 20-60 | 150-350 |
| | N9 | | | | | | | |
| | N10 | | | | | | | |
| S | S1 | | | | | | | 20-80 |
| | S2 | | | | | | | 20-80 |
| | S3 | | | | | | | 20-80 |
| | S4 | | | | | | | 20-80 |
| | S5 | | | | | | | 20-80 |
| | S6 | | | | | | | 20-80 |
| | S7 | | | | | | | 20-80 |
| | S8 | | | | | | | 20-80 |
| H | H1 | | | | | | | |
| | H2 | | | | | | | |
| | H3 | | | | | | | |
| | H4 | | | | | | | |

| | | INOX | | HRC40 | Nazwa | |
|---|---|---|---|---|---|---|
| KPL/2 | KPL/3 | KPL/3-P | KPL/3-P-TN2 | KPL/3-P-TC | | |
| | | | | | | |
| 95 / 96 / 97 | 95 / 96 / 97 | 98 | 99 | 100 | M | Nr strony |
| 101 / 102 / 103 | | | | 104 | MF | |
| | 105 | | | | UNC | |
| 106 | | | | | UNF | |
| 107 | | 108 | | 109 | G | |
| | 110 | | | | BSW | |
| 111 | | | | | BSF | |
| 112 | | | | | Pg | |
| | | | | | | |
| HSS | HSS | HSSE | HSSE | HSSE-PM | Materiał | |
| C/2-3P | C/2-3P | C/2-3P | C/2-3P | C/2-3P | Nakrój | |
| < 2,5xD | < 2,5xD | < 2,5xD | < 2,5xD | < 1,5xD | Typ otworu | |
| E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | Chłodziwo | |
| ✋ | ✋ | ✋ | ✋ | | P1 | P |
| ✋ | ✋ | ✋ | ✋ | | P2 | |
| ✋ | ✋ | ✋ | ✋ | | P3 | |
| ✋ | ✋ | ✋ | ✋ | | P4 | |
| | | | | ✋ | P5 | |
| ✋ | ✋ | ✋ | ✋ | | P6 | |
| | | | | ✋ | P7 | |
| | | | | ✋ | P8 | |
| | | | | ✋ | P9 | |
| ✋ | ✋ | ✋ | ✋ | | P10 | |
| | | | | ✋ | P11 | |
| | | | | | P12 | |
| | | ✋ | ✋ | | P13 | |
| | | ✋ | ✋ | | P14 | |
| | | | | | | |
| | | ✋ | ✋ | | M1 | M |
| | | ✋ | ✋ | | M2 | |
| | | ✋ | ✋ | | M3 | |
| | | | | | | |
| | | | | | K1 | K |
| | | | | | K2 | |
| | | | | | K3 | |
| | | | | | K4 | |
| | | | | | K5 | |
| | | | | | K6 | |
| | | | | | | |
| | | | | | N1 | N |
| | | | | | N2 | |
| | | | | | N3 | |
| | | | | | N4 | |
| | | | | | N5 | |
| | | | | | N6 | |
| | | | | | N7 | |
| | | | | | N8 | |
| | | | | | N9 | |
| | | | | | N10 | |
| | | | | | | |
| | | | | | S1 | S |
| | | | | | S2 | |
| | | | | | S3 | |
| | | | | | S4 | |
| | | | | | S5 | |
| | | | | | S6 | |
| | | | | | S7 | |
| | | | | | S8 | |
| | | | | | | |
| | | | | | H1 | H |
| | | | | | H2 | |
| | | | | | H3 | |
| | | | | | H4 | |

| Nazwa | | 800 | 800 SPN | Ms | INOX |
|---|---|---|---|---|---|
| | | | | | |
| Nr strony | M | 115 | 115 | 115 | 115 |
| | MF | 116 / 117 / 118 | 116 / 117 / 118 | 116 / 117 / 118 | 116 / 117 / 118 |
| | UNC | 119 | | | |
| | UNF | 120 | | | |
| | G | 121 | 121 | 121 | 121 |
| | R | 122 | | | |
| | BSW | 123 | | | |
| | BSF | 124 | | | |
| | NPT | 125 | | | |
| Wykonanie | | | SPN - Skośna powierzchnia natarcia | Docierane; specjalna geometria | Docieranie; specjalna geometria |
| Materiał | | HSS | HSS | HSS | HSSE |
| Nakrój | | 1,75P | 1,75P | 1,25P | 2,25P |
| Chłodziwo | | E/O/P | E/O/P | E/O/P | E/O/P |
| P | P1 | 4-8 | 4-8 | | 4-8 |
| | P2 | 3-6 | 3-6 | | 3-6 |
| | P3 | 3-6 | 3-6 | | 3-6 |
| | P4 | 2-5 | 2-5 | | 3-6 |
| | P5 | 2-5 | 2-5 | | 3-6 |
| | P6 | | | | |
| | P7 | | | | |
| | P8 | | | | |
| | P9 | | | | |
| | P10 | 1-3 | 1-3 | | 1-5 |
| | P11 | | | | 1-5 |
| | P12 | | | | |
| | P13 | | | | 2-6 |
| | P14 | | | | 2-6 |
| M | M1 | | | | 2-6 |
| | M2 | | | | 2-6 |
| | M3 | | | | |
| K | K1 | | | 5-8 | |
| | K2 | | | 5-8 | |
| | K3 | | | 5-8 | |
| | K4 | | | 2-5 | |
| | K5 | | | 2-5 | |
| | K6 | | | | |
| N | N1 | | | | |
| | N2 | | | | |
| | N3 | 10-20 | 10-20 | | 10-20 |
| | N4 | 10-20 | 10-20 | | 10-20 |
| | N5 | | | | 5-15 |
| | N6 | | | | 1-5 |
| | N7 | 7-12 | 7-12 | 10-15 | 10-15 |
| | N8 | 10-15 | 10-15 | 12-18 | 10-15 |
| | N9 | | | 20-30 | 15-25 |
| | N10 | | | 6-10 | 8-12 |
| S | S1 | | | | |
| | S2 | | | | |
| | S3 | | | | |
| | S4 | | | | |
| | S5 | | | | |
| | S6 | | | | |
| | S7 | | | | |
| | S8 | | | | |
| H | H1 | | | | |
| | H2 | | | | |
| | H3 | | | | |
| | H4 | | | | |

| MASTERDRILL | | 1300 | | | | | | 1300 micro | AL | | INOX | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN-6537 3xD | DIN-6537 5xD | DIN-6537 3xD | DIN-6537 3xD | DIN-6537 5xD | DIN-6537 5xD | DIN-6537 8xD | DIN-6537 | DIN-6539 | DIN-6537 5xD | DIN-6537 5xD | DIN-338 | DIN-338 | **Norma** |
| m7 | m7 | m7 | m7 | m7 | m7 | m7 | m7 | h7 | m7 | m7 | h8 | h8 | **Tolerancja** |
| 129 /130 /131 | 132 / 133 /134 | 129 /130 / 131 | 129-131 | 132-134 | 132-134 | 135 / 136 / 137 | 139 / 140 / 141 | 138 | 142 / 143 / 144 | 142 / 143/ 144 | 145 / 146 / 147 | 145 / 146 / 147 | **Nr strony** |
| λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ140° | λ35°÷40° δ118° | λ15° δ130° | λ15° δ130° | λ36° δ130° | λ36° δ130° | **Geometria** |
| IK | IK | | IK | | IK | IK | | | IK | IK | | | **Chłodzenie wewnętrzne** |
| VHM | VHM | VHM | VHM | VHM | VHM | VHM | VHM | VHM | VHM | VHM | HSSE | HSSE | **Materiał** |
| AT | AT | AT | AT | AT | AT | AT | AT | - | - | TB | - | TN2 | **Rodzaj powłoki** |
| 3÷20 | 3÷20 | 3÷20 | 3÷20 | 3÷20 | 3÷20 | 3÷20 | 2,35÷14 | 0,75÷2,9 | 3÷20 | 3÷20 | 1÷16 | 1÷16 | **Rozaj średnic** |
| | | | | | | Vc (m/min) | | | | | | | |
| 110 c | 100 c | 70 c | 90 c | 60 c | 80 c | 50 c | 70 a | 55 a | - | - | 35 c | 40 c | P1 |
| 110 c | 100 c | 70 c | 90 c | 60 c | 80 c | 50 c | 70 a | 55 a | - | - | 28 b | 32 b | P2 |
| 100 c | 90 c | 70 c | 90 c | 60 c | 80 c | 50 c | 70 a | 55 a | - | - | 28 b | 32 b | P3 |
| 110 c | 100 c | 50 b | 70 b | 45 b | 60 b | 40 b | 50 a | 40 a | - | - | 18 b | 21 b | P4 |
| 100 c | 90 c | 50 b | 70 b | 45 b | 60 b | 40 b | 50 a | 40 a | - | - | 18 b | 21 b | P5 |
| 95 c | 85 c | 50 b | 70 b | 45 b | 60 b | 40 b | 50 a | 40 a | - | - | 18 b | 21 b | P6 |
| 85 c | 75 c | 40 b | 50 b | 35 b | 40 b | 30 b | 40 a | 30 a | - | - | - | - | P7 |
| 65 c | 55 c | 40 b | 50 b | 35 b | 40 b | 30 b | 40 a | 30 a | - | - | - | - | P8 |
| 65 c | 55 c | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | - | - | P9 |
| 60 c | 50 c | 50 b | 70 b | 45 b | 60 b | 40 b | 50 a | 40 a | - | - | 18 b | 21 b | P10 |
| 55 c | 45 c | 40 b | 50 b | 35 b | 40 b | 30 b | 40 a | 30 a | - | - | - | - | P11 |
| 55 c | 45 c | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | - | - | P12 |
| 60 c | 50 c | 50 b | 60 b | 45 b | 55 b | 40 b | 50 a | 40 a | - | - | 13 b | 15 b | P13 |
| 60 c | 50 c | 50 b | 60 b | 45 b | 55 b | 40 b | 50 a | 40 a | - | - | 13 b | 15 b | P14 |
| 60 b | 50 b | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | 10 b | 12 b | M1 |
| 60 b | 50 b | | | | | | | | - | - | | | M2 |
| 60 b | 50 b | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | - | - | M3 |
| 120 d | 110 d | 100 d | 120 d | 90 d | 110 d | 80 d | 100 b | 80 b | - | - | 35 d | 40 d | K1 |
| 95 d | 85 d | - | - | - | - | - | - | - | - | - | - | - | K2 |
| 120 d | 110 d | 80 d | 100 d | 70 d | 90 d | 60 d | 80 b | 60 b | - | - | - | - | K3 |
| 100 d | 90 d | 80 d | 100 d | 70 d | 90 d | 60 d | 80 b | 60 b | - | - | - | - | K4 |
| 85 d | 75 d | 65 d | 80 d | 60 d | 70 d | 50 d | 65 b | 50 b | - | - | - | - | K5 |
| 85 d | 75 d | 65 d | 80 d | 60 d | 70 d | 50 d | 65 b | 50 b | - | - | - | - | K6 |
| 250 e | 220 e | 200 e | 250 e | 180 e | 220 e | 160 e | 200 b | 160 b | 250 e | 250 e | 37 d | 43 d | N1 |
| 250 e | 220 e | 200 e | 250 e | 180 e | 220 e | 160 e | 200 b | 160 b | 250 e | 250 e | 37 d | 43 d | N2 |
| 250 e | 220 e | 200 e | 250 e | 180 e | 220 e | 160 e | 200 b | 160 b | 250 e | 250 e | 27 c | 31 c | N3 |
| 250 e | 220 e | 200 e | 250 e | 180 e | 220 e | 160 e | 200 b | 160 b | 250 e | 250 e | 27 c | 31 c | N4 |
| 200 e | 180 e | 160 e | 200 e | 150 e | 180 e | 130 e | 160 a | 125 a | 200 e | 200 e | 32 d | 37 d | N5 |
| 200 e | 180 e | - | - | - | - | - | - | - | 150 d | 150 d | - | - | N6 |
| 120 c | 110 d | 100 c | 120 c | 90 c | 110 c | 80 c | 100 b | 80 b | 200 c | 200 c | 38 c | 44 c | N7 |
| 150 c | 135 c | 120 c | 150 c | 110 c | 135 c | 100 c | 120 b | 100 b | 200 c | 200 c | 41 b | 47 b | N8 |
| 150 c | 135 c | 120 c | 150 c | 110 c | 135 c | 100 c | 120 b | 100 b | 200 c | 200 c | 41 b | 47 b | N9 |
| 150 c | 135 c | - | - | - | - | - | - | - | 200 c | 200 c | - | - | N10 |
| 25 a | 22 a | 20 a | 25 a | 18 a | 22 a | 15 a | 20 a | 16 a | - | - | 9 b | 10 b | S1 |
| 25 a | 22 a | 20 a | 25 a | 18 a | 22 a | 15 a | 20 a | 16 a | - | - | 9 b | 10 b | S2 |
| 25 a | 22 a | - | - | - | - | - | - | - | - | - | - | - | S3 |
| 25 a | 22 a | - | - | - | - | - | - | - | - | - | - | - | S4 |
| 25 a | 22 a | - | - | - | - | - | - | - | - | - | - | - | S5 |
| 60 b | 50 b | 40 b | 50 b | 35 b | 45 b | 30 b | 40 a | 30 a | - | - | 24 b | 28 b | S6 |
| 60 b | 50 b | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | 12 a | 14 a | S7 |
| 60 b | 50 b | 30 b | 40 b | 30 b | 35 b | 25 b | 30 a | 25 a | - | - | 12 a | 14 a | S8 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | H1 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | H2 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | H3 |
| - | - | - | - | - | - | - | - | - | - | - | - | - | H4 |

P

M

K

N

S

H

*Tabela zawiera zalecane średnie prędkości skrawania Vc w m/min oraz symbole grup posuwów w tabeli na stronie następnej*

| | WST | WDG | Nawiertaki | | | Fazowniki | | Pogłębiacze | | | | | Rozwiertak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Stożkowe | | | Fazownik PF | Walcowy | |
| | Wiertło wielostopniowe | Wiertło do usuwania złamanych gwintowników | | | | | | | | | | | |
| **Norma** | | | NC | NC | DIN-333A | DIN-6537L | DIN-6537L | DIN-335 | DIN-335 | DIN-335 | | DIN-373 | |
| **Tolerancja** | | | | | | | | | | | | | |
| **Nr strony** | 148 | 149 | 150 | 150 | 151 | 152 | 152 | 153 | 153 | 153 | 155 | 156 | 157 |
| **Geometria** | | | δ90° | δ120° | | δ60° | δ90° | δ90° | δ90° | δ90° | δ30/45/60° | | |
| **Chłodzenie wewnętrzne** | | | | | | | | | | | | | |
| **Materiał** | HSS | VHM | HSSE | HSSE | HSS | VHM | VHM | HSS/ HSSE | HSS/ HSSE | HSSE-Co8 | | HSS | HSS |
| **Rodzaj powłoki** | - | AT | TN2 | TN2 | - | AT | AT | - | TN2 | TC | - | - | - |
| **Rodzaj średnic** | | 2,5÷10,2 | 3÷16 | 2,5÷10,2 | 0,8÷10 | 4÷20 | 4÷20 | | | | | | |

## TABELA ZALECANYCH POSUWÓW MM/OBR.

| Grupa | Średnica wiertła | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ć 1 | Ć 2 | Ć 3 | Ć 4 | Ć 5 | Ć 6 | Ć8 | Ć10 | Ć12 | Ć14 | Ć16 | Ć20 |
| **a** | 0,015 | 0,030 | 0,038 | 0,047 | 0,053 | 0,060 | 0,075 | 0,090 | 0,100 | 0,120 | 0,127 | 0,160 |
| **b** | 0,020 | 0,050 | 0,070 | 0,085 | 0,100 | 0,120 | 0,150 | 0,180 | 0,200 | 0,230 | 0,250 | 0,270 |
| **c** | 0,023 | 0,080 | 0,100 | 0,130 | 0,150 | 0,180 | 0,250 | 0,270 | 0,280 | 0,300 | 0,330 | 0,370 |
| **d** | 0,030 | 0,100 | 0,160 | 0,180 | 0,220 | 0,240 | 0,300 | 0,370 | 0,400 | 0,450 | 0,480 | 0,500 |
| **e** | 0,035 | 0,120 | 0,200 | 0,250 | 0,270 | 0,300 | 0,350 | 0,450 | 0,470 | 0,500 | 0,530 | 0,550 |
| **f** | 0,050 | 0,150 | 0,220 | 0,250 | 0,320 | 0,400 | 0,490 | 0,620 | 0,650 | 0,720 | 0,850 | 0,900 |
| **g** | 0,070 | 0,160 | 0,250 | 0,270 | 0,360 | 0,470 | 0,620 | 0,830 | 0,900 | 0,950 | 1,100 | 1,200 |
| **h** | 0,090 | 0,200 | 0,270 | 0,300 | 0,400 | 0,520 | 0,750 | 1,000 | 1,100 | 1,200 | 1,300 | 1,350 |

**Symbole grup posuwów umieszczone są w tabeli doboru wierteł obok zalecanej prędkości skrawania**

# JAK DOBRAĆ I ZAMÓWIĆ PRODUKT?

2

| | | | MASTERTAP | | | | | | 800X | | | 800 | | | FAN-1200 | | Nazwa |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL | C-TN | B-TN | C-R40-TN | C | B | C-R40 | B-TC | C-R40-TC | |
| | | | 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 15 / 16 | 17 / 18 | 17 / 18 | 17 / 18 | 19 / 20 | 19 / 20 / 23 | 21 / 22 / 23 | 24 | 24 | M |
| | | | 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 35 / 36 | 37 / 39 | 37 / 39 | 37 / 39 | 38 / 41 | 38 / 41 / 42 | 38 / 41 / 42 | 43 /44 | 43 / 44 | MF |
| | | | 58 | | 58 | | | | | 59 | 59 | | 60 | 60 | | | UNC |
| | | | 62 | | 62 | | | | | 63 | 63 | | 64 | 64 | | | UNF |
| | | | | | | | | | | | | | | | | | UN-8 |
| | | | | | | | | | | 66 | 66 | | 67 | 67 | | | UNEF |
| | | | 68 | | 68 | | | | 69 | 69 | 69 | 70 | 70 | 70 | | | G |
| | | | | | | | | | | | | 74 | | | | | Rp |
| | | | | | | | | | | | | | 74 | | | | RC |
| | | | | | | | | | | | | 75 | | | | | NPT |
| | | | | | | | | | | | | 76 | | | | | NPTF |
| | | | | | | | | | | | | 77 | | | | | NPSF |
| | | | | | | | | | | | | | 78 | | | | BSW |
| | | | | | | | | | | | | | | | | | BSF |
| | | | 79 | | | | 79 | | | | | | | | | | EG M |
| | | | 80 | | | | 80 | | | | | | | | | | EG UNC |
| | | | 81 | | | | 81 | | | | | | | | | | EG UNF |
| | | | | | | | | | | | | | | | | | Pg |
| | | | | | | | | | | | | | | | | | Tr |
| | | | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | Material |
| | | | B/4-5 | B/4-5 | C/2-3 | C/2-3 | E/1,5-2 | E/1,5-2 | C/2-3 | B/4-5 | C/2-3 | C/2-3 | B/4-5 | C/2-3 | B/4-5 | C/2-3 | Nakrój |
| | | | < 3xD | < 3xD | < 2,5xD | < 2,5xD | < 2,5xD | < 2,5xD | < 1,5xD | < 3xD | < 2,5xD | < 1,5xD | < 3xD | < 2,5xD | < 3xD | < 2,5xD | Typ otworu |
| | | | E/O/P | E/O/MQL | E/O/P | E/O/MQL | E/O/P | E/O/MQL | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | E/O/P | Chłodziwo |
| | | **Stal** | | | | | | | | | | | | | | | |
| P | P1 | Stal węglowa — Stal automatowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P1 |
| P | P2 | Stal węglowa — C ≤ 0,55 % wyżarzona | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P2 |
| P | P3 | Stal węglowa — C > 0,55 % wyżarzona | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P3 |
| P | P4 | Stal węglowa — C ≤ 0,55 % ulepszana cieplnie | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P4 |
| P | P5 | Stal węglowa — C > 0,55 % ulepszana cieplnie | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 5-20 | 5-20 | 5-20 | | | | 5-20 | 5-20 | P5 |
| P | P6 | Stal niskostopowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P6 |
| P | P7 | Stal niskostopowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 5-20 | 5-20 | 5-20 | | | | 5-20 | 5-20 | P7 |
| P | P8 | Stal niskostopowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | | | | | | | 5-20 | 5-20 | P8 |
| P | P9 | Stal niskostopowa | 5-15[1] | 5-15[1] | | | | | | | | | | | | | P9 |
| P | P10 | Stal wysokostopowa i wysokostopowa stal narzędziowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | 10-35 | 10-35 | 10-35 | 5-20 | 5-20 | 5-20 | 10-35 | 10-35 | P10 |
| P | P11 | Stal wysokostopowa i wysokostopowa stal narzędziowa | 10-40 | 20-50 | 10-40 | 20-50 | 10-40 | 20-50 | | | | | | | 5-20 | 5-20 | P11 |
| P | P12 | Stal wysokostopowa i wysokostopowa stal narzędziowa | 5-15[1] | 5-15[1] | | | | | | | | | | | | | P12 |
| P | P13 | Stal nierdzewna — Ferrytyczna/Martenz. | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-15 | 5-15 | P13 |
| P | P14 | Stal nierdzewna — Martenzytyczna | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-15 | 5-15 | P14 |
| | | **Stal nierdzewna** | | | | | | | | | | | | | | | |
| M | M1 | Stal nierdzewna — Austenityczna | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | | | M1 |
| M | M2 | Stal nierdzewna — Austenityczna | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-10 | 5-10 | M2 |
| M | M3 | Stal nierdzewna — Duplex | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-15 | 5-15 | | | | 5-10 | 5-10 | M3 |
| | | **Żeliwo** | | | | | | | | | | | | | | | |
| K | K1 | Żeliwo szare (GJL) | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 5-15 | 5-15 | | 5-15 | 5-15 | | 5-15 | 5-15 | K1 |
| K | K2 | Żeliwo wermikularne (GJV) CGI | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 5-15 | 5-15 | | 5-15 | 5-15 | | 5-15 | 5-15 | K2 |
| K | K3 | Żeliwo ciągliwe (GJMW / GJMB) | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K3 |
| K | K4 | Żeliwo ciągliwe (GJMB) | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K4 |
| K | K5 | Żeliwo sferoidalne (GJS) | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-25 | 10-25 | 10-25 | 5-15 | 5-15 | 5-15 | 10-25 | 10-25 | K5 |
| K | K6 | Żeliwo sferoidalne (GJS) ADI | 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | 5-15[1] | | | | | | | | | K6 |
| | | **Metale nieżelazne** | | | | | | | | | | | | | | | |
| N | N1 | Stopy aluminium o obróbki plastycznej | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N1 |
| N | N2 | Stopy aluminium o obróbki plastycznej | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N2 |
| N | N3 | Si ≤ 12% | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 10-25 | 10-25 | | 10-30 | 10-30 | N3 |
| N | N4 | Stopy aluminium odlewnicze — Si ≤ 12% | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 10-25 | 10-25 | | 10-30 | 10-30 | N4 |
| N | N5 | Si> 12 % | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | | 5-20 | 5-20 | | 10-30 | 10-30 | N5 |
| N | N6 | Stopy magnezu | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N6 |
| N | N7 | Miedź i jej stopy — Czysta miedź, niestopowa | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | 10-30 | 5-20 | 5-20 | 5-20 | 10-30 | 10-30 | N7 |
| N | N8 | Miedź i jej stopy — Stopy miedzi długowiórowe | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-30 | 10-30 | 5-20 | 5-20 | 5-20 | 10-30 | 10-30 | N8 |
| N | N9 | Miedź i jej stopy — Stopy miedzi krótkowiórowe (mosiądz, brąz) | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 | | | | | | | | | N9 |
| N | N10 | Miedź i jej stopy — Wysoka wytrzymałość | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 | | | | | | | 10-30 | 10-30 | N10 |
| | | **Stopy żaroodporne i stopy tytanu** | | | | | | | | | | | | | | | |
| S | S1 | Stopy żaroodporne — Na bazie Fe | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S1 |
| S | S2 | Stopy żaroodporne — Na bazie Fe | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S2 |
| S | S3 | Stopy żaroodporne — Na bazie Ni/Co | | | | | | | | | | | | | | | S3 |
| S | S4 | Stopy żaroodporne — Na bazie Ni/Co | | | | | | | | | | | | | | | S4 |
| S | S5 | Stopy żaroodporne — Na bazie Ni/Co | | | | | | | | | | | | | | | S5 |
| S | S6 | Stopy tytanu — Czysty tytan | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | 1-8[1] | | | | | | | | | S6 |
| S | S7 | Stopy tytanu — Stopy α- i β | | | | | | | | | | | | | | | S7 |
| S | S8 | Stopy tytanu — Stopy β | | | | | | | | | | | | | | | S8 |
| | | **Materiały twarde** | | | | | | | | | | | | | | | |
| H | H1 | Stal hartowana | | | | | | | | | | | | | | | H1 |
| H | H2 | Stal hartowana | | | | | | | | | | | | | | | H2 |
| H | H3 | Stal hartowana | | | | | | | | | | | | | | | H3 |
| H | H4 | Żeliwo utwardzone i hartowane | | | | | | | | | | | | | | | H4 |

3

1

Materiał grupy /

4

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M4,5 | 0,75 | 70 | 14 | - | 25 | 6,0 | 4,9 | 3,80 | 0045 | ● | | ● | | | | | |
| M5 | 0,80 | 70 | 14 | - | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● | ○ | | |
| M6 | 1,00 | 80 | 18 | - | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● | ○ | | |
| M7 | 1,00 | 80 | 18 | - | 30 | 7,0 | 5,5 | 6,00 | 0070 | ○ | | ● | | | | | |
| M8 | 1,25 | 90 | 20 | - | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● | ● | ○ | | |
| M9 | 1,25 | 90 | 20 | - | 35 | 9,0 | 7,0 | 7,80 | 0090 | ○ | | ○ | | | | | |
| M10 | 1,50 | 100 | 20 | - | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● | ● | ○ | | |

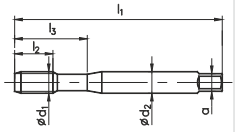
| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 |
| M | 5-15 | - | - | - | - | - |
| K | 10-25 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 |
| N | 10-35 | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 |
| S | | | | | | |

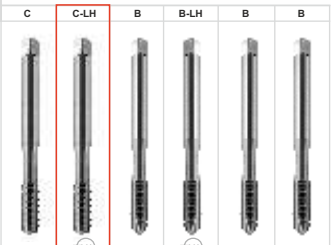
7

## Gwint metryczny DIN-13

HSSE PM

HSSE



| | 800 | | | | | |
|---|---|---|---|---|---|---|
| | C | C-LH | B | B-LH | B | B |
| Rodzaj materiału obrabianego | P K N | P K N | P K N | P K N | P K N | P K N |
| Typ otworu | < 1,5d | < 1,5d | < 3d | < 3d | < 3d | < 3d |
| Materiał | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | | | | |
| Nakrój | C / 2-3P | C / 2-3P | B / 4-5P | B / 4-5P | B / 4-5P | B / 4-5P |

| M Ćd1 | P | l1 | l2 | l2 R40 R45 | l3 | Ćd2 | a | | INDEX | C4-121102 | C4-111102 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | DIN-371 | |
| Tolerancja | | | | | | | | | | ISO1(4H) | ISO1(4H) |
| M1 | 0,25 | 40 | 6 | - | - | 2,5 | 2,1 | 0,75 | 0010 | ● | ● |
| M1,1 | 0,25 | 40 | 6 | - | - | 2,5 | 2,1 | 0,85 | 0011 | ● | ● |
| M1,2 | 0,25 | 40 | 6 | - | - | 2,5 | 2,1 | 0,95 | 0012 | ● | ● |
| M1,4 | 0,30 | 40 | 7 | - | - | 2,5 | 2,1 | 1,10 | 0014 | ● | ● |

| M Ćd1 | P | l1 | l2 | l2 R40 R45 | l3 | Ćd2 | a | | INDEX | C4-121101 | C4-111101 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | DIN-371 | |
| Tolerancja | | | | | | | | | | ISO2 (6H) | ISO2 (6H) |
| M1,6 | 0,35 | 40 | 8 | - | - | 2,5 | 2,1 | 1,25 | 0016 | ● | ● |
| M1,7 | 0,35 | 40 | 8 | - | - | 2,5 | 2,1 | 1,35 | 0017 | ● | ● |
| M1,8 | 0,35 | 40 | 8 | - | - | 2,5 | 2,1 | 1,45 | 0018 | ● | ● |
| M2 | 0,40 | 45 | 10 | - | - | 2,8 | 2,1 | 1,60 | 0020 | ● | ● |
| M2,2 | 0,45 | 45 | 10 | - | - | 2,8 | 2,1 | 1,75 | 0022 | ● | ● |
| M2,3 | 0,40 | 45 | 10 | - | - | 2,8 | 2,1 | 1,90 | 0023 | ● | ● |
| M2,5 | 0,45 | 50 | 9 | - | - | 2,8 | 2,1 | 2,05 | 0025 | ● | ● |
| M2,6 | 0,45 | 50 | 9 | - | - | 2,8 | 2,1 | 2,15 | 0026 | ● | ● |

5

| M Ćd1 | P | l1 | l2 | l2 R40 R45 | l3 | Ćd2 | a | | INDEX | C2-121101 | C2-221101 | C2-111101 | C2-211101 | C2-111103 | C2-111104 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | DIN-371 | | | | | |
| Tolerancja | | | | | | | | | | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO3 (6G) | 7G |
| M3 | 0,50 | 56 | 10 | - | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● | ● | ● | ○ |
| M3,5 | 0,60 | 56 | 12 | - | 20 | 4,0 | 3,0 | 2,90 | 0035 | ○ | ○ | ● | | | |
| M4 | 0,70 | 63 | 12 | - | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● | ● | ● | ○ |
| M4,5 | 0,75 | 70 | 14 | - | 25 | 6,0 | 4,9 | 3,80 | 0045 | ○ | ○ | ● | | | |
| M5 | 0,80 | 70 | 14 | - | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● | ○ |
| M6 | 1,00 | 80 | 18 | - | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● | ○ |
| M7 | 1,00 | 80 | 18 | - | 30 | 7,0 | 5,5 | 6,00 | 0070 | ○ | ○ | ● | | | |
| M8 | 1,25 | 90 | 20 | - | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | | | | |
| M9 | 1,25 | 90 | 20 | - | 35 | 9,0 | 7,0 | 7,80 | 0090 | ○ | ○ | ○ | | | |
| M10 | 1,50 | 100 | 20 | - | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | | | |

6

1. W tabeli doboru odszukać materiał obrabiany
2. Wybrać wykonanie w danej grupie narzędzi
3. Odszukać nr strony w katalogu dla wybranego rodzaju gwintu
4. Odszukać wykonanie narzędzia na wskazanej stronie katalogowej
5. Wybrać właściwy wymiar gwintu
6. Zbudować indeks i nazwę
7. Sprawdzić polecaną prędkość skrawania

Przykład

**C2-221101-0080**

**Gwintownik 800 M8-6H DIN-371 C LH HSSE**

**Jedno rozwiązanie**, brak ograniczeń

Przekonaj się dlaczego X **zmienia tak wiele**

# SPIS TREŚCI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# Gwintowniki maszynowe

# GWINTOWNIKI MASZYNOWE

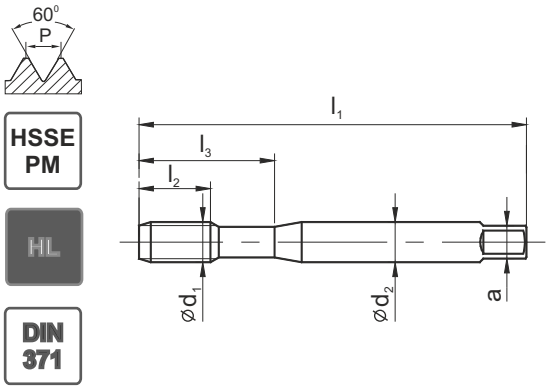
STRONA

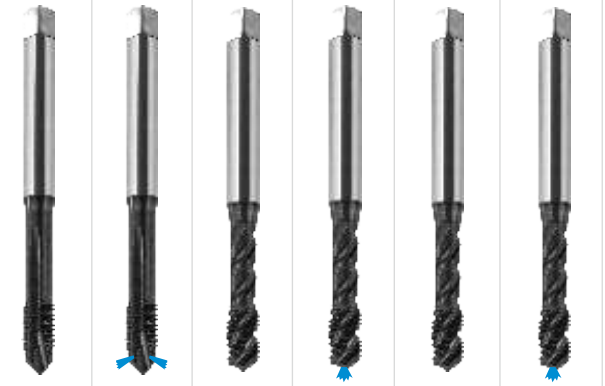

| | |
|---|---|
| TABELE DOBORU NARZĘDZI | 1-8 |
| STRONY KATALOGOWE | 15-82 |


| | | | | |
|---|---|---|---|---|
| M | DIN-371<br>DIN-376 | Gwintowniki maszynowe wysokowydajne | MasterTAP 800X 800 | 15-22 |
| | DIN-371 EL<br>DIN-376 EL | Gwintowniki maszynowe wysokowydajne z chwytem wydłużonym | 800 | 23 |
| | DIN-371<br>DIN-376 | Gwintowniki maszynowe wysokowydajne | FAN-1200 1400 INOX GG GAL HRC60 S-NC | 24-29 |
| | DIN-352 | Gwintowniki maszynowe krótkie | | 30 |
| | NUT-TAP<br>NGMf<br>KOMBI<br>BIT | Gwintowniki maszynowe do nakrętek<br>Wiertło-Gwintownik<br>Gwintowniki maszynowe - BITS | NUT-TAP BIT KOMBI | 31-34 |
| MF | DIN-371<br>DIN-374 | Gwintowniki maszynowe wysokowydajne | MasterTAP 800X 800 FAN-1200 1400 INOX GG GAL S-NC | 35-57 |
| | DIN-2181 | Gwintowniki maszynowe krótkie | | 52-54 |
| | NUT-TAP<br>NGMf | Gwintowniki maszynowe do nakrętek | NUT-TAP NGMf | 55-57 |
| UNC | DIN-371<br>DIN-376 | Gwintowniki maszynowe wysokowydajne | MasterTAP 800X 800 | 58-60 |
| | DIN-352 | Gwintowniki maszynowe krótkie | | 61 |
| UNF | DIN-371<br>DIN-374 | Gwintowniki maszynowe wysokowydajne | MasterTAP 800X 800 | 62-64 |
| | DIN-2181 | Gwintowniki maszynowe krótkie | | 65 |
| UNEF | ~DIN-374 | Gwintowniki maszynowe wysokowydajne | 800X 800 | 66-67 |
| G | DIN-5156 | Gwintowniki maszynowe wysokowydajne | MasterTAP 800X 800 | 68-70 |
| | ~DIN-5157 | Gwintowniki maszynowe krótkie | Ms | 71 |
| | DIN-5157 | Gwintowniki maszynowe krótkie | | 72 |
| | NGRf | Gwintowniki maszynowe krótkie | NGRf | 73 |
| Rp/Rc | DIN-5156 | Gwintowniki maszynowe wysokowydajne | 800 | 74 |
| | ~DIN-5156 | Gwintowniki maszynowe wysokowydajne | 800 | 74 |
| NPT | ~DIN-371<br>~DIN-374 | Gwintowniki maszynowe wysokowydajne | 800 | 75 |
| NPTF | ~DIN-374 | Gwintowniki maszynowe wysokowydajne | 800 | 76 |
| NPSF | ~DIN-5156 | Gwintowniki maszynowe wysokowydajne | 800 | 77 |
| BSW | DIN-371<br>DIN-376 | Gwintowniki maszynowe wysokowydajne | 800 | 78 |
| EG M STI | ~DIN-371<br>~DIN-376 | Gwintowniki maszynowe wysokowydajne | MasterTAP | 79 |
| EG UNC STI | ~DIN-371<br>~DIN-376 | Gwintowniki maszynowe wysokowydajne | MasterTAP | 80 |
| EG UNF STI | ~DIN-371<br>~DIN-376 | Gwintowniki maszynowe wysokowydajne | MasterTAP | 81 |
| TR | NGSt | Gwintowniki maszynowe krótkie | NGSt | 82 |

## Gwint metryczny ISO DIN-13

MASTERTAP



| | B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL |
|---|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL | HL | HL | HL | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO1(4H) | | ISO1(4H) | | | |
| | | | | | | | | INDEX | C4-118M02 | | C4-528M02 | | | |
| M1 | 0,25 | 40 | 6 | 13 | 2,5 | 2,1 | 0,75 | 0010 | ● | | ● | | | |
| M1,1 | 0,25 | 40 | 6 | 13 | 2,5 | 2,1 | 0,85 | 0011 | ● | | ● | | | |
| M1,2 | 0,25 | 40 | 6 | 13 | 2,5 | 2,1 | 0,95 | 0012 | ● | | ● | | | |
| M1,4 | 0,30 | 40 | 8 | 13 | 2,5 | 2,1 | 1,10 | 0014 | ● | | ● | | | |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | | ISO2 (6H) | | | |
| | | | | | | | | INDEX | C4-118M01 | | C4-528M01 | | | |
| M1,6 | 0,35 | 40 | 8 | 13 | 2,5 | 2,1 | 1,25 | 0016 | ● | | ● | | | |
| M1,7 | 0,35 | 40 | 8 | 13 | 2,5 | 2,1 | 1,35 | 0017 | ● | | ● | | | |
| M1,8 | 0,35 | 40 | 8 | 13 | 2,5 | 2,1 | 1,45 | 0018 | ● | | ● | | | |
| M2 | 0,40 | 45 | 10 | 13 | 2,8 | 2,1 | 1,60 | 0020 | ● | | ● | | | |
| M2,2 | 0,45 | 45 | 10 | 13 | 2,8 | 2,1 | 1,75 | 0022 | ● | | ● | | | |
| M2,3 | 0,40 | 45 | 10 | 13 | 2,8 | 2,1 | 1,90 | 0023 | ● | | ● | | | |
| M2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,05 | 0025 | ● | | ● | | | |
| M2,6 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 2,15 | 0026 | ● | | ● | | | |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C4-118M01 | C4-118M61 | C4-528M01 | C4-528M51 | C4-718M01 | C4-718M51 |
| M3 | 0,50 | 56 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | - | ● | - | ● | - |
| M3,5 | 0,60 | 56 | 6 | 20 | 4,0 | 3,0 | 2,90 | 0035 | ● | - | ● | - | ● | - |
| M4 | 0,70 | 63 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | - | ● | - | ● | - |
| M4,5 | 0,75 | 70 | 7,5 | 25 | 6,0 | 4,9 | 3,80 | 0045 | ● | - | ● | - | ● | - |
| M5 | 0,80 | 70 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● | ○ |
| M6 | 1,00 | 80 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● | ○ |
| M7 | 1,00 | 80 | 10 | 30 | 7,0 | 5,5 | 6,00 | 0070 | ● | ○ | ○ | ○ | ○ | ○ |
| M8 | 1,25 | 90 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● | ● | ○ |
| M9 | 1,25 | 90 | 13 | 35 | 9,0 | 7,0 | 7,80 | 0090 | ○ | ○ | ○ | ○ | ○ | ○ |
| M10 | 1,50 | 100 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● | ● | ○ |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-40 | 5-50 | 5-40 | 5-50 | 5-40 | 5-50 |
| M | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 |
| K | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| N | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| S | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 |

● Dostępne z magazynu
○ **Na zapytanie**

**Przykład zamówienia**

**C4-118M01-0100**
**MasterTAP M10-6HX DIN-371 B HSSE-PM HL**

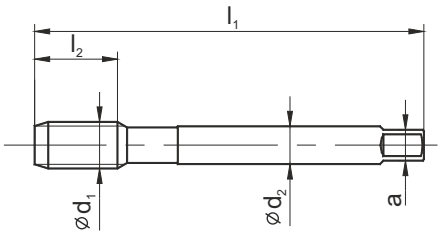
## Gwint metryczny ISO DIN-13

MASTERTAP

HSSE PM

HL

DIN 376



| | B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL |
|---|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL | HL | HL | HL | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | D4-118M01 | D4-118M61 | D4-528M01 | D4-528M51 | D4-718M01 | D4-718M51 |
| M8 | 1,25 | 90 | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ○ | ● | ○ | ○ | ○ |
| M10 | 1,50 | 100 | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ○ | ● | ○ | ○ | ○ |
| M12 | 1,75 | 110 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● | ● | ○ |
| M14 | 2,00 | 110 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● | ● | ● | ○ |
| M16 | 2,00 | 110 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ● | ● | ○ |
| M18 | 2,50 | 125 | 25 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ○ | ● | ○ | ○ | ○ |
| M20 | 2,50 | 140 | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ○ | ● | ○ | ○ | ○ |
| M22 | 2,50 | 140 | 25 | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ○ | ● | ○ | ○ | ○ |
| M24 | 3,00 | 160 | 30 | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ○ | ● | ○ | ○ | ○ |
| M27 | 3,00 | 160 | 30 | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ○ | ● | ○ | ○ | ○ |
| M30 | 3,50 | 180 | 35 | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ○ | ● | ○ | ○ | ○ |
| M33 | 3,50 | 180 | 35 | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ○ | ● | ○ | ○ | ○ |
| M36 | 4,00 | 200 | 40 | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ○ | ● | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-40 | 5-50 | 5-40 | 5-50 | 5-40 | 5-50 |
| M | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 |
| K | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| N | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| S | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 |



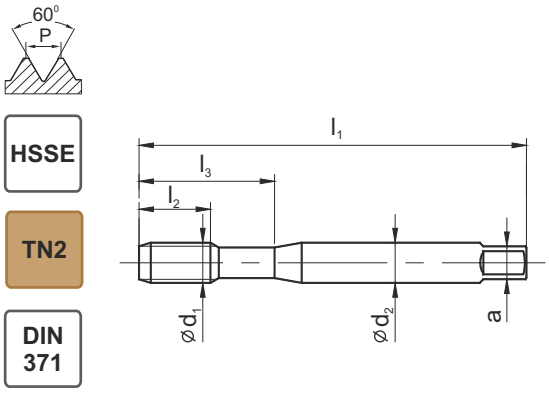
**Przykład zamówienia**

**D4-118M01-0120**
**MasterTAP M12-6H DIN-376 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

800X



| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-123X01 | C2-113X01 | C2-513X01 |
| M 3 | 0,50 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● |
| M 3,5 | 0,60 | 56 | 12 | 6 | 20 | 4,0 | 3,0 | 2,90 | 0035 | ● | ● | ● |
| M 4 | 0,70 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● |
| M 4,5 | 0,75 | 70 | 14 | 7,5 | 25 | 6,0 | 4,9 | 3,80 | 0045 | ● | ● | ● |
| M 5 | 0,80 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● |
| M 6 | 1,00 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● |
| M 7 | 1,00 | 80 | 18 | 10 | 30 | 7,0 | 5,5 | 6,00 | 0070 | ● | ● | ● |
| M 8 | 1,25 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● |
| M 9 | 1,25 | 90 | 20 | 13 | 35 | 9,0 | 7,0 | 7,80 | 0090 | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-35 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 5-25 | 10-25 |
| N | 10-30 | 10-30 | 10-30 |
| S | - | - | - |

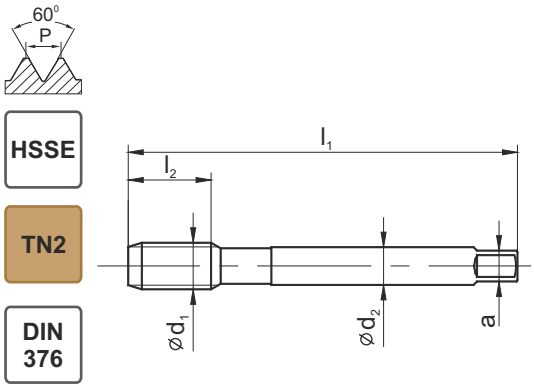
**Przykład zamówienia**

**C2-123X01-0030**
**Gwintownik 800X M3-6H DIN-371 C HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

800X



| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-376 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-123X01 | D2-113X01 | D2-513X01 |
| M3 | 0,50 | 56 | 11 | 5 | - | 2,2 | 1,8 | 2,50 | 0030 | ○ | ○ | ○ |
| M4 | 0,70 | 63 | 12 | 8 | - | 2,8 | 2,1 | 3,30 | 0040 | ● | ● | ● |
| M5 | 0,80 | 70 | 14 | 10 | - | 3,5 | 2,7 | 4,20 | 0050 | ● | ● | ● |
| M6 | 1,00 | 80 | 18 | 12 | - | 4,5 | 3,4 | 5,00 | 0060 | ● | ● | ● |
| M8 | 1,25 | 90 | 20 | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ● | ● |
| M12 | 1,75 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● |
| M14 | 2,00 | 110 | 25 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● |
| M16 | 2,00 | 110 | 32 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● |
| M18 | 2,50 | 125 | 32 | 25 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ● | ● |
| M20 | 2,50 | 140 | 32 | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ● | ● |
| M22 | 2,50 | 140 | 32 | 25 | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ● | ● |
| M24 | 3,00 | 160 | 38 | 30 | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ● | ● |
| M27 | 3,00 | 160 | 38 | 30 | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ● | ● |
| M30 | 3,50 | 180 | 40 | 35 | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ● | ● |
| M33 | 3,50 | 180 | 45 | 35 | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ● | ● |
| M36 | 4,00 | 200 | 50 | 40 | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ● | ● |
| M39 | 4,00 | 200 | 55 | 40 | - | 32,0 | 24,0 | 35,00 | 0390 | ● | ● | ● |
| M42 | 4,50 | 200 | 60 | 45 | - | 32,0 | 24,0 | 37,50 | 0420 | ● | ● | ● |
| M45 | 4,50 | 220 | 60 | 45 | - | 36,0 | 29,0 | 40,50 | 0450 | ○ | ○ | ○ |
| M48 | 5,00 | 250 | 65 | 50 | - | 36,0 | 29,0 | 43,00 | 0480 | ○ | ○ | ○ |
| M52 | 5,00 | 250 | 65 | 50 | - | 40,0 | 32,0 | 47,00 | 0520 | ○ | ○ | ○ |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-35 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 5-25 | 10-25 |
| N | 10-30 | 10-30 | 10-30 |
| S | - | - | - |

**Przykład zamówienia**

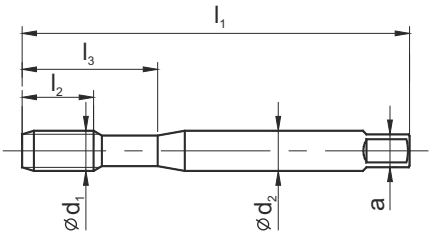
**D2-123X01-0390**
**Gwintownik 800X M39-6H DIN-376 C HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

HSSE

DIN 371




800

| | C | C-LH | B | B-LH | B | B |
|---|---|---|---|---|---|---|
| | | LH | | LH | 6G | 7G |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d | < 3d | < 3d | < 3d | < 3d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | | | | |
| Nakrój | C / 2-3P | C / 2-3P | B / 4-5P | B / 4-5P | B / 4-5P | B / 4-5P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO1(4H) | | ISO1(4H) | | | | |
| | | | | | | | | | INDEX | C4-121102 | | C4-111102 | | | | |
| M1 | 0,25 | 40 | 6 | - | 13 | 2,5 | 2,1 | 0,75 | 0010 | ● | | ● | | | | |
| M1,1 | 0,25 | 40 | 6 | - | 13 | 2,5 | 2,1 | 0,85 | 0011 | ● | | ● | | | | |
| M1,2 | 0,25 | 40 | 6 | - | 13 | 2,5 | 2,1 | 0,95 | 0012 | ● | | ● | | | | |
| M1,4 | 0,30 | 40 | 7 | - | 13 | 2,5 | 2,1 | 1,10 | 0014 | ● | | ● | | | | |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | | ISO2 (6H) | | | | |
| | | | | | | | | | INDEX | C4-121101 | | C4-111101 | | | | |
| M1,6 | 0,35 | 40 | 8 | - | 13 | 2,5 | 2,1 | 1,25 | 0016 | ● | | ● | | | | |
| M1,7 | 0,35 | 40 | 8 | - | 13 | 2,5 | 2,1 | 1,35 | 0017 | ● | | ● | | | | |
| M1,8 | 0,35 | 40 | 8 | - | 13 | 2,5 | 2,1 | 1,45 | 0018 | ● | | ● | | | | |
| M2 | 0,40 | 45 | 10 | - | 13 | 2,8 | 2,1 | 1,60 | 0020 | ● | | ● | | | | |
| M2,2 | 0,45 | 45 | 10 | - | 13 | 2,8 | 2,1 | 1,75 | 0022 | ● | | ● | | | | |
| M2,3 | 0,40 | 45 | 10 | - | 13 | 2,8 | 2,1 | 1,90 | 0023 | ● | | ● | | | | |
| M2,5 | 0,45 | 50 | 9 | - | 14 | 2,8 | 2,1 | 2,05 | 0025 | ● | | ● | | | | |
| M2,6 | 0,45 | 50 | 9 | - | 14 | 2,8 | 2,1 | 2,15 | 0026 | ● | | ● | | | | |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO3 (6G) | 7G | |
| | | | | | | | | | INDEX | C2-121101 | C2-221101 | C2-111101 | C2-211101 | C2-111103 | C2-111104 | |
| M3 | 0,50 | 56 | 10 | - | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● | ● | ● | ○ | |
| M3,5 | 0,60 | 56 | 12 | - | 20 | 4,0 | 3,0 | 2,90 | 0035 | ● | ○ | ● | ○ | ○ | ○ | |
| M4 | 0,70 | 63 | 12 | - | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● | ● | ● | ○ | |
| M4,5 | 0,75 | 70 | 14 | - | 25 | 6,0 | 4,9 | 3,80 | 0045 | ● | ○ | ● | ○ | ○ | ○ | |
| M5 | 0,80 | 70 | 14 | - | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● | ○ | |
| M6 | 1,00 | 80 | 18 | - | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● | ○ | |
| M7 | 1,00 | 80 | 18 | - | 30 | 7,0 | 5,5 | 6,00 | 0070 | ● | ○ | ● | ○ | ○ | ○ | |
| M8 | 1,25 | 90 | 20 | - | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● | ● | ○ | |
| M9 | 1,25 | 90 | 20 | - | 35 | 9,0 | 7,0 | 7,80 | 0090 | ● | ○ | ● | ○ | ○ | ○ | |
| M10 | 1,50 | 100 | 20 | - | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● | ● | ○ | |

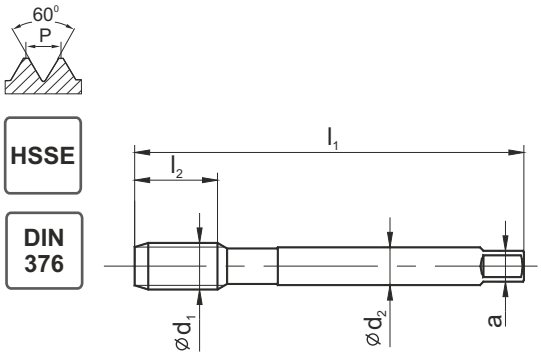
| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 |
| M | - | - | - | - | - | - |
| K | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 |
| S | - | - | - | - | - | - |

● **Dostępne z magazynu**
○ **Na zapytanie**

**Przykład zamówienia**

**C4-121101-0100**
**Gwintownik 800 M10-6H DIN-371 C HSSE**

## Gwint metryczny ISO DIN-13



| 800 | C | C-LH | B | B-LH | B | B |
|---|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d | < 3d | < 3d | < 3d | < 3d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | | | | |
| Nakrój | C / 2-3P | C / 2-3P | B / 4-5P | B / 4-5P | B / 4-5P | B / 4-5P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norm | DIN-376 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO3 (6G) | 7G |
| | | | | | | | | | INDEX | D2-121101 | D2-221101 | D2-111101 | D2-211101 | D2-111103 | D2-111104 |
| M3 | 0,50 | 56 | 11 | - | - | 2,2 | 1,8 | 2,50 | 0030 | ● | ○ | ● | ○ | ○ | ○ |
| M4 | 0,70 | 63 | 12 | - | - | 2,8 | 2,1 | 3,30 | 0040 | ● | ○ | ● | ○ | ○ | ○ |
| M5 | 0,80 | 70 | 14 | - | - | 3,5 | 2,7 | 4,20 | 0050 | ● | ○ | ● | ○ | ○ | ○ |
| M6 | 1,00 | 80 | 18 | - | - | 4,5 | 3,4 | 5,00 | 0060 | ● | ○ | ● | ○ | ○ | ○ |
| M8 | 1,25 | 90 | 20 | - | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ○ | ● | ○ | ○ | ○ |
| M10 | 1,50 | 100 | 20 | - | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ○ | ● | ○ | ○ | ○ |
| M12 | 1,75 | 110 | 24 | - | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● | ● | ○ |
| M14 | 2,00 | 110 | 25 | - | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ○ | ● | ○ | ○ | ○ |
| M16 | 2,00 | 110 | 32 | - | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ● | ● | ○ |
| M18 | 2,50 | 125 | 32 | - | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ○ | ● | ○ | ○ | ○ |
| M20 | 2,50 | 140 | 32 | - | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ● | ● | ● | ● | ○ |
| M22 | 2,50 | 140 | 32 | - | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ○ | ● | ○ | ○ | ○ |
| M24 | 3,00 | 160 | 38 | - | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ● | ● | ● | ○ | ○ |
| M27 | 3,00 | 160 | 38 | - | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ○ | ● | ○ | ○ | ○ |
| M30 | 3,50 | 180 | 40 | - | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ○ | ● | ○ | ○ | ○ |
| M33 | 3,50 | 180 | 45 | - | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ○ | ● | ○ | ○ | ○ |
| M36 | 4,00 | 200 | 50 | - | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ○ | ● | ○ | ○ | ○ |
| M39 | 4,00 | 200 | 55 | - | - | 32,0 | 24,0 | 35,00 | 0390 | ● | ○ | ● | ○ | ○ | ○ |
| M42 | 4,50 | 200 | 60 | - | - | 32,0 | 24,0 | 37,50 | 0420 | ● | ○ | ● | ○ | ○ | ○ |
| M45 | 4,50 | 220 | 60 | - | - | 36,0 | 29,0 | 40,50 | 0450 | ● | ○ | ● | ○ | ○ | ○ |
| M48 | 5,00 | 250 | 65 | - | - | 36,0 | 29,0 | 43,00 | 0480 | ● | ○ | ● | ○ | ○ | ○ |
| M52 | 5,00 | 250 | 65 | - | - | 40,0 | 32,0 | 47,00 | 0520 | ● | ○ | ● | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-35 | 5-20 | 5-20 | 5-20 | 5-20 | 5-20 |
| M | - | - | - | - | - | - |
| K | 10-25 | 5-15 | 5-15 | 5-15 | 5-15 | 5-15 |
| N | 10-35 | 5-25 | 5-25 | 5-25 | 5-25 | 5-25 |
| S | - | - | - | - | - | - |

**Przykład zamówienia**

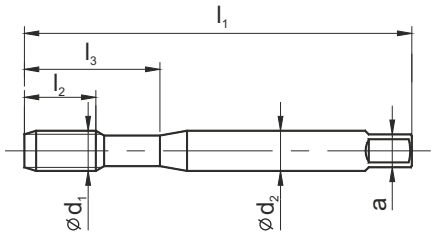
**D2-221101-0120**
**Gwintownik 800 M12-6H DIN-376 C LH HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

HSSE

DIN 371




| | 800 | | | |
|---|---|---|---|---|
| | C-R40 | C-LH-L40 | C-R40 | C-R40 |
| | | LH | 6G | 7G |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | | |
| Nakrój | C / 2-3P | C / 2-3P | C / 2-3P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO1(4H) | | | | | | |
| | | | | | | | | | INDEX | C4-511102 | | | | | | |
| M1 | 0,25 | 40 | - | 6 | 13 | 2,5 | 2,1 | 0,75 | 0010 | ● | | | | | | |
| M1,1 | 0,25 | 40 | - | 6 | 13 | 2,5 | 2,1 | 0,85 | 0011 | ● | | | | | | |
| M1,2 | 0,25 | 40 | - | 6 | 13 | 2,5 | 2,1 | 0,95 | 0012 | ● | | | | | | |
| M1,4 | 0,30 | 40 | - | 8 | 13 | 2,5 | 2,1 | 1,10 | 0014 | ● | | | | | | |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | | | | | | |
| | | | | | | | | | INDEX | C4-511101 | | | | | | |
| M1,6 | 0,35 | 40 | - | 8 | 13 | 2,5 | 2,1 | 1,25 | 0016 | ● | | | | | | |
| M1,7 | 0,35 | 40 | - | 8 | 13 | 2,5 | 2,1 | 1,35 | 0017 | ● | | | | | | |
| M1,8 | 0,35 | 40 | - | 8 | 13 | 2,5 | 2,1 | 1,45 | 0018 | ● | | | | | | |
| M2 | 0,40 | 45 | - | 10 | 13 | 2,8 | 2,1 | 1,60 | 0020 | ● | | | | | | |
| M2,2 | 0,45 | 45 | - | 10 | 13 | 2,8 | 2,1 | 1,75 | 0022 | ● | | | | | | |
| M2,3 | 0,40 | 45 | - | 10 | 13 | 2,8 | 2,1 | 1,90 | 0023 | ● | | | | | | |
| M2,5 | 0,45 | 50 | - | 5 | 14 | 2,8 | 2,1 | 2,05 | 0025 | ● | | | | | | |
| M2,6 | 0,45 | 50 | - | 5 | 14 | 2,8 | 2,1 | 2,15 | 0026 | ● | | | | | | |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | DIN-371 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | C2-511101 | C2-591101 | C2-511103 | C2-511104 | | | |
| | | | | | | | | | INDEX | ISO2 (6H) | ISO2 (6H) | ISO3 (6G) | 7G | | | |
| M3 | 0,50 | 56 | - | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● | ○ | | | |
| M3,5 | 0,60 | 56 | - | 6 | 20 | 4,0 | 3,0 | 2,90 | 0035 | ● | ○ | ○ | ○ | | | |
| M4 | 0,70 | 63 | - | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● | ○ | | | |
| M4,5 | 0,75 | 70 | - | 7,5 | 25 | 6,0 | 4,9 | 3,80 | 0045 | ● | ○ | ○ | ○ | | | |
| M5 | 0,80 | 70 | - | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ○ | | | |
| M6 | 1,00 | 80 | - | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ○ | | | |
| M7 | 1,00 | 80 | - | 10 | 30 | 7,0 | 5,5 | 6,00 | 0070 | ● | ○ | ○ | ○ | | | |
| M8 | 1,25 | 90 | - | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ○ | | | |
| M9 | 1,25 | 90 | - | 13 | 35 | 9,0 | 7,0 | 7,80 | 0090 | ● | ○ | ○ | ○ | | | |
| M10 | 1,50 | 100 | - | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ○ | | | |

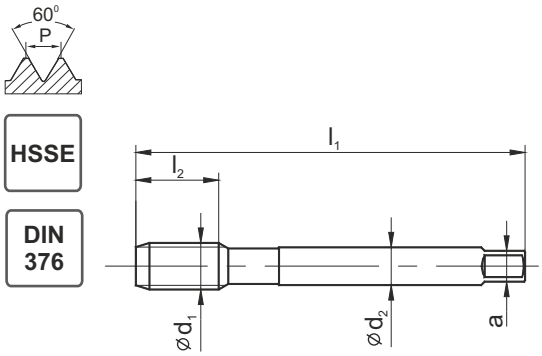
| ISO | Vc (m/min) | | | | | | |
|---|---|---|---|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 | 5-20 | | | |
| M | - | - | - | - | | | |
| K | 5-15 | 5-15 | 5-15 | 5-15 | | | |
| N | 5-25 | 5-25 | 5-25 | 5-25 | | | |
| S | - | - | - | - | | | |

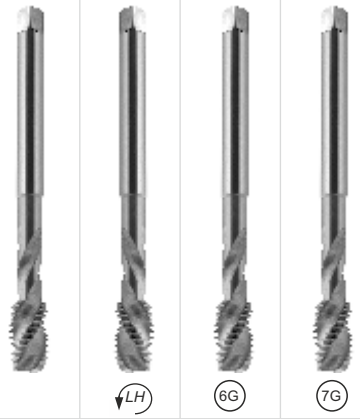
● **Dostępne z magazynu**
○ **Na zapytanie**

**Przykład zamówienia**

**C4-511102-0010**
**Gwintownik 800 M1-4H DIN-371 C R40 HSSE-PM**

## Gwint metryczny ISO DIN-13




| | 800 | | | |
|---|---|---|---|---|
| | C-R40 | C-LH-L40 | C-R40 | C-R40 |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | | |
| Nakrój | C / 2-3P | C / 2-3P | C / 2-3P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO3 (6G) | 7G |
| | | | | | | | | | INDEX | D2-511101 | D2-591101 | D2-511103 | D2-511104 |
| M3 | 0,50 | 56 | - | 5 | - | 2,2 | 1,8 | 2,50 | 0030 | ● | ○ | ○ | ○ |
| M4 | 0,70 | 63 | - | 8 | - | 2,8 | 2,1 | 3,30 | 0040 | ● | ○ | ○ | ○ |
| M5 | 0,80 | 70 | - | 10 | - | 3,5 | 2,7 | 4,20 | 0050 | ● | ○ | ○ | ○ |
| M6 | 1,00 | 80 | - | 12 | - | 4,5 | 3,4 | 5,00 | 0060 | ● | ○ | ○ | ○ |
| M8 | 1,25 | 90 | - | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ○ | ○ | ○ |
| M10 | 1,50 | 100 | - | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ○ | ○ | ○ |
| M12 | 1,75 | 110 | - | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ○ |
| M14 | 2,00 | 110 | - | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ○ | ○ | ○ |
| M16 | 2,00 | 110 | - | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ○ |
| M18 | 2,50 | 125 | - | 25 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ○ | ○ | ○ |
| M20 | 2,50 | 140 | - | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ● | ● | ○ |
| M22 | 2,50 | 140 | - | 25 | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ○ | ○ | ○ |
| M24 | 3,00 | 160 | - | 30 | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ● | ○ | ○ |
| M27 | 3,00 | 160 | - | 30 | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ○ | ○ | ○ |
| M30 | 3,50 | 180 | - | 35 | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ○ | ○ | ○ |
| M33 | 3,50 | 180 | - | 35 | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ○ | ○ | ○ |
| M36 | 4,00 | 200 | - | 40 | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ○ | ○ | ○ |
| M39 | 4,00 | 200 | - | 40 | - | 32,0 | 24,0 | 35,00 | 0390 | ● | ○ | ○ | ○ |
| M42 | 4,50 | 200 | - | 45 | - | 32,0 | 24,0 | 37,50 | 0420 | ● | ○ | ○ | ○ |
| M45 | 4,50 | 220 | - | 45 | - | 36,0 | 29,0 | 40,50 | 0450 | ● | ○ | ○ | ○ |
| M48 | 5,00 | 250 | - | 50 | - | 36,0 | 29,0 | 43,00 | 0480 | ● | ○ | ○ | ○ |
| M52 | 5,00 | 250 | - | 50 | - | 40,0 | 32,0 | 47,00 | 0520 | ● | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 | 5-20 |
| M | - | - | - | - |
| K | 5-15 | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 | 5-25 |
| S | - | - | - | - |



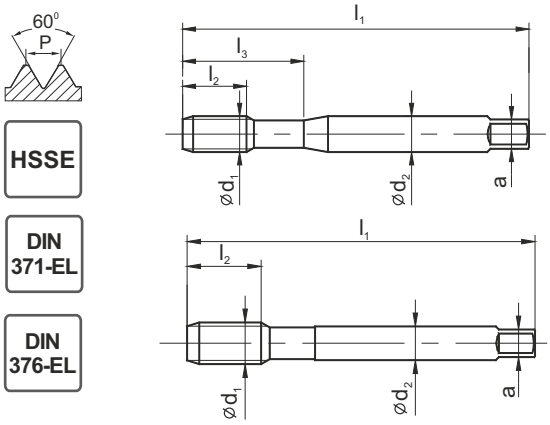
**Przykład zamówienia**

**D2-511101-0030**
**Gwintownik 800 M3-6H DIN-376 C R40 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

800



| | B | C-R40 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | B / 4-5P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371-EL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-111121 | C2-511121 |
| M3 | 0,50 | 100 | 10 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● |
| M3,5 | 0,60 | 100 | 12 | 6 | 20 | 4,0 | 3,0 | 2,90 | 0035 | ○ | ○ |
| M4 | 0,70 | 125 | 12 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● |
| M4,5 | 0,75 | 140 | 14 | 7,5 | 25 | 6,0 | 4,9 | 3,80 | 0045 | | |
| M5 | 0,80 | 140 | 14 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● |
| M6 | 1,00 | 160 | 18 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-376-EL | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | | |
| | | | | | | | | | INDEX | D2-111121 | D2-511121 |
| M8 | 1,25 | 180 | 20 | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ● |
| M10 | 1,50 | 200 | 20 | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ● |
| M12 | 1,75 | 220 | 24 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● |
| M14 | 2,00 | 220 | 25 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ○ | ○ |
| M16 | 2,00 | 220 | 32 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● |
| M20 | 2,50 | 250 | - | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ○ | ○ |

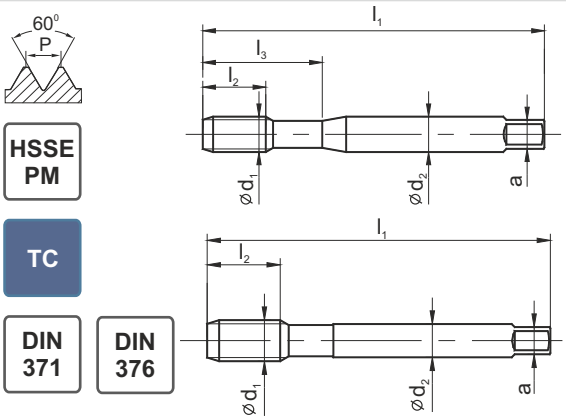
| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 5-25 | 5-25 |
| S | - | - |

**Przykład zamówienia**

**C2-111121-0030**
**Gwintownik 800 M3-6H DIN-371 EL C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13



| | FAN-1200 | | 1400 | | |
|---|---|---|---|---|---|
| | B-TC | C-R40-TC | C-TC | B-TC | C-R15-TC |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d | < 1,5d | < 2,5d | < 1,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P | B / 4-5P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | C4-115001 | C4-565001 | C4-125901 | C4-115901 | C4-505901 |
| M 3 | 0,50 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● | ● | ● |
| M 4 | 0,70 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● | ● | ● |
| M 5 | 0,80 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● |
| M 6 | 1,00 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● |
| M 8 | 1,25 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● | ● |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | D4-115001 | D4-565001 | D4-125901 | D4-115901 | D4-505901 |
| M8 | 1,25 | 90 | 20 | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ● | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ● | ● | ● | ● |
| M12 | 1,75 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● | ● |
| M14 | 2,00 | 110 | 25 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● | ● | ● |
| M16 | 2,00 | 110 | 32 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ● | ● |
| M18 | 2,50 | 125 | 32 | 25 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ● | ○ | ○ | ○ |
| M20 | 2,50 | 140 | 32 | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ● | ● | ● | ● |
| M22 | 2,50 | 140 | 32 | 25 | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ● | ○ | ○ | ○ |
| M24 | 3,00 | 160 | 38 | 30 | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ● | ● | ● | ● |
| M27 | 3,00 | 160 | 38 | 30 | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ● | ○ | ○ | ○ |
| M30 | 3,50 | 180 | 40 | 35 | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ● | ○ | ○ | ○ |
| M33 | 3,50 | 180 | 45 | 35 | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ● | ○ | ○ | ○ |
| M36 | 4,00 | 200 | 50 | 40 | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ● | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | |
|---|---|---|---|---|---|
| P | 5-35 | 5-35 | 1-20 | 1-20 | 1-20 |
| M | 5-15 | 5-10 | 1-10 | 1-10 | 1-10 |
| K | 5-25 | 5-25 | 1-20 | 1-20 | 1-20 |
| N | 10-30 | 10-30 | 10-20 | 10-20 | 10-20 |
| S | - | - | - | - | - |

**Przykład zamówienia**

**C4-115001-0030**
**Gwintownik FAN-1200 M3-6H DIN-371 B HSSE-PM TC**

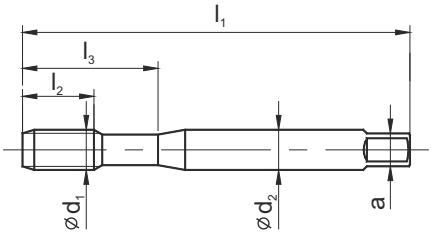
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

HSSE

HL

DIN 371




### INOX

| | B | B-HL | C-R40 | C-R40-HL |
|---|---|---|---|---|
| | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | HL | | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-111801 | C2-118801 | C2-511801 | C2-518801 |
| M3 | 0,50 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | ● | ● |
| M4 | 0,70 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | ● | ● |
| M5 | 0,80 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● |
| M6 | 1,00 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● |
| M8 | 1,25 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | 5-15 | 5-15 | 5-15 | 5-15 |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |

**Przykład zamówienia**

**C2-111801-0080**
**Gwintownik INOX M8-6H DIN-371 B HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

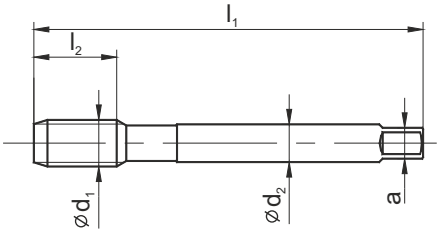
## Gwint metryczny ISO DIN-13

**INOX**

HSSE

HL

DIN 376



| | B | B-HL | C-R40 | C-R40-HL |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | - | HL | - | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-111801 | D2-118801 | D2-511801 | D2-518801 |
| M8 | 1,25 | 90 | 20 | 15 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ● | ● | ● |
| M10 | 1,50 | 100 | 20 | 17 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ● | ● | ● |
| M12 | 1,75 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● |
| M14 | 2,00 | 110 | 25 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● | ● |
| M16 | 2,00 | 110 | 32 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ● |
| M18 | 2,50 | 125 | 32 | 25 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ● | ● | ● |
| M20 | 2,50 | 140 | 32 | 25 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ● | ● | ● |
| M22 | 2,50 | 140 | 32 | 25 | - | 18,0 | 14,5 | 19,50 | 0220 | ● | ● | ● | ● |
| M24 | 3,00 | 160 | 38 | 30 | - | 18,0 | 14,5 | 21,00 | 0240 | ● | ● | ● | ● |
| M27 | 3,00 | 160 | 38 | 30 | - | 20,0 | 16,0 | 24,00 | 0270 | ● | ○ | ● | ○ |
| M30 | 3,50 | 180 | 40 | 35 | - | 22,0 | 18,0 | 26,50 | 0300 | ● | ○ | ● | ○ |
| M33 | 3,50 | 180 | 45 | 35 | - | 25,0 | 20,0 | 29,50 | 0330 | ● | ○ | ● | ○ |
| M36 | 4,00 | 200 | 50 | 40 | - | 28,0 | 22,0 | 32,00 | 0360 | ● | ○ | ● | ○ |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | 5-15 | 5-15 | 5-15 | 5-15 |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |

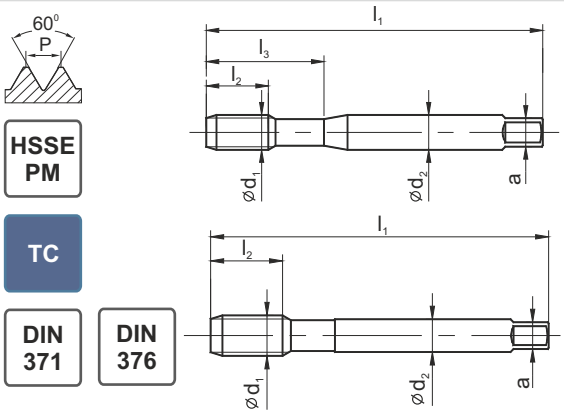


**Przykład zamówienia**

**D2-111801-0080**
**Gwintownik INOX M8-6H DIN-376 B HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13



| | GG | | | | | GAL | |
|---|---|---|---|---|---|---|---|
| | C-TC | C-IK-TC | E-TC | E-IK-TC | E-IKR-TC | C-R15-TC | E-R15-IK-TC |
| Rodzaj materiału obrabianego | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M K **N** S H | P M K **N** S H |
| Typ otworu | < 2d | < 2,5d | < 2d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC | TC | TC | TC | TC |
| Nakrój | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P | E / 1,5-2P | C / 2-3P | E / 1,5-2P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C2-125501 | C4-125551 | C2-145501 | C4-145551 | C4-145561 | C2-505601 | C4-655651 |
| M 3 | 0,50 | 56 | 10 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | - | ○ | - | - | ● | - |
| M 4 | 0,70 | 63 | 12 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | - | ● | - | - | ● | - |
| M 5 | 0,80 | 70 | 14 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● | ● | ● | ● | ○ |
| M 6 | 1,00 | 80 | 18 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● | ● | ● | ○ |
| M 7 | 1,00 | 80 | 18 | 30 | 7,0 | 5,5 | 6,00 | 0070 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M 8 | 1,25 | 90 | 20 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● | ● | ● | ○ |
| M 9 | 1,25 | 90 | 20 | 35 | 9,0 | 7,0 | 7,80 | 0090 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M10 | 1,50 | 100 | 20 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● | ● | ● | ○ |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | D2-125501 | D4-125551 | D2-145501 | D4-145551 | D4-145561 | D2-505601 | D4-655651 |
| M6 | 1,00 | 80 | 18 | - | 4,5 | 3,4 | 5,00 | 0060 | ● | ○ | ● | ○ | ○ | ● | ○ |
| M8 | 1,25 | 90 | 20 | - | 6,0 | 4,9 | 6,80 | 0080 | ● | ● | ● | ● | ○ | ● | ○ |
| M10 | 1,50 | 100 | 20 | - | 7,0 | 5,5 | 8,50 | 0100 | ● | ● | ● | ● | ○ | ● | ○ |
| M12 | 1,75 | 110 | 24 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● | ● | ● | ● |
| M14 | 2,00 | 110 | 25 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ○ | ○ | ○ | ○ | ● | ○ |
| M16 | 2,00 | 110 | 32 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ○ | ● | ● | ● | ● |
| M18 | 2,50 | 125 | 32 | - | 14,0 | 11,0 | 15,50 | 0180 | ● | ○ | ○ | ○ | ○ | ● | ○ |
| M20 | 2,50 | 140 | 32 | - | 16,0 | 12,0 | 17,50 | 0200 | ● | ○ | ○ | ○ | ○ | ● | ○ |

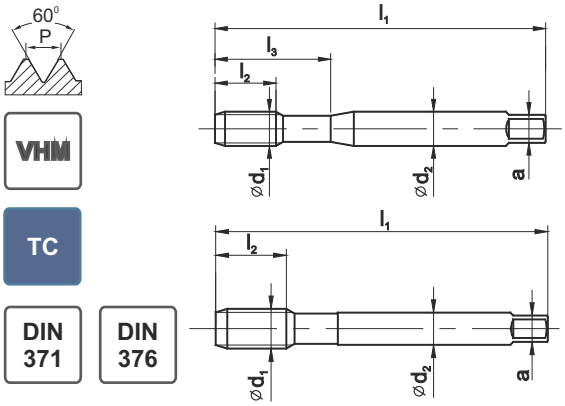
| ISO | Vc (m/min) | | | | | | |
|---|---|---|---|---|---|---|---|
| P | - | - | - | - | - | - | - |
| M | - | - | - | - | - | - | - |
| K | 1-60 | 5-60 | 1-60 | 5-60 | 5-60 | - | - |
| N | - | - | - | - | - | 10-30 | 10-30 |
| S | - | - | - | - | - | - | - |

**Przykład zamówienia**

**C2-125501-0030**
**Gwintownik GG M3-6HX DIN-371 C HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13




VHM

TC

DIN 371

DIN 376

**HRC60**

| | C-HM-TC | C-IK-HM-TC | D-HM-TC | D-IK-HM-TC |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d | < 1,5d | < 1,5d |
| Rodzaj materiału | VHM | VHM | VHM | VHM |
| Rodzaj powłoki | TC | TC | TC | TC |
| Nakrój | C / 2-3P | C / 2-3P | D / 4-5P | D / 4-5P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | | | |
| | | | | | | | | INDEX | C9-125F01 | C9-125F51 | C9-135F01 | C9-135F51 |
| M3 | 0,50 | 56 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | - | ● | - |
| M4 | 0,70 | 63 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | - | ● | - |
| M5 | 0,80 | 70 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | - | ● | - |
| M6 | 1,00 | 80 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● | ● |
| M8 | 1,25 | 90 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● | ● |
| M10 | 1,50 | 100 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● | ● |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-376 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | | | |
| | | | | | | | | INDEX | D9-125F01 | D9-125F51 | D9-135F01 | D9-135F51 |
| M12 | 1,75 | 110 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● | ● |
| M14 | 2,00 | 110 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● | ● |
| M16 | 2,00 | 110 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● | ● |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | - | - | - | - |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |
| H | 1-4 | 1-4 | 1-4 | 1-4 |



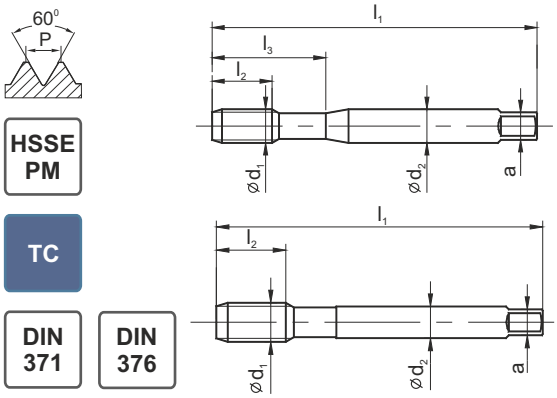
**Przykład zamówienia**

**C9-125F01-0030**
**Gwintownik HRC60 M3-6HX DIN-371 C VHM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

S-NC




HSSE PM

TC

DIN 371 | DIN 376

| | B-TC | C-R45-TC | C-R45-IK-TC |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 3d | < 3d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C4-115301 | C4-525301 | C4-525351 |
| M3 | 0,50 | 56 | 5 | 18 | 3,5 | 2,7 | 2,50 | 0030 | ● | ● | - |
| M4 | 0,70 | 63 | 7 | 21 | 4,5 | 3,4 | 3,30 | 0040 | ● | ● | - |
| M5 | 0,80 | 70 | 8 | 25 | 6,0 | 4,9 | 4,20 | 0050 | ● | ● | ● |
| M6 | 1,00 | 80 | 10 | 30 | 6,0 | 4,9 | 5,00 | 0060 | ● | ● | ● |
| M8 | 1,25 | 90 | 13 | 35 | 8,0 | 6,2 | 6,80 | 0080 | ● | ● | ● |
| M10 | 1,50 | 100 | 15 | 39 | 10,0 | 8,0 | 8,50 | 0100 | ● | ● | ● |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-376 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | D4-115301 | D4-525301 | D4-525351 |
| M12 | 1,75 | 110 | 18 | - | 9,0 | 7,0 | 10,20 | 0120 | ● | ● | ● |
| M14 | 2,00 | 110 | 20 | - | 11,0 | 9,0 | 12,00 | 0140 | ● | ● | ● |
| M16 | 2,00 | 110 | 20 | - | 12,0 | 9,0 | 14,00 | 0160 | ● | ● | ● |

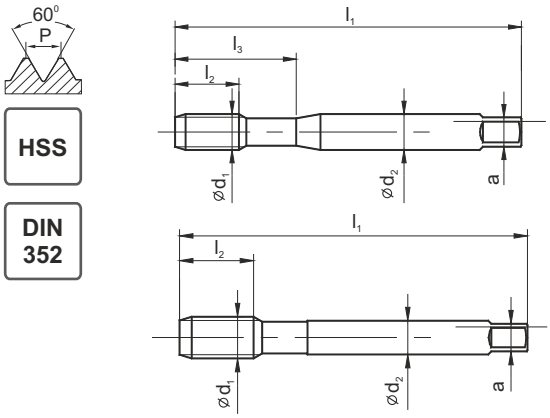
| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-50 | 5-50 | 5-60 |
| M | 5-20 | 5-20 | 5-30 |
| K | 10-40 | 10-40 | 10-60 |
| N | 10-40 | 10-40 | 10-60 |
| S | 1-8 | 1-8 | 1-8 |

**Przykład zamówienia**

**C4-115301-0030**
**Gwintownik S-NC M3-6HX DIN-371 B HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13




HSS

DIN 352

| | | LH |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | ~3P | ~3P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-352 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | E1-131001 | E1-231001 |
| M3 | 0,50 | 40 | 11 | 18,0 | 3,5 | 2,7 | 2,5 | 0030 | ● | ○ |
| M3,5 | 0,60 | 45 | 13 | 21,0 | 4,0 | 3,0 | 2,9 | 0035 | ● | ○ |
| M4 | 0,70 | 45 | 13 | 21,0 | 4,5 | 3,4 | 3,3 | 0040 | ● | ○ |
| M4,5 | 0,75 | 50 | 16 | 25,0 | 6,0 | 4,9 | 3,7 | 0045 | ○ | ○ |
| M5 | 0,80 | 52 | 16 | 26,0 | 6,0 | 4,9 | 4,2 | 0050 | ● | ○ |
| M6 | 1,00 | 56 | 18 | 27,0 | 6,0 | 4,9 | 5,0 | 0060 | ● | ○ |
| M7 | 1,00 | 56 | 18 | - | 6,0 | 4,9 | 6,0 | 0070 | ○ | ○ |
| M8 | 1,25 | 63 | 20 | - | 6,0 | 4,9 | 6,8 | 0080 | ● | ○ |
| M9 | 1,25 | 63 | 20 | - | 7,0 | 5,5 | 7,8 | 0090 | ○ | ○ |
| M10 | 1,50 | 70 | 22 | - | 7,0 | 5,5 | 8,5 | 0100 | ● | ○ |
| M11 | 1,50 | 70 | 22 | - | 8,0 | 6,2 | 9,5 | 0110 | ○ | ○ |
| M12 | 1,75 | 80 | 24 | - | 9,0 | 7,0 | 10,2 | 0120 | ● | ○ |
| M14 | 2,00 | 80 | 26 | - | 11,0 | 9,0 | 12,0 | 0140 | ● | ○ |
| M16 | 2,00 | 80 | 27 | - | 12,0 | 9,0 | 14,0 | 0160 | ● | ○ |
| M18 | 2,50 | 95 | 30 | - | 14,0 | 11,0 | 15,5 | 0180 | ● | ○ |
| M20 | 2,50 | 95 | 32 | - | 16,0 | 12,0 | 17,5 | 0200 | ● | ○ |
| M22 | 2,50 | 100 | 32 | - | 18,0 | 14,5 | 19,5 | 0220 | ● | ○ |
| M24 | 3,00 | 110 | 34 | - | 18,0 | 14,5 | 21,0 | 0240 | ● | ○ |
| M27 | 3,00 | 110 | 36 | - | 20,0 | 16,0 | 24,0 | 0270 | ● | ○ |
| M30 | 3,50 | 125 | 40 | - | 22,0 | 18,0 | 26,5 | 0300 | ● | ○ |
| M33 | 3,50 | 125 | 40 | - | 25,0 | 20,0 | 29,5 | 0330 | ○ | ○ |
| M36 | 4,00 | 150 | 50 | - | 28,0 | 22,0 | 32,0 | 0360 | ● | ○ |
| M39 | 4,00 | 150 | 50 | - | 32,0 | 24,0 | 35,0 | 0390 | ○ | ○ |
| M42 | 4,50 | 150 | 56 | - | 32,0 | 24,0 | 37,5 | 0420 | ● | ○ |
| M45 | 4,50 | 160 | 58 | - | 36,0 | 29,0 | 40,5 | 0450 | ○ | ○ |
| M48 | 5,00 | 180 | 65 | - | 36,0 | 29,0 | 43,0 | 0480 | ○ | ○ |
| M52 | 5,00 | 180 | 65 | - | 40,0 | 32,0 | 47,0 | 0520 | ○ | ○ |
| M56 | 5,50 | 180 | 70 | - | 40,0 | 32,0 | 50,5 | 0560 | ○ | ○ |
| M60 | 5,50 | 200 | 70 | - | 45,0 | 35,0 | 54,5 | 0600 | ○ | ○ |
| M64 | 6,00 | 220 | 75 | - | 50,0 | 39,0 | 58,0 | 0640 | ○ | ○ |
| M68 | 6,00 | 220 | 75 | - | 50,0 | 39,0 | 62,0 | 0680 | ○ | ○ |

● **Dostępne z magazynu**

○ **Na zapytanie**

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | - | - |
| N | - | - |
| S | - | - |

**Przykład zamówienia**

**E1-131001-0060**
**Gwintownik M6-6H DIN-352 HSS**

## Gwint metryczny ISO DIN-13

**NUT-TAP**

HSSE

TC

| | lutowane | skręcane |
|---|---|---|
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | TC | TC |
| Nakrój | 12P | 12P |

| M Ćd1 | P | Wymiary gabarytowe | d | | Na zapytanie | |
|---|---|---|---|---|---|---|
| M12 | 1,75 | Na zapytanie | 10,2 | | o | o |
| M14 | 2,00 | | 12,0 | | o | o |
| M16 | 2,00 | | 14,0 | | o | o |
| M18 | 2,50 | | 15,5 | | o | o |
| M20 | 2,50 | | 17,5 | | o | o |
| M22 | 2,50 | | 19,5 | | o | o |
| M24 | 3,00 | | 21,0 | | o | o |
| M27 | 3,00 | | 24,0 | | o | o |
| M30 | 3,50 | | 26,5 | | o | o |
| M33 | 3,50 | | 29,5 | | o | o |
| M36 | 4,00 | | 32,0 | | o | o |

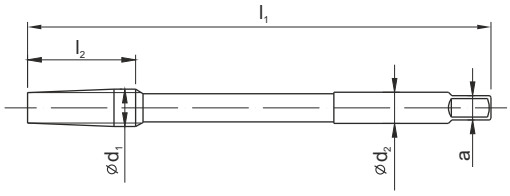
| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | - | - |
| N | - | - |
| S | - | - |

**Przykład zamówienia**
**NUT-TAP M24-ISO2 HSSE TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**HSS**




| | NGMf | |
|---|---|---|
| | | LH |
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | 12P | 12P |

| M Ć $d_1$ | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | NGMf | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | INDEX | F1-151001 | F1-251001 |
| M3 | 0,5 | 70 | 10 | 2,2 | 1,8 | 2,50 | 0030 | ○ | ○ |
| M4 | 0,70 | 90 | 14 | 2,8 | 2,2 | 3,30 | 0040 | ● | ● |
| M4,5 | 0,75 | 100 | 16 | 3,2 | 2,5 | 3,80 | 0045 | ○ | ○ |
| M5 | 0,80 | 110 | 16 | 3,5 | 2,8 | 4,20 | 0050 | ● | ● |
| M6 | 1,00 | 120 | 20 | 4,5 | 3,6 | 5,00 | 0060 | ● | ● |
| M7 | 1,00 | 120 | 20 | 5,6 | 4,5 | 6,00 | 0070 | ○ | ○ |
| M8 | 1,25 | 140 | 25 | 6,3 | 5,0 | 6,80 | 0080 | ● | ● |
| M10 | 1,50 | 160 | 30 | 8,0 | 6,3 | 8,50 | 0100 | ● | ● |
| M12 | 1,75 | 180 | 36 | 9,0 | 7,1 | 10,20 | 0120 | ● | ● |
| M14 | 2,00 | 180 | 40 | 10,0 | 8,0 | 12,00 | 0140 | ● | ○ |
| M16 | 2,00 | 200 | 40 | 12,5 | 10,0 | 14,00 | 0160 | ● | ● |
| M18 | 2,50 | 200 | 50 | 14,0 | 11,2 | 15,50 | 0180 | ● | ○ |
| M20 | 2,50 | 220 | 50 | 16,0 | 12,5 | 17,50 | 0200 | ● | ● |
| M22 | 2,50 | 220 | 50 | 18,0 | 14,0 | 19,50 | 0220 | ● | ○ |
| M24 | 3,00 | 250 | 60 | 18,0 | 14,0 | 21,00 | 0240 | ● | ● |
| M27 | 3,00 | 250 | 60 | 20,0 | 16,0 | 24,00 | 0270 | ● | ○ |
| M30 | 3,50 | 280 | 70 | 22,4 | 18,0 | 26,50 | 0300 | ● | ● |
| M33 | 3,50 | 280 | 70 | 25,0 | 20,0 | 29,50 | 0330 | ● | ● |
| M36 | 4,00 | 320 | 80 | 28,0 | 22,4 | 32,00 | 0360 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 6-15 | 6-15 |
| N | 6-15 | 6-15 |
| S | - | - |



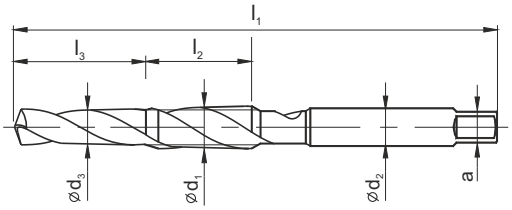
**Przykład zamówienia**

**F1-151001-0040**
**Gwintownik M4-6H NGMf HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

HSS




| | KOMBI |
|---|---|
| | D-R30 |
| | |
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | - |
| Nakrój | D/4P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | KOMBI |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) |
| | | | | | | | | INDEX | G1-051001 |
| M 3 | 0,50 | 56 | 11 | 16 | 3 | 2,4 | 2,5 | 0030 | ● |
| M 4 | 0,70 | 63 | 14 | 18 | 4 | 3,0 | 3,3 | 0040 | ● |
| M 5 | 0,80 | 71 | 18 | 20 | 5 | 3,8 | 4,2 | 0050 | ● |
| M 6 | 1,00 | 80 | 22 | 22 | 6 | 4,9 | 5,0 | 0060 | ● |
| M 8 | 1,25 | 95 | 25 | 26 | 8 | 6,2 | 6,8 | 0080 | ● |
| M 10 | 1,50 | 106 | 31 | 30 | 10 | 8,0 | 8,5 | 0100 | ● |
| M 12 | 1,75 | 115 | 35 | 32 | 12 | 9,0 | 10,2 | 0120 | ● |

| ISO | Vc (m/min) |
|---|---|
| P | 5-15 |
| M | - |
| K | - |
| N | 6-15 |
| S | - |

**Przykład zamówienia**

**G1-051001-0030**
**Gwintownik M3-6H KOMBI D-R30 HSS**

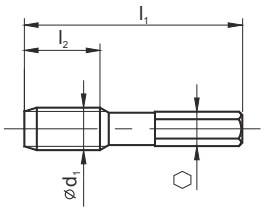
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**BIT**

D

**HSS**



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | - |
| Nakrój | D/4P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | ⬡ | d | Norma | BIT |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) |
| | | | | | | | | INDEX | G1-031001 |
| M3 | 0,50 | 33 | 11 | - | - | 1/4" | 2,5 | 0030 | ● |
| M4 | 0,70 | 35 | 12 | - | - | 1/4" | 3,3 | 0040 | ● |
| M5 | 0,80 | 36 | 15 | - | - | 1/4" | 4,2 | 0050 | ● |
| M6 | 1,00 | 39 | 18 | - | - | 1/4" | 5,0 | 0060 | ● |
| M8 | 1,25 | 40 | 19 | - | - | 1/4" | 6,8 | 0080 | ● |
| M10 | 1,50 | 41 | 21 | - | - | 1/4" | 8,5 | 0100 | ● |

| ISO | Vc (m/min) |
|---|---|
| P | 5-15 |
| M | - |
| K | - |
| N | 6-15 |
| S | - |

**Zestaw BIT na stronie 206**

**Przykład zamówienia**

**G1-031001-0030**
**Gwintownik M3-6H BIT HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

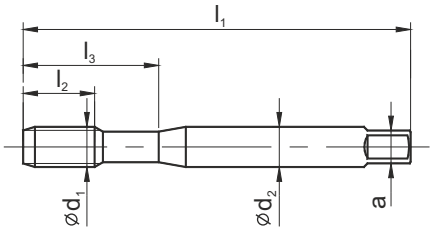
## Gwint metryczny drobnozwojny ISO DIN-13

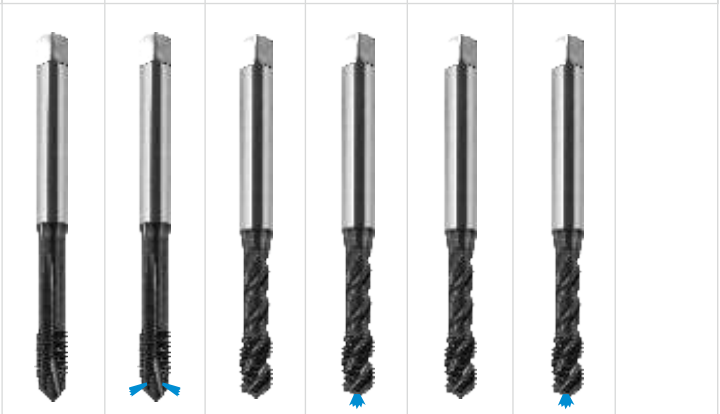
MASTERTAP

HSSE PM

HL

DIN 371



| | B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL |
|---|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL | HL | HL | HL | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P |

| MF Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | | Norma | DIN-371 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C4-118M01 | C4-118M61 | C4-528M01 | C4-528M51 | C4-718M01 | C4-718M51 |
| M3x0,35 | 0,35 | 56 | 5 | 18 | 3,5 | 2,7 | 2,65 | 0031 | ● | - | ● | - | ○ | - |
| M3,5x0,35 | 0,35 | 56 | 5 | 20 | 4,0 | 3,0 | 3,15 | 0036 | ● | - | ● | - | ○ | - |
| M4x0,5 | 0,50 | 63 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ● | - | ● | - | ○ | - |
| M5x0,5 | 0,50 | 70 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ● | ○ | ● | ○ | ○ | ○ |
| M6x0,5 | 0,50 | 80 | 10 | 30 | 6,0 | 4,9 | 5,50 | 0061 | ● | ○ | ● | ○ | ○ | ○ |
| M6x0,75 | 0,75 | 80 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ● | ○ | ● | ○ | ○ | ○ |
| M8x0,75 | 0,75 | 80 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ● | ○ | ● | ○ | ○ | ○ |
| M8x1 | 1,00 | 90 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ● | ● | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ● | ○ | ● | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ● | ○ | ● | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-40 | 5-50 | 5-40 | 5-50 | 5-40 | 5-50 |
| M | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 |
| K | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| N | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| S | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 |

**Przykład zamówienia**

**C4-118M01-0041**
**MasterTAP M4x0,5-6HX DIN-371 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

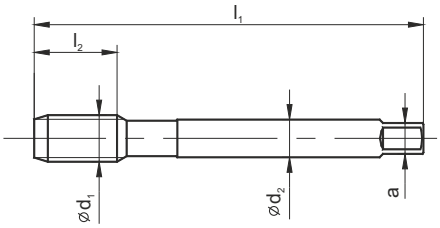
## Gwint metryczny drobnozwojny ISO DIN-13

MASTERTAP

HSSE PM

HL

DIN 374



| | B-HL | B-IKR-HL | C-R45-HL | C-R45-IK-HL | E-R45-HL | E-R45-IK-HL |
|---|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL | HL | HL | HL | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P |

| MF Ć $d_1$ | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-374 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | D4-118M01 | D4-118M61 | D4-528M01 | D4-528M51 | D4-718M01 | D4-718M51 |
| M8x1 | 1,00 | 90 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ● | ● | ● | ● | ● | ○ |
| M10x0,75 | 0,75 | 90 | 10 | - | 7,0 | 5,5 | 9,20 | 0102 | ○ | ○ | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● | ● | ● | ○ |
| M10x1,25 | 1,25 | 100 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ○ | ○ | ○ | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ● | ○ | ● | ○ | ○ | ○ |
| M12x1,25 | 1,25 | 100 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ● | ○ | ● | ○ | ○ | ○ |
| M12x1,5 | 1,50 | 100 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● | ● | ● | ○ |
| M14x1 | 1,00 | 100 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ○ | ○ | ○ | ○ | ○ | ○ |
| M14x1,25 | 1,25 | 100 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ○ | ○ | ○ | ○ | ○ | ○ |
| M14x1,5 | 1,50 | 100 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ● | ● | ● | ○ |
| M15x1 | 1,00 | 100 | 10 | - | 12,0 | 9,0 | 14,00 | 0153 | ○ | ○ | ○ | ○ | ○ | ○ |
| M16x1 | 1,00 | 100 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ○ | ○ | ○ | ○ | ○ | ○ |
| M16x1,5 | 1,50 | 100 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● | ● | ● | ○ |
| M18x1 | 1,00 | 110 | 13 | - | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 17 | - | 14,0 | 11,0 | 16,50 | 0185 | ● | ○ | ● | ○ | ○ | ○ |
| M18x2 | 2,00 | 125 | 20 | - | 14,0 | 11,0 | 16,00 | 0186 | ○ | ○ | ○ | ○ | ○ | ○ |
| M20x1 | 1,00 | 125 | 13 | - | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 17 | - | 16,0 | 12,0 | 18,50 | 0205 | ● | ○ | ● | ○ | ○ | ○ |
| M20x2 | 2,00 | 140 | 20 | - | 16,0 | 12,0 | 18,00 | 0206 | ○ | ○ | ○ | ○ | ○ | ○ |
| M22x1 | 1,00 | 125 | 13 | - | 18,0 | 14,5 | 21,00 | 0223 | ○ | ○ | ○ | ○ | ○ | ○ |
| M22x1,5 | 1,50 | 125 | 17 | - | 18,0 | 14,5 | 20,50 | 0225 | ● | ○ | ● | ○ | ○ | ○ |
| M22x2 | 2,00 | 140 | 20 | - | 18,0 | 14,5 | 20,00 | 0226 | ○ | ○ | ○ | ○ | ○ | ○ |
| M24x1 | 1,00 | 140 | 13 | - | 18,0 | 14,5 | 23,00 | 0243 | ○ | ○ | ○ | ○ | ○ | ○ |
| M24x1,5 | 1,50 | 140 | 20 | - | 18,0 | 14,5 | 22,50 | 0245 | ● | ○ | ● | ○ | ○ | ○ |
| M24x2 | 2,00 | 140 | 20 | - | 18,0 | 14,5 | 22,00 | 0246 | ○ | ○ | ○ | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | 5-40 | 5-50 | 5-40 | 5-50 | 5-40 | 5-50 |
| M | 5-15 | 5-25 | 5-15 | 5-25 | 5-15 | 5-25 |
| K | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| N | 10-30 | 10-50 | 10-30 | 10-50 | 10-30 | 10-50 |
| S | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 | 1-8 |



**Przykład zamówienia**

**D4-118M01-0083**
**MasterTAP M8x1-6HX DIN-374 B HSSE-PM HL**

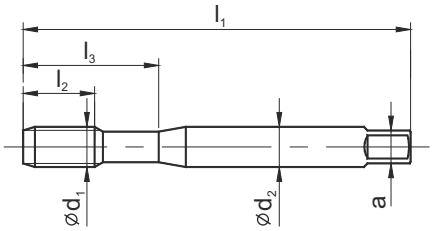
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

TN2

DIN 371




800X

| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-371 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-123X01 | C2-113X01 | C2-513X01 |
| M4x0,5 | 0,50 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ○ | ○ | ○ |
| M5x0,5 | 0,50 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ○ | ○ | ○ |
| M6x0,75 | 0,75 | 80 | 14 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ○ | ○ | ○ |
| M8x0,75 | 0,75 | 80 | 18 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ○ | ○ | ○ |
| M8x1 | 1,00 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ○ | ● | ● |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-35 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 5-25 | 5-25 |
| N | 10-30 | 10-30 | 10-30 |
| S | - | - | - |

**Przykład zamówienia**

**C2-123X01-0083**
**Gwintownik 800X M8x1-6H DIN-371 C HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

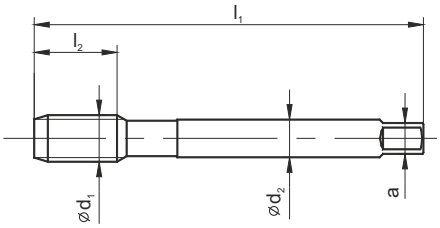
## Gwint metryczny drobnozwojny ISO DIN-13

800X

HSSE

TN2

DIN 374



| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-374 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-123X01 | D2-113X01 | D2-513X01 |
| M8x1 | 1,00 | 90 | 20 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ● | ● | ● |
| M9x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 8,00 | 0093 | ○ | ○ | ○ |
| M10x0,75 | 0,75 | 90 | 18 | 10 | - | 7,0 | 5,5 | 9,20 | 0102 | ● | ● | ● |
| M10x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ● | ● | ● |
| M11x1 | 1,00 | 90 | 20 | 10 | - | 8,0 | 6,2 | 10,00 | 0113 | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 20 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ● | ● | ● |
| M12x1,25 | 1,25 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ● | ● | ● |
| M12x1,5 | 1,50 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● |
| M14x1 | 1,00 | 100 | 20 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ● | ● | ● |
| M14x1,25 | 1,25 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ● | ● | ● |
| M14x1,5 | 1,50 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ● |
| M15x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 14,00 | 0153 | ○ | ○ | ○ |
| M16x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ● | ● | ● |
| M16x1,5 | 1,50 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● |
| M18x1 | 1,00 | 110 | 24 | 13 | - | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 24 | 17 | - | 14,0 | 11,0 | 16,50 | 0185 | ● | ● | ● |
| M18x2 | 2,00 | 125 | 27 | 20 | - | 14,0 | 11,0 | 16,00 | 0186 | ● | ● | ● |
| M20x1 | 1,00 | 125 | 24 | 13 | - | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 24 | 17 | - | 16,0 | 12,0 | 18,50 | 0205 | ● | ● | ● |
| M20x2 | 2,00 | 140 | 27 | 20 | - | 16,0 | 12,0 | 18,00 | 0206 | ● | ● | ● |
| M22x1 | 1,00 | 125 | 24 | 13 | - | 18,0 | 14,5 | 21,00 | 0223 | ○ | ○ | ○ |
| M22x1,5 | 1,50 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,50 | 0225 | ● | ● | ● |
| M22x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 20,00 | 0226 | ● | ● | ● |
| M24x1 | 1,00 | 140 | 27 | 13 | - | 18,0 | 14,5 | 23,00 | 0243 | ○ | ○ | ○ |
| M24x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,50 | 0245 | ● | ● | ● |
| M24x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,00 | 0246 | ● | ● | ● |
| M25x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 23,50 | 0253 | ○ | ○ | ○ |
| M26x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 24,50 | 0265 | ○ | ○ | ○ |
| M27x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,50 | 0275 | ● | ● | ● |
| M27x2 | 2,00 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,00 | 0276 | ● | ● | ● |
| M28x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,50 | 0285 | ○ | ○ | ○ |

● **Dostępne z magazynu**

○ **Na zapytanie**

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-35 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 5-25 | 5-25 |
| N | 10-30 | 10-30 | 10-30 |
| S | - | - | - |

**Przykład zamówienia**

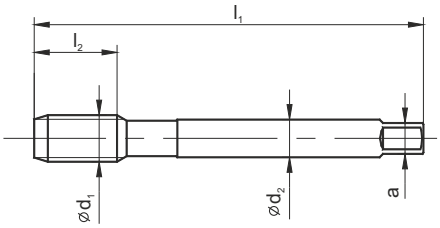
**D2-123X01-0083**
**Gwintownik 800X M8x1-6H DIN-374 C HSSE TN2**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

TN2

DIN 374




800X

| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-374 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-123X01 | D2-113X01 | D2-513X01 |
| M28x2 | 2,0 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,00 | 0286 | ○ | ○ | ○ |
| M30x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,50 | 0305 | ● | ● | ● |
| M30x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,00 | 0306 | ● | ● | ● |
| M32x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,50 | 0325 | ○ | ○ | ○ |
| M32x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,00 | 0326 | ○ | ○ | ○ |
| M33x1,5 | 1,5 | 160 | 30 | 22 | - | 25,0 | 20,0 | 31,50 | 0335 | ○ | ○ | ○ |
| M33x2 | 2,0 | 160 | 30 | 24 | - | 25,0 | 20,0 | 31,00 | 0336 | ○ | ○ | ○ |
| M34x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 32,50 | 0345 | ○ | ○ | ○ |
| M35x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 33,50 | 0355 | ○ | ○ | ○ |
| M36x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 34,50 | 0365 | ○ | ○ | ○ |
| M36x2 | 2,0 | 170 | 30 | 24 | - | 28,0 | 22,0 | 34,00 | 0366 | ○ | ○ | ○ |
| M36x3 | 3,0 | 200 | 50 | 30 | - | 28,0 | 22,0 | 33,00 | 0367 | ○ | ○ | ○ |
| M38x1,5 | 1,5 | 170 | 30 | 24 | - | 28,0 | 22,0 | 36,50 | 0385 | ○ | ○ | ○ |
| M39x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 37,50 | 0395 | ○ | ○ | ○ |
| M39x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 37,00 | 0396 | ○ | ○ | ○ |
| M39x3 | 3,0 | 200 | 50 | 30 | - | 32,0 | 24,0 | 36,00 | 0397 | ○ | ○ | ○ |
| M40x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 38,50 | 0405 | ○ | ○ | ○ |
| M40x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 38,00 | 0406 | ○ | ○ | ○ |
| M42x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 40,50 | 0425 | ○ | ○ | ○ |
| M42x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 40,00 | 0426 | ○ | ○ | ○ |
| M42x3 | 3,0 | 200 | 50 | 30 | - | 32,0 | 24,0 | 39,00 | 0427 | ○ | ○ | ○ |
| M45x1,5 | 1,5 | 180 | 30 | 27 | - | 36,0 | 29,0 | 43,50 | 0455 | ○ | ○ | ○ |
| M45x2 | 2,0 | 180 | 30 | 27 | - | 36,0 | 29,0 | 43,00 | 0456 | ○ | ○ | ○ |
| M45x3 | 3,0 | 200 | 50 | 30 | - | 36,0 | 29,0 | 42,00 | 0457 | ○ | ○ | ○ |
| M48x1,5 | 1,5 | 190 | 30 | 27 | - | 36,0 | 29,0 | 46,50 | 0485 | ○ | ○ | ○ |
| M48x2 | 2,0 | 190 | 30 | 27 | - | 36,0 | 29,0 | 46,00 | 0486 | ○ | ○ | ○ |
| M48x3 | 3,0 | 225 | 50 | 33 | - | 36,0 | 29,0 | 45,00 | 0487 | ○ | ○ | ○ |
| M50x1,5 | 1,5 | 190 | 30 | 27 | - | 36,0 | 29,0 | 48,50 | 0505 | ○ | ○ | ○ |
| M50x2 | 2,0 | 190 | 30 | 33 | - | 36,0 | 29,0 | 48,00 | 0506 | ○ | ○ | ○ |
| M52x1,5 | 1,5 | 190 | 32 | 27 | - | 40,0 | 32,0 | 50,50 | 0525 | ○ | ○ | ○ |
| M52x2 | 2,0 | 190 | 32 | 33 | - | 40,0 | 32,0 | 50,00 | 0526 | ○ | ○ | ○ |
| M52x3 | 3,0 | 225 | 50 | 33 | - | 40,0 | 32,0 | 49,00 | 0527 | ○ | ○ | ○ |

● **Dostępne z magazynu**
○ **Na zapytanie**

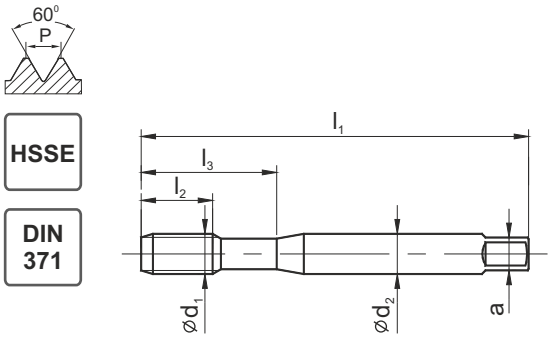
| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-35 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 5-25 | 5-25 |
| N | 10-30 | 10-30 | 10-30 |
| S | - | - | - |

**Przykład zamówienia**

**D2-123X01-0305**
**Gwintownik 800X M30x1,5-6H DIN-374 C HSSE TN2**

## Gwint metryczny drobnozwojny ISO DIN-13

800



| | C | B | C-R40 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ć $d_1$ | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-371 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-121101 | C2-111101 | C2-511101 |
| M3x0,35 | 0,35 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,65 | 0031 | ● | ● | ● |
| M3,5x0,35 | 0,35 | 56 | 10 | 5 | 20 | 4,0 | 3,0 | 3,15 | 0036 | ● | ● | ● |
| M4x0,5 | 0,50 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ● | ● | ● |
| M5x0,5 | 0,50 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ● | ● | ● |
| M6x0,75 | 0,75 | 80 | 14 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ● | ● | ● |
| M8x0,75 | 0,75 | 80 | 18 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ● | ● | ● |
| M8x1 | 1,00 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ● | ● | ● |
| M10x1 | 1,00 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ● | ● | ● |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 |
| M | - | - | - |
| K | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 |
| S | - | - | - |

**Przykład zamówienia**

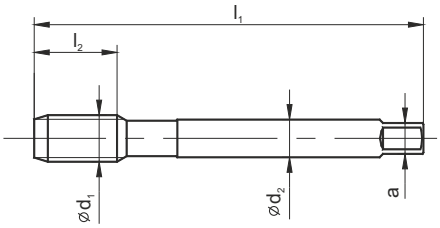
**C2-121101-0041**
**Gwintownik 800 M4x0,5-6H DIN-371 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

DIN 374




| 800 | | |
|---|---|---|
| C | B | C-R40 |
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 R45 | l3 | Ćd2 | a | | Norma | DIN-374 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-121101 | D2-111101 | D2-511101 |
| M8x1 | 1,00 | 90 | 20 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ● | ● | ● |
| M9x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 8,00 | 0093 | ○ | ○ | ○ |
| M10x0,75 | 0,75 | 90 | 18 | 10 | - | 7,0 | 5,5 | 9,20 | 0102 | ● | ● | ● |
| M10x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ● | ● | ● |
| M11x1 | 1,00 | 90 | 20 | 10 | - | 8,0 | 6,2 | 10,00 | 0113 | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 20 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ● | ● | ● |
| M12x1,25 | 1,25 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ● | ● | ● |
| M12x1,5 | 1,50 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● |
| M14x1 | 1,00 | 100 | 20 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ● | ● | ● |
| M14x1,25 | 1,25 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ● | ● | ● |
| M14x1,5 | 1,50 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ● |
| M15x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 14,00 | 0153 | ○ | ○ | ○ |
| M16x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ● | ● | ● |
| M16x1,5 | 1,50 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● |
| M18x1 | 1,00 | 110 | 24 | 13 | - | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 24 | 17 | - | 14,0 | 11,0 | 16,50 | 0185 | ● | ● | ● |
| M18x2 | 2,00 | 125 | 27 | 20 | - | 14,0 | 11,0 | 16,00 | 0186 | ● | ● | ● |
| M20x1 | 1,00 | 125 | 24 | 13 | - | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 24 | 17 | - | 16,0 | 12,0 | 18,50 | 0205 | ● | ● | ● |
| M20x2 | 2,00 | 140 | 27 | 20 | - | 16,0 | 12,0 | 18,00 | 0206 | ● | ● | ● |
| M22x1 | 1,00 | 125 | 24 | 13 | - | 18,0 | 14,5 | 21,00 | 0223 | ○ | ○ | ○ |
| M22x1,5 | 1,50 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,50 | 0225 | ● | ● | ● |
| M22x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 20,00 | 0226 | ● | ● | ● |
| M24x1 | 1,00 | 140 | 27 | 13 | - | 18,0 | 14,5 | 23,00 | 0243 | ○ | ○ | ○ |
| M24x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,50 | 0245 | ● | ● | ● |
| M24x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,00 | 0246 | ● | ● | ● |
| M25x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 23,50 | 0255 | ○ | ○ | ○ |
| M26x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 24,50 | 0265 | ○ | ○ | ○ |
| M27x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,50 | 0275 | ● | ● | ● |
| M27x2 | 2,00 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,00 | 0276 | ● | ● | ● |
| M28x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,50 | 0285 | ○ | ○ | ○ |

● **Dostępne z magazynu**
○ **Na zapytanie**

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 |
| M | - | - | - |
| K | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 |
| S | - | - | - |

**Przykład zamówienia**

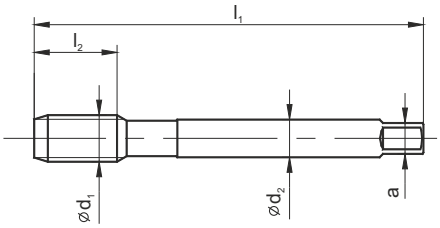
**D2-121101-0083**
**Gwintownik 800 M8x1-6H DIN-374 C HSSE**

## Gwint metryczny drobnozwojny ISO DIN-13

800

HSSE

DIN 374



| | C | B | C-R40 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-374 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-121101 | D2-111101 | D2-511101 |
| M28x2 | 2,0 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,00 | 0286 | ○ | ○ | ○ |
| M30x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,50 | 0305 | ● | ● | ● |
| M30x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,00 | 0306 | ● | ● | ● |
| M32x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,50 | 0325 | ○ | ○ | ○ |
| M32x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,00 | 0326 | ○ | ○ | ○ |
| M33x1,5 | 1,5 | 160 | 30 | 22 | - | 25,0 | 20,0 | 31,50 | 0335 | ● | ● | ● |
| M33x2 | 2,0 | 160 | 30 | 24 | - | 25,0 | 20,0 | 31,00 | 0336 | ● | ● | ● |
| M34x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 32,50 | 0345 | ○ | ○ | ○ |
| M35x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 33,50 | 0355 | ○ | ○ | ○ |
| M36x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 34,50 | 0365 | ● | ● | ● |
| M36x2 | 2,0 | 170 | 30 | 24 | - | 28,0 | 22,0 | 34,00 | 0366 | ● | ● | ● |
| M36x3 | 3,0 | 200 | 50 | 30 | - | 28,0 | 22,0 | 33,00 | 0367 | ○ | ○ | ○ |
| M38x1,5 | 1,5 | 170 | 30 | 24 | - | 28,0 | 22,0 | 36,50 | 0385 | ○ | ○ | ○ |
| M39x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 37,50 | 0395 | ○ | ○ | ○ |
| M39x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 37,00 | 0396 | ○ | ○ | ○ |
| M39x3 | 3,0 | 200 | 50 | 30 | - | 32,0 | 24,0 | 36,00 | 0397 | ○ | ○ | ○ |
| M40x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 38,50 | 0405 | ○ | ○ | ○ |
| M40x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 38,00 | 0406 | ○ | ○ | ○ |
| M42x1,5 | 1,5 | 170 | 30 | 25 | - | 32,0 | 24,0 | 40,50 | 0425 | ○ | ○ | ○ |
| M42x2 | 2,0 | 170 | 30 | 25 | - | 32,0 | 24,0 | 40,00 | 0426 | ○ | ○ | ○ |
| M42x3 | 3,0 | 200 | 50 | 30 | - | 32,0 | 24,0 | 39,00 | 0427 | ○ | ○ | ○ |
| M45x1,5 | 1,5 | 180 | 30 | 27 | - | 36,0 | 29,0 | 43,50 | 0455 | ○ | ○ | ○ |
| M45x2 | 2,0 | 180 | 30 | 27 | - | 36,0 | 29,0 | 43,00 | 0456 | ○ | ○ | ○ |
| M45x3 | 3,0 | 200 | 50 | 30 | - | 36,0 | 29,0 | 42,00 | 0457 | ○ | ○ | ○ |
| M48x1,5 | 1,5 | 190 | 30 | 27 | - | 36,0 | 29,0 | 46,50 | 0485 | ○ | ○ | ○ |
| M48x2 | 2,0 | 190 | 30 | 27 | - | 36,0 | 29,0 | 46,00 | 0486 | ○ | ○ | ○ |
| M48x3 | 3,0 | 225 | 50 | 33 | - | 36,0 | 29,0 | 45,00 | 0487 | ○ | ○ | ○ |
| M50x1,5 | 1,5 | 190 | 30 | 27 | - | 36,0 | 29,0 | 48,50 | 0505 | ○ | ○ | ○ |
| M50x2 | 2,0 | 190 | 30 | 33 | - | 36,0 | 29,0 | 48,00 | 0506 | ○ | ○ | ○ |
| M52x1,5 | 1,5 | 190 | 32 | 27 | - | 40,0 | 32,0 | 50,50 | 0525 | ○ | ○ | ○ |
| M52x2 | 2,0 | 190 | 32 | 33 | - | 40,0 | 32,0 | 50,00 | 0526 | ○ | ○ | ○ |
| M52x3 | 3,0 | 225 | 50 | 33 | - | 40,0 | 32,0 | 49,00 | 0527 | ○ | ○ | ○ |

● **Dostępne z magazynu**

○ **Na zapytanie**

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 |
| M | - | - | - |
| K | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 |
| S | - | - | - |

**Przykład zamówienia**

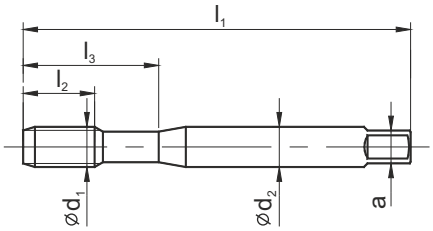
**D2-121101-0286**
**Gwintownik 800 M28x2-6H DIN-374 C HSSE**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE PM

TC

DIN 371




| | FAN-1200 | | 1400 | | |
|---|---|---|---|---|---|
| | B-TC | C-R40-TC | C-TC | B-TC | C-R15-TC |
| | | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d | < 1,5d | < 2,5d | < 1,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | C4-115001 | C4-565001 | C4-125901 | C4-115901 | C4-505901 |
| M4x0,5 | 0,50 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ○ | ○ | ○ | ○ | ○ |
| M5x0,5 | 0,50 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ○ | ○ | ○ | ○ | ○ |
| M6x0,75 | 0,75 | 80 | 14 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ○ | ○ | ○ | ○ | ○ |
| M8x0,75 | 0,75 | 80 | 18 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ○ | ○ | ○ | ○ | ○ |
| M8x1 | 1,00 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ● | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ○ | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ○ | ○ | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | |
|---|---|---|---|---|---|
| P | 5-35 | 5-35 | 1-20 | 1-20 | 1-20 |
| M | 5-15 | 5-15 | 1-10 | 1-10 | 1-10 |
| K | 5-25 | 5-25 | 1-20 | 1-20 | 1-20 |
| N | 10-30 | 10-30 | 10-20 | 10-20 | 10-20 |
| S | - | - | - | - | - |

**Przykład zamówienia**

**C4-115001-0062**
**Gwintownik FAN-1200 M6x0,75-6H DIN-371 B HSSE-PM TC**

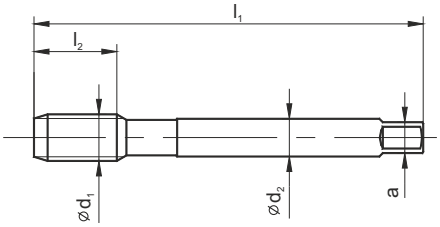
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE PM

TC

DIN 374




| | FAN-1200 | | 1400 | | |
|---|---|---|---|---|---|
| | B-TC | C-R40-TC | C-TC | B-TC | C-R15-TC |
| | | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d | < 1,5d | < 2,5d | < 1,5d |
| Rodzaj materiału | PM/HSSE | PM/HSSE | PM/HSSE | PM/HSSE | PM/HSSE |
| Rodzaj powłoki | TC | TC | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P | B / 4-5P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-374 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | D4-115001 | D4-565001 | D4-125901 | D4-115901 | D4-505901 |
| M8x1 | 1,00 | 90 | 20 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ● | ● | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 18 | 10 | - | 7,0 | 5,5 | 9,20 | 0102 | ○ | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ○ | ○ | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 20 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ● | ● | ● | ● | ● |
| M12x1,25 | 1,25 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ● | ● | ● | ● | ● |
| M12x1,5 | 1,50 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● | ● | ● |
| M14x1 | 1,00 | 100 | 20 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ○ | ○ | ○ | ○ | ● |
| M14x1,25 | 1,25 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ○ | ○ | ○ | ○ | ○ |
| M14x1,5 | 1,50 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ● | ● | ● |
| M16x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ● | ● | ● | ● | ● |
| M16x1,5 | 1,50 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● | ● | ● |
| M18x1 | 1,00 | 110 | 24 | 13 | - | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 24 | 17 | - | 14,0 | 11,0 | 16,50 | 0185 | ● | ● | ● | ● | ● |
| M18x2 | 2,00 | 125 | 32 | 27 | - | 14,0 | 11,0 | 16,00 | 0186 | ● | ○ | ○ | ○ | ○ |
| M20x1 | 1,00 | 125 | 24 | 13 | - | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 24 | 17 | - | 16,0 | 12,0 | 18,50 | 0205 | ● | ● | ● | ● | ● |
| M20x2 | 2,00 | 140 | 32 | 27 | - | 16,0 | 12,0 | 18,00 | 0206 | ○ | ○ | ○ | ○ | ○ |
| M22x1 | 1,00 | 125 | 24 | 13 | - | 18,0 | 14,5 | 21,00 | 0223 | ○ | ○ | ○ | ○ | ○ |
| M22x1,5 | 1,50 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,50 | 0225 | ○ | ○ | ○ | ○ | ○ |
| M22x2 | 2,00 | 140 | 32 | 27 | - | 18,0 | 14,5 | 20,00 | 0226 | ○ | ○ | ○ | ○ | ○ |
| M24x1 | 1,00 | 140 | 27 | 13 | - | 18,0 | 14,5 | 23,00 | 0243 | ○ | ○ | ○ | ○ | ○ |
| M24x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,50 | 0245 | ○ | ○ | ○ | ○ | ○ |
| M24x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,00 | 0246 | ○ | ○ | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | |
|---|---|---|---|---|---|
| P | 5-35 | 5-35 | 1-20 | 1-20 | 1-20 |
| M | 5-15 | 5-15 | 1-10 | 1-10 | 1-10 |
| K | 5-25 | 5-25 | 1-20 | 1-20 | 1-20 |
| N | 10-30 | 10-30 | 10-20 | 10-20 | 10-20 |
| S | - | - | - | - | - |

**Przykład zamówienia**

**D4-115001-0083**
**Gwintownik FAN-1200 M8x1-6H DIN-374 B HSSE-PM TC**

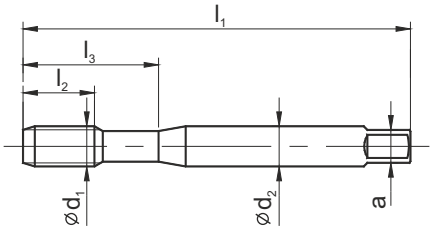
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

HL

DIN 371




### INOX

| | B | B-HL | C-R40 | C-R40-HL |
|---|---|---|---|---|
| | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | HL | | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-371 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | C2-111801 | C2-118801 | C2-511801 | C2-518801 |
| M4x0,5 | 0,50 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ● | ● | ● | ● |
| M5x0,5 | 0,50 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ● | ● | ● | ● |
| M6x0,75 | 0,75 | 80 | 14 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ● | ● | ● | ● |
| M8x0,75 | 0,75 | 80 | 18 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ● | ● | ● | ● |
| M8x1 | 1,00 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ● | ● | ● |
| M10x0,75 | 0,75 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ● | ● | ● | ● |
| M10x1 | 1,00 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ● | ● | ● | ● |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | 5-15 | 5-15 | 5-15 | 5-15 |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |

**Przykład zamówienia**

**C2-111801-0041**
**Gwintownik INOX M4x0,5-6H DIN-371 B HSSE**

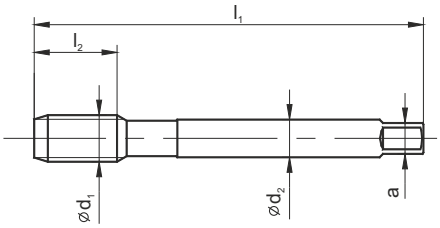
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

HL

DIN 374




### INOX

| | B | B-HL | C-R40 | C-R40-HL |
|---|---|---|---|---|
| | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | HL | | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d1 | Norma | DIN-374 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-111801 | D2-118801 | D2-511801 | D2-518801 |
| M8x1 | 1,00 | 90 | 20 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ● | ○ | ● | ○ |
| M10x0,75 | 0,75 | 90 | 18 | 10 | - | 7,0 | 5,5 | 9,20 | 0102 | ● | ○ | ● | ○ |
| M10x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ● | ○ | ● | ○ |
| M12x1 | 1,00 | 100 | 20 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ● | ○ | ● | ○ |
| M12x1,25 | 1,25 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ● | ○ | ● | ○ |
| M12x1,5 | 1,50 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● | ● |
| M14x1 | 1,00 | 100 | 20 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ○ | ○ | ○ | ○ |
| M14x1,25 | 1,25 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ○ | ○ | ○ | ○ |
| M14x1,5 | 1,50 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ○ | ● | ○ |
| M15x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 14,00 | 0153 | ○ | ○ | ○ | ○ |
| M16x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ● | ○ | ● | ○ |
| M16x1,5 | 1,50 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● | ● |
| M18x1 | 1,00 | 110 | 24 | 13 | - | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 24 | 17 | - | 14,0 | 11,0 | 16,50 | 0185 | ● | ○ | ● | ○ |
| M18x2 | 2,00 | 125 | 27 | 20 | - | 14,0 | 11,0 | 16,00 | 0186 | ○ | ○ | ○ | ○ |
| M20x1 | 1,00 | 125 | 24 | 13 | - | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 24 | 17 | - | 16,0 | 12,0 | 18,50 | 0205 | ● | ● | ● | ● |
| M20x2 | 2,00 | 140 | 27 | 20 | - | 16,0 | 12,0 | 18,00 | 0206 | ○ | ○ | ○ | ○ |
| M22x1 | 1,00 | 125 | 24 | 13 | - | 18,0 | 14,5 | 21,00 | 0223 | ○ | ○ | ○ | ○ |
| M22x1,5 | 1,50 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,50 | 0225 | ● | ○ | ● | ○ |
| M22x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 20,00 | 0226 | ○ | ○ | ○ | ○ |
| M24x1 | 1,00 | 140 | 27 | 13 | - | 18,0 | 14,5 | 23,00 | 0243 | ○ | ○ | ○ | ○ |
| M24x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,50 | 0245 | ○ | ○ | ○ | ○ |
| M24x2 | 2,00 | 140 | 27 | 20 | - | 18,0 | 14,5 | 22,00 | 0246 | ○ | ○ | ○ | ○ |
| M26x1,5 | 1,50 | 140 | 27 | 20 | - | 18,0 | 14,5 | 24,50 | 0265 | ○ | ○ | ○ | ○ |
| M27x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,50 | 0275 | ○ | ○ | ○ | ○ |
| M27x2 | 2,00 | 140 | 27 | 20 | - | 20,0 | 16,0 | 25,00 | 0276 | ○ | ○ | ○ | ○ |
| M28x1,5 | 1,50 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,50 | 0285 | ○ | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | 5-15 | 5-15 | 5-15 | 5-15 |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |

● **Dostępne z magazynu**

○ **Na zapytanie**

**Przykład zamówienia**

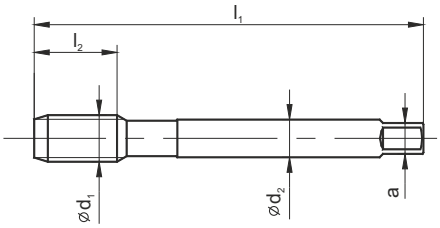
**D2-118801-0083**
**Gwintownik INOX M8x1-6H DIN-374 B HSSE HL**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

HL

DIN 374




| | INOX | | | |
|---|---|---|---|---|
| | B | B-HL | C-R40 | C-R40-HL |
| | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | HL | | HL |
| Nakrój | B / 4-5P | B / 4-5P | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-374 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | | INDEX | D2-111801 | D2-118801 | D2-511801 | D2-518801 |
| M28x2 | 2,0 | 140 | 27 | 20 | - | 20,0 | 16,0 | 26,00 | 0286 | o | o | o | o |
| M30x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,50 | 0305 | o | o | o | o |
| M30x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 28,00 | 0306 | o | o | o | o |
| M32x1,5 | 1,5 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,50 | 0325 | o | o | o | o |
| M32x2 | 2,0 | 150 | 27 | 22 | - | 22,0 | 18,0 | 30,00 | 0326 | o | o | o | o |
| M33x1,5 | 1,5 | 160 | 30 | 22 | - | 25,0 | 20,0 | 31,50 | 0335 | o | o | o | o |
| M33x2 | 2,0 | 160 | 30 | 24 | - | 25,0 | 20,0 | 31,00 | 0336 | o | o | o | o |
| M34x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 32,50 | 0345 | o | o | o | o |
| M35x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 33,50 | 0355 | o | o | o | o |
| M36x1,5 | 1,5 | 170 | 30 | 22 | - | 28,0 | 22,0 | 34,50 | 0365 | o | o | o | o |
| M36x2 | 2,0 | 170 | 30 | 24 | - | 28,0 | 22,0 | 34,00 | 0366 | o | o | o | o |
| M36x3 | 3,0 | 200 | 50 | 30 | - | 28,0 | 22,0 | 33,00 | 0367 | o | o | o | o |

| ISO | Vc (m/min) | | | |
|---|---|---|---|---|
| P | - | - | - | - |
| M | 5-15 | 5-15 | 5-15 | 5-15 |
| K | - | - | - | - |
| N | - | - | - | - |
| S | - | - | - | - |

**Przykład zamówienia**

**D2-118801-0325**
**Gwintownik INOX M32x1,5-6H DIN-374 B HSSE HL**

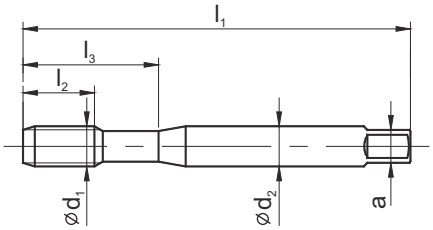
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE PM

TC

DIN 371




| | GG | | | | | GAL | |
|---|---|---|---|---|---|---|---|
| | C-TC | C-IK-TC | E-TC | E-IK-TC | E-IKR-TC | C-R15-TC | E-R15-IK-TC |
| | | | | | | | |
| Rodzaj materiału obrabianego | P M **K** / N S H | P M **K** / N S H | P M **K** / N S H | P M **K** / N S H | P M **K** / N S H | P M K / **N** S H | P M K / **N** S H |
| Typ otworu | < 2d | < 2,5d | < 2d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC | TC | TC | TC | TC |
| Nakrój | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P | E / 1,5-2P | C / 2-3P | E / 1,5-2P |

| MF Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C2-125501 | C4-125551 | C2-145501 | C4-145551 | C4-145561 | C2-505601 | C4-655601 |
| M8x1 | 1,00 | 90 | 20 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ● | ○ | ● | ○ | ○ | ● | ○ |
| M10x0,75 | 0,75 | 90 | 20 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ○ | ● | ○ | ○ | ● | ○ |
| M10x1,25 | 1,25 | 100 | 20 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ○ | ○ | ● | ○ | ○ | ● | ○ |

| ISO | Vc (m/min) | | | | | | |
|---|---|---|---|---|---|---|---|
| P | - | - | - | - | - | - | - |
| M | - | - | - | - | - | - | - |
| K | 1-60 | 1-60 | 1-60 | 1-60 | 1-60 | - | - |
| N | - | - | - | - | - | 10-30 | 10-30 |
| S | - | - | - | - | - | - | - |

**Przykład zamówienia**

**C2-125501-0083**
**Gwintownik GG M8x1-6HX DIN-371 C HSSE-PM TC**

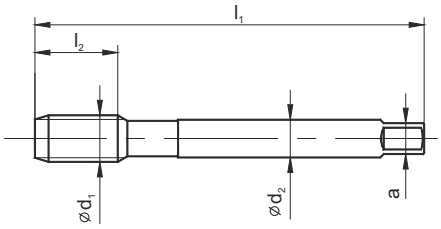
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE PM

TC

DIN 374




| | GG | | | | | GAL | |
|---|---|---|---|---|---|---|---|
| | C-TC | C-IK-TC | E-TC | E-IK-TC | E-IKR-TC | C-R15-TC | E-R15-IK-TC |
| | | | | | | | |
| Rodzaj materiału obrabianego | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M **K** N S H | P M K **N** S H | P M K **N** S H |
| Typ otworu | < 2d | < 2,5d | < 2d | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC | TC | TC | TC | TC |
| Nakrój | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P | E / 1,5-2P | C / 2-3P | E / 1,5-2P |

| MF Ćd1 | P | l1 | l2 | Ćd2 | a | d | Norma | DIN-374 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | INDEX | D2-125501 | D4-125551 | D2-145501 | D4-145551 | D4-145561 | D2-505601 | D4-655651 |
| M8x1 | 1,00 | 90 | 20 | 6,0 | 4,9 | 7,00 | 0083 | ● | ○ | ● | ○ | ○ | ● | ○ |
| M10x0,75 | 0,75 | 90 | 18 | 7,0 | 5,5 | 9,2 | 0102 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 7,0 | 5,5 | 9,00 | 0103 | ● | ● | ● | ○ | ○ | ● | ● |
| M10x1,25 | 1,25 | 100 | 20 | 7,0 | 5,5 | 8,80 | 0104 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 20 | 9,0 | 7,0 | 11,00 | 0123 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M12x1,25 | 1,25 | 100 | 20 | 9,0 | 7,0 | 10,80 | 0124 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M12x1,5 | 1,50 | 100 | 20 | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ● | ○ | ○ | ● | ● |
| M14x1 | 1,00 | 100 | 20 | 11,0 | 9,0 | 13,00 | 0143 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M14x1,25 | 1,25 | 100 | 20 | 11,0 | 9,0 | 12,80 | 0144 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M14x1,5 | 1,50 | 100 | 20 | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ● | ○ | ○ | ● | ● |
| M16x1 | 1,00 | 100 | 20 | 12,0 | 9,0 | 15,00 | 0163 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M16x1,5 | 1,50 | 100 | 20 | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ● | ○ | ○ | ● | ● |
| M18x1 | 1,00 | 110 | 24 | 14,0 | 11,0 | 17,00 | 0183 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M18x1,5 | 1,50 | 110 | 24 | 14,0 | 11,0 | 16,50 | 0185 | ● | ○ | ● | ○ | ○ | ○ | ○ |
| M18x2 | 2,00 | 125 | 27 | 14,0 | 11,0 | 16,00 | 0186 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M20x1 | 1,00 | 125 | 24 | 16,0 | 12,0 | 19,00 | 0203 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M20x1,5 | 1,50 | 125 | 24 | 16,0 | 12,0 | 18,50 | 0205 | ● | ○ | ○ | ○ | ○ | ○ | ○ |
| M20x2 | 2,00 | 140 | 27 | 16,0 | 12,0 | 18,00 | 0206 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| ISO | Vc (m/min) | | | | | | |
|---|---|---|---|---|---|---|---|
| P | - | - | - | - | - | - | - |
| M | - | - | - | - | - | - | - |
| K | 1-60 | 1-60 | 1-60 | 1-60 | 1-60 | - | - |
| N | - | - | - | - | - | 10-30 | 10-30 |
| S | - | - | - | - | - | - | - |

**Przykład zamówienia**

**D2-125501-0103**
**Gwintownik GG M10x1-6HX DIN-374 C HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

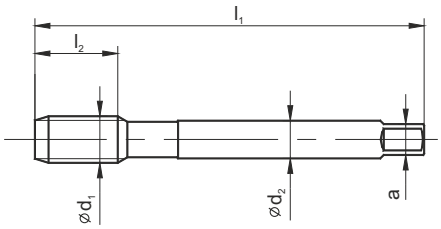
S-NC

| | B-TC | C-R45-TC | C-R45-IK-TC |
|---|---|---|---|

HSSE PM

TC

DIN 374



| | B-TC | C-R45-TC | C-R45-IK-TC |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | PM/HSSE | PM/HSSE | PM/HSSE |
| Rodzaj powłoki | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | DIN-374 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | D4-115301 | D4-525301 | D4-525351 |
| M8x1 | 1,00 | 90 | 20 | 10 | - | 6,0 | 4,9 | 7,00 | 0083 | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 10 | - | 7,0 | 5,5 | 9,00 | 0103 | ○ | ○ | ○ |
| M10x1,25 | 1,25 | 100 | 20 | 15 | - | 7,0 | 5,5 | 8,80 | 0104 | ○ | ○ | ○ |
| M11x1 | 1,00 | 90 | 20 | 10 | - | 8,0 | 6,2 | 10,00 | 0113 | ○ | ○ | ○ |
| M12x1 | 1,00 | 100 | 20 | 10 | - | 9,0 | 7,0 | 11,00 | 0123 | ○ | ○ | ○ |
| M12x1,25 | 1,25 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,80 | 0124 | ○ | ○ | ○ |
| M12x1,5 | 1,50 | 100 | 20 | 15 | - | 9,0 | 7,0 | 10,50 | 0125 | ● | ● | ○ |
| M14x1 | 1,00 | 100 | 20 | 10 | - | 11,0 | 9,0 | 13,00 | 0143 | ○ | ○ | ○ |
| M14x1,25 | 1,25 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,80 | 0144 | ○ | ○ | ○ |
| M14x1,5 | 1,50 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,50 | 0145 | ● | ● | ○ |
| M15x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 14,00 | 0153 | ○ | ○ | ○ |
| M16x1 | 1,00 | 100 | 20 | 10 | - | 12,0 | 9,0 | 15,00 | 0163 | ○ | ○ | ○ |
| M16x1,5 | 1,50 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 0165 | ● | ● | ○ |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-50 | 5-50 | 5-60 |
| M | 5-20 | 5-20 | 5-30 |
| K | 5-40 | 5-40 | 5-60 |
| N | 5-40 | 5-40 | 5-60 |
| S | 1-8 | 1-8 | 1-8 |

**Przykład zamówienia**

**D4-115301-0144**
**Gwintownik S-NC M14x1,25-6HX DIN-374 B HSSE-PM TC**

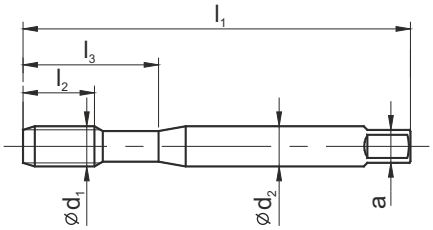
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE PM

TC

DIN 371




S-NC

| | B-TC | C-R45-TC | C-R45-IK-TC |
|---|---|---|---|
| | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC | TC |
| Nakrój | B / 4-5P | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | DIN-371 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 6HX | 6HX | 6HX |
| | | | | | | | | | INDEX | C4-115301 | C4-525301 | C4-525351 |
| M4x0,5 | 0,50 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 0041 | ○ | ○ | ○ |
| M5x0,5 | 0,50 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,50 | 0051 | ○ | ○ | ○ |
| M6x0,75 | 0,75 | 80 | 14 | 10 | 30 | 6,0 | 4,9 | 5,20 | 0062 | ○ | ○ | ○ |
| M8x0,75 | 0,75 | 80 | 18 | 10 | 30 | 8,0 | 6,2 | 7,20 | 0082 | ● | ● | ○ |
| M8x1 | 1,00 | 90 | 20 | 13 | 35 | 8,0 | 6,2 | 7,00 | 0083 | ○ | ○ | ○ |
| M10x0,75 | 0,75 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,20 | 0102 | ○ | ○ | ○ |
| M10x1 | 1,00 | 90 | 20 | 13 | 35 | 10,0 | 8,0 | 9,00 | 0103 | ● | ● | ○ |
| M10x1,25 | 1,25 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,80 | 0104 | ○ | ○ | ○ |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-50 | 5-50 | 5-60 |
| M | 5-20 | 5-20 | 5-30 |
| K | 5-40 | 5-40 | 5-60 |
| N | 5-40 | 5-40 | 5-60 |
| S | 1-8 | 1-8 | 1-8 |

**Przykład zamówienia**

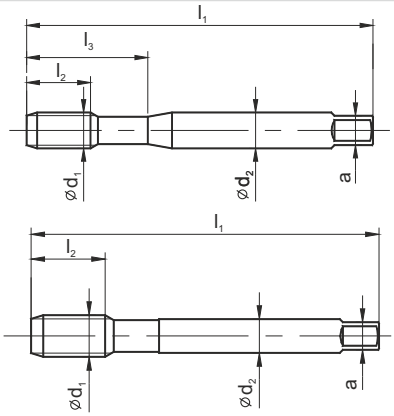
**C4-115301-0041**
**Gwintownik S-NC M4x0,5-6HX DIN-371 B HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

DIN 2181



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | ~3P |

| MF Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-2181 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) |
| | | | | | | | | INDEX | E1-131001 |
| M4x0,5 | 0,50 | 45 | 10 | 18,0 | 4,5 | 3,4 | 3,5 | 0041 | ○ |
| M4,5x0,5 | 0,50 | 50 | 12 | 22,0 | 6,0 | 4,9 | 4,0 | 0046 | ○ |
| M5x0,5 | 0,50 | 52 | 13 | 22,0 | 6,0 | 4,9 | 4,5 | 0051 | ○ |
| M5,5x0,5 | 0,50 | 56 | 13 | 24,0 | 6,0 | 4,9 | 5,0 | 0056 | ○ |
| M6x0,75 | 0,75 | 56 | 14 | 24,0 | 6,0 | 4,9 | 5,2 | 0062 | ● |
| M7x0,75 | 0,75 | 56 | 14 | - | 6,0 | 4,9 | 6,2 | 0072 | ○ |
| M8x0,75 | 0,75 | 63 | 14 | - | 6,0 | 4,9 | 7,2 | 0082 | ● |
| M8x1 | 1,00 | 63 | 17 | - | 6,0 | 4,9 | 7,0 | 0083 | ● |
| M9x0,75 | 0,75 | 63 | 14 | - | 7,0 | 5,5 | 8,2 | 0092 | ○ |
| M9x1 | 1,00 | 63 | 17 | - | 7,0 | 5,5 | 8,0 | 0093 | ○ |
| M10x0,75 | 0,75 | 63 | 18 | - | 7,0 | 5,5 | 9,2 | 0102 | ○ |
| M10x1 | 1,00 | 63 | 18 | - | 7,0 | 5,5 | 9,0 | 0103 | ● |
| M10x1,25 | 1,25 | 70 | 22 | - | 7,0 | 5,5 | 8,8 | 0104 | ● |
| M11x0,75 | 0,75 | 63 | 18 | - | 8,0 | 6,2 | 10,2 | 0112 | ○ |
| M11x1 | 1,00 | 63 | 18 | - | 8,0 | 6,2 | 10,0 | 0113 | ○ |
| M12x1 | 1,00 | 70 | 18 | - | 9,0 | 7,0 | 11,0 | 0123 | ● |
| M12x1,25 | 1,25 | 70 | 20 | - | 9,0 | 7,0 | 10,8 | 0124 | ● |
| M12x1,5 | 1,50 | 70 | 20 | - | 9,0 | 7,0 | 10,5 | 0125 | ● |
| M14x1 | 1,00 | 70 | 18 | - | 11,0 | 9,0 | 13,0 | 0143 | ○ |
| M14x1,25 | 1,25 | 70 | 20 | - | 11,0 | 9,0 | 12,8 | 0144 | ● |
| M14x1,5 | 1,50 | 70 | 20 | - | 11,0 | 9,0 | 12,5 | 0145 | ● |
| M15x1 | 1,00 | 70 | 18 | - | 12,0 | 9,0 | 14,0 | 0153 | ○ |
| M15x1,5 | 1,50 | 70 | 20 | - | 12,0 | 9,0 | 13,5 | 0155 | ○ |
| M16x1 | 1,00 | 80 | 18 | - | 12,0 | 9,0 | 15,0 | 0163 | ○ |
| M16x1,25 | 1,25 | 80 | 18 | - | 18,0 | 9,0 | 14,8 | 0164 | ○ |
| M16x1,5 | 1,50 | 80 | 22 | - | 12,0 | 9,0 | 14,5 | 0165 | ● |
| M17x1 | 1,00 | 80 | 18 | - | 12,0 | 9,0 | 16,0 | 0173 | ○ |
| M17x1,5 | 1,50 | 80 | 22 | - | 12,0 | 9,0 | 15,5 | 0175 | ○ |
| M18x1 | 1,00 | 80 | 18 | - | 14,0 | 11,0 | 17,0 | 0183 | ○ |
| M18x1,5 | 1,50 | 80 | 22 | - | 14,0 | 11,0 | 16,5 | 0185 | ● |
| M18x2 | 2,00 | 80 | 22 | - | 14,0 | 11,0 | 16,0 | 0186 | ○ |
| M20x1 | 1,00 | 80 | 18 | - | 16,0 | 12,0 | 19,0 | 0203 | ○ |

● **Dostępne z magazynu**

○ **Na zapytanie**

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |

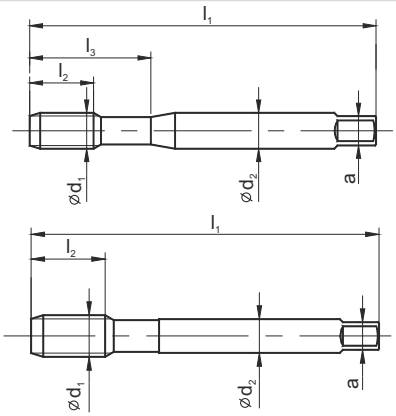
**Przykład zamówienia**

**E1-131001-0062**
**Gwintownik M6x0,75-6H DIN-2181 HSS**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

DIN 2181



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | ~3P |

| MF Ć $d_1$ | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-2181 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) |
| | | | | | | | | INDEX | E1-131001 |
| M20x1,5 | 1,50 | 80 | 22 | - | 16 | 12,0 | 18,5 | 0205 | ● |
| M20x2 | 2,00 | 80 | 22 | - | 16 | 12,0 | 18,0 | 0206 | ○ |
| M22x1 | 1,00 | 80 | 18 | - | 18 | 14,5 | 21,0 | 0223 | ○ |
| M22x1,5 | 1,5 | 80 | 22 | - | 18 | 14,5 | 20,5 | 0225 | ● |
| M22x2 | 2,0 | 80 | 22 | - | 18 | 14,5 | 20,0 | 0226 | ○ |
| M24x1 | 1,0 | 90 | 18 | - | 18 | 14,5 | 23,0 | 0243 | ○ |
| M24x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 22,5 | 0245 | ● |
| M24x2 | 2,0 | 90 | 22 | - | 18 | 14,5 | 22,0 | 0246 | ● |
| M25x1 | 1,0 | 90 | 18 | - | 18 | 14,5 | 24,0 | 0253 | ○ |
| M25x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 23,5 | 0255 | ● |
| M25x2 | 2,0 | 90 | 22 | - | 18 | 14,5 | 23,0 | 0256 | ○ |
| M26x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 24,5 | 0265 | ● |
| M27x1 | 1,0 | 90 | 20 | - | 20 | 16,0 | 26,0 | 0273 | ○ |
| M27x1,5 | 1,5 | 90 | 22 | - | 20 | 16,0 | 25,5 | 0275 | ○ |
| M27x2 | 2,0 | 90 | 22 | - | 20 | 16,0 | 25,0 | 0276 | ○ |
| M28x1 | 1,0 | 90 | 20 | - | 20 | 16,0 | 27,0 | 0283 | ○ |
| M28x1,5 | 1,5 | 90 | 22 | - | 20 | 16,0 | 26,5 | 0285 | ○ |
| M28x2 | 2,0 | 90 | 22 | - | 20 | 16,0 | 26,0 | 0286 | ○ |
| M30x1 | 1,0 | 90 | 22 | - | 22 | 18,0 | 29,0 | 0303 | ○ |
| M30x1,5 | 1,5 | 90 | 22 | - | 22 | 18,0 | 28,5 | 0305 | ● |
| M30x2 | 2,0 | 90 | 22 | - | 22 | 18,0 | 28,0 | 0306 | ○ |
| M30x3 | 3,0 | 125 | 36 | - | 22 | 18,0 | 27,0 | 0307 | ○ |
| M32x1,5 | 1,5 | 90 | 22 | - | 22 | 18,0 | 30,5 | 0325 | ○ |
| M32x2 | 2,0 | 90 | 22 | - | 22 | 18,0 | 30,0 | 0326 | ○ |
| M33x1,5 | 1,5 | 100 | 25 | - | 25 | 20,0 | 31,5 | 0335 | ○ |
| M33x2 | 2,0 | 100 | 25 | - | 25 | 20,0 | 31,0 | 0336 | ○ |
| M33x3 | 3,0 | 125 | 36 | - | 25 | 20,0 | 30,0 | 0337 | ○ |
| M35x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 33,5 | 0355 | ○ |
| M36x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 34,5 | 0365 | ○ |
| M36x2 | 2,0 | 125 | 36 | - | 28 | 22,0 | 34,0 | 0366 | ○ |
| M36x3 | 3,0 | 125 | 36 | - | 28 | 22,0 | 33,0 | 0367 | ○ |
| M38x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 36,5 | 0385 | ○ |

● **Dostępne z magazynu**
○ **Na zapytanie**

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |

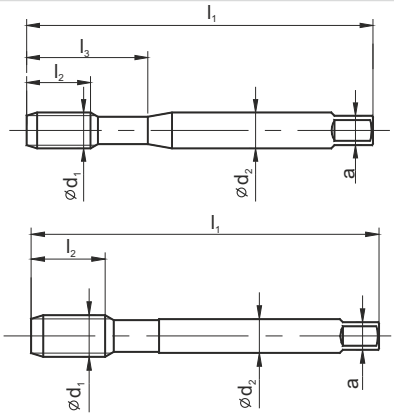
**Przykład zamówienia**

**E1-131001-0205**
**Gwintownik M20x1,5-6H DIN-2181 HSS**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

DIN 2181



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | ~3P |

| MF Ć $d_1$ | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-2181 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) |
| | | | | | | | | INDEX | E1-131001 |
| M39x1,5 | 1,5 | 110 | 25 | - | 32 | 24 | 37,5 | 0395 | o |
| M39x2 | 2,0 | 125 | 36 | - | 32 | 24 | 37,0 | 0396 | o |
| M39x3 | 3,0 | 125 | 36 | - | 32 | 24 | 36,0 | 0397 | o |
| M40x1,5 | 1,5 | 110 | 25 | - | 32 | 24 | 38,5 | 0405 | o |
| M40x2 | 2,0 | 125 | 36 | - | 32 | 24 | 38,0 | 0406 | o |
| M40x3 | 3,0 | 125 | 36 | - | 32 | 29 | 37,0 | 0407 | o |
| M42x1,5 | 1,5 | 110 | 25 | - | 32 | 24 | 40,5 | 0425 | o |
| M42x2 | 2,0 | 125 | 36 | - | 32 | 24 | 40,0 | 0426 | o |
| M42x3 | 3,0 | 125 | 36 | - | 32 | 24 | 39,0 | 0427 | o |
| M42x4 | 4,0 | 150 | 50 | - | 32 | 24 | 38,0 | 0428 | o |
| M45x1,5 | 1,5 | 110 | 25 | - | 36 | 29 | 43,5 | 0455 | o |
| M45x2 | 2,0 | 125 | 36 | - | 36 | 29 | 43,0 | 0456 | o |
| M45x3 | 3,0 | 125 | 36 | - | 36 | 29 | 42,0 | 0457 | o |
| M45x4 | 4,0 | 160 | 50 | - | 36 | 29 | 41,0 | 0458 | o |
| M48x1,5 | 1,5 | 140 | 30 | - | 36 | 29 | 46,5 | 0485 | o |
| M48x2 | 2,0 | 140 | 36 | - | 36 | 29 | 46,0 | 0486 | o |
| M48x3 | 3,0 | 140 | 36 | - | 36 | 29 | 45,0 | 0487 | o |
| M48x4 | 4,0 | 180 | 55 | - | 36 | 29 | 44,0 | 0488 | o |
| M50x1,5 | 1,5 | 140 | 30 | - | 36 | 29 | 48,5 | 0505 | o |
| M50x2 | 2,0 | 140 | 36 | - | 36 | 29 | 48,0 | 0506 | o |
| M50x3 | 3,0 | 140 | 36 | - | 36 | 29 | 47,0 | 0507 | o |
| M52x1,5 | 1,5 | 140 | 30 | - | 40 | 32 | 50,5 | 0525 | o |
| M52x2 | 2,0 | 140 | 36 | - | 40 | 32 | 50,0 | 0526 | o |
| M52x3 | 3,0 | 140 | 40 | - | 40 | 32 | 49,0 | 0527 | o |
| M52x4 | 4,0 | 180 | 55 | - | 40 | 32 | 48,0 | 0528 | o |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |



**Przykład zamówienia**

**E1-131001-0395**
**Gwintownik M39x1,5-6H DIN-2181 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSSE

TC

| | NUTAP | | | | |
|---|---|---|---|---|---|
| | lutowane | skręcane | | | |
| | | | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | | | |
| Typ otworu | < 1,5d | < 1,5d | | | |
| Rodzaj materiału | HSSE | HSSE | | | |
| Rodzaj powłoki | TC | TC | | | |
| Nakrój | 12P | 12P | | | |

| M Ć $d_1$ | P | Wymiary gabarytowe | d | | Na zapytanie | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M8x1 | 1,0 | Na zapytanie | 7,0 | | | | | | |
| M10x1 | 1,0 | | 9,0 | | | | | | |
| M12x1 | 1,0 | | 11,0 | | | | | | |
| M12x1,5 | 1,5 | | 10,5 | | | | | | |
| M14x1,5 | 1,5 | | 12,5 | | | | | | |
| M16x1 | 1,0 | | 15,0 | | | | | | |
| M16x1,5 | 1,5 | | 14,5 | | | | | | |
| M18x1,5 | 1,5 | | 16,5 | | | | | | |
| M20x1,5 | 1,5 | | 18,5 | | | | | | |
| M20x2 | 2,0 | | 18,0 | | | | | | |
| M22x1,5 | 1,5 | | 20,5 | | | | | | |
| M22x2 | 2,0 | | 20,0 | | | | | | |
| M24x1,5 | 1,5 | | 22,5 | | | | | | |
| M24x2 | 2,0 | | 22,0 | | | | | | |
| M27x1,5 | 1,5 | | 25,5 | | | | | | |
| M27x2 | 2,0 | | 25,0 | | | | | | |

| ISO | Vc (m/min) | | | | |
|---|---|---|---|---|---|
| P | 5-20 | 5-20 | | | |
| M | - | - | | | |
| K | - | - | | | |
| N | - | - | | | |
| S | - | - | | | |

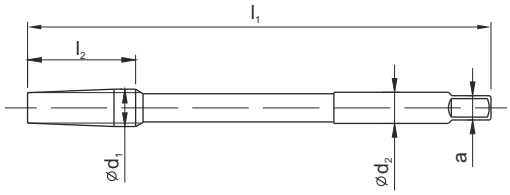
**Przykład zamówienia**

**NUT-TAP M24x1,5 ISO2 HSSE TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

**HSS**




| | NGMf | |
|---|---|---|
| | | LH |
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | 12P | 12P |

| MF Ć $d_1$ | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | NGMf | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | INDEX | F1-151001 | F1-251001 |
| M4,5x0,5 | 0,50 | 100 | 10 | 3,2 | 2,5 | 4,0 | 0046 | ○ | ○ |
| M5x0,5 | 0,50 | 110 | 10 | 3,6 | 2,8 | 4,5 | 0051 | ○ | ○ |
| M5,5x0,5 | 0,50 | 110 | 10 | 4,5 | 3,6 | 5,0 | 0056 | ○ | ○ |
| M6x0,75 | 0,75 | 120 | 16 | 4,5 | 3,6 | 5,2 | 0062 | ○ | ○ |
| M7x0,75 | 0,75 | 120 | 16 | 5,6 | 4,5 | 6,2 | 0072 | ○ | ○ |
| M8x0,75 | 0,75 | 140 | 16 | 6,3 | 5,0 | 7,2 | 0082 | ○ | ○ |
| M8x1 | 1,00 | 140 | 20 | 6,3 | 5,0 | 7,0 | 0083 | ● | ○ |
| M10x0,75 | 0,75 | 160 | 16 | 8,0 | 6,3 | 9,2 | 0102 | ○ | ○ |
| M10x1 | 1,00 | 160 | 20 | 8,0 | 6,3 | 9,0 | 0103 | ● | ○ |
| M10x1,25 | 1,25 | 160 | 25 | 8,0 | 6,3 | 8,8 | 0104 | ● | ○ |
| M12x1 | 1,00 | 180 | 20 | 9,0 | 7,1 | 11,0 | 0123 | ● | ○ |
| M12x1,25 | 1,25 | 180 | 25 | 9,0 | 7,1 | 10,8 | 0124 | ● | ○ |
| M12x1,5 | 1,50 | 180 | 30 | 9,0 | 7,1 | 10,5 | 0125 | ● | ○ |
| M14x1 | 1,00 | 180 | 20 | 10,0 | 8,0 | 13,0 | 0143 | ○ | ○ |
| M14x1,25 | 1,25 | 180 | 25 | 10,0 | 8,0 | 12,8 | 0144 | ● | ○ |
| M14x1,5 | 1,50 | 180 | 30 | 10,0 | 8,0 | 12,5 | 0145 | ● | ○ |
| M15x1 | 1,00 | 180 | 20 | 12,5 | 10,0 | 14,0 | 0153 | ○ | ○ |
| M15x1,5 | 1,50 | 180 | 30 | 12,5 | 10,0 | 13,5 | 0155 | ○ | ○ |
| M16x1 | 1,00 | 200 | 20 | 12,5 | 10,0 | 15,0 | 0163 | ○ | ○ |
| M16x1,5 | 1,50 | 200 | 30 | 12,5 | 10,0 | 14,5 | 0165 | ● | ○ |
| M17x1 | 1,00 | 200 | 20 | 14,0 | 11,2 | 16,0 | 0173 | ○ | ○ |
| M17x1,5 | 1,50 | 200 | 30 | 14,0 | 11,2 | 15,5 | 0175 | ○ | ○ |
| M18x1 | 1,00 | 200 | 20 | 14,0 | 11,2 | 17,0 | 0183 | ○ | ○ |
| M18x1,5, | 1,50 | 200 | 30 | 14,0 | 11,2 | 16,5 | 0185 | ○ | ○ |
| M18x2 | 2,00 | 200 | 40 | 14,0 | 11,2 | 16,0 | 0186 | ○ | ○ |
| M20x1 | 1,00 | 220 | 20 | 16,0 | 12,5 | 19,0 | 0203 | ○ | ○ |
| M20x1,5 | 1,50 | 220 | 30 | 16,0 | 12,5 | 18,5 | 0205 | ● | ○ |
| M20x2 | 2,00 | 220 | 40 | 16,0 | 12,5 | 18,0 | 0206 | ○ | ○ |
| M22x1 | 1,00 | 220 | 20 | 18,0 | 14,0 | 21,0 | 0223 | ○ | ○ |
| M22x1,5 | 1,50 | 220 | 30 | 18,0 | 14,0 | 20,5 | 0225 | ○ | ○ |
| M22x2 | 2,00 | 220 | 40 | 18,0 | 14,0 | 20,0 | 0226 | ○ | ○ |
| M24x1 | 1,00 | 250 | 20 | 18,0 | 14,0 | 23,0 | 0243 | ○ | ○ |

● **Dostępne z magazynu**

○ **Na zapytanie**

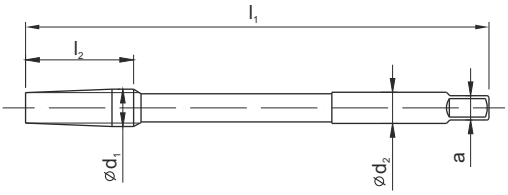
| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 6-15 | 6-15 |
| N | 6-15 | 6-15 |
| S | - | - |

**Przykład zamówienia**

**F1-151001-0083**
**Gwintownik M8x1-6H NGMf HSS**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS




| | NGMf | |
|---|---|---|
| | | LH |
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | 12P | 12P |

| MF Ćd1 | P | l1 | l2 | Ćd2 | a | d | Norma | NGMf | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | INDEX | F1-151001 | F1-251001 |
| M24x1,5 | 1,50 | 250 | 30 | 18,0 | 14,0 | 22,5 | 0245 | o | o |
| M24x2 | 2,00 | 250 | 40 | 18,0 | 14,0 | 22,0 | 0246 | o | o |
| M25x1 | 1,00 | 250 | 20 | 20,0 | 16,0 | 24,0 | 0253 | o | o |
| M25x1,5 | 1,50 | 250 | 30 | 20,0 | 16,0 | 23,5 | 0255 | o | o |
| M25x2 | 2,00 | 250 | 40 | 20,0 | 16,0 | 23,0 | 0256 | o | o |
| M26x1,5 | 1,50 | 250 | 30 | 20,0 | 16,0 | 24,5 | 0265 | o | o |
| M27x1 | 1,00 | 250 | 20 | 20,0 | 16,0 | 26,0 | 0273 | o | o |
| M27x1,5 | 1,50 | 250 | 30 | 20,0 | 16,0 | 25,5 | 0275 | o | o |
| M27x2 | 2,00 | 250 | 40 | 20,0 | 16,0 | 25,0 | 0276 | o | o |
| M28x1 | 1,00 | 250 | 20 | 22,4 | 18,0 | 27,0 | 0283 | o | o |
| M28x1,5 | 1,50 | 250 | 30 | 22,4 | 18,0 | 26,5 | 0285 | o | o |
| M28x2 | 2,00 | 250 | 40 | 22,4 | 18,0 | 26,0 | 0286 | o | o |
| M30x1 | 1,00 | 280 | 20 | 22,4 | 18,0 | 29,0 | 0303 | o | o |
| M30x1,5 | 1,50 | 280 | 30 | 22,4 | 18,0 | 28,5 | 0305 | o | o |
| M30x2 | 2,00 | 280 | 40 | 22,4 | 18,0 | 28,0 | 0306 | o | o |
| M30x3 | 3,00 | 280 | 60 | 22,4 | 18,0 | 27,0 | 0307 | o | o |
| M32x1,5 | 1,50 | 280 | 30 | 25,0 | 20,0 | 30,5 | 0325 | o | o |
| M32x2 | 2,00 | 280 | 40 | 25,0 | 20,0 | 30,0 | 0326 | o | o |
| M33x1,5 | 1,50 | 280 | 30 | 25,0 | 20,0 | 31,5 | 0335 | o | o |
| M33x2 | 2,00 | 280 | 40 | 25,0 | 20,0 | 31,0 | 0336 | o | o |
| M33x3 | 3,00 | 280 | 60 | 25,0 | 20,0 | 30,0 | 0337 | o | o |
| M35x1,5 | 1,50 | 280 | 30 | 28,0 | 22,4 | 33,5 | 0355 | o | o |
| M36x1,5 | 1,50 | 280 | 30 | 28,0 | 22,4 | 34,5 | 0365 | o | o |
| M36x2 | 2,00 | 280 | 40 | 28,0 | 22,4 | 34,0 | 0366 | o | o |
| M36x3 | 3,00 | 280 | 60 | 28,0 | 22,4 | 33,0 | 0367 | o | o |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 6-15 | 6-15 |
| N | 6-15 | 6-15 |
| S | - | - |

**Przykład zamówienia**

**F1-151001-0245**
**Gwintownik M24x1,5-6H NGMf HSS**

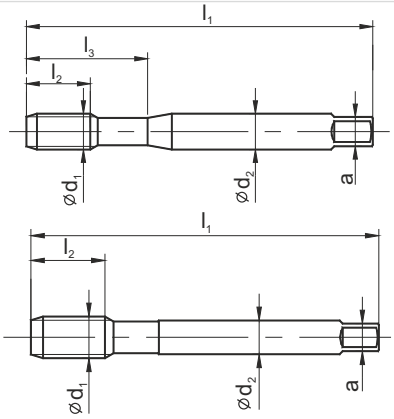
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

HSSE PM

HL

DIN 371 DIN 376




| MasterTAP | B-HL | C-R45-HL |
|---|---|---|
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | C / 2-3P |

| UNC | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2BX | 2BX |
| | | | | | | | | | | INDEX | C4-118M01 | C4-528M01 |
| No2-56 | 2,184 | 56 | 0,455 | 45 | 10 | 13 | 2,8 | 2,1 | 1,85 | 4102 | ○ | ○ |
| No4-40 | 2,844 | 40 | 0,635 | 56 | 5 | 18 | 3,5 | 2,7 | 2,35 | 4104 | ● | ● |
| No5-40 | 3,175 | 40 | 0,635 | 56 | 7 | 18 | 3,5 | 2,7 | 2,65 | 4105 | ● | ● |
| No6-32 | 3,505 | 32 | 0,794 | 56 | 6 | 20 | 4,0 | 3,0 | 2,85 | 4106 | ● | ● |
| No8-32 | 4,165 | 32 | 0,794 | 63 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4108 | ● | ● |
| No10-24 | 4,826 | 24 | 1,058 | 70 | 8 | 25 | 6,0 | 4,9 | 3,90 | 4110 | ● | ● |
| No12-24 | 5,486 | 24 | 1,058 | 80 | 10 | 30 | 6,0 | 4,9 | 4,50 | 4112 | ● | ● |
| 1/4-20 | 6,350 | 20 | 1,270 | 80 | 13 | 30 | 7,0 | 5,5 | 5,10 | 4127 | ● | ● |
| 5/16-18 | 7,938 | 18 | 1,411 | 90 | 13 | 35 | 8,0 | 6,0 | 6,60 | 4128 | ● | ● |
| 3/8-16 | 9,525 | 16 | 1,588 | 100 | 15 | 39 | 10,0 | 8,0 | 8,00 | 4129 | ● | ● |

| UNC | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-376 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2BX | 2BX |
| | | | | | | | | | | INDEX | D4-118M01 | D4-528M01 |
| 7/16-14 | 11,112 | 14 | 1,814 | 100 | 15 | - | 8,0 | 6,2 | 9,40 | 4130 | ● | ● |
| 1/2-13 | 12,700 | 13 | 1,954 | 110 | 18 | - | 9,0 | 7,0 | 10,80 | 4131 | ● | ● |
| 9/16-12 | 14,288 | 12 | 2,117 | 110 | 20 | - | 11,0 | 9,0 | 12,20 | 4132 | ● | ● |
| 5/8-11 | 15,875 | 11 | 2,309 | 110 | 22 | - | 12,0 | 9,0 | 13,50 | 4133 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-40 | 5-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-30 | 10-30 |
| S | 1-8 | 1-8 |

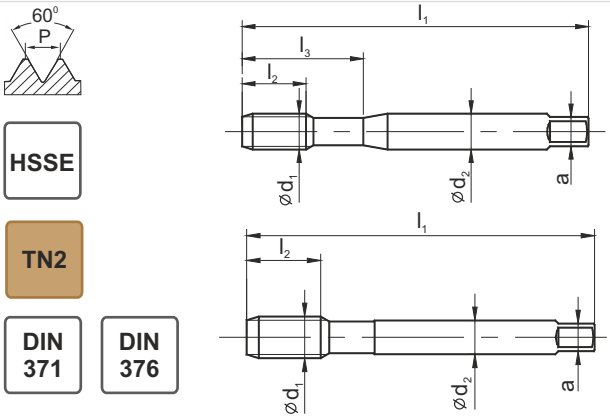


**Przykład zamawiania**

**C4-118M01-4104**
**MasterTAP No5-40 UNC 2BX DIN-371 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1




HSSE

TN2

DIN 371 | DIN 376

800X

| | B-TN2 | C-R40-TN2 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 |
| Nakrój | B / 4-5P | C / 2-3P |

| UNC | Ć d1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ć d2 | a | d | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | C2-113X01 | C2-513X01 |
| No2-56 | 2,184 | 56 | 0,455 | 45 | 10 | 10 | 13 | 2,8 | 2,1 | 1,85 | 4102 | ○ | ○ |
| No4-40 | 2,844 | 40 | 0,635 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,35 | 4104 | ● | ● |
| No5-40 | 3,175 | 40 | 0,635 | 56 | 10 | 7 | 18 | 3,5 | 2,7 | 2,65 | 4105 | ● | ● |
| No6-32 | 3,505 | 32 | 0,794 | 56 | 12 | 6 | 20 | 4,0 | 3,0 | 2,85 | 4106 | ● | ● |
| No8-32 | 4,165 | 32 | 0,794 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4108 | ● | ● |
| No10-24 | 4,826 | 24 | 1,058 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 3,90 | 4110 | ● | ● |
| No12-24 | 5,486 | 24 | 1,058 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 4,50 | 4112 | ● | ● |
| 1/4-20 | 6,350 | 20 | 1,270 | 80 | 18 | 13 | 30 | 7,0 | 5,5 | 5,10 | 4127 | ● | ● |
| 5/16-18 | 7,938 | 18 | 1,411 | 90 | 20 | 13 | 35 | 8,0 | 6,0 | 6,60 | 4128 | ● | ● |
| 3/8-16 | 9,525 | 16 | 1,588 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,00 | 4129 | ● | ● |

| UNC | Ć d1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ć d2 | a | d | Norma | DIN-376 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-113X01 | D2-513X01 |
| 7/16-14 | 11,112 | 14 | 1,814 | 100 | 22 | 15 | - | 8,0 | 6,2 | 9,40 | 4130 | ● | ● |
| 1/2-13 | 12,700 | 13 | 1,954 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,80 | 4131 | ● | ● |
| 9/16-12 | 14,288 | 12 | 2,117 | 110 | 25 | 20 | - | 11,0 | 9,0 | 12,20 | 4132 | ● | ● |
| 5/8-11 | 15,875 | 11 | 2,309 | 110 | 32 | 22 | - | 12,0 | 9,0 | 13,50 | 4133 | ● | ● |
| 3/4-10 | 19,050 | 10 | 2,504 | 125 | 32 | 25 | - | 14,0 | 11,0 | 16,50 | 4135 | ● | ● |
| 7/8-9 | 22,225 | 9 | 2,822 | 140 | 32 | 30 | - | 18,0 | 14,5 | 19,50 | 4137 | ● | ● |
| 1-8 | 25,400 | 8 | 3,175 | 160 | 38 | 30 | - | 20,0 | 16,0 | 22,25 | 4139 | ● | ● |
| 1.1/8-7 | 28,575 | 7 | 3,629 | 180 | 40 | 40 | - | 22,0 | 18,0 | 25,00 | 4141 | ○ | ○ |
| 1.1/4-7 | 31,750 | 7 | 3,629 | 180 | 40 | 40 | - | 22,0 | 18,0 | 28,00 | 4143 | ○ | ○ |
| 1.3/8-6 | 34,925 | 6 | 4,233 | 200 | 50 | 40 | - | 28,0 | 22,0 | 30,75 | 4145 | ○ | ○ |
| 1.1/2-6 | 38,100 | 6 | 4,233 | 200 | 55 | 40 | - | 28,0 | 22,0 | 34,00 | 4147 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-35 | 5-35 |
| M | 5-15 | 5-15 |
| K | 5-25 | 5-25 |
| N | 10-30 | 10-30 |
| S | - | - |

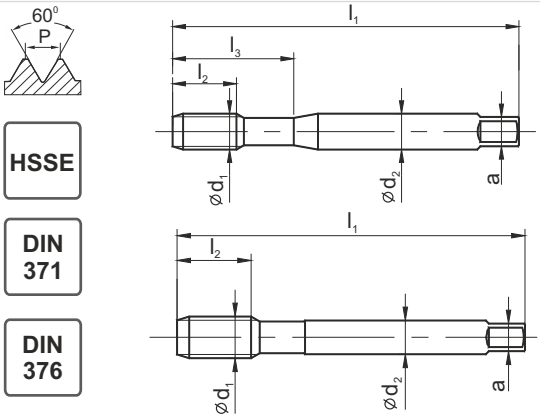
**Przykład zamawiania**

**C2-113X01-4105**
**Gwintownik 800X No5-40 UNC 2B DIN-371 HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

800




HSSE

DIN 371

DIN 376

| | B | C-R40 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | B / 4-5P | C / 2-3P |

| UNC | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | C2-111101 | C2-511101 |
| No2-56 | 2,184 | 56 | 0,455 | 45 | 10 | 10 | 13 | 2,8 | 2,1 | 1,85 | 4102 | ○ | ○ |
| No4-40 | 2,844 | 40 | 0,635 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,35 | 4104 | ● | ● |
| No5-40 | 3,175 | 40 | 0,635 | 56 | 10 | 7 | 18 | 3,5 | 2,7 | 2,65 | 4105 | ● | ● |
| No6-32 | 3,505 | 32 | 0,794 | 56 | 12 | 6 | 20 | 4,0 | 3,0 | 2,85 | 4106 | ● | ● |
| No8-32 | 4,165 | 32 | 0,794 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4108 | ● | ● |
| No10-24 | 4,826 | 24 | 1,058 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 3,90 | 4110 | ● | ● |
| No12-24 | 5,486 | 24 | 1,058 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 4,50 | 4112 | ● | ● |
| 1/4-20 | 6,350 | 20 | 1,270 | 80 | 18 | 13 | 30 | 7,0 | 5,5 | 5,10 | 4127 | ● | ● |
| 5/16-18 | 7,938 | 18 | 1,411 | 90 | 20 | 13 | 35 | 8,0 | 6,0 | 6,60 | 4128 | ● | ● |
| 3/8-16 | 9,525 | 16 | 1,588 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,00 | 4129 | ● | ● |

| UNC | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-376 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-111101 | D2-511101 |
| 7/16-14 | 11,112 | 14 | 1,814 | 100 | 22 | 15 | - | 8,0 | 6,2 | 9,40 | 4130 | ● | ● |
| 1/2-13 | 12,700 | 13 | 1,954 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,80 | 4131 | ● | ● |
| 9/16-12 | 14,288 | 12 | 2,117 | 110 | 25 | 20 | - | 11,0 | 9,0 | 12,20 | 4132 | ● | ● |
| 5/8-11 | 15,875 | 11 | 2,309 | 110 | 32 | 22 | - | 12,0 | 9,0 | 13,50 | 4133 | ● | ● |
| 3/4-10 | 19,050 | 10 | 2,504 | 125 | 32 | 25 | - | 14,0 | 11,0 | 16,50 | 4135 | ● | ● |
| 7/8-9 | 22,225 | 9 | 2,822 | 140 | 32 | 30 | - | 18,0 | 14,5 | 19,50 | 4137 | ● | ● |
| 1-8 | 25,400 | 8 | 3,175 | 160 | 38 | 30 | - | 20,0 | 16,0 | 22,25 | 4139 | ● | ● |
| 1.1/8-7 | 28,575 | 7 | 3,629 | 180 | 40 | 40 | - | 22,0 | 18,0 | 25,00 | 4141 | ● | ● |
| 1.1/4-7 | 31,750 | 7 | 3,629 | 180 | 40 | 40 | - | 22,0 | 18,0 | 28,00 | 4143 | ● | ● |
| 1.3/8-6 | 34,925 | 6 | 4,233 | 200 | 50 | 40 | - | 28,0 | 22,0 | 30,75 | 4145 | ● | ● |
| 1.1/2-6 | 38,100 | 6 | 4,233 | 200 | 55 | 40 | - | 28,0 | 22,0 | 34,00 | 4147 | ● | ● |

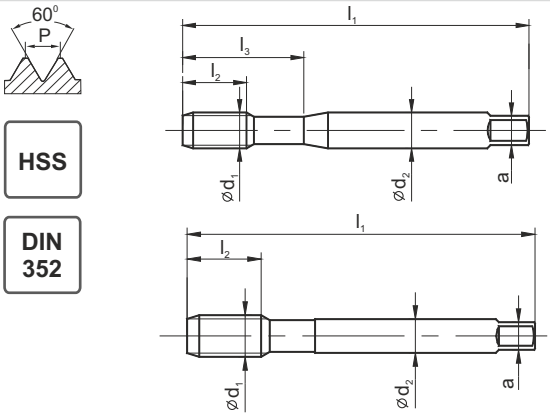
| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 5-25 | 5-25 |
| S | - | - |

**Przykład zamawiania**

**C2-111101-4106**
**Gwintownik 800 No5-40 UNC 2B DIN-371 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1




HSS

DIN 352

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | D/~3P |

| UNC | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-352 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B |
| | | | | | | | | | | INDEX | E1-131001 |
| No4-40 | 2,844 | 40 | 0,635 | 40 | 10 | 18 | 3,5 | 2,7 | 2,35 | 4104 | ○ |
| No5-40 | 3,175 | 40 | 0,640 | 42 | 10 | 18 | 3,5 | 2,7 | 2,65 | 4105 | ○ |
| No6-32 | 3,505 | 32 | 0,794 | 45 | 11 | 18 | 4,0 | 3,0 | 2,85 | 4106 | ● |
| No8-32 | 4,166 | 32 | 0,794 | 48 | 12 | 23 | 4,5 | 3,4 | 3,50 | 4108 | ○ |
| No10-24 | 4,826 | 24 | 1,060 | 52 | 14 | 26 | 6,0 | 4,9 | 3,90 | 4110 | ○ |
| No12-24 | 5,486 | 24 | 1,060 | 56 | 16 | 27 | 6,0 | 4,9 | 4,50 | 4112 | ○ |
| 1/4-20 | 6,350 | 20 | 1,270 | 56 | 16 | 27 | 6,0 | 4,9 | 5,20 | 4127 | ● |
| 5/16-18 | 7,938 | 18 | 1,411 | 63 | 20 | - | 6,0 | 4,9 | 6,60 | 4128 | ● |
| 3/8-16 | 9,525 | 16 | 1,588 | 70 | 22 | - | 7,0 | 5,5 | 8,00 | 4129 | ● |
| 7/16-14 | 11,112 | 14 | 1,814 | 70 | 22 | - | 8,0 | 6,2 | 9,40 | 4130 | ○ |
| 1/2-13 | 12,700 | 13 | 1,954 | 80 | 25 | - | 9,0 | 7,0 | 10,80 | 4131 | ● |
| 9/16-12 | 14,288 | 12 | 2,117 | 80 | 26 | - | 11,0 | 9,0 | 12,20 | 4132 | ○ |
| 5/8-11 | 15,875 | 11 | 2,309 | 80 | 27 | - | 12,0 | 9,0 | 13,50 | 4133 | ● |
| 3/4-10 | 19,050 | 10 | 2,504 | 95 | 30 | - | 14,0 | 11,0 | 16,50 | 4135 | ● |
| 7/8-9 | 22,225 | 9 | 2,822 | 100 | 32 | - | 18,0 | 14,5 | 19,50 | 4137 | ○ |
| 1-8 | 25,400 | 8 | 3,175 | 110 | 36 | - | 18,0 | 14,5 | 22,25 | 4139 | ○ |
| 1.1/8-7 | 28,575 | 7 | 3,629 | 125 | 40 | - | 22,0 | 18,0 | 25,00 | 4141 | ○ |
| 1.1/4-7 | 31,750 | 7 | 3,629 | 125 | 40 | - | 22,0 | 18,0 | 28,00 | 4143 | ○ |
| 1.3/8-6 | 34,925 | 6 | 4,233 | 150 | 50 | - | 28,0 | 22,0 | 30,75 | 4145 | ○ |
| 1.1/2-6 | 38,100 | 6 | 4,233 | 150 | 50 | - | 28,0 | 22,0 | 34,00 | 4147 | ○ |
| 1.3/4-5 | 44,450 | 5 | 5,080 | 160 | 58 | - | 36,0 | 29,0 | 39,50 | 4151 | ○ |
| 2-4.1/2 | 50,800 | 4 1/2 | 5,644 | 180 | 65 | - | 40,0 | 32,0 | 45,00 | 4155 | ○ |

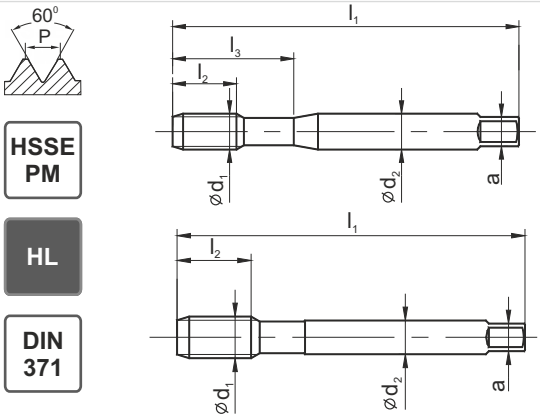
| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |

**Przykład zamawiania**

**E1-131001-4106**
**Gwintownik No6-32 UNC 2B DIN-352 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1




HSSE PM

HL

DIN 371

MASTERTAP

| | B-HL | C-R45-HL |
|---|---|---|
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | C / 2-3P |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2BX | 2BX |
| | | | | | | | | | | INDEX | C4-118M01 | C4-528M01 |
| No4-48 | 2,844 | 48 | 0,529 | 56 | 5 | 18 | 3,5 | 2,7 | 2,40 | 4204 | ● | ● |
| No5-44 | 3,175 | 44 | 0,557 | 56 | 7 | 18 | 3,5 | 2,7 | 2,70 | 4205 | ● | ● |
| No6-40 | 3,505 | 40 | 0,635 | 56 | 6 | 20 | 4,0 | 3,0 | 2,95 | 4206 | ● | ● |
| No8-36 | 4,165 | 36 | 0,705 | 63 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4208 | ● | ● |
| No10-32 | 4,826 | 32 | 0,794 | 70 | 8 | 25 | 6,0 | 4,9 | 4,10 | 4210 | ● | ● |
| No12-28 | 5,486 | 28 | 0,907 | 80 | 10 | 30 | 6,0 | 4,9 | 4,60 | 4212 | ● | ● |
| 1/4-28 | 6,350 | 28 | 0,907 | 80 | 10 | 30 | 7,0 | 5,5 | 5,50 | 4227 | ● | ● |
| 5/16-24 | 7,938 | 24 | 1,058 | 90 | 13 | 35 | 8,0 | 6,0 | 6,90 | 4228 | ● | ● |
| 3/8-24 | 9,525 | 24 | 1,058 | 100 | 15 | 39 | 10,0 | 8,0 | 8,50 | 4229 | ● | ● |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-374 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2BX | 2BX |
| | | | | | | | | | | INDEX | D4-118M01 | D4-528M01 |
| 7/16-20 | 11,112 | 20 | 1,270 | 100 | 15 | - | 8,0 | 6,2 | 9,90 | 4230 | ● | ● |
| 1/2-20 | 12,700 | 20 | 1,270 | 100 | 15 | - | 9,0 | 7,0 | 11,50 | 4231 | ● | ● |
| 9/16-18 | 14,288 | 18 | 1,411 | 100 | 15 | - | 11,0 | 9,0 | 12,90 | 4232 | ● | ● |
| 5/8-18 | 15,875 | 18 | 1,411 | 100 | 15 | - | 12,0 | 9,0 | 14,50 | 4233 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-40 | 5-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-30 | 10-30 |
| S | 1-8 | 1-8 |

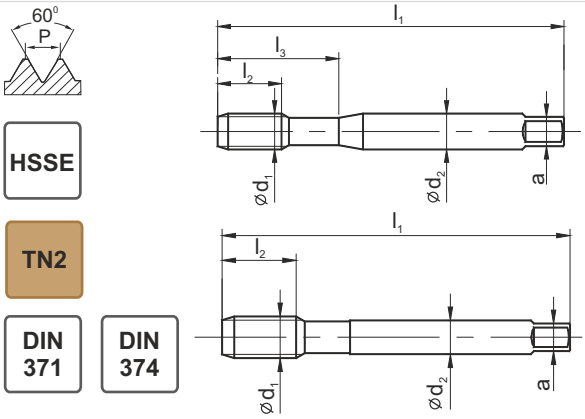
MASTERTAP

**Przykład zamawiania**

**C4-118M01-4210**
**MasterTAP No10-32 UNF 2BX DIN-371 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1




HSSE

TN2

DIN 371 | DIN 374

800X

| | B-TN2 | C-R40-TN2 |
|---|---|---|
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 |
| Nakrój | B / 4-5P | C / 2-3P |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | C2-113X01 | C2-513X01 |
| No6-40 | 3,505 | 40 | 0,635 | 56 | 12 | 6 | 20 | 4,0 | 3,0 | 2,95 | 4206 | ○ | ○ |
| No8-36 | 4,165 | 36 | 0,705 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4208 | ○ | ○ |
| No10-32 | 4,826 | 32 | 0,794 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,10 | 4210 | ● | ● |
| No12-28 | 5,486 | 28 | 0,907 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 4,60 | 4212 | ● | ● |
| 1/4-28 | 6,350 | 28 | 0,907 | 80 | 18 | 10 | 30 | 7,0 | 5,5 | 5,50 | 4227 | ● | ● |
| 5/16-24 | 7,938 | 24 | 1,058 | 90 | 20 | 13 | 35 | 8,0 | 6,0 | 6,90 | 4228 | ● | ● |
| 3/8-24 | 9,525 | 24 | 1,058 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,50 | 4229 | ● | ● |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | | Norma | DIN-374 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-113X01 | D2-513X01 |
| 7/16-20 | 11,112 | 20 | 1,270 | 100 | 20 | 15 | - | 8,0 | 6,2 | 9,90 | 4230 | ● | ● |
| 1/2-20 | 12,700 | 20 | 1,270 | 100 | 20 | 15 | - | 9,0 | 7,0 | 11,50 | 4231 | ● | ● |
| 9/16-18 | 14,288 | 18 | 1,411 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,90 | 4232 | ● | ● |
| 5/8-18 | 15,875 | 18 | 1,411 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 4233 | ● | ● |
| 3/4-16 | 19,050 | 16 | 1,588 | 110 | 24 | 17 | - | 14,0 | 11,0 | 17,50 | 4235 | ● | ● |
| 7/8-14 | 22,225 | 14 | 1,814 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,40 | 4237 | ● | ● |
| 1-12 | 25,400 | 12 | 2,117 | 140 | 27 | 20 | - | 18,0 | 14,5 | 23,25 | 4239 | ● | ● |
| 1.1/8-12 | 28,575 | 12 | 2,117 | 150 | 27 | 22 | - | 22,0 | 18,0 | 26,50 | 4241 | ○ | ○ |
| 1.1/4-12 | 31,750 | 12 | 2,117 | 150 | 27 | 22 | - | 22,0 | 18,0 | 29,50 | 4243 | ○ | ○ |
| 1.3/8-12 | 34,925 | 12 | 2,117 | 170 | 30 | 22 | - | 28,0 | 22,0 | 32,75 | 4245 | ○ | ○ |
| 1.1/2-12 | 38,100 | 12 | 2,117 | 170 | 30 | 24 | - | 28,0 | 22,0 | 36,00 | 4247 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-35 | 5-35 |
| M | 5-15 | 5-15 |
| K | 5-25 | 10-25 |
| N | 10-30 | 10-30 |
| S | - | - |

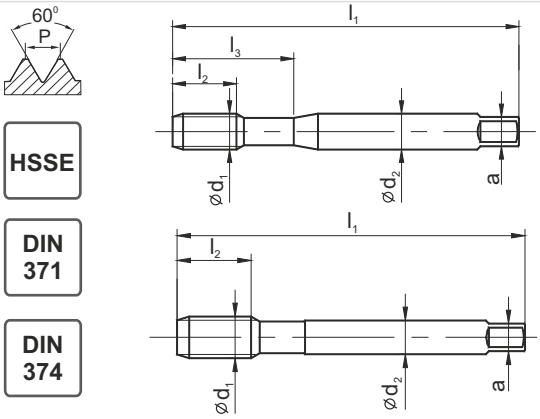
**Przykład zamawiania**

**C2-113X01-4208**
**Gwintownik 800X No8-36 UNF 2B DIN-371 B HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

800



| | B | C-R40 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 3d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | B / 4-5P | C / 2-3P |

| UNF | Ćd1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | C2-111101 | C2-511101 |
| No6-40 | 3,505 | 40 | 0,635 | 56 | 12 | 6 | 20 | 4,0 | 3,0 | 2,95 | 4206 | ○ | ○ |
| No8-36 | 4,165 | 36 | 0,705 | 63 | 12 | 7 | 21 | 4,5 | 3,4 | 3,50 | 4208 | ○ | ○ |
| No10-32 | 4,826 | 32 | 0,794 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,10 | 4210 | ● | ● |
| No12-28 | 5,486 | 28 | 0,907 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 4,60 | 4212 | ● | ● |
| 1/4-28 | 6,350 | 28 | 0,907 | 80 | 18 | 10 | 30 | 7,0 | 5,5 | 5,50 | 4227 | ● | ● |
| 5/16-24 | 7,938 | 24 | 1,058 | 90 | 20 | 13 | 35 | 8,0 | 6,0 | 6,90 | 4228 | ● | ● |
| 3/8-24 | 9,525 | 24 | 1,058 | 100 | 20 | 15 | 39 | 10,0 | 8,0 | 8,50 | 4229 | ● | ● |

| UNF | Ćd1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | d | Norma | DIN-374 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-111101 | D2-511101 |
| 7/16-20 | 11,112 | 20 | 1,270 | 100 | 20 | 15 | - | 8,0 | 6,2 | 9,90 | 4230 | ● | ● |
| 1/2-20 | 12,700 | 20 | 1,270 | 100 | 20 | 15 | - | 9,0 | 7,0 | 11,50 | 4231 | ● | ● |
| 9/16-18 | 14,288 | 18 | 1,411 | 100 | 20 | 15 | - | 11,0 | 9,0 | 12,90 | 4232 | ● | ● |
| 5/8-18 | 15,875 | 18 | 1,411 | 100 | 20 | 15 | - | 12,0 | 9,0 | 14,50 | 4233 | ● | ● |
| 3/4-16 | 19,050 | 16 | 1,588 | 110 | 24 | 17 | - | 14,0 | 11,0 | 17,50 | 4235 | ● | ● |
| 7/8-14 | 22,225 | 14 | 1,814 | 125 | 24 | 17 | - | 18,0 | 14,5 | 20,40 | 4237 | ● | ● |
| 1-12 | 25,400 | 12 | 2,117 | 140 | 27 | 20 | - | 18,0 | 14,5 | 23,25 | 4239 | ● | ● |
| 1.1/8-12 | 28,575 | 12 | 2,117 | 150 | 27 | 22 | - | 22,0 | 18,0 | 26,50 | 4241 | ○ | ○ |
| 1.1/4-12 | 31,750 | 12 | 2,117 | 150 | 27 | 22 | - | 22,0 | 18,0 | 29,50 | 4243 | ○ | ○ |
| 1.3/8-12 | 34,925 | 12 | 2,117 | 170 | 30 | 22 | - | 28,0 | 22,0 | 32,75 | 4245 | ○ | ○ |
| 1.1/2-12 | 38,100 | 12 | 2,117 | 170 | 30 | 24 | - | 28,0 | 22,0 | 36,00 | 4247 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 5-25 | 5-25 |
| S | - | - |

**Przykład zamawiania**

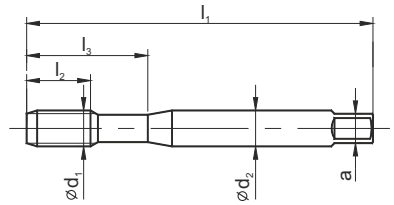
**C2-111101-4210**
**Gwintownik 800 No10-32 UNF 2B DIN-371 B HSSE**

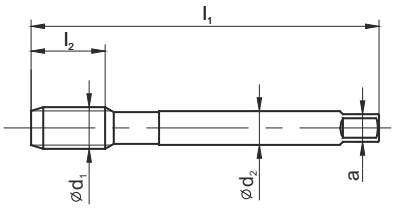
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

**HSS**

**DIN 2181**



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | ~3P |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-2181 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B |
| | | | | | | | | | | INDEX | E1-131001 |
| No5-44 | 3,175 | 44 | 0,577 | 42 | 10 | 18 | 3,5 | 2,7 | 2,70 | 4205 | ○ |
| No6-40 | 3,505 | 40 | 0,635 | 45 | 11 | 18 | 4,0 | 3,0 | 2,95 | 4206 | ○ |
| No8-36 | 4,165 | 36 | 0,705 | 48 | 12 | 23 | 4,5 | 3,4 | 3,50 | 4208 | ○ |
| No10-32 | 4,826 | 32 | 0,794 | 52 | 14 | 22 | 6,0 | 4,9 | 4,10 | 4210 | ○ |
| No12-28 | 5,486 | 28 | 0,907 | 56 | 16 | 24 | 6,0 | 4,9 | 4,60 | 4212 | ○ |
| 1/4-28 | 6,350 | 28 | 0,907 | 56 | 16 | 24 | 6,0 | 4,9 | 5,50 | 4227 | ● |
| 5/16-24 | 7,938 | 24 | 1,058 | 63 | 17 | - | 6,0 | 4,9 | 6,90 | 4228 | ● |
| 3/8-24 | 9,525 | 24 | 1,058 | 63 | 18 | - | 7,0 | 5,5 | 8,50 | 4229 | ● |
| 7/16-20 | 11,112 | 20 | 1,270 | 70 | 22 | - | 8,0 | 6,2 | 9,90 | 4230 | ● |
| 1/2-20 | 12,700 | 20 | 1,270 | 70 | 20 | - | 9,0 | 7,0 | 11,50 | 4231 | ● |
| 9/16-18 | 14,288 | 18 | 1,411 | 80 | 20 | - | 11,0 | 9,0 | 12,90 | 4232 | ● |
| 5/8-18 | 15,875 | 18 | 1,411 | 80 | 20 | - | 12,0 | 9,0 | 14,50 | 4233 | ● |
| 3/4-16 | 16,050 | 16 | 1,588 | 80 | 22 | - | 14,0 | 11,0 | 17,50 | 4235 | ● |
| 7/8-14 | 22,225 | 14 | 1,814 | 80 | 22 | - | 18,0 | 14,5 | 20,40 | 4237 | ○ |
| 1-12 | 25,400 | 12 | 2,117 | 90 | 22 | - | 18,0 | 14,5 | 23,25 | 4239 | ○ |
| 1.1/8-12 | 28,575 | 12 | 2,117 | 90 | 22 | - | 22,0 | 18,0 | 26,50 | 4242 | ○ |
| 1.1/4-12 | 31,750 | 12 | 2,117 | 90 | 22 | - | 22,0 | 18,0 | 29,50 | 4243 | ○ |
| 1.3/8-12 | 34,925 | 12 | 2,117 | 125 | 36 | - | 28,0 | 22,0 | 32,75 | 4245 | ○ |
| 1.1/2-12 | 38,100 | 12 | 2,117 | 125 | 36 | - | 28,0 | 22,0 | 36,00 | 4247 | ○ |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |

**Przykład zamawiania**

**E1-131001-4227**
**Gwintownik 1/4-28 UNF 2B DIN-2181 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

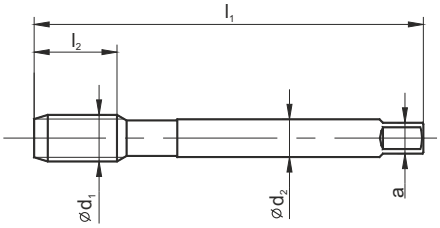
## Gwint amerykański zunifikowany drobnozwojny UNEF, ANSI B-1.1

800X

HSSE

TN2

DIN ~374



| | B-TN2 | C-R40-TN2 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 |
| Nakrój | B / 4-5P | C / 2-3P |

| UNEF | Ć d1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ć d2 | a | d | Norma | ~DIN-374 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-113X01 | D2-513X01 |
| 1/4-32 | 6,350 | 32 | 0,794 | 80 | 14 | 8 | - | 4,5 | 3,4 | 5,55 | 4327 | ○ | ○ |
| 5/16-32 | 7,938 | 32 | 0,794 | 80 | 14 | 8 | - | 6,0 | 4,9 | 7,15 | 4328 | ○ | ○ |
| 3/8-32 | 9,525 | 32 | 0,794 | 90 | 18 | 8 | - | 7,0 | 5,5 | 8,70 | 4329 | ○ | ○ |
| 7/16-28 | 11,112 | 28 | 0,907 | 90 | 18 | 10 | - | 8,0 | 6,2 | 10,20 | 4330 | ○ | ○ |
| 1/2-28 | 12,700 | 28 | 0,907 | 100 | 18 | 10 | - | 9,0 | 7,0 | 11,80 | 4331 | ○ | ○ |
| 9/16-24 | 14,288 | 24 | 1,058 | 100 | 18 | 11 | - | 11,0 | 9,0 | 13,20 | 4332 | ○ | ○ |
| 5/8-24 | 15,875 | 24 | 1,058 | 100 | 18 | 11 | - | 12,0 | 9,0 | 14,80 | 4333 | ○ | ○ |
| 3/4-20 | 19,050 | 20 | 1,270 | 110 | 25 | 13 | - | 14,0 | 11,0 | 17,80 | 4335 | ○ | ○ |
| 7/8-20 | 22,225 | 20 | 1,270 | 125 | 25 | 13 | - | 18,0 | 14,5 | 20,95 | 4337 | ○ | ○ |
| 1-20 | 25,400 | 20 | 1,270 | 140 | 28 | 13 | - | 18,0 | 14,5 | 24,15 | 4339 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-35 | 5-35 |
| M | 5-15 | 5-15 |
| K | 5-25 | 10-25 |
| N | 10-30 | 10-30 |
| S | - | - |



**Przykład zamawiania**

**D2-11X01-4327**
**Gwintownik 800X 1/4-32 UNEF 2B DIN-374 B HSSE TN2**

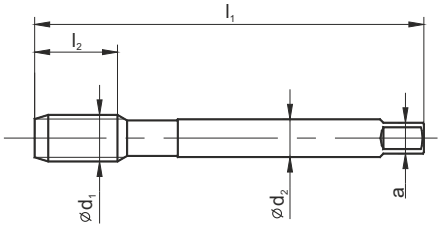
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNEF, ANSI B-1.1

800

HSSE

DIN ~374



| | B | C-R40 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 3d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | B / 4-5P | C / 2-3P |

| UNEF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | d | Norma | ~DIN-374 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | | INDEX | D2-111101 | D2-511101 |
| 1/4-32 | 6,350 | 32 | 0,794 | 80 | 14 | 8 | - | 4,5 | 3,4 | 5,55 | 4327 | o | o |
| 5/16-32 | 7,938 | 32 | 0,794 | 80 | 14 | 8 | - | 6,0 | 4,9 | 7,15 | 4328 | o | o |
| 3/8-32 | 9,525 | 32 | 0,794 | 90 | 18 | 8 | - | 7,0 | 5,5 | 8,70 | 4329 | o | o |
| 7/16-28 | 11,112 | 28 | 0,907 | 90 | 18 | 10 | - | 8,0 | 6,2 | 10,20 | 4330 | o | o |
| 1/2-28 | 12,700 | 28 | 0,907 | 100 | 18 | 10 | - | 9,0 | 7,0 | 11,80 | 4331 | o | o |
| 9/16-24 | 14,288 | 24 | 1,058 | 100 | 18 | 11 | - | 11,0 | 9,0 | 13,20 | 4332 | o | o |
| 5/8-24 | 15,875 | 24 | 1,058 | 100 | 18 | 11 | - | 12,0 | 9,0 | 14,80 | 4333 | o | o |
| 3/4-20 | 19,050 | 20 | 1,270 | 110 | 25 | 13 | - | 14,0 | 11,0 | 17,80 | 4335 | o | o |
| 7/8-20 | 22,225 | 20 | 1,270 | 125 | 25 | 13 | - | 18,0 | 14,5 | 20,95 | 4337 | o | o |
| 1-20 | 25,400 | 20 | 1,270 | 140 | 28 | 13 | - | 18,0 | 14,5 | 24,15 | 4339 | o | o |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 5-25 | 5-25 |
| S | - | - |

**Przykład zamawiania**

**D2-111101-4327**
**Gwintownik 800 1/4-32 UNEF 2B ~DIN-374 B HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

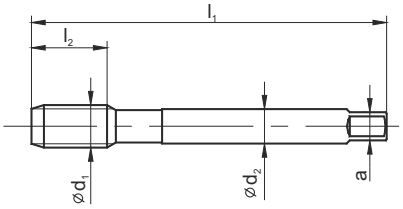
## Gwint rurowy walcowy G, DIN-ISO 228

MASTERTAP

HSSE PM

HL

DIN 5156



| | B-HL | C-R45-HL |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | C / 2-3P |

| G | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-5156 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | |
| | | | | | | | | | | INDEX | D4-118M01 | D4-528M01 |
| G1/16 | 7,723 | 28 | 0,907 | 90 | 10 | - | 6,0 | 4,9 | 6,80 | 3121 | ○ | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 90 | 10 | - | 7,0 | 5,5 | 8,80 | 3123 | ● | ● |
| G1/4 | 13,157 | 19 | 1,337 | 100 | 14 | - | 11,0 | 9,0 | 11,80 | 3127 | ● | ● |
| G3/8 | 16,662 | 19 | 1,337 | 100 | 15 | - | 12,0 | 9,0 | 15,25 | 3129 | ● | ● |
| G1/2 | 20,955 | 14 | 1,814 | 125 | 17 | - | 16,0 | 12,0 | 19,00 | 3131 | ● | ● |
| G5/8 | 22,911 | 14 | 1,814 | 125 | 20 | - | 18,0 | 14,5 | 21,00 | 3133 | ● | ● |
| G3/4 | 26,441 | 14 | 1,814 | 140 | 20 | - | 20,0 | 16,0 | 24,50 | 3135 | ● | ● |
| G7/8 | 30,201 | 14 | 1,814 | 150 | 22 | - | 22,0 | 18,0 | 28,25 | 3137 | ● | ● |
| G1 | 33,249 | 11 | 2,309 | 160 | 24 | - | 25,0 | 20,0 | 30,75 | 3139 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 10-40 | 10-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-50 | 10-50 |
| S | 1-8 | 1-8 |

MASTERTAP



**Przykład zamawiania**

**D4-528M01-3123**
**Gwintownik MasterTAP G-1/8" DIN-5156 C HSSE-PM HL**

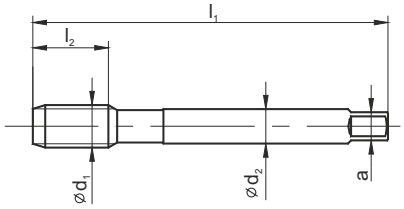
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

HSSE

TN2

DIN 5156




800X

| | C-TN2 | B-TN2 | C-R40-TN2 |
|---|---|---|---|
| | | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 | TN2 |
| Nakrój | C / 2-3P | B / 4-5P | C / 2-3P |

| G | Ć d1 | 1"/P | P | l1 | l2 | l2 R40 | Ć d2 | a | d | Norma | DIN-5156 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | | |
| | | | | | | | | | | INDEX | D2-123X01 | D2-113X01 | D2-513X01 |
| G1/16 | 7,723 | 28 | 0,907 | 90 | 17 | 10 | 6,0 | 4,9 | 6,80 | 3121 | ○ | ○ | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 90 | 18 | 10 | 7,0 | 5,5 | 8,80 | 3123 | ● | ● | ● |
| G1/4 | 13,157 | 19 | 1,337 | 100 | 22 | 14 | 11,0 | 9,0 | 11,80 | 3127 | ● | ● | ● |
| G3/8 | 16,662 | 19 | 1,337 | 100 | 22 | 15 | 12,0 | 9,0 | 15,25 | 3129 | ● | ● | ● |
| G1/2 | 20,955 | 14 | 1,814 | 125 | 25 | 17 | 16,0 | 12,0 | 19,00 | 3131 | ● | ● | ● |
| G5/8 | 22,911 | 14 | 1,814 | 125 | 25 | 20 | 18,0 | 14,5 | 21,00 | 3133 | ● | ● | ● |
| G3/4 | 26,441 | 14 | 1,814 | 140 | 28 | 20 | 20,0 | 16,0 | 24,50 | 3135 | ● | ● | ● |
| G7/8 | 30,201 | 14 | 1,814 | 150 | 30 | 22 | 22,0 | 18,0 | 28,25 | 3137 | ● | ● | ● |
| G1 | 33,249 | 11 | 2,309 | 160 | 32 | 24 | 25,0 | 20,0 | 30,75 | 3139 | ● | ● | ● |
| G1.1/8 | 37,907 | 11 | 2,309 | 170 | 34 | 24 | 28,0 | 22,0 | 35,50 | 3141 | ○ | ○ | ○ |
| G1.1/4 | 41,910 | 11 | 2,309 | 170 | 34 | 25 | 32,0 | 24,0 | 39,50 | 3143 | ○ | ○ | ○ |
| G1.1/2 | 47,800 | 11 | 2,309 | 190 | 36 | - | 36,0 | 29,0 | 45,25 | 3147 | ○ | ○ | - |
| G1.3/4 | 53,756 | 11 | 2,309 | 190 | 36 | - | 40,0 | 32,0 | 51,00 | 3151 | ○ | ○ | - |
| G2 | 59,614 | 11 | 2,309 | 220 | 40 | - | 45,0 | 35,0 | 57,00 | 3155 | ○ | ○ | - |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-35 | 5-35 | 5-20 |
| M | 5-15 | 5-15 | 5-15 |
| K | 5-25 | 10-25 | 5-15 |
| N | 10-30 | 10-30 | 5-25 |
| S | - | - | - |

**Przykład zamawiania**

**D4-123X01-3139**
**Gwintownik 800X G-1" DIN-5156 C HSSE TN2**

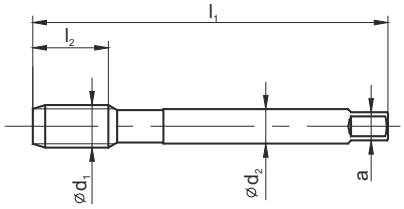
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

800

HSSE

DIN ~5156



| | C | B | C-R40 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 1.5d | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE | HSSE |
| Rodzaj powłoki | | | |
| Nakrój | C / 2-3P | C / 2-3P | B / 4-5P |

| G | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_2$ R40 | $l_3$ | Ć $d_2$ | a | d | Norma | DIN-5156 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | | | |
| | | | | | | | | | | | INDEX | D2-121101 | D2-111101 | D2-511101 |
| G1/16 | 7,723 | 28 | 0,907 | 90 | 17 | 10 | | 6,0 | 4,9 | 6,80 | 3121 | ○ | ○ | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 90 | 18 | 10 | | 7,0 | 5,5 | 8,80 | 3123 | ● | ● | ● |
| G1/4 | 13,157 | 19 | 1,337 | 100 | 22 | 14 | | 11,0 | 9,0 | 11,80 | 3127 | ● | ● | ● |
| G3/8 | 16,662 | 19 | 1,337 | 100 | 22 | 15 | | 12,0 | 9,0 | 15,25 | 3129 | ● | ● | ● |
| G1/2 | 20,955 | 14 | 1,814 | 125 | 25 | 17 | | 16,0 | 12,0 | 19,00 | 3131 | ● | ● | ● |
| G5/8 | 22,911 | 14 | 1,814 | 125 | 25 | 20 | | 18,0 | 14,5 | 21,00 | 3133 | ● | ● | ● |
| G3/4 | 26,441 | 14 | 1,814 | 140 | 28 | 20 | | 20,0 | 16,0 | 24,50 | 3135 | ● | ● | ● |
| G7/8 | 30,201 | 14 | 1,814 | 150 | 30 | 22 | | 22,0 | 18,0 | 28,25 | 3137 | ● | ● | ● |
| G1 | 33,249 | 11 | 2,309 | 160 | 32 | 24 | | 25,0 | 20,0 | 30,75 | 3139 | ● | ● | ● |
| G1.1/8 | 37,907 | 11 | 2,309 | 170 | 34 | 24 | | 28,0 | 22,0 | 35,50 | 3141 | ○ | ○ | ○ |
| G1.1/4 | 41,910 | 11 | 2,309 | 170 | 34 | 25 | | 32,0 | 24,0 | 39,50 | 3143 | ○ | ○ | ○ |
| G1.1/2 | 47,800 | 11 | 2,309 | 190 | 36 | - | | 36,0 | 29,0 | 45,25 | 3147 | ○ | ○ | - |
| G1.3/4 | 53,756 | 11 | 2,309 | 190 | 36 | - | | 40,0 | 32,0 | 51,00 | 3151 | ○ | ○ | - |
| G2 | 59,614 | 11 | 2,309 | 220 | 40 | - | | 45,0 | 35,0 | 57,00 | 3155 | ○ | ○ | - |

| ISO | Vc (m/min) | | |
|---|---|---|---|
| P | 5-20 | 5-20 | 5-20 |
| M | - | - | - |
| K | 5-15 | 5-15 | 5-15 |
| N | 5-25 | 5-25 | 5-25 |
| S | - | - | - |

**Przykład zamawiania**

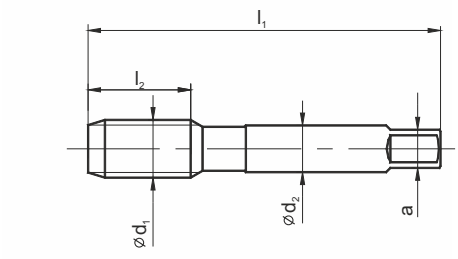
**D2-121101-3123**
**Gwintownik 800 G-1/8" DIN-5156 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

HSSE

DIN ~5157




| | Ms | | | | | |
|---|---|---|---|---|---|---|
| | F | | | | | |
| | | | | | | |
| Rodzaj materiału obrabianego | P M K N S H | | | | | |
| Typ otworu | < 1,5d | | | | | |
| Rodzaj materiału | HSSE | | | | | |
| Rodzaj powłoki | | | | | | |
| Nakrój | F / 1P | | | | | |

| G | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | ~DIN-5157 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | | | | | |
| | | | | | | | | | | INDEX | E2-141401 | | | | | |
| G3/8 | 16,662 | 19 | 1,337 | 70 | 22 | - | 12 | 9 | 15,25 | 3129 | ● | | | | | |
| G1/2 | 20,965 | 14 | 1,814 | 80 | 22 | - | 16 | 12 | 19,00 | 3131 | ● | | | | | |
| G3/4 | 26,441 | 14 | 1,814 | 90 | 22 | - | 20 | 16 | 24,50 | 3135 | ● | | | | | |
| G1 | 33,259 | 11 | 2,309 | 100 | 25 | - | 25 | 20 | 30,75 | 3139 | ● | | | | | |

| ISO | Vc (m/min) | | | | | |
|---|---|---|---|---|---|---|
| P | - | | | | | |
| M | - | | | | | |
| K | - | | | | | |
| N | 10-25 | | | | | |
| S | - | | | | | |

**Przykład zamawiania**

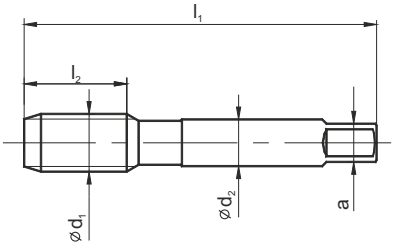
**E1-141401-3129**
**Gwintownik Ms G-3/8" ~DIN-5157 F HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

**HSS**

**DIN 5157**



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | ~3P |

| G | Ć d1 | 1"/P | P | l1 | l2 | l3 | Ć d2 | a | d | Norma | DIN-5157 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | |
| | | | | | | | | | | INDEX | E1-131001 |
| G1/16 | 7,723 | 28 | 0,907 | 56 | 22 | - | 6 | 4,9 | 6,80 | 3121 | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 63 | 20 | - | 7 | 5,5 | 8,80 | 3123 | ○ |
| G1/4 | 13,157 | 19 | 1,337 | 70 | 22 | - | 11 | 9,0 | 11,80 | 3127 | ● |
| G3/8 | 16,662 | 19 | 1,337 | 70 | 22 | - | 12 | 9,0 | 15,25 | 3129 | ● |
| G1/2 | 20,955 | 14 | 1,814 | 80 | 22 | - | 16 | 12,0 | 19,00 | 3131 | ● |
| G5/8 | 22,911 | 14 | 1,814 | 80 | 22 | - | 18 | 14,5 | 21,00 | 3133 | ○ |
| G3/4 | 26,441 | 14 | 1,814 | 90 | 22 | - | 20 | 16,0 | 24,50 | 3135 | ● |
| G7/8 | 30,201 | 14 | 1,814 | 90 | 22 | - | 22 | 18,0 | 28,25 | 3137 | ○ |
| G1 | 33,249 | 11 | 2,309 | 100 | 25 | - | 25 | 20,0 | 30,75 | 3139 | ● |
| G1.1/8 | 37,897 | 11 | 2,309 | 125 | 36 | - | 28 | 22,0 | 35,50 | 3141 | ○ |
| G1.1/4 | 41,910 | 11 | 2,309 | 125 | 36 | - | 32 | 24,0 | 39,50 | 3143 | ○ |
| G1.3/8 | 44,323 | 11 | 2,309 | 125 | 36 | - | 36 | 29,0 | 41,75 | 3145 | ○ |
| G1.1/2 | 47,803 | 11 | 2,309 | 140 | 40 | - | 36 | 29,0 | 45,25 | 3147 | ○ |
| G1.3/4 | 53,769 | 11 | 2,309 | 140 | 40 | - | 40 | 32,0 | 51,00 | 3151 | ○ |
| G2 | 59,614 | 11 | 2,309 | 160 | 40 | - | 45 | 35,0 | 57,00 | 3155 | ○ |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | - |
| N | - |
| S | - |



**Przykład zamawiania**

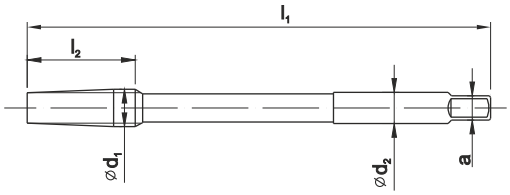
**E1-131001-3127**
**Gwintownik G-1/4" DIN-5157 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

**NGRf**

HSS



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSS |
| Rodzaj powłoki | |
| Nakrój | 12P |

| G | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | NGRf |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | |
| | | | | | | | | | | INDEX | F1-151001 |
| G1/16 | 7,723 | 28 | 0,907 | 140 | 20 | - | 6,0 | 4,5 | 6,80 | 3121 | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 140 | 20 | - | 7,0 | 6,3 | 8,80 | 3123 | ○ |
| G1/4 | 13,157 | 19 | 1,337 | 180 | 30 | - | 11,0 | 8,0 | 11,80 | 3127 | ○ |
| G3/8 | 16,662 | 19 | 1,337 | 200 | 30 | - | 12,0 | 10,0 | 15,25 | 3129 | ○ |
| G1/2 | 20,955 | 14 | 1,814 | 220 | 40 | - | 16,0 | 12,5 | 19,00 | 3131 | ● |
| G5/8 | 22,911 | 14 | 1,814 | 220 | 40 | - | 18,0 | 14,0 | 21,00 | 3133 | ○ |
| G3/4 | 26,441 | 14 | 1,814 | 250 | 40 | - | 20,0 | 16,0 | 24,00 | 3135 | ○ |
| G7/8 | 30,201 | 14 | 1,814 | 280 | 40 | - | 22,0 | 18,0 | 28,25 | 3137 | ○ |
| G1 | 33,249 | 11 | 2,309 | 280 | 60 | - | 25,0 | 20,0 | 30,75 | 3139 | ○ |
| G1.1/8 | 37,907 | 11 | 2,309 | 280 | 60 | - | 28,0 | 22,4 | 35,50 | 3141 | - |
| G1.1/4 | 41,910 | 11 | 2,309 | 280 | 60 | - | 32,0 | 25,0 | 39,50 | 3143 | ○ |
| G1.3/8 | 44,323 | 11 | 2,309 | 280 | 60 | - | 32,0 | 25,0 | 42,00 | 3145 | - |
| G1.1/2 | 47,800 | 11 | 2,309 | 280 | 60 | - | 36,0 | 28,0 | 45,00 | 3147 | ○ |
| G1.3/4 | 53,756 | 11 | 2,309 | 280 | 60 | - | 40,0 | 28,0 | 51,00 | 3151 | - |
| G2 | 59,614 | 11 | 2,309 | 280 | 60 | - | 45,0 | 31,5 | 57,00 | 3155 | ○ |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | 6-15 |
| N | 6-15 |
| S | - |

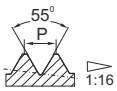
**Przykład zamawiania**

**F1-151001-3131**
**Gwintownik G-1/2"-6H NGRf HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy Rp, PN-ISO 7/1, DIN EN 10226-1

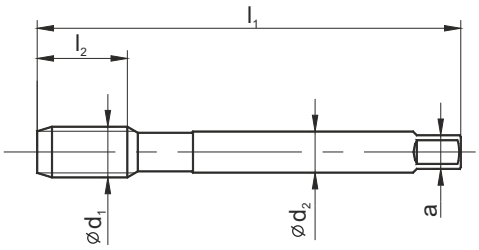
## Gwint rurowy stożkowy Rc, PN-ISO 7/1, DIN EN 10226-2




HSSE

DIN 5156

DIN ~5156




800

| | c | c |
|---|---|---|
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | C / 2-3P | C / 2-3P |

| Rp | Ć d1 | 1"/P | P | l1 | l2 | l3 | Ć d2 | a | d | Norma | DIN-5156 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | | | | | |
| | | | | | | | | | | INDEX | D2-121101 | | | | | |
| Rp-1/16" | 7,723 | 28 | 0,907 | 90 | 17 | - | 6,0 | 4,9 | 6,55 | 3221 | ○ | | | | | |
| Rp-1/8" | 9,728 | 28 | 0,907 | 90 | 18 | - | 7,0 | 5,5 | 8,60 | 3223 | ○ | | | | | |
| Rp-1/4" | 13,157 | 19 | 1,337 | 100 | 22 | - | 11,0 | 9,0 | 11,50 | 3227 | ○ | | | | | |
| Rp-3/8" | 16,662 | 19 | 1,337 | 100 | 22 | - | 12,0 | 9,0 | 15,00 | 3229 | ○ | | | | | |
| Rp-1/2" | 20,955 | 14 | 1,814 | 125 | 25 | - | 16,0 | 12,0 | 18,50 | 3231 | ○ | | | | | |
| Rp-3/4" | 26,441 | 14 | 1,814 | 140 | 28 | - | 20,0 | 16,0 | 24,00 | 3235 | ○ | | | | | |
| Rp-1" | 33,249 | 11 | 2,309 | 160 | 32 | - | 25,0 | 20,0 | 30,25 | 3239 | ○ | | | | | |

| Rc | Ć d1 | 1"/P | P | l1 | l2 | l3 | Ć d2 | a | d | Norma | | ~DIN-5156 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | | | | | |
| | | | | | | | | | | INDEX | | D2-121101 | | | | |
| Rc-1/16" | - | 28 | 0,907 | 90 | 17 | - | 6,0 | 4,9 | 6,15 | 3321 | | ○ | | | | |
| Rc-1/8" | - | 28 | 0,907 | 90 | 18 | - | 7,0 | 5,5 | 8,15 | 3323 | | ● | | | | |
| Rc-1/4" | - | 19 | 1,337 | 100 | 22 | - | 11,0 | 9,0 | 10,85 | 3327 | | ● | | | | |
| Rc-3/8" | - | 19 | 1,337 | 100 | 22 | - | 12,0 | 9,0 | 14,30 | 3329 | | ● | | | | |
| Rc-1/2" | - | 14 | 1,814 | 125 | 25 | - | 16,0 | 12,0 | 17,80 | 3331 | | ○ | | | | |
| Rc-3/4" | - | 14 | 1,814 | 140 | 28 | - | 20,0 | 16,0 | 23,20 | 3335 | | ○ | | | | |
| Rc-1" | - | 11 | 2,309 | 160 | 33 | - | 25,0 | 20,0 | 29,20 | 3339 | | ○ | | | | |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 10-25 | 10-25 |
| S | - | - |

**Pogłębiacze stożkowe 1:16 na stronie 157**

**Informacje odnośnie wymiarów otworów pod gwinty stożkowe w części technicznej katalogu na stronie 267**



**Przykład zamawiania**

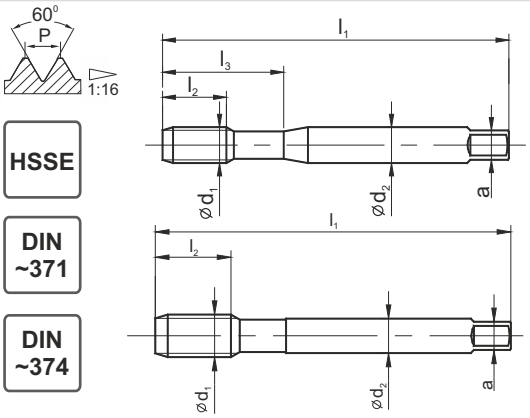
**D2-121101-3221**
**Gwintownik Rp-1/16" DIN-5156 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański rurowy stożkowy NPT 1:16, ANSI B-1.20.1

800

c




HSSE

DIN ~371

DIN ~374

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | |
| Nakrój | C / 2-3P |

| NPT | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | ~DIN-371 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | |
| | | | | | | | | | | INDEX | C2-121101 |
| 1/8 | - | 27 | 0,941 | 90 | 13 | 33 | 10,0 | 8,0 | 8,50 | 4623 | ● |
| 1/4 | - | 18 | 1,411 | 100 | 19,5 | 34,5 | 14,0 | 11,0 | 11,10 | 4627 | ● |

| NPT | 1"/P | P | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | a | d | Norma | ~DIN-374 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | |
| | | | | | | | | | INDEX | D2-121101 |
| 3/8 | 18 | 1,411 | 110 | 22 | - | 14,0 | 11,0 | 14,40 | 4629 | ● |
| 1/2 | 14 | 1,814 | 140 | 27 | - | 18,0 | 14,5 | 17,80 | 4631 | ● |
| 3/4 | 14 | 1,814 | 140 | 28 | - | 20,0 | 16,0 | 23,15 | 4635 | ● |
| 1 | 11.1/2 | 2,209 | 160 | 35 | - | 25,0 | 20,0 | 29,05 | 4639 | ● |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | 5-15 |
| N | 10-25 |
| S | - |

**Przykład zamawiania**

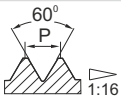
**C2-121101-4623**
**Gwintownik 800 1/8" NPT DIN-371 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański rurowy stożkowy NPTF 1:16, ANSI B-1.20.1

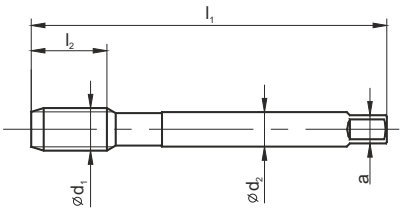
800

C




HSSE

DIN ~374



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | |
| Nakrój | C / 2-3P |

| NPTF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | ~DIN-374 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | |
| | | | | | | | | | INDEX | D2-121101 |
| 1/8 | - | 27 | 0,941 | 90 | 15 | 7,0 | 5,5 | 8,45 | 4723 | ● |
| 1/4 | - | 18 | 1,411 | 100 | 20 | 11,0 | 9,0 | 10,90 | 4727 | ○ |
| 3/8 | - | 18 | 1,411 | 110 | 22 | 14,0 | 11,0 | 14,30 | 4729 | ○ |
| 1/2 | - | 14 | 1,814 | 140 | 27 | 18,0 | 14,5 | 17,60 | 4731 | ○ |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | 5-15 |
| N | 10-25 |
| S | - |



**Przykład zamawiania**

**D2-121101-4723**
**Gwintownik 800 1/8" NPTF ~DIN-374 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

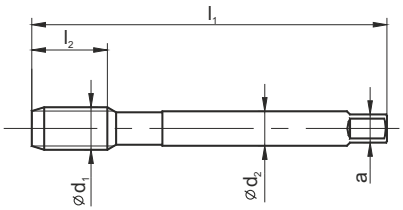
## Gwint amerykański walcowy rurowy NPSF, ANSI B 1.20.3

800

c

HSSE

DIN ~5156



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Typ otworu | < 1,5d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | |
| Nakrój | C / 2-3P |

| NPSF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | ~DIN-5156 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | |
| | | | | | | | | | INDEX | D2-121101 |
| 1/16 | 7,582 | 27 | 0,941 | 90 | 17 | 6,0 | 4,9 | 6,35 | 4521 | o |
| 1/8 | 9,929 | 27 | 0,941 | 90 | 18 | 7,0 | 5,5 | 8,70 | 4523 | o |
| 1/4 | 13,236 | 18 | 1,411 | 100 | 22 | 11,0 | 9,0 | 11,30 | 4527 | o |
| 3/8 | 16,673 | 18 | 1,411 | 100 | 22 | 12,0 | 9,0 | 14,75 | 4529 | o |
| 1/2 | 20,814 | 14 | 1,814 | 125 | 25 | 16,0 | 12,0 | 18,20 | 4531 | o |
| 3/4 | 26,166 | 14 | 1,814 | 140 | 28 | 20,0 | 16,0 | 23,50 | 4535 | o |
| 1 | 32,718 | 11.1/2 | 2,209 | 160 | 30 | 25,0 | 20,0 | 29,50 | 4539 | o |

| ISO | Vc (m/min) |
|---|---|
| P | 5-20 |
| M | - |
| K | 5-15 |
| N | 5-25 |
| S | - |

**Przykład zamawiania**

**D2-121101-4723**
**Gwintownik 800 1/8" NPSF ~DIN-5156 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

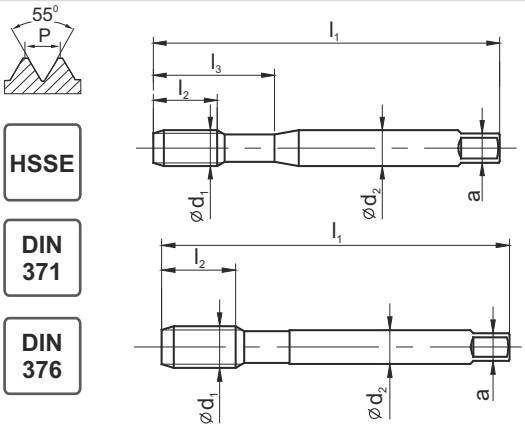
## Gwint calowy zwykły Whitwortha BSW, BS-84:1956

800

HSSE

DIN 371

DIN 376



| | B | C-R40 |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | B / 4-5P | C / 2-3P |

| BSW | Ćd1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norma | DIN-371(~DIN2182) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | normal | normal |
| | | | | | | | | | | | INDEX | C2-111101 | C2-511101 |
| 1/8-40 | 3,175 | 40 | 0,635 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,55 | 7123 | o | o |
| 3/16-24 | 4,762 | 24 | 1,058 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 3,70 | 7125 | o | o |
| 1/4-20 | 6,350 | 20 | 1,270 | 80 | 18 | 13 | 30 | 7,0 | 5,5 | 5,10 | 7127 | o | o |
| 5/16-18 | 7,938 | 18 | 1,411 | 90 | 20 | 20 | 35 | 8,0 | 6,0 | 6,50 | 7128 | o | o |
| 3/8-16 | 9,525 | 16 | 1,588 | 100 | 21 | 20 | 39 | 10,0 | 8,0 | 7,90 | 7129 | o | o |

| BSW | Ćd1 | 1"/P | P | l1 | l2 | l2 R40 | l3 | Ćd2 | a | | Norm | DIN-376(~DIN2182) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Tol. | | |
| | | | | | | | | | | | INDEX | D2-111101 | D2-511101 |
| 7/16-14 | 11,112 | 14 | 1,814 | 100 | 22 | 15 | - | 8,0 | 6,2 | 9,25 | 7130 | o | o |
| 1/2-12 | 12,700 | 12 | 2,117 | 110 | 24 | 18 | - | 9,0 | 7,0 | 10,50 | 7131 | o | o |
| 5/8-11 | 15,875 | 11 | 2,309 | 110 | 32 | 22 | - | 12,0 | 9,0 | 13,50 | 7133 | o | o |
| 3/4-10 | 19,050 | 10 | 2,540 | 125 | 32 | 25 | - | 14,0 | 11,0 | 16,40 | 7135 | o | o |
| 7/8-9 | 22,225 | 9 | 2,822 | 140 | 32 | 30 | - | 18,0 | 14,5 | 19,25 | 7137 | o | o |
| 1-8 | 25,400 | 8 | 3,175 | 160 | 38 | 30 | - | 20,0 | 16,0 | 22,00 | 7139 | o | o |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-20 | 5-20 |
| M | - | - |
| K | 5-15 | 5-15 |
| N | 5-25 | 5-25 |
| S | - | - |



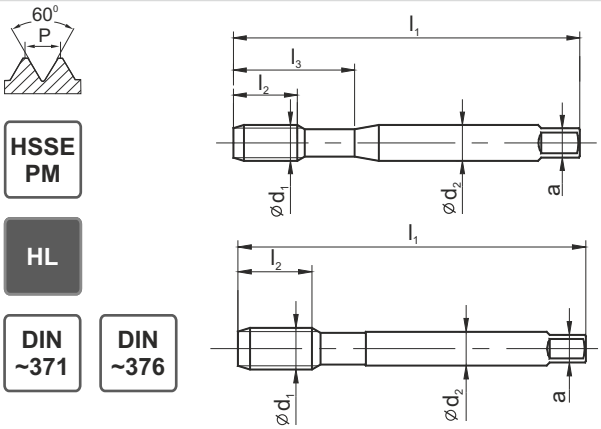
**Przykład zamawiania**

**C2-111101-7123**
**Gwintownik 800 1/8-40 BSW DIN-371 C HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny zwykły ISO DIN 8140-2

MASTERTAP



| | B-HL | E-R45-HL |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | E / 1,5-2P |

| EG M (STI) | Ćd1 | P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | ~DIN-371(DIN-40435) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 6H mod. | 6H mod. |
| | | | | | | | | | | INDEX | C4-118M01 | C4-718M01 |
| M2 | 2,520 | 0,40 | 50 | 9 | 5 | 14 | 2,8 | 2,1 | 2,10 | 6020 | ● | ● |
| M2,5 | 3,084 | 0,45 | 56 | 10 | 5 | 18 | 3,5 | 2,7 | 2,65 | 6025 | ● | ● |
| M3 | 3,650 | 0,50 | 63 | 12 | 5 | 21 | 4,5 | 3,4 | 3,15 | 6030 | ● | ● |
| M4 | 4,910 | 0,70 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 4,20 | 6040 | ● | ● |
| M5 | 6,040 | 0,80 | 80 | 18 | 10 | 30 | 6,0 | 4,9 | 5,25 | 6050 | ● | ● |
| M6 | 7,300 | 1,00 | 90 | 18 | 10 | 35 | 8,0 | 6,2 | 6,30 | 6060 | ● | ● |
| M8 | 9,624 | 1,25 | 100 | 20 | 16 | 39 | 10,0 | 8,0 | 8,40 | 6080 | ● | ● |

| EG M (STI) | Ćd1 | P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | ~DIN-376(DIN-40435) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 6H mod. | 6H mod. |
| | | | | | | | | | | INDEX | D4-118M01 | D4-718M01 |
| M10 | 11,948 | 1,50 | 100 | 15 | 15 | - | 9,0 | 7,0 | 10,50 | 6100 | ● | ● |
| M12 | 14,274 | 1,75 | 110 | 20 | 20 | - | 11,0 | 9,0 | 12,50 | 6120 | ● | ● |
| M14 | 16,598 | 2,00 | 110 | 20 | 20 | - | 12,0 | 9,0 | 14,50 | 6140 | ● | ● |
| M16 | 18,598 | 2,00 | 125 | 20 | 20 | - | 14,0 | 11,0 | 16,50 | 6160 | ● | ● |
| M18 | 21,248 | 2,50 | 140 | 27 | 27 | - | 18,0 | 14,5 | 18,75 | 6180 | ● | ● |
| M20 | 23,248 | 2,50 | 160 | 30 | 30 | - | 18,0 | 14,5 | 20,75 | 6200 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-40 | 5-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-30 | 10-30 |
| S | 1-8 | 1-8 |

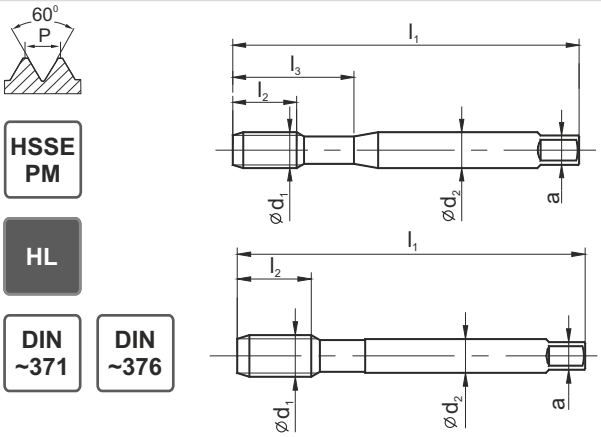
**Przykład zamawiania**

**C4-118M01-6030**
**MasterTAP M3 EG M 6H mod. DIN-371 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ASME B18.29.1

MASTERTAP




HSSE PM

HL

DIN ~371

DIN ~376

| | B-HL | E-R45-HL |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | E / 1,5-2P |

| EG UNC (STI) | Ćd1 | 1/P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | ~DIN-371(DIN-40435) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | C4-118M01 | C4-718M01 |
| No4-40 | 3,671 | 40 | 63 | 13 | 7 | 21 | 4,5 | 3,4 | 3,10 | 6804 | ○ | ○ |
| No6-32 | 4,536 | 32 | 70 | 14 | 8 | 25 | 6,0 | 4,9 | 3,80 | 6806 | ○ | ○ |
| No8-32 | 5,197 | 32 | 80 | 16 | 10 | 30 | 6,0 | 4,9 | 4,40 | 6808 | ○ | ○ |
| No10-24 | 6,200 | 24 | 80 | 17 | 12 | 30 | 7,0 | 5,5 | 5,20 | 6810 | ○ | ○ |
| 1/4-20 | 8,002 | 20 | 90 | 20 | 15 | 35 | 8,0 | 6,2 | 6,70 | 6827 | ○ | ○ |
| 5/16-18 | 9,771 | 18 | 100 | 22 | 18 | 39 | 10,0 | 8,0 | 8,40 | 6828 | ○ | ○ |

| EG UNC (STI) | Ćd1 | 1/P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norm | ~DIN-376(DIN-40435) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | D4-118M01 | D4-718M01 |
| 3/8-16 | 11,587 | 16 | 100 | 15 | 15 | - | 9 | 7 | 10 | 6829 | ○ | ○ |
| 7/16-14 | 13,469 | 14 | 110 | 18 | 18 | - | 11 | 9 | 11,6 | 6830 | ○ | ○ |
| 1/2-13 | 15,237 | 13 | 110 | 18 | 18 | - | 12 | 9 | 13,3 | 6831 | ○ | ○ |
| 9/16-12 | 17,039 | 12 | 110 | 20 | 20 | - | 12 | 9 | 14,9 | 6832 | ○ | ○ |
| 5/8-11 | 18,875 | 11 | 125 | 20 | 20 | - | 14 | 11 | 16,5 | 6833 | ○ | ○ |
| 3/4-10 | 22,349 | 10 | 140 | 25 | 25 | - | 18 | 14,5 | 19,75 | 6835 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-40 | 5-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-30 | 10-30 |
| S | 1-8 | 1-8 |



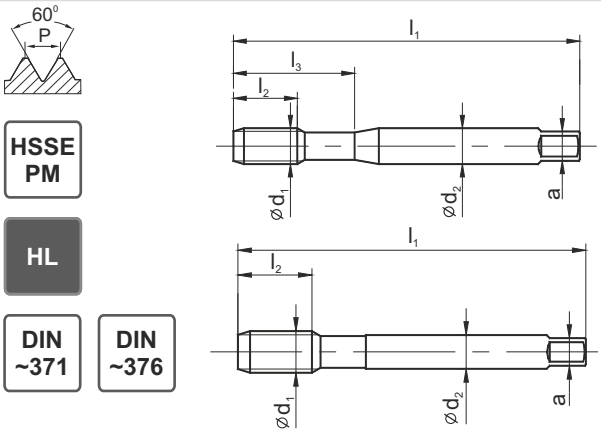
**Przykład zamawiania**

**C4-118M01-6804**
**MasterTAP No4-40 EG UNC 2B ~DIN-371 B HSSE-PM HL**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ASME B18.29.1

MASTERTAP




HSSE PM

HL

DIN ~371 DIN ~376

| | B-HL | E-R45-HL |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 2,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | HL | HL |
| Nakrój | B / 4-5P | E / 1,5-2P |

| EG UNF (STI) | Ćd1 | 1/P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norma | ~DIN-371 | (DIN-40435) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | C4-118M01 | C4-718M01 |
| No4-56 | 3,533 | 56 | 48 | 9 | 6 | 20 | 4 | 3 | 3 | 6904 | o | o |
| No6-40 | 4,330 | 40 | 70 | 10 | 7 | 25 | 6 | 4,9 | 3,7 | 6906 | o | o |
| No8-36 | 5,083 | 36 | 80 | 13 | 9 | 30 | 6 | 4,9 | 4,4 | 6908 | o | o |
| No10-32 | 5,858 | 32 | 80 | 13 | 9 | 30 | 6 | 4,9 | 5,1 | 6910 | o | o |
| 1/4-28 | 7,528 | 28 | 90 | 17 | 10 | 35 | 8 | 6,2 | 6,6 | 6927 | o | o |
| 5/16-24 | 9,312 | 24 | 90 | 18 | 12 | 35 | 10 | 8 | 8,3 | 6928 | o | o |

| EG UNF (STI) | Ćd1 | 1/P | l1 | l2 | l2 R45 | l3 | Ćd2 | a | d | Norm | ~DIN-376 | (DIN-40435) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | D4-118M01 | D4-718M01 |
| 3/8-24 | 10,899 | 24 | 90 | 12 | 12 | - | 8 | 6 | 9,8 | 6929 | o | o |
| 7/16-20 | 12,763 | 20 | 100 | 15 | 15 | - | 9 | 7 | 11,5 | 6930 | o | o |
| 1/2-20 | 14,352 | 20 | 100 | 15 | 15 | - | 11 | 9 | 13,1 | 6931 | o | o |
| 9/16-18 | 16,121 | 18 | 100 | 15 | 15 | - | 12 | 9 | 14,7 | 6932 | o | o |
| 5/8-18 | 17,709 | 18 | 110 | 15 | 15 | - | 14 | 11 | 16,25 | 6933 | o | o |
| 3/4-16 | 21,112 | 16 | 125 | 17 | 17 | - | 16 | 12,0 | 19,5 | 6935 | o | o |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 5-40 | 5-40 |
| M | 5-15 | 5-15 |
| K | 10-30 | 10-30 |
| N | 10-30 | 10-30 |
| S | 1-8 | 1-8 |

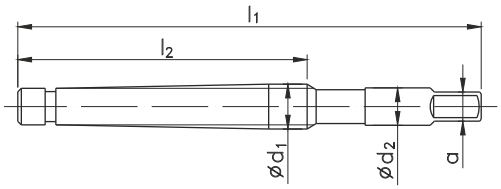
**Przykład zamawiania**

C4-118M01-6904
MasterTAP No4-56 EG UNF 2B ~DIN-371 B HSSE-PM HL

● Dostępne z magazynu
○ Na zapytanie

## Gwint trapezowy Tr, DIN-103

HSS




| | NGSt | |
|---|---|---|
| | | LH |
| | | |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2d | < 2d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | - | - |
| Nakrój | 24P | 24P |

| Tr Ć $d_1$ | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | NGSt | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | 7H | 7H |
| | | | | | | | INDEX | G1-701002 | G1-751002 |
| Tr 10x1,5 | 1,5 | 100 | 45 | 7 | 5,5 | 8,5 | 8008 | ○ | ○ |
| Tr 10x2 | 2 | 115 | 76 | 7 | 5,5 | 8 | 8009 | ● | ○ |
| Tr 12x2 | 2 | 120 | 74 | 8 | 6,3 | 10 | 8014 | ● | ○ |
| Tr 12x3 | 3 | 155 | 104 | 8 | 6,3 | 9 | 8015 | ● | ○ |
| Tr 14x2 | 2 | 130 | 74 | 10 | 8 | 12 | 8018 | ● | ○ |
| Tr 14x3 | 3 | 160 | 104 | 10 | 8 | 11 | 8019 | ● | ○ |
| Tr 16x2 | 2 | 135 | 74 | 11,2 | 9 | 14 | 8022 | ● | ○ |
| Tr 16x4 | 4 | 200 | 132 | 11,2 | 9 | 12 | 8024 | ● | ○ |
| Tr 18x2 | 2 | 140 | 74 | 12,5 | 10 | 16 | 8030 | ○ | ○ |
| Tr 18x4 | 4 | 205 | 132 | 12,5 | 10 | 14 | 8032 | ○ | ○ |
| Tr 20x2 | 2 | 145 | 74 | 14 | 11,2 | 18 | 8033 | ○ | ○ |
| Tr 20x4 | 4 | 210 | 132 | 14 | 11,2 | 16 | 8034 | ○ | ○ |
| Tr 22x3 | 3 | 185 | 104 | 16 | 12,5 | 19 | 8035 | ○ | ○ |
| Tr 22x5 | 5 | 250 | 165 | 16 | 12,5 | 17 | 8037 | ○ | ○ |
| Tr 24x3 | 3 | 190 | 104 | 18 | 14 | 21 | 8040 | ○ | ○ |
| Tr 24x5 | 5 | 255 | 165 | 18 | 14 | 19 | 8042 | ○ | ○ |
| Tr 26x3 | 3 | 195 | 104 | 20 | 16 | 23 | 8045 | ○ | ○ |
| Tr 26x5 | 5 | 265 | 165 | 20 | 16 | 21 | 8047 | ○ | ○ |
| Tr 28x3 | 3 | 205 | 104 | 22,4 | 18 | 25 | 8050 | ○ | ○ |
| Tr 28x5 | 5 | 270 | 165 | 22,4 | 18 | 23 | 8052 | ○ | ○ |
| Tr 30x3 | 3 | 205 | 104 | 22,4 | 18 | 27 | 8055 | ○ | ○ |
| Tr 30x6 | 6 | 305 | 206 | 22,4 | 18 | 24 | 8057 | ○ | ○ |
| Tr 32x6 | 6 | 315 | 206 | 25 | 20 | 26 | 8062 | ○ | ○ |
| Tr 36x6 | 6 | 325 | 206 | 28 | 22,4 | 30 | 8072 | ○ | ○ |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 2-6 | 2-6 |
| M | - | - |
| K | 2-6 | 2-6 |
| N | 2-8 | 2-8 |
| S | - | - |

**Przykład zamawiania**

**G1-701002-8009**
**Gwintownik Tr10x2-7H NGSt HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Wygniataki

# WYGNIATAKI

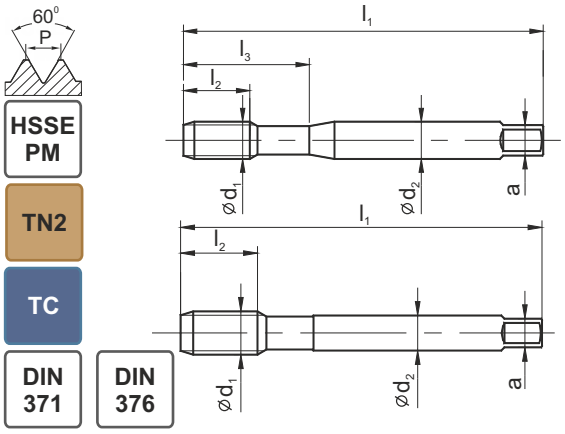
STRONA


TABELA DOBORU 4

STRONY KATALOGOWE 85-89

| | | | | |
|---|---|---|---|---|
| M | DIN-371<br>DIN-376 | Wygniataki z chwytem wzmocnionym<br>Wygniataki z chwytem przelotowym | WGN | 85 |
| MF | DIN-371<br>DIN-374 | Wygniataki z chwytem wzmocnionym<br>Wygniataki z chwytem przelotowym | WGN | 86 |
| UNC | DIN-371<br>DIN-376 | Wygniataki z chwytem wzmocnionym<br>Wygniataki z chwytem przelotowym | WGN | 87 |
| UNF | DIN-371<br>DIN-374 | Wygniataki z chwytem wzmocnionym<br>Wygniataki z chwytem przelotowym | WGN | 88 |
| G | ~DIN-5156 | Wygniataki z chwytem przelotowym | WGN | 89 |

## Gwint metryczny ISO DIN-13




### WGN

| | C-TN2 | C-SR-TN2 | C-SR-TN2 | C-SR-TC | E-SR-TC | E-SR-IK-TC | E-SR-IKR-TC |
|---|---|---|---|---|---|---|---|
| Rodzaj materiału obrabbianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d | < 3d | < 3d | < 3d | < 3d | < 3d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TN2 | TN2 | TN2 | TC | TC | TC | TC |
| Nakrój | C / 2-3P | C / 2-3P | C / 2-3P | C / 2-3P | E / 1,5-2P | E / 1,5-2P | E / 1,5-2P |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-371 (~DIN-2174) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6GX | 6HX | 6HX | 6HX | 6HX |
| | | | | | | | | INDEX | C4-903005 | C4-923005 | C4-923006 | C4-925005 | C4-945005 | C4-945055 | C4-945065 |
| M 1,6 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 1,47 | 0016 | ● | ● | - | - | - | - | - |
| M 2 | 0,40 | 45 | 8 | 8 | 2,8 | 2,1 | 1,85 | 0020 | ● | ● | - | - | - | - | - |
| M 2,5 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 2,33 | 0025 | ● | ● | - | - | - | - | - |
| M 3 | 0,50 | 56 | 10 | 18 | 3,5 | 2,7 | 2,80 | 0030 | ● | ● | ● | ● | ● | - | - |
| M 3,5 | 0,60 | 56 | 12 | 20 | 4 | 3 | 3,25 | 0035 | ○ | ○ | ○ | ○ | ○ | - | - |
| M 4 | 0,70 | 63 | 7 | 21 | 4,5 | 3,4 | 3,70 | 0040 | ● | ● | ● | ● | ● | - | - |
| M 5 | 0,80 | 70 | 8 | 25 | 6 | 4,9 | 4,65 | 0050 | ● | ● | ● | ● | ● | ● | ● |
| M 6 | 1,00 | 80 | 10 | 30 | 6 | 4,9 | 5,60 | 0060 | ● | ● | ● | ● | ● | ● | ● |
| M 7 | 1,00 | 80 | 10 | 30 | 7 | 5,5 | 6,60 | 0070 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 7,45 | 0080 | ● | ● | ● | ● | ● | ● | ● |
| M 9 | 1,25 | 90 | 13 | 35 | 9 | 7 | 8,45 | 0090 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| M 10 | 1,50 | 100 | 15 | 39 | 10 | 8 | 9,35 | 0100 | ● | ● | ● | ● | ● | ● | ● |

| M Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | d | Norma | DIN-376 (~DIN-2174) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX | 6GX | | | | |
| | | | | | | | | INDEX | D4-903005 | D4-923005 | D4-923006 | | | | |
| M6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 5,60 | 0060 | ● | ● | ● | | | | |
| M8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 7,45 | 0080 | ● | ● | ● | | | | |
| M 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 9,35 | 0100 | ● | ● | ● | | | | |
| M 12 | 1,75 | 110 | 18 | - | 9 | 7 | 11,25 | 0120 | ● | ● | ● | | | | |
| M 14 | 2 | 110 | 20 | - | 11 | 9 | 13,10 | 0140 | ● | ● | ● | | | | |
| M 16 | 2 | 110 | 20 | - | 12 | 9 | 15,10 | 0160 | ● | ● | ● | | | | |
| M 18 | 2,5 | 125 | 32 | - | 14 | 11 | 16,85 | 0180 | ● | ● | ● | | | | |
| M 20 | 2,5 | 140 | 32 | - | 16 | 12 | 18,85 | 0200 | ● | ● | ● | | | | |

| ISO | Vc (m/min) | | | | | | |
|---|---|---|---|---|---|---|---|
| P | 10-30 | 10-30 | 10-30 | | | | |
| M | 10-25 | 10-25 | 10-25 | | | | |
| K | - | - | - | | | | |
| N | 20-40 | 20-40 | 20-40 | | | | |
| S | - | - | - | | | | |

**Przykład zamawiania**

**C4-903005-0100**
**Wygniatak WGN M10-6HX DIN-371 C HSSE-PM TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

2

## Gwint metryczny drobnozwojny ISO DIN-13

**WGN**

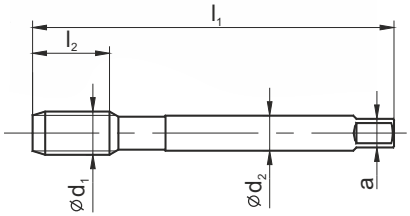
HSSE PM

TN2

TC

DIN 371

DIN 374



| | C-SR-TN2 | C-SR-TC |
|---|---|---|
| Rodzaj materiału obrabbianego | P M K N S H | P M K N S H |
| Typ otworu | < 3d | < 3d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TN2 | TC |
| Nakrój | C / 2-3P | C / 2-3P |

| MF Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | | Norma | DIN-371 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX |
| | | | | | | | | INDEX | C4-923005 | C4-925005 |
| M 4 x 0,5 | 0,5 | 63 | 7 | 21 | 4,5 | 3,4 | 3,80 | 0041 | ● | ● |
| M 5 x 0,5 | 0,5 | 70 | 8 | 25 | 6 | 4,9 | 4,80 | 0051 | ● | ● |
| M 6 x 0,5 | 0,5 | 80 | 10 | 30 | 6 | 4,9 | 5,80 | 0061 | ● | ● |
| M 6 x 0,75 | 0,75 | 80 | 10 | 30 | 7 | 5,5 | 5,70 | 0062 | ● | ● |
| M 8 x 1 | 1 | 90 | 13 | 35 | 8 | 6,2 | 7,60 | 0083 | ● | ● |
| M 10 x 1 | 1 | 90 | 13 | 35 | 9 | 7 | 9,60 | 0103 | ● | ● |
| M 10 x 1,25 | 1,25 | 100 | 15 | 39 | 10 | 8 | 9,45 | 0104 | ● | ● |

| MF Ćd1 | P | l1 | l2 | l3 | Ćd2 | a | | Norma | DIN-374 (~DIN-2174) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX |
| | | | | | | | | INDEX | D4-923005 | D4-925005 |
| M 6 x 0,5 | 0,5 | 80 | 10 | - | 4,5 | 3,4 | 5,80 | 0061 | ○ | ○ |
| M 6 x 0,75 | 0,75 | 80 | 10 | - | 4,5 | 3,4 | 5,70 | 0062 | ○ | ○ |
| M 8 x 1 | 1 | 90 | 10 | - | 6,0 | 4,9 | 7,60 | 0083 | ● | ● |
| M 10 x 1 | 1 | 90 | 10 | - | 7,0 | 5,5 | 9,60 | 0103 | ● | ● |
| M 10 x 1,25 | 1,25 | 100 | 15 | - | 7,0 | 5,5 | 9,45 | 0104 | ● | ● |
| M 12 x 1 | 1 | 100 | 10 | - | 9,0 | 7 | 11,60 | 0123 | ● | ● |
| M 12 x 1,25 | 1,25 | 100 | 15 | - | 9,0 | 7 | 11,45 | 0124 | ● | ● |
| M 12 x 1,5 | 1,5 | 100 | 15 | - | 9,0 | 7 | 11,35 | 0125 | ● | ● |
| M 16 x 1,5 | 1,5 | 100 | 15 | - | 12 | 9 | 15,35 | 0165 | ● | ● |
| M 18 x 1,5 | 1,5 | 110 | 17 | - | 14 | 11 | 17,35 | 0185 | ● | ● |
| M 20 x 1,5 | 1,5 | 125 | 17 | - | 16 | 12 | 19,35 | 0205 | ● | ● |

| ISO | Vc (m/min) | |
|---|---|---|
| P | 10-30 | 10-30 |
| M | 10-25 | 10-25 |
| K | - | - |
| N | 20-40 | 20-60 |
| S | - | - |

**Przykład zamawiania**

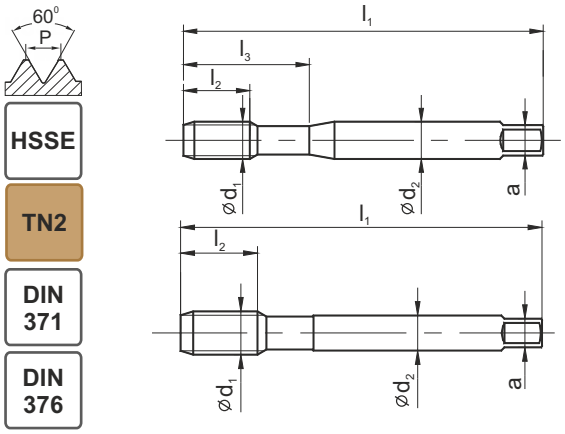
**D2-923105-0083**
**Wygniatak WGN M8x1-6HX DIN-374 C HSSE-PM TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

**WGN**

C-SR-TN2



| | |
|---|---|
| Rodzaj materiału obrabbianego | P M K N S H |
| Typ otworu | < 3d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | TN2 |
| Nakrój | C / 2-3P |

| UNC | Ć d1 | 1"/P | P | l1 | l2 | Ć d2 | a | d | Norma | DIN-371 (~DIN-2174) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 2BX |
| | | | | | | | | | INDEX | C2-923105 |
| No 5-40 | 3,175 | 40 | 0,635 | 56 | 7 | 3,5 | 2,7 | 2,90 | 4105 | o |
| No 6-32 | 3,505 | 32 | 0,795 | 56 | 6 | 4,0 | 3,0 | 3,15 | 4106 | o |
| No 8-32 | 4,166 | 32 | 0,794 | 63 | 7 | 4,5 | 3,4 | 3,80 | 4108 | o |
| No 10-24 | 4,826 | 24 | 1,058 | 70 | 8 | 6,0 | 4,9 | 4,35 | 4110 | o |
| No 12-24 | 5,486 | 24 | 1,058 | 80 | 10 | 6,0 | 4,9 | 5,00 | 4112 | o |
| 1/4-20 | 6,350 | 20 | 1,270 | 80 | 13 | 7,0 | 5,5 | 5,75 | 4127 | o |
| 5/16-18 | 7,938 | 18 | 1,411 | 90 | 13 | 8,0 | 6,2 | 7,30 | 4128 | o |
| 3/8-16 | 9,525 | 16 | 1,588 | 100 | 15 | 10 | 8 | 8,80 | 4129 | o |

| UNC | Ć d1 | 1"/P | P | l1 | l2 | Ć d2 | a | d | Norma | DIN-376 (~DIN-2174) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 2BX |
| | | | | | | | | | INDEX | D2-923105 |
| 7/16-14 | 11,112 | 14 | 1,814 | 100 | 15 | 8 | 6,2 | 10,25 | 4130 | o |
| 1/2-13 | 12,700 | 13 | 1,954 | 110 | 18 | 9 | 7 | 11,80 | 4131 | o |
| 5/8-11 | 15,875 | 11 | 2,309 | 110 | 20 | 12 | 9 | 14,80 | 4133 | o |

| ISO | Vc (m/min) |
|---|---|
| P | 10-30 |
| M | 10-25 |
| K | - |
| N | 20-40 |
| S | - |

**Przykład zamawiania**

**C2-923105-4105**
**Wygniatak WGN No 5-40 UNC 2BX DIN-371 C HSSE TN2**

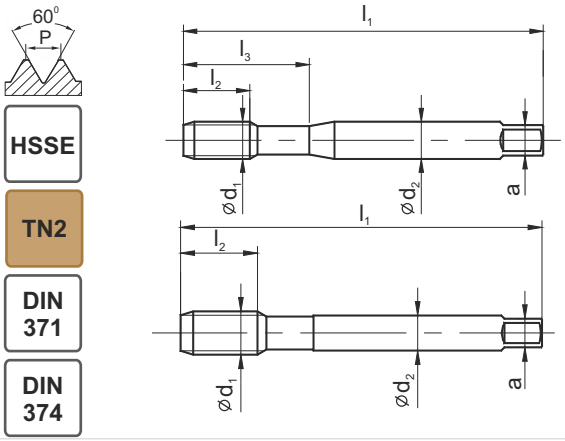
● **Dostępne z magazynu**
○ **Na zapytanie**

2

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

**WGN**

C-SR-TN2




HSSE

TN2

DIN 371

DIN 374

| | |
|---|---|
| Rodzaj materiału obrabbianego | P M K N S H |
| Typ otworu | < 3d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | TN2 |
| Nakrój | C / 2-3P |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | DIN-371 (~DIN-2174) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 2BX |
| | | | | | | | | | INDEX | C2-923105 |
| No 5-44 | 3,175 | 44 | 0,577 | 56 | 7 | 3,5 | 2,7 | 2,92 | 4205 | o |
| No 6-40 | 3,505 | 40 | 0,635 | 56 | 6 | 4 | 3 | 3,22 | 4206 | o |
| No 8-36 | 4,166 | 36 | 0,705 | 63 | 7 | 4,5 | 3,4 | 3,85 | 4208 | o |
| No 10-32 | 4,826 | 32 | 0,794 | 70 | 8 | 6 | 4,9 | 4,45 | 4210 | o |
| No 12-28 | 5,486 | 28 | 0,907 | 80 | 10 | 6 | 4,9 | 5,10 | 4212 | o |
| 1/4-28 | 6,350 | 28 | 0,907 | 80 | 10 | 6 | 4,9 | 5,95 | 4227 | o |
| 5/16-24 | 7,938 | 24 | 1,058 | 90 | 13 | 8 | 6,2 | 7,45 | 4228 | o |
| 3/8-24 | 9,525 | 24 | 1,058 | 100 | 15 | 10 | 8 | 9,05 | 4229 | o |

| UNF | Ć $d_1$ | 1"/P | P | $l_1$ | $l_2$ | Ć $d_2$ | a | d | Norma | DIN-374 (~DIN-2174) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | 2BX |
| | | | | | | | | | INDEX | D2-923105 |
| 7/16-20 | 11,112 | 20 | 1,270 | 100 | 15 | 8 | 6,2 | 10,55 | 4230 | o |
| 1/2-20 | 12,700 | 20 | 1,270 | 110 | 15 | 9 | 7 | 12,15 | 4231 | o |
| 5/8-18 | 15,875 | 18 | 1,411 | 110 | 15 | 12 | 9 | 15,25 | 4233 | o |
| 3/4-16 | 19,050 | 16 | 1,588 | 120 | 17 | 14 | 11 | 18,35 | 4235 | o |

| ISO | Vc (m/min) |
|---|---|
| P | 10-30 |
| M | 10-25 |
| K | - |
| N | 20-40 |
| S | - |



**Przykład zamawiania**

**C2-923105-4205**
**Wygniatak WGN No 5-44 UNF 2BX UNF DIN-371 C HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

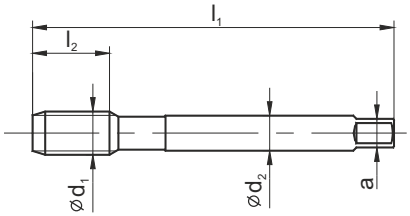
**WGN**

C-SR-TN2

HSSE

TN2

DIN ~5156



| | |
|---|---|
| Rodzaj materiału obrabbianego | P M K N S H |
| Typ otworu | < 3d |
| Rodzaj materiału | HSSE |
| Rodzaj powłoki | TN2 |
| Nakrój | C / 2-3P |

| G | Ć d1 | 1"/P | P | l1 | l2 | Ć d2 | a | d | Norma | ~DIN-5156 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | |
| | | | | | | | | | INDEX | D2-923105 |
| G-1/8" | 9,728 | 28 | 0,907 | 90 | 13 | 7 | 5,5 | 9,25 | 3123 | ● |
| G-1/4" | 13,157 | 19 | 1,337 | 100 | 16 | 11 | 9 | 12,55 | 3127 | ● |
| G-3/8" | 16,662 | 19 | 1,337 | 100 | 16 | 12 | 9 | 16,05 | 3129 | ● |
| G-1/2" | 20,955 | 14 | 1,814 | 125 | 18 | 16 | 12 | 20,10 | 3131 | ● |
| G-5/8" | 22,911 | 14 | 1,814 | 125 | 20 | 18 | 14,5 | 22,05 | 3133 | ● |
| G-3/4" | 26,441 | 14 | 1,814 | 140 | 22 | 20 | 16 | 25,60 | 3135 | ● |

| ISO | Vc (m/min) |
|---|---|
| P | 10-30 |
| M | 10-25 |
| K | - |
| N | 20-40 |
| S | - |

**Przykład zamawiania**

**D2-923105-3127**
**Wygniatak WGN G-1/4" DIN-5156 C HSSE TN2**

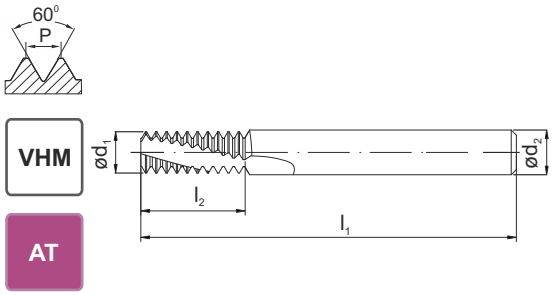
● **Dostępne z magazynu**
○ **Na zapytanie**

# Pełnowęglikowe frezy do gwintów

FANAR®

# Pełnowęglikowe frezy do gwintów

## Gwint metryczny ISO DIN-13




CTM

IK

| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Rodzaj materiału | VHM | VHM |
| Rodzaj powłoki | AT | AT |

| P | M | MF | Ć $d_1$ | Ć $d_2$ | $l_1$ | $l_2$ | z | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0,5 | M3 | ø≥ 4 | 2,2 | 6 | 58,0 | 5,3 | 3,00 | MI-0206053-0050 | o | MI-0206053-0050-IK | o |
| 0,5 | | ø≥ 5 | 3,8 | 6 | 58,0 | 10,3 | 3,00 | MI-0306103-0050 | o | MI-0306103-0050-IK | o |
| 0,7 | M4 | ø≥ 5 | 3,1 | 6 | 58,0 | 7,4 | 3,00 | MI-0306073-0070 | o | MI-0306073-0070-IK | o |
| 0,75 | | ø≥ 6 | 4,5 | 6 | 58,0 | 10,1 | 3,00 | MI-0406103-0075 | o | MI-0406103-0075-IK | o |
| 0,8 | M5 | ø≥ 6 | 3,6 | 6 | 58,0 | 9,2 | 3,00 | MI-0306093-0080 | o | MI-0306093-0080-IK | o |
| 1 | M6 | ø≥ 7 | 4,0 | 6 | 58,0 | 10,5 | 3,00 | MI-0406103-0100 | o | MI-0406103-0100-IK | o |
| 1 | M6 | ø≥ 7 | 4,0 | 6 | 58,0 | 14,5 | 3,00 | MI-0406143-0100 | o | MI-0406143-0100-IK | o |
| 1 | | ø≥ 9 | 6,0 | 6 | 58,0 | 12,5 | 3,00 | MI-0606123-0100 | o | MI-0606123-0100-IK | o |
| 1 | | ø≥ 10 | 8,0 | 8 | 64,0 | 16,5 | 4,00 | MI-0808164-0100 | o | MI-0808164-0100-IK | o |
| 1,25 | M8 | ø≥ 10 | 5,0 | 6 | 58,0 | 14,4 | 3,00 | MI-0506143-0125 | o | MI-0506143-0125-IK | o |
| 1,25 | M8 | ø≥ 10 | 5,0 | 6 | 58,0 | 19,4 | 3,00 | MI-0506193-0125 | o | MI-0506193-0125-IK | o |
| 1,5 | M10 | ø≥ 12 | 7,0 | 8 | 64,0 | 17,3 | 3,00 | MI-0708173-0150 | o | MI-0708173-0150-IK | o |
| 1,5 | M10 | ø≥ 12 | 7,0 | 8 | 76,0 | 24,8 | 3,00 | MI-0708243-0150 | o | MI-0708243-0150-IK | o |
| 1,5 | | ø≥ 14 | 10,0 | 10 | 73,0 | 21,8 | 4,00 | MI-1010214-0150 | o | MI-1010214-0150-IK | o |
| 1,5 | | ø≥ 20 | 16,0 | 16 | 105,0 | 33,8 | 6,00 | MI-1616336-0150 | o | MI-1616333-0150-IK | o |
| 1,75 | M12 | ø≥ 14 | 8,0 | 8 | 64,0 | 20,1 | 3,00 | MI-0808203-0175 | o | MI-0808203-0175-IK | o |
| 1,75 | M12 | ø≥ 14 | 8,0 | 8 | 76,0 | 28,9 | 3,00 | MI-0808283-0175 | o | MI-0808283-0175-IK | o |
| 2 | M16 | ø≥ 17 | 10,0 | 10 | 73,0 | 27,0 | 3,00 | MI-1010273-0200 | o | MI-1010274-0200-IK | o |
| 2 | M16 | ø≥ 17 | 10,0 | 10 | 105,0 | 39,0 | 3,00 | MI-1010393-0200 | o | MI-1010393-0200-IK | o |
| 2 | | ø≥ 18 | 12,0 | 12 | 84,0 | 27,0 | 4,00 | MI-1212274-0200 | o | MI-1212273-0200-IK | o |
| 2 | | ø≥ 26 | 20,0 | 20 | 105,0 | 41,0 | 6,00 | MI-2020416-0200 | o | MI-2020416-0200-IK | o |
| 2,5 | M20 | ø≥ 22 | 14,0 | 14 | 84,0 | 33,8 | 4,00 | MI-1414334-0250 | o | MI-1414334-0250-IK | o |
| 2,5 | M20 | ø≥ 22 | 14,0 | 14 | 105,0 | 48,8 | 4,00 | MI-1414484-0250 | o | MI-1414484-0250-IK | o |
| 3 | M24 | ø≥ 25 | 16,0 | 16 | 105,0 | 40,5 | 3,00 | MI-1616403-0300 | o | MI-1616403-0300-IK | o |
| 3 | M24 | ø≥ 25 | 16,0 | 16 | 120,0 | 58,5 | 3,00 | MI-1616583-0300 | o | MI-1616583-0300-IK | o |
| 3 | M27 | ø≥ 28 | 20,0 | 20 | 105,0 | 43,5 | 4,00 | MI-2020434-0300 | o | MI-2020434-0300-IK | o |

| ISO | | | Vc [m/min] | posuw [mm/z] | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ć 2 | Ć 3 | Ć4 | Ć6 | Ć 8 | Ć10 | Ć 12 | Ć 14 | Ć16 | Ć20 | Ć25 |
| P | P1-P5 | Stal konstrukcyjna, stal do nawęglania | 100-250 | 0,03 | 0,04 | 0,04 | 0,06 | 0,07 | 0,08 | 0,09 | 0,11 | 0,12 | 0,15 | 0,18 |
| | P6-P9 | Stal węglowa i niskostopowa, staliwo | 110-180 | 0,02 | 0,03 | 0,03 | 0,05 | 0,06 | 0,07 | 0,08 | 0,09 | 0,10 | 0,12 | 0,15 |
| | P10-P12 | Stal stopowa, stal narzędziowa, stal do ulepszania cieplnie do 38 HRC | 90-160 | 0,02 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,05 | 0,06 | 0,07 | 0,08 | 0,10 |
| | P13-P14 | Stal ferrytyczna i martenzytyczna | 60-160 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,06 | 0,06 | 0,07 | 0,08 | 0,09 | 0,11 |
| M | M1-M3 | Stal austenityczna | 60-120 | 0,02 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,05 | 0,06 | 0,07 | 0,08 | 0,10 |
| K | K1-K6 | Żeliwo szare | 70-150 | 0,03 | 0,04 | 0,04 | 0,06 | 0,07 | 0,08 | 0,09 | 0,11 | 0,12 | 0,15 | 0,18 |
| N | N1-N4<br>N7-N9 | Aluminium i jego stopy 1% < Si < 7%, miedź niestopowa i stopowa | 150-350 | 0,03 | 0,04 | 0,04 | 0,06 | 0,07 | 0,08 | 0,09 | 0,11 | 0,12 | 0,15 | 0,18 |
| | N5, N10 | Stopy aluminium Si ≥ 7% | 100-250 | 0,02 | 0,02 | 0,03 | 0,03 | 0,04 | 0,05 | 0,05 | 0,06 | 0,07 | 0,08 | 0,10 |
| S | S1-S8 | Tytan i jego stopy, nikiel i jego stopy | 20-80 | 0,02 | 0,02 | 0,02 | 0,03 | 0,03 | 0,03 | 0,03 | 0,04 | 0,04 | 0,04 | 0,05 |



**Przykład zamawiania**
**MI-0206053-0050**
**Pełnowęglikowe frezy do gwintów 0,5 M3 VHM AT**

# Gwintowniki ręczne

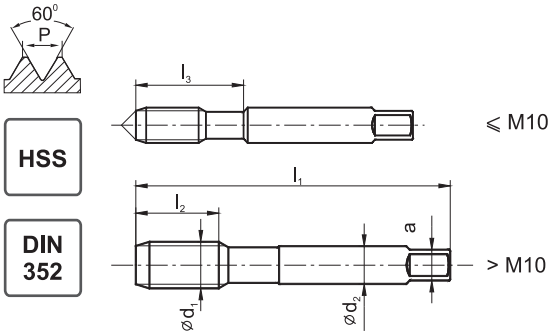
# GWINTOWNIKI RĘCZNE

STRONA


| | |
|---|---|
| TABELA DOBORU | 5 |
| STRONY KATALOGOWE | 95-112 |

| | | | | |
|---|---|---|---|---|
| M | DIN-352 | Komplety gwintowników ręcznych 3-sztukowe<br>Komplety gwintowników ręcznych 2-sztukowe<br>Gwintownik ręczny wykańczak F | | 95-97 |
| | DIN-352 | Komplety gwintowników ręcznych 3-sztukowe<br>Gwintownik ręczny wykańczak F | INOX | 98-99 |
| | ~DIN-352 | Komplety gwintowników ręcznych 3-sztukowe<br>Gwintownik ręczny wykańczak F | HRC40 | 100 |
| MF | DIN-2181 | Komplety gwintowników ręcznych 2-sztukowe<br>Gwintownik ręczny wykańczak F | | 101-103 |
| | DIN-2181 | Komplety gwintowników ręcznych 2-sztukowe<br>Gwintownik ręczny wykańczak F | HRC40 | 104 |
| UNC | DIN-352 | Komplety gwintowników ręcznych 3-sztukowe<br>Gwintownik ręczny wykańczak F | | 105 |
| UNF | DIN-2181 | Komplety gwintowników ręcznych 2-sztukowe<br>Gwintownik ręczny wykańczak F | | 106 |
| G | DIN-5157 | Komplety gwintowników ręcznych do gwintów rurowych 2-sztukowe<br>Gwintownik ręczny wykańczak F | | 107 |
| | DIN-5157 | Komplety gwintowników ręcznych do gwintów rurowych 2-sztukowe<br>Gwintownik ręczny wykańczak F | INOX | 108 |
| | DIN-5157 | Komplety gwintowników ręcznych do gwintów rurowych 2-sztukowe<br>Gwintownik ręczny wykańczak F | HRC40 | 109 |
| BSW | DIN-352 | Komplety gwintowników ręcznych 3-sztukowe<br>Gwintownik ręczny wykańczak F | | 110 |
| BSF | DIN-2181 | Komplety gwintowników ręcznych 2-sztukowe<br>Gwintownik ręczny wykańczak F | | 111 |
| PG | NGSy | Gwintowniki ręczne do rurek instalacyjnych.<br>Gwintownik ręczny wykańczak F | | 112 |

## Gwint metryczny ISO DIN-13



| | KPL/3 | KPL/2 | F |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS |
| Rodzaj powłoki | | | |
| Nakrój | | | ~2P |

| M ⌀$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ⌀$d_2$ | a | d | Norma | DIN-352 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO1 (4H) | | |
| | | | | | | | | INDEX | A1-230002 | A1-220002 | A1-233002 |
| M1 | 0,25 | 32,5 | 6,5 | 10,5 | 2,5 | 2,10 | 0,75 | 0010 | ● | - | ● |
| M1,1 | 0,25 | 32,5 | 6,5 | 10,5 | 2,5 | 2,10 | 0,85 | 0011 | ● | - | ● |
| M1,2 | 0,25 | 32,5 | 6,5 | 10,5 | 2,5 | 2,10 | 0,95 | 0012 | ● | - | ● |
| M1,4 | 0,30 | 32,5 | 8,0 | 10,5 | 2,5 | 2,10 | 1,10 | 0014 | ● | - | ● |
| | | | | | | | | Tol. | ISO2 (6H) | | |
| | | | | | | | | INDEX | A1-230001 | A1-220001 | A1-233001 |
| M1,6 | 0,35 | 41,0 | 9,0 | 10,5 | 2,5 | 2,10 | 1,25 | 0016 | ● | - | ● |
| M1,7 | 0,35 | 41,0 | 9,0 | 10,5 | 2,5 | 2,10 | 1,35 | 0017 | ● | - | ● |
| M1,8 | 0,35 | 41,0 | 9,0 | 10,5 | 2,5 | 2,10 | 1,45 | 0018 | ● | - | ● |
| M2 | 0,40 | 36,0 | 10,0 | 10,0 | 2,8 | 2,10 | 1,60 | 0020 | ● | - | ● |
| M2,2 | 0,45 | 36,0 | 9,0 | 13,0 | 2,8 | 2,10 | 1,75 | 0022 | ● | - | ● |
| M2,3 | 0,40 | 36,0 | 9,0 | 13,0 | 2,8 | 2,10 | 1,90 | 0023 | ● | - | ● |
| M2,5 | 0,45 | 40,0 | 9,0 | 15,0 | 2,8 | 2,10 | 2,05 | 0025 | ● | - | ● |
| M2,6 | 0,45 | 40,0 | 9,0 | 15,0 | 2,8 | 2,10 | 2,15 | 0026 | ● | - | ● |
| M3 | 0,50 | 40,0 | 11,0 | 18,0 | 3,5 | 2,70 | 2,50 | 0030 | ● | ● | ● |
| M3,5 | 0,60 | 45,0 | 13,0 | 21,0 | 4,0 | 3,00 | 2,90 | 0035 | ● | ● | ● |
| M4 | 0,70 | 45,0 | 13,0 | 21,0 | 4,5 | 3,40 | 3,30 | 0040 | ● | ● | ● |
| M4,5 | 0,75 | 50,0 | 16,0 | 25,0 | 6,0 | 4,90 | 3,70 | 0045 | ● | ● | ● |
| M5 | 0,80 | 52,0 | 16,0 | 26,0 | 6,0 | 4,90 | 4,20 | 0050 | ● | ● | ● |
| M6 | 1,00 | 56,0 | 18,0 | 27,0 | 6,0 | 4,90 | 5,00 | 0060 | ● | ● | ● |
| M7 | 1,00 | 56,0 | 18,0 | - | 6,0 | 4,90 | 6,00 | 0070 | ● | ● | ● |
| M8 | 1,25 | 63,0 | 20,0 | - | 6,0 | 4,90 | 6,80 | 0080 | ● | ● | ● |
| M9 | 1,25 | 63,0 | 20,0 | - | 7,0 | 5,50 | 7,80 | 0090 | ● | ● | ● |
| M10 | 1,50 | 70,0 | 22,0 | - | 7,0 | 5,50 | 8,50 | 0100 | ● | ● | ● |
| M11 | 1,50 | 70,0 | 22,0 | - | 8,0 | 6,20 | 9,50 | 0110 | ● | ● | ● |
| M12 | 1,75 | 80,0 | 24,0 | - | 9,0 | 7,00 | 10,20 | 0120 | ● | ● | ● |
| M14 | 2,00 | 80,0 | 26,0 | - | 11,0 | 9,00 | 12,00 | 0140 | ● | ● | ● |
| M16 | 2,00 | 80,0 | 27,0 | - | 12,0 | 9,00 | 14,00 | 0160 | ● | ● | ● |
| M18 | 2,50 | 95,0 | 30,0 | - | 14,0 | 11,00 | 15,50 | 0180 | ● | ● | ● |
| M20 | 2,50 | 95,0 | 32,0 | - | 16,0 | 12,00 | 17,50 | 0200 | ● | ● | ● |
| M22 | 2,50 | 100,0 | 32,0 | - | 18,0 | 14,50 | 19,50 | 0220 | ● | ● | ● |
| M24 | 3,00 | 110,0 | 34,0 | - | 18,0 | 14,50 | 21,00 | 0240 | ● | ○ | ● |
| M27 | 3,00 | 110,0 | 36,0 | - | 20,0 | 16,00 | 24,00 | 0270 | ● | ○ | ● |

**Przykład zamawiania**

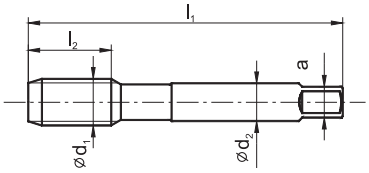
**A1-230001-0060**
**KPL/3 M6-6H DIN-352 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**HSS**

**DIN 352**



| | KPL/3 | KPL/2 | F |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS |
| Rodzaj powłoki | | | |
| Nakrój | | | ~2P |

| M ∅$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ∅$d_2$ | a | d | Norma | DIN-352 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | A1-230001 | A1-220001 | A1-233001 |
| M30 | 3,5 | 125 | 40 | - | 22 | 18 | 26,5 | 0300 | ● | - | ● |
| M33 | 3,5 | 125 | 40 | - | 25 | 20 | 29,5 | 0330 | ● | - | ● |
| M36 | 4,0 | 150 | 50 | - | 28 | 22 | 32,0 | 0360 | ● | - | ● |
| M39 | 4,0 | 150 | 50 | - | 32 | 24 | 35,0 | 0390 | ● | - | ● |
| M42 | 4,5 | 150 | 56 | - | 32 | 24 | 37,5 | 0420 | ● | - | ● |
| M45 | 4,5 | 160 | 58 | - | 36 | 29 | 40,5 | 0450 | ● | - | ● |
| M48 | 5,0 | 180 | 65 | - | 36 | 29 | 43,0 | 0480 | ● | - | ● |
| M52 | 5,0 | 180 | 65 | - | 40 | 32 | 47,0 | 0520 | ● | - | ● |
| M56 | 5,5 | 200 | 75 | - | 45 | 35 | 50,5 | 0560 | ○ | - | ○ |
| M60 | 5,5 | 200 | 70 | - | 45 | 35 | 54,5 | 0600 | ○ | - | ○ |
| M64 | 6,0 | 220 | 75 | - | 50 | 39 | 58,0 | 0640 | ○ | - | ○ |
| M68 | 6,0 | 220 | 75 | - | 50 | 39 | 62,0 | 0680 | ○ | - | ○ |



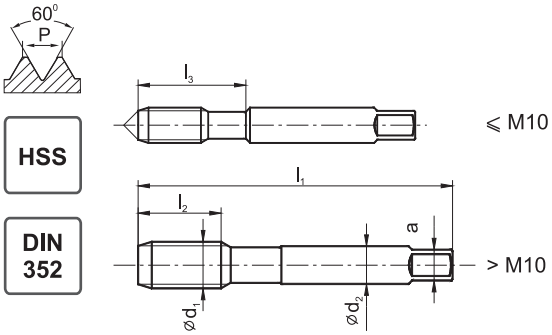


**Przykład zamawiania**

**A1-230001-0420**
**KPL/3 M42-6H DIN-352 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13



| | KPL/3-LH | KPL/2-LH | F-LH |
|---|---|---|---|
| | Nr1 Nr2 F | Nr1 F | F |
| | LH | LH | LH |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS |
| Rodzaj powłoki | | | |
| Nakrój | | | ~2P |

| M ⌀$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ⌀$d_2$ | a | d | Norma | DIN-352 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | A1-270001 | A1-260001 | A1-273001 |
| M3 | 0,50 | 40 | 11 | 18 | 3,5 | 2,7 | 2,5 | 0030 | ● | ● | ● |
| M3,5 | 0,60 | 45 | 13 | 21 | 4,0 | 3,0 | 2,9 | 0035 | ○ | ○ | ○ |
| M4 | 0,70 | 45 | 13 | 21 | 4,5 | 3,4 | 3,3 | 0040 | ● | ● | ● |
| M4,5 | 0,75 | 50 | 16 | 25 | 6,0 | 4,9 | 3,7 | 0045 | ○ | ○ | ○ |
| M5 | 0,80 | 50 | 16 | 26 | 6,0 | 4,9 | 4,2 | 0050 | ● | ● | ● |
| M6 | 1,00 | 56 | 18 | 27 | 6,0 | 4,9 | 5,0 | 0060 | ● | ● | ● |
| M7 | 1,00 | 56 | 18 | - | 6,0 | 4,9 | 6,0 | 0070 | ○ | ○ | ○ |
| M8 | 1,25 | 63 | 20 | - | 6,0 | 4,9 | 6,8 | 0080 | ● | ● | ● |
| M9 | 1,25 | 63 | 20 | - | 7,0 | 5,5 | 7,8 | 0090 | ○ | ○ | ○ |
| M10 | 1,50 | 70 | 22 | - | 7,0 | 5,5 | 8,5 | 0100 | ● | ● | ● |
| M11 | 1,50 | 70 | 22 | - | 8,0 | 6,2 | 9,5 | 0110 | ○ | ○ | ○ |
| M12 | 1,75 | 80 | 24 | - | 9,0 | 7,0 | 10,2 | 0120 | ● | ● | ● |
| M14 | 2,00 | 80 | 26 | - | 11,0 | 9,0 | 12,0 | 0140 | ○ | ○ | ○ |
| M16 | 2,00 | 80 | 27 | - | 12,0 | 9,0 | 14,0 | 0160 | ● | ● | ● |
| M18 | 2,50 | 95 | 30 | - | 14,0 | 11,0 | 15,5 | 0180 | ○ | ○ | ○ |
| M20 | 2,50 | 95 | 32 | - | 16,0 | 12,0 | 17,5 | 0200 | ● | ● | ● |
| M22 | 2,50 | 100 | 32 | - | 18,0 | 14,5 | 19,5 | 0220 | ○ | ○ | ○ |
| M24 | 3,00 | 110 | 34 | - | 18,0 | 14,5 | 21,0 | 0240 | ○ | ○ | ○ |
| M27 | 3,00 | 110 | 36 | - | 20,0 | 16,0 | 24,0 | 0270 | ○ | ○ | ○ |
| M30 | 3,50 | 125 | 40 | - | 22,0 | 18,0 | 26,5 | 0300 | ○ | ○ | ○ |
| M33 | 3,50 | 125 | 40 | - | 25,0 | 20,0 | 29,5 | 0330 | ○ | ○ | ○ |
| M36 | 4,00 | 150 | 50 | - | 28,0 | 22,0 | 32,0 | 0360 | ○ | ○ | ○ |
| M39 | 4,00 | 150 | 50 | - | 32,0 | 24,0 | 35,0 | 0390 | ○ | ○ | ○ |
| M42 | 4,50 | 150 | 56 | - | 32,0 | 24,0 | 37,5 | 0420 | ○ | ○ | ○ |
| M45 | 4,50 | 160 | 58 | - | 36,0 | 29,0 | 40,5 | 0450 | ○ | ○ | ○ |
| M48 | 5,00 | 180 | 65 | - | 36,0 | 29,0 | 43,0 | 0480 | ○ | ○ | ○ |
| M52 | 5,00 | 180 | 65 | - | 45,0 | 35,0 | 47,0 | 0520 | ○ | ○ | ○ |
| M56 | 5,50 | 200 | 75 | - | 40,0 | 32,0 | 50,5 | 0560 | ○ | ○ | ○ |
| M60 | 5,50 | 200 | 70 | - | 45,0 | 35,0 | 54,5 | 0600 | ○ | ○ | ○ |
| M64 | 6,00 | 220 | 75 | - | 50,0 | 39,0 | 58,0 | 0640 | ○ | ○ | ○ |
| M68 | 6,00 | 220 | 75 | - | 50,0 | 39,0 | 62,0 | 0680 | ○ | ○ | ○ |



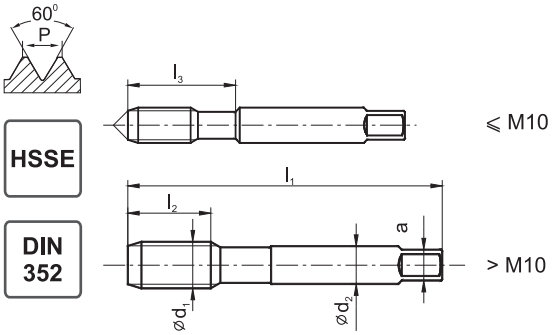
**Przykład zamawiania**

**A1-270001-0270**
**KPL/3 M27-LH-6H DIN-352 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**INOX**



| | KPL/3-P | F |
|---|---|---|
| | Nr1-P, Nr2, F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | | |
| Nakrój | | ~3P |

| M Ød1 | P | l1 | l2 | l3 | Ød2 | a | d | Norma | DIN-352 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX |
| | | | | | | | | INDEX | A2-235801 | A2-203801 |
| M2 | 0,40 | 36 | 10 | 10 | 2,8 | 2,1 | 1,6 | 0020 | ● | ● |
| M2,5 | 0,45 | 40 | 10 | 10 | 2,8 | 2,1 | 2,05 | 0025 | ● | ● |
| M3 | 0,50 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | 0030 | ● | ● |
| M3,5 | 0,60 | 45 | 11 | 20 | 4,0 | 3,0 | 2,9 | 0035 | ○ | ○ |
| M4 | 0,70 | 45 | 12 | 21 | 4,5 | 3,4 | 3,3 | 0040 | ● | ● |
| M4,5 | 0,75 | 50 | 13 | 24 | 6,0 | 4,9 | 3,7 | 0045 | ○ | ○ |
| M5 | 0,80 | 50 | 14 | 25 | 6,0 | 4,9 | 4,2 | 0050 | ● | ● |
| M6 | 1,00 | 56 | 16 | 27 | 6,0 | 4,9 | 5,0 | 0060 | ● | ● |
| M8 | 1,25 | 63 | 22 | | 6,0 | 4,9 | 6,8 | 0080 | ● | ● |
| M10 | 1,50 | 70 | 22 | | 7,0 | 5,5 | 8,5 | 0100 | ● | ● |
| M12 | 1,75 | 75 | 24 | | 9,0 | 7,0 | 10,2 | 0120 | ● | ● |
| M14 | 2,00 | 80 | 32 | | 11,0 | 9,0 | 12,0 | 0140 | ● | ● |
| M16 | 2,00 | 80 | 32 | | 12,0 | 9,0 | 14,0 | 0160 | ● | ● |
| M18 | 2,50 | 95 | 40 | | 14,0 | 11,0 | 15,5 | 0180 | ● | ● |
| M20 | 2,50 | 95 | 40 | | 16,0 | 12,0 | 17,5 | 0200 | ● | ● |
| M22 | 2,50 | 100 | 40 | | 18,0 | 14,5 | 19,5 | 0220 | ● | ● |
| M24 | 3,00 | 110 | 50 | | 18,0 | 14,5 | 21,0 | 0240 | ● | ● |





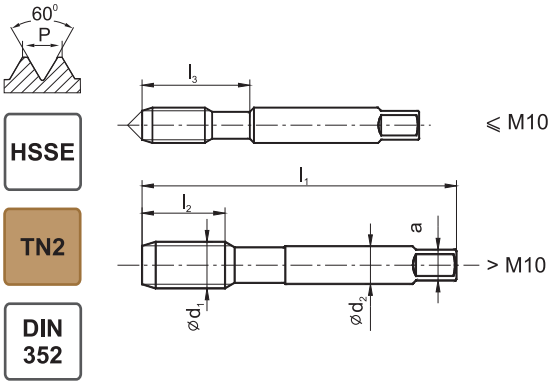
**Przykład zamawiania**

**A2-235801-0080**
**KPL/3 INOX M8-6HX DIN-352 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**INOX**




HSSE

TN2

DIN 352

| | KPL/3-P | F |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSSE | HSSE |
| Rodzaj powłoki | TN2 | TN2 |
| Nakrój | | ~3P |

| M ∅$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ∅$d_2$ | a | d | Norma | DIN-352 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX |
| | | | | | | | | INDEX | A2-235831 | A2-203831 |
| M2 | 0,40 | 36 | 10 | 10 | 2,8 | 2,1 | 1,6 | 0020 | ● | ● |
| M2,5 | 0,45 | 40 | 10 | 10 | 2,8 | 2,1 | 2,05 | 0025 | ● | ● |
| M3 | 0,50 | 40 | 10 | 18 | 3,5 | 2,7 | 2,5 | 0030 | ● | ● |
| M3,5 | 0,60 | 45 | 11 | 20 | 4,0 | 3,0 | 2,9 | 0035 | ○ | ○ |
| M4 | 0,70 | 45 | 12 | 21 | 4,5 | 3,4 | 3,3 | 0040 | ● | ● |
| M4,5 | 0,75 | 50 | 13 | 24 | 6,0 | 4,9 | 3,7 | 0045 | ○ | ○ |
| M5 | 0,80 | 50 | 14 | 25 | 6,0 | 4,9 | 4,2 | 0050 | ● | ● |
| M6 | 1,00 | 56 | 16 | 27 | 6,0 | 4,9 | 5,0 | 0060 | ● | ● |
| M8 | 1,25 | 63 | 22 | - | 6,0 | 4,9 | 6,8 | 0080 | ● | ● |
| M10 | 1,50 | 70 | 22 | - | 7,0 | 5,5 | 8,5 | 0100 | ● | ● |
| M12 | 1,75 | 75 | 24 | - | 9,0 | 7,0 | 10,2 | 0120 | ● | ● |
| M14 | 2,00 | 80 | 32 | - | 11,0 | 9,0 | 12,0 | 0140 | ● | ● |
| M16 | 2,00 | 80 | 32 | - | 12,0 | 9,0 | 14,0 | 0160 | ● | ● |
| M18 | 2,50 | 95 | 40 | - | 14,0 | 11,0 | 15,5 | 0180 | ● | ● |
| M20 | 2,50 | 95 | 40 | - | 16,0 | 12,0 | 17,5 | 0200 | ● | ● |
| M22 | 2,50 | 100 | 40 | - | 18,0 | 14,5 | 19,5 | 0220 | ● | ● |
| M24 | 3,00 | 110 | 50 | - | 18,0 | 14,5 | 21,0 | 0240 | ● | ● |



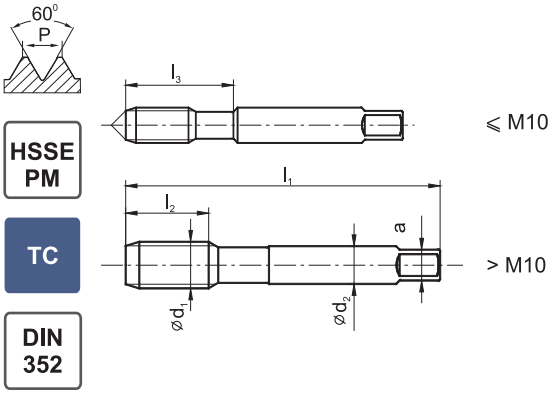
**Przykład zamawiania**

**A2-235831-0080**
**KPL/3 INOX M8-6HX DIN-352 HSSE TN2**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny ISO DIN-13

**HRC40**




HSSE PM

TC

DIN 352

| | KPL/3-P | F |
|---|---|---|
| | Nr1-P, Nr2, F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 1,5d | < 1,5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | TC | TC |
| Nakrój | | ~3P |

| M ⌀$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ⌀$d_2$ | a | d | Norma | ~DIN-352 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | 6HX |
| | | | | | | | | INDEX | A4-235D51 | A4-203D51 |
| M3 | 0,50 | 40 | 10 | - | 3,5 | 2,7 | 2,5 | 0030 | ● | ● |
| M4 | 0,70 | 50 | 13 | - | 6,0 | 4,9 | 3,3 | 0040 | ● | ● |
| M5 | 0,80 | 50 | 16 | - | 6,0 | 4,9 | 4,2 | 0050 | ● | ● |
| M6 | 1,00 | 56 | 19 | - | 6,0 | 4,9 | 5,0 | 0060 | ● | ● |
| M8 | 1,25 | 63 | 22 | - | 6,0 | 4,9 | 6,8 | 0080 | ● | ● |
| M10 | 1,50 | 70 | 25 | - | 7,0 | 5,5 | 8,5 | 0100 | ● | ● |
| M12 | 1,75 | 75 | 30 | - | 9,0 | 7,0 | 10,2 | 0120 | ● | ● |
| M16 | 2,00 | 80 | 32 | - | 12,0 | 9,0 | 14,0 | 0160 | ● | ● |
| M20 | 2,50 | 95 | 40 | - | 16,0 | 12,0 | 17,5 | 0200 | ○ | ○ |

**Komplet gwintowników HRC40 służy do obróbki materiałów w stanie zahartowanym do 40HRC Instrukcja poprawnego stosowania kompletu gwintowników HRC40:**

1. Maksymalna głębokość gwintowania 1,5xD
2. Bezwzględnie przestrzegać kolejności pracy gwintowników w komplecie
3. Stosować wyłącznie wysokiej jakości oleje obróbkowe (np. TEREBOR oferowany przez FANAR)
4. Przed kolejnym użyciem jak najstaranniej oczyścić z wiórów gwintowniki oraz otwór gwintowany
5. Podczas gwintowania unikać cofania w celu obcięcia wióra, gwintować bez przerwy na wymaganą głębokość

**Gwintownik F służy do kalibrowania gwintu w otworach wcześniej nagwintowanych, które następnie były obrabiane cieplnie, ulepszane cieplnie lub cynkowane ogniowo Instrukcja poprawnego stosowania gwintownika KAL:**

1. Oczyścić otwór gwintowany z zanieczyszczeń
2. Zwilżyć otwór gwintowany oraz gwintownik środkiem smarnym (np. pasta CIMTAP, TEREBOR lub olej maszynowy)
3. Wprowadzić ręcznie gwintownik w otwór i przetrzeć gwint
4. Po przetarciu gwintu oczyścić i umyć gwintownik

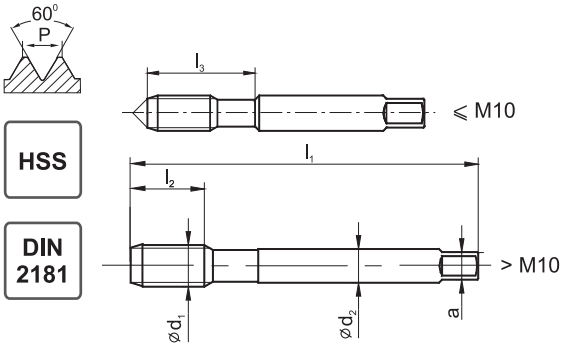


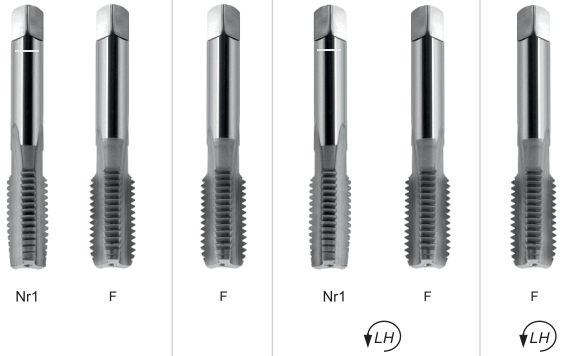
**Przykład zamawiania**

**A4-235D51-0040**
**KPL/3-P HRC40 M4-6HX DIN-352 F HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny DIN-13




| | KPL/2 | F | KPL/2-LH | F-LH |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS | HSS |
| Rodzaj powłoki | | | | |
| Nakrój | | ~2P | | ~2P |

| MF ∅$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ∅$d_2$ | a | | Norma | DIN-2181 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | A1-220001 | A1-222001 | A1-260001 | A1-262001 |
| M4x0,5 | 0,50 | 45 | 10 | 18,0 | 4,5 | 3,4 | 3,5 | 0041 | ● | ● | ○ | ○ |
| M4,5x0,5 | 0,50 | 50 | 12 | 22,0 | 6,0 | 4,9 | 4,0 | 0046 | ○ | ○ | ○ | ○ |
| M5x0,5 | 0,50 | 52 | 13 | 22,0 | 6,0 | 4,9 | 4,5 | 0051 | ● | ● | ○ | ○ |
| M5,5x0,5 | 0,50 | 56 | 13 | 24,0 | 6,0 | 4,9 | 5,0 | 0056 | ○ | ○ | ○ | ○ |
| M6x0,75 | 0,75 | 56 | 14 | 24,0 | 6,0 | 4,9 | 5,2 | 0062 | ● | ● | ○ | ○ |
| M7x0,75 | 0,75 | 56 | 14 | - | 6,0 | 4,9 | 6,2 | 0072 | ○ | ○ | ○ | ○ |
| M8x0,75 | 0,75 | 63 | 14 | - | 6,0 | 4,9 | 7,2 | 0082 | ● | ● | ○ | ○ |
| M8x1 | 1,00 | 63 | 17 | - | 6,0 | 4,9 | 7,0 | 0083 | ● | ● | ● | ● |
| M9x0,75 | 0,75 | 63 | 14 | - | 7,0 | 5,5 | 8,2 | 0092 | ○ | ○ | ○ | ○ |
| M9x1 | 1,00 | 63 | 17 | - | 7,0 | 5,5 | 8,0 | 0093 | ○ | ○ | ○ | ○ |
| M10x0,75 | 0,75 | 63 | 18 | - | 7,0 | 5,5 | 9,2 | 0102 | ○ | ○ | ○ | ○ |
| M10x1 | 1,00 | 63 | 18 | - | 7,0 | 5,5 | 9,0 | 0103 | ● | ● | ● | ● |
| M10x1,25 | 1,25 | 70 | 22 | - | 7,0 | 5,5 | 8,8 | 0104 | ● | ● | ● | ● |
| M11x0,75 | 0,75 | 63 | 18 | - | 8,0 | 6,2 | 10,2 | 0112 | ○ | ○ | ○ | ○ |
| M11x1 | 1,00 | 63 | 18 | - | 8,0 | 6,2 | 10,0 | 0113 | ○ | ○ | ○ | ○ |
| M12x1 | 1,00 | 70 | 18 | - | 9,0 | 7,0 | 11,0 | 0123 | ● | ● | ● | ● |
| M12x1,25 | 1,25 | 70 | 20 | - | 9,0 | 7,0 | 10,8 | 0124 | ● | ● | ● | ● |
| M12x1,5 | 1,50 | 70 | 20 | - | 9,0 | 7,0 | 10,5 | 0125 | ● | ● | ○ | ○ |
| M14x1 | 1,00 | 70 | 18 | - | 11,0 | 9,0 | 13,0 | 0143 | ● | ● | ○ | ○ |
| M14x1,25 | 1,25 | 70 | 22 | - | 11,0 | 9,0 | 12,8 | 0144 | ● | ● | ○ | ○ |
| M14x1,5 | 1,50 | 70 | 22 | - | 11,0 | 9,0 | 12,5 | 0145 | ● | ● | ● | ● |
| M15x1 | 1,00 | 70 | 18 | - | 12,0 | 9,0 | 14,0 | 0153 | ○ | ○ | ○ | ○ |
| M15x1,5 | 1,50 | 70 | 22 | - | 12,0 | 9,0 | 13,5 | 0155 | ○ | ○ | ○ | ○ |
| M16x1 | 1,00 | 80 | 18 | - | 12,0 | 9,0 | 15,0 | 0163 | ● | ● | ● | ● |
| M16x1,25 | 1,25 | 80 | 18 | - | 12,0 | 9,0 | 14,8 | 0164 | ○ | ○ | ○ | ○ |
| M16x1,5 | 1,50 | 80 | 22 | - | 12,0 | 9,0 | 14,5 | 0165 | ● | ● | ○ | ○ |
| M17x1 | 1,00 | 80 | 18 | - | 12,0 | 9,0 | 16,0 | 0173 | ○ | ○ | ○ | ○ |
| M17x1,5 | 1,50 | 80 | 22 | - | 12,0 | 9,0 | 15,5 | 0175 | ○ | ○ | ○ | ○ |
| M18x1 | 1,00 | 80 | 18 | - | 14,0 | 11,0 | 17,0 | 0183 | ● | ● | ○ | ○ |
| M18x1,5 | 1,50 | 80 | 22 | - | 14,0 | 11,0 | 16,5 | 0185 | ● | ● | ● | ● |
| M18x2 | 2,00 | 80 | 22 | - | 14,0 | 11,0 | 16,0 | 0186 | ● | ● | ○ | ○ |
| M20x1 | 1,00 | 80 | 18 | - | 16,0 | 12,0 | 19,0 | 0203 | ● | ● | ○ | ○ |
| M20x1,5 | 1,50 | 80 | 22 | - | 16,0 | 12,0 | 18,5 | 0205 | ● | ● | ● | ● |
| M20x2 | 2,00 | 80 | 22 | - | 16,0 | 12,0 | 18,0 | 0206 | ● | ● | ○ | ○ |
| M22x1 | 1,00 | 80 | 18 | - | 18,0 | 14,5 | 21,0 | 0223 | ● | ● | ○ | ○ |

**Przykład zamawiania**

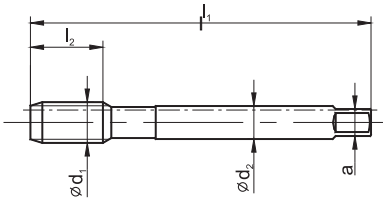
**A1-220001-0083**
**KPL/2 M8x1-6H DIN-2181 HSS**

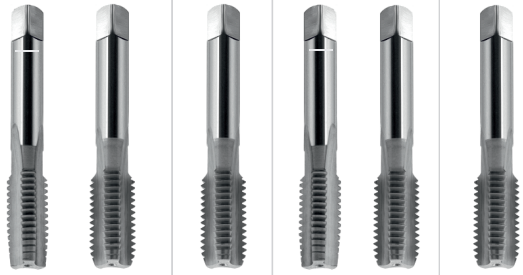
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny DIN-13

HSS

DIN 2181




| | KPL/2 | F | KPL/2-LH | F-LH |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P | P | P | P |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS | HSS |
| Rodzaj powłoki | | | | |
| Nakrój | | ~2P | | ~2P |

| MF Ød1 | P | l1 | l2 | l3 | Ød2 | a | | Norma | DIN-2181 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | A1-220001 | A1-222001 | A1-260001 | A1-262001 |
| M22x1,5 | 1,5 | 80 | 22 | - | 18 | 14,5 | 20,5 | 0225 | ● | ● | ● | ● |
| M22x2 | 2,0 | 80 | 22 | - | 18 | 14,5 | 20,0 | 0226 | ● | ● | ○ | ○ |
| M24x1 | 1,0 | 90 | 18 | - | 18 | 14,5 | 23,0 | 0243 | ● | ● | ● | ● |
| M24x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 22,5 | 0245 | ● | ● | ○ | ○ |
| M24x2 | 2,0 | 90 | 22 | - | 18 | 14,5 | 22,0 | 0246 | ● | ● | ○ | ○ |
| M25x1 | 1,0 | 90 | 18 | - | 18 | 14,5 | 24,0 | 0253 | ○ | ○ | ○ | ○ |
| M25x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 23,5 | 0255 | ○ | ○ | ○ | ○ |
| M25x2 | 2,0 | 90 | 22 | - | 18 | 14,5 | 23,0 | 0256 | ○ | ○ | ○ | ○ |
| M26x1,5 | 1,5 | 90 | 22 | - | 18 | 14,5 | 24,5 | 0265 | ○ | ○ | ○ | ○ |
| M27x1 | 1,0 | 90 | 22 | - | 20 | 16,0 | 26,0 | 0273 | ○ | ○ | ○ | ○ |
| M27x1,5 | 1,5 | 90 | 22 | - | 20 | 16,0 | 25,5 | 0275 | ● | ● | ○ | ○ |
| M27x2 | 2,0 | 90 | 22 | - | 20 | 16,0 | 25,0 | 0276 | ● | ● | ○ | ○ |
| M28x1 | 1,0 | 90 | 20 | - | 20 | 16,0 | 27,0 | 0283 | ○ | ○ | ○ | ○ |
| M28x1,5 | 1,5 | 90 | 22 | - | 20 | 16,0 | 26,5 | 0285 | ● | ● | ○ | ○ |
| M28x2 | 2,0 | 90 | 22 | - | 20 | 16,0 | 26,0 | 0286 | ○ | ○ | ○ | ○ |
| M30x1 | 1,0 | 90 | 18 | - | 22 | 18,0 | 29,0 | 0303 | ○ | ○ | ○ | ○ |
| M30x1,5 | 1,5 | 90 | 22 | - | 22 | 18,0 | 28,5 | 0305 | ● | ● | ○ | ○ |
| M30x2 | 2,0 | 90 | 22 | - | 22 | 18,0 | 28,0 | 0306 | ● | ● | ○ | ○ |
| M30x3 | 3,0 | 125 | 36 | - | 22 | 18,0 | 27,0 | 0307 | ● | ○ | ○ | ○ |
| M32x1,5 | 1,5 | 90 | 22 | - | 22 | 18,0 | 30,5 | 0325 | ○ | ○ | ○ | ○ |
| M32x2 | 2,0 | 90 | 22 | - | 22 | 18,0 | 30,0 | 0326 | ○ | ○ | ○ | ○ |
| M33x1,5 | 1,5 | 100 | 25 | - | 25 | 20,0 | 31,5 | 0335 | ● | ● | ○ | ○ |
| M33x2 | 2,0 | 100 | 25 | - | 25 | 20,0 | 31,0 | 0336 | ● | ● | ○ | ○ |
| M33x3 | 3,0 | 125 | 36 | - | 25 | 20,0 | 30,0 | 0337 | ● | ● | ○ | ○ |
| M35x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 33,5 | 0355 | ○ | ○ | ○ | ○ |
| M36x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 34,5 | 0365 | ○ | ○ | ○ | ○ |
| M36x2 | 2,0 | 125 | 30 | - | 28 | 22,0 | 34,0 | 0366 | ○ | ○ | ○ | ○ |
| M36x3 | 3,0 | 125 | 36 | - | 28 | 22,0 | 33,0 | 0367 | ○ | ○ | ○ | ○ |
| M38x1,5 | 1,5 | 100 | 25 | - | 28 | 22,0 | 36,5 | 0385 | ○ | ○ | ○ | ○ |
| M39x1,5 | 1,5 | 110 | 25 | - | 32 | 24,0 | 37,5 | 0395 | ○ | ○ | ○ | ○ |
| M39x2 | 2,0 | 125 | 30 | - | 32 | 24,0 | 37,0 | 0396 | ○ | ○ | ○ | ○ |
| M39x3 | 3,0 | 125 | 36 | - | 32 | 24,0 | 36,0 | 0397 | ○ | ○ | ○ | ○ |
| M40x1,5 | 1,5 | 110 | 25 | - | 32 | 24,0 | 38,5 | 0405 | ○ | ○ | ○ | ○ |
| M40x2 | 2,0 | 125 | 30 | - | 32 | 24,0 | 38,0 | 0406 | ● | ● | ○ | ○ |
| M40x3 | 3,0 | 125 | 36 | - | 32 | 24,0 | 37,0 | 0407 | ○ | ○ | ○ | ○ |

**Przykład zamawiania**

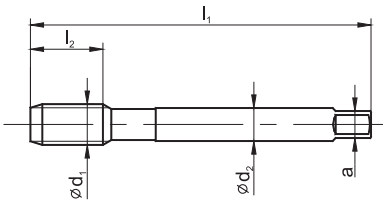
**A1-220001-0225**
**KPL/2 M22x1,5-6H DIN-2181 HSS**

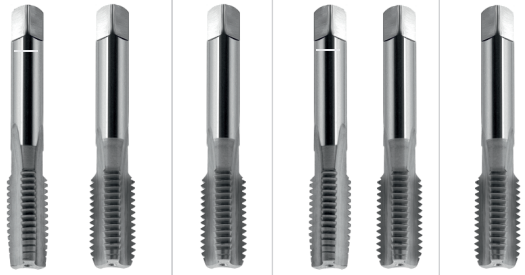
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny DIN-13

HSS

DIN 2181



| | KPL/2 | F | KPL/2-LH | F-LH |
|---|---|---|---|---|
| | Nr1 F | F | Nr1 F (LH) | F (LH) |
| Rodzaj materiału obrabianego | P M K N S H / P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS | HSS |
| Rodzaj powłoki | | | | |
| Nakrój | | ~2P | | ~2P |

| MF ∅$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ∅$d_2$ | a | d | Norma | DIN-2181 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) | ISO2 (6H) |
| | | | | | | | | INDEX | A1-220001 | A1-222001 | A1-260001 | A1-262001 |
| M42x1,5 | 1,5 | 110 | 25 | - | 32 | 24 | 40,5 | 0425 | ● | ● | ○ | ○ |
| M42x2 | 2,0 | 125 | 30 | - | 32 | 24 | 40,0 | 0426 | ○ | ○ | ○ | ○ |
| M42x3 | 3,0 | 125 | 36 | - | 32 | 24 | 39,0 | 0427 | ● | ● | ○ | ○ |
| M42x4 | 4,0 | 150 | 50 | - | 32 | 24 | 38,0 | 0428 | ○ | ○ | ○ | ○ |
| M45x1,5 | 1,5 | 110 | 25 | - | 36 | 29 | 43,5 | 0455 | ● | ● | ○ | ○ |
| M45x2 | 2,0 | 125 | 30 | - | 36 | 29 | 43,0 | 0456 | ○ | ○ | ○ | ○ |
| M45x3 | 3,0 | 125 | 36 | - | 36 | 29 | 42,0 | 0457 | ● | ● | ○ | ○ |
| M45x4 | 4,0 | 160 | 50 | - | 36 | 29 | 41,0 | 0458 | ○ | ○ | ○ | ○ |
| M48x1,5 | 1,5 | 140 | 25 | - | 36 | 29 | 46,5 | 0485 | ○ | ○ | ○ | ○ |
| M48x2 | 2,0 | 140 | 30 | - | 36 | 29 | 46,0 | 0486 | ○ | ○ | ○ | ○ |
| M48x3 | 3,0 | 140 | 36 | - | 36 | 29 | 45,0 | 0487 | ○ | ○ | ○ | ○ |
| M48x4 | 4,0 | 180 | 55 | - | 36 | 29 | 44,0 | 0488 | ○ | ○ | ○ | ○ |
| M50x1,5 | 1,5 | 140 | 25 | - | 36 | 29 | 48,5 | 0505 | ● | ● | ○ | ○ |
| M50x2 | 2,0 | 140 | 36 | - | 36 | 29 | 48,0 | 0506 | ○ | ○ | ○ | ○ |
| M50x3 | 3,0 | 140 | 36 | - | 36 | 29 | 47,0 | 0507 | ● | ● | ○ | ○ |
| M52x1,5 | 1,5 | 140 | 25 | - | 40 | 32 | 50,5 | 0525 | ● | ● | ○ | ○ |
| M52x2 | 2,0 | 140 | 36 | - | 40 | 32,0 | 50,00 | 0526 | ○ | ○ | ○ | ○ |
| M52x3 | 3,0 | 140 | 36 | - | 40 | 32,0 | 49,00 | 0527 | ● | ● | ○ | ○ |
| M52x4 | 4,0 | 180 | 55 | - | 40 | 32,0 | 48,00 | 0528 | ○ | ○ | ○ | ○ |



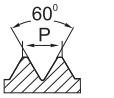
**Przykład zamawiania**

**A1-220001-0425**
**KPL/2 M42x1,5-6H DIN-2181 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny DIN-13

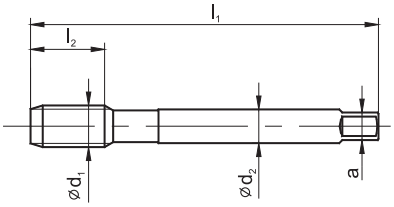
**HRC40**




HSSE PM

TC

DIN 2181



| | KPL/2 | F | | |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | | |
| Typ otworu | < 1,5d | < 1,5d | | |
| Rodzaj materiału | HSSE-PM | HSSE-PM | | |
| Rodzaj powłoki | TC | TC | | |
| Nakrój | | ~3P | | |

| M ∅$d_1$ | P | $l_1$ | $l_2$ | $l_3$ | ∅$d_2$ | a | d | Norma | DIN-2181 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | 6HX | | | |
| | | | | | | | | INDEX | A4-225D51 | A4-202D51 | | |
| M8x1 | 1,0 | 63 | 18 | - | 6 | 4,9 | 7,0 | 0083 | ● | ○ | | |
| M10x1 | 1,0 | 63 | 18 | - | 7 | 5,5 | 9,0 | 0103 | ● | ● | | |
| M12x1,5 | 1,5 | 70 | 20 | - | 9 | 7,0 | 10,5 | 0125 | ● | ● | | |
| M16x1,5 | 1,5 | 70 | 22 | - | 12 | 9,0 | 14,5 | 0165 | ● | ● | | |

**Komplet gwintowników HRC40 służy do obróbki materiałów w stanie zahartowanym do 40HRC Instrukcja poprawnego stosowania kompletu gwintowników HRC40:**

1. Maksymalna głębokość gwintowania 1,5xD
2. Bezwzględnie przestrzegać kolejności pracy gwintowników w komplecie
3. Stosować wyłącznie wysokiej jakości oleje obróbkowe (np. TEREBOR oferowany przez FANAR)
4. Przed kolejnym użyciem jak najstaranniej oczyścić z wiórów gwintowniki oraz otwór gwintowany
5. Podczas gwintowania unikać cofania w celu obcięcia wióra, gwintować bez przerwy na wymaganą głębokość

**Gwintownik F służy do kalibrowania gwintu w otworach wcześniej nagwintowanych, które następnie były obrabiane cieplnie, ulepszane cieplnie lub cynkowane ogniowo Instrukcja poprawnego stosowania gwintownika KAL:**

1. Oczyścić otwór gwintowany z zanieczyszczeń
2. Zwilżyć otwór gwintowany oraz gwintownik środkiem smarnym (np. pasta CIMTAP, TEREBOR lub olej maszynowy)
3. Wprowadzić ręcznie gwintownik w otwór i przetrzeć gwint
4. Po przetarciu gwintu oczyścić i umyć gwintownik



**Przykład zamawiania**

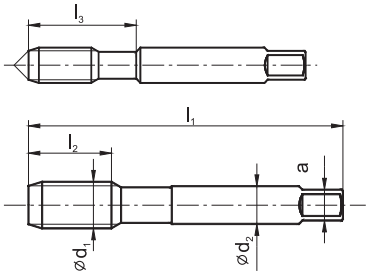
**A4-225D51-0083**
**KPL/2 HRC40 M10x1-6HX DIN-2181 HSSE-PM TC**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

HSS

DIN 352



| | KPL/3 | F |
|---|---|---|
| | Nr1, Nr2, F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | | ~2P |

| UNC | Ød1 | 1"/P | P | l1 | l2 | l3 | Ød2 | a | d | Norma | DIN-352 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | A1-230001 | A1-233001 |
| No2-56 | 2,184 | 56 | 0,454 | 36 | 10 | 10 | 2,8 | 2,1 | 1,85 | 4102 | ○ | ○ |
| No4-40 | 2,844 | 40 | 0,635 | 40 | 10 | 18 | 3,5 | 2,7 | 2,35 | 4104 | ● | ● |
| No5-40 | 3,175 | 40 | 0,640 | 42 | 10 | 18 | 3,5 | 2,7 | 2,65 | 4105 | ● | ● |
| No6-32 | 3,505 | 32 | 0,794 | 45 | 11 | 18 | 4,0 | 3,0 | 2,85 | 4106 | ● | ● |
| No8-32 | 4,166 | 32 | 0,794 | 48 | 12 | 23 | 4,5 | 3,4 | 3,50 | 4108 | ● | ● |
| No10-24 | 4,826 | 24 | 1,058 | 52 | 14 | 26 | 6,0 | 4,9 | 3,90 | 4110 | ● | ● |
| No12-24 | 5,486 | 24 | 1,058 | 56 | 16 | 27 | 6,0 | 4,9 | 4,50 | 4112 | ○ | ○ |
| 1/4-20 | 6,350 | 20 | 1,270 | 56 | 16 | 27 | 6,0 | 4,9 | 5,10 | 4127 | ● | ● |
| 5/16-18 | 7,938 | 18 | 1,411 | 63 | 20 | - | 6,0 | 4,9 | 6,60 | 4128 | ● | ● |
| 3/8-16 | 9,525 | 16 | 1,588 | 70 | 22 | - | 7,0 | 5,5 | 8,00 | 4129 | ● | ● |
| 7/16-14 | 11,112 | 14 | 1,814 | 70 | 22 | - | 8,0 | 6,2 | 9,40 | 4130 | ● | ● |
| 1/2-13 | 12,700 | 13 | 1,954 | 80 | 25 | - | 9,0 | 7,0 | 10,80 | 4131 | ● | ● |
| 9/16-12 | 14,288 | 12 | 2,117 | 80 | 26 | - | 11,0 | 9,0 | 12,20 | 4132 | ○ | ○ |
| 5/8-11 | 15,875 | 11 | 2,309 | 80 | 27 | - | 12,0 | 9,0 | 13,50 | 4133 | ● | ● |
| 3/4-10 | 19,050 | 10 | 2,504 | 95 | 30 | - | 14,0 | 11,0 | 16,50 | 4135 | ● | ● |
| 7/8-9 | 22,225 | 9 | 2,822 | 100 | 32 | - | 18,0 | 14,5 | 19,50 | 4137 | ● | ● |
| 1-8 | 25,400 | 8 | 3,175 | 110 | 36 | - | 18,0 | 14,5 | 22,25 | 4139 | ● | ● |
| 1.1/8-7 | 28,575 | 7 | 3,629 | 125 | 40 | - | 22,0 | 18,0 | 25,00 | 4141 | ○ | ○ |
| 1.1/4-7 | 31,750 | 7 | 3,629 | 125 | 40 | - | 22,0 | 18,0 | 28,00 | 4143 | ○ | ○ |
| 1.3/8-6 | 34,925 | 6 | 4,233 | 150 | 50 | - | 28,0 | 22,0 | 30,75 | 4145 | ○ | ○ |
| 1.1/2-6 | 38,100 | 6 | 4,233 | 150 | 50 | - | 28,0 | 22,0 | 34,00 | 4147 | ○ | ○ |
| 1.3/4-5 | 44,450 | 5 | 5,080 | 160 | 58 | - | 36,0 | 29,0 | 39,50 | 4151 | ○ | ○ |
| 2-4.1/2 | 50,800 | 4 1/2 | 5,645 | 180 | 70 | - | 40,0 | 32,0 | 45,00 | 4155 | ○ | ○ |



**Przykład zamawiania**

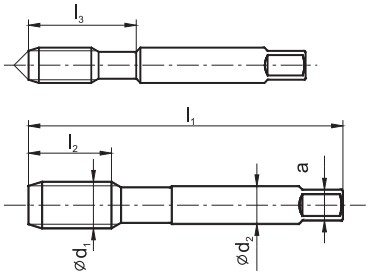
A1-230001-4104
KPL/3 No 4-40 UNC 2B DIN-352 HSS

● Dostępne z magazynu
○ Na zapytanie

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

**HSS**

**DIN 2181**



| | KPL/2 | F |
|---|---|---|
| | Nr1 F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | | ~2P |

| UNF | Ød1 | 1"/P | P | l1 | l2 | l3 | Ød2 | a | d | Norma | DIN-2181 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | 2B | 2B |
| | | | | | | | | | | INDEX | A1-220001 | A1-222001 |
| No 5-44 | 3,175 | 44 | 0,577 | 42 | 10 | 18 | 3,5 | 2,7 | 2,70 | 4205 | ○ | ○ |
| No 6-40 | 3,505 | 40 | 0,635 | 45 | 11 | 18 | 4,0 | 3,0 | 2,95 | 4206 | ○ | ○ |
| No 8-36 | 4,166 | 36 | 0,705 | 48 | 12 | 23 | 4,5 | 3,4 | 3,50 | 4208 | ○ | ○ |
| No 10-32 | 4,826 | 32 | 0,794 | 52 | 14 | 22 | 6,0 | 4,9 | 4,10 | 4210 | ● | ● |
| No 12-28 | 5,486 | 28 | 0,907 | 56 | 16 | 24 | 6,0 | 4,9 | 4,60 | 4212 | ○ | ○ |
| 1/4-28 | 6,350 | 28 | 0,907 | 56 | 16 | 24 | 6,0 | 4,9 | 5,50 | 4227 | ● | ● |
| 5/16-24 | 7,938 | 24 | 1,058 | 63 | 17 | - | 6,0 | 4,9 | 6,90 | 4228 | ○ | ○ |
| 3/8-24 | 9,525 | 24 | 1,058 | 63 | 18 | - | 7,0 | 5,5 | 8,50 | 4229 | ● | ● |
| 7/16-20 | 11,112 | 20 | 1,270 | 70 | 22 | - | 8,0 | 6,2 | 9,90 | 4230 | ● | ● |
| 1/2-20 | 12,700 | 20 | 1,270 | 70 | 20 | - | 9,0 | 7,0 | 11,50 | 4231 | ● | ● |
| 9/16-18 | 14,288 | 18 | 1,411 | 80 | 20 | - | 12,0 | 9,0 | 12,90 | 4232 | ● | ○ |
| 5/8-18 | 15,875 | 18 | 1,411 | 80 | 22 | - | 12,0 | 9,0 | 14,50 | 4233 | ○ | ○ |
| 3/4-16 | 19,050 | 16 | 1,588 | 80 | 22 | - | 14,0 | 11,0 | 17,50 | 4235 | ● | ● |
| 7/8-14 | 22,225 | 14 | 1,814 | 80 | 22 | - | 18,0 | 14,5 | 20,40 | 4237 | ○ | ○ |
| 1-12 | 25,400 | 12 | 2,117 | 90 | 22 | - | 18,0 | 14,5 | 23,25 | 4239 | ● | ● |
| 1.1/8-12 | 28,575 | 12 | 2,117 | 90 | 22 | - | 22,0 | 18,0 | 26,50 | 4242 | ○ | ○ |
| 1.1/4-12 | 31,750 | 12 | 2,117 | 90 | 22 | - | 22,0 | 18,0 | 29,50 | 4243 | ○ | ○ |
| 1.3/8-12 | 34,925 | 12 | 2,117 | 125 | 36 | - | 28,0 | 22,0 | 32,75 | 4245 | ○ | ○ |
| 1.1/2-12 | 38,100 | 12 | 2,117 | 125 | 36 | - | 28,0 | 22,0 | 36,00 | 4247 | ○ | ○ |



**Przykład zamawiania**

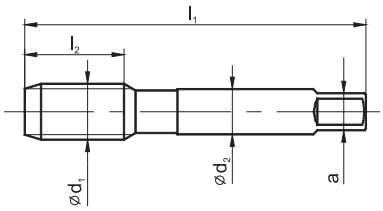
**A1-220001-4210**
**KPL/2 No 10-32 UNF 2B DIN-2128 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

HSS

DIN 5157




| | KPL/2 | F | KPL/2-LH | F-LH |
|---|---|---|---|---|
| | Nr1 F | F | Nr1 F LH | F LH |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS | HSS | HSS |
| Rodzaj powłoki | | | | |
| Nakrój | | ~2P | | ~2P |

| G | ∅d1 | 1"/P | P | l1 | l2 | l3 | ∅d2 | a | d | Norma | DIN-5157 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | | | | |
| | | | | | | | | | | INDEX | A1-220001 | A1-222001 | A1-260001 | A1-262001 |
| G1/16 | 7,723 | 28 | 0,907 | 56 | 22 | 26 | 6 | 4,9 | 6,80 | 3121 | ○ | ○ | ○ | ○ |
| G1/8 | 9,728 | 28 | 0,907 | 63 | 20 | 27 | 7 | 5,5 | 8,80 | 3123 | ● | ● | ○ | ○ |
| G1/4 | 13,157 | 19 | 1,337 | 70 | 22 | 32 | 11 | 9,0 | 11,80 | 3127 | ● | ● | ○ | ○ |
| G3/8 | 16,662 | 19 | 1,337 | 70 | 22 | 32 | 12 | 9,0 | 15,25 | 3129 | ● | ● | ● | ● |
| G1/2 | 20,955 | 14 | 1,814 | 80 | 22 | 35 | 16 | 12,0 | 19,00 | 3131 | ● | ● | ● | ● |
| G5/8 | 22,911 | 14 | 1,814 | 80 | 22 | - | 18 | 14,5 | 21,00 | 3133 | ● | ● | ○ | ○ |
| G3/4 | 26,441 | 14 | 1,814 | 90 | 22 | - | 20 | 16,0 | 24,50 | 3135 | ● | ● | ● | ● |
| G7/8 | 30,201 | 14 | 1,814 | 90 | 22 | - | 22 | 18,0 | 28,25 | 3137 | ● | ● | ○ | ○ |
| G1 | 33,249 | 11 | 2,309 | 100 | 25 | - | 25 | 20,0 | 30,75 | 3139 | ● | ● | ● | ● |
| G1.1/8 | 37,897 | 11 | 2,309 | 125 | 36 | - | 28 | 22,0 | 35,50 | 3141 | ○ | ○ | ○ | ○ |
| G1.1/4 | 41,910 | 11 | 2,309 | 125 | 36 | - | 32 | 24,0 | 39,50 | 3143 | ● | ● | ○ | ○ |
| G1.3/8 | 44,323 | 11 | 2,309 | 125 | 36 | - | 36 | 29,0 | 41,75 | 3145 | ○ | ○ | ○ | ○ |
| G1.1/2 | 47,803 | 11 | 2,309 | 140 | 40 | - | 36 | 29,0 | 45,25 | 3147 | ● | ● | ○ | ○ |
| G1.3/4 | 53,769 | 11 | 2,309 | 140 | 40 | - | 40 | 32,0 | 51,00 | 3151 | ○ | ○ | ○ | ○ |
| G2 | 59,614 | 11 | 2,309 | 160 | 40 | - | 45 | 35,0 | 57,00 | 3155 | ○ | ○ | ○ | ○ |



**Przykład zamawiania**

**A1-220001-3123**
**KPL/2 G-1/8" DIN-5157 HSS**

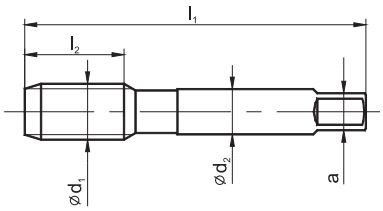
● **Dostępne z magazynu**
○ **Na zapytanie**

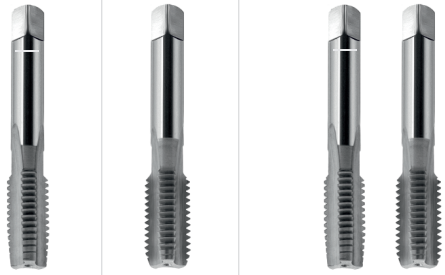
## Gwint rurowy walcowy G, DIN-ISO 228

**INOX**

**HSSE PM**

**DIN 5157**



| | F | KPL/2 |
|---|---|---|
| | Nr1 | F | Nr1 | F |

| | | F | KPL/2 |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Typ otworu | | < 1.5d | < 1.5d |
| Rodzaj materiału | HSSE-PM | HSSE-PM | HSSE-PM |
| Rodzaj powłoki | | | |
| Nakrój | 4P | 3P | |

| G | Ød1 | 1"/P | P | l1 | l2 | Ød2 | a | d | Norma | DIN-5157 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | | | |
| | | | | | | | | | INDEX | A2-205801 | A2-202801 | A2-225801 |
| G-1/8" | 9,728 | 28 | 0,907 | 63 | 18 | 7 | 5,5 | 8,8 | 3123 | ○ | ○ | ○ |
| G-1/4" | 13,157 | 19 | 1,337 | 70 | 22 | 11 | 9 | 11,8 | 3127 | ○ | ○ | ○ |
| G-3/8" | 16,662 | 19 | 1,337 | 70 | 22 | 12 | 9 | 15,25 | 3129 | ○ | ○ | ○ |
| G-1/2" | 20,955 | 14 | 1,814 | 80 | 22 | 16 | 12 | 19,0 | 3131 | ○ | ○ | ○ |





**Przykład zamawiania**

**A2-225801-3123**
**KPL/2 G-1/8" DIN-5157 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

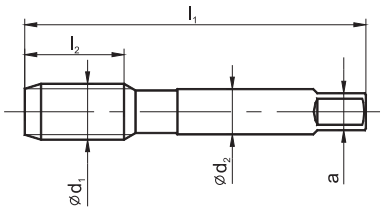
## Gwint rurowy walcowy G, DIN-ISO 228

**HRC40**

HSSE PM

TC

DIN 5157



| | KPL/2 | F | | | |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | | | |
| Typ otworu | < 1,5d | < 1,5d | | | |
| Rodzaj materiału | HSSE-PM | HSSE-PM | | | |
| Rodzaj powłoki | TC | TC | | | |
| Nakrój | | ~2P | | | |

| G | Ød1 | 1"/P | P | l1 | l2 | Ød2 | a | d | Norma | DIN-5157 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Tol. | | | | | |
| | | | | | | | | | INDEX | A4-225D51 | A4-202D51 | | | |
| G-1/8" | 9,728 | 28 | 0,907 | 63 | 18 | 7,0 | 5,5 | 8,80 | 3123 | ● | ● | | | |
| G-1/4" | 13,157 | 19 | 1,337 | 70 | 22 | 11,0 | 9,0 | 11,80 | 3127 | ● | ● | | | |
| G-3/8" | 16,662 | 19 | 1,337 | 70 | 22 | 12,0 | 9,0 | 15,25 | 3129 | ● | ● | | | |
| G-1/2" | 20,955 | 14 | 1,814 | 80 | 22 | 16,0 | 12,0 | 19,00 | 3131 | ● | ● | | | |

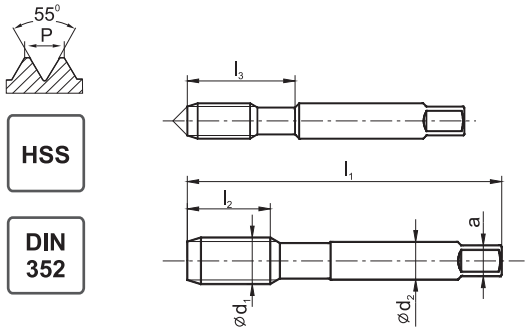
**Komplet gwintowników HRC40 służy do obróbki materiałów w stanie zahartowanym do 40HRC Instrukcja poprawnego stosowania kompletu gwintowników HRC40:**

1. Maksymalna głębokość gwintowania 1,5xD
2. Bezwzględnie przestrzegać kolejności pracy gwintowników w komplecie
3. Stosować wyłącznie wysokiej jakości oleje obróbkowe (np. TEREBOR oferowany przez FANAR)
4. Przed kolejnym użyciem jak najstaranniej oczyścić z wiórów gwintowniki oraz otwór gwintowany
5. Podczas gwintowania unikać cofania w celu obcięcia wióra, gwintować bez przerwy na wymaganą głębokość

**Gwintownik KAL (Nr2) służy do kalibrowania gwintu w otworach wcześniej nagwintowanych, które następnie były obrabiane cieplnie, ulepszane cieplnie lub cynkowane ogniowo Instrukcja poprawnego stosowania gwintownika KAL:**

1. Oczyścić otwór gwintowany z zanieczyszczeń
2. Zwilżyć otwór gwintowany oraz gwintownik środkiem smarnym (np. pasta CIMTAP, TEREBOR lub olej maszynowy)
3. Wprowadzić ręcznie gwintownik w otwór i przetrzeć gwint
4. Po przetarciu gwintu oczyścić i umyć gwintownik

## Gwint calowy zwykły Whitwortha BSW, BS-84:1956




HSS

DIN 352

Nr1 Nr2 F F

| | KPL/3 | F | | |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | | |
| Typ otworu | < 2,5d | < 2,5d | | |
| Rodzaj materiału | HSS | HSS | | |
| Rodzaj powłoki | | | | |
| Nakrój | | ~2P | | |

| BSW | Ød1 | 1"/P | P | l1 | l2 | l3 | Ød2 | a | d | Norma | DIN-352 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | normal | normal | | |
| | | | | | | | | | | INDEX | A1-230001 | A1-233001 | | |
| 1/8-40 | 3,180 | 40 | 0,635 | 42 | 10 | 18 | 3,5 | 2,7 | 2,55 | 7123 | ● | ● | | |
| 3/16-24 | 4,760 | 24 | 1,058 | 52 | 14 | 26 | 6 | 4,9 | 3,70 | 7125 | ● | ● | | |
| 1/4-20 | 6,35 | 20 | 1,270 | 56 | 16 | 27 | 6 | 4,9 | 5,10 | 7127 | ● | ● | | |
| 5/16-18 | 7,938 | 18 | 1,411 | 63 | 20 | - | 6 | 4,9 | 6,50 | 7128 | ○ | ○ | | |
| 3/8-16 | 9,525 | 16 | 1,588 | 70 | 22 | - | 7 | 5,5 | 7,90 | 7129 | ● | ● | | |
| 7/16-14 | 11,112 | 14 | 1,814 | 70 | 22 | - | 8 | 6,2 | 9,25 | 7130 | ○ | ○ | | |
| 1/2-12 | 12,7 | 12 | 2,117 | 80 | 25 | - | 9 | 7,0 | 10,50 | 7131 | ● | ● | | |
| 9/16-12 | 14,288 | 12 | 2,117 | 80 | 26 | - | 11 | 9,0 | 12,00 | 7132 | ○ | ○ | | |
| 5/8-11 | 15,875 | 11 | 2,309 | 80 | 27 | - | 12 | 9,0 | 13,50 | 7133 | ○ | ○ | | |
| 3/4-10 | 19,050 | 10 | 2,504 | 95 | 30 | - | 14 | 11,0 | 16,40 | 7135 | ● | ● | | |
| 7/8-9 | 22,225 | 9 | 2,822 | 100 | 32 | - | 18 | 14,5 | 19,25 | 7137 | ○ | ○ | | |
| 1-8 | 25,400 | 8 | 3,175 | 110 | 36 | - | 18 | 14,5 | 22,00 | 7139 | ● | ● | | |
| 1.1/8-7 | 28,575 | 7 | 3,629 | 125 | 40 | - | 22 | 18,0 | 24,75 | 7141 | ○ | ○ | | |
| 1.1/4-7 | 31,750 | 7 | 3,629 | 125 | 40 | - | 22 | 18,0 | 27,75 | 7143 | ○ | ○ | | |
| 1.1/2-6 | 38,100 | 6 | 4,233 | 150 | 50 | - | 28 | 22,0 | 33,50 | 7147 | ○ | ○ | | |
| 1.3/4-5 | 44,450 | 5 | 5,080 | 160 | 58 | - | 36 | 29,0 | 39,00 | 7151 | ○ | ○ | | |
| 2-4.1/2 | 50,800 | 4 1/2 | 5,645 | 180 | 70 | - | 40 | 32,0 | 44,50 | 7155 | ○ | ○ | | |

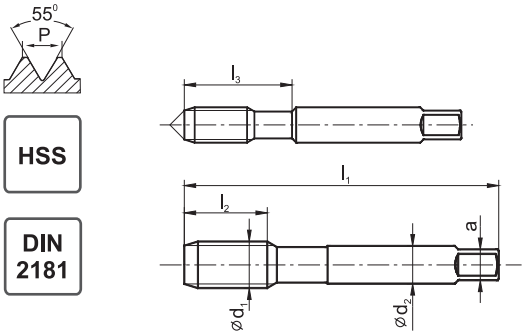


**Przykład zamawiania**

**A1-230001-7123**
**KPL/3 1/8-40 BSW DIN-352 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint calowy drobnozwojny Whitwortha BSF, BS-84:1956




HSS

DIN 2181

| | KPL/2 | F |
|---|---|---|
| | Nr1 F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | | ~2P |

| BSF | Ød1 | 1"/P | P | l1 | l2 | l3 | Ød2 | a | d | Norma | DIN-2181 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Tol. | normal | normal |
| | | | | | | | | | | INDEX | A1-220001 | A1-222001 |
| 3/16-32 | 4,762 | 32 | 0,794 | 50 | 14 | 25 | 6 | 4,9 | 4,00 | 7225 | ● | ● |
| 1/4-26 | 6,350 | 26 | 0,977 | 56 | 14 | 21 | 6 | 4,9 | 5,30 | 7227 | ● | ● |
| 5/16-22 | 7,937 | 22 | 1,155 | 63 | 19 | - | 6 | 4,9 | 6,80 | 7228 | ○ | ○ |
| 3/8-20 | 9,525 | 20 | 1,270 | 70 | 20 | - | 7 | 5,5 | 8,30 | 7229 | ● | ● |
| 7/16-18 | 11,112 | 18 | 1,411 | 70 | 20 | - | 8 | 6,2 | 9,70 | 7230 | ○ | ○ |
| 1/2-16 | 12,700 | 16 | 1,588 | 70 | 20 | - | 9 | 7,0 | 11,10 | 7231 | ● | ● |
| 9/16-16 | 14,288 | 16 | 1,588 | 80 | 20 | - | 12 | 9,0 | 12,70 | 7232 | ○ | ○ |
| 5/8-14 | 15,875 | 14 | 1,814 | 80 | 27 | - | 12 | 9,0 | 14,00 | 7233 | ○ | ○ |
| 3/4-12 | 19,050 | 12 | 2,117 | 80 | 22 | - | 14 | 11,0 | 16,75 | 7235 | ● | ● |
| 7/8-11 | 22,225 | 11 | 2,309 | 80 | 22 | - | 18 | 14,5 | 19,75 | 7237 | ○ | ○ |
| 1-10 | 25,400 | 10 | 2,504 | 110 | 36 | - | 18 | 14,5 | 22,75 | 7239 | ● | ● |



**Przykład zamawiania**

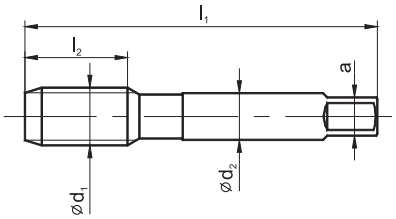
**A1-220001-7225**
**KPL/2 3/16-32 BSF DIN-2181 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint do rurek instalacyjnych stalowych Pg DIN-40430

HSS

NGSy




| | KPL/2 | F |
|---|---|---|
| | Nr1 F | F |
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Typ otworu | < 2,5d | < 2,5d |
| Rodzaj materiału | HSS | HSS |
| Rodzaj powłoki | | |
| Nakrój | | ~2P |

| Pg | Ød1 | 1"/P | P | l1 | l2 | l3 | Ød2 | a | d | Norma / Tol. / INDEX | NGSy A1-320001 | NGSy A1-322001 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pg7 | 12,5 | 20 | 1,270 | 65 | 18 | - | 9,0 | 7,1 | 11,35 | 8807 | ● | ● |
| Pg9 | 15,2 | 18 | 1,411 | 70 | 20 | - | 12,5 | 10,0 | 13,95 | 8809 | ● | ● |
| Pg11 | 18,6 | 18 | 1,411 | 75 | 22 | - | 16,0 | 12,5 | 17,35 | 8811 | ● | ● |
| Pg13,5 | 20,4 | 18 | 1,411 | 80 | 22 | - | 18,0 | 14,0 | 19,15 | 8813 | ● | ● |
| Pg16 | 22,5 | 18 | 1,411 | 85 | 22 | - | 20,0 | 16,0 | 21,25 | 8816 | ● | ● |
| Pg21 | 28,3 | 16 | 1,588 | 95 | 25 | - | 25,0 | 20,0 | 26,95 | 8821 | ● | ● |
| Pg29 | 37,0 | 16 | 1,588 | 105 | 28 | - | 31,5 | 25,0 | 35,60 | 8829 | ● | ● |
| Pg36 | 47,0 | 16 | 1,588 | 120 | 32 | - | 40,0 | 31,5 | 45,60 | 8836 | ○ | ○ |
| Pg42 | 54,0 | 16 | 1,588 | 130 | 36 | - | 40,0 | 31,5 | 52,60 | 8842 | ○ | ○ |

**Gwint Pg jest zastępowany gwintem metrycznym drobnozwojnym MF wg normy DIN EN 60423 dostępnym na zapytanie**



**Przykład zamawiania**

**A1-320001-8807**
**KPL/2 Pg7 NGSy HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Narzynki

# NARZYNKI

STRONA


| | |
|---|---|
| TABELA DOBORU | 6 |
| STRONY KATALOGOWE | 115-125 |

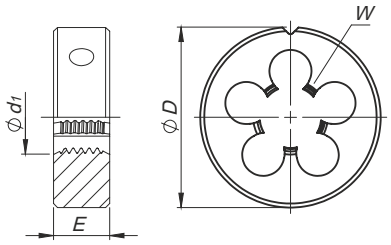

| | | | |
|---|---|---|---|
| M | DIN-EN 22568 | 800 800 SPN Ms INOX | 115 |
| MF | DIN-EN 22568 | 800 800 SPN Ms INOX | 116-118 |
| UNC | DIN-EN 22568 | 800 | 119 |
| UNF | DIN-EN 22568 | 800 | 120 |
| G | DIN-EN 24231 | 800 Ms INOX | 121 |
| R | DIN-EN 24230 | 800 | 122 |
| BSW | DIN-EN 22568 | 800 | 123 |
| BSF | DIN-EN 22568 | 800 | 124 |
| NPT | DIN-EN 24230 | 800 | 125 |

## Gwint metryczny ISO DIN-13

HSS

HSSE

DIN-EN 22 568



*SPN - Skośna powierzchnia natarcia

| | 800 | 800 LH | 800 SPN | Ms | INOX |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wykonanie | | LH | SPN* | | SPN |
| Rodzaj materiału | HSS | HSS | HSS | HSS | HSSE |
| Nakrój | 1,75P | 1,75P | 1,75P | 1,25P | 2,25P |

| M Ć d1 | P | Ć DxE | W | | Norma | DIN-EN 22 568 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tol. | 6g | 6g | 6g | 6g | 6g |
| | | | | | INDEX | N1-121001 | N1-111001 | N1-141001 | N1-164001 | N2-188001 |
| M 1 | 0,25 | 16 x 5 | 3 | 0,96 | 0010 | ● | - | - | - | - |
| M 1,1 | 0,25 | 16 x 5 | 3 | 1,05 | 0011 | ● | - | - | - | - |
| M 1,2 | 0,25 | 16 x 5 | 3 | 1,15 | 0012 | ● | - | - | - | - |
| M 1,4 | 0,3 | 16 x 5 | 3 | 1,35 | 0014 | ● | - | - | - | - |
| M 1,6 | 0,35 | 16 x 5 | 3 | 1,55 | 0016 | ● | - | - | - | - |
| M 1,8 | 0,35 | 16 x 5 | 3 | 1,75 | 0018 | ● | - | - | - | - |
| M 2 | 0,4 | 16 x 5 | 3 | 1,95 | 0020 | ● | - | - | - | - |
| M 2,2 | 0,45 | 16 x 5 | 3 | 2,15 | 0022 | ● | - | - | - | - |
| M 2,5 | 0,45 | 16 x 5 | 3 | 2,42 | 0025 | ● | - | - | - | - |
| M 3 | 0,5 | 20 x 5 | 3 | 2,92 | 0030 | ● | ● | ● | ● | ● |
| M 3,5 | 0,6 | 20 x 5 | 3 | 3,41 | 0035 | ● | ○ | ● | ○ | ○ |
| M 4 | 0,7 | 20 x 5 | 3 | 3,90 | 0040 | ● | ● | ● | ● | ● |
| M 4,5 | 0,75 | 20 x 7 | 3 | 4,40 | 0045 | ● | ○ | ● | ○ | ○ |
| M 5 | 0,8 | 20 x 7 | 3 | 4,90 | 0050 | ● | ● | ● | ● | ● |
| M 6 | 1 | 20 x 7 | 4 | 5,88 | 0060 | ● | ● | ● | ● | ● |
| M 7 | 1 | 25 x 9 | 4 | 6,88 | 0070 | ● | ○ | ● | ○ | ○ |
| M 8 | 1,25 | 25 x 9 | 4 | 7,86 | 0080 | ● | ● | ● | ● | ● |
| M 9 | 1,25 | 25 x 9 | 4 | 8,86 | 0090 | ● | ○ | ● | ○ | ○ |
| M 10 | 1,5 | 30 x 11 | 4 | 9,85 | 0100 | ● | ● | ● | ● | ● |
| M 11 | 1,5 | 30 x 11 | 4 | 10,85 | 0110 | ● | ○ | ● | ○ | ○ |
| M 12 | 1,75 | 38 x 14 | 4 | 11,83 | 0120 | ● | ● | ● | ○ | ● |
| M 14 | 2 | 38 x 14 | 4 | 13,82 | 0140 | ● | ● | ● | ○ | ● |
| M 16 | 2 | 45 x 18 | 5 | 15,82 | 0160 | ● | ● | ● | ○ | ● |
| M 18 | 2,5 | 45 x 18 | 5 | 17,79 | 0180 | ● | ● | ● | ○ | ● |
| M 20 | 2,5 | 45 x 18 | 5 | 19,79 | 0200 | ● | ● | ● | ○ | ● |
| M 22 | 2,5 | 55 x 22 | 5 | 21,79 | 0220 | ● | ● | ● | ○ | ● |
| M 24 | 3 | 55 x 22 | 5 | 23,76 | 0240 | ● | ● | ● | ○ | ● |
| M 27 | 3 | 65 x 25 | 5 | 26,76 | 0270 | ● | ● | ● | ○ | ● |
| M 30 | 3,5 | 65 x 25 | 6 | 29,73 | 0300 | ● | ● | ● | ○ | ● |
| M 33 | 3,5 | 65 x 25 | 6 | 32,73 | 0330 | ● | ● | ● | ○ | ○ |
| M 36 | 4 | 65 x 25 | 7 | 35,70 | 0360 | ● | ● | ● | ○ | ○ |
| M 39 | 4 | 75 x 30 | 7 | 38,70 | 0390 | ● | ○ | ○ | ○ | ○ |
| M 42 | 4,5 | 75 x 30 | 7 | 41,68 | 0420 | ● | ○ | ○ | ○ | ○ |
| M 45 | 4,5 | 90 x 36 | 7 | 44,68 | 0450 | ● | ○ | ○ | ○ | ○ |
| M 48 | 5 | 90 x 36 | 7 | 47,66 | 0480 | ● | ○ | ○ | ○ | ○ |
| M 52 | 5 | 90 x 36 | 8 | 51,66 | 0520 | ● | ○ | ○ | ○ | ○ |
| M 56 | 5,5 | 105 x 36 | 7 | 55,65 | 0560 | ○ | ○ | ○ | ○ | ○ |
| M 60 | 5,5 | 105 x 36 | 8 | 59,65 | 0600 | ○ | ○ | ○ | ○ | ○ |
| M 64 | 6 | 120 x 36 | 7 | 63,62 | 0640 | ○ | ○ | ○ | ○ | ○ |
| M 68 | 6 | 120 x 36 | 8 | 67,62 | 0680 | ○ | ○ | ○ | ○ | ○ |



**Przykład zamawiania**

**N1-121001-0030**
**DIN-EN 22 568 M3-6g HSS 800**

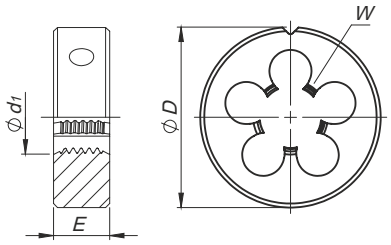
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

HSSE

DIN-EN 22 568




*SPN - Skośna powierzchnia natarcia

| | 800 | 800 | 800 SPN | Ms | INOX |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wykonanie | | LH | SPN | | SPN |
| Rodzaj materiału | HSS | HSS | HSS | HSS | HSSE |
| Nakrój | 1,75P | 1,75P | 1,75P | 1,25P | 2,25P |

| M Ć $d_1$ | P | Ć DxE | W | Ø3 | Norma | DIN-EN 22 568 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tol. | 6g | 6g | 6g | 6g | 6g |
| | | | | | INDEX | N1-121001 | N1-111001 | N1-141001 | N1-164001 | N2-188001 |
| M 3,5 x 0,5 | 0,5 | 20 x 5 | 3 | 3,43 | 0037 | ○ | ○ | ○ | ○ | ○ |
| M 4 x 0,5 | 0,5 | 20 x 5 | 4 | 3,92 | 0041 | ● | ○ | ● | ● | ● |
| M 4,5 x 0,5 | 0,5 | 20 x 5 | 4 | 4,43 | 0046 | ○ | ○ | ○ | ○ | ○ |
| M 5 x 0,5 | 0,5 | 20 x 5 | 4 | 4,92 | 0051 | ● | ○ | ● | ● | ● |
| M 5 x 0,75 | 0,75 | 20 x 5 | 4 | 4,91 | 0052 | ○ | ○ | ○ | ○ | ○ |
| M 5,5 x 0,5 | 0,5 | 20 x 5 | 4 | 5,43 | 0056 | ○ | ○ | ○ | ○ | ○ |
| M 5,5 x 0,75 | 0,75 | 20 x 7 | 4 | 5,42 | 0057 | ○ | ○ | ○ | ○ | ○ |
| M 6 x 0,5 | 0,5 | 20 x 5 | 4 | 5,92 | 0061 | ● | ○ | ● | ● | ● |
| M 6 x 0,75 | 0,75 | 20 x 7 | 4 | 5,90 | 0062 | ● | ○ | ● | ● | ● |
| M 7 x 0,75 | 0,75 | 25 x 9 | 4 | 6,90 | 0072 | ● | ○ | ● | ● | ● |
| M 8 x 0,5 | 0,5 | 25 x 9 | 4 | 7,92 | 0081 | ● | ○ | ● | ● | ● |
| M 8 x 0,75 | 0,75 | 25 x 9 | 4 | 7,90 | 0082 | ● | ● | ● | ● | ● |
| M 8 x 1 | 1 | 25 x 9 | 4 | 7,88 | 0083 | ● | ● | ● | ● | ● |
| M 9 x 0,75 | 0,75 | 25 x 9 | 4 | 8,90 | 0092 | ● | ● | ● | ● | ● |
| M 9 x 1 | 1 | 25 x 9 | 4 | 8,88 | 0093 | ● | ● | ● | ● | ● |
| M 10 x 0,75 | 0,75 | 30 x 11 | 4 | 9,90 | 0102 | ● | ● | ● | ● | ● |
| M 10 x 1 | 1 | 30 x 11 | 5 | 9,88 | 0103 | ● | ● | ● | ● | ● |
| M 10 x 1,25 | 1,25 | 30 x 11 | 4 | 9,86 | 0104 | ● | ● | ● | ● | ● |
| M 11 x 0,75 | 0,75 | 30 x 11 | 5 | 10,91 | 0112 | ● | ○ | ● | ● | ● |
| M 11 x 1 | 1 | 30 x 11 | 4 | 10,88 | 0113 | ● | ○ | ● | ● | ● |
| M 12 x 1 | 1 | 38 x 10 | 4 | 11,88 | 0123 | ● | ● | ● | ● | ● |
| M 12 x 1,25 | 1,25 | 38 x 10 | 4 | 11,86 | 0124 | ● | ● | ● | ● | ● |
| M 12 x 1,5 | 1,5 | 38 x 10 | 4 | 11,85 | 0125 | ● | ● | ● | ● | ● |
| M 14 x 1 | 1 | 38 x 10 | 5 | 13,88 | 0143 | ● | ● | ○ | ● | ● |
| M 14 x 1,5 | 1,5 | 38 x 10 | 5 | 13,85 | 0145 | ● | ● | ● | ● | ● |
| M 15 x 1 | 1 | 38 x 10 | 5 | 14,88 | 0153 | ● | ○ | ○ | ● | ● |
| M 15 x 1,5 | 1,5 | 38 x 10 | 5 | 14,85 | 0155 | ● | ○ | ○ | ● | ● |
| M 16 x 1 | 1 | 45 x 14 | 5 | 15,88 | 0163 | ● | ● | ○ | ● | ● |
| M 16 x 1,5 | 1,5 | 45 x 14 | 5 | 15,85 | 0165 | ● | ● | ● | ● | ● |
| M 17 x 1 | 1 | 45 x 14 | 5 | 16,88 | 0173 | ● | ○ | ○ | ● | ● |
| M 17 x 1,5 | 1,5 | 45 x 14 | 5 | 16,85 | 0175 | ● | ○ | ○ | ● | ● |
| M 18 x 1 | 1 | 45 x 14 | 5 | 17,88 | 0183 | ● | ● | ○ | ● | ● |
| M 18 x 1,5 | 1,5 | 45 x 14 | 5 | 17,85 | 0185 | ● | ● | ● | ● | ● |
| M 18 x 2 | 2 | 45 x 14 | 5 | 17,82 | 0186 | ● | ● | ● | ● | ● |
| M 20 x 1 | 1 | 45 x 14 | 6 | 19,80 | 0203 | ● | ● | ● | ● | ● |
| M 20 x 1,5 | 1,5 | 45 x 14 | 6 | 19,85 | 0205 | ● | ● | ● | ● | ● |
| M 20 x 2 | 2 | 45 x 14 | 6 | 19,82 | 0206 | ● | ● | ○ | ● | ● |
| M 22 x 1 | 1 | 55 x 16 | 6 | 21,88 | 0223 | ● | ● | ○ | ● | ● |
| M 22 x 1,5 | 1,5 | 55 x 16 | 6 | 21,85 | 0225 | ● | ● | ● | ● | ● |
| M 22 x 2 | 2 | 55 x 16 | 6 | 21,82 | 0226 | ● | ● | ○ | ● | ● |
| M 24 x 1 | 1 | 55 x 16 | 6 | 23,88 | 0243 | ● | ● | ○ | ● | ● |
| M 24 x 1,5 | 1,5 | 55 x 16 | 6 | 23,85 | 0245 | ● | ● | ● | ● | ● |

**Przykład zamawiania**

**N1-121001-0041**
**DIN-EN 22 568 M4x0,5-6g HSS 800**

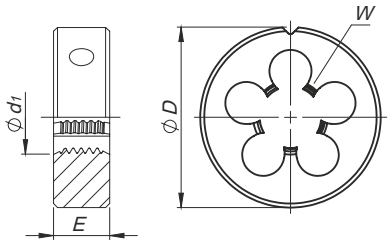
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

HSSE

DIN-EN 22 568



*SPN - Skośna powierzchnia natarcia

| | 800 | 800 | 800 SPN | Ms | INOX |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wykonanie | | LH | SPN | | SPN |
| Rodzaj materiału | HSS | HSS | HSS | HSS | HSSE |
| Nakrój | 1,75P | 1,75P | 1,75P | 1,25P | 2,25P |

| M Ć $d_1$ | P | Ć DxE | W | Ø | Norma | DIN-EN 22 568 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tol. | 6g | 6g | 6g | 6g | 6g |
| | | | | | INDEX | N1-121001 | N1-111001 | N1-141001 | N1-164001 | N2-188001 |
| M 24 x 2 | 2 | 55 x 16 | 6 | 23,82 | 0246 | ● | ● | ○ | ○ | ○ |
| M 25 x 1 | 1 | 55 x 16 | 6 | 24,88 | 0253 | ● | ○ | ○ | ○ | ○ |
| M 25 x 1,5 | 1,5 | 55 x 16 | 6 | 24,85 | 0255 | ● | ○ | ○ | ○ | ○ |
| M 25 x 2 | 2 | 55 x 16 | 6 | 24,82 | 0256 | ● | ○ | ○ | ○ | ○ |
| M 26 x 1,5 | 1,5 | 55 x 16 | 6 | 25,85 | 0265 | ● | ○ | ○ | ○ | ○ |
| M 27 x 1 | 1 | 65 x 18 | 6 | 26,88 | 0273 | ● | ○ | ○ | ○ | ○ |
| M 27 x 1,5 | 1,5 | 65 x 18 | 6 | 26,85 | 0275 | ● | ○ | ○ | ○ | ○ |
| M 27 x 2 | 2 | 65 x 18 | 6 | 26,82 | 0276 | ● | ○ | ○ | ○ | ○ |
| M 28 x 1 | 1 | 65 x 18 | 6 | 27,88 | 0283 | ● | ○ | ○ | ○ | ○ |
| M 28 x 1,5 | 1,5 | 65 x 18 | 6 | 27,85 | 0285 | ● | ○ | ○ | ○ | ○ |
| M 28 x 2 | 2 | 65 x 18 | 6 | 27,82 | 0286 | ● | ○ | ○ | ○ | ○ |
| M 30 x 1 | 1 | 65 x 18 | 6 | 29,88 | 0303 | ● | ○ | ○ | ○ | ○ |
| M 30 x 1,5 | 1,5 | 65 x 18 | 6 | 29,85 | 0305 | ● | ○ | ○ | ○ | ○ |
| M 30 x 2 | 2 | 65 x 18 | 6 | 29,82 | 0306 | ● | ○ | ○ | ○ | ○ |
| M 30 x 3 | 3 | 65 x 25 | 6 | 29,76 | 0307 | ● | ○ | ○ | ○ | ○ |
| M 32 x 1,5 | 1,5 | 65 x 18 | 7 | 31,85 | 0325 | ● | ○ | ○ | ○ | ○ |
| M 32 x 2 | 2 | 65 x 18 | 7 | 31,82 | 0326 | ● | ○ | ○ | ○ | ○ |
| M 33 x 1,5 | 1,5 | 65 x 18 | 7 | 32,85 | 0335 | ● | ○ | ○ | ○ | ○ |
| M 33 x 2 | 2 | 65 x 18 | 7 | 32,82 | 0336 | ● | ○ | ○ | ○ | ○ |
| M 33 x 3 | 3 | 65 x 25 | 7 | 32,76 | 0337 | ● | ○ | ○ | ○ | ○ |
| M 35 x 1,5 | 1,5 | 65 x 18 | 7 | 34,85 | 0355 | ● | ○ | ○ | ○ | ○ |
| M 36 x 1,5 | 1,5 | 65 x 18 | 7 | 35,85 | 0365 | ● | ○ | ○ | ○ | ○ |
| M 36 x 2 | 2 | 65 x 18 | 7 | 35,82 | 0366 | ● | ○ | ○ | ○ | ○ |
| M 36 x 3 | 3 | 65 x 25 | 7 | 35,76 | 0367 | ● | ○ | ○ | ○ | ○ |
| M 38 x 1,5 | 1,5 | 75 x 20 | 7 | 37,85 | 0385 | ● | ○ | ○ | ○ | ○ |
| M 39 x 1,5 | 1,5 | 75 x 20 | 7 | 38,85 | 0395 | ● | ○ | ○ | ○ | ○ |
| M 39 x 2 | 2 | 75 x 20 | 7 | 38,82 | 0396 | ● | ○ | ○ | ○ | ○ |
| M 39 x 3 | 3 | 75 x 30 | 7 | 38,76 | 0397 | ● | ○ | ○ | ○ | ○ |
| M 40 x 1,5 | 1,5 | 75 x 20 | 7 | 39,85 | 0405 | ● | ○ | ○ | ○ | ○ |
| M 40 x 2 | 2 | 75 x 20 | 7 | 39,82 | 0406 | ● | ○ | ○ | ○ | ○ |
| M 40 x 3 | 3 | 75 x 30 | 7 | 39,76 | 0407 | ● | ○ | ○ | ○ | ○ |
| M 42 x 1,5 | 1,5 | 75 x 20 | 7 | 41,85 | 0425 | ● | ○ | ○ | ○ | ○ |
| M 42 x 2 | 2 | 75 x 20 | 8 | 41,82 | 0426 | ● | ○ | ○ | ○ | ○ |
| M 42 x 3 | 3 | 75 x 30 | 7 | 41,76 | 0427 | ● | ○ | ○ | ○ | ○ |
| M 45 x 1,5 | 1,5 | 90 x 22 | 7 | 44,85 | 0455 | ● | ○ | ○ | ○ | ○ |
| M 45 x 2 | 2 | 90 x 22 | 7 | 44,82 | 0456 | ● | ○ | ○ | ○ | ○ |
| M 45 x 3 | 3 | 90 x 36 | 7 | 44,76 | 0457 | ● | ○ | ○ | ○ | ○ |
| M 48 x 1,5 | 1,5 | 90 x 22 | 7 | 47,85 | 0485 | ● | ○ | ○ | ○ | ○ |
| M 48 x 2 | 2 | 90 x 22 | 7 | 47,82 | 0486 | ● | ○ | ○ | ○ | ○ |
| M 48 x 3 | 3 | 90 x 36 | 7 | 47,76 | 0487 | ● | ○ | ○ | ○ | ○ |
| M 48 x 4 | 4 | 90 x 36 | 7 | 47,73 | 0488 | ● | ○ | ○ | ○ | ○ |
| M 50 x 1,5 | 1,5 | 90 x 22 | 8 | 49,85 | 0505 | ● | ○ | ○ | ○ | ○ |



**Przykład zamawiania**

**N1-121001-0285**
**DIN-EN 22 568 M28x1,5-6g HSS 800**

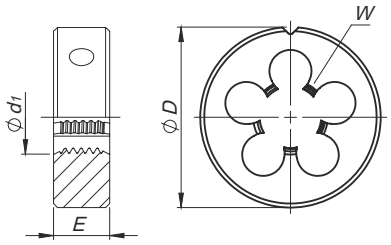
● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

HSS

HSSE

DIN-EN 22 568




*SPN - Skośna powierzchnia natarcia

| | 800 | 800 | 800 SPN | Ms | INOX |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wykonanie | | LH | SPN | | SPN |
| Rodzaj materiału | HSS | HSS | HSS | HSS | HSSE |
| Nakrój | 1,75P | 1,75P | 1,75P | 1,25P | 2,25P |

5

| M Ć $d_1$ | P | Ć DxE | W | ⌀d | Norma | DIN-EN 22 568 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tol. | 6g | 6g | 6g | 6g | 6g |
| | | | | | INDEX | N1-121001 | N1-111001 | N1-141001 | N1-164001 | N2-188001 |
| M 50 x 2 | 2 | 90 x 22 | 8 | 49,82 | 0506 | ● | ○ | ○ | ○ | ○ |
| M 50 x 3 | 3 | 90 x 36 | 8 | 49,76 | 0507 | ● | ○ | ○ | ○ | ○ |
| M 52 x 1,5 | 1,5 | 90 x 22 | 8 | 51,85 | 0525 | ● | ○ | ○ | ○ | ○ |
| M 52 x 2 | 2 | 90 x 22 | 8 | 51,82 | 0526 | ● | ○ | ○ | ○ | ○ |
| M 52 X 3 | 3 | 90 x 36 | 8 | 51,76 | 0527 | ● | ○ | ○ | ○ | ○ |
| M 52 x 4 | 4 | 90 x 36 | 8 | 51,73 | 0528 | ● | ○ | ○ | ○ | ○ |
| M 55 x 1,5 | 1,5 | 105 x 22 | 8 | 54,85 | 0555 | ○ | ○ | ○ | ○ | ○ |
| M 55 x 2 | 2 | 105 x 22 | 7 | 54,82 | 0556 | ○ | ○ | ○ | ○ | ○ |
| M 55 x 3 | 3 | 105 x 36 | 7 | 54,76 | 0557 | ○ | ○ | ○ | ○ | ○ |
| M 55 x 4 | 4 | 105 x 36 | 7 | 54,73 | 0558 | ○ | ○ | ○ | ○ | ○ |
| M 56 x 1,5 | 2 | 105 x 22 | 8 | 55,85 | 0565 | ○ | ○ | ○ | ○ | ○ |
| M 56 x 2 | 2 | 105 x 22 | 8 | 55,82 | 0566 | ○ | ○ | ○ | ○ | ○ |
| M 56 x 3 | 3 | 105 x 36 | 8 | 55,76 | 0567 | ○ | ○ | ○ | ○ | ○ |
| M 56 x 4 | 4 | 105 x 36 | 7 | 55,73 | 0568 | ○ | ○ | ○ | ○ | ○ |



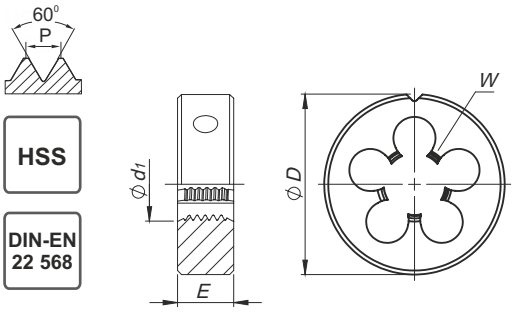
**Przykład zamawiania**

**N1-121001-0506**
**DIN-EN 22 568 M50x2-6g HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

800




HSS

DIN-EN 22 568

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 1,75P |

| UNC | Ćd1 | 1"/P | P | ĆD x E | W | ø d | Norma | DIN-EN 22 568 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | 2A |
| | | | | | | | INDEX | N1-121001 |
| No 5 - 40 | 3,175 | 40 | 0,635 | 20 x 5 | 3 | 3,09 | 4105 | ● |
| No 6 - 32 | 3,505 | 32 | 0,794 | 20 x 5 | 3 | 3,41 | 4106 | ● |
| No 8 - 32 | 4,166 | 32 | 0,794 | 20 x 7 | 3 | 4,07 | 4108 | ● |
| No 10 - 24 | 4,826 | 24 | 1,058 | 20 x 7 | 3 | 4,71 | 4110 | ● |
| No 12 - 24 | 5,486 | 24 | 1,058 | 20 x 7 | 4 | 5,37 | 4112 | ● |
| 1/4 - 20 | 6,35 | 20 | 1,270 | 20 x 7 | 4 | 6,22 | 4127 | ● |
| 5/16 - 18 | 7,938 | 18 | 1,411 | 25 x 9 | 4 | 7,80 | 4128 | ● |
| 3/8 - 16 | 9,525 | 16 | 1,588 | 30 x 11 | 4 | 9,37 | 4129 | ● |
| 7/16 - 14 | 11,112 | 14 | 1,814 | 30 x 11 | 4 | 10,95 | 4130 | ● |
| 1/2 - 13 | 12,7 | 13 | 1,954 | 38 x 14 | 4 | 12,52 | 4131 | ● |
| 9/16 - 12 | 14,288 | 12 | 2,117 | 38 x 14 | 4 | 14,10 | 4132 | ● |
| 5/8 - 11 | 15,875 | 11 | 2,309 | 45 x 18 | 5 | 15,68 | 4133 | ● |
| 3/4 - 10 | 19,05 | 10 | 2,504 | 45 x 18 | 5 | 18,84 | 4135 | ● |
| 7/8 - 9 | 22,225 | 9 | 2,822 | 55 x 22 | 5 | 22,00 | 4137 | ● |
| 1 - 8 | 25,4 | 8 | 3,175 | 55 x 22 | 5 | 25,16 | 4139 | ● |
| 1.1/8 - 7 | 28,575 | 7 | 3,629 | 65 x 25 | 5 | 28,31 | 4141 | ○ |
| 1.1/4 - 7 | 31,75 | 7 | 3,629 | 65 x 25 | 6 | 31,49 | 4143 | ○ |
| 1.3/8 - 6 | 34,925 | 6 | 4,233 | 65 x 25 | 7 | 34,63 | 4145 | ○ |
| 1.1/2 - 6 | 38,1 | 6 | 4,233 | 75 x 30 | 6 | 37,80 | 4147 | ○ |
| 1.3/4 - 5 | 44,45 | 5 | 5,080 | 90 x 36 | 6 | 44,12 | 4151 | ○ |
| 2 - 4.1/2 | 50,8 | 4.1/2 | 5,645 | 90 x 36 | 7 | 50,45 | 4155 | ○ |



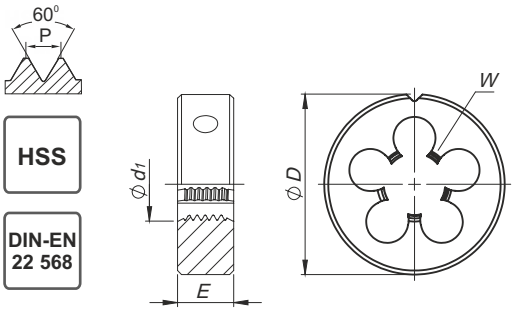
**Przykład zamawiania**

**N1-121001-4128**
**DIN-EN 22 568 5/16-18 UNC-2A HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

800




HSS

DIN-EN 22 568

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 1,75P |

| UNF | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 22 568 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | 2A |
| | | | | | | | INDEX | N1-121001 |
| No 5 - 44 | 3,175 | 44 | 0,577 | 20 x 5 | 3 | 3,10 | 4205 | ● |
| No 6 - 40 | 3,505 | 40 | 0,635 | 20 x 5 | 3 | 3,42 | 4206 | ● |
| No 8 - 36 | 4,166 | 36 | 0,705 | 20 x 7 | 3 | 4,08 | 4208 | ● |
| No 10 - 32 | 4,826 | 32 | 0,794 | 20 x 7 | 3 | 4,73 | 4210 | ● |
| No 12 - 28 | 5,486 | 28 | 0,907 | 20 x 7 | 4 | 5,38 | 4212 | ● |
| 1/4 - 28 | 6,35 | 28 | 0,907 | 20 x 7 | 4 | 6,24 | 4227 | ● |
| 5/16 - 24 | 7,938 | 24 | 1,058 | 25 x 9 | 5 | 7,82 | 4228 | ● |
| 3/8 - 24 | 9,525 | 24 | 1,058 | 30 x 11 | 4 | 9,41 | 4229 | ● |
| 7/16 - 20 | 11,112 | 20 | 1,270 | 30 x 11 | 5 | 10,98 | 4230 | ● |
| 1/2 - 20 | 12,7 | 20 | 1,270 | 38 x 10 | 5 | 12,56 | 4231 | ● |
| 9/16 - 18 | 14,288 | 18 | 1,411 | 38 x 10 | 5 | 14,14 | 4232 | ● |
| 5/8 - 18 | 15,875 | 18 | 1,411 | 45 x 14 | 5 | 15,73 | 4233 | ● |
| 3/4 - 16 | 19,05 | 16 | 1,588 | 45 x 14 | 6 | 18,89 | 4235 | ● |
| 7/8 - 14 | 22,225 | 14 | 1,814 | 55 x 16 | 5 | 22,05 | 4237 | ● |
| 1 - 12 | 25,4 | 12 | 2,117 | 55 x 16 | 6 | 25,21 | 4239 | ● |
| 1.1/8 - 12 | 28,575 | 12 | 2,117 | 65 x 18 | 6 | 28,38 | 4241 | ○ |
| 1.1/4 - 12 | 31,75 | 12 | 2,117 | 65 x 18 | 6 | 31,55 | 4243 | ○ |
| 1.3/8 - 12 | 34,925 | 12 | 2,117 | 65 x 18 | 7 | 34,73 | 4245 | ○ |
| 1.1/2 - 12 | 38,1 | 12 | 2,117 | 75 x 20 | 8 | 37,90 | 4247 | ○ |



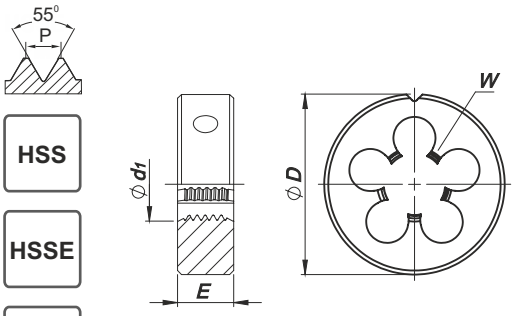


**Przykład zamawiania**

**N1-121001-4228**
**DIN-EN 22 568 5/16-24 UNF-2A HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228




HSS

HSSE

DIN-EN 24 231

| | 800 | 800 | Ms | INOX |
|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wykonanie | | LH | | SPN |
| Rodzaj materiału | HSS | HSS | HSS | HSSE |
| Nakrój | 1,75P | 1,75P | 1,25P | 2,25P |

| G | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 24231 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | | | | |
| | | | | | | | INDEX | N1-121001 | N1-111001 | N1-164001 | N2-188001 |
| G1/8 | 9,73 | 28 | 0,907 | 30 x 11 | 4 | 9,62 | 3123 | ● | ○ | ● | ● |
| G1/4 | 13,16 | 19 | 1,337 | 38 x 10 | 4 | 13,03 | 3127 | ● | ● | ● | ● |
| G3/8 | 16,66 | 19 | 1,337 | 45 x 14 | 5 | 16,54 | 3129 | ● | ● | ● | ● |
| G1/2 | 20,96 | 14 | 1,814 | 45 x 14 | 6 | 20,81 | 3131 | ● | ● | ● | ● |
| G5/8 | 22,91 | 14 | 1,814 | 55 x 16 | 5 | 22,77 | 3133 | ● | ○ | ○ | ○ |
| G3/4 | 26,44 | 14 | 1,814 | 55 x 16 | 6 | 26,30 | 3135 | ● | ● | ● | ● |
| G7/8 | 30,20 | 14 | 1,814 | 65 x 18 | 6 | 30,06 | 3137 | ● | ○ | ○ | ○ |
| G1 | 33,25 | 11 | 2,309 | 65 x 18 | 7 | 33,07 | 3139 | ● | ● | ● | ● |
| G1.1/8 | 37,90 | 11 | 2,309 | 75 x 20 | 7 | 37,72 | 3141 | ○ | ○ | ○ | ○ |
| G1.1/4 | 41,91 | 11 | 2,309 | 75 x 20 | 8 | 41,73 | 3143 | ● | ○ | ○ | ○ |
| G1.3/8 | 44,32 | 11 | 2,309 | 90 x 22 | 7 | 44,14 | 3145 | ○ | ○ | ○ | ○ |
| G1.1/2 | 47,80 | 11 | 2,309 | 90 x 22 | 7 | 47,62 | 3147 | ● | ○ | ○ | ○ |
| G1.3/4 | 53,75 | 11 | 2,309 | 105 x 22 | 8 | 53,57 | 3151 | ○ | ○ | ○ | ○ |
| G2 | 59,61 | 11 | 2,309 | 105 x 22 | 8 | 59,43 | 3155 | ○ | ○ | ○ | ○ |
| G2.1/4 | 65,71 | 11 | 2,309 | 120 x 22 | 8 | 65,49 | 3157 | ○ | ○ | ○ | ○ |

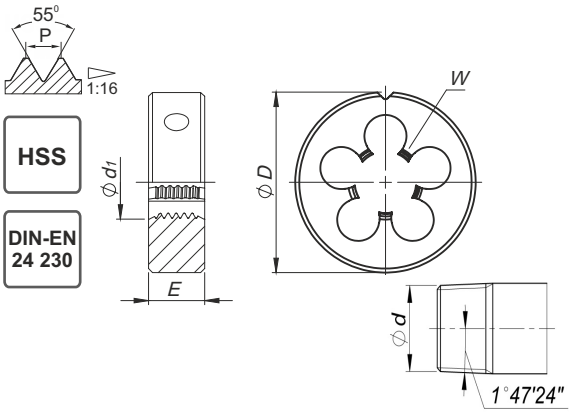
**Przykład zamawiania**

**N1-121001-3143**
**DIN-EN 24 231 G-1.1/4" A HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy stożkowy R, ISO-7/1

800



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 2P |

| G | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 24 230 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | |
| | | | | | | | INDEX | N1-121001 |
| R-1/8” | 9,73 | 28 | 0,907 | 30 x 11 | 5 | 9,48 | 3423 | ● |
| R-1/4” | 13,16 | 19 | 1,337 | 38 x 14 | 5 | 12,78 | 3427 | ● |
| R-3/8” | 16,16 | 19 | 1,337 | 45 x 18 | 5 | 16,26 | 3429 | ● |
| R-1/2” | 20,96 | 14 | 1,814 | 55 x 22 | 5 | 20,44 | 3431 | ● |
| R-3/4” | 26,44 | 14 | 1,814 | 55 x 22 | 6 | 25,85 | 3435 | ● |
| R-1” | 32,25 | 11 | 2,309 | 65 x 25 | 7 | 32,60 | 3439 | ● |





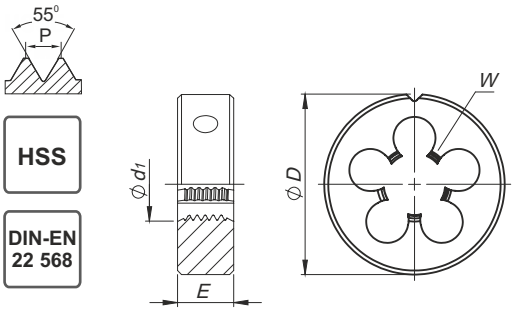
**Przykład zamawiania**

**N1-121001-3427**
**DIN-EN 24 230 R-1/4”- HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint calowy zwykły Whitwortha BSW, BS-84:2007

800




HSS

DIN-EN 22 568

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 1,75P |

| BSW | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 22 568 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | medium |
| | | | | | | | INDEX | N1-121001 |
| 1/8 - 40 | 3,18 | 40 | 0,635 | 20 x 5 | 3 | 3,09 | 7123 | ● |
| 3/16 - 24 | 4,76 | 24 | 1,058 | 20 x 7 | 4 | 4,66 | 7125 | ● |
| 1/4 - 20 | 6,35 | 20 | 1,270 | 20 x 7 | 4 | 6,24 | 7127 | ● |
| 5/16 - 18 | 7,94 | 18 | 1,411 | 25 x 9 | 4 | 7,82 | 7128 | ● |
| 3/8 - 16 | 9,53 | 16 | 1,588 | 30 x 11 | 4 | 9,40 | 7129 | ● |
| 7/16 - 14 | 11,11 | 14 | 1,814 | 30 x 11 | 4 | 10,98 | 7130 | ● |
| 1/2 - 12 | 12,7 | 12 | 2,117 | 38 x 14 | 4 | 12,56 | 7131 | ● |
| 9/16 - 12 | 14,29 | 12 | 2,117 | 38 x 14 | 4 | 14,14 | 7132 | ● |
| 5/8 - 11 | 15,88 | 11 | 2,309 | 45 x 18 | 5 | 15,72 | 7133 | ● |
| 3/4 - 10 | 19,05 | 10 | 2,504 | 45 x 18 | 5 | 18,89 | 7135 | ● |
| 7/8 - 9 | 22,23 | 9 | 2,822 | 55 x 22 | 5 | 22,10 | 7137 | ● |
| 1 - 8 | 25,4 | 8 | 3,175 | 55 x 22 | 5 | 25,27 | 7139 | ● |



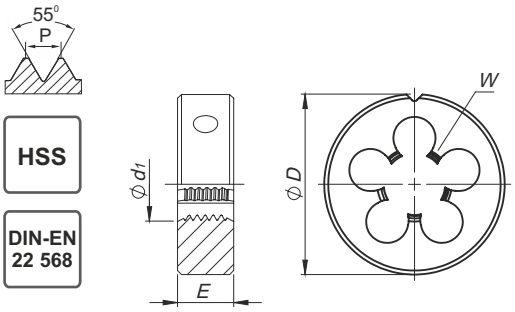
**Przykład zamawiania**

**N1-121001-7131**
**DIN-EN 22 568 1/2 - 12 BSW HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint calowy drobnozwojny Whitwortha BSF, BS-84:2007

800




HSS

DIN-EN 22 568

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 1,75P |

| BSF | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 22 568 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | medium |
| | | | | | | | INDEX | N1-121001 |
| 3/16 - 32 | 4,76 | 32 | 0,794 | 20 x 7 | 4 | 4,76 | 7225 | ● |
| 1/4 - 26 | 6,35 | 26 | 0,977 | 20 x 7 | 4 | 6,25 | 7227 | ● |
| 5/16 - 22 | 7,94 | 22 | 1,155 | 25 x 9 | 4 | 7,83 | 7228 | ● |
| 3/8 - 20 | 9,53 | 20 | 1,270 | 30 x 11 | 4 | 9,41 | 7229 | ● |
| 7/16 - 18 | 11,11 | 18 | 1,411 | 30 x 11 | 5 | 10,99 | 7230 | ● |
| 1/2 - 16 | 12,70 | 16 | 1,588 | 38 x 10 | 5 | 12,57 | 7231 | ● |
| 9/16 - 16 | 14,29 | 16 | 1,588 | 38 x 10 | 4 | 14,16 | 7232 | ● |
| 5/8 - 14 | 15,88 | 14 | 1,814 | 45 x 14 | 4 | 15,73 | 7233 | ● |
| 3/4 - 12 | 19,05 | 12 | 2,117 | 45 x 14 | 5 | 18,89 | 7235 | ● |
| 7/8 - 11 | 22,23 | 11 | 2,309 | 55 x 22 | 5 | 22,11 | 7237 | ● |
| 1 - 10 | 25,40 | 10 | 2,504 | 55 x 22 | 5 | 25,28 | 7239 | ● |





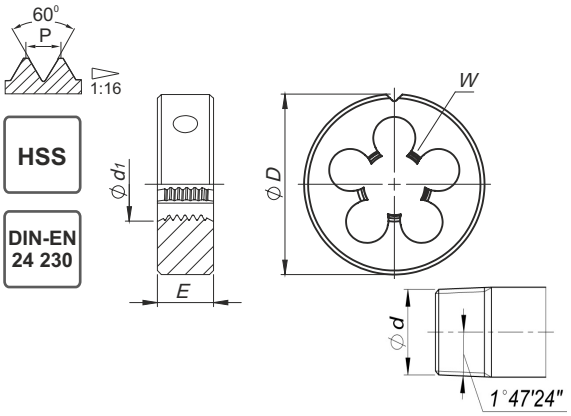
**Przykład zamawiania**

**N1-121001-7232**
**DIN-EN 22 568 9/16 - 16 BSF HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański rurowy stożkowy NPT 1:16, ANSI B-1.20.1

800



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | |
| Rodzaj materiału | HSS |
| Nakrój | 2P |

| NPT | Ćd1 | 1"/P | P | ĆD x E | W | | Norma | DIN-EN 24 230 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | |
| | | | | | | | INDEX | N1-121001 |
| 1/8 | 9,728 | 27 | 0,941 | 30 x 11 | 5 | 9,99 | 4623 | ● |
| 1/4 | 13,157 | 18 | 1,411 | 38 x 14 | 5 | 13,26 | 4627 | ● |
| 3/8 | 16,662 | 18 | 1,411 | 45 x 18 | 5 | 16,67 | 4629 | ● |
| 1/2 | 20,955 | 14 | 1,814 | 45 x 18 | 6 | 20,71 | 4631 | ● |
| 3/4 | 26,441 | 14 | 1,814 | 55 x 22 | 6 | 26,03 | 4635 | ● |
| 1 | 33,249 | 11.1/2 | 2,209 | 65 x 25 | 7 | 32,59 | 4639 | ● |



**Przykład zamawiania**

**N1-121001-4627**
**DIN-EN 24 230 1/4" NPT - HSS 800**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Narzędzia wiertarskie

# NARZĘDZIA WIERTARSKIE

STRONA


| | |
|---|---|
| TABELA DOBORU | 7-8 |
| STRONY KATALOGOWE | 129-157 |

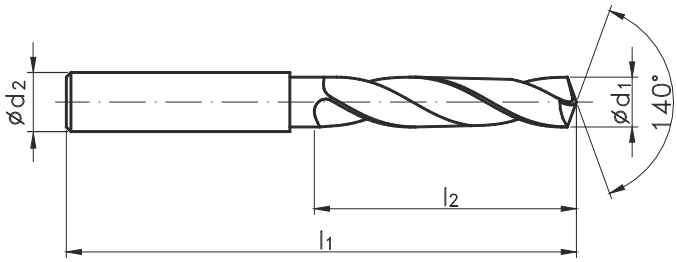

| | | | | | | |
|---|---|---|---|---|---|---|
| VHM | Wiertła pełnowęglikowe kręte<br>Maksymalna głębokość wiercenia | 3xD | DIN-6537 | MASTERDRILL | 1300 | 129-131 |
| VHM | Wiertła pełnowęglikowe kręte<br>Maksymalna głębokość wiercenia | 5xD | DIN-6537 | MASTERDRILL | 1300 | 132-134 |
| VHM | Wiertła pełnowęglikowe kręte<br>Maksymalna głębokość wiercenia | 8xD | DIN-6537 | | 1300 | 135-137 |
| VHM | Wiertła pełnowęglikowe kręte | | DIN-6539 | | 1300micro | 138 |
| VHM | Wiertła pełnowęglikowe stopniowe pod gwintowniki | | DIN-6537 | | 1300 | 139 |
| VHM | Wiertła pełnowęglikowe stopniowe pod wygniataki | | ~DIN-6537 | | 1300 | 140 |
| VHM | Wiertła pełnowęglikowe stopniowe pod śruby | | ~DIN-6537 | | 1300 | 141 |
| VHM | Wiertła pełnowęglikowe kręte do aluminium<br>Maksymalna głębokość wiercenia | 5xD | DIN-6537 | | AL | 142-144 |
| HSSE | Wiertła kręte | | DIN-338 | | INOX | 145-147 |
| HSS | Wiertła mielostopniowe | | | | | 148 |
| VHM | Wiertło do usuwania złamanych gwintowników | | | | | 149 |
| HSSE<br>VHM | Nawiertak NC | | | | | 150 |
| HSS | Nawiertak | | DIN-333A | | | 151 |
| VHM | Fazowniki | | DIN-6537L | | | 152 |
| HSS | Pogłębiacze stożkowe | | DIN-335 | | | 153-154 |
| HM | Pogłębiacz stożkowy z wymienną płytką | | DIN-373 | | | 155 |
| HSS | Pogłębiacze walcowo-czołowe z pilotem stałym | | DIN-373 | | | 156 |
| HSS | Rozwiertaki stożkowe 1:16 | | DIN-335 | | | 157 |

## 3xD Maksymalna głębokość wiercenia

VHM

AT

DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ćd1 | M MF | M "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-604M33 | W9-604013 | W9-604033 |
| 3,00 | | | 62 | 20 | 6,0 | 0300 | ● | ● | ○ |
| 3,10 | | | 62 | 20 | 6,0 | 0310 | ○ | ○ | ○ |
| 3,20 | | | 62 | 20 | 6,0 | 0320 | ● | ● | ○ |
| 3,25 | | M3,5 | 62 | 20 | 6,0 | 0325 | ○ | ○ | ○ |
| 3,30 | M4 | | 62 | 20 | 6,0 | 0330 | ● | ● | ○ |
| 3,40 | | | 62 | 20 | 6,0 | 0340 | ○ | ○ | ○ |
| 3,50 | M4x0,5 | | 62 | 20 | 6,0 | 0350 | ○ | ● | ○ |
| 3,60 | | | 62 | 20 | 6,0 | 0360 | ○ | ○ | ○ |
| 3,70 | M4,5 | M4 | 62 | 20 | 6,0 | 0370 | ● | ● | ○ |
| 3,80 | | | 66 | 24 | 6,0 | 0380 | ● | ● | ○ |
| 3,90 | | | 66 | 24 | 6,0 | 0390 | ○ | ○ | ○ |
| 4,00 | | | 66 | 24 | 6,0 | 0400 | ● | ● | ● |
| 4,10 | | | 66 | 24 | 6,0 | 0410 | ○ | ○ | ○ |
| 4,20 | M5 | M4,5 | 66 | 24 | 6,0 | 0420 | ● | ● | ○ |
| 4,30 | | | 66 | 24 | 6,0 | 0430 | ● | ● | ○ |
| 4,40 | | | 66 | 24 | 6,0 | 0440 | ○ | ● | ○ |
| 4,50 | M5x0,5 | | 66 | 24 | 6,0 | 0450 | ● | ● | ○ |
| 4,60 | M5,5 | | 66 | 24 | 6,0 | 0460 | ○ | ○ | ○ |
| 4,65 | | M5 | 66 | 24 | 6,0 | 0465 | ○ | ○ | ○ |
| 4,70 | | | 66 | 24 | 6,0 | 0470 | ○ | ○ | ○ |
| 4,80 | | | 66 | 28 | 6,0 | 0480 | ○ | ○ | ○ |
| 4,90 | | | 66 | 28 | 6,0 | 0490 | ○ | ○ | ○ |
| 5,00 | M6 | | 66 | 28 | 6,0 | 0500 | ● | ● | ● |
| 5,10 | | M5,5 | 66 | 28 | 6,0 | 0510 | ○ | ● | ○ |
| 5,20 | M6x0,75 | | 66 | 28 | 6,0 | 0520 | ● | ● | ○ |
| 5,30 | | | 66 | 28 | 6,0 | 0530 | ○ | ○ | ○ |
| 5,40 | | | 66 | 28 | 6,0 | 0540 | ○ | ○ | ○ |
| 5,50 | | | 66 | 28 | 6,0 | 0550 | ● | ● | ○ |
| 5,60 | | M6 | 66 | 28 | 6,0 | 0560 | ○ | ○ | ○ |
| 5,70 | | | 66 | 28 | 6,0 | 0570 | ○ | ○ | ○ |
| 5,80 | | | 66 | 28 | 6,0 | 0580 | ○ | ○ | ○ |
| 5,90 | | | 66 | 28 | 6,0 | 0590 | ○ | ○ | ○ |
| 6,00 | M7 | | 66 | 28 | 6,0 | 0600 | ● | ● | ● |
| 6,10 | | | 79 | 34 | 8,0 | 0610 | ○ | ○ | ○ |
| 6,20 | M7x0,75 | | 79 | 34 | 8,0 | 0620 | ○ | ○ | ○ |
| 6,30 | | | 79 | 34 | 8,0 | 0630 | ○ | ○ | ○ |
| 6,40 | | | 79 | 34 | 8,0 | 0640 | ○ | ○ | ○ |
| 6,50 | | | 79 | 34 | 8,0 | 0650 | ● | ● | ○ |
| 6,60 | | M7 | 79 | 34 | 8,0 | 0660 | ○ | ○ | ○ |
| 6,70 | | | 79 | 34 | 8,0 | 0670 | ○ | ○ | ○ |
| 6,80 | M8 | | 79 | 34 | 8,0 | 0680 | ● | ● | ● |
| 6,90 | | | 79 | 34 | 8,0 | 0690 | ○ | ○ | ○ |
| 7,00 | M8x1 | | 79 | 34 | 8,0 | 0700 | ● | ● | ○ |
| 7,10 | | | 79 | 41 | 8,0 | 0710 | ○ | ○ | ○ |
| 7,20 | M8x0,75 | | 79 | 41 | 8,0 | 0720 | ○ | ○ | ○ |
| 7,30 | | | 79 | 41 | 8,0 | 0730 | ○ | ○ | ○ |



**Przykład zamawiania**

**W9-604M33-0300**
**WK MasterDRILL 3,00 DIN-6537 3xD VHM IK AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

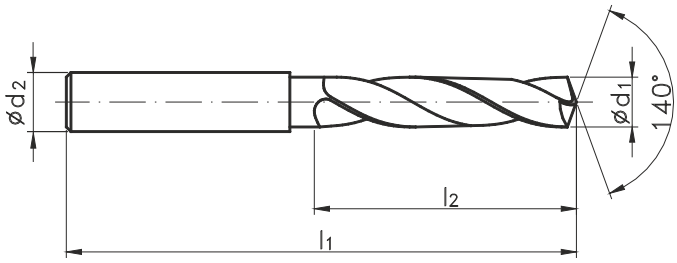
Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

## 3xD Maksymalna głębokość wiercenia

VHM

AT

DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ć $d_1$ | M MF | M "WGN" | $l_1$ | $l_2$ | Ćd$_2$h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-604M33 | W9-604013 | W9-604033 |
| 7,40 | | | 79 | 41 | 8,0 | 0740 | ○ | ○ | ○ |
| 7,45 | | M8 | 79 | 41 | 8,0 | 0745 | ● | ○ | ○ |
| 7,50 | | | 79 | 41 | 8,0 | 0750 | ○ | ● | ● |
| 7,60 | | M8x1 | 79 | 41 | 8,0 | 0760 | ● | ○ | ○ |
| 7,70 | | | 79 | 41 | 8,0 | 0770 | ○ | ○ | ○ |
| 7,80 | M9 | | 79 | 41 | 8,0 | 0780 | ● | ○ | ○ |
| 7,90 | | | 79 | 41 | 8,0 | 0790 | ○ | ○ | ○ |
| 8,00 | M9x1 | | 79 | 41 | 8,0 | 0800 | ● | ● | ● |
| 8,10 | | | 89 | 47 | 10,0 | 0810 | ○ | ○ | ○ |
| 8,20 | M9x0,75 | | 89 | 47 | 10,0 | 0820 | ○ | ○ | ○ |
| 8,30 | | | 89 | 47 | 10,0 | 0830 | ○ | ○ | ○ |
| 8,40 | | | 89 | 47 | 10,0 | 0840 | ○ | ○ | ○ |
| 8,45 | | M9 | 89 | 47 | 10,0 | 0845 | ○ | ○ | ○ |
| 8,50 | M10 | | 89 | 47 | 10,0 | 0850 | ● | ● | ● |
| 8,60 | | M9x1 | 89 | 47 | 10,0 | 0860 | ○ | ○ | ○ |
| 8,70 | | M9x0,75 | 89 | 47 | 10,0 | 0870 | ○ | ○ | ○ |
| 8,80 | M10x1,25 | | 89 | 47 | 10,0 | 0880 | ○ | ○ | ○ |
| 8,90 | | | 89 | 47 | 10,0 | 0890 | ○ | ○ | ○ |
| 9,00 | M10x1 | | 89 | 47 | 10,0 | 0900 | ● | ● | ● |
| 9,10 | | | 89 | 47 | 10,0 | 0910 | ○ | ○ | ○ |
| 9,20 | M10x0,75 | | 89 | 47 | 10,0 | 0920 | ○ | ○ | ○ |
| 9,30 | | | 89 | 47 | 10,0 | 0930 | ○ | ○ | ○ |
| 9,35 | | M10 | 89 | 47 | 10,0 | 0935 | ● | ● | ○ |
| 9,40 | | | 89 | 47 | 10,0 | 0940 | ○ | ○ | ○ |
| 9,45 | | M10x1,25 | 89 | 47 | 10,0 | 0945 | ○ | ○ | ○ |
| 9,50 | M11 | | 89 | 47 | 10,0 | 0950 | ● | ● | ● |
| 9,60 | | M10x1 | 89 | 47 | 10,0 | 0960 | ○ | ○ | ○ |
| 9,70 | | M10x0,75 | 89 | 47 | 10,0 | 0970 | ○ | ○ | ○ |
| 9,80 | | | 89 | 47 | 10,0 | 0980 | ● | ● | ○ |
| 9,90 | | | 89 | 47 | 10,0 | 0990 | ○ | ○ | ○ |
| 10,00 | M11x1 | | 89 | 47 | 10,0 | 1000 | ● | ● | ● |
| 10,10 | | | 102 | 55 | 12,0 | 1010 | ○ | ○ | ○ |
| 10,20 | M12 | | 102 | 55 | 12,0 | 1020 | ● | ● | ○ |
| 10,30 | | | 102 | 55 | 12,0 | 1030 | ○ | ○ | ○ |
| 10,40 | | | 102 | 55 | 12,0 | 1040 | ○ | ○ | ○ |
| 10,50 | M12x1,5 | | 102 | 55 | 12,0 | 1050 | ● | ● | ○ |
| 10,60 | | M11x1 | 102 | 55 | 12,0 | 1060 | ○ | ○ | ○ |
| 10,70 | | | 102 | 55 | 12,0 | 1070 | ○ | ○ | ○ |
| 10,80 | M12x1,25 | | 102 | 55 | 12,0 | 1080 | ○ | ○ | ○ |
| 10,90 | | | 102 | 55 | 12,0 | 1090 | ○ | ○ | ○ |
| 11,00 | M12x1 | | 102 | 55 | 12,0 | 1100 | ● | ● | ○ |
| 11,10 | | | 102 | 55 | 12,0 | 1110 | ○ | ○ | ○ |
| 11,20 | | | 102 | 55 | 12,0 | 1120 | ○ | ○ | ○ |
| 11,25 | | M12 | 102 | 55 | 12,0 | 1125 | ○ | ○ | ○ |
| 11,30 | | | 102 | 55 | 12,0 | 1130 | ○ | ○ | ○ |
| 11,35 | | M12x1,5 | 102 | 55 | 12,0 | 1135 | ○ | ○ | ○ |





**Przykład zamawiania**

**W9-604013-0745**
**WK 1300 7,45 DIN-6537 3xD VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

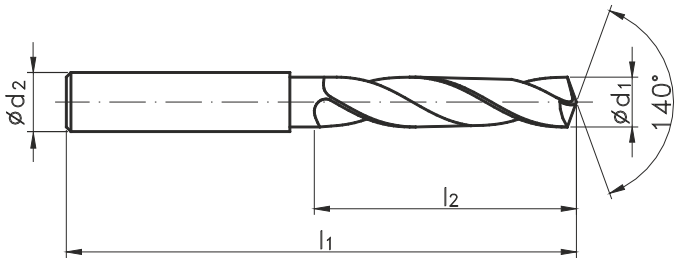
Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

# 3xD Maksymalna głębokość wiercenia

VHM

AT

DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ć $d_1$ | M MF | M "WGN" | $l_1$ | $l_2$ | Ć $d_2$h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-604M33 | W9-604013 | W9-604033 |
| 11,40 | | | 102 | 55 | 12,0 | 1140 | ○ | ○ | ○ |
| 11,45 | | M12x1,25 | 102 | 55 | 12,0 | 1145 | ○ | ○ | ○ |
| 11,50 | | | 102 | 55 | 12,0 | 1150 | ● | ● | ○ |
| 11,60 | | M12x1 | 102 | 55 | 12,0 | 1160 | ○ | ○ | ○ |
| 11,70 | | | 102 | 55 | 12,0 | 1170 | ○ | ○ | ○ |
| 11,80 | | | 102 | 55 | 12,0 | 1180 | ● | ● | ○ |
| 11,90 | | | 102 | 55 | 12,0 | 1190 | ○ | ○ | ○ |
| 12,00 | M14 | | 102 | 55 | 12,0 | 1200 | ● | ● | ○ |
| 12,30 | | | 107 | 60 | 14,0 | 1230 | ○ | ○ | ○ |
| 12,50 | M14x1,5 | | 107 | 60 | 14,0 | 1250 | ● | ● | ○ |
| 12,80 | M14x1,25 | | 107 | 60 | 14,0 | 1280 | ○ | ○ | ○ |
| 13,00 | M14x1 | M14 | 107 | 60 | 14,0 | 1300 | ● | ● | ○ |
| 13,50 | | | 107 | 60 | 14,0 | 1350 | ● | ● | ○ |
| 13,80 | | | 107 | 60 | 14,0 | 1380 | ○ | ○ | ○ |
| 14,00 | M16; M15x1 | | 107 | 60 | 14,0 | 1400 | ● | ● | ○ |
| 14,50 | M16x1,5 | | 115 | 65 | 16,0 | 1450 | ● | ● | ○ |
| 14,80 | | | 115 | 65 | 16,0 | 1480 | ○ | ○ | ○ |
| 15,00 | M16x1 | M16 | 115 | 65 | 16,0 | 1500 | ● | ● | ○ |
| 15,35 | | M16x1,5 | 115 | 65 | 16,0 | 1535 | ○ | ○ | ○ |
| 15,50 | M18 | | 115 | 65 | 16,0 | 1550 | ○ | ○ | ○ |
| 15,80 | | | 115 | 65 | 16,0 | 1580 | ● | ● | ○ |
| 16,00 | M18x2 | | 115 | 65 | 16,0 | 1600 | ● | ● | ○ |
| 16,50 | M18x1,5 | | 123 | 73 | 18,0 | 1650 | ○ | ○ | ○ |
| 16,80 | | M18 | 123 | 73 | 18,0 | 1680 | ○ | ○ | ○ |
| 17,00 | M18x1 | | 123 | 73 | 18,0 | 1700 | ● | ● | ○ |
| 17,35 | | M18x1,5 | 123 | 73 | 18,0 | 1735 | ○ | ○ | ○ |
| 17,50 | M20 | | 123 | 73 | 18,0 | 1750 | ○ | ○ | ○ |
| 17,80 | | | 123 | 73 | 18,0 | 1780 | ○ | ○ | ○ |
| 18,00 | M20x2 | | 123 | 73 | 18,0 | 1800 | ● | ● | ○ |
| 18,50 | M20x1,5 | | 131 | 79 | 20,0 | 1850 | ○ | ○ | ○ |
| 18,80 | | M20 | 131 | 79 | 20,0 | 1880 | ○ | ○ | ○ |
| 19,00 | M20x1 | | 131 | 79 | 20,0 | 1900 | ○ | ○ | ○ |
| 19,35 | | M20x1,5 | 131 | 79 | 20,0 | 1935 | ○ | ○ | ○ |
| 19,50 | M22 | | 131 | 79 | 20,0 | 1950 | ○ | ○ | ○ |
| 19,80 | | | 131 | 79 | 20,0 | 1980 | ○ | ○ | ○ |
| 20,00 | M22x2 | | 131 | 79 | 20,0 | 2000 | ○ | ○ | ○ |



**Przykład zamawiania**

**W9-604013-1200**
**WK 1300 12,00 DIN-6537 3xD VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

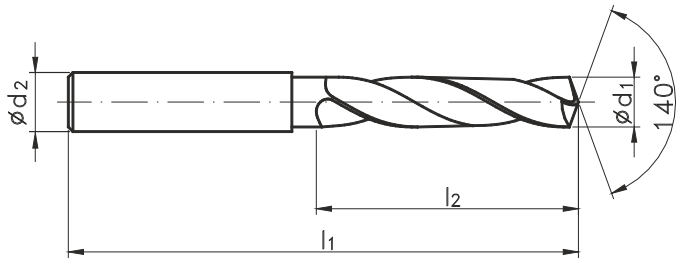
Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

# 5xD Maksymalna głębokość wiercenia

VHM

AT

DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ć $d_1$ | M MF | M "WGN" | $l_1$ | $l_2$ | Ć $d_2$h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-614M33 | W9-614013 | W9-614033 |
| 3,00 | | | 66 | 28 | 6,0 | 0300 | ● | ● | ○ |
| 3,10 | | | 66 | 28 | 6,0 | 0310 | ○ | ● | ○ |
| 3,20 | | | 66 | 28 | 6,0 | 0320 | ● | ● | ○ |
| 3,25 | | M3,5 | 66 | 28 | 6,0 | 0325 | ○ | ● | ○ |
| 3,30 | M4 | | 66 | 28 | 6,0 | 0330 | ● | ● | ○ |
| 3,40 | | | 66 | 28 | 6,0 | 0340 | ○ | ○ | ○ |
| 3,50 | M4x0,5 | | 66 | 28 | 6,0 | 0350 | ○ | ● | ○ |
| 3,60 | | | 66 | 28 | 6,0 | 0360 | ○ | ● | ○ |
| 3,70 | M4,5 | M4 | 66 | 28 | 6,0 | 0370 | ● | ● | ○ |
| 3,80 | | | 74 | 36 | 6,0 | 0380 | ● | ● | ○ |
| 3,90 | | | 74 | 36 | 6,0 | 0390 | ○ | ○ | ○ |
| 4,00 | | | 74 | 36 | 6,0 | 0400 | ● | ● | ● |
| 4,10 | | | 74 | 36 | 6,0 | 0410 | ○ | ○ | ○ |
| 4,20 | M5 | M4,5 | 74 | 36 | 6,0 | 0420 | ● | ● | ● |
| 4,30 | | | 74 | 36 | 6,0 | 0430 | ● | ● | ○ |
| 4,40 | | | 74 | 36 | 6,0 | 0440 | ○ | ○ | ○ |
| 4,50 | M5x0,5 | | 74 | 36 | 6,0 | 0450 | ● | ● | ○ |
| 4,60 | M5,5 | | 74 | 36 | 6,0 | 0460 | ○ | ○ | ○ |
| 4,65 | | M5 | 74 | 36 | 6,0 | 0465 | ○ | ○ | ○ |
| 4,70 | | | 74 | 36 | 6,0 | 0470 | ○ | ○ | ○ |
| 4,80 | | | 82 | 44 | 6,0 | 0480 | ○ | ○ | ○ |
| 4,90 | | | 82 | 44 | 6,0 | 0490 | ○ | ○ | ○ |
| 5,00 | M6 | | 82 | 44 | 6,0 | 0500 | ● | ● | ● |
| 5,10 | | M5,5 | 82 | 44 | 6,0 | 0510 | ○ | ○ | ○ |
| 5,20 | M6x0,75 | | 82 | 44 | 6,0 | 0520 | ● | ● | ○ |
| 5,30 | | | 82 | 44 | 6,0 | 0530 | ○ | ○ | ○ |
| 5,40 | | | 82 | 44 | 6,0 | 0540 | ○ | ○ | ○ |
| 5,50 | | | 82 | 44 | 6,0 | 0550 | ● | ● | ● |
| 5,60 | | M6 | 82 | 44 | 6,0 | 0560 | ● | ● | ○ |
| 5,70 | | | 82 | 44 | 6,0 | 0570 | ○ | ○ | ○ |
| 5,80 | | | 82 | 44 | 6,0 | 0580 | ○ | ○ | ○ |
| 5,90 | | | 82 | 44 | 6,0 | 0590 | ○ | ○ | ○ |
| 6,00 | M7 | | 82 | 44 | 6,0 | 0600 | ● | ● | ● |
| 6,10 | | | 91 | 53 | 8,0 | 0610 | ○ | ○ | ○ |
| 6,20 | M7x0,75 | | 91 | 53 | 8,0 | 0620 | ○ | ○ | ○ |
| 6,30 | | | 91 | 53 | 8,0 | 0630 | ○ | ○ | ○ |
| 6,40 | | | 91 | 53 | 8,0 | 0640 | ○ | ○ | ○ |
| 6,50 | | | 91 | 53 | 8,0 | 0650 | ● | ● | ● |
| 6,60 | | M7 | 91 | 53 | 8,0 | 0660 | ○ | ○ | ○ |
| 6,70 | | | 91 | 53 | 8,0 | 0670 | ○ | ○ | ○ |
| 6,80 | M8 | | 91 | 53 | 8,0 | 0680 | ● | ● | ● |
| 6,90 | | | 91 | 53 | 8,0 | 0690 | ○ | ○ | ○ |
| 7,00 | M8x1 | | 91 | 53 | 8,0 | 0700 | ● | ● | ● |
| 7,10 | | | 91 | 53 | 8,0 | 0710 | ○ | ○ | ○ |
| 7,20 | M8x0,75 | | 91 | 53 | 8,0 | 0720 | ○ | ○ | ○ |
| 7,30 | | | 91 | 53 | 8,0 | 0730 | ○ | ○ | ○ |





**Przykład zamawiania**

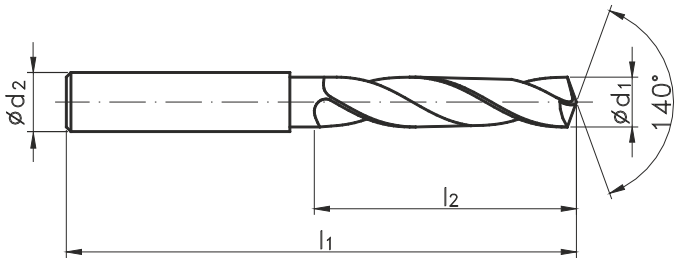
**W9-614013-0300**
**WK 1300 3,00 DIN-6537 5xD VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

# 5xD Maksymalna głębokość wiercenia

VHM
AT
DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ć d1 | M MF | M "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-614M33 | W9-614013 | W9-614033 |
| 7,40 | | | 91 | 53 | 8,0 | 0740 | ○ | ○ | ○ |
| 7,45 | | M8 | 91 | 53 | 8,0 | 0745 | ● | ● | ○ |
| 7,50 | | | 91 | 53 | 8,0 | 0750 | ○ | ● | ● |
| 7,60 | | M8x1 | 91 | 53 | 8,0 | 0760 | ● | ● | ○ |
| 7,70 | | | 91 | 53 | 8,0 | 0770 | ○ | ○ | ○ |
| 7,80 | M9 | | 91 | 53 | 8,0 | 0780 | ● | ● | ○ |
| 7,90 | | | 91 | 53 | 8,0 | 0790 | ○ | ○ | ○ |
| 8,00 | M9x1 | | 91 | 53 | 8,0 | 0800 | ● | ● | ● |
| 8,10 | | | 103 | 61 | 10,0 | 0810 | ○ | ○ | ○ |
| 8,20 | M9x0,75 | | 103 | 61 | 10,0 | 0820 | ○ | ○ | ○ |
| 8,30 | | | 103 | 61 | 10,0 | 0830 | ○ | ○ | ○ |
| 8,40 | | | 103 | 61 | 10,0 | 0840 | ○ | ○ | ○ |
| 8,45 | | M9 | 103 | 61 | 10,0 | 0845 | ○ | ○ | ○ |
| 8,50 | M10 | | 103 | 61 | 10,0 | 0850 | ● | ● | ● |
| 8,60 | | M9x1 | 103 | 61 | 10,0 | 0860 | ○ | ○ | ○ |
| 8,70 | | M9x0,75 | 103 | 61 | 10,0 | 0870 | ○ | ○ | ○ |
| 8,80 | M10x1,25 | | 103 | 61 | 10,0 | 0880 | ○ | ○ | ○ |
| 8,90 | | | 103 | 61 | 10,0 | 0890 | ○ | ○ | ○ |
| 9,00 | M10x1 | | 103 | 61 | 10,0 | 0900 | ● | ● | ● |
| 9,10 | | | 103 | 61 | 10,0 | 0910 | ○ | ○ | ○ |
| 9,20 | M10x0,75 | | 103 | 61 | 10,0 | 0920 | ○ | ○ | ○ |
| 9,30 | | | 103 | 61 | 10,0 | 0930 | ○ | ○ | ○ |
| 9,35 | | M10 | 103 | 61 | 10,0 | 0935 | ● | ● | ○ |
| 9,40 | | | 103 | 61 | 10,0 | 0940 | ○ | ○ | ○ |
| 9,45 | | M10x1,25 | 103 | 61 | 10,0 | 0945 | ○ | ○ | ○ |
| 9,50 | M11 | | 103 | 61 | 10,0 | 0950 | ● | ● | ○ |
| 9,60 | | M10x1 | 103 | 61 | 10,0 | 0960 | ○ | ○ | ○ |
| 9,70 | | M10x0,75 | 103 | 61 | 10,0 | 0970 | ○ | ○ | ○ |
| 9,80 | | | 103 | 61 | 10,0 | 0980 | ● | ● | ○ |
| 9,90 | | | 103 | 61 | 10,0 | 0990 | ○ | ○ | ○ |
| 10,00 | M11x1 | | 103 | 61 | 10,0 | 1000 | ● | ● | ● |
| 10,10 | | | 118 | 71 | 12,0 | 1010 | ○ | ○ | ○ |
| 10,20 | M12 | | 118 | 71 | 12,0 | 1020 | ● | ● | ○ |
| 10,30 | | | 118 | 71 | 12,0 | 1030 | ○ | ○ | ○ |
| 10,40 | | | 118 | 71 | 12,0 | 1040 | ○ | ○ | ○ |
| 10,50 | M12x1,5 | | 118 | 71 | 12,0 | 1050 | ● | ● | ○ |
| 10,60 | | M11x1 | 118 | 71 | 12,0 | 1060 | ○ | ○ | ○ |
| 10,70 | | | 118 | 71 | 12,0 | 1070 | ○ | ○ | ○ |
| 10,80 | M12x1,25 | | 118 | 71 | 12,0 | 1080 | ○ | ○ | ○ |
| 10,90 | | | 118 | 71 | 12,0 | 1090 | ○ | ○ | ○ |
| 11,00 | M12x1 | | 118 | 71 | 12,0 | 1100 | ● | ● | ● |
| 11,10 | | | 118 | 71 | 12,0 | 1110 | ○ | ○ | ○ |
| 11,20 | | | 118 | 71 | 12,0 | 1120 | ○ | ○ | ○ |
| 11,25 | | M12 | 118 | 71 | 12,0 | 1125 | ○ | ○ | ○ |
| 11,30 | | | 118 | 71 | 12,0 | 1130 | ○ | ○ | ○ |
| 11,35 | | M12,1,5 | 118 | 71 | 12,0 | 1135 | ○ | ○ | ○ |



**Przykład zamawiania**

**W9-614013-0750**
**WK 1300 7,50 DIN-6537 5xD VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

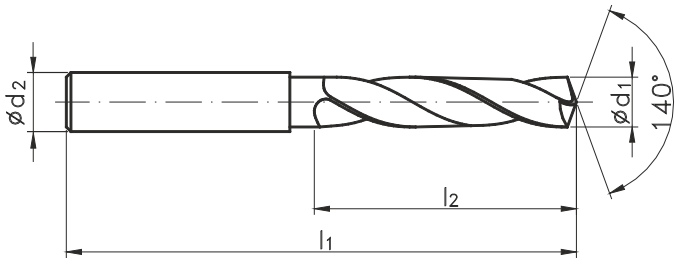
Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

# 5xD Maksymalna głębokość wiercenia

VHM

AT

DIN 6537



| | MASTERDRILL | 1300 | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | - | IK |
| Rodzaj materiału | VHM | VHM | VHM |
| Powłoka | AT | AT | AT |

| Ć $d_1$ | M MF | M "WGN" | $l_1$ | $l_2$ | Ćd$_2$h6 | Norma | DIN-6537 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 | m7 |
| | | | | | | INDEX | W9-614M33 | W9-614013 | W9-614033 |
| 11,40 | | | 118 | 71 | 12,0 | 1140 | ○ | ○ | ○ |
| 11,45 | | M12x1,25 | 118 | 71 | 12,0 | 1145 | ○ | ○ | ○ |
| 11,50 | | | 118 | 71 | 12,0 | 1150 | ● | ● | ○ |
| 11,60 | | M12x1 | 118 | 71 | 12,0 | 1160 | ○ | ○ | ○ |
| 11,70 | | | 118 | 71 | 12,0 | 1170 | ○ | ○ | ○ |
| 11,80 | | | 118 | 71 | 12,0 | 1180 | ● | ● | ○ |
| 11,90 | | | 118 | 71 | 12,0 | 1190 | ○ | ○ | ○ |
| 12,00 | M14 | | 118 | 71 | 12,0 | 1200 | ● | ● | ● |
| 12,30 | | | 124 | 77 | 14,0 | 1230 | ○ | ○ | ○ |
| 12,50 | M14x1,5 | | 124 | 77 | 14,0 | 1250 | ● | ● | ○ |
| 12,80 | M14x1,25 | | 124 | 77 | 14,0 | 1280 | ○ | ○ | ○ |
| 13,00 | M14x1 | M14 | 124 | 77 | 14,0 | 1300 | ● | ● | ● |
| 13,50 | | | 124 | 77 | 14,0 | 1350 | ● | ● | ○ |
| 13,80 | | | 124 | 77 | 14,0 | 1380 | ○ | ○ | ○ |
| 14,00 | M16; M15x1 | | 124 | 77 | 14,0 | 1400 | ● | ● | ● |
| 14,50 | M16x1,5 | | 133 | 83 | 16,0 | 1450 | ● | ● | ○ |
| 14,80 | | | 133 | 83 | 16,0 | 1480 | ○ | ○ | ○ |
| 15,00 | M16x1 | M16 | 133 | 83 | 16,0 | 1500 | ● | ● | ○ |
| 15,35 | | M16x1,5 | 133 | 83 | 16,0 | 1535 | ○ | ○ | ○ |
| 15,50 | M18 | | 133 | 83 | 16,0 | 1550 | ○ | ○ | ○ |
| 15,80 | | | 133 | 83 | 16,0 | 1580 | ● | ● | ○ |
| 16,00 | M18x2 | | 133 | 83 | 16,0 | 1600 | ● | ● | ○ |
| 16,50 | M18x1,5 | | 143 | 93 | 18,0 | 1650 | ○ | ○ | ○ |
| 16,80 | | M18 | 143 | 93 | 18,0 | 1680 | ○ | ○ | ○ |
| 17,00 | M18x1 | | 143 | 93 | 18,0 | 1700 | ● | ● | ○ |
| 17,35 | | M18x1,5 | 143 | 93 | 18,0 | 1735 | ○ | ○ | ○ |
| 17,50 | M20 | | 143 | 93 | 18,0 | 1750 | ○ | ○ | ○ |
| 17,80 | | | 143 | 93 | 18,0 | 1780 | ○ | ○ | ○ |
| 18,00 | M20x2 | | 143 | 93 | 18,0 | 1800 | ● | ● | ○ |
| 18,50 | M20x1,5 | | 153 | 101 | 20,0 | 1850 | ○ | ○ | ○ |
| 18,80 | | M20 | 153 | 101 | 20,0 | 1880 | ○ | ○ | ○ |
| 19,00 | M20x1 | | 153 | 101 | 20,0 | 1900 | ○ | ○ | ○ |
| 19,35 | | M20x1,5 | 153 | 101 | 20,0 | 1935 | ○ | ○ | ○ |
| 19,50 | M22 | | 153 | 101 | 20,0 | 1950 | ○ | ○ | ○ |
| 19,80 | | | 153 | 101 | 20,0 | 1980 | ○ | ○ | ○ |
| 20,00 | M22x2 | | 153 | 101 | 20,0 | 2000 | ○ | ○ | ○ |





**Przykład zamawiania**

**W9-614013-1200**
**WK 1300 12,00 DIN-6537 5xD VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

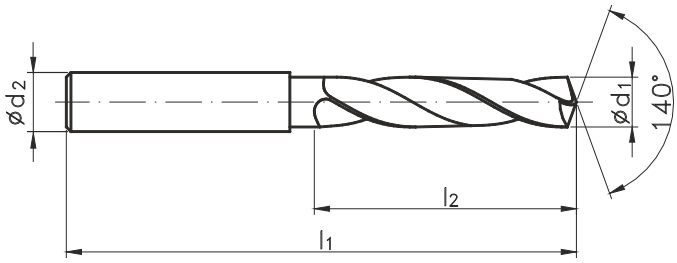
# 8xD Maksymalna głębokość wiercenia 4 łysinki

1300

VHM

AT

DIN 6537



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | IK |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć d1 | M MF | M "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 |
|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 |
| | | | | | | INDEX | W9-624063 |
| 3,00 | | | 72 | 34 | 6,0 | 0300 | o |
| 3,10 | | | 72 | 34 | 6,0 | 0310 | o |
| 3,20 | | | 72 | 34 | 6,0 | 0320 | o |
| 3,30 | M4 | | 72 | 34 | 6,0 | 0330 | o |
| 3,40 | | | 72 | 34 | 6,0 | 0340 | o |
| 3,50 | M4x0,5 | | 72 | 34 | 6,0 | 0350 | o |
| 3,60 | | | 72 | 34 | 6,0 | 0360 | o |
| 3,70 | M4,5 | M4 | 72 | 34 | 6,0 | 0370 | o |
| 3,80 | M4x0,5 | | 81 | 43 | 6,0 | 0380 | o |
| 3,90 | | | 81 | 43 | 6,0 | 0390 | o |
| 4,00 | | | 81 | 43 | 6,0 | 0400 | o |
| 4,10 | | | 81 | 43 | 6,0 | 0410 | o |
| 4,20 | M5 | M4,5 | 81 | 43 | 6,0 | 0420 | o |
| 4,30 | | | 81 | 43 | 6,0 | 0430 | o |
| 4,40 | | | 81 | 43 | 6,0 | 0440 | o |
| 4,50 | M5x0,5 | | 81 | 43 | 6,0 | 0450 | o |
| 4,60 | M5,5 | | 81 | 43 | 6,0 | 0460 | o |
| 4,70 | | | 81 | 43 | 6,0 | 0470 | o |
| 4,80 | M5x0,5 | | 95 | 57 | 6,0 | 0480 | o |
| 4,90 | | | 95 | 57 | 6,0 | 0490 | o |
| 5,00 | M6 | | 95 | 57 | 6,0 | 0500 | o |
| 5,10 | | M5,5 | 95 | 57 | 6,0 | 0510 | o |
| 5,20 | M6x0,75 | | 95 | 57 | 6,0 | 0520 | o |
| 5,30 | | | 95 | 57 | 6,0 | 0530 | o |
| 5,40 | | | 95 | 57 | 6,0 | 0540 | o |
| 5,50 | | | 95 | 57 | 6,0 | 0550 | o |
| 5,60 | | M6 | 95 | 57 | 6,0 | 0560 | o |
| 5,70 | M6x0,75 | | 95 | 57 | 6,0 | 0570 | o |
| 5,80 | M6x0,5 | | 95 | 57 | 6,0 | 0580 | o |
| 5,90 | | | 95 | 57 | 6,0 | 0590 | o |
| 6,00 | M7 | | 95 | 57 | 6,0 | 0600 | o |
| 6,10 | | | 114 | 76 | 8,0 | 0610 | o |
| 6,20 | M7x0,75 | | 114 | 76 | 8,0 | 0620 | o |
| 6,30 | | | 114 | 76 | 8,0 | 0630 | o |
| 6,40 | | | 114 | 76 | 8,0 | 0640 | o |
| 6,50 | | | 114 | 76 | 8,0 | 0650 | o |
| 6,60 | | M7 | 114 | 76 | 8,0 | 0660 | o |
| 6,70 | M7x0,75 | | 114 | 76 | 8,0 | 0670 | o |
| 6,80 | M8 | | 114 | 76 | 8,0 | 0680 | o |
| 6,90 | | | 114 | 76 | 8,0 | 0690 | o |
| 7,00 | M8x1 | | 114 | 76 | 8,0 | 0700 | o |
| 7,10 | | | 114 | 76 | 8,0 | 0710 | o |
| 7,20 | M8x0,75 | | 114 | 76 | 8,0 | 0720 | o |
| 7,30 | | | 114 | 76 | 8,0 | 0730 | o |
| 7,40 | | | 114 | 76 | 8,0 | 0740 | o |
| 7,50 | | | 114 | 76 | 8,0 | 0750 | o |



**Przykład zamawiania**

**W9-624063-0300**
**WK 1300 3,00 DIN-6537 8xD VHM IK AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

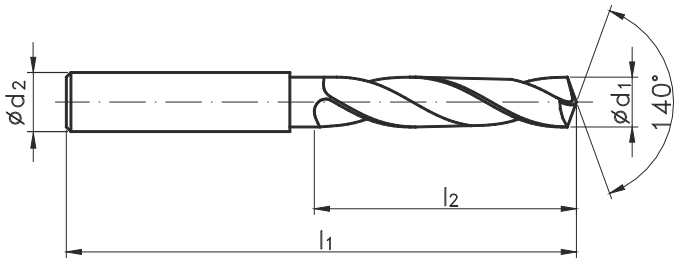
## 8xD Maksymalna głębokość wiercenia 4 łysinki

1300

VHM

AT

DIN 6537



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | IK |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć d1 | M MF | M "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 |
|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 |
| | | | | | | INDEX | W9-624063 |
| 7,60 | M8x1 | | 114 | 76 | 8,0 | 0760 | ○ |
| 7,70 | M8x0,75 | | 114 | 76 | 8,0 | 0770 | ○ |
| 7,80 | M9 | | 114 | 76 | 8,0 | 0780 | ○ |
| 7,90 | | | 114 | 76 | 8,0 | 0790 | ○ |
| 8,00 | M9x1 | | 114 | 76 | 8,0 | 0800 | ○ |
| 8,10 | | | 142 | 95 | 10,0 | 0810 | ○ |
| 8,20 | M9x0,75 | | 142 | 95 | 10,0 | 0820 | ○ |
| 8,30 | | | 142 | 95 | 10,0 | 0830 | ○ |
| 8,40 | | | 142 | 95 | 10,0 | 0840 | ○ |
| 8,50 | M10 | | 142 | 95 | 10,0 | 0850 | ○ |
| 8,60 | | M9x1 | 142 | 95 | 10,0 | 0860 | ○ |
| 8,70 | | M9x0,75 | 142 | 95 | 10,0 | 0870 | ○ |
| 8,80 | M10x1,25 | | 142 | 95 | 10,0 | 0880 | ○ |
| 8,90 | | | 142 | 95 | 10,0 | 0890 | ○ |
| 9,00 | M10x1 | | 142 | 95 | 10,0 | 0900 | ○ |
| 9,10 | | | 142 | 95 | 10,0 | 0910 | ○ |
| 9,20 | M10x0,75 | | 142 | 95 | 10,0 | 0920 | ○ |
| 9,30 | | | 142 | 95 | 10,0 | 0930 | ○ |
| 9,40 | | | 142 | 95 | 10,0 | 0940 | ○ |
| 9,50 | M11 | | 142 | 95 | 10,0 | 0950 | ○ |
| 9,60 | | M10x1 | 142 | 95 | 10,0 | 0960 | ○ |
| 9,70 | | M10x0,75 | 142 | 95 | 10,0 | 0970 | ○ |
| 9,80 | | | 142 | 95 | 10,0 | 0980 | ○ |
| 9,90 | | | 142 | 95 | 10,0 | 0990 | ○ |
| 10,00 | M11x1 | | 142 | 95 | 10,0 | 1000 | ○ |
| 10,10 | | | 162 | 114 | 12,0 | 1010 | ○ |
| 10,20 | M12 | | 162 | 114 | 12,0 | 1020 | ○ |
| 10,30 | | | 162 | 114 | 12,0 | 1030 | ○ |
| 10,40 | | | 162 | 114 | 12,0 | 1040 | ○ |
| 10,50 | M12x1,5 | | 162 | 114 | 12,0 | 1050 | ○ |
| 10,60 | | M11x1 | 162 | 114 | 12,0 | 1060 | ○ |
| 10,70 | | | 162 | 114 | 12,0 | 1070 | ○ |
| 10,80 | M12x1,25 | | 162 | 114 | 12,0 | 1080 | ○ |
| 10,90 | | | 162 | 114 | 12,0 | 1090 | ○ |
| 11,00 | M12x1 | | 162 | 114 | 12,0 | 1100 | ○ |
| 11,10 | | | 162 | 114 | 12,0 | 1110 | ○ |
| 11,20 | | | 162 | 114 | 12,0 | 1120 | ○ |
| 11,30 | | | 162 | 114 | 12,0 | 1130 | ○ |
| 11,40 | | | 162 | 114 | 12,0 | 1140 | ○ |
| 11,50 | | | 162 | 114 | 12,0 | 1150 | ○ |
| 11,60 | | M12x1 | 162 | 114 | 12,0 | 1160 | ○ |
| 11,70 | | | 162 | 114 | 12,0 | 1170 | ○ |
| 11,80 | | | 162 | 114 | 12,0 | 1180 | ○ |
| 11,90 | | | 162 | 114 | 12,0 | 1190 | ○ |
| 12,00 | M14 | | 162 | 114 | 12,0 | 1200 | ○ |
| 12,30 | | | 178 | 133 | 14,0 | 1230 | ○ |





**Przykład zamawiania**

**W9-624063-0760**
**WK 1300 7,60 DIN-6537 8xD VHM IK AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

Możliwość wykonania z chwytem DIN-6535-HB, DIN-6535-HE

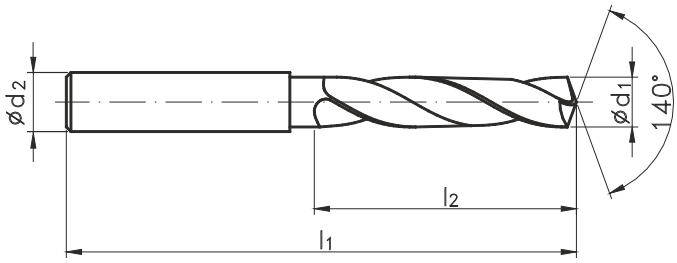
## 8xD Maksymalna głębokość wiercenia 4 łysinki

1300

VHM

AT

DIN 6537



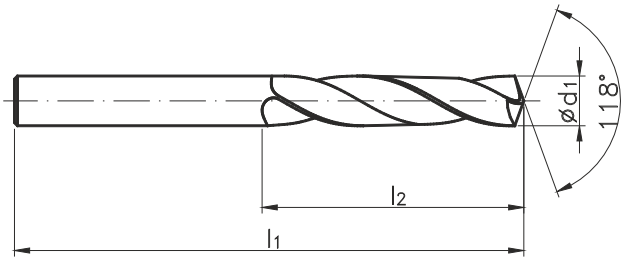
| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | IK |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć d1 | M MF | M "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 |
|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 |
| | | | | | | INDEX | W9-624063 |
| 12,50 | M14x1,5 | | 178 | 133 | 14,0 | 1250 | o |
| 12,80 | | | 178 | 133 | 14,0 | 1280 | o |
| 13,00 | M14x1 | | 178 | 133 | 14,0 | 1300 | o |
| 13,50 | | | 178 | 133 | 14,0 | 1350 | o |
| 13,80 | | | 178 | 133 | 14,0 | 1380 | o |
| 14,00 | M16, M15x1 | | 178 | 133 | 14,0 | 1400 | o |
| 14,50 | M16x1,5 | | 203 | 152 | 16,0 | 1450 | o |
| 14,80 | | | 203 | 152 | 16,0 | 1480 | o |
| 15,00 | M16x1 | | 203 | 152 | 16,0 | 1500 | o |
| 15,50 | M18 | | 203 | 152 | 16,0 | 1550 | o |
| 15,80 | | | 203 | 152 | 16,0 | 1580 | o |
| 16,00 | M18x2 | | 203 | 152 | 16,0 | 1600 | o |
| 16,50 | M18x1,5 | | 222 | 171 | 18,0 | 1650 | o |
| 16,80 | | | 222 | 171 | 18,0 | 1680 | o |
| 17,00 | M18x1 | | 222 | 171 | 18,0 | 1700 | o |
| 17,50 | M20 | | 222 | 171 | 18,0 | 1750 | o |
| 17,80 | | | 222 | 171 | 18,0 | 1780 | o |
| 18,00 | M20x2 | | 222 | 171 | 18,0 | 1800 | o |
| 18,50 | M20x1,5 | | 243 | 190 | 20,0 | 1850 | o |
| 19,00 | M20x1 | | 243 | 190 | 20,0 | 1900 | o |
| 19,50 | M22 | | 243 | 190 | 20,0 | 1950 | o |
| 19,80 | | | 243 | 190 | 20,0 | 1980 | o |
| 20,00 | M22x2 | | 243 | 190 | 20,0 | 2000 | o |

**1300micro**

**VHM**

**DIN 6539**



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | - |
| Rodzaj materiału | VHM |
| Powłoka | - |

| Ć $d_1$ | M MF | M "WGN" | $l_1$ | $l_2$ | Norma | DIN-6539 |
|---|---|---|---|---|---|---|
| | | | | | Tol. | h7 |
| | | | | | INDEX | W9-801014 |
| 0,75 | M1 | M1 | 22 | 6 | 0075 | ● |
| 0,85 | M1,1 | | 24 | 6 | 0085 | ● |
| 0,90 | | M1,1 | 24 | 7 | 0090 | ● |
| 0,95 | M1,2 | | 24 | 7 | 0095 | ● |
| 1,00 | | | 26 | 7 | 0100 | ● |
| 1,10 | M1,4 | M1,4 | 28 | 8 | 0110 | ● |
| 1,25 | M1,6 | | 30 | 9 | 0125 | ● |
| 1,28 | | | 30 | 9 | 0128 | ● |
| 1,35 | M1,7 | M1,6 | 30 | 9 | 0135 | ● |
| 1,45 | M1,8 | M1,7 | 32 | 10 | 0145 | ● |
| 1,47 | | | 32 | 10 | 0147 | ● |
| 1,57 | | M1,8 | 32 | 10 | 0157 | ● |
| 1,60 | M2 | | 34 | 11 | 0160 | ● |
| 1,67 | | M2 | 34 | 11 | 0167 | ● |
| 1,75 | M2,2 | | 34 | 11 | 0175 | ● |
| 1,85 | | | 36 | 12 | 0185 | ● |
| 1,90 | M2,3 | M2,2 | 36 | 12 | 0190 | ● |
| 2,00 | | | 38 | 12 | 0200 | ● |
| 2,03 | | | 38 | 12 | 0203 | ● |
| 2,05 | M2,5 | M2,3 | 38 | 12 | 0205 | ● |
| 2,10 | | | 38 | 12 | 0210 | ● |
| 2,15 | M2,6 | | 38 | 12 | 0215 | ● |
| 2,20 | | M2,5 | 40 | 13 | 0220 | ● |
| 2,30 | | | 40 | 13 | 0230 | ● |
| 2,33 | | M2,6 | 40 | 13 | 0233 | ● |
| 2,40 | | | 43 | 14 | 0240 | ● |
| 2,43 | | | 43 | 14 | 0243 | ● |
| 2,50 | M3 | | 43 | 14 | 0250 | ● |
| 2,60 | | M3 | 43 | 14 | 0260 | ● |
| 2,70 | | | 46 | 16 | 0270 | ● |
| 2,80 | | | 46 | 16 | 0280 | ● |
| 2,90 | M3,5 | | 46 | 16 | 0290 | ● |





**Przykład zamawiania**

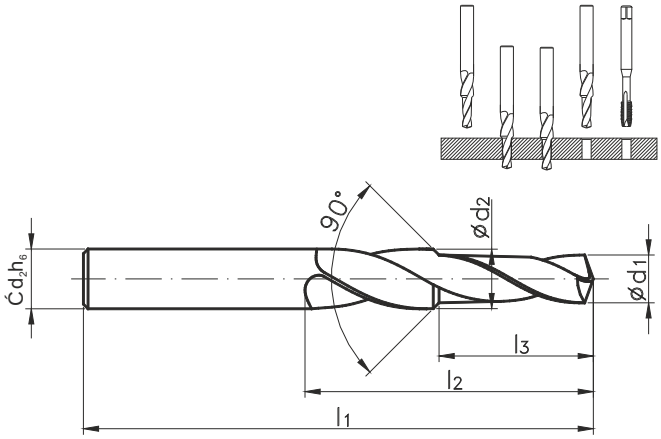
**W9-801014-0075**
**WK 1300micro 0,75 DIN-6539 VHM**

● **Dostępne z magazynu**
○ **Na zapytanie**

VHM

AT

DIN 6537



1300

| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | 90° |
| Rodzaj materiału | VHM |
| Powłoka | AT |

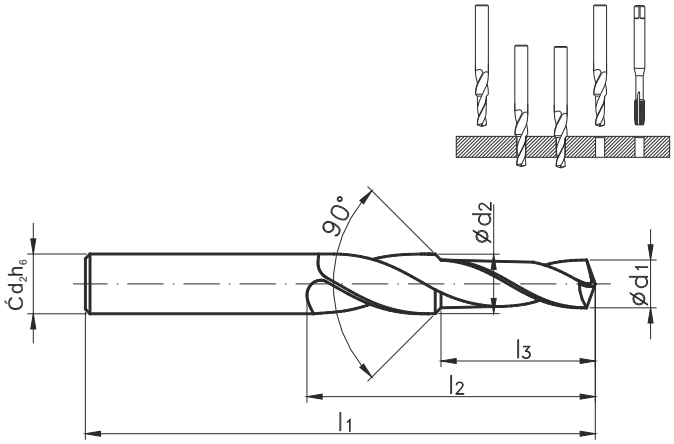
| Ć $d_1$ | M | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | Ć $d_3$h6 | Norma | ~DIN-6537 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | m7 |
| | | | | | | | INDEX | W9-704010 |
| 2,50 | M3 | 62 | 20 | 8,8 | 6 | 6 | 0250 | ● |
| 3,30 | M4 | 62 | 24 | 11,4 | 6 | 6 | 0330 | ● |
| 4,20 | M5 | 66 | 28 | 13,6 | 6 | 6 | 0420 | ● |
| 5,00 | M6 | 79 | 34 | 16,5 | 8 | 8 | 0500 | ● |
| 6,80 | M8 | 89 | 47 | 21,0 | 10 | 10 | 0680 | ● |
| 8,50 | M10 | 102 | 55 | 25,5 | 12 | 12 | 0850 | ● |
| 10,20 | M12 | 107 | 60 | 30,0 | 14 | 14 | 1020 | ● |

# Wiertła pełnowęglikowe stopniowe pod wygniataki

VHM

AT

DIN ~6537



| | 1300 |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | 90° |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć $d_1$ | M MF | $l_1$ | $l_3$ | Ć $d_2$ | Ć$d_2$h6 | Norma | ~DIN-6537 |
|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 |
| | | | | | | INDEX | W9-704010 |
| 2,80 | 2,80 | 66 | 20 | 12 | 6 | 0280 | ● |
| 3,70 | 3,70 | 66 | 24 | 14 | 6 | 0370 | ● |
| 4,65 | 4,65 | 66 | 28 | 20 | 6 | 0465 | ● |
| 5,55 | 5,55 | 79 | 34 | 24 | 8 | 0555 | ● |
| 7,45 | 7,45 | 89 | 47 | 30 | 10 | 0745 | ● |
| 9,30 | 9,30 | 102 | 55 | 40 | 12 | 0930 | ● |
| 11,20 | 11,20 | 107 | 60 | 45 | 14 | 1120 | ● |





**Przykład zamawiania**

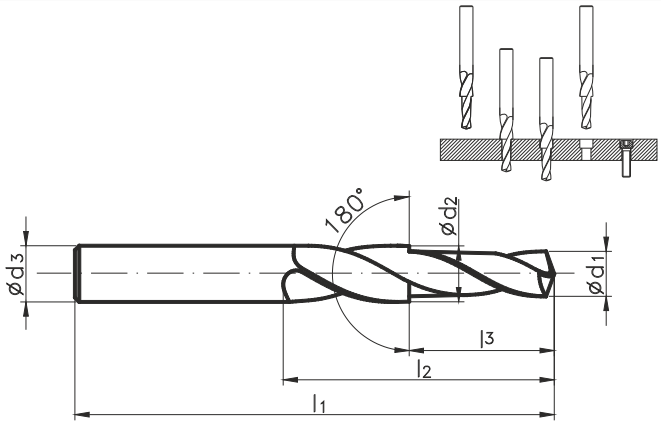
**W9-704010-0235**
**WT 1300 2,35 DIN-6537 VHM**

● **Dostępne z magazynu**
○ **Na zapytanie**

VHM

AT

DIN ~6537



| | 1300 |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wykonanie | 180° |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć $d_1$ | M | $l_1$ | $l_2$ | $l_3$ | Ć $d_2$ | Ćd$_2$h6 | Norma | ~DIN-6537 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Tol. | m7 |
| | | | | | | | INDEX | W9-714010 |
| 3,40 | M3 | 66 | 28 | 9 | 6 | 6 | 0340 | ● |
| 4,50 | M4 | 80 | 37 | 11 | 8 | 8 | 0450 | ● |
| 5,50 | M5 | 89 | 43 | 13 | 10 | 10 | 0550 | ● |
| 6,60 | M6 | 95 | 47 | 15 | 11 | 12 | 0660 | ● |
| 9,00 | M8 | 110 | 56 | 19 | 15 | 16 | 0900 | ● |
| 11,00 | M10 | 123 | 62 | 23 | 18 | 18 | 1100 | ● |



**Przykład zamawiania**

**W9-714010-0340**
**WT 1300 3,40 ~DIN-6537 VHM AT**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Wiertła pełnowęglikowe kręte do aluminium

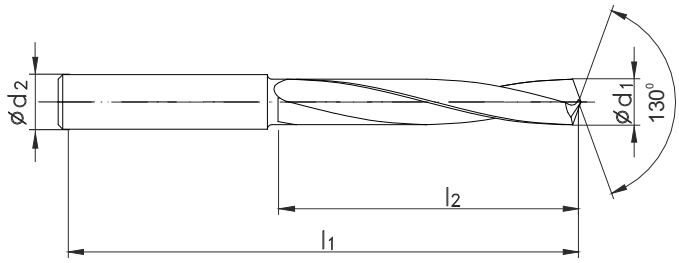
## 5xD Maksymalna głębokość wiercenia

AL

VHM

TB

DIN 6537



| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | IK |
| Rodzaj materiału | VHM | VHM |
| Powłoka | - | TB |

| Ć d1 | M MF | M MF "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 |
| | | | | | | INDEX | W9-611733 | W9-61B733 |
| 3,00 | | | 66 | 28 | 6,0 | 0300 | ○ | ○ |
| 3,10 | | | 66 | 28 | 6,0 | 0310 | ○ | ○ |
| 3,20 | | | 66 | 28 | 6,0 | 0320 | ○ | ○ |
| 3,25 | | M3,5 | 66 | 28 | 6,0 | 0325 | ○ | ○ |
| 3,30 | M4 | | 66 | 28 | 6,0 | 0330 | ○ | ○ |
| 3,40 | | | 66 | 28 | 6,0 | 0340 | ○ | ○ |
| 3,50 | M4x0,5 | | 66 | 28 | 6,0 | 0350 | ○ | ○ |
| 3,60 | | | 66 | 28 | 6,0 | 0360 | ○ | ○ |
| 3,70 | M4,5 | M4 | 66 | 28 | 6,0 | 0370 | ○ | ○ |
| 3,80 | | | 74 | 36 | 6,0 | 0380 | ○ | ○ |
| 3,90 | | | 74 | 36 | 6,0 | 0390 | ○ | ○ |
| 4,00 | | | 74 | 36 | 6,0 | 0400 | ○ | ○ |
| 4,10 | | | 74 | 36 | 6,0 | 0410 | ○ | ○ |
| 4,20 | M5 | M4,5 | 74 | 36 | 6,0 | 0420 | ○ | ○ |
| 4,30 | | | 74 | 36 | 6,0 | 0430 | ○ | ○ |
| 4,40 | | | 74 | 36 | 6,0 | 0440 | ○ | ○ |
| 4,50 | M5x0,5 | | 74 | 36 | 6,0 | 0450 | ○ | ○ |
| 4,60 | M5,5 | | 74 | 36 | 6,0 | 0460 | ○ | ○ |
| 4,65 | | M5 | 74 | 36 | 6,0 | 0465 | ○ | ○ |
| 4,70 | | | 74 | 36 | 6,0 | 0470 | ○ | ○ |
| 4,80 | | | 82 | 44 | 6,0 | 0480 | ○ | ○ |
| 4,90 | | | 82 | 44 | 6,0 | 0490 | ○ | ○ |
| 5,00 | M6 | | 82 | 44 | 6,0 | 0500 | ○ | ○ |
| 5,10 | | M5,5 | 82 | 44 | 6,0 | 0510 | ○ | ○ |
| 5,20 | M6x0,75 | | 82 | 44 | 6,0 | 0520 | ○ | ○ |
| 5,30 | | | 82 | 44 | 6,0 | 0530 | ○ | ○ |
| 5,40 | | | 82 | 44 | 6,0 | 0540 | ○ | ○ |
| 5,50 | | | 82 | 44 | 6,0 | 0550 | ○ | ○ |
| 5,60 | | M6 | 82 | 44 | 6,0 | 0560 | ○ | ○ |
| 5,70 | | | 82 | 44 | 6,0 | 0570 | ○ | ○ |
| 5,80 | | | 82 | 44 | 6,0 | 0580 | ○ | ○ |
| 5,90 | | | 82 | 44 | 6,0 | 0590 | ○ | ○ |
| 6,00 | M7 | | 82 | 44 | 6,0 | 0600 | ○ | ○ |
| 6,10 | | | 91 | 53 | 8,0 | 0610 | ○ | ○ |
| 6,20 | M7x0,75 | | 91 | 53 | 8,0 | 0620 | ○ | ○ |
| 6,30 | | | 91 | 53 | 8,0 | 0630 | ○ | ○ |
| 6,40 | | | 91 | 53 | 8,0 | 0640 | ○ | ○ |
| 6,50 | | | 91 | 53 | 8,0 | 0650 | ○ | ○ |
| 6,60 | | M7 | 91 | 53 | 8,0 | 0660 | ○ | ○ |
| 6,70 | | | 91 | 53 | 8,0 | 0670 | ○ | ○ |
| 6,80 | M8 | | 91 | 53 | 8,0 | 0680 | ○ | ○ |
| 6,90 | | | 91 | 53 | 8,0 | 0690 | ○ | ○ |
| 7,00 | M8x1 | | 91 | 53 | 8,0 | 0700 | ○ | ○ |
| 7,10 | | | 91 | 53 | 8,0 | 0710 | ○ | ○ |
| 7,20 | M8x0,75 | | 91 | 53 | 8,0 | 0720 | ○ | ○ |
| 7,30 | | | 91 | 53 | 8,0 | 0730 | ○ | ○ |





**Przykład zamawiania**

**W9-611733-0300**
**WK AL 3,00 DIN-6537 5xD VHM IK TB**

● **Dostępne z magazynu**
○ **Na zapytanie**

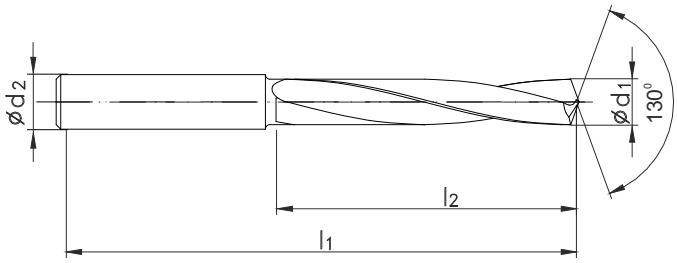
# 5xD Maksymalna głębokość wiercenia

AL

VHM

TB

DIN 6537



| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | IK |
| Rodzaj materiału | VHM | VHM |
| Powłoka | - | TB |

| Ć d1 | M MF | M MF "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 |
| | | | | | | INDEX | W9-611733 | W9-61B733 |
| 7,40 | | | 91 | 53 | 8,0 | 0740 | ○ | ○ |
| 7,45 | | M8 | 91 | 53 | 8,0 | 0745 | ○ | ○ |
| 7,50 | | | 91 | 53 | 8,0 | 0750 | ○ | ○ |
| 7,60 | | M8x1 | 91 | 53 | 8,0 | 0760 | ○ | ○ |
| 7,70 | | | 91 | 53 | 8,0 | 0770 | ○ | ○ |
| 7,80 | M9 | | 91 | 53 | 8,0 | 0780 | ○ | ○ |
| 7,90 | | | 91 | 53 | 8,0 | 0790 | ○ | ○ |
| 8,00 | M9x1 | | 91 | 53 | 8,0 | 0800 | ○ | ○ |
| 8,10 | | | 103 | 61 | 10,0 | 0810 | ○ | ○ |
| 8,20 | M9x0,75 | | 103 | 61 | 10,0 | 0820 | ○ | ○ |
| 8,30 | | | 103 | 61 | 10,0 | 0830 | ○ | ○ |
| 8,40 | | | 103 | 61 | 10,0 | 0840 | ○ | ○ |
| 8,45 | | M9 | 103 | 61 | 10,0 | 0845 | ○ | ○ |
| 8,50 | M10 | | 103 | 61 | 10,0 | 0850 | ○ | ○ |
| 8,60 | | M9x1 | 103 | 61 | 10,0 | 0860 | ○ | ○ |
| 8,70 | | M9x0,75 | 103 | 61 | 10,0 | 0870 | ○ | ○ |
| 8,80 | M10x1,25 | | 103 | 61 | 10,0 | 0880 | ○ | ○ |
| 8,90 | | | 103 | 61 | 10,0 | 0890 | ○ | ○ |
| 9,00 | M10x1 | | 103 | 61 | 10,0 | 0900 | ○ | ○ |
| 9,10 | | | 103 | 61 | 10,0 | 0910 | ○ | ○ |
| 9,20 | M10x0,75 | | 103 | 61 | 10,0 | 0920 | ○ | ○ |
| 9,30 | | | 103 | 61 | 10,0 | 0930 | ○ | ○ |
| 9,35 | | M10 | 103 | 61 | 10,0 | 0935 | ○ | ○ |
| 9,40 | | | 103 | 61 | 10,0 | 0940 | ○ | ○ |
| 9,45 | | M10x1,25 | 103 | 61 | 10,0 | 0945 | ○ | ○ |
| 9,50 | M11 | | 103 | 61 | 10,0 | 0950 | ○ | ○ |
| 9,60 | | M10x1 | 103 | 61 | 10,0 | 0960 | ○ | ○ |
| 9,70 | | M10x0,75 | 103 | 61 | 10,0 | 0970 | ○ | ○ |
| 9,80 | | | 103 | 61 | 10,0 | 0980 | ○ | ○ |
| 9,90 | | | 103 | 61 | 10,0 | 0990 | ○ | ○ |
| 10,00 | M11x1 | | 103 | 61 | 10,0 | 1000 | ○ | ○ |
| 10,10 | | | 118 | 71 | 12,0 | 1010 | ○ | ○ |
| 10,20 | M12 | | 118 | 71 | 12,0 | 1020 | ○ | ○ |
| 10,30 | | | 118 | 71 | 12,0 | 1030 | ○ | ○ |
| 10,40 | | | 118 | 71 | 12,0 | 1040 | ○ | ○ |
| 10,50 | M12x1,5 | | 118 | 71 | 12,0 | 1050 | ○ | ○ |
| 10,60 | | M11x1 | 118 | 71 | 12,0 | 1060 | ○ | ○ |
| 10,70 | | | 118 | 71 | 12,0 | 1070 | ○ | ○ |
| 10,80 | M12x1,25 | | 118 | 71 | 12,0 | 1080 | ○ | ○ |
| 10,90 | | | 118 | 71 | 12,0 | 1090 | ○ | ○ |
| 11,00 | M12x1 | | 118 | 71 | 12,0 | 1100 | ○ | ○ |
| 11,10 | | | 118 | 71 | 12,0 | 1110 | ○ | ○ |
| 11,20 | | | 118 | 71 | 12,0 | 1120 | ○ | ○ |
| 11,25 | | M12 | 118 | 71 | 12,0 | 1125 | ○ | ○ |
| 11,30 | | | 118 | 71 | 12,0 | 1130 | ○ | ○ |
| 11,35 | | M12x1,5 | 118 | 71 | 12,0 | 1135 | ○ | ○ |



**Przykład zamawiania**

W9-611733-0740
WK AL 7,40 DIN-6537 5xD VHM IK

● Dostępne z magazynu
○ Na zapytanie

# Wiertła pełnowęglikowe kręte do aluminium

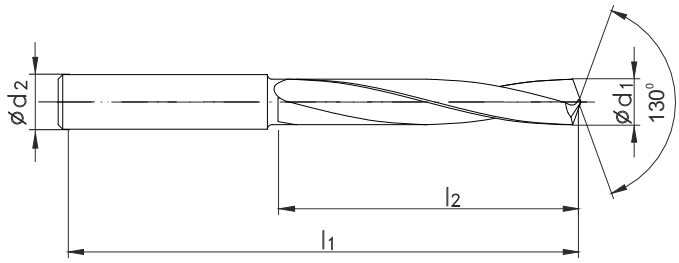
## 5xD Maksymalna głębokość wiercenia

AL

VHM

TB

DIN 6537



| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | IK | IK |
| Rodzaj materiału | VHM | VHM |
| Powłoka | - | TB |

| Ć d1 | M MF | M MF "WGN" | l1 | l2 | Ćd2h6 | Norma | DIN-6537 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tol. | m7 | m7 |
| | | | | | | INDEX | W9-611733 | W9-61B733 |
| 11,40 | | | 118 | 71 | 12,0 | 1140 | ○ | ○ |
| 11,45 | | M12x1,25 | 118 | 71 | 12,0 | 1145 | ○ | ○ |
| 11,50 | | | 118 | 71 | 12,0 | 1150 | ○ | ○ |
| 11,60 | | M12x1 | 118 | 71 | 12,0 | 1160 | ○ | ○ |
| 11,70 | | | 118 | 71 | 12,0 | 1170 | ○ | ○ |
| 11,80 | | | 118 | 71 | 12,0 | 1180 | ○ | ○ |
| 11,90 | | | 118 | 71 | 12,0 | 1190 | ○ | ○ |
| 12,00 | M14 | | 118 | 71 | 12,0 | 1200 | ○ | ○ |
| 12,30 | | | 124 | 77 | 14,0 | 1230 | ○ | ○ |
| 12,50 | M14x1,5 | | 124 | 77 | 14,0 | 1250 | ○ | ○ |
| 12,80 | M14x1,25 | | 124 | 77 | 14,0 | 1280 | ○ | ○ |
| 13,00 | M14x1 | M14 | 124 | 77 | 14,0 | 1300 | ○ | ○ |
| 13,50 | | | 124 | 77 | 14,0 | 1350 | ○ | ○ |
| 13,80 | | | 124 | 77 | 14,0 | 1380 | ○ | ○ |
| 14,00 | M16; M15x1 | | 124 | 77 | 14,0 | 1400 | ○ | ○ |
| 14,50 | M16x1,5 | | 133 | 83 | 16,0 | 1450 | ○ | ○ |
| 14,80 | | | 133 | 83 | 16,0 | 1480 | ○ | ○ |
| 15,00 | M16x1 | M16 | 133 | 83 | 16,0 | 1500 | ○ | ○ |
| 15,35 | | M16x1,5 | 133 | 83 | 16,0 | 1535 | ○ | ○ |
| 15,50 | M18 | | 133 | 83 | 16,0 | 1550 | ○ | ○ |
| 15,80 | | | 133 | 83 | 16,0 | 1580 | ○ | ○ |
| 16,00 | M18x2 | | 133 | 83 | 16,0 | 1600 | ○ | ○ |
| 16,50 | M18x1,5 | | 143 | 93 | 18,0 | 1650 | ○ | ○ |
| 16,80 | | M18 | 143 | 93 | 18,0 | 1680 | ○ | ○ |
| 17,00 | M18x1 | | 143 | 93 | 18,0 | 1700 | ○ | ○ |
| 17,35 | | M18x1,5 | 143 | 93 | 18,0 | 1735 | ○ | ○ |
| 17,50 | M20 | | 143 | 93 | 18,0 | 1750 | ○ | ○ |
| 17,80 | | | 143 | 93 | 18,0 | 1780 | ○ | ○ |
| 18,00 | M20x2 | | 143 | 93 | 18,0 | 1800 | ○ | ○ |
| 18,50 | M20x1,5 | | 153 | 101 | 20,0 | 1850 | ○ | ○ |
| 18,80 | | M20 | 153 | 101 | 20,0 | 1880 | ○ | ○ |
| 19,00 | M20x1 | | 153 | 101 | 20,0 | 1900 | ○ | ○ |
| 19,35 | | M20x1,5 | 153 | 101 | 20,0 | 1935 | ○ | ○ |
| 19,50 | M22 | | 153 | 101 | 20,0 | 1950 | ○ | ○ |
| 19,80 | | | 153 | 101 | 20,0 | 1980 | ○ | ○ |
| 20,00 | M22x2 | | 153 | 101 | 20,0 | 2000 | ○ | ○ |





**Przykład zamawiania**

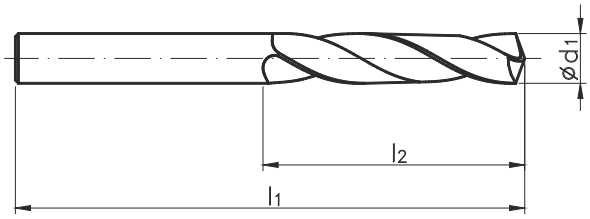
**W9-611733-1140**
**WK AL 11,40 DIN-6537 VHM 5xD**

● **Dostępne z magazynu**
○ **Na zapytanie**

HSSE

TN2

DIN 338




## INOX

| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - |
| Rodzaj materiału | HSSE | HSSE |
| Powłoka | - | TN2 |

| Ć $d_1$ | M MF | M MF "WGN" | $l_1$ | $l_2$ | Norma | DIN-338 | |
|---|---|---|---|---|---|---|---|
| | | | | | Tol. | h8 | h8 |
| | | | | | INDEX | W2-101811 | W2-103811 |
| 1,00 | | M1,1 | 34 | 12 | 0100 | ● | ○ |
| 1,10 | M1,4 | M1,2 | 36 | 14 | 0110 | ● | ○ |
| 1,20 | | | 38 | 16 | 0120 | ● | ○ |
| 1,30 | | | 38 | 16 | 0130 | ● | ○ |
| 1,40 | | | 40 | 18 | 0140 | ● | ○ |
| 1,50 | | | 40 | 18 | 0150 | ● | ○ |
| 1,60 | M2 | | 43 | 20 | 0160 | ● | ○ |
| 1,70 | | | 43 | 20 | 0170 | ● | ○ |
| 1,80 | | | 46 | 22 | 0180 | ● | ○ |
| 1,83 | | M2 | 46 | 22 | 0183 | ○ | ○ |
| 1,90 | M2,3 | | 46 | 22 | 0190 | ● | ○ |
| 2,00 | | M2,2 | 49 | 24 | 0200 | ● | ● |
| 2,05 | M2,5 | | 49 | 24 | 0205 | ○ | ○ |
| 2,10 | | | 49 | 24 | 0210 | ● | ○ |
| 2,20 | | | 53 | 27 | 0220 | ● | ○ |
| 2,30 | | M2,5 | 53 | 27 | 0230 | ● | ○ |
| 2,40 | | | 57 | 30 | 0240 | ● | ○ |
| 2,50 | M3 | | 57 | 30 | 0250 | ● | ● |
| 2,60 | | | 57 | 30 | 0260 | ● | ○ |
| 2,70 | | | 61 | 33 | 0270 | ● | ○ |
| 2,80 | | M3 | 61 | 33 | 0280 | ● | ○ |
| 2,90 | M3,5 | | 61 | 33 | 0290 | ● | ○ |
| 3,00 | | | 61 | 33 | 0300 | ● | ● |
| 3,10 | | | 65 | 36 | 0310 | ● | ○ |
| 3,20 | | | 65 | 36 | 0320 | ● | ● |
| 3,25 | | M3,5 | 65 | 36 | 0325 | ○ | ○ |
| 3,30 | M4 | | 65 | 36 | 0330 | ● | ● |
| 3,40 | | | 70 | 39 | 0340 | ● | ○ |
| 3,50 | M4x0,5 | | 70 | 39 | 0350 | ● | ● |
| 3,60 | | | 70 | 39 | 0360 | ● | ○ |
| 3,70 | M4,5 | M4 | 70 | 39 | 0370 | ● | ○ |
| 3,80 | | | 75 | 43 | 0380 | ● | ○ |
| 3,90 | | | 75 | 43 | 0390 | ● | ○ |
| 4,00 | | | 75 | 43 | 0400 | ● | ● |
| 4,10 | | | 75 | 43 | 0410 | ● | ○ |
| 4,20 | M5 | | 75 | 43 | 0420 | ● | ● |
| 4,30 | | | 80 | 47 | 0430 | ● | ○ |
| 4,40 | | | 80 | 47 | 0440 | ● | ○ |
| 4,50 | M5x0,5 | | 80 | 47 | 0450 | ● | ● |
| 4,60 | M5,5 | | 80 | 47 | 0460 | ● | ○ |
| 4,65 | | M5 | 80 | 47 | 0465 | ○ | ○ |
| 4,70 | | | 80 | 47 | 0470 | ● | ○ |
| 4,80 | | | 86 | 52 | 0480 | ● | ○ |
| 4,90 | | | 86 | 52 | 0490 | ● | ○ |
| 5,00 | M6 | | 86 | 52 | 0500 | ● | ● |
| 5,10 | | | 86 | 52 | 0510 | ● | ● |



**Przykład zamawiania**

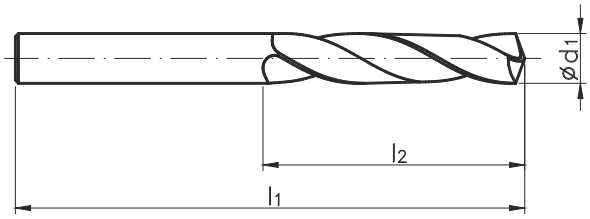
**W2-101811-0100**
**WK INOX 1,00 DIN-338 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

HSSE

TN2

DIN 338



## INOX

| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - |
| Rodzaj materiału | HSSE | HSSE |
| Powłoka | - | TN2 |

| Ć $d_1$ | M MF | M MF "WGN" | $l_1$ | $l_2$ | Norma | DIN-338 | |
|---|---|---|---|---|---|---|---|
| | | | | | Tol. | h8 | h8 |
| | | | | | INDEX | W2-101811 | W2-103811 |
| 5,20 | M6x0,75 | | 86 | 52 | 0520 | ● | ○ |
| 5,30 | | | 86 | 52 | 0530 | ● | ○ |
| 5,40 | | | 93 | 57 | 0540 | ● | ○ |
| 5,50 | | | 93 | 57 | 0550 | ● | ● |
| 5,55 | | | 93 | 57 | 0555 | ○ | ○ |
| 5,60 | | M6 | 93 | 57 | 0560 | ● | ○ |
| 5,70 | | | 93 | 57 | 0570 | ● | ○ |
| 5,80 | | | 93 | 57 | 0580 | ● | ○ |
| 5,90 | | | 93 | 57 | 0590 | ● | ○ |
| 6,00 | M7 | | 93 | 57 | 0600 | ● | ● |
| 6,10 | | | 101 | 63 | 0610 | ● | ○ |
| 6,20 | M7x0,75 | | 101 | 63 | 0620 | ● | ○ |
| 6,30 | | | 101 | 63 | 0630 | ● | ○ |
| 6,40 | | | 101 | 63 | 0640 | ● | ○ |
| 6,50 | | | 101 | 63 | 0650 | ● | ● |
| 6,60 | | M7 | 101 | 63 | 0660 | ● | ○ |
| 6,70 | | | 101 | 63 | 0670 | ● | ○ |
| 6,80 | M8 | | 109 | 69 | 0680 | ● | ● |
| 6,90 | | | 109 | 69 | 0690 | ● | ● |
| 7,00 | M8x1 | | 109 | 69 | 0700 | ● | ● |
| 7,10 | | | 109 | 69 | 0710 | ● | ○ |
| 7,20 | M8x0,75 | | 109 | 69 | 0720 | ● | ○ |
| 7,30 | | | 109 | 69 | 0730 | ● | ○ |
| 7,40 | | M8 | 109 | 69 | 0740 | ● | ○ |
| 7,50 | | | 109 | 69 | 0750 | ● | ● |
| 7,60 | | | 117 | 75 | 0760 | ● | ○ |
| 7,70 | | | 117 | 75 | 0770 | ● | ○ |
| 7,80 | M9 | | 117 | 75 | 0780 | ● | ○ |
| 7,90 | | | 117 | 75 | 0790 | ● | ○ |
| 8,00 | M9x1 | | 117 | 75 | 0800 | ● | ● |
| 8,10 | | | 117 | 75 | 0810 | ● | ○ |
| 8,20 | M9x0,75 | | 117 | 75 | 0820 | ● | ● |
| 8,30 | | | 117 | 75 | 0830 | ● | ○ |
| 8,40 | | | 117 | 75 | 0840 | ● | ○ |
| 8,50 | M10 | | 117 | 75 | 0850 | ● | ● |
| 8,60 | | | 125 | 81 | 0860 | ● | ○ |
| 8,70 | | | 125 | 81 | 0870 | ● | ○ |
| 8,80 | M10x1,25 | | 125 | 81 | 0880 | ● | ○ |
| 8,90 | | | 125 | 81 | 0890 | ● | ○ |
| 9,00 | M10x1 | | 125 | 81 | 0900 | ● | ● |
| 9,10 | | | 125 | 81 | 0910 | ● | ○ |
| 9,20 | M10x0,75 | | 125 | 81 | 0920 | ● | ○ |
| 9,30 | | M10 | 125 | 81 | 0930 | ● | ○ |
| 9,40 | | | 125 | 81 | 0940 | ○ | ○ |
| 9,50 | M11 | | 125 | 81 | 0950 | ● | ● |
| 9,60 | | | 133 | 87 | 0960 | ○ | ○ |





**Przykład zamawiania**

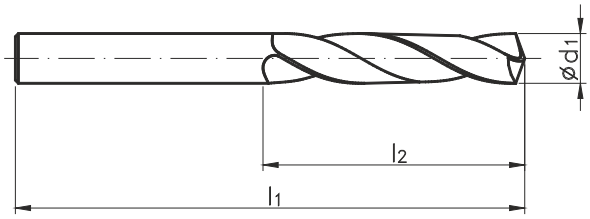
**W2-101811-0520**
**WK INOX 5,20 DIN-338 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

HSSE

TN2

DIN 338



| | INOX | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - |
| Rodzaj materiału | HSSE | HSSE |
| Powłoka | - | TN2 |

| Ć $d_1$ | M MF | M MF "WGN" | $l_1$ | $l_2$ | Norma | DIN-338 | |
|---|---|---|---|---|---|---|---|
| | | | | | Tol. | h8 | h8 |
| | | | | | INDEX | W2-101811 | W2-103811 |
| 9,70 | | | 133 | 87 | 0970 | ● | ○ |
| 9,80 | | | 133 | 87 | 0980 | ● | ○ |
| 9,90 | | | 133 | 87 | 0990 | ○ | ○ |
| 10,00 | M11x1 | | 133 | 87 | 1000 | ● | ● |
| 10,10 | | | 133 | 87 | 1010 | ● | ○ |
| 10,20 | M12 | | 133 | 87 | 1020 | ● | ● |
| 10,30 | | | 133 | 87 | 1030 | ● | ○ |
| 10,40 | | | 133 | 87 | 1040 | ○ | ○ |
| 10,50 | M12x1,5 | | 133 | 87 | 1050 | ● | ● |
| 10,60 | | | 133 | 87 | 1060 | ● | ○ |
| 10,70 | | | 142 | 94 | 1070 | ○ | ○ |
| 10,80 | M12x1,25 | | 142 | 94 | 1080 | ● | ○ |
| 10,90 | | | 142 | 94 | 1090 | ○ | ○ |
| 11,00 | M12x1 | | 142 | 94 | 1100 | ● | ● |
| 11,10 | | | 142 | 94 | 1110 | ○ | ○ |
| 11,20 | | M12 | 142 | 94 | 1120 | ● | ○ |
| 11,30 | | | 142 | 94 | 1130 | ○ | ○ |
| 11,40 | | | 142 | 94 | 1140 | ○ | ○ |
| 11,50 | | | 142 | 94 | 1150 | ● | ○ |
| 11,60 | | | 142 | 94 | 1160 | ○ | ○ |
| 11,70 | | | 142 | 94 | 1170 | ○ | ○ |
| 11,80 | | | 142 | 94 | 1180 | ● | ○ |
| 11,90 | | | 151 | 101 | 1190 | ○ | ○ |
| 12,00 | M14 | | 151 | 101 | 1200 | ● | ● |
| 12,10 | | | 151 | 101 | 1210 | ● | ○ |
| 12,20 | | | 151 | 101 | 1220 | ● | ○ |
| 12,30 | | | 151 | 101 | 1230 | ● | ○ |
| 12,50 | M14x1,5 | | 151 | 101 | 1250 | ● | ● |
| 12,60 | | | 151 | 101 | 1260 | ○ | ○ |
| 12,70 | | | 151 | 101 | 1270 | ● | ○ |
| 12,80 | M14x1,25 | | 151 | 101 | 1280 | ● | ○ |
| 12,90 | | | 151 | 101 | 1290 | ○ | ○ |
| 13,00 | M14x1 | M14 | 151 | 101 | 1300 | ● | ● |
| 13,20 | | | 151 | 101 | 1320 | ● | ○ |
| 13,50 | | | 160 | 108 | 1350 | ● | ○ |
| 13,80 | | | 160 | 108 | 1380 | ○ | ○ |
| 14,00 | M16;M15x1 | | 160 | 108 | 1400 | ● | ● |
| 14,50 | M16x1,5 | | 169 | 114 | 1450 | ● | ○ |
| 15,00 | M16x1 | M16 | 169 | 114 | 1500 | ● | ● |
| 15,50 | M18 | | 178 | 120 | 1550 | ○ | ○ |
| 16,00 | M18x2 | | 178 | 120 | 1600 | ● | ● |



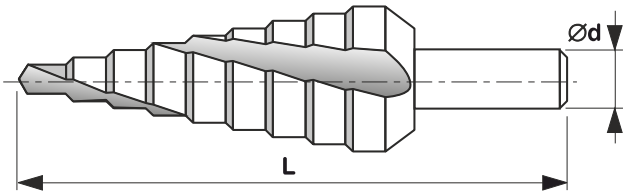
**Przykład zamawiania**

**W2-101811-0970**
**WK INOX 9,70 DIN-338 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Wiertła wielostopniowe

HSS



| | |
|---|---|
| Rodzaj materiału obrabianego | - |
| Wewnętrzne chłodzenie | - |
| Rodzaj materiału | HSS |
| Powłoka | - |

| Ć d | L | Ć D | INDEX | | Nazwa |
|---|---|---|---|---|---|
| 8 | 75 | 4/6/8/10/12/14/16/18/20 | W1-641010-0420 | ● | Nr 1 HSS 4-20mm |
| 10 | 100 | 6/8/10/12/14/16/18/20/22/24/26/28/30 | W1-641020-0630 | ● | Nr 2 HSS 6-30mm |
| 10 | 100 | 6/9/13/16/19/21/23/26/29/32/35/38 | W1-641030-0638 | ● | Nr 3 HSS 6-38mm |
| 10 | 100 | 6/9/11,4/14/17,25/19/21,25/24/26,75/30/33/35,7 | W1-642030-0636 | ● | PG 3 HSS 6-36mm |
| 10 | 100 | 6/9/12,5/15,2/18,6/20,4/22,5/26/28,3/30,5/34/37 | W1-642040-0637 | ● | PG 4 HSS 6-37mm |
| 8 | 75 | 4/6/8/10/12/14/16/18/20 | W1-648010-0420 | ● | Nr 1 HSS 4-20mm |
| 10 | 100 | 6/8/10/12/14/16/18/20/22/24/26/28//30 | W1-648020-0630 | ● | Nr 2 HSS 6-30mm |
| 10 | 100 | 6/9/13/16/19/21/23/26/29/32/35/38 | W1-648030-0638 | ○ | Nr 3 HSS 6-38mm |
| 10 | 100 | 6/9/11,4/14/17,25/19/21,25/24/26,75/30/33/35,7 | W1-645030-0636 | ● | PG 3 HSS 6-36mm |
| 10 | 100 | 6/9/12,5/15,2/18,6/20,4/22,5/26/28,3/30,5/34/37 | W1-645040-0637 | ● | PG 4 HSS 6-37mm |





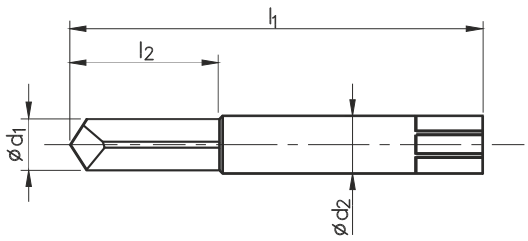
**Przykład zamawiania**
**WST W1-641010-0420**

● **Dostępne z magazynu**
○ **Na zapytanie**

## WDG

VHM

AT



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | - |
| Rodzaj materiału | VHM |
| Powłoka | AT |

| Ć $d_1$ | M | $l_1$±2 | $l_2$±2 | Ć $d_2$ | Norma / Tol. / INDEX | W9-900002 |
|---|---|---|---|---|---|---|
| 2,5 | M3 | 38 | 10 | 3 | 0250 | ● |
| 3,3 | M4 | 46 | 14 | 4 | 0330 | ● |
| 4,2 | M5 | 50 | 19 | 5 | 0420 | ● |
| 5,0 | M6 | 50 | 23 | 6 | 0500 | ● |
| 6,8 | M8 | 60 | 23 | 8 | 0680 | ● |
| 8,5 | M10 | 80 | 25 | 10 | 0850 | ● |
| 10,2 | M12 | 80 | 35 | 12 | 1020 | ● |

Parametry skrawania dla wiertarek stołowych oraz kolumnowych.
Chłodzenie: na sucho lub mokro (ryzyko nalepień podczas chłodzenia)
Prędkość skrawania: 1000-1500 obr/min

Instrukcja operacji
1. Przedmiot obrabiany powinien być zamocowany stabilne i bezpieczne.
2. Wystającą cześć gwintownika wyrównać do płaszczyzny przedmiotu obrabianego.
3. Wycentrować wiertło kilkakrotnie punktując. W przypadku maszyny sterowanej numerycznie wybrać dla tej operacji mniejszy posuw.
4. Gwintownik może być usunięty przy pomocy maszyny sterowanej numerycznie z chłodzeniem (uwaga: ryzyko nalepień), a także przy pomocy wiertarki stołowej lub kolumnowej. Wielokrotne usuwanie wióra jest absolutnie konieczne.
5. Usuń pozostałości gwintownika sprężonym powietrzem lub skrobakiem.
6. Wykonaj gwint.
7. Po wykonaniu gwintu sprawdź poprawność wykonania gwintu przy pomocy sprawdzianu do gwintu.

1 do 5 gwintowników może być usuniętych przy pomocy jednego wiertła do usuwania złamanych gwintowników.
Regeneracja WDG jest nie ekonomiczna.
Z uwagi na sześciokątny chwyt WDG może być mocowane w trój lub cztero – szczękowym uchwycie.
W przypadku poprawnego użytkowania otwór przedmiotu obrabianego nie będzie zniszczony w przypadku każdego rodzaju materiału obrabianego.

| posuw | | fz | | fz | | fz | | fz | | fz | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc m/min | | ϕ3,3-6,8 | | ϕ6,8-10,2 | | ϕ10,2-14,0 | | ϕ14,0-15,5 | | ϕ15,5-17,5 | |
| od | do | od | do | od | do | od | do | od | do | od | do |
| 10 | 12 | 0,040 | 0,08 | 0,08 | 0,110 | 0,110 | 0,140 | 0,140 | 0,150 | 0,150 | 0,170 |

Zestaw do usuwania złamanych gwintowników na stronie 208

**Przykład zamawiania**
W9-900002-0250
WDG 2,5 VHM AT

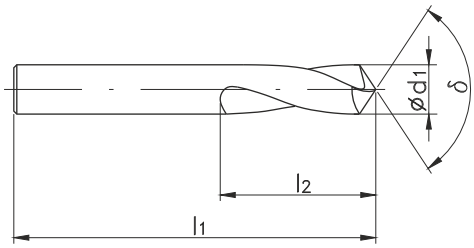
● Dostępne z magazynu
○ Na zapytanie

## Narzędzie wielofunkcyjne do frezowania kanałków, profilowania wiercenia, nawiercania, fazowania i grawerowania

VHM

TN2

HSSE



| | | | |
|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - | - |
| Rodzaj materiału | HSSE | HSSE | VHM |
| Powłoka | TN2 | TN2 | - |
| Kąt wierzchołkowy | 90° | 120° | 142° |

| Ć $d_1$ | δ90 / δ120° | | δ142° | | Norma | | | |
|---|---|---|---|---|---|---|---|---|
| | $l_1$ | $l_2$ | $l_1$ | $l_2$ | Tol. | | | |
| | | | | | INDEX | W2-003012 | W2-003013 | W9-001014 |
| 3,0 | 46 | 12 | 45 | 12,0 | 0300 | ● | ○ | ○ |
| 4,0 | 55 | 12 | 50 | 15,0 | 0400 | ● | ● | ● |
| 5,0 | 62 | 15 | 50 | 18,0 | 0500 | ● | ● | ● |
| 6,0 | 66 | 20 | 50 | 21,0 | 0600 | ● | ○ | ○ |
| 8,0 | 79 | 25 | 60 | 25,0 | 0800 | ○ | ○ | ○ |
| 10,0 | 89 | 25 | 70 | 27,0 | 1000 | ○ | ○ | ○ |
| 12,0 | 102 | 30 | 70 | 27,0 | 1200 | ● | ● | ● |
| 14,0 | 107 | 34 | 75 | 30,0 | 1400 | ○ | ○ | ○ |
| 16,0 | 115 | 35 | 75 | 30,0 | 1600 | ○ | ○ | ○ |





**Przykład zamawiania**

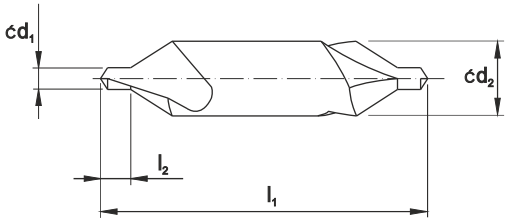
**W2-001012-0300**
**Nawiertak NC 3,00 HSSE**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Do nawiercania

**HSS**

**DIN 333 A**



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | - |
| Rodzaj materiału | HSS |
| Powłoka | - |
| Kąt wierzchołkowy | 60° |

| $d_1$ | $d_2$ | $l_1$ | $l_2$ *min~max* | Norma | DIN-333 A |
|---|---|---|---|---|---|
| | | | | Tol. | |
| | | | | INDEX | W1-011021 |
| 0,8 | 3,15 | 25 | 1,0~1,3 | 0080 | ● |
| 1,0 | 3,15 | 31 | 1,3~1,7 | 0100 | ● |
| 1,25 | 3,15 | 31 | 1,6~2,0 | 0125 | ● |
| 1,6 | 4,0 | 35 | 2,0~2,6 | 0160 | ● |
| 2,0 | 5,0 | 40 | 2,5~3,1 | 0200 | ● |
| 2,5 | 6,3 | 45 | 3,1~3,8 | 0250 | ● |
| 3,15 | 8,0 | 50 | 3,9~4,6 | 0315 | ● |
| 4,0 | 10,0 | 55 | 5,0~5,9 | 0400 | ○ |
| 5,0 | 12,5 | 63 | 6,3~7,2 | 0500 | ● |
| 6,3 | 16,0 | 71 | 8,0~8,9 | 0630 | ● |
| 8,0 | 20,0 | 80 | 10,1~11,1 | 0800 | ● |
| 10,0 | 25,0 | 100 | 12,8~13,8 | 1000 | ● |

**Przykład zamawiania**

**W1-011021-0100**
**Nawiertak 1,00 DIN-333 A HSS**

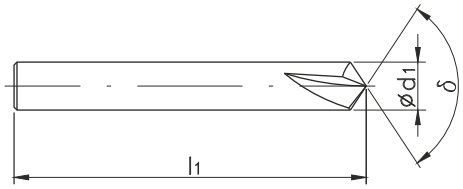
● **Dostępne z magazynu**
○ **Na zapytanie**

## Do fazowania otworów gwintowanych

VHM

AT

DIN 6537L



| | | |
|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - |
| Rodzaj materiału | VHM | VHM |
| Powłoka | AT | AT |
| Kąt wierzchołkowy | 60° | 90° |

| Ć $d_1$ | $l_1$ | z | Norma | DIN-6537L | |
|---|---|---|---|---|---|
| | | | Tol. | | |
| | | | INDEX | W9-054011 | W9-054012 |
| 4 | 54 | 4 | 0400 | ● | ● |
| 6 | 57 | 4 | 0600 | ● | ● |
| 8 | 63 | 5 | 0800 | ● | ● |
| 10 | 72 | 6 | 1000 | ● | ● |
| 12 | 83 | 6 | 1200 | ● | ● |
| 16 | 92 | 6 | 1600 | ● | ● |
| 20 | 104 | 6 | 2000 | ○ | ○ |

6



**Przykład zamawiania**

**W9-054011-0400**
**Fazownik 4,00 DIN-6537L VHM AT**

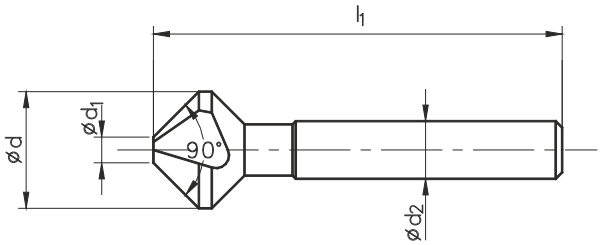
● **Dostępne z magazynu**
○ **Na zapytanie**

HSS

TN2

TC

DIN 335



| | | | | | |
|---|---|---|---|---|---|
| Rodzaj materiału obrabianego | P M K N S H | P M K N S H | P M K N S H | P M K N S H | P M K N S H |
| Wewnętrzne chłodzenie | - | - | - | - | |
| Rodzaj materiału | HSS | HSS | HSSE | HSSE | HSSE (8%Co) |
| Powłoka | - | TN2 | - | TN2 | TC |

| ød | ød$_1$ | ød$_2$ | l$_1$ | Norma | DIN-335 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Tol. | | | | | |
| | | | | INDEX | T1-040010 | T1-043010 | T2-040010 | T2-043010 | T2-045110 |
| 6,3 | 1,5 | 5 | 45 | 0063 | ○ | ○ | ● | ● | ● |
| 8,3 | 2,0 | 6 | 50 | 0083 | ○ | ○ | ● | ● | ● |
| 10,4 | 2,5 | 6 | 50 | 0104 | ○ | ○ | ● | ● | ● |
| 12,4 | 2,8 | 8 | 56 | 0124 | ○ | ○ | ● | ● | ● |
| 16,5 | 3,2 | 10 | 60 | 0165 | ○ | ○ | ● | ● | ● |
| 20,5 | 3,5 | 10 | 63 | 0205 | ○ | ○ | ● | ● | ● |
| 25,0 | 3,8 | 10 | 67 | 0250 | ○ | ○ | ● | ● | ● |
| 30,0 | 4,2 | 12 | 71 | 0300 | ○ | ○ | ● | ● | ● |
| 37,0 | 5,0 | 16 | 80 | 0370 | ○ | ○ | | | |
| 40,0 | 10,0 | 16 | 80 | 0400 | ○ | ○ | | | |
| 45,0 | 12,0 | 20 | 95 | 0450 | ○ | ○ | | | |
| 50,0 | 14,0 | 20 | 95 | 0500 | ○ | ○ | | | |

Zestawy pogłębiaczy na stronie: 208

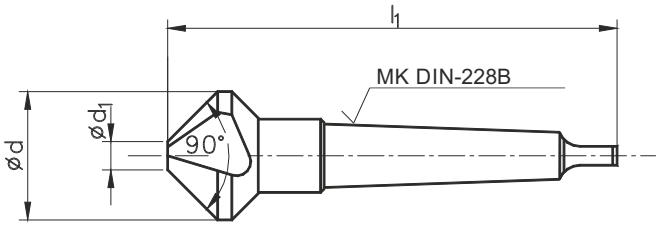
**Przykład zamawiania**

**T1-043010-0630**
**Pogłębiacz stożkowy 6,30 DIN-335 HSS TN2**

● Dostępne z magazynu
○ Na zapytanie

HSS

DIN 335



| | |
|---|---|
| Rodzaj materiału obrabianego | P M K N S H |
| Wewnętrzne chłodzenie | - |
| Rodzaj materiału | HSS |
| Powłoka | - |

| Ć d | Ć d 1 | l 1 | MK DIN-228B | INDEX | T1-040210 |
|---|---|---|---|---|---|
| 37 | 4,8 | 118 | 2 | 0037 | ● |

| Ć d | Ć d 1 | l 1 | MK DIN-228B | INDEX | T1-040410 |
|---|---|---|---|---|---|
| 50 | 14 | 150 | 3 | 0050 | ● |
| 63 | 16,0 | 180 | 4 | 0063 | ● |
| 80 | 20,0 | 180 | 4 | 0080 | ● |

6

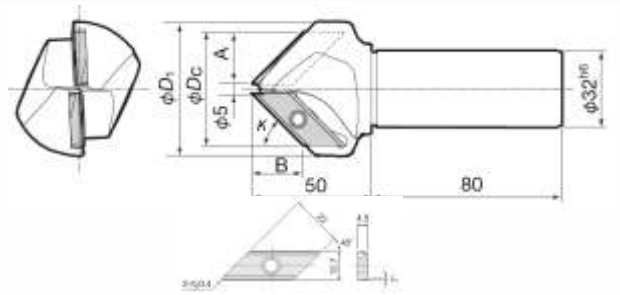


**Przykład zamawiania**

**W1-040210-0037**
**Pogłębiacz stożkowy 37 DIN-228B HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## PF



| ∅$D_1$ | ∅$D_c$ | κ | A | B | Z | INDEX | |
|---|---|---|---|---|---|---|---|
| 40 | 34 | 30° | 14,5 | 25,5 | 1 | T9-100013-0400 | ● |
| 56 | 46 | 45° | 20,5 | 20,5 | 2 | T9-100012-0560 | ● |
| 72 | 55 | 60° | 14,5 | 14,5 | 2 | T9-100011-0720 | ● |

Płytki do pogłębiaczy sprzedawane oddzielnie.

## Akcesoria

| Nazwa | INDEX |
|---|---|
| Płytka AH 330 | T9-104000-0127 |
| Śruba mocująca | T9-100001-0000 |
| Klucz | T9-100002-0000 |

## Parametry obróbki

| Materiał | posuw $f_z$ (mm/ząb) |
|---|---|
| Stal węglowa | 0,1~0,25 |
| Stal stopowa | 0,1~0,2 |
| Stal narzędziowa | 0,1~0,2 |
| Stal nierdzewna | 0,1~0,25 |
| Żeliwo | 0,1~0,25 |

## Wielkość skoku narzędzia w osi Z

- Dla fazy 60°

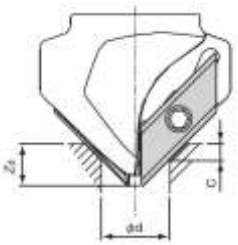
| Średnica otworu Ćd (mm) | Wymiar dla fazy C (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0,5 | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 |
| 5 | 0,6 | 1,1 | 1,6 | 2,1 | | | |
| 6 | 0,9 | 1,4 | 1,9 | 2,4 | | | |
| 6,8 | 1,1 | 1,6 | 2,1 | 2,6 | | | |
| 8 | 1,4 | 1,9 | 2,4 | 2,9 | | | |
| 8,5 | 1,6 | 2,1 | 2,6 | 3,1 | | | |
| 10 | 2,0 | 2,5 | 3,0 | 3,5 | 4,0 | 4,5 | 5,0 |
| 10,2 | 2,1 | 2,6 | 3,1 | 3,6 | 4,1 | 4,6 | 5,1 |
| 12 | 2,6 | 3,1 | 3,6 | 4,1 | 4,6 | 5,1 | 5,6 |
| 16 | 3,7 | 4,2 | 4,7 | 5,2 | 5,7 | 6,2 | 6,7 |
| 17,5 | 4,2 | 4,7 | 5,2 | 5,7 | 6,2 | 6,7 | 7,2 |
| 20 | 4,9 | 5,4 | 5,9 | 6,4 | 6,9 | 7,4 | 7,9 |
| 21 | 5,2 | 5,7 | 6,2 | 6,7 | 7,2 | 7,7 | 8,2 |
| 24 | 6,1 | 6,6 | 7,1 | 7,6 | 8,1 | 8,6 | 9,1 |
| 30 | 7,8 | 8,3 | 8,8 | 9,3 | 9,8 | 10,3 | 10,8 |
| 33 | 8,7 | 9,2 | 9,7 | 10,2 | 10,7 | 11,2 | 11,7 |
| 36 | 9,5 | 10,0 | 10,5 | 11,0 | 11,5 | 12,0 | 12,5 |
| 38 | 10,1 | 10,6 | 11,1 | 11,6 | 12,1 | 12,6 | 13,1 |
| 42 | 11,2 | 11,7 | 12,2 | 12,7 | 13,2 | 13,7 | 14,2 |
| 46 | 12,4 | 12,9 | 13,4 | 13,9 | 14,4 | | |
| 48 | 13,0 | 13,5 | 14 | 14,5 | | | |
| 52 | 14,1 | | | | | | |

- Dla fazy 30°

| Średnica otworu Ćd (mm) | Wymiar dla fazy C (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0,5 | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 |
| 5 | 0,8 | 1,3 | 1,8 | 2,3 | 2,8 | | | |
| 6 | 1,7 | 2,2 | 2,7 | 3,2 | 3,7 | | | |
| 6,8 | 2,4 | 2,9 | 3,4 | 3,9 | 4,4 | | | |
| 8 | 3,4 | 3,9 | 4,4 | 4,9 | 5,4 | | | |
| 8,5 | 3,8 | 4,3 | 4,8 | 5,3 | 5,8 | | | |
| 10 | 5,1 | 5,6 | 6,1 | 6,6 | 7,1 | 7,6 | 8,1 | 8,6 |
| 10,2 | 5,3 | 5,8 | 6,3 | 6,8 | 7,3 | 7,8 | 8,3 | 8,8 |
| 12 | 6,9 | 7,4 | 7,9 | 8,4 | 8,9 | 9,4 | 9,9 | 10,4 |
| 16 | 10,3 | 10,8 | 11,3 | 11,8 | 12,3 | 12,8 | 13,3 | 13,8 |
| 17,5 | 11,6 | 12,1 | 12,6 | 13,1 | 13,6 | 14,1 | 14,6 | 15,1 |
| 20 | 13,7 | 14,2 | 14,7 | 15,2 | 15,7 | 16,2 | 16,7 | 17,2 |
| 21 | 14,6 | 15,1 | 15,6 | 16,1 | 16,6 | 17,1 | 17,6 | 18,1 |
| 24 | 17,2 | 17,7 | 18,2 | 18,7 | 19,2 | 19,7 | 20,2 | 20,7 |
| 30 | 22,4 | 22,9 | 23,4 | 23,9 | 24,4 | 24,9 | 25,4 | |
| 33 | 24,9 | 25,4 | | | | | | |

- Dla fazy 45°

| Średnica otworu Ćd (mm) | Wymiar dla fazy C (mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0,5 | 1 | 1,5 | 2 | 3 | 4 | 5 |
| 5 | 0,7 | 1,2 | 1,7 | 2,2 | 3,2 | | |
| 6 | 1,2 | 1,7 | 2,2 | 2,7 | 3,7 | | |
| 6,8 | 1,6 | 2,1 | 2,6 | 3,1 | 4,1 | | |
| 8 | 2,2 | 2,7 | 3,2 | 3,7 | 4,7 | | |
| 8,5 | 2,4 | 2,9 | 3,4 | 3,9 | 4,9 | | |
| 10 | 3,2 | 3,7 | 4,2 | 4,7 | 5,7 | 6,7 | 7,7 |
| 10,2 | 3,3 | 3,8 | 4,3 | 4,8 | 5,8 | 6,8 | 7,8 |
| 12 | 4,2 | 4,7 | 5,2 | 5,7 | 6,7 | 7,7 | 8,7 |
| 14 | 5,2 | 5,7 | 6,2 | 6,7 | 7,7 | 8,7 | 9,7 |
| 16 | 6,2 | 6,7 | 7,2 | 7,7 | 8,7 | 9,7 | 10,7 |
| 17,5 | 6,9 | 7,4 | 7,9 | 8,4 | 9,4 | 10,4 | 11,4 |
| 20 | 8,2 | 8,7 | 9,2 | 9,7 | 10,7 | 11,7 | 12,7 |
| 21 | 8,7 | 9,2 | 9,7 | 10,2 | 11,2 | 12,2 | 13,2 |
| 24 | 10,2 | 10,7 | 11,2 | 11,7 | 12,7 | 13,7 | 14,7 |
| 30 | 13,2 | 13,7 | 14,2 | 14,7 | 15,7 | 16,7 | 17,7 |
| 33 | 14,7 | 15,2 | 15,7 | 16,2 | 17,2 | 18,2 | 19,2 |
| 36 | 16,2 | 16,7 | 17,2 | 17,7 | 18,7 | 19,7 | |
| 42 | 19,2 | 19,7 | 20,2 | | | | |



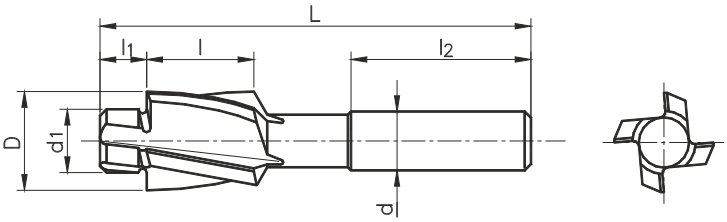

**Uwaga:**
Jeżeli głębokość otworu fazowanego jest mniejsza niż wartość zagłębienia w osi Z ($Z_d$), należy zachować szczególną ostrożność dla uniknięcia uszkodzenia czoła narzędzia o dno wywierconego otworu.

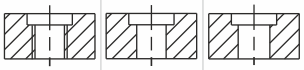
## Informacje techniczne

- Dla fazownika małych średnic otworów lub pracy wierzchołkiem narzędzia, należy stosować górny zakres prędkości sugerowanych w tabeli.
- Fazując otwory o małej średnicy (poniżej 10mm) w trybie wiercenia nie należy przerywać procesu wycofując narzędzie.
- Jeżeli wymiar fazowanego otworu jest mniejszy niż 10mm lub pracujemy wierzchołkiem narzędzia posuw nie powinien przekraczać wartości 0,15mm/ząb.

## DIN-373

**HSS**



| | | | |
|---|---|---|---|
| Wykonanie | N | F | M |
| Prowadzenie | W otworze pod gwint | W otworze przejściowym dokładnym | W otworze przejściowym średnio dokładnym |
| Typ otworu |  | | |
| Rodzaj materiału | HSS | HSS | HSS |

| D z9 | $d_1$ e8 | d h9 | l | $l_1$ | $l_2$ | L | M | Norma | DIN-373 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | | | | | |
| | | | | | | | | INDEX | T1-044010 | | | | |
| 6,0 | 2,5 | 5,0 | 14 | 3,0 | 31,5 | 71 | M3 | 6025 | ● | | | | |
| 6,5 | 2,9 | 5,0 | 14 | 3,5 | 31,5 | 71 | M3,5 | 6529 | ● | | | | |
| 8,0 | 3,3 | 5,0 | 14 | 4,0 | 31,5 | 71 | M4 | 8033 | ● | | | | |
| 10,0 | 4,2 | 8,0 | 18 | 5,0 | 35,5 | 80 | M5 | 1042 | ● | | | | |
| 11,0 | 5,0 | 8,0 | 18 | 6,0 | 35,5 | 80 | M6 | 1150 | ● | | | | |
| 15,0 | 6,8 | 12,5 | 22 | 8,0 | 40,0 | 100 | M8 | 1568 | ● | | | | |
| 18,0 | 8,5 | 12,5 | 22 | 10,0 | 40,0 | 100 | M10 | 1885 | ● | | | | |
| 20,0 | 10,2 | 12,5 | 22 | 12,0 | 40,0 | 100 | M12 | 2010 | ● | | | | |

| D z9 | $d_1$ e8 | d h9 | l | $l_1$ | $l_2$ | L | M | Norma | | DIN-373 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | | | | |
| | | | | | | | | INDEX | | T1-045010 | | |
| 6,0 | 3,2 | 5,0 | 14 | 3,0 | 31,5 | 71 | M3 | 6032 | | ● | | |
| 6,5 | 3,7 | 5,0 | 14 | 3,5 | 31,5 | 71 | M3,5 | 6537 | | ● | | |
| 8,0 | 4,3 | 5,0 | 14 | 4,0 | 31,5 | 71 | M4 | 8043 | | ● | | |
| 10,0 | 5,3 | 8,0 | 18 | 5,0 | 35,5 | 80 | M5 | 1053 | | ● | | |
| 11,0 | 6,4 | 8,0 | 18 | 6,0 | 35,5 | 80 | M6 | 1164 | | ● | | |
| 15,0 | 8,4 | 12,5 | 22 | 8,0 | 40,0 | 100 | M8 | 1584 | | ● | | |
| 18,0 | 10,5 | 12,5 | 22 | 10,0 | 40,0 | 100 | M10 | 1810 | | ● | | |
| 20,0 | 13,0 | 12,5 | 22 | 12,0 | 40,0 | 100 | M12 | 2013 | | ● | | |

| D z9 | $d_1$ e8 | d h9 | l | $l_1$ | $l_2$ | L | M | Norma | | | DIN-373 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Tol. | | | | |
| | | | | | | | | INDEX | | | T1-046010 | |
| 6,0 | 3,4 | 5,0 | 14 | 3,0 | 31,5 | 71 | M3 | 6034 | | | ● | |
| 6,5 | 3,9 | 5,0 | 14 | 3,5 | 31,5 | 71 | M3,5 | 6539 | | | ● | |
| 8,0 | 4,5 | 5,0 | 14 | 4,0 | 31,5 | 71 | M4 | 8045 | | | ● | |
| 10,0 | 5,5 | 8,0 | 18 | 5,0 | 35,5 | 80 | M5 | 1055 | | | ● | |
| 11,0 | 6,6 | 8,0 | 18 | 6,0 | 35,5 | 80 | M6 | 1166 | | | ● | |
| 15,0 | 9,0 | 12,5 | 22 | 8,0 | 40,0 | 100 | M8 | 1590 | | | ● | |
| 18,0 | 11,0 | 12,5 | 22 | 10,0 | 40,0 | 100 | M10 | 1811 | | | ● | |
| 20,0 | 14,0 | 12,5 | 22 | 12,0 | 40,0 | 100 | M12 | 2014 | | | ● | |





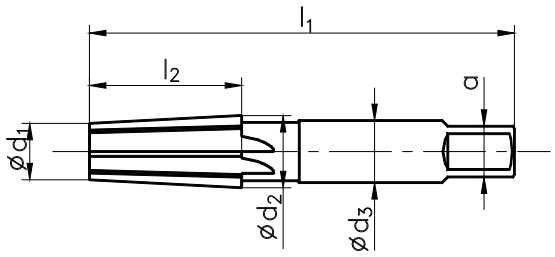
**Przykład zamawiania**

**T1-045010-0600**
**Pogłębiacz walcowo-czołowy 6,0 DIN-373 HSS**

● **Dostępne z magazynu**
○ **Na zapytanie**

## ASME B94,2-1995

HSS



| | |
|---|---|
| Rodzaj materiału | HSS |
| Wykonanie | C |

| Ć nom | Ć $d_1$ | Ć $d_2$ | Ć $d_3$ | $l_1$ | $l_2$ | a | Norma / Tol. / INDEX | T1-030010 |
|---|---|---|---|---|---|---|---|---|
| 1/4 | 10,30 | 12,00 | 14,3 | 62 | 27 | 10,7 | 0027 | ● |
| 3/8 | 13,70 | 15,40 | 17,5 | 65 | 27 | 13,5 | 0029 | ● |
| 1/2 | 16,90 | 19,10 | 17,5 | 79 | 35 | 13,0 | 0031 | ● |
| 3/4 | 22,25 | 24,40 | 23,0 | 82 | 35 | 17,5 | 0035 | ● |

6

**Informacje odnośnie wymiarów otworów pod gwinty stożkowe w części technicznej w katalogu na stronie 267**

# Sprawdziany

# SPRAWDZIANY

STRONA

## STRONY KATALOGOWE 161-173


| | | | |
|---|---|---|---|
| A | MSBa | Sprawdziany tłoczkowe do otworów | 161 |
| | MSBa pod gwint | Sprawdziany tłoczkowe do otworów | 162 |
| M | MSBg | Sprawdziany gwintowe trzpieniowe | 163 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 163 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 163 |
| MF | MSBg | Sprawdziany gwintowe trzpieniowe | 164-165 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 164-165 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 164-165 |
| UNC | MSBg | Sprawdziany gwintowe trzpieniowe | 166 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 166 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 166 |
| UNF | MSBg | Sprawdziany gwintowe trzpieniowe | 167 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 167 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 167 |
| G | MSBg | Sprawdziany gwintowe trzpieniowe | 168 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 168 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 168 |
| R Rc/Rp | MSXa | Sprawdziany gwintowe trzpieniowe | 169 |
| | MSXc | Sprawdziany gwintowe pierścieniowe | 169 |
| Pg | MSBg | Sprawdziany gwintowe trzpieniowe | 170 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 170 |
| | MSRc | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 170 |
| BSW | MSBg | Sprawdziany gwintowe trzpieniowe | 171 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 171 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 171 |
| NPT | MSXa | Sprawdziany gwintowe trzpieniowe | 172 |
| | MSXc | Sprawdziany gwintowe pierścieniowe | 172 |
| Tr | MSBg | Sprawdziany gwintowe trzpieniowe | 173 |
| | MSRh | Sprawdziany gwintowe pierścieniowe przechodnie | 173 |
| | MSRk | Sprawdziany gwintowe pierścieniowe nieprzechodnie | 173 |

## Wymiary sprawdzianów według normy PN-EN ISO 1938-1:2016-03

| Typ sprawdzianu<br>GO - Przechodni<br>NOGO - Nieprzechodni | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Symbol | | MSBa | MSBa | | | | | |
| Typ | | GO / NOGO | GO / NOGO | | | | | |
| Ć nom. | Tol | H7 | H8 | | | | | |
| | INDEX | S3-100111 | S3-100112 | | | | | |
| 1 | 0010 | ● | ○ | | | | | |
| 1,2 | 0012 | ● | ○ | | | | | |
| 1,5 | 0015 | ● | ○ | | | | | |
| 1,8 | 0018 | ● | ○ | | | | | |
| 2 | 0020 | ● | ○ | | | | | |
| 2,2 | 0022 | ● | ○ | | | | | |
| 2,5 | 0025 | ● | ○ | | | | | |
| 2,8 | 0028 | ● | ○ | | | | | |
| 3 | 0030 | ● | ○ | | | | | |
| 3,5 | 0035 | ○ | ○ | | | | | |
| 4 | 0040 | ● | ○ | | | | | |
| 4,5 | 0045 | ○ | ○ | | | | | |
| 5 | 0050 | ● | ○ | | | | | |
| 6 | 0060 | ● | ○ | | | | | |
| 7 | 0070 | ○ | ○ | | | | | |
| 8 | 0080 | ● | ○ | | | | | |
| 9 | 0090 | ○ | ○ | | | | | |
| 10 | 0100 | ● | ○ | | | | | |
| 12 | 0120 | ● | ○ | | | | | |
| 14 | 0140 | ● | ○ | | | | | |
| 16 | 0160 | ● | ○ | | | | | |
| 18 | 0180 | ● | ○ | | | | | |
| 20 | 0200 | ● | ○ | | | | | |
| 22 | 0220 | ● | ○ | | | | | |
| 24 | 0240 | ● | ○ | | | | | |
| 25 | 0250 | ● | ○ | | | | | |
| 26 | 0260 | ● | ○ | | | | | |
| 27 | 0270 | ○ | ○ | | | | | |
| 28 | 0280 | ● | ○ | | | | | |
| 30 | 0300 | ● | ○ | | | | | |
| 32 | 0320 | ● | ○ | | | | | |
| 33 | 0330 | ● | ○ | | | | | |
| 34 | 0340 | ● | ○ | | | | | |
| 35 | 0350 | ● | ○ | | | | | |
| 36 | 0360 | ● | ○ | | | | | |
| 37 | 0370 | ● | ○ | | | | | |
| 38 | 0380 | ● | ○ | | | | | |
| 40 | 0400 | ● | ○ | | | | | |
| 42 | 0420 | ● | ○ | | | | | |
| 44 | 0440 | ○ | ○ | | | | | |
| 45 | 0450 | ● | ○ | | | | | |
| 46 | 0460 | ○ | ○ | | | | | |
| 47 | 0470 | ● | ○ | | | | | |
| 48 | 0480 | ○ | ○ | | | | | |
| 50 | 0500 | ● | ○ | | | | | |
| 52 | 0520 | ○ | ○ | | | | | |

**Powyżej Ć52 sprawdziany przechodnie mają symbol MSCb, a nieprzechodnie MSCc i wykonywane są z rękojeściami oddzielnymi**

**Przykład zamawiania**

**S3-100111-0100**
**MSBa 10-H7**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Wymiar sprawdzianu według normy ISO 1502

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Symbol | | MSBa pod gwint | | | | MSBa pod gwint | | | |
| Typ | | GO / NOGO | | | | GO / NOGO | | | |
| Tolerance | | 6H | | | | 6G | | | |
| M | P | Średnica rdzeniowa gwintu (6H) | | INDEX | S3-100161 | Średnica rdzeniowa gwintu (6G) | | INDEX | S3-100162 |
| | | min | max | | | min | max | | |
| M 3 | 0,5 | 2,459 | 2,599 | 0030 | ● | 2,479 | 2,619 | 0030 | ○ |
| M 3,5 | 0,6 | 2,850 | 3,010 | 0035 | ○ | 2,871 | 3,031 | 0035 | ○ |
| M 4 | 0,7 | 3,242 | 3,422 | 0040 | ● | 3,264 | 3,444 | 0040 | ○ |
| M 4,5 | 0,75 | 3,688 | 3,878 | 0045 | ○ | 3,710 | 3,900 | 0045 | ○ |
| M 5 | 0,8 | 4,134 | 4,334 | 0050 | ● | 4,158 | 4,358 | 0050 | ○ |
| M 6 | 1 | 4,917 | 5,153 | 0060 | ● | 4,943 | 5,179 | 0060 | ○ |
| M 7 | 1 | 5,917 | 6,153 | 0070 | ○ | 5,943 | 6,179 | 0070 | ○ |
| M 8 | 1,25 | 6,647 | 6,912 | 0080 | ● | 6,675 | 6,940 | 0080 | ○ |
| M 9 | 1,25 | 7,647 | 7,912 | 0090 | ○ | 7,675 | 7,940 | 0090 | ○ |
| M 10 | 1,5 | 8,376 | 8,676 | 0100 | ● | 8,408 | 8,708 | 0100 | ○ |
| M 12 | 1,75 | 10,106 | 10,441 | 0120 | ● | 10,140 | 10,475 | 0120 | ○ |
| M 14 | 2 | 11,835 | 12,210 | 0140 | ○ | 11,873 | 12,248 | 0140 | ○ |
| M 16 | 2 | 13,835 | 14,210 | 0160 | ● | 13,873 | 14,248 | 0160 | ○ |
| M 18 | 2,5 | 15,294 | 15,744 | 0180 | ● | 15,336 | 15,786 | 0180 | ○ |
| M 20 | 2,5 | 17,294 | 17,744 | 0200 | ○ | 17,336 | 17,786 | 0200 | ○ |
| M 22 | 2,5 | 19,294 | 19,744 | 0220 | ○ | 19,336 | 19,786 | 0220 | ○ |
| MF | P | Średnica rdzeniowa gwintu (6H) | | INDEX | S3-100161 | Średnica rdzeniowa gwintu (6G) | | INDEX | S3-100162 |
| | | min | max | | | min | max | | |
| M 8 x 0,5 | 0,5 | 7,459 | 7,599 | 0081 | ○ | 7,479 | 7,619 | 0081 | ○ |
| M 8 x 0,75 | 0,75 | 7,188 | 7,378 | 0082 | ○ | 7,210 | 7,400 | 0082 | ○ |
| M 8 x 1 | 1 | 6,917 | 7,153 | 0083 | ● | 6,943 | 7,179 | 0083 | ○ |
| M 9 x 1 | 1 | 7,917 | 8,153 | 0093 | ○ | 7,943 | 8,179 | 0093 | ○ |
| M 10 x 0,75 | 0,75 | 9,188 | 9,378 | 0102 | ○ | 9,210 | 9,400 | 0102 | ○ |
| M 10 x 1 | 1 | 8,917 | 9,153 | 0103 | ● | 8,943 | 9,179 | 0103 | ○ |
| M 10 x 1,25 | 1,25 | 8,647 | 8,912 | 0104 | ○ | 8,675 | 8,940 | 0104 | ○ |
| M 11 x 1 | 1 | 9,917 | 10,153 | 0113 | ○ | 9,943 | 10,179 | 0113 | ○ |
| M 12 x 1 | 1 | 10,917 | 11,153 | 0123 | ○ | 10,943 | 11,179 | 0123 | ○ |
| M 12 x 1,25 | 1,25 | 10,647 | 10,912 | 0124 | ○ | 10,675 | 10,940 | 0124 | ○ |
| M 12 x 1,5 | 1,5 | 10,376 | 10,676 | 0125 | ● | 10,408 | 10,708 | 0125 | ○ |
| M 13 x 1 | 1 | 11,917 | 12,153 | 0133 | ○ | 11,943 | 12,179 | 0133 | ○ |
| M 14 x 1 | 1 | 12,917 | 13,153 | 0143 | ○ | 12,943 | 13,179 | 0143 | ○ |
| M 14 x 1,25 | 1,25 | 12,647 | 12,912 | 0144 | ○ | 12,675 | 12,940 | 0144 | ○ |
| M 14 x 1,5 | 1,5 | 12,376 | 12,676 | 0145 | ● | 12,408 | 12,708 | 0145 | ○ |
| M 15 x 1 | 1 | 13,917 | 14,153 | 0153 | ○ | 13,943 | 14,179 | 0153 | ○ |
| M 15 x 1,5 | 1,5 | 13,376 | 13,676 | 0155 | ○ | 13,408 | 13,708 | 0155 | ○ |
| M 16 x 1 | 1 | 14,917 | 15,153 | 0163 | ○ | 14,943 | 15,179 | 0163 | ○ |
| M 16 x 1,5 | 1,5 | 14,376 | 14,676 | 0165 | ● | 14,408 | 14,708 | 0165 | ○ |
| M 18 x 1 | 1 | 16,917 | 17,153 | 0183 | ○ | 16,943 | 17,179 | 0183 | ○ |
| M 18 x 1,5 | 1,5 | 16,376 | 16,676 | 0185 | ○ | 16,408 | 16,708 | 0185 | ○ |
| M 18 x 2 | 2 | 15,835 | 16,210 | 0186 | ○ | 15,873 | 16,248 | 0186 | ○ |
| M 20 x 1 | 1 | 18,917 | 19,153 | 0203 | ○ | 18,943 | 19,179 | 0203 | ○ |
| M 20 x 1,5 | 1,5 | 18,376 | 18,676 | 0205 | ● | 18,408 | 18,708 | 0205 | ○ |
| M 20 x 2 | 2 | 17,835 | 18,210 | 0206 | ○ | 17,873 | 18,248 | 0206 | ○ |
| M 22 x 1 | 1 | 20,917 | 21,153 | 0223 | ○ | 20,943 | 21,179 | 0223 | ○ |
| M 22 x 1,5 | 1,5 | 20,376 | 20,676 | 0225 | ○ | 20,408 | 20,708 | 0225 | ○ |
| M 22 x 2 | 2 | 19,835 | 20,210 | 0226 | ○ | 19,873 | 20,248 | 0226 | ○ |

**Powyżej Ć52 sprawdziany przechodnie mają symbol MSCb, a nieprzechodnie MSCc i wykonywane są z rękojeściami oddzielnymi**





**Przykład zamawiania**

**S1-100161-0100**
**MSBa 10-H7**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny zwykły ISO DIN-13

Zestaw sprawdzianów na stronie: 210

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Symbol | | | MSBg | MSBg LH | MSBg | MSRh | MSRk |
| Typ | | | GO / NOGO | GO / NOGO | GO / NOGO | GO | NOGO |
| M | P | Tol | 6H | 6H | 6G | 6g | 6g |
| | | INDEX | S3-302161 | S3-301161 | S3-302162 | Y3-412162 | Y3-422162 |
| M 1 | 0,25 | 0010 | ● | ○ | ○ | ● | ● |
| M 1,2 | 0,25 | 0012 | ● | ○ | ○ | ● | ● |
| M 1,4 | 0,3 | 0014 | ● | ○ | ○ | ● | ● |
| M 1,6 | 0,35 | 0016 | ● | ○ | ○ | ● | ● |
| M 1,7 | 0,35 | 0017 | ● | ○ | ○ | ● | ● |
| M 1,8 | 0,35 | 0018 | ● | ○ | ○ | ● | ● |
| M 2 | 0,4 | 0020 | ● | ○ | ○ | ● | ● |
| M 2,2 | 0,45 | 0022 | ● | ○ | ○ | ● | ● |
| M 2,5 | 0,45 | 0025 | ● | ○ | ○ | ● | ● |
| M 2,6 | 0,45 | 0026 | ● | ○ | ○ | ● | ● |
| M 3 | 0,5 | 0030 | ● | ● | ○ | ● | ● |
| M 3,5 | 0,6 | 0035 | ● | ○ | ○ | ● | ● |
| M 4 | 0,7 | 0040 | ● | ● | ○ | ● | ● |
| M 4,5 | 0,75 | 0045 | ● | ○ | ○ | ● | ● |
| M 5 | 0,8 | 0050 | ● | ● | ○ | ● | ● |
| M 6 | 1 | 0060 | ● | ● | ○ | ● | ● |
| M 7 | 1 | 0070 | ● | ○ | ○ | ● | ● |
| M 8 | 1,25 | 0080 | ● | ● | ○ | ● | ● |
| M 9 | 1,25 | 0090 | ● | ○ | ○ | ● | ● |
| M 10 | 1,5 | 0100 | ● | ● | ○ | ● | ● |
| M 12 | 1,75 | 0120 | ● | ● | ○ | ● | ● |
| M 14 | 2 | 0140 | ● | ● | ○ | ● | ● |
| M 16 | 2 | 0160 | ● | ● | ○ | ● | ● |
| M 18 | 2,5 | 0180 | ● | ● | ○ | ● | ● |
| M 20 | 2,5 | 0200 | ● | ● | ○ | ● | ● |
| M 22 | 2,5 | 0220 | ● | ● | ○ | ● | ● |
| M 24 | 3 | 0240 | ● | ● | ○ | ● | ● |
| M 27 | 3 | 0270 | ● | ● | ○ | ● | ● |
| M 30 | 3,5 | 0300 | ● | ● | ○ | ● | ● |
| M 33 | 3,5 | 0330 | ● | ● | ○ | ● | ● |
| M 36 | 4 | 0360 | ● | ● | ○ | ● | ● |
| M 39 | 4 | 0390 | ● | ○ | ○ | ● | ● |
| M 42 | 4,5 | 0420 | ● | ○ | ○ | ● | ● |
| M 45 | 4,5 | 0450 | ● | ○ | ○ | ● | ● |
| M 48 | 5 | 0480 | ● | ○ | ○ | ● | ● |
| M 52 | 5 | 0520 | ● | ○ | ○ | ● | ● |

**Powyżej Ć52 sprawdziany przechodnie mają symbol MSCh, a nieprzechodnie MSCk i wykonywane są z rękojeściami oddzielnymi**

**Przykład zamawiania**
**S3-302161-0030**
**MSBg M3-6H**

● Dostępne z magazynu
○ Na zapytanie

# Sprawdziany gwintowe trzpieniowe i pierścieniowe

## Gwint metryczny zwykły ISO DIN-13

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Symbol | | | MSBg | MSBg LH | MSBg | MSRh | MSRk |
| Typ | | | GO / NOGO | GO / NOGO | GO / NOGO | GO | NOGO |
| MF | P | Tol | 6H | 6H | 6G | 6g | 6g |
| | | INDEX | S3-302161 | S3-301161 | S3-302162 | Y3-412162 | Y3-422162 |
| M 3 x 0,35 | 0,35 | 0031 | ○ | ○ | ○ | ○ | ○ |
| M 3,5 x 0,35 | 0,35 | 0036 | ○ | ○ | ○ | ○ | ○ |
| M 4 x 0,35 | 0,35 | 0043 | ○ | ○ | ○ | ○ | ○ |
| M 4x0,5 | 0,5 | 0041 | ○ | ○ | ○ | ○ | ○ |
| M 4,5 x 0,5 | 0,5 | 0046 | ○ | ○ | ○ | ○ | ○ |
| M 5 x 0,5 | 0,5 | 0051 | ○ | ○ | ○ | ○ | ○ |
| M 6 x 0,5 | 0,5 | 0061 | ○ | ○ | ○ | ○ | ○ |
| M 6 x 0,75 | 0,75 | 0062 | ○ | ○ | ○ | ○ | ○ |
| M 8 x 0,5 | 0,5 | 0081 | ○ | ○ | ○ | ○ | ○ |
| M 8 x 0,75 | 0,75 | 0082 | ○ | ○ | ○ | ○ | ○ |
| M 8 x 1 | 1 | 0083 | ● | ● | ○ | ● | ● |
| M 9 x 1 | 1 | 0093 | ○ | ○ | ○ | ○ | ○ |
| M 10 x 0,75 | 0,75 | 0102 | ○ | ○ | ○ | ○ | ○ |
| M 10 x 1 | 1 | 0103 | ● | ● | ○ | ● | ● |
| M 10 x 1,25 | 1,25 | 0104 | ● | ● | ○ | ● | ● |
| M 11 x 1 | 1 | 0113 | ○ | ○ | ○ | ○ | ○ |
| M 12 x 1 | 1 | 0123 | ● | ● | ○ | ● | ● |
| M 12 x 1,25 | 1,25 | 0124 | ● | ● | ○ | ● | ● |
| M 12 x 1,5 | 1,5 | 0125 | ● | ● | ○ | ● | ● |
| M 13 x 1 | 1 | 0133 | ○ | ○ | ○ | ○ | ○ |
| M 14 x 1 | 1 | 0143 | ○ | ○ | ○ | ○ | ○ |
| M 14 x 1,25 | 1,25 | 0144 | ○ | ○ | ○ | ○ | ○ |
| M 14 x 1,5 | 1,5 | 0145 | ● | ● | ○ | ● | ● |
| M 15 x 1 | 1 | 0153 | ○ | ○ | ○ | ○ | ○ |
| M 15 x 1,5 | 1,5 | 0155 | ○ | ○ | ○ | ○ | ○ |
| M 16 x 1 | 1 | 0163 | ● | ● | ○ | ● | ● |
| M 16 x 1,5 | 1,5 | 0165 | ● | ● | ○ | ● | ● |
| M 18 x 1 | 1 | 0183 | ○ | ○ | ○ | ○ | ○ |
| M 18 x 1,5 | 1,5 | 0185 | ● | ● | ○ | ● | ● |
| M 18 x 2 | 2 | 0186 | ○ | ○ | ○ | ○ | ○ |
| M 20 x 1 | 1 | 0203 | ● | ● | ○ | ● | ● |
| M 20 x 1,5 | 1,5 | 0205 | ● | ● | ○ | ● | ● |
| M 20 x 2 | 2 | 0206 | ○ | ○ | ○ | ○ | ○ |
| M 22 x 1 | 1 | 0223 | ○ | ○ | ○ | ○ | ○ |
| M 22 x 1,5 | 1,5 | 0225 | ● | ● | ○ | ● | ● |
| M 22 x 2 | 2 | 0226 | ● | ● | ○ | ● | ● |
| M 24 x 1 | 1 | 0243 | ○ | ○ | ○ | ○ | ○ |
| M 24 x 1,5 | 1,5 | 0245 | ● | ● | ○ | ● | ● |
| M 24 x 2 | 2 | 0246 | ● | ○ | ○ | ○ | ○ |
| M 25 x 1,5 | 1,5 | 0255 | ● | ○ | ○ | ○ | ○ |
| M 26 x1,5 | 1,5 | 0265 | ● | ○ | ○ | ○ | ○ |
| M 27 x 1,5 | 1,5 | 0275 | ● | ○ | ○ | ○ | ○ |





**Przykład zamawiania**
**S3-302162-0083**
**MSBg M8x1-6G**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint metryczny drobnozwojny ISO DIN-13

Zestaw sprawdzianów na stronie: 210

**Wymiar sprawdzianu według normy ISO 1502**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | MSBg | MSBg LH | MSBg | MSRh | MSRk |
|---|---|---|---|---|---|---|---|
| Typ | | | GO / NOGO | GO / NOGO | GO / NOGO | GO | NOGO |
| MF | P | Tol | 6H | 6H | 6G | 6g | 6g |
| | | INDEX | S3-302161 | S3-301161 | S3-302162 | Y3-412162 | Y3-422162 |
| M 27 x 2 | 2 | 0276 | ● | ○ | ○ | ○ | ○ |
| M 28 x 1,5 | 1,5 | 0285 | ● | ○ | ○ | ○ | ○ |
| M 28 x 2 | 2 | 0286 | ○ | ○ | ○ | ○ | ○ |
| M 30 x 1 | 1 | 0303 | ○ | ○ | ○ | ○ | ○ |
| M 30 x 1,5 | 1,5 | 0305 | ● | ○ | ○ | ○ | ○ |
| M 30 x 2 | 2 | 0306 | ● | ○ | ○ | ○ | ○ |
| M 32 x 1,5 | 1,5 | 0325 | ● | ○ | ○ | ○ | ○ |
| M 33 x 1,5 | 1,5 | 0335 | ● | ○ | ○ | ○ | ○ |
| M 33 x 2 | 2 | 0336 | ● | ○ | ○ | ○ | ○ |
| M 33 x 3 | 3 | 0337 | ○ | ○ | ○ | ○ | ○ |
| M 34 x 1,5 | 1,5 | 0345 | ○ | ○ | ○ | ○ | ○ |
| M 35 x 1,5 | 1,5 | 0355 | ● | ○ | ○ | ○ | ○ |
| M 36 x 1,5 | 1,5 | 0365 | ● | ○ | ○ | ○ | ○ |
| M 36 x 2 | 2 | 0366 | ● | ○ | ○ | ○ | ○ |
| M 36 x 3 | 3 | 0367 | ○ | ○ | ○ | ○ | ○ |
| M 38 x 1,5 | 1,5 | 0385 | ● | ○ | ○ | ○ | ○ |
| M 39 x 2 | 2 | 0396 | ● | ○ | ○ | ○ | ○ |
| M 39 x 3 | 3 | 0397 | ○ | ○ | ○ | ○ | ○ |
| M 40 x 1,5 | 1,5 | 0405 | ● | ○ | ○ | ○ | ○ |
| M 40 x 2 | 2 | 0406 | ○ | ○ | ○ | ○ | ○ |
| M 40 x 3 | 3 | 0407 | ○ | ○ | ○ | ○ | ○ |
| M 42 x 1,5 | 1,5 | 0425 | ● | ○ | ○ | ○ | ○ |
| M 42 x 2 | 2 | 0426 | ● | ○ | ○ | ○ | ○ |
| M 42 x 3 | 3 | 0427 | ● | ○ | ○ | ○ | ○ |
| M 45 x 1,5 | 1,5 | 0455 | ● | ○ | ○ | ○ | ○ |
| M 45 x 2 | 2 | 0456 | ● | ○ | ○ | ○ | ○ |
| M 45 x 3 | 3 | 0457 | ○ | ○ | ○ | ○ | ○ |
| M 48 x 1,5 | 1,5 | 0485 | ● | ○ | ○ | ○ | ○ |
| M 48 x 2 | 2 | 0486 | ● | ○ | ○ | ○ | ○ |
| M 48 x 3 | 3 | 0487 | ● | ○ | ○ | ○ | ○ |
| M 50 x 1,5 | 1,5 | 0505 | ○ | ○ | ○ | ○ | ○ |
| M 50 x 2 | 2 | 0506 | ○ | ○ | ○ | ○ | ○ |
| M 50 x 3 | 3 | 0507 | ○ | ○ | ○ | ○ | ○ |
| M 52 x 1,5 | 1,5 | 0525 | ● | ○ | ○ | ○ | ○ |
| M 52 x 2 | 2 | 0526 | ● | ○ | ○ | ○ | ○ |
| M 52 x 3 | 3 | 0527 | ● | ○ | ○ | ○ | ○ |

**Powyżej Ć52 sprawdziany przechodnie mają symbol MSCh, a nieprzechodnie MSCk i wykonywane są z rękojeściami oddzielnymi**

# Sprawdziany gwintowe trzpieniowe i pierścieniowe

## Gwint amerykański zunifikowany UNC, ANSI B-1.1

**Wymiar sprawdzianu według normy ANSI/ASME B1.2**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | | MSBg | MSBg | MSRh | MSRk |
|---|---|---|---|---|---|---|---|
| Typ | | | | GO / NOGO | GO / NOGO | GO | NOGO |
| UNC | Ć $d_1$ | 1"/P | Tol | 2B | 3B | 2A | 2A |
| | | | INDEX | S3-302186 | S3-302187 | Y3-412182 | Y3-422182 |
| No 5 - 40 | 3,175 | 40 | 4105 | ● | ○ | ○ | ○ |
| No 6 - 32 | 3,505 | 32 | 4106 | ● | ○ | ○ | ○ |
| No 8 - 32 | 4,166 | 32 | 4108 | ● | ○ | ○ | ○ |
| No 10 - 24 | 4,826 | 24 | 4110 | ● | ○ | ○ | ○ |
| No 12 - 24 | 5,486 | 24 | 4112 | ● | ○ | ○ | ○ |
| 1/4 - 20 | 6,350 | 20 | 4127 | ● | ○ | ○ | ○ |
| 5/16 - 18 | 7,938 | 18 | 4128 | ● | ○ | ○ | ○ |
| 3/8 - 16 | 9,525 | 16 | 4129 | ● | ○ | ○ | ○ |
| 7/16 - 14 | 11,112 | 14 | 4130 | ● | ○ | ○ | ○ |
| 1/2 - 13 | 12,700 | 13 | 4131 | ● | ○ | ○ | ○ |
| 9/16 - 12 | 14,288 | 12 | 4132 | ● | ○ | ○ | ○ |
| 5/8 - 11 | 15,875 | 11 | 4133 | ● | ○ | ○ | ○ |
| 3/4 - 10 | 19,050 | 10 | 4135 | ● | ○ | ○ | ○ |
| 7/8 - 9 | 22,225 | 9 | 4137 | ● | ○ | ○ | ○ |
| 1 - 8 | 25,400 | 8 | 4139 | ● | ○ | ○ | ○ |
| 1.1/8 - 7 | 28,575 | 7 | 4141 | ○ | ○ | ○ | ○ |
| 1.1/4 - 7 | 31,750 | 7 | 4143 | ○ | ○ | ○ | ○ |
| 1.3/8 - 6 | 34,925 | 6 | 4145 | ○ | ○ | ○ | ○ |
| 1.1/2 - 6 | 38,100 | 6 | 4147 | ○ | ○ | ○ | ○ |
| 1.3/4 - 5 | 44,450 | 5 | 4151 | ○ | ○ | ○ | ○ |
| 2 - 4.1/2 | 50,800 | 4.1/2 | 4155 | ○ | ○ | ○ | ○ |





**Przykład zamawiania**
**S3-302187-4127**
**MSBg 1/4-20 UNC-3B**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint amerykański zunifikowany drobnozwojny UNF, ANSI B-1.1

**Wymiar sprawdzianu według normy ANSI/ASME B1.2**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | | MSBg | MSBg | MSRh | MSRk |
|---|---|---|---|---|---|---|---|
| Typ | | | | GO / NOGO | GO / NOGO | GO | NOGO |
| UNF | Ć $d_1$ | 1"/P | Tol | 2B | 3B | 2A | 2A |
| | | | INDEX | S3-302186 | S3-302187 | Y3-412182 | Y3-422182 |
| No 5 - 44 | 3,175 | 44 | 4205 | ○ | ○ | ○ | ○ |
| No 6 - 40 | 3,505 | 40 | 4206 | ○ | ○ | ○ | ○ |
| No 8 - 36 | 4,166 | 36 | 4208 | ○ | ○ | ○ | ○ |
| No 10 - 32 | 4,826 | 32 | 4210 | ○ | ○ | ○ | ○ |
| No 12 - 28 | 5,486 | 28 | 4212 | ○ | ○ | ○ | ○ |
| 1/4 - 28 | 6,350 | 28 | 4227 | ● | ○ | ○ | ○ |
| 5/16 - 24 | 7,938 | 24 | 4228 | ● | ○ | ○ | ○ |
| 3/8 - 24 | 9,525 | 24 | 4229 | ● | ○ | ○ | ○ |
| 7/16 - 20 | 11,112 | 20 | 4230 | ● | ○ | ○ | ○ |
| 1/2 - 20 | 12,700 | 20 | 4231 | ● | ○ | ○ | ○ |
| 9/16 - 18 | 14,288 | 18 | 4232 | ● | ○ | ○ | ○ |
| 5/8 - 18 | 15,875 | 18 | 4233 | ● | ○ | ○ | ○ |
| 3/4 - 16 | 19,050 | 16 | 4235 | ● | ○ | ○ | ○ |
| 7/8 - 14 | 22,225 | 14 | 4237 | ● | ○ | ○ | ○ |
| 1 - 12 | 25,400 | 12 | 4239 | ● | ○ | ○ | ○ |
| 1.1/8 - 12 | 28,575 | 12 | 4241 | ○ | ○ | ○ | ○ |
| 1.1/4 - 12 | 31,750 | 12 | 4243 | ○ | ○ | ○ | ○ |
| 1.3/8 - 12 | 34,925 | 12 | 4245 | ○ | ○ | ○ | ○ |
| 1.1/2 - 12 | 38,100 | 12 | 4247 | ○ | ○ | ○ | ○ |



**Przykład zamawiania**
**Y3-422182-4235**
**MSRk 3/4-16 UNF-2A**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy walcowy G, DIN-ISO 228

**Wymiar sprawdzianu według normy ISO 228-2**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| | | | | | | |
|---|---|---|---|---|---|---|
| Symbol | | | | MSBg | MSRh | MSRk |
| Typ | | | | GO / NOGO | GO | NOGO |
| G | Ć $d_1$ | 1”/P | Tol | | A | A |
| | | | INDEX | S3-302180 | Y3-412180 | Y3-422180 |
| G-1/8” | 9,73 | 28 | 3123 | ● | ○ | ○ |
| G-1/4” | 13,16 | 19 | 3127 | ● | ○ | ○ |
| G-3/8” | 16,66 | 19 | 3129 | ● | ● | ● |
| G-1/2” | 20,96 | 14 | 3131 | ● | ● | ● |
| G-5/8” | 22,91 | 14 | 3133 | ○ | ○ | ○ |
| G-3/4” | 26,44 | 14 | 3135 | ● | ● | ● |
| G-7/8” | 30,20 | 14 | 3137 | ○ | ○ | ○ |
| G-1” | 33,25 | 11 | 3139 | ● | ● | ● |
| G-1.1/8” | 37,90 | 11 | 3141 | ● | ○ | ○ |
| G-1.1/4” | 41,91 | 11 | 3143 | ● | ○ | ○ |



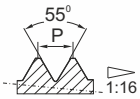


**Przykład zamawiania**
**S3-302180-3127**
**MSBg G-1/4”**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint rurowy do połączeń ze szczelnością uzyskiwaną na gwincie

## PN-EN 10226-3 (ISO7-2:2000)




R, Rc

Rp

**PN-EN 10226-1,**
**PN-EN 10226-2 (ISO7-1:2000)**

**Gauge system acc. PN-EN 10226-3**

**Wymiar sprawdzianu według normy PN-EN 10226-3**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | | MSXa | MSXa | MSXc | MSXc | MSXa |
|---|---|---|---|---|---|---|---|---|
| Typ | | | | Nr 1 | Nr 2 | Nr 3 | Nr 4 | Nr 5 |
| Rc/Rp | Ć $d_1$ | 1”/P | Tol | Rc/Rp | Rc/Rp | R | R | R |
| | | | INDEX | S3-332101 | S3-332102 | - | - | S3-332105 |
| 1/16” | 7,72 | 28 | 3321 | o | o | | | o |
| 1/8” | 9,73 | 28 | 3323 | o | o | | | o |
| 1/4” | 13,16 | 19 | 3327 | o | o | | | o |
| 3/8” | 16,66 | 19 | 3329 | o | o | | | o |
| 1/2” | 20,96 | 14 | 3331 | o | o | | | o |
| 3/4” | 26,44 | 14 | 3335 | o | o | | | o |
| 1” | 32,25 | 11 | 3339 | o | o | | | o |
| 1.1/4” | 41,91 | 11 | 3343 | o | o | | | o |
| 1.1/2” | 47,80 | 11 | 3347 | o | o | | | o |
| 2” | 59,61 | 11 | 3355 | o | o | | | o |
| 2.1/2" | 75,18 | 11 | 3359 | o | o | | | o |
| 3" | 87,88 | 11 | 3363 | o | o | | | o |
| 4" | 113,03 | 11 | 3371 | o | o | | | o |
| R | Ć $d_1$ | 1”/P | INDEX | - | - | Y3-432103 | Y3-432104 | - |
| 1/16” | 7,72 | 28 | 3421 | | | o | o | |
| 1/8” | 9,73 | 28 | 3423 | | | o | o | |
| 1/4” | 13,16 | 19 | 3427 | | | o | o | |
| 3/8” | 16,66 | 19 | 3429 | | | o | o | |
| 1/2” | 20,96 | 14 | 3431 | | | o | o | |
| 3/4” | 26,44 | 14 | 3435 | | | o | o | |
| 1” | 32,25 | 11 | 3439 | | | o | o | |
| 1.1/4” | 41,91 | 11 | 3443 | | | o | o | |
| 1.1/2” | 47,80 | 11 | 3447 | | | o | o | |
| 2” | 59,61 | 11 | 3455 | | | o | o | |
| 2.1/2" | 75,18 | 11 | 3459 | | | o | o | |
| 3" | 87,88 | 11 | 3463 | | | o | o | |
| 4" | 113,03 | 11 | 3471 | | | o | o | |

**Informacje techniczne odnośnie konstrukcji oraz stosowania sprawdzianów R i Rc/Rp w części technicznej katalogu na stronie 249**



**Przykład zamawiania**

**S3-332101-3327**
**MSXa EN 10226 1/4”-Rc/Rp Nr1**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint do rurek instalacyjnych stalowych PG, DIN-40430

**Wymiar sprawdzianu według normy DIN 404031**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | | MSBg | MSRh | MSRc |
|---|---|---|---|---|---|---|
| Typ | | | | GO / NOGO | GO | NOGO |
| Pg | Ć $d_1$ | 1"/P | Tol INDEX | S3-832100 | Y3-412100 | Y3-450100 |
| Pg 7 | 12,5 | 20 | 8807 | o | o | o |
| Pg 9 | 15,2 | 18 | 8809 | o | o | o |
| Pg 11 | 18,6 | 18 | 8811 | o | o | o |
| Pg 13,5 | 20,4 | 18 | 8813 | o | o | o |
| Pg 16 | 22,5 | 18 | 8816 | o | o | o |
| Pg 21 | 28,3 | 16 | 8821 | o | o | o |
| Pg 29 | 37 | 16 | 8829 | o | o | o |
| Pg 36 | 47 | 16 | 8836 | o | o | o |

**Gwint Pg jest zastępowany gwintem metrycznym drobnozwojnym MF wg normy DIN EN 60423 dostępnym na zapytanie**





**Przykład zamawiania**
**S3-832100-8807**
**MSBg Pg7**

● Dostępne z magazynu
○ Na zapytanie

## Gwint calowy zwykły Whitwortha BSW, BS-84

**Wymiar sprawdzianu według normy BS 919-2**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

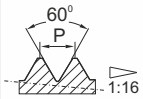
| Symbol | | | | MSBg | MSRh | MSRk |
|---|---|---|---|---|---|---|
| Typ | | | | GO / NOGO | GO | NOGO |
| BSW | Ć $d_1$ | 1"/P | Tol | medium | medium | medium |
| | | | INDEX | S3-302100 | Y3-412100 | Y3-422100 |
| 1/8 - 40 | 3,175 | 40 | 7123 | o | o | o |
| 3/16 - 24 | 4,762 | 24 | 7125 | o | o | o |
| 1/4 - 20 | 6,350 | 20 | 7127 | o | o | o |
| 5/16 - 18 | 7,938 | 18 | 7128 | o | o | o |
| 3/8 - 16 | 9,525 | 16 | 7129 | o | o | o |
| 7/16 - 14 | 11,112 | 14 | 7130 | o | o | o |
| 1/2 - 12 | 12,700 | 12 | 7131 | o | o | o |
| 9/16 - 12 | 14,288 | 12 | 7132 | o | o | o |
| 5/8 - 11 | 15,875 | 11 | 7133 | o | o | o |
| 3/4 - 10 | 19,050 | 10 | 7135 | o | o | o |
| 7/8 - 9 | 22,225 | 9 | 7137 | o | o | o |
| 1 - 8 | 25,400 | 8 | 7139 | o | o | o |
| 1.1/8 - 7 | 28,575 | 7 | 7141 | o | o | o |
| 1.1/4 - 7 | 31,750 | 7 | 7143 | o | o | o |
| 1.3/8 - 6 | 34,925 | 6 | 7145 | o | o | o |
| 1.1/2 - 6 | 38,100 | 6 | 7147 | o | o | o |
| 1.3/4 - 5 | 44,450 | 5 | 7151 | o | o | o |
| 2 - 4.1/2 | 50,800 | 4.1/2 | 7155 | o | o | o |

**Przykład zamawiania**
**Y3-412100-7131**
**MSRh 1/2-12 BSW**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Sprawdziany gwintowe trzpieniowe i pierścieniowe

## Gwint amerykański rurowy stożkowy NPT 1:16, ANSI B-1.20.1




**Wymiar sprawdzianu według normy ANSI/ASME B1.20.1**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | MSXa | MSXc | |
|---|---|---|---|---|---|
| Typ | | | | | |
| NPT Ć $d_1$ | 1”/P | Tol INDEX | S3-332100 | Y3-432100 | |
| 1/16” | 27 | 4621 | ○ | ○ | |
| 1/8” | 27 | 4623 | ○ | ○ | |
| 1/4” | 18 | 4627 | ○ | ○ | |
| 3/8” | 18 | 4629 | ● | ○ | |
| 1/2” | 14 | 4631 | ● | ○ | |
| 3/4” | 14 | 4635 | ● | ○ | |
| 1” | 11.1/2 | 4639 | ● | ○ | |
| 1.1/4” | 11.1/2 | 4643 | ○ | ○ | |
| 1.1/2” | 11.1/2 | 4647 | ○ | ○ | |
| 2” | 11.1/2 | 4655 | ○ | ○ | |

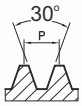
**Informacje techniczne odnośnie stosowania sprawdzianów NPT w części technicznej katalogu na stronie 248**



**Przykład zamawiania**
**S3-332100-4627**
**MSXa 1/4” NPT**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Gwint trapezowy Tr, DIN-103




**Wymiar sprawdzianu według normy DIN 103-9**

Typ sprawdzianu
GO - Przechodni
NOGO - Nieprzechodni

| Symbol | | | MSBg | MSRh | MSRk |
|---|---|---|---|---|---|
| Typ | | | GO / NOGO | GO | NOGO |
| Tr Ć $d_1$ [mm] | P [mm] | Tol | 7H | 7e | 7e |
| | | INDEX | S3-302171 | Y3-412174 | Y3-422174 |
| Tr 10 x 2 | 2 | 8009 | o | o | o |
| Tr 12 x 3 | 3 | 8015 | o | o | o |
| Tr 14 x 3 | 3 | 8019 | o | o | o |
| Tr 16 x 4 | 4 | 8024 | o | o | o |
| Tr 18 x 4 | 4 | 8032 | o | o | o |
| Tr 20 x 4 | 4 | 8034 | o | o | o |
| Tr 22 x 5 | 5 | 8037 | o | o | o |
| Tr 24 x 5 | 5 | 8042 | o | o | o |
| Tr 26 x 5 | 5 | 8047 | o | o | o |
| Tr 28 x 5 | 5 | 8052 | o | o | o |
| Tr 30 x 6 | 6 | 8057 | o | o | o |
| Tr 32 x 6 | 6 | 8062 | o | o | o |
| Tr 36 x 6 | 6 | 8072 | o | o | o |

**Przykład zamawiania**

**S3-302171-8009**
**MSBg Tr 10x2-7H**

● **Dostępne z magazynu**
○ **Na zapytanie**

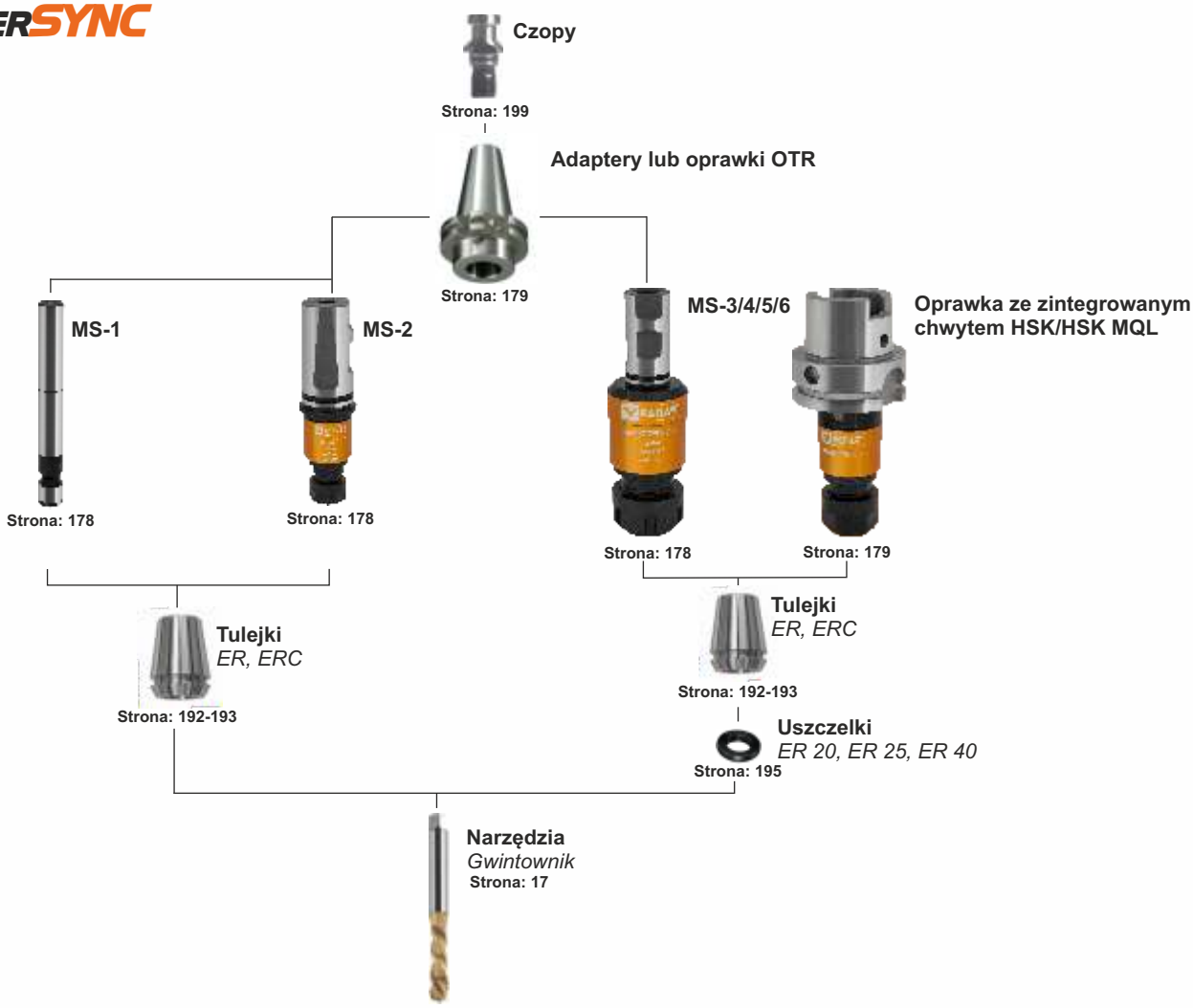
# Oprawki maszynowe

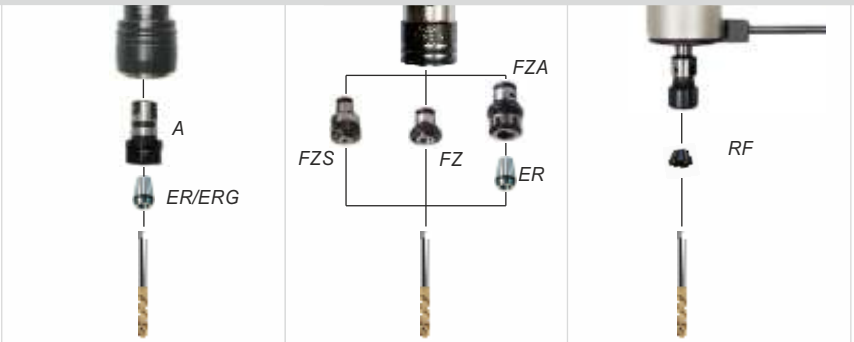
STRONA

## STRONY KATALOGOWE 178-200


| | | |
|---|---|---|
| MS | Oprawki do gwintowania „SOFT SYNCHRO” MASTERSYNC | 178-179 |
| OGSS | Oprawki do gwintowania „SOFT SYNCHRO” | 180-182 |
| OGK | Oprawki do gwintowania z kompensacją osiową | 183-186 |
| OGN | Oprawki do gwintowania z ruchem nawrotnym | 187 |
| FZS | Zabieraki ze sprzęgłem przeciążeniowym do gwintowników | 188 |
| FZ | Zabieraki bez sprzęgła przeciążeniowego do gwintowników | 189 |
| FZA | Adaptery szybkozmienne do mocowania narzędzi w tulejkach ER | 190 |
| A | Adaptery do mocowania narzędzi w tulejkach ER | 191 |
| ER | Tulejki zaciskowe do mocowania narzędzi trzpieniowych | 192 |
| ERC | Tulejki zaciskowe z zabierakiem kwadratowym do gwintowników | 193 |
| ERG | Tulejki zaciskowe z uszczelnieniem gumowym | 194 |
| ERCG | Tulejki zaciskowe z uszczelnieniem i zabierakiem kwadratowym do gwintowników | 194 |
| R | Uszczelki i nakrętki | 195 |
| TR | Tulejki redukcyjne do oprawek OGS | 196 |
| TRH | Tulejki redukcyjne TRH | 197 |
| RF | Tulejki elastyczne do oprawek OGN | 198 |
| C | Czopy do mocowania oprawek | 199-200 |

MASTERSYNC

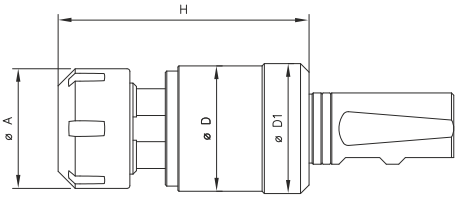



| | | | | | |
|---|---|---|---|---|---|
| | | Strona | 180-182 | 183-186 | 187 |
| | | Opis | Do gwintowania „SOFT SYNCHRO" z minimalną kompensacją osiową na rozciąganie 1mm i ściskanie 0.2mm z wewnętrznym chłodzeniem | Do gwintowania z kompensacją osiową na ściskanie i rozciąganie | Do gwintowania z kompensacją osiową na ściskanie i rozciąganie oraz z ruchem nawrotnym do obrabiarek z prawymi obrotami wrzeciona |
| **Chwyt** | **Norma** | **Symbol** | **OGSS** | **OGK** | **OGN** |
| **MORSE'A** | DIN-228 A/B | **MK** | | MK2, MK3, MK4, MK5 | MK1, MK2, MK3, MK4 (JT6, M20) |
| **DIN** | DIN-2080 | **DIN** | | DIN30, DIN40, DIN50 | |
| **TR** | DIN-6327 | **TR** | | TR20, TR28, TR36, TR48 | |
| **ISO** | DIN 69871 A | **ISO** | ISO40, ISO50 | ISO30, ISO40, ISO50 | |
| **MAS-BT** | JIS B 6339 | **BT** | BT40, BT50 | BT30, BT40, BT50 | |
| **HSK** | DIN 69893 A | **HSK** | HSK40, HSK50, HSK63, HSK100 | HSK50, HSK63, HSK80, HSK100 | |
| **VDI** | DIN 69880 | **VDI** | VDI30, VDI40 | VDI20, VDI25, VDI30, VDI40, VDI50 | |
| **WELDON** | DIN 1835 B | **W** | W25, W40 | W20, W25, W32, W40 | |
| **POLYGONAL** | ISO 26623-1 | **C** | C40, C50, C63, C80 | C40, C50, C63, C80 | |

# Oprawki do gwintowania „SOFT SYNCHRO”

· Kompensacja osiowa: +/- 0,5




Akcesoria

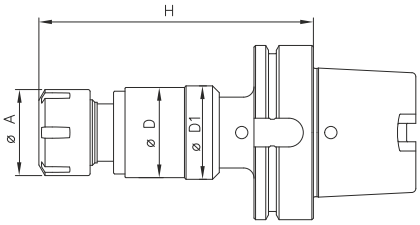
Uszczelki 195

MASTERSYNC

| | MS-1 | MS-2 | MS-3 | MS-4 | MS-5 | MS-6 |
|---|---|---|---|---|---|---|
| | | | | | | |
| Zakres stosowania | M1÷M3 | M2÷M5 | M4,5÷M12 | M8÷M20 | M16÷M30 | M22÷M48 |
| Wewnętrzne chłodzenie | - | - | IK | IK | IK | IK |

| Model | Chwyt | Tulejka | M | D | $D_1$ | A | H | Uszczelki | INDEX | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS-1-D12 | 12 | ER8 | M1÷M3 | 12 | 12 | 12 | 28 | - | R-MS-1-D12 | | | | | |
| MS-2-W25 | 25 | ER11 | M2÷M5 | 23,5 | 23,5 | 19 | 52 | - | | R-MS-2-W25 | | | | |
| MS-3-W25 | 25 | ER20 | M4,5÷M12 | 34,6 | 36,3 | 34 | 69 | + | | | R-MS-3-W25 | | | |
| MS-4-W25 | 25 | ER25 | M8÷M20 | 44 | 45,6 | 42 | 88 | + | | | | R-MS-4-W25 | | |
| MS-5-W25 | 25 | ER40 | M16÷M30 | 62 | 63,6 | 63 | 117 | + | | | | | R-MS-5-W25 | |
| MS-6-W40 | 40 | ER50 | M22÷M48 | 80 | 87 | 78 | 166 | + | | | | | | R-MS-6-W40 |

· Kompensacja osiowa: +/- 0,5




**Akcesoria**

Uszczelki 195

MASTERSYNC

| | MS-3 | MS-4 | MS-5 |
|---|---|---|---|
| | | | |
| **Zakres stosowania** | M4÷M12 | M8÷M20 | M16÷M30 |
| **Wewnętrzne chłodzenie** | IK | IK | IK |

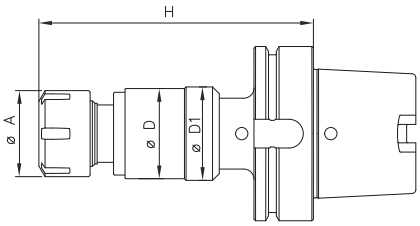
| Model | Chwyt | Tulejka | M | D | $D_1$ | A | H | Uszczelki | INDEX | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MS-3-HSK63A | HSK63A | ER20 | M4÷M12 | 34,6 | 36,3 | 34 | 108 | + | R-MS-3-HSK63A | | |
| MS-3-HSK80A | HSK80A | ER20 | M4÷M12 | 34,6 | 36,3 | 34 | 113 | + | R-MS-3-HSK80A | | |
| MS-3-HSK100A | HSK100A | ER20 | M4÷M12 | 34,6 | 36,3 | 34 | 115 | + | R-MS-3-HSK100A | | |
| MS-4-HSK63A | HSK63A | ER25 | M8÷M20 | 44 | 45,6 | 42 | 128 | + | | R-MS-4-HSK63A | |
| MS-4-HSK80A | HSK80A | ER25 | M8÷M20 | 44 | 45,6 | 42 | 115 | + | | R-MS-4-HSK80A | |
| MS-4-HSK100A | HSK100A | ER25 | M8÷M20 | 44 | 45,6 | 42 | 131 | + | | R-MS-4-HSK100A | |
| MS-5-HSK63A | HSK63A | ER40 | M16÷M30 | 62 | 63,6 | 63 | 160 | + | | | R-MS-5-HSK63A |
| MS-5-HSK80A | HSK80A | ER40 | M16÷M30 | 62 | 63,6 | 63 | 161 | + | | | R-MS-5-HSK80A |
| MS-5-HSK100A | HSK100A | ER40 | M16÷M30 | 62 | 63,6 | 63 | 163 | + | | | R-MS-5-HSK100A |



**Przykład zamawiania**
**R-MS-4-HSK63A**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Cechy i zalety**
- zwiększa żywotność gwintownika o 100% lub więcej
- poprawia jakość gwintu
- precyzyjne dozowanie chłodziwa zwiększa żywotność gwintownika
- redukuje koszty chłodziwa w procesie obróbki
- przyjazne środowisku dzięki mniejszemu zużyciu chłodziwa
- w standardzie jednokanałowe doprowadzenie chłodziwa
- kompensacja osiowa: +/- 0,5




MASTERSYNC

| | MS-3 | MS-4 |
|---|---|---|
| | | |
| Zakres stosowania | M4÷M12 | M8÷M20 |
| Wewnętrzne chłodzenie | MQL | MQL |

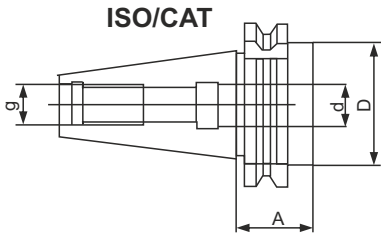
| Model | Chwyt | Tulejka | M | D | $D_1$ | A | H | Uszczelki | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|
| MS-3-HSK63A-MQL | HSK63A | ER20 | M4÷M12 | 34,6 | 36,6 | 34 | 108 | + | R-MS-3-HSK63A-MQL | |
| MS-3-HSK80A-MQL | HSK80A | ER20 | M4÷M12 | 34,6 | 36,6 | 34 | 113 | + | R-MS-3-HSK80A-MQL | |
| MS-3-HSK100A-MQL | HSK100A | ER20 | M4÷M12 | 34,6 | 36,6 | 34 | 115 | + | R-MS-3-HSK100A-MQL | |
| MS-4-HSK63A-MQL | HSK63A | ER25 | M8÷M20 | 44 | 44 | 42 | 128 | + | | R-MS-4-HSK63A-MQL |
| MS-4-HSK80A-MQL | HSK80A | ER25 | M8÷M20 | 44 | 44 | 42 | 131 | + | | R-MS-4-HSK80A-MQL |
| MS-4-HSK100A-MQL | HSK100A | ER25 | M8÷M20 | 44 | 44 | 42 | 133 | + | | R-MS-4-HSK100A-MQL |

MASTERSYNC

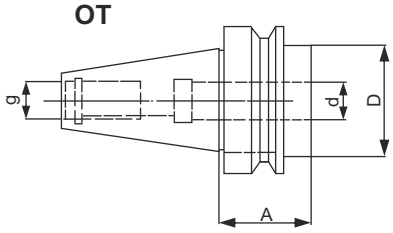
## ADAPTERY

OTR

**ISO/CAT**




**OT**



**Zakres stosowania**

**Wewnętrzne chłodzenie**

| Model | Chwyt | D | d | A | g | Norma | INDEX |
|---|---|---|---|---|---|---|---|
| ISO40 | ISO40 | 45 | 25 | 35 | M16 | DIN-69871 | R-OTR-ISO40/D25 |
| ISO40 | ISO40 | 90 | 40 | 120 | M16 | DIN-69871 | R-OTR-ISO40/D40 |
| ISO50 | ISO50 | 72 | 25 | 35 | M24 | DIN-69871 | R-OTR-ISO50/D25 |
| ISO50 | ISO50 | 90 | 40 | 100 | M24 | DIN-69871 | R-OTR-ISO50/D40 |
| CAT40 | CAT40 | 45 | 25 | 35 | 5/8"-11 | CAT | R-OTR-CAT40/D25 |
| CAT50 | CAT50 | 70 | 25 | 35 | 1"-8 | CAT | R-OTR-CAT50/D25 |
| CAT50 | CAT50 | 70 | 40 | 75 | 1"-8 | CAT | R-OTR-CAT50/D40 |
| BT40 | BT40 | 45 | 25 | 35 | M16 | DIN-B6339 | R-OTR-BT40/D25 |
| BT50 | BT50 | 70 | 25 | 48 | M24 | DIN-B6339 | R-OTR-BT50/D25 |
| BT50 | BT50 | 90 | 40 | 110 | M24 | DIN-B6339 | R-OTR-BT50/D40 |

**Przykład zamawiania**
**R-OTR-ISO40/D25**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Oprawki do gwintowania „SOFT SYNCHRO”

**Informacje:**
- Do obrabiarek z funkcją gwintowania synchronicznego "rigid tapping"
- Niewielka kompensacja osiowa: ściskanie 0,2mm, rozciąganie 1mm
- Dopuszczalne maksymalne ciśnienie chłodziwa 50bar
- Do oprawek z wewnętrznym chłodzeniem należy stosować czopy z otworem centralnym IK

Akcesoria

**Adaptery** 191 — A

**Tulejki** 192 — ER

**Czopy** 199 - 200 — C

## ISO

## MAS BT

| | ISO | MAS BT |
|---|---|---|
| Norma | DIN-69871 | JIS B6339 |
| Wewnętrzne chłodzenie | <A50 AD / A50 AD+B | <A50 AD / A50 AD+B |

| Chwyt | Zabierak | D | A | H | M | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| ISO40 | A20 | 20 | 43 | 53 | M3-M12 | R-OGSS-ISO40/A20 | ● | | |
| ISO40 | A32 | 32 | 60 | 90 | M6-M20 | R-OGSS-ISO40/A32 | ● | | |
| ISO50 | A20 | 20 | 43 | 53 | M3-M12 | R-OGSS-ISO50/A20 | ○ | | |
| ISO50 | A32 | 32 | 60 | 74 | M6-M20 | R-OGSS-ISO50/A32 | ○ | | |
| ISO50 | A50 | 50 | 87 | 115 | M14-M33 | R-OGSS-ISO50/A50 | ○ | | |
| BT40 | A20 | 20 | 43 | 61 | M3-M12 | | | R-OGSS-BT40/A20 | ○ |
| BT40 | A32 | 32 | 60 | 80 | M6-M20 | | | R-OGSS-BT40/A32 | ○ |
| BT50 | A20 | 20 | 43 | 72 | M3-M12 | | | R-OGSS-BT50/A20 | ○ |
| BT50 | A32 | 32 | 60 | 93 | M6-M20 | | | R-OGSS-BT50/A32 | ○ |
| BT50 | A50 | 50 | 87 | 124 | M14-M33 | | | R-OGSS-BT50/A50 | ○ |

**Oprawki z chłodzeniem przez kołnierz AD+B oraz z chwytami ISO 45, DIN 40, DIN 50 dostępne na zapytanie**





**Przykład zamawiania**
**R-OGSS-BT40/A20**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Informacje:**

- Do obrabiarek z funkcją gwintowania synchronicznego "rigid tapping"
- Niewielka kompensacja osiowa: ściskanie 0,2mm, rozciąganie 1mm
- Dopuszczalne maksymalne ciśnienie chłodziwa 50bar

Akcesoria

**Adaptery** 191

A

**Tulejki** 192

ER

## HSK

## VDI

| | HSK | VDI |
|---|---|---|
| Norma | DIN-69893 A | DIN-69880 |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| HSK40 | A20 | 20 | 43 | 68 | M3-M12 | R-OGSS-HSK40/A20 | ○ | | |
| HSK40 | A32 | 32 | 59 | 89 | M6-M20 | R-OGSS-HSK40/A32 | ○ | | |
| HSK50 | A20 | 20 | 43 | 70 | M3-M12 | R-OGSS-HSK50/A20 | ○ | | |
| HSK50 | A32 | 32 | 59 | 76 | M6-M20 | R-OGSS-HSK50/A32 | ○ | | |
| HSK63 | A20 | 20 | 43 | 63 | M3-M12 | R-OGSS-HSK63/A20 | ○ | | |
| HSK63 | A32 | 32 | 59 | 59 | M6-M20 | R-OGSS-HSK63/A32 | ○ | | |
| HSK63 | A50 | 50 | 87 | 122 | M3-M12 | R-0GSS-HSK-63/A50 | ○ | | |
| HSK100 | A20 | 20 | 43 | 70 | M14-M33 | R-OGSS-HSK100/A20 | ○ | | |
| HSK100 | A32 | 32 | 59 | 91 | M6-M20 | R-OGSS-HSK100/A32 | ○ | | |
| HSK100 | A50 | 50 | 87 | 115 | M14-M33 | R-OGSS-HSK100/A50 | ○ | | |
| VDI30 | A20 | 20 | 43 | 45 | M3-M12 | | | R-OGSS-VDI30/A20 | ○ |
| VDI30 | A32 | 32 | 59 | 70 | M6-M20 | | | R-OGSS-VDI30/A32 | ○ |
| VDI40 | A20 | 20 | 43 | 45 | M3-M12 | | | R-OGSS-VDI40/A20 | ○ |
| VDI40 | A32 | 32 | 59 | 70 | M6-M20 | | | R-OGSS-VDI40/A32 | ○ |

# Oprawki do gwintowania „SOFT SYNCHRO”

**Informacje:**

- Do obrabiarek z funkcją gwintowania synchronicznego "rigid tapping"
- Niewielka kompensacja osiowa: ściskanie 0,2mm, rozciąganie 1mm
- Dopuszczalne maksymalne ciśnienie chłodziwa 50bar

Akcesoria

**Adaptery** 191

A

**Tulejki** 192

ER

## POLYGONAL

## WELDON

| | POLYGONAL | WELDON |
|---|---|---|
| Norma | ISO 26623-1 | DIN 1835 B+E |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| C40 | A20 | 20 | 43 | 55 | M3-M12 | R-OGSS-C40/A20 | ○ | | |
| C40 | A32 | 32 | 60 | 75 | M6-M20 | R-OGSS-C40/A32 | ○ | | |
| C50 | A20 | 20 | 43 | 55 | M3-M12 | R-OGSS-C50/A20 | ○ | | |
| C50 | A32 | 32 | 60 | 75 | M6-M20 | R-OGSS-C50/A32 | ○ | | |
| C63 | A20 | 20 | 43 | 58 | M3-M12 | R-OGSS-C63/A20 | ○ | | |
| C63 | A32 | 32 | 60 | 78 | M6-M20 | R-OGSS-C63/A32 | ○ | | |
| C63 | A50 | 50 | 87 | 102 | M14-M33 | R-OGSS-C63/A50 | ○ | | |
| C80 | A20 | 20 | 43 | 66 | M3-M12 | R-OGSS-C80/A20 | ○ | | |
| C80 | A32 | 32 | 60 | 86 | M6-M20 | R-OGSS-C80/A32 | ○ | | |
| C80 | A50 | 50 | 87 | 116 | M14-M33 | R-OGSS-C80/A50 | ○ | | |
| W25 | A20 | 20 | 43 | 34 | M3-M12 | | | R-OGSS-W25/A20 | ○ |
| W25 | A32 | 32 | 60 | 56 | M6-M20 | | | R-OGSS-W25/A32 | ○ |
| W40 | A50 | 50 | 87 | 87 | M14-M33 | | | R-OGSS-W40/A50 | ○ |





**Przykład zamawiania**
**R-OGSS-C63/A20**

● **Dostępne z magazynu**
○ **Na zapytanie**

## MK

## MK-A

Akcesoria

Zabierak 188

FZS

Adapter 191

FZA

Tulejka 192

ER

| | MK | MK-A |
|---|---|---|
| Norma | MORSE DIN-228 B | MORSE DIN-228 A |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | (-) | (+) | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MK2 | FZ19 | 19 | 38 | 46 | M2-M12 | 9 | 9 | R-OGK-MK2/FZ19 | ● | | |
| MK3 | FZ19 | 19 | 38 | 46 | M2-M12 | 9 | 9 | R-OGK-MK3/FZ19 | ● | | |
| MK3 | FZ31 | 31 | 55 | 69 | M6-M20 | 15 | 15 | R-OGK-MK3/FZ31 | ● | | |
| MK4 | FZ48 | 48 | 79 | 108 | M14-M33 | 24 | 24 | R-OGK-MK4/FZ48 | ● | | |
| MK5 | FZ60 | 60 | 98 | 116 | M22-M48 | 26 | 26 | R-OGK-MK5/FZ60 | ● | | |
| MK2 | FZ19 | 19 | 38 | 46 | M2-M12 | 9 | 9 | | | R-OGK-MK2/FZ19-A | ○ |
| MK3 | FZ19 | 19 | 38 | 46 | M2-M12 | 9 | 9 | | | R-OGK-MK3/FZ19-A | ○ |
| MK3 | FZ31 | 31 | 55 | 69 | M6-M20 | 15 | 15 | | | R-OGK-MK3/FZ31-A | ○ |
| MK4 | FZ48 | 48 | 79 | 108 | M14-M33 | 24 | 24 | | | R-OGK-MK4/FZ48-A | ○ |
| MK5 | FZ60 | 60 | 98 | 116 | M22-M48 | 26 | 26 | | | R-OGK-MK5/FZ60-A | ○ |

## DIN

## TR

**Akcesoria**

**Zabieraki** 188

FZS

**Adaptery** 191

FZA

**Tulejki** 192

ER

| | DIN | TR |
|---|---|---|
| **Norma** | DIN-2080 | DIN-6327 |
| **Wewnętrzne chłodzenie** | | |

| Chwyt | Zabierak | D | A | H | M | (-) | (+) | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN30 | FZ19 | 19 | 38 | 51 | M2-M12 | 9 | 9 | R-OGK-DIN30/FZ19 | ○ | | |
| DIN30 | FZ31 | 31 | 55 | 86 | M6-M20 | 15 | 15 | R-OGK-DIN30/FZ31 | ○ | | |
| DIN40 | FZ19 | 19 | 38 | 53 | M2-M12 | 9 | 9 | R-OGK-DIN40/FZ19 | ○ | | |
| DIN40 | FZ31 | 31 | 55 | 77 | M6-M20 | 15 | 15 | R-OGK-DIN40/FZ31 | ○ | | |
| DIN40 | FZ48 | 48 | 79 | 118 | M14-M33 | 24 | 24 | R-OGK-DIN40/FZ48 | ○ | | |
| DIN50 | FZ19 | 19 | 38 | 57 | M2-M12 | 9 | 9 | R-OGK-DIN50/FZ19 | ○ | | |
| DIN50 | FZ31 | 31 | 55 | 79 | M6-M20 | 15 | 15 | R-OGK-DIN50/FZ31 | ○ | | |
| DIN50 | FZ48 | 48 | 79 | 125 | M14-M33 | 24 | 24 | R-OGK-DIN50/FZ48 | ○ | | |
| DIN50 | FZ60 | 60 | 98 | 143 | M22-M48 | 26 | 26 | R-OGK-DIN50/FZ60 | ○ | | |
| TR20 | FZ19 | 19 | 38 | 53 | M2-M12 | 9 | 9 | | | R-OGK-TR20/FZ19 | ○ |
| TR28 | FZ19 | 19 | 38 | 53 | M2-M12 | 9 | 9 | | | R-OGK-TR28/FZ19 | ○ |
| TR28 | FZ31 | 31 | 55 | 76 | M6-M20 | 15 | 15 | | | R-OGK-TR28/FZ31 | ○ |
| TR36 | FZ19 | 19 | 38 | 55 | M2-M12 | 9 | 9 | | | R-OGK-TR36/FZ19 | ○ |
| TR36 | FZ31 | 31 | 55 | 78 | M6-M20 | 15 | 15 | | | R-OGK-TR36/FZ31 | ○ |
| TR36 | FZ48 | 48 | 79 | 111 | M14-M33 | 24 | 24 | | | R-OGK-TR36/FZ48 | ○ |
| TR36 | FZ60 | 60 | 98 | 123 | M22-M48 | 26 | 26 | | | R-OGK-TR36/FZ60 | ○ |
| TR48 | FZ48 | 48 | 79 | 115 | M14-M33 | 24 | 24 | | | R-OGK-TR48/FZ48 | ○ |
| TR48 | FZ60 | 60 | 98 | 127 | M22-M48 | 26 | 26 | | | R-OGK-TR48/FZ60 | ○ |

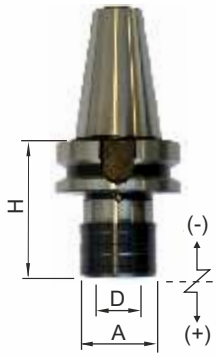
**Przykład zamawiania**

**R-OGK-DIN50/FZ60**

● **Dostępne z magazynu**

○ **Na zapytanie**

# Oprawki do gwintowania z kompensacją osiową

| | ISO | MAS BT |
|---|---|---|
| | |   |
| Akcesoria | | |
| **Zabieraki** 188 FZS | | |
| **Adaptery** 190 FZA | | |
| **Tulejki** 192 ER | | |
| **Czopy** 199 - 200 C | | |
| Norma | DIN-69871 A | JIS B6339 |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | (-) | (+) | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO30 | FZ19 | 19 | 38 | 60 | M2-M12 | 9 | 9 | R-OGK-ISO30/FZ19 | ○ | | |
| ISO30 | FZ31 | 31 | 55 | 101 | M6-M20 | 15 | 15 | R-OGK-ISO30/FZ31 | ○ | | |
| ISO40 | FZ19 | 19 | 38 | 60 | M2-M12 | 9 | 9 | R-OGK-ISO40/FZ19 | ● | | |
| ISO40 | FZ31 | 31 | 55 | 100 | M6-M20 | 15 | 15 | R-OGK-ISO40/FZ31 | ● | | |
| ISO40 | FZ48 | 48 | 79 | 138 | M14-M33 | 24 | 24 | R-OGK-ISO40/FZ48 | ○ | | |
| ISO40 | FZ60 | 60 | 98 | 154 | M22-M48 | 26 | 26 | R-OGK-ISO40/FZ60 | ○ | | |
| ISO50 | FZ19 | 19 | 38 | 62 | M2-M12 | 9 | 9 | R-OGK-ISO50/FZ19 | ○ | | |
| ISO50 | FZ31 | 31 | 55 | 83 | M6-M20 | 15 | 15 | R-OGK-ISO50/FZ31 | ● | | |
| ISO50 | FZ48 | 48 | 79 | 133 | M14-M33 | 24 | 24 | R-OGK-ISO50/FZ48 | ● | | |
| ISO50 | FZ60 | 60 | 98 | 147 | M22-M48 | 26 | 26 | R-OGK-ISO50/FZ60 | ● | | |
| BT30 | FZ19 | 19 | 38 | 63 | M2-M12 | 9 | 9 | | | R-OGK-BT30/FZ19 | ○ |
| BT30 | FZ31 | 31 | 55 | 96 | M6-M20 | 15 | 15 | | | R-OGK-BT30/FZ31 | ○ |
| BT40 | FZ19 | 19 | 38 | 68 | M2-M12 | 9 | 9 | | | R-OGK-BT40/FZ19 | ● |
| BT40 | FZ31 | 31 | 55 | 93 | M6-M20 | 15 | 15 | | | R-OGK-BT40/FZ31 | ● |
| BT40 | FZ48 | 48 | 79 | 138 | M14-M33 | 24 | 24 | | | R-OGK-BT40/FZ48 | ○ |
| BT40 | FZ60 | 60 | 98 | 157 | M22-M48 | 26 | 26 | | | R-OGK-BT40/FZ60 | ○ |
| BT50 | FZ19 | 19 | 38 | 80 | M2-M12 | 9 | 9 | | | R-OGK-BT50/FZ19 | ○ |
| BT50 | FZ31 | 31 | 55 | 102 | M6-M20 | 15 | 15 | | | R-OGK-BT50/FZ31 | ● |
| BT50 | FZ48 | 48 | 79 | 133 | M14-M33 | 24 | 24 | | | R-OGK-BT50/FZ48 | ○ |
| BT50 | FZ60 | 60 | 98 | 147 | M22-M48 | 26 | 26 | | | R-OGK-BT50/FZ60 | ○ |

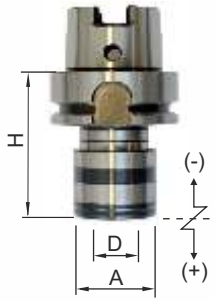
**Wersja OGKC z wewnętrznym chłodzeniem na zapytanie**





**Przykład zamawiania**
**R-OGK-ISO40/FZ31**

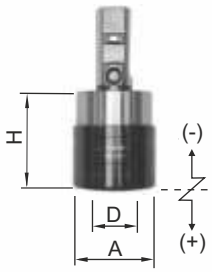
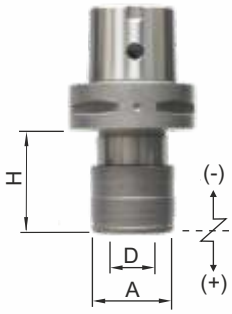
● **Dostępne z magazynu**
○ **Na zapytanie**

| | HSK | VDI |
|---|---|---|
| |   | |
| Akcesoria | | |
| Zabieraki 188 FZS | | |
| Adaptery 191 FZA | | |
| Tulejki 192 ER | | |
| Norma | DIN-69893 A | DIN-69880 |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | (-) | (+) | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HSK50 | FZ19 | 19 | 41 | 72 | M2-M12 | 7,5 | 7,5 | R-OGK-HSK50/FZ19 | ○ | | |
| HSK50 | FZ31 | 31 | 60 | 110 | M6-M20 | 10 | 10 | R-OGK-HSK50/FZ31 | ○ | | |
| HSK63 | FZ19 | 19 | 41 | 72 | M2-M12 | 7,5 | 7,5 | R-OGK-HSK63/FZ19 | ● | | |
| HSK63 | FZ31 | 31 | 60 | 110 | M6-M20 | 10 | 10 | R-OGK-HSK63/FZ31 | ● | | |
| HSK63 | FZ48 | 48 | 86 | 141 | M14-M33 | 17,5 | 17,5 | R-OGK-HSK63/FZ48 | ○ | | |
| HSK80 | FZ19 | 19 | 41 | 75 | M2-M12 | 7,5 | 7,5 | R-OGK-HSK80/FZ19 | ○ | | |
| HSK80 | FZ31 | 31 | 60 | 95 | M6-M20 | 10 | 10 | R-OGK-HSK80/FZ31 | ○ | | |
| HSK80 | FZ48 | 48 | 86 | 141 | M14-M33 | 17,5 | 17,5 | R-OGK-HSK80/FZ48 | ○ | | |
| HSK100 | FZ19 | 19 | 41 | 80 | M2-M12 | 7,5 | 7,5 | R-OGK-HSK100/FZ19 | ○ | | |
| HSK100 | FZ31 | 31 | 60 | 100 | M6-M20 | 10 | 10 | R-OGK-HSK100/FZ31 | ○ | | |
| HSK100 | FZ48 | 48 | 86 | 141 | M14-M33 | 17,5 | 17,5 | R-OGK-HSK100/FZ48 | ○ | | |
| VDI20 | FZ19 | 19 | 38 | 55 | M2-M12 | 9 | 9 | | | R-OGK-VDI20/FZ19 | ○ |
| VDI20 | FZ31 | 31 | 55 | 77 | M6-M20 | 15 | 15 | | | R-OGK-VDI20/FZ31 | ○ |
| VDI25 | FZ19 | 19 | 38 | 55 | M2-M12 | 9 | 9 | | | R-OGK-VDI25/FZ19 | ● |
| VDI25 | FZ31 | 31 | 55 | 77 | M6-M20 | 15 | 15 | | | R-OGK-VDI25/FZ31 | ● |
| VDI30 | FZ19 | 19 | 38 | 55 | M2-M12 | 9 | 9 | | | R-OGK-VDI30/FZ19 | ● |
| VDI30 | FZ31 | 31 | 55 | 77 | M6-M20 | 15 | 15 | | | R-OGK-VDI30/FZ31 | ● |
| VDI40 | FZ19 | 19 | 38 | 55 | M2-M12 | 9 | 9 | | | R-OGK-VDI40/FZ19 | ○ |
| VDI40 | FZ31 | 31 | 55 | 77 | M6-M20 | 15 | 15 | | | R-OGK-VDI40/FZ31 | ● |
| VDI40 | FZ48 | 48 | 79 | 110 | M14-M33 | 24 | 24 | | | R-OGK-VDI40/FZ48 | ○ |
| VDI50 | FZ48 | 48 | 79 | 110 | M14-M33 | 24 | 24 | | | R-OGK-VDI50/FZ48 | ○ |

**Wersja OGKC z wewnętrznym chłodzeniem na zapytanie**

# Oprawki do gwintowania z kompensacją osiową

| | WELDON | POLYGONAL |
|---|---|---|
| |   |   |
| Akcesoria | Zabieraki 188 FZS<br>Adaptery 190 FZA<br>Tulejki 192 ER | |
| Norma | DIN-1835 B+E | ISO 26623-1 |
| Wewnętrzne chłodzenie | | |

| Chwyt | Zabierak | D | A | H | M | (-) | (+) | INDEX | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| W20 | FZ19 | 19 | 38 | 41 | M2-M12 | 9 | 9 | R-OGK-W20/FZ19 | ○ | | |
| W20 | FZ31 | 31 | 55 | 63 | M6-M20 | 15 | 15 | R-OGK-W20/FZ31 | ○ | | |
| W25 | FZ19 | 19 | 38 | 41 | M2-M12 | 9 | 9 | R-OGK-W25/FZ19 | ● | | |
| W25 | FZ31 | 31 | 55 | 63 | M6-M20 | 15 | 15 | R-OGK-W25/FZ31 | ● | | |
| W32 | FZ19 | 19 | 38 | 41 | M2-M12 | 9 | 9 | R-OGK-W32/FZ19 | ○ | | |
| W32 | FZ31 | 31 | 55 | 63 | M6-M20 | 15 | 15 | R-OGK-W32/FZ31 | ● | | |
| W32 | FZ48 | 48 | 79 | 109 | M14-M33 | 24 | 24 | R-OGK-W32/FZ48 | ○ | | |
| W40 | FZ19 | 19 | 38 | 41 | M2-M12 | 9 | 9 | R-OGK-W40/FZ19 | ○ | | |
| W40 | FZ31 | 31 | 55 | 63 | M6-M20 | 15 | 15 | R-OGK-W40/FZ31 | ○ | | |
| W40 | FZ48 | 48 | 79 | 98 | M14-M33 | 24 | 24 | R-OGK-W40/FZ48 | ○ | | |
| C40 | FZ19 | 19 | 41 | 48 | M2-M12 | 7,5 | 7,5 | | | R-OGK-C40/FZ19 | ○ |
| C40 | FZ31 | 31 | 60 | 71 | M6-M20 | 10 | 10 | | | R-OGK-C40/FZ31 | ○ |
| C50 | FZ19 | 19 | 41 | 48 | M2-M12 | 7,5 | 7,5 | | | R-OGK-C50/FZ19 | ○ |
| C50 | FZ31 | 31 | 60 | 71 | M6-M20 | 10 | 10 | | | R-OGK-C50/FZ31 | ○ |
| C63 | FZ19 | 19 | 41 | 73 | M2-M12 | 7,5 | 7,5 | | | R-OGK-C63/FZ19 | ○ |
| C63 | FZ31 | 31 | 60 | 97 | M6-M20 | 10 | 10 | | | R-OGK-C63/FZ31 | ○ |
| C63 | FZ48 | 48 | 86 | 124 | M12-M33 | 17,5 | 17,5 | | | R-OGK-C63/FZ48 | ○ |
| C80 | FZ19 | 19 | 41 | 45 | M2-M12 | 7,5 | 7,5 | | | R-OGK-C80/FZ19 | ○ |
| C80 | FZ31 | 31 | 60 | 60 | M6-M20 | 10 | 10 | | | R-OGK-C80/FZ31 | ○ |
| C80 | FZ48 | 48 | 86 | 107 | M12-M33 | 17,5 | 17,5 | | | R-OGK-C80/FZ48 | ○ |

**Wersja OGKC z wewnętrznym chłodzeniem na zapytanie**





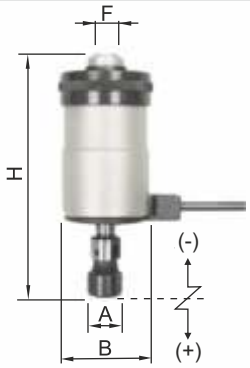
**Przykład zamawiania**
**R-OGK-W40/FZ48**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Informacje:**

- Do obrabiarek z prawymi obrotami wrzeciona
- Oprawka posiada kompensację osiową na ściskanie i rozciąganie oraz sprzęgło przeciążeniowe

$I = U / U_n$
U - prędkość gwintowania
$U_n$ - prędkość ruchu nawrotnego




Akcesoria

**Trzpień**

R-TM-MK2/JT6

**Tulejki** 198

RF

Norma: JT6 / M20 (+ MK DIN-228 B)

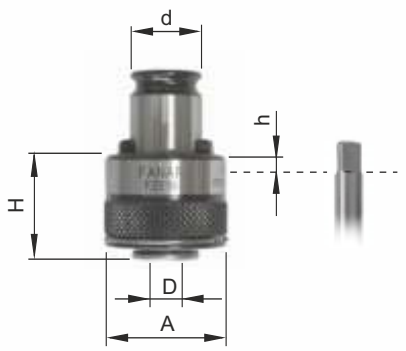
| F | Tulejka | H | B | A | $U_{max}$ [1/min] | I | M | W zestawie | | INDEX | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | RF | TM | | |
| JT6 | RF15 | 134 | 55 | 23 | 1500 | 1,6 | M2-M7 | J116, J117 | MK1, MK3 | R-OGN-JT6/RF15-Z | ● |
| JT6 | RF23 | 158 | 75 | 28 | 1000 | 1,75 | M5-M12 | J421, J422 | MK3, MK4 | R-OGN-JT6/RF23-Z | ● |
| M20 | RF32 | 205 | 91 | 40 | 600 | 1,7 | M5-M18 | J441, J445 | MK3, MK4 | R-OGN-M20/RF32-Z | ● |

**Oprawka sprzedawana jest w zestawie walizkowym wraz z akcesoriami - szczegóły w tabeli powyżej**

# Zabieraki ze sprzęgłem przeciążeniowym do gwintowników

**Informacje:**

- Zabieraki ze sprzęgłem przeciążeniowym przeznaczone są do oprawek **OGK** posiadających kompensację osiową
- Sprzęgło przeciążeniowe pozwala uchronić narzędzie przed uszkodzeniem w przypadku dużego wzrostu oporów skrawania



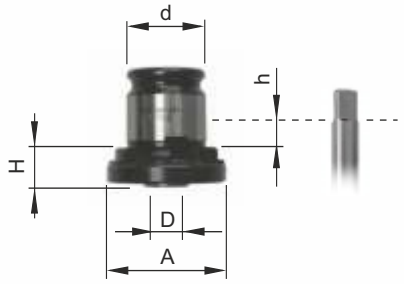

| Rozmiar | | | | | FZS13 | FZS19 | FZS31 | FZS48 | FZS60 |
|---|---|---|---|---|---|---|---|---|---|
| d / A / H / h | | | | | 13 / 23 / 21 / 6 | 19 / 32 / 25 / 8 | 31 / 50 / 34 / 4 | 48 / 72 / 45 / 1 | 60 / 95 / 68 / 3 |
| M | DIN | D | ⌀ | INDEX | R-FZS13 | R-FZS19 | R-FZS31 | R-FZS48 | R-FZS60 |
| M 2 | 371 | 2,8 | 2,1 | M2 D2,8 DIN | ○ | ● | | | |
| M 3 | 371 | 3,5 | 2,7 | M3 D3,5 DIN | ○ | ● | | | |
| M 4 | 371 | 4,5 | 3,4 | M4 D4,5 DIN | ○ | ● | | | |
| M 5 | 371 | 6 | 4,9 | M5 D6 DIN | ○ | ● | | | |
| M 6 | 371 | 6 | 4,9 | M6 D6 DIN | ○ | ● | ● | | |
| M 8 | 371 | 8 | 6,2 | M8 D8 DIN | | ● | ● | | |
| M 8 | 376 | 6 | 4,9 | M8 D6 DIN | | ○ | ○ | | |
| M 10 | 371 | 10 | 8 | M10 D10 DIN | | ● | ● | ○ | |
| M 10 | 376 | 7 | 5,5 | M10 D7 DIN | | ○ | ○ | | |
| M 12 | 376 | 9 | 7 | M12 D9 DIN | | ● | ● | ○ | |
| M 14 | 376 | 11 | 9 | M14 D11 DIN | | ○ | ● | ● | |
| M 16 | 376 | 12 | 9 | M16 D12 DIN | | | ● | ○ | |
| M 18 | 376 | 14 | 11 | M18 D14 DIN | | | ● | ● | |
| M 20 | 376 | 16 | 12 | M20 D16 DIN | | | ● | ○ | ○ |
| M 22 | 376 | 18 | 14,5 | M22 D18 DIN | | | ● | ● | ○ |
| M 24 | 376 | 18 | 14,5 | M24 D18 DIN | | | ○ | ● | ○ |
| M 27 | 376 | 20 | 16 | M27 D20 DIN | | | ○ | ● | ○ |
| M 30 | 376 | 22 | 18 | M30 D22 DIN | | | | ○ | ○ |
| M 33 | 376 | 25 | 20 | M33 D25 DIN | | | | ○ | ○ |
| M 36 | 376 | 28 | 22 | M36 D28 DIN | | | | | ● |
| M 39 | 376 | 32 | 24 | M39 D32 DIN | | | | | ○ |
| M 42 | 376 | 32 | 24 | M42 D32 DIN | | | | | ● |
| M 45 | 376 | 36 | 29 | M45 D36 DIN | | | | | ○ |
| M 48 | 376 | 36 | 29 | M48 D36 DIN | | | | | ○ |

**Na zapytanie wersja wydłużona zabieraków o symbolu FZSL oraz przedłużek FL**

**Przykład zamawiania**
**R-FZS31/M12 D9 DIN**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Informacje:**
· Zabieraki przeznaczone są do oprawek OGK




| Rozmiar | | | | | FZ13 | FZ19 | FZ31 | FZ48 | FZ60 |
|---|---|---|---|---|---|---|---|---|---|
| d / A / H / h | | | | | 13 / 22 / 7 / 8 | 19 / 30 / 7 / 10 | 31 / 46 / 11 / 19 | 48 / 68 / 14 / 25 | 60 / 83 / 42 / 29 |
| M | DIN | D | ⌀ | INDEX | R-FZ13 | R-FZ19 | R-FZ31 | R-FZ48 | R-FZ60 |
| M 2 | 371 | 2,8 | 2,1 | M2 D2,8 DIN | ○ | ○ | | | |
| M 3 | 371 | 3,5 | 2,7 | M3 D3,5 DIN | ○ | ● | | | |
| M 4 | 371 | 4,5 | 3,4 | M4 D4,5 DIN | ○ | ● | | | |
| M 5, M6 | 371 | 6 | 4,9 | M5, M6 D6 DIN | ○ | ● | ● | | |
| M 8 | 371 | 8 | 6,2 | M8 D8 DIN | | ● | ● | | |
| M 10 | 371 | 10 | 8 | M10 D10 DIN | | ● | ● | | |
| M 12 | 376 | 9 | 7 | M12 D9 DIN | | ● | ● | | |
| M 14 | 376 | 11 | 9 | M14 D11 DIN | | ○ | ○ | ○ | |
| M 16 | 376 | 12 | 9 | M16 D12 DIN | | | ● | ○ | |
| M 18 | 376 | 14 | 11 | M18 D14 DIN | | | ○ | ○ | |
| M 20 | 376 | 16 | 12 | M20 D16 DIN | | | ● | ○ | |
| M 22, M24 | 376 | 18 | 14,5 | M24 D18 DIN | | | ○ | ○ | ○ |
| M 27 | 376 | 20 | 16 | M27 D20 DIN | | | | ○ | ○ |
| M 30 | 376 | 22 | 18 | M30 D22 DIN | | | | ○ | ○ |
| M 33 | 376 | 25 | 20 | M33 D25 DIN | | | | ○ | ○ |
| M 36 | 376 | 28 | 22 | M36 D28 DIN | | | | | ○ |
| M 39, M42 | 376 | 32 | 24 | M42 D32 DIN | | | | | ○ |
| M 45, M48 | 376 | 36 | 29 | M48 D36 DIN | | | | | ○ |

**Na zapytanie wersja wydłużona zabieraków o symbolu FZL oraz przedłużek FL**

**Na zapytanie zabieraki FZN do narzynek**

# Adaptery do mocowania narzędzi w tulejkach ER

**Informacje:**
- Adaptery przeznaczone są do oprawek OGK
- Mocowanie gwintowników w standardowych tulejkach ER - **adapter posiada wkręty zabierakowe**

*Po każdorazowej zmianie gwintownika konieczne jest dokręcenie zabieraków.

Akcesoria

**Tulejki** 192

ER

| Rozmiar | Tulejka | H | h | A | d | D | M | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| FZA19 | ER16 | 29,5 | 8,5 | 28 | 19 | 2-10 | M3-M12 | R-FZA19/ER16 | ● |
| FZA31 | ER25 | 38,5 | 15 | 42 | 31 | 2-16 | M6-M20 | R-FZA31/ER25 | ● |



# Redukcje do zabieraków

**Informacje:**
- Redukcje przeznaczone są do oprawek OGK do podłączania zabieraków FZS, FZ i adapterów FZA

| Redukcja | H | A | d | D | INDEX | |
|---|---|---|---|---|---|---|
| 19/13 | 6 | 30 | 19 | 13 | R-FR19/13 | ○ |
| 31/19 | 8,5 | 46 | 31 | 19 | R-FR31/19 | ● |
| 48/31 | 7 | 68 | 48 | 31 | R-FR48/31 | ● |
| 60/48 | 13 | 92 | 60 | 48 | R-FR60/48 | ○ |





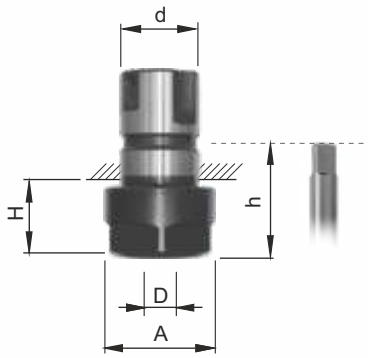
**Przykład zamawiania**
**R-FR19/13**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Informacje:**

- Adaptery przeznaczone są do oprawek OGSS
- Mocowanie gwintowników w standardowych tulejkach ER - **adapter posiada wkręty zabierakowe**

*Po każdorazowej zmianie gwintownika konieczne jest dokręcenie zabieraków.




Akcesoria

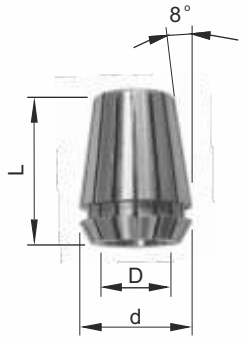
**Tulejki** 192

ER

| Rozmiar | Tulejka | H | h | A | d | D | M | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| A20 | ER16 | 24 | 42 | 28 | 20 | 2-10 | M3-M12 | R-A20/ER16 | ● |
| A32 | ER25 | 28 | 59 | 42 | 32 | 2-16 | M6-M20 | R-A32/ER25 | ● |
| A50 | ER40 | 32 | 75 | 63 | 50 | 6-26 | M14-M33 | R-A50/ER40 | ● |

# Tulejki zaciskowe do mocowania narzędzi trzpieniowych

## DIN-6499



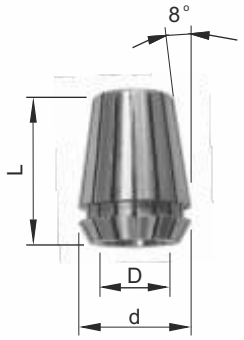

| Rozmiar | | | | ER16 | ER20 | ER25 | ER32 | ER40 | ER50 |
|---|---|---|---|---|---|---|---|---|---|
| d / L | | | | 17 / 27,5 | 21 / 31,5 | 26 / 34 | 33 / 40 | 41 / 46 | 52 / 60 |
| D | M | | INDEX | R-ER16 | R-ER20 | R-ER25 | R-ER32 | R-ER40 | R-ER50 |
| | DIN 371 | DIN 376 | | | | | | | |
| 2 | | | D2 | ● | ● | ● | ● | | |
| 3 | M2-M2,5 | M3,5-M4 | D3 | ● | ● | ● | ● | ○ | |
| 4 | M3-M3,5 | M5 | D4 | ● | ● | ● | ● | ○ | |
| 5 | M4 | M6 | D5 | ● | ● | ● | ● | ○ | |
| 6 | M4,5-M5-M6 | M8 | D6 | ● | ● | ● | ● | ● | ○ |
| 7 | M7 | M9-M10 | D7 | ● | ● | ● | ● | ○ | ○ |
| 8 | M8 | M11 | D8 | ● | ● | ● | ● | ● | ○ |
| 9 | M9 | M12 | D9 | ● | ● | ● | ● | ● | ○ |
| 10 | M10 | | D10 | ● | ● | ● | ● | ● | ○ |
| 11 | | M14 | D11 | | ○ | ● | ● | ● | ○ |
| 12 | | M16 | D12 | | ● | ● | ● | ● | ○ |
| 13 | | M16 | D13 | | ○ | ● | ● | ○ | ○ |
| 14 | | M18 | D14 | | | ● | ● | ● | ○ |
| 15 | | M18 | D15 | | | ● | ● | ○ | ○ |
| 16 | | M20 | D16 | | | ● | ● | ● | ○ |
| 18 | | M22-M24 | D18 | | | | ● | ● | ○ |
| 20 | | M27 | D20 | | | | ● | ● | ○ |
| 22 | | M30 | D22 | | | | | ● | ○ |
| 25 | | M33 | D25 | | | | | ● | ○ |
| 28 | | M36 | D28 | | | | | ● | ○ |
| 32 | | M39-42 | D32 | | | | | | ○ |

Zestawy tulejek strona: 209

**Przykład zamawiania**
**R-ER25/D3**

● Dostępne z magazynu
○ Na zapytanie

## DIN-6499



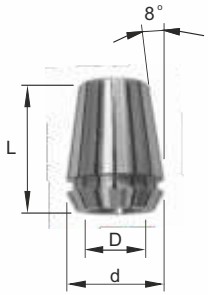

| Rozmiar | | | | | ERC16 | ERC20 | ERC25 | ERC32 | ERC40 | ERC50 |
|---|---|---|---|---|---|---|---|---|---|---|
| d / L | | | | | 17 / 27,5 | 21 / 31,5 | 26 / 34 | 33 / 40 | 41 / 46 | 52 / 60 |
| D | ⌀ | M | | INDEX | R-ERC16 | R-ERC20 | R-ERC25 | R-ERC32 | R-ERC40 | R-ERC50 |
| | | DIN 371 | DIN 376 | | | | | | | |
| 3,5 | 2,7 | M3 | M4-M4,5 | D3,5 | ○ | ○ | ● | ○ | | |
| 4,0 | 3,0 | M3,5 | | D4 | ○ | ○ | ○ | ○ | | |
| 4,5 | 3,4 | M4 | M6 | D4,5 | ○ | ○ | ● | ○ | | |
| 5,0 | 4,0 | | | D5 | ○ | ○ | ○ | ○ | | |
| 5,5 | 4,3 | | M7 | D5,5 | ○ | ○ | ○ | ○ | | |
| 6,0 | 4,9 | M4,5-M5-M6 | M8 | D6 | ● | ● | ● | ● | ○ | |
| 7,0 | 5,5 | M7 | M9-M10 | D7 | ○ | ○ | ● | ● | ○ | |
| 8,0 | 6,2 | M8 | M11 | D8 | ● | ● | ● | ● | ○ | ○ |
| 9,0 | 7,0 | M9 | M12 | D9 | | ○ | ● | ● | ○ | ○ |
| 10,0 | 8,0 | M10 | | D10 | | ● | ● | ● | ○ | ○ |
| 11,0 | 9,0 | | M14 | D11 | | | ○ | ● | ○ | ○ |
| 12,0 | 9,0 | | M16 | D12 | | | ● | ● | ● | ○ |
| 14,0 | 11,0 | | M18 | D14 | | | | ● | ○ | ○ |
| 16,0 | 12,0 | | M20 | D16 | | | | ● | ● | ○ |
| 18,0 | 14,5 | | M22-M24 | D18 | | | | | ○ | ○ |
| 20,0 | 16,0 | | M27 | D20 | | | | | ○ | ○ |
| 22,0 | 18,0 | | M30 | D22 | | | | | | ○ |
| 25,0 | 20,0 | | M33 | D25 | | | | | | ○ |
| 28,0 | 22,0 | | M36 | D28 | | | | | | ○ |
| 32,0 | 24,0 | | M39-42 | D32 | | | | | | ○ |

**Przykład zamawiania**
**R-ERC16/D3,5**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Tulejki zaciskowe z uszczelnieniem gumowym

## DIN-6499

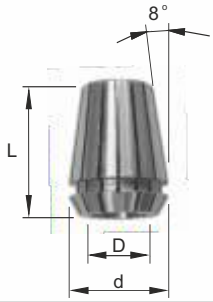



| Rozmiar | | | | ERG16 | ERG20 | ERG25 | ERG32 | ERG40 |
|---|---|---|---|---|---|---|---|---|
| d / L | | | | 17 / 27,5 | 21 / 31,5 | 26 / 34 | 33 / 40 | 41 / 46 |
| D | M | | INDEX | R-ERG16 | R-ERG20 | R-ERG25 | R-ERG32 | R-ERG40 |
| | DIN 371 | DIN 376 | | | | | | |
| 3 | M2-M2,5 | M3,5-M4 | D3 | ○ | ○ | ○ | ○ | |
| 4 | M3-M3,5 | M5 | D4 | ○ | ○ | ○ | ○ | ○ |
| 5 | M4 | M6 | D5 | ○ | ○ | ○ | ○ | ○ |
| 6 | M4,5-M5-M6 | M8 | D6 | ○ | ○ | ● | ● | ○ |
| 7 | M7 | M9-M10 | D7 | ○ | ○ | ○ | ○ | ○ |
| 8 | M8 | M11 | D8 | ○ | ○ | ● | ● | ○ |
| 9 | M9 | M12 | D9 | ○ | ○ | ○ | ○ | ○ |
| 10 | M10 | | D10 | ○ | ○ | ● | ● | ○ |
| 11 | | M14 | D11 | | ○ | ○ | ○ | ○ |
| 12 | | M16 | D12 | | ○ | ● | ● | ○ |
| 13 | | M16 | D13 | | ○ | ○ | ○ | ○ |
| 14 | | M18 | D14 | | | ● | ● | ○ |
| 15 | | M18 | D15 | | | ○ | ○ | ○ |
| 16 | | M20 | D16 | | | ● | ● | ○ |
| 18 | | M22-M24 | D18 | | | | ○ | ○ |
| 20 | | M27 | D20 | | | | ● | ○ |
| 22 | | M30 | D22 | | | | | ○ |
| 25 | | M33 | D25 | | | | | ○ |



# Tulejki zaciskowe z uszczelnieniem i zabierakiem kwadratowym do gwintowników

## DIN-6499




| Rozmiar | | | | | ERCG16 | ERCG20 | ERCG25 | ERCG32 | ERCG40 | |
|---|---|---|---|---|---|---|---|---|---|---|
| d / L | | | | | 17 / 27,5 | 21 / 31,5 | 26 / 34 | 33 / 40 | 41 / 46 | |
| D | ⌀ | M | | INDEX | R-ERCG16 | R-ERCG20 | R-ERCG25 | R-ERCG32 | R-ERCG40 | |
| | | DIN 371 | DIN 376 | | | | | | | |
| 4 | 3,0 | M3,5 | | D4 | ○ | ○ | ● | ○ | | |
| 4,5 | 3,4 | M4 | M6 | D4,5 | ○ | ○ | ○ | ○ | | |
| 5 | 4 | | | D5 | ○ | ○ | ● | ○ | | |
| 5,5 | 4,3 | | M7 | D5,5 | ○ | ○ | ○ | ○ | | |
| 6 | 4,9 | M4,5-M5-M6 | M8 | D6 | ○ | ○ | ○ | ○ | | |
| 7 | 5,5 | M7 | M9-M10 | D7 | ● | ● | ● | ● | ○ | |
| 8 | 6,2 | M8 | M11 | D8 | ○ | ○ | ● | ● | ○ | |
| 9 | 7 | M9 | M12 | D9 | ● | ● | ● | ● | ○ | |
| 10 | 8 | M10 | | D10 | | ○ | ● | ● | ○ | |
| 11 | 9 | | M14 | D11 | | ● | ● | ● | ○ | |
| 12 | 9 | | M16 | D12 | | | ○ | ● | ○ | |
| 14 | 11 | | M18 | D14 | | | ● | ● | ● | |
| 16 | 12 | | M20 | D16 | | | | ● | ○ | |
| 18 | 14,5 | | M22-M24 | D18 | | | | ● | ● | |
| 20 | 16 | | | D20 | | | | | ○ | |



**Przykład zamawiania**
**R-ERCG32/D8**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Uszczelki

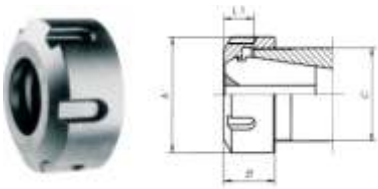
**Uszczelki do ER40 i ER50 dostępne na zapytanie**

| Uszczelki do ER20 | INDEX |
|---|---|
| 3-3.5mm | R-U20/D3 |
| 3.5-4mm | R-U20/D3,5 |
| 4-4.5mm | R-U20/D4 |
| 4.5-5mm | R-U20/D4,5 |
| 5-5.5mm | R-U20/D5 |
| 5.5-6mm | R-U20/D5,5 |
| 6-6.5mm | R-U20/D6 |
| 6.5-7mm | R-U20/D6,5 |
| 7-7.5mm | R-U20/D7 |
| 7.5-8mm | R-U20/D7,5 |
| 8-8.5mm | R-U20/D8 |
| 8.5-9mm | R-U20/D8,5 |
| 9-9.5mm | R-U20/D9 |
| 9.5-10mm | R-U20/D9,5 |
| 10-10.5mm | R-U20/D10 |
| 10.5-11mm | R-U20/D10,5 |
| 11-11.5mm | R-U20/D11 |
| 11.5-12mm | R-U20/D11,5 |
| 12-12.5mm | R-U20/D12 |

| Uszczelki do ER25 | INDEX |
|---|---|
| 3-3.5mm | R-U25/D3 |
| 3.5-4mm | R-U25/D3,5 |
| 4-4.5mm | R-U25/D4 |
| 4.5-5mm | R-U25/D4,5 |
| 5-5.5mm | R-U25/D5 |
| 5.5-6mm | R-U25/D5,5 |
| 6-6.5mm | R-U25/D6 |
| 6.5-7mm | R-U25/D6,5 |
| 7-7.5mm | R-U25/D7 |
| 7.5-8mm | R-U25/D7,5 |
| 8-8.5mm | R-U25/D8 |
| 8.5-9mm | R-U25/D8,5 |
| 9-9.5mm | R-U25/D9 |
| 9.5-10mm | R-U25/D9,5 |
| 10-10.5mm | R-U25/D10 |
| 10.5-11mm | R-U25/D10,5 |
| 11-11.5mm | R-U25/D11 |
| 11.5-12mm | R-U25/D11,5 |
| 12-12.5mm | R-U25/D12 |
| 12.5-13mm | R-U25/D12,5 |
| 13-13.5mm | R-U25/D13 |
| 13.5-14mm | R-U25/D13,5 |
| 14-14.5mm | R-U25/D14 |
| 14.5-15mm | R-U25/D14,5 |
| 15-15.5mm | R-U25/D15 |
| 15.5-16mm | R-U25/D15,5 |
| 16-16.5mm | R-U25/D16 |

## Nakrętki mocujące wg. DIN 6499 bez uszczelnienia chłodziwa

**Uwaga:** Max. Nm pokazuje maksymalny moment jakim należy dokręcać nakrętkę



| Typ | A mm | B mm | max. Nm | INDEX |
|---|---|---|---|---|
| ER11 | 19 | 11,3 | 30 | R-NT11-SE |
| ER16 | 28 | 17,5 | 70 | R-NT16-SE |
| ER20 | 34 | 19 | 100 | R-NT20-SE |

| Typ | A mm | B mm | max. Nm | INDEX |
|---|---|---|---|---|
| ER25 | 42 | 20 | 130 | R-NT25-S |
| ER40 | 63 | 25,5 | 220 | R-NT40-S |
| ER50 | 78 | 35,3 | 300 | R-NT50-S |

## Nakrętki mocujące wg. DIN 6499 do systemu wewnętrznego chłodzenia z uszczelkami

**Uwaga:** Max. Nm pokazuje maksymalny moment jakim należy dokręcać nakrętkę

| Typ | A mm | B mm | max. Nm | INDEX |
|---|---|---|---|---|
| ER16 | 28 | 22,5 | 70 | R-NTU16-SE |
| ER20 | 34 | 24,5 | 100 | R-NTU20-SE |

| Typ | A mm | B mm | max. Nm | INDEX |
|---|---|---|---|---|
| ER25 | 42 | 25 | 130 | R-NTU25-S |
| ER40 | 63 | 30,5 | 220 | R-NTU40-S |
| ER50 | 78 | 42,5 | 300 | R-NTU50-S |

**Przykład zamawiania**
**R-NTU16-SE**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Tulejki redukcyjne do oprawek OGS

**Informacje:**

· Zastosowanie tulejek redukcyjnych powoduje konieczność ograniczenia maksymalnej prędkości obrotowej do 50%

| Rozmiar | | TR20 | TR32 |
|---|---|---|---|
| d / L | | 20 / 54 | 32 / 64 |
| D | INDEX | R-TR20 | R-TR32 |
| 3 | D3 | ○ | ○ |
| 4 | D4 | ○ | ○ |
| 5 | D5 | ○ | ○ |
| 6 | D6 | ○ | ○ |
| 7 | D7 | ○ | ○ |
| 8 | D8 | ○ | ○ |
| 9 | D9 | ○ | ○ |
| 10 | D10 | ○ | ○ |
| 11 | D11 | ○ | ○ |
| 12 | D12 | ○ | ○ |
| 13 | D13 | ○ | ○ |
| 14 | D14 | ○ | ○ |
| 15 | D15 | ○ | ○ |
| 16 | D16 | ○ | ○ |
| 17 | D17 | ○ | ○ |
| 18 | D18 | ○ | ○ |
| 19 | D19 | | ○ |
| 20 | D20 | | ○ |
| 21 | D21 | | ○ |
| 22 | D22 | | ○ |
| 23 | D23 | | ○ |
| 24 | D24 | | ○ |
| 25 | D25 | | ○ |
| 26 | D26 | | ○ |
| 28 | D28 | | ○ |



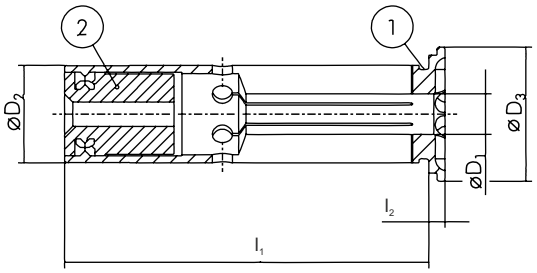


**Przykład zamawiania**
**R-TR20/D10**

● **Dostępne z magazynu**
○ **Na zapytanie**

## Podstawowe akcesoria

① Pierścień uszczelniający
② Regulowany zderzak do ustawiania długości



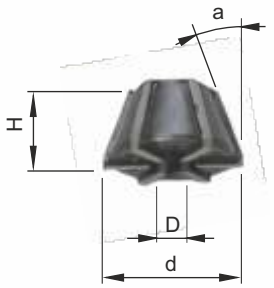

| | TRH20 | TRH20-EK |
|---|---|---|
| | | |
| Chłodzenie | | EK |
| | - | kurtynowe |

| $D_1$ | $D_2$ | $D_3$ | $l_1$ | $l_2$ | m | INDEX | R-TRH20 | R-TRH20-EK |
|---|---|---|---|---|---|---|---|---|
| 3,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D3 | ○ | ○ |
| 4,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D4 | ○ | ○ |
| 5,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D5 | ○ | ○ |
| 6,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D6 | ○ | ○ |
| 7,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D7 | ○ | ○ |
| 8,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D8 | ○ | ○ |
| 9,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D9 | ○ | ○ |
| 10,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D10 | ○ | ○ |
| 11,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D11 | ○ | ○ |
| 12,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D12 | ○ | ○ |
| 13,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D13 | ○ | ○ |
| 14,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D14 | ○ | ○ |
| 15,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D15 | ○ | ○ |
| 16,0 | 20 | 24 | 50,5 | 2,0 | 0,1 | D16 | ○ | ○ |

**Przykład zamawiania**
**R-TRH20/D16**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Tulejki elastyczne do oprawek OGN




| Rozmiar | d | H | a | D | M | INDEX | |
|---|---|---|---|---|---|---|---|
| RF15 | 15 | 12 | 13 | 2,5-4,5 | M2-M4 | R-RF15/J116 | ● |
| RF15 | 15 | 12 | 13 | 4,5-6,5 | M4-M7 | R-RF15/J117 | ● |
| RF23 | 23 | 13 | 20 | 3,5-6,5 | M5-M6 | R-RF23/J421 | ● |
| RF23 | 23 | 13 | 20 | 6,5-10,0 | M6-M12 | R-RF23/J422 | ● |
| RF32 | 32,5 | 16 | 22,5 | 4,5-10,0 | M8-M12 | R-RF32/J441 | ● |
| RF32 | 32,5 | 16 | 22,5 | 10,0-15,0 | M10-M18 | R-RF32/J445 | ● |





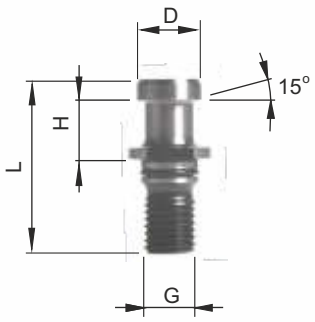
**Przykład zamawiania**
**R-RF32/J445**

● **Dostępne z magazynu**
○ **Na zapytanie**

**Informacje:**

- Zastosowanie: do oprawek z chwytem ISO wg DIN-69871
- IK - wersja z otworem centralnym

## C ISO A



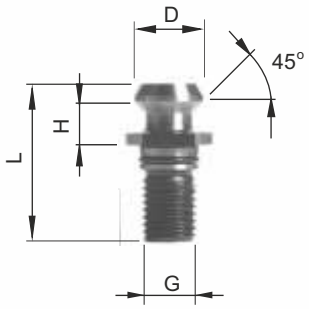

**Norma** ISO-7388/2A

| Rozmiar ISO | IK | O-RING | L | H | D | G | INDEX | |
|---|---|---|---|---|---|---|---|---|
| 30 | | | 44 | 19 | 12 | M12 | R-C-ISO-A-30 | ○ |
| 30 | ● | | 44 | 19 | 12 | M12 | R-C-ISO-A-30-IK | ○ |
| 40 | | ● | 54 | 20 | 19 | M16 | R-C-ISO-A-40 | ○ |
| 40 | ● | ● | 54 | 20 | 19 | M16 | R-C-ISO-A-40-IK | ○ |
| 50 | | ● | 74 | 25 | 28 | M24 | R-C-ISO-A-50 | ○ |
| 50 | ● | ● | 74 | 25 | 28 | M24 | R-C-ISO-A-50-IK | ○ |

**Informacje:**

- Zastosowanie: do oprawek z chwytem ISO wg DIN-69871
- IK - wersja z otworem centralnym

## C ISO B




**Norma** ISO-7388/2B

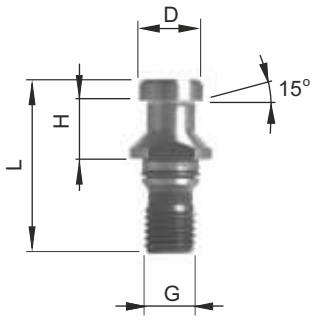
| Rozmiar ISO | IK | O-RING | L | H | D | G | INDEX | |
|---|---|---|---|---|---|---|---|---|
| 30 | | | 34,0 | 8,15 | 13,35 | M12 | R-C-ISO-B-30 | ○ |
| 30 | ● | | 34,0 | 8,15 | 13,35 | M12 | R-C-ISO-B-30-IK | ○ |
| 40 | | ● | 44,5 | 11,15 | 18,95 | M16 | R-C-ISO-B-40 | ● |
| 40 | ● | ● | 44,5 | 11,15 | 18,95 | M16 | R-C-ISO-B-40-IK | ● |
| 50 | | ● | 65,5 | 17,95 | 29,10 | M24 | R-C-ISO-B-50 | ○ |
| 50 | ● | ● | 65,5 | 17,95 | 29,10 | M24 | R-C-ISO-B-50-IK | ○ |

# Czopy do mocowania oprawek

**Informacje:**

- Zastosowanie: do oprawek z chwytem ISO wg DIN-69871
- IK - wersja z otworem centralnym

## C DIN



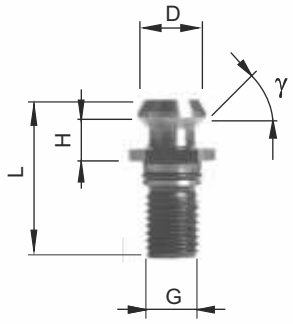

Norma: DIN-69872

| Rozmiar ISO | IK | O-RING | L | H | D | G | INDEX | |
|---|---|---|---|---|---|---|---|---|
| 30 | | | 44 | 19 | 13 | M12 | R-C-DIN-30 | ○ |
| 30 | ● | | 44 | 19 | 13 | M12 | R-C-DIN-30-IK | ○ |
| 40 | | ● | 54 | 20 | 19 | M16 | R-C-DIN-40 | ● |
| 40 | ● | ● | 54 | 20 | 19 | M16 | R-C-DIN-40-IK | ● |
| 50 | | ● | 74 | 25 | 28 | M24 | R-C-DIN-50 | ○ |
| 50 | ● | ● | 74 | 25 | 28 | M24 | R-C-DIN-50-IK | ○ |

**Informacje:**

- Zastosowanie: do oprawek z chwytem MAS-BT
- IK - wersja z otworem centralnym

## C BT




| Rozmiar MAS-BT | IK | O-RING | L | H | D | G | g | INDEX | |
|---|---|---|---|---|---|---|---|---|---|
| 30 | | | 43 | 18 | 11 | M12 | 45 | R-C-BT-30/45 | ○ |
| 30 | ● | | 43 | 18 | 11 | M12 | 45 | R-C-BT-30/45-IK | ○ |
| 30 | | | 43 | 18 | 11 | M12 | 60 | R-C-BT-30/60 | ○ |
| 30 | ● | | 43 | 18 | 11 | M12 | 60 | R-C-BT-30/60-IK | ○ |
| 40 | | ● | 60 | 28 | 15 | M16 | 45 | R-C-BT-40/45 | ● |
| 40 | ● | ● | 60 | 28 | 15 | M16 | 45 | R-C-BT-40/45-IK | ● |
| 40 | | ● | 60 | 28 | 15 | M16 | 60 | R-C-BT-40/60 | ○ |
| 40 | ● | ● | 60 | 28 | 15 | M16 | 60 | R-C-BT-40/60-IK | ○ |
| 40 | | ● | 60 | 28 | 15 | M16 | 90 | R-C-BT-40/90 | ○ |
| 40 | ● | ● | 60 | 28 | 15 | M16 | 90 | R-C-BT-40/90-IK | ○ |
| 50 | | ● | 85 | 35 | 23 | M24 | 45 | R-C-BT-50/45 | ○ |
| 50 | ● | ● | 85 | 35 | 23 | M24 | 45 | R-C-BT-50/45-IK | ○ |
| 50 | | ● | 85 | 35 | 23 | M24 | 60 | R-C-BT-50/60 | ○ |
| 50 | ● | ● | 85 | 35 | 23 | M24 | 60 | R-C-BT-50/60-IK | ○ |
| 50 | | ● | 85 | 35 | 23 | M24 | 90 | R-C-BT-50/90 | ○ |
| 50 | ● | ● | 85 | 35 | 23 | M24 | 90 | R-C-BT-50/90-IK | ○ |





**Przykład zamawiania**
**R-C-BT-40/90-IK**

● **Dostępne z magazynu**
○ **Na zapytanie**

# Zestawy narzędzi

# ZESTAWY NARZĘDZI

STRONA

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|---|---|---|---|
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| | CZB-31 HSS (M3 ÷ M12) | Zestaw narzędzi do gwintowania | 205 |
| | CZB-31 INOX (M3 ÷ M12) | Zestaw narzędzi do gwintowania | 205 |
| | CZP-31 HSS mini (M1 ÷ M2,5) | Zestaw narzędzi do gwintowania | 206 |
| | CZP-7 BIT HSS (M3 ÷ M10) | Zestaw narzędzi do gwintowania | 206 |
| | CZP-8 B HSSE OPTI OX (M3 ÷ M12) | Zestaw narzędzi do gwintowania | 207 |
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| | CZP-8 C HSSE OPTI OX (M3 ÷ M12) | Zestaw narzędzi do gwintowania | 207 |
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| | R-ER11 | Zestaw tulejek | 209 |
| | R-ER16 | Zestaw tulejek | 209 |
| | R-ER20 | Zestaw tulejek | 209 |
| | R-ER25 | Zestaw tulejek | 209 |
| | R-ER32 | Zestaw tulejek | 209 |
| | R-ER40 | Zestaw tulejek | 209 |
| | CZD-8 MSRh (M3 ÷ M12) | Zestaw sprawdzianów | 210 |
| | CZD8 MSBg (M3 ÷ M12) | Zestaw sprawdzianów | 210 |

## CZD-40 HSS M3÷M20 — INDEX Z1-040011-0000

| | Gwintowniki | Narzynki | Wzorzec zarysu gwintu | Pokrętki do gwintowników | Oprawki do narzynek | Wkrętak |
|---|---|---|---|---|---|---|
| ZAWARTOŚĆ | DIN-352 HSS dla M3÷M12<br>DIN-352/2 HSS dla M14÷M20 | DIN-EN 22 568 HSS 800 | MWGa | PBPc | PBGa | RWWe |
| | | | | | | |
| | M3 \| M4 \| M5 \| M6 \| M7, M8, M10 \| M12 \| M14 \| M16 \| M20 | Ć25 x 9: M3 \| M4 \| M5 \| M6 \| M7 \| M8 \| M10<br>Ć38 x 14: M12 \| M14 \| M16 \| M20 | 0,4 ÷ 6 mm | Nr 2 zm.: 2,5 ÷ 9 mm<br>Nr 3: 4,9 ÷ 14 mm | Ć25 x 9 mm<br>Ć38 x 14 mm | 4 x 90 mm |
| WYMIARY | 475 x 255 x 40 mm | | | | | |
| CIĘŻAR | 3,40 kg | | | | | |

## CZD-85 HSS M3÷M24 — INDEX Z1-085011-0000

| | Gwintowniki | Narzynki | Wzorzec zarysu gwintu | Pokrętki do gwintowników | Oprawki do narzynek | Pokrętka typu "T" | Wkrętak | Pierścień dystansowy |
|---|---|---|---|---|---|---|---|---|
| ZAWARTOŚĆ | DIN-352 HSS - M3÷M12<br>DIN-352/2 HSS - M14÷M24<br>DIN-2181/2 HSS - MF1 14x1,25 | DIN-EN 22 568 HSS 800 | MWGa | PBPc | PBGa | | RWWe | |
| | | | | | | | | |
| | M3, M4, M5, M6, M8, M10, M12, M14, M16, M18, M20, M22, M24, M8x1, M10x1, M12x1,25, M12x1,5, M14x1,25, M14x1,5, M16x1,5,M18x1,5, M20x1,5, M22x1,5, M24x1,5 | M3 \| M4 \| M5 \| M6 \| M8 \| M10 M12 \| M14 \| M16 \| M18 M20 \| M22 \| M24 M8x1 \| M10x1 \| M12x1,25 M12x1,5 \| M14x1,25 \| M14x1,5 M16x1,5 \| M18x1,5 \| M20x1,5 M22x1,5 \| M24x1,5 | 0,4 ÷ 6 mm | Nr 2 zm.: 2,5 ÷ 9 mm<br>Nr 3: 4,9 ÷ 14 mm | Ć25 x 9 mm<br>Ć38 x 14 mm<br>Ć45 x 18 mm<br>Ć55 x 22 mm | Nr 1 (M2 ÷ M5) | 4 x 90 mm | 38 x 2<br>45 x 2<br>55 x 3 |
| WYMIARY | 550 x 380 x 70 mm | | | | | | | |
| CIĘŻAR | 12 kg | | | | | | | |

## CZB-29 HSS M3÷M12 — INDEX Z1-029012-0000

| | Gwintowniki | Narzynki |
|---|---|---|
| ZAWARTOŚĆ | DIN-352/3 HSS | DIN-EN 22 568 HSS 800 |
| | | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10\| M12 | Ć 25 x 9: M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 |
| WYMIARY | 270 x 230 x 30 mm | |
| CIĘŻAR | 0,85 kg | |

## CZB-29W HSS M3÷M12 — INDEX Z1-029112-0000

| | Gwintowniki | Narzynki | Wiertła |
|---|---|---|---|
| ZAWARTOŚĆ | DIN-352/2 HSS | DIN-EN 22 568 HSS 800 | DIN-338 N HSS |
| | | | |
| | M3, M4, M5, M6, M8, M10, M12 | Ć 25 x 9: M3, M4, M5, M6, M8, M10, M12 | Ć 2,5;Ć 3,3;Ć 4,2; Ć 5,0;Ć 6,8;Ć 8,5;Ć 10,2 |
| WYMIARY | 340 x 290 x 40 mm | | |
| CIĘŻAR | 1,20 kg | | |





Przykład zamawiania
Z1-029112-0000
CZB-29W HSS

## CZB-31 HSS M3÷M12 — INDEX Z1-031012-0000

| | Gwintowniki | Narzynki | Pokrętka do gwintowników | Oprawka do narzynek | Wkrętak |
|---|---|---|---|---|---|
| ZAWARTOŚĆ | DIN-352/3 HSS | DIN-EN 22 568 HSS 800 | PBPc | PBGa | RWWe |
| | | | | | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 | Ć25 x 9: M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 | Nr 1,5: 2,5 ÷ 8 mm | Ć25 x 9 mm | 4 x 90 mm |
| WYMIARY | 340 x 290 x 40 mm | | | | |
| CIĘŻAR | 1,52 kg | | | | |

## CZB-31 INOX M3÷M12 — INDEX Z2-031012-0000

| | Gwintowniki | Narzynki | Pokrętka do gwintowników | Oprawka do narzynek | Wkrętak |
|---|---|---|---|---|---|
| ZAWARTOŚĆ | DIN-352/3 HSSE INOX | DIN-EN 22 568 HSSE INOX | PBPc | PBGa | RWWe |
| | | | | | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 | Ć25 x 9: M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 | Nr 1,5: 2,5 ÷ 8 mm | Ć25 x 9 mm | 4 x 90 mm |
| WYMIARY | 340 x 290 x 40 mm | | | | |
| CIĘŻAR | 1,52 kg | | | | |

## CZP-31 HSS mini M1÷M2,5 — INDEX Z1-031115-0000

| | Gwintowniki | Narzynki | Pokrętka do gwintowników i narzynek |
|---|---|---|---|
| ZAWARTOŚĆ | DIN-352/2 HSS | DIN-EN 22 568 HSS | |
| | | | |
| | M1 \| M1,1 \| M1,2 \| M1,4 \| M1,6 \| M1,8 \| M2 \| M2,2 \| M2,5 | Ć12 x 3: M1 \| M1,1 \| M1,2 \| M1,4 \| M1,6 \| M1,8 \| M2, Ć16 x 3: M2,2 \| M2,5 | |
| WYMIARY | 155 x 85 x 12 mm | | |
| CIĘŻAR | 0,17 kg | | |

## CZP-7 BIT HSS M3÷M10 — Z1-007020-0310

| Oznaczenie | M Ć $d_1$ | ⬡ | INDEX | Z1-007020 |
|---|---|---|---|---|
| CZP-7 BIT HSS | M 3 ÷ M 10 | 1/4” | 0310 | ● |

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Przykład zamawiania
Z1-007020-0310
CZP-7 BIT HSS

| CZP-8 B HSSE OPTI OX | CZP-8 R40 HSSE OPTI OX | CZB-8 C HSSE OPTI OX |
|---|---|---|
| INDEX Z2-081015-0000 | INDEX Z2-085015-0000 | INDEX Z2-082015-0000 |
| | | |
| ZAWARTOŚĆ | | |
| Gwintowniki | | |
| **DIN-371 B** ISO2 (6H) HSSE OPTI OX | **DIN-371 C** ISO2 (6H) R40 HSSE OPTI OX | **DIN-371 C** ISO2 (6H) C HSSE OPTI OX |
| | | |
| M3 \| M4 \| M5 \| M6 \| M8 \| M10 | M3 \| M4 \| M5 \| M6 \| M8 \| M10 | M3 \| M4 \| M5 \| M6 \| M8 \| M10 |
| **DIN-376 B** ISO2 (6H) HSSE OPTI OX | **DIN-376 C** ISO2 (6H) R40 HSSE OPTI OX | **DIN-376 C** ISO2 (6H) C HSSE OPTI OX |
| | | |
| M12 | M12 | M12 |
| **Wymiary opakowania** | | **Ciężar** |
| 145 x 90 x 37 mm | | 0,23 kg |

| CZW-19 HSSE INOX TiN Ø1,0 ÷ Ø10 | CZW-24 HSSE INOX TiN Ø1,0 ÷ Ø10,5 | CZW-25 HSSE INOX TiN Ø1,0 ÷ Ø13 |
|---|---|---|
| INDEX Z2-019315-0000 | INDEX Z2-024315-0000 | INDEX Z2-025315-0000 |
| | | |
| WYMIARY | | |
| 1 \| 1,5 \| 2 \| 2,5 \| 3 \| 3,5 \| 4 \| 4,5 \| 5 \| 5,5 \| 6<br>6,5 \| 7 \|7,5 \| 8 \| 8,5 \| 9 \| 9,5 \| 10 | 1 \| 1,5 \| 2 \| 2,5 \| 3 \| 3,54 \| 4,5 \| 5 \| 5,5 \| 6<br>6,5 \| 7 \|7,5 \| 8 \| 8,5 \| 9 \| 9,5 \| 10<br>**+**<br>**wymiary pod gwint**<br>3,3 \| 4,2 \| 6,8 \| 10,2 \|10,5 | 1 \| 1,5 \| 2 \| 2,5 \| 3 \| 3,5 \| 4 \| 4,5 \| 5 \| 5,5 \| 6<br>6,5 \| 7 \|7,5 \| 8 \| 8,5 \| 9 \| 9,5 \| 10 \| 10,5 \| 11<br>11,5 \| 12 \| 12,5 \| 13 |

**Przykład zamawiania**

**Z2-019315-0000**
**CZW-19 HSSE INOX TiN Ø1÷Ø10**

## CZP-6 DIN-335-C Ø6,3 ÷ Ø25 — INDEX Z2-065015-0000

| | |
|---|---|
| ZAWARTOŚĆ | **Pogłębiacze** |
| | DIN-335-C HSSE Co8 TiCN |
| | |
| | 6,3 \| 10,4 \| 16,5 \| 20,5 \| 25 |
| WYMIARY | 125 x 75 mm |
| CIĘŻAR | 0,20 kg |

## WDG M3÷M12 — INDEX W9-900002-0000

| | |
|---|---|
| ZAWARTOŚĆ | **Wiertła** |
| | WDG |
| | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 |
| WYMIARY | 290 x 340 x 40 mm |
| CIĘŻAR | 1,225 kg |





Przykład zamawiania
Z1-031012-0000

| R-ER11 | R-ER16 | R-ER20 |
|---|---|---|
| INDEX: R-ER11-13BOX | INDEX: R-ER16-10BOX | INDEX: R-ER20-12BOX |

| | | |
|---|---|---|
| Plastikowe pudełko<br>D.1÷7 x 0,5 mm | Plastikowe pudełko<br>D.1÷10 x 1 mm | Plastikowe pudełko<br>D.2÷13 x 1 mm |

| R-ER25 | R-ER32 | R-ER40 |
|---|---|---|
| INDEX: R-ER25-15BOX | INDEX: R-ER32-18BOX | INDEX: R-ER40-23BOX |

| | | |
|---|---|---|
| Aluminiowe pudełko<br>D.2÷16 x 1 mm | Aluminiowe pudełko<br>D.3÷20 x 1 mm | Aluminiowe pudełko<br>D.4÷26 x 1 mm |

## CZD-8 MSRh M3÷M12

**Index: Z3-200120-0312**

**Wymiar sprawdzianu według normy ISO 1502**

| | |
|---|---|
| ZAWARTOŚĆ | **Zestaw sprawdzianów** |
| | MSRh 6g |
| | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 |
| WYMIARY | 145 x 145 x 35 mm |
| CIĘŻAR | 0,542 kg |

## CZD-8 MSBg M3÷M12

**Index: Z3-302161-0312**

**Wymiar sprawdzianu według normy ISO 1502**

| | |
|---|---|
| ZAWARTOŚĆ | **Zestaw sprawdzianów** |
| | MSBg 6H |
| | |
| | M3 \| M4 \| M5 \| M6 \| M8 \| M10 \| M12 |
| WYMIARY | 290 x 175 x 35 mm |
| CIĘŻAR | 0,600 kg |





**Przykład zamawiania**

**Z3-302161-0312**
**CZD-8 MSBg M3÷12**

# Akcesoria i maszyny do gwintowania

STRONA

## STRONY KATALOGOWE 213-220


| | | |
|---|---|---|
| | Środki ułatwiające gwintowanie | 213 |
| | Pokrętki, przedłużacze, oprawki | 214 |
| | Przedłużacze maszynowe do gwintowników | 215-217 |
| | Pneumatyczne maszyny do gwintowania | 218-219 |
| | Ostrzarki PMW do wierteł | 220 |

## TEREBOR

### Preparat do gwintowania

**Zastosowanie:** do gwintowania stali trudnoobrabialnych, a w szczególności:
- stale nierdzewne,
- stale kwasoodporne,
- stale o podwyższonej wytrzymałości na rozciąganie

| POJEMNOŚĆ | INDEX |
|---|---|
| 250 ml | T0-100110-0250 |
| 500 ml | T0-100110-0500 |
| 5 l | T0-100110-5000 |

## VARIOCUT B 40

### Bezchlorowy olej do obróbki skrawaniem

Za**stosowanie:** do gwintowania stali węglowych i niskostopowych

| POJEMNOŚĆ | INDEX |
|---|---|
| 250 ml | T0-100340-0250 |
| 500 ml | T0-100340-0500 |
| 5 l | T0-100340-5000 |
| 200 l* | Na zapytanie |

*Do zastosowania w automatach tokarskich

## CIMTAP

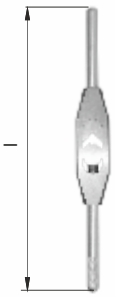
### Pasta do gwintowania

**Zastosowanie:** do gwintowania ręcznego i maszynowego metali żelaznych i nieżelaznych

| POJEMNOŚĆ | INDEX |
|---|---|
| 1 l | T0-100410-1000 |

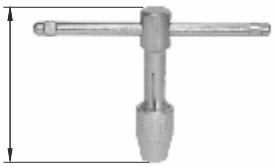
## Pokrętki do gwintowników

| Oznaczenie | □ | l | M | | INDEX |
|---|---|---|---|---|---|
| | | | ISO-529 | DIN-352 | |
| PBPc/m - 0 | 2 ÷ 4,5 | 125 | M1 ÷ M5 | M1 ÷ M4 | V0-303000-0204 |
| PBPc/m - 1 | 3,15 ÷ 6,3 | 205 | M4 ÷ M8 | M3 ÷ M11 | V0-303010-0306 |
| PBPc/m - 1,5 | 2,5 ÷ 7,1 | 205 | M3 ÷ M9 | M3 ÷ M12 | V0-303015-0207 |
| PBPc/m - 2 | 3,55 ÷ 9 | 305 | M4,5 ÷ M14 | M4,5 ÷ M16 | V0-303020-0309 |
| PBPc/m - 4 | 5,6 ÷ 16 | 395 | M7 ÷ M30 | M11 ÷ M27 | V0-303040-0516 |




## Pokrętki typu "t" do gwintowników

| Oznaczenie | □ | l | M | | INDEX |
|---|---|---|---|---|---|
| | | | ISO-529 | DIN-352 | |
| PT Nr 1 | 2,0 ÷ 4,0 | 55 | M1 ÷ M5 | M1 ÷ M4 | V0-310000-0205 |
| PT Nr 1D | 2,0 ÷ 4,0 | 200 | M1 ÷ M5 | M1 ÷ M4 | V0-311000-0205 |
| PT Nr 2 | 4,0 ÷ 7,1 | 90 | M6 ÷ M12 | M5 ÷ M12 | V0-320000-0612 |
| PT Nr 2D | 4,0 ÷ 7,1 | 250 | M6 ÷ M12 | M5 ÷ M12 | V0-321000-0612 |
| PT Nr 3 | 9,0 ÷ 11,2 | 110 | M14 ÷ M20 | M14 ÷ M18 | V0-330000-1420 |

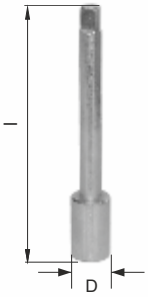


## Pokrętki z grzechotką do gwintowników

| Oznaczenie | l | M DIN-352 | INDEX |
|---|---|---|---|
| PG Nr 1 | 85 | M3 ÷ M6 | V0-310500-0306 |
| PG Nr 1 D | 250 | M3 ÷ M6 | V0-311500-0306 |
| PG Nr 2 | 110 | M6 ÷ M12 | V0-320500-0612 |
| PG Nr 2 D | 300 | M6 ÷ M12 | V0-321500-0612 |

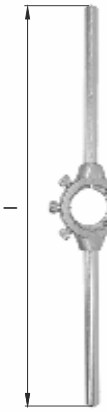
## Przedłużacze do gwintowników

| Oznaczenie | □ | l | D | M | | INDEX |
|---|---|---|---|---|---|---|
| | | | | ISO-529 | DIN-352 | |
| PBNa - 5 | 5,0 | 110 | 11 | M6 | | V0-200000-0050 |
| PBNa - 6,3 | 6,3 | 120 | 14 | M8, M11 | | V0-200000-0063 |
| PBNa - 7,1 | 7,1 | 125 | 15 | M9, M12 | | V0-200000-0071 |
| PBNa - 8 | 8,0 | 130 | 17 | M10 | | V0-200000-0080 |
| PBNa - 9 | 9,0 | 130 | 19 | M14 | M14, M16 | V0-200000-0090 |
| PBNa - 10 | 10,0 | 140 | 21 | M16 | | V0-200000-0100 |




## Oprawki do narzynek

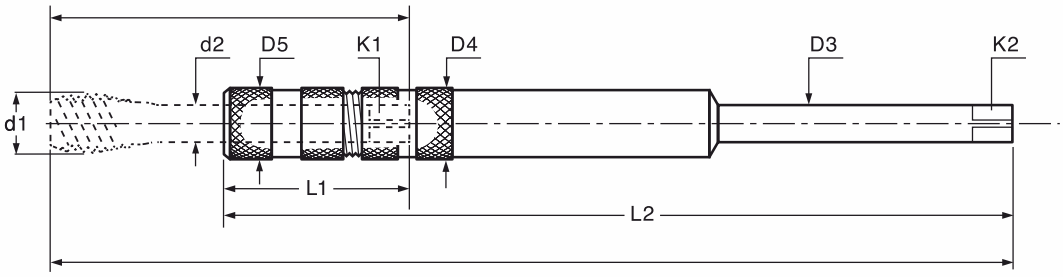
| Oznaczenie | l | M | INDEX |
|---|---|---|---|
| PBGa/m - 16x5 | 160 | M1 ÷ M2,5 | V0-103000-1605 |
| PBGa/m - 20x5 | 185 | M3 ÷ M6 | V0-103000-2005 |
| PBGa/m - 25x9 | 220 | M7 ÷ M9 | V0-103000-2509 |
| PBGa/m - 30x11 | 260 | M10 ÷ M11 | V0-103000-3011 |
| PBGa/m - 38x14 | 310 | M12 ÷ M14 | V0-103000-3814 |
| PBGa/m - 45x18 | 400 | M16 ÷ M20 | V0-103000-4518 |
| PBGa/m - 55x22 | 500 | M22 ÷ M24 | V0-103000-5522 |
| PBGa/m - 65x25 | 560 | M27 ÷ M36 | V0-103000-6525 |






**Przykład zamawiania**

**V0-103000-1605**
**PBGa/m-16x5**



## Krótkie

| Oznaczenie | $D_1$ | | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| | DIN-371 | DIN-376 | | | | | | | | |
| PBNm 2,8/2,1-6/4,9-130 | M2 - M2,6 | M4 | 2,8 | 6 | 6,1 | 22 | 130 | 2,1 | 4,9 | V0-211130-0206 |
| PBNm 3,5/2,7-6/4,9-130 | M3 | M4,5 - M5 | 3,5 | 6 | 7,5 | 23 | 130 | 2,7 | 4,9 | V0-211130-0306 |
| PBNm 4,5/3,4-6/4,9-130 | M4 | M6 | 4,5 | 6 | 8,4 | 23 | 130 | 3,4 | 4,9 | V0-211130-0406 |
| PBNm 6/4,9-7/5,5-130 | M4,5 - M6 | M8 | 6 | 7 | 12,1 | 26 | 130 | 4,9 | 5,5 | V0-211130-0607 |
| PBNm 7/5,5-7/5,5-130 | M7 | M9 - M10 | 7 | 7 | 12,1 | 26 | 130 | 5,5 | 5,5 | V0-211130-0707 |
| PBNm 8/6,2-8/6,2-130 | M8 | M11 | 8 | 8 | 13 | 30 | 130 | 6,2 | 6,2 | V0-211130-0808 |
| PBNm 9/7-9/7-130 | M9 | M12 | 9 | 9 | 15 | 31 | 130 | 7 | 7 | V0-211130-0909 |
| PBNm 10/8-10/8-130 | M10 | - | 10 | 10 | 15 | 33 | 130 | 8 | 8 | V0-211130-1010 |
| PBNm 11/9-11/9-130 | | M14 | 11 | 11 | 18 | 36 | 130 | 9 | 9 | V0-211130-1111 |
| PBNm 12/9-12/9-130 | | M16 | 12 | 12 | 18 | 36 | 130 | 9 | 9 | V0-211130-1212 |
| PBNm 14/11-14/11-200 | | M18 | 14 | 14 | 22 | 42 | 200 | 11 | 11 | V0-211200-1414 |
| PBNm 16/12-16/12-200 | | M20 | 16 | 16 | 22 | 42 | 200 | 12 | 12 | V0-211200-1616 |
| PBNm 18/14,5-18/14,5-200 | | M22/M24 | 18 | 18 | 26 | 43 | 200 | 14,5 | 14,5 | V0-211200-1818 |
| PBNm 20/16-20/16-200 | | M27 | 20 | 20 | 28 | 48 | 200 | 16 | 16 | V0-211200-2020 |

## Długie

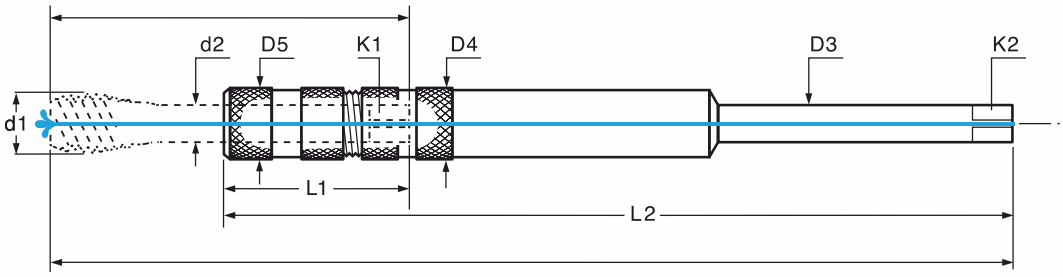
| Oznaczenie | $D_1$ | | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| | DIN-371 | DIN-376 | | | | | | | | |
| PBNm 2,8/2,1-6/4,9-230 | M2-M2,6 | M4 | 2,8 | 6 | 6,1 | 22 | 230 | 2,1 | 4,9 | V0-211230-0206 |
| PBNm 3,5/2,7-6/4,9-230 | M3 | M4,5-M5 | 3,5 | 6 | 7,5 | 23 | 230 | 2,7 | 4,9 | V0-211230-0306 |
| PBNm 4,5/3,4-6/4,9-230 | M4 | M6 | 4,5 | 6 | 8,4 | 23 | 230 | 3,4 | 4,9 | V0-211230-0406 |
| PBNm 6/4,9-7/5,5-230 | M4,5 - M6 | M8 | 6 | 7 | 12,1 | 26 | 230 | 4,9 | 5,5 | V0-211230-0607 |
| PBNm 7/5,5-7/5,5-230 | M7 | M9 - M10 | 7 | 7 | 12,1 | 26 | 230 | 5,5 | 5,5 | V0-211230-0707 |
| PBNm 8/6,2-8/6,2-230 | M8 | M11 | 8 | 8 | 13 | 30 | 230 | 6,2 | 6,2 | V0-211230-0808 |
| PBNm 9/7-9/7-230 | M9 | M12 | 9 | 9 | 15 | 31 | 230 | 7 | 7 | V0-211230-0909 |
| PBNm 10/8-10/8-230 | M10 | - | 10 | 10 | 15 | 33 | 230 | 8 | 8 | V0-211230-1010 |
| PBNm 11/9-11/9-230 | | M14 | 11 | 11 | 18 | 36 | 230 | 9 | 9 | V0-211230-1111 |
| PBNm 12/9-12/9-230 | | M16 | 12 | 12 | 18 | 36 | 230 | 9 | 9 | V0-211230-1212 |
| PBNm 14/11-14/11-330 | | M18 | 14 | 14 | 22 | 42 | 330 | 11 | 11 | V0-211330-1414 |
| PBNm 16/12-16/12-330 | | M20 | 16 | 16 | 22 | 42 | 330 | 12 | 12 | V0-211330-1616 |
| PBNm 18/14,5-18/14,5-330 | | M22/M24 | 18 | 18 | 26 | 43 | 330 | 14,5 | 14,5 | V0-211330-1818 |
| PBNm 20/16-20/16-330 | | M27 | 20 | 20 | 28 | 48 | 330 | 16 | 16 | V0-211330-2020 |



**Przykład zamawiania**

**V0-211230-1212**
**PBNm 12/9-12/9-230**

## IK



### Krótkie

| Oznaczenie | $D_1$ DIN-371 | $D_1$ DIN-376 | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| PBNm 2,8/2,1-6/4,9-130 | M2 - M2,6 | M4 | 2,8 | 6 | 6,1 | 22 | 130 | 2,1 | 4,9 | V0-211135-0206 |
| PBNm 3,5/2,7-6/4,9-130 | M3 | M4,5 - M5 | 3,5 | 6 | 7,5 | 23 | 130 | 2,7 | 4,9 | V0-211135-0306 |
| PBNm 4,5/3,4-6/4,9-130 | M4 | M6 | 4,5 | 6 | 8,4 | 23 | 130 | 3,4 | 4,9 | V0-211135-0406 |
| PBNm 6/4,9-7/5,5-130 | M4,5 - M6 | M8 | 6 | 7 | 12,1 | 26 | 130 | 4,9 | 5,5 | V0-211135-0607 |
| PBNm 7/5,5-7/5,5-130 | M7 | M9 - M10 | 7 | 7 | 12,1 | 26 | 130 | 5,5 | 5,5 | V0-211135-0707 |
| PBNm 8/6,2-8/6,2-130 | M8 | M11 | 8 | 8 | 13 | 30 | 130 | 6,2 | 6,2 | V0-211135-0808 |
| PBNm 9/7-9/7-130 | M9 | M12 | 9 | 9 | 15 | 31 | 130 | 7 | 7 | V0-211135-0909 |
| PBNm 10/8-10/8-130 | M10 | - | 10 | 10 | 15 | 33 | 130 | 8 | 8 | V0-211135-1010 |
| PBNm 11/9-11/9-130 | | M14 | 11 | 11 | 18 | 36 | 130 | 9 | 9 | V0-211135-1111 |
| PBNm 12/9-12/9-200 | | M16 | 12 | 12 | 18 | 36 | 130 | 9 | 9 | V0-211135-1212 |
| PBNm 14/11-14/11-200 | | M18 | 14 | 14 | 22 | 42 | 200 | 11 | 11 | V0-211205-1414 |
| PBNm 16/12-16/12-200 | | M20 | 16 | 16 | 22 | 42 | 200 | 12 | 12 | V0-211205-1616 |
| PBNm 18/14,5-18/14,5-200 | | M22/M24 | 18 | 18 | 26 | 43 | 200 | 14,5 | 14,5 | V0-211205-1818 |
| PBNm 20/16-20/16-200 | | M27 | 20 | 20 | 28 | 48 | 200 | 16 | 16 | V0-211205-2020 |

### Długie

| Oznaczenie | $D_1$ DIN-371 | $D_1$ DIN-376 | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| PBNm 2,8/2,1-6/4,9-230 | M2-M2,6 | M4 | 2,8 | 6 | 6,1 | 22 | 130 | 2,1 | 4,9 | V0-211235-0206 |
| PBNm 3,5/2,7-6/4,9-230 | M3 | M4,5-M5 | 3,5 | 6 | 7,5 | 23 | 130 | 2,7 | 4,9 | V0-211235-0306 |
| PBNm 4,5/3,4-6/4,9-230 | M4 | M6 | 4,5 | 6 | 8,4 | 23 | 130 | 3,4 | 4,9 | V0-211235-0406 |
| PBNm 6/4,9-7/5,5-230 | M4,5 - M6 | M8 | 6 | 7 | 12,1 | 26 | 230 | 4,9 | 5,5 | V0-211235-0607 |
| PBNm 7/5,5-7/5,5-230 | M7 | M9 - M10 | 7 | 7 | 12,1 | 26 | 230 | 5,5 | 5,5 | V0-211235-0707 |
| PBNm 8/6,2-8/6,2-230 | M8 | M11 | 8 | 8 | 13 | 30 | 230 | 6,2 | 6,2 | V0-211235-0808 |
| PBNm 9/7-9/7-230 | M9 | M12 | 9 | 9 | 15 | 31 | 230 | 7 | 7 | V0-211235-0909 |
| PBNm 10/8-10/8-230 | M10 | - | 10 | 10 | 15 | 33 | 230 | 8 | 8 | V0-211235-1010 |
| PBNm 11/9-11/9-230 | | M14 | 11 | 11 | 18 | 36 | 230 | 9 | 9 | V0-211235-1111 |
| PBNm 12/9-12/9-230 | | M16 | 12 | 12 | 18 | 36 | 230 | 9 | 9 | V0-211235-1212 |
| PBNm 14/11-14/11-330 | | M18 | 14 | 14 | 22 | 42 | 330 | 11 | 11 | V0-211335-1414 |
| PBNm 16/12-16/12-330 | | M20 | 16 | 16 | 22 | 42 | 330 | 12 | 12 | V0-211335-1616 |
| PBNm 18/14,5-18/14,5-330 | | M22/M24 | 18 | 18 | 26 | 43 | 330 | 14,5 | 14,5 | V0-211335-1818 |
| PBNm 20/16-20/16-330 | | M27 | 20 | 20 | 28 | 48 | 330 | 16 | 16 | V0-211335-2020 |

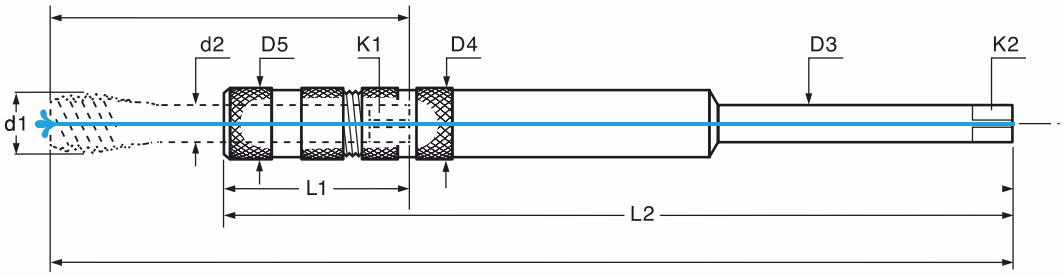




**Przykład zamawiania**

**V0-211235-1212**
**PBNm 12/9-12/9-230-IK**

## IK-H6



### Krótkie

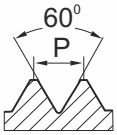
| Oznaczenie | $D_1$ DIN-371 | $D_1$ DIN-376 | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| PBNm 2,8/2,1-6/4,9-130 | M2 - M2,6 | M4 | 2,8 | 6 | 6,1 | 22 | 130 | 2,1 | 4,9 | V0-211136-0206 |
| PBNm 3,5/2,7-6/4,9-130 | M3 | M4,5 - M5 | 3,5 | 6 | 7,5 | 23 | 130 | 2,7 | 4,9 | V0-211136-0306 |
| PBNm 4,5/3,4-6/4,9-130 | M4 | M6 | 4,5 | 6 | 8,4 | 23 | 130 | 3,4 | 4,9 | V0-211136-0406 |
| PBNm 6/4,9-7/5,5-130 | M4,5 - M6 | M8 | 6 | 8 | 12,1 | 26 | 130 | 4,9 | 6,2 | V0-211136-0607 |
| PBNm 7/5,5-7/5,5-130 | M7 | M9 - M10 | 7 | 8 | 12,1 | 26 | 130 | 5,5 | 6,2 | V0-211136-0707 |
| PBNm 8/6,2-8/6,2-130 | M8 | M11 | 8 | 8 | 13 | 30 | 130 | 6,2 | 6,2 | V0-211136-0808 |
| PBNm 9/7-9/7-130 | M9 | M12 | 9 | 9 | 15 | 31 | 130 | 7 | 8 | V0-211136-0909 |
| PBNm 10/8-10/8-130 | M10 | - | 10 | 10 | 15 | 33 | 130 | 8 | 8 | V0-211136-1010 |
| PBNm 11/9-11/9-130 | | M14 | 11 | 12 | 18 | 36 | 130 | 9 | 9 | V0-211136-1111 |
| PBNm 12/9-12/9-200 | | M16 | 12 | 12 | 18 | 36 | 130 | 9 | 9 | V0-211136-1212 |
| PBNm 14/11-14/11-200 | | M18 | 14 | 14 | 22 | 42 | 200 | 11 | 11 | V0-211206-1414 |
| PBNm 16/12-16/12-200 | | M20 | 16 | 16 | 22 | 42 | 200 | 12 | 12 | V0-211206-1616 |
| PBNm 18/14,5-18/14,5-200 | | M22M24 | 18 | 18 | 26 | 43 | 200 | 14,5 | 14,5 | V0-211206-1818 |
| PBNm 20/16-20/16-200 | | M27 | 20 | 20 | 28 | 48 | 200 | 16 | 16 | V0-211206-2020 |

### Długie

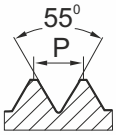
| Oznaczenie | $D_1$ DIN-371 | $D_1$ DIN-376 | $D_2$ | $D_3$ | $D_4$=$D_5$ | $L_1$ | $L_2$ | $a_1$ | $a_2$ | INDEX |
|---|---|---|---|---|---|---|---|---|---|---|
| PBNm 6/4,9-7/5,5-230 | M4,5 - M6 | M8 | 6 | 8 | 12,1 | 26 | 230 | 4,9 | 6,2 | V0-211236-0607 |
| PBNm 7/5,5-7/5,5-230 | M7 | M9 - M10 | 7 | 8 | 12,1 | 26 | 230 | 5,5 | 6,2 | V0-211236-0707 |
| PBNm 8/6,2-8/6,2-230 | M8 | M11 | 8 | 8 | 13 | 30 | 230 | 6,2 | 6,2 | V0-211236-0808 |
| PBNm 9/7-9/7-230 | M9 | M12 | 9 | 10 | 15 | 31 | 230 | 7 | 8 | V0-211236-0909 |
| PBNm 10/8-10/8-230 | M10 | - | 10 | 10 | 15 | 33 | 230 | 8 | 8 | V0-211236-1010 |
| PBNm 11/9-11/9-230 | | M14 | 11 | 12 | 18 | 36 | 230 | 9 | 9 | V0-211236-1111 |
| PBNm 12/9-12/9-230 | | M16 | 12 | 12 | 18 | 36 | 230 | 9 | 9 | V0-211236-1212 |
| PBNm 14/11-14/11-330 | | M18 | 14 | 14 | 22 | 42 | 330 | 11 | 11 | V0-211336-1414 |
| PBNm 16/12-16/12-330 | | M20 | 16 | 16 | 22 | 42 | 330 | 12 | 12 | V0-211336-1616 |
| PBNm 18/14,5-18/14,5-330 | | M22/M24 | 18 | 18 | 26 | 43 | 330 | 14,5 | 14,5 | V0-211336-1818 |
| PBNm 20/16-20/16-330 | | M27 | 20 | 20 | 28 | 48 | 330 | 16 | 16 | V0-211336-2020 |

## Wzorce zarysu gwintu

**Gwint metryczny ISO DIN-13**




**Gwint calowy Whitwortha BS-84:1956**



| Oznaczenie | Zakres skoków | Ilość listków | INDEX |
|---|---|---|---|
| 60° | 0,4 ÷ 7 mm | 20 | V0-600000-0000 |
| 55° | 62 ÷ 4 1"/P (TPI) | 28 | V0-550000-0000 |
| 55°/60° | 62 ÷ 4 1"/P (TPI)<br>0,25 ÷ 7 mm | 58 | V0-556000-0000 |



**Przykład zamawiania**

**V0-211236-1212**
**PBNm 12/9-12/9-230-IK-6h**

| MODEL | MPD-08/II | MPD-12/II | MPD-16/II | MPD-22/II | MPD-27/II |
|---|---|---|---|---|---|
| INDEX | P0-130000-10208 | P0-130000-10312 | P0-130000-10316 | P0-130000-10322 | P0-130000-10327 |
| Zakres gwintowania | M2-M8 | M3-M12 | M3-M16 | M3-M22 | M3-M27 |
| n [1/min] | 700 | 400 | 300 | 120/300 | 70/220 |
| Pole robocze | Rmax=1900mm Rmin=200mm | | | | |
| Masa [kg] | 23 | 23 | 27 | 39 | 39 |
| Max. moment obr. [Nm] | 12 | 32 | 52 | 100 | 160 |
| Wydatek powietrza [l/min] | 840 | 840 | 840 | 935 | 935 |
| Zabieraki w dostawie | FZS19/... M2,3,4,5,6,8 | FZS19/... M4,5,6,8,10,12 | FZS31/... M6,8,10,12,14,16 | FZS31/... M6,8,10,12,16,20 | FZS31/... M8,10,12,16,20,24 |
| Zabieraki w opcji | - | FZS19/M3 | FZS19/...M3,4,5 +FR31/19 | FZS19/...M3,4,5 +FR-31/19; FZS31/...M14,18,22 | FZS19/...M3,4,5 +FR-31/19; FZS31/...M6,14,18,22,27 |

Wyposażenie standardowe

- wrzeciono z napędem pneumatycznym
- podwójne sztywne ramię
- kolumna mocująca
- system przygotowania powietrza
- promieniowy wysięgnik
- sześć zabieraków do gwintowników

**Pełna oferta zabieraków FZS oraz redukcji FR na stronie 188, 190**



**Przykład zamawiania**

**P0-130000-10208**
**MPD-08/II**

## Głowica uchylna do mocowania wrzeciona z płynną regulacją kąta 0-90°

| MODEL | Masa | INDEX |
|---|---|---|
| MGO-08-90° | 1,1 kg | P0-133000-00890 |
| MGO-12-90° | 1,1 kg | P0-133000-01290 |
| MGO-16-90° | 1,5 kg | P0-133000-01690 |
| MGO-22-90° | 1,5 kg | P0-133000-02290 |
| MGO-27-90° | 1,5 kg | P0-133000-02790 |

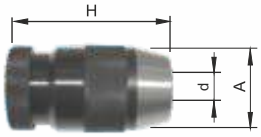
## Podstawa magnetyczna do maszyn

| MODEL | Siła mocująca | Wymiary | Do maszyny | Masa | INDEX |
|---|---|---|---|---|---|
| MMP-300 | 300 kg | 150x90x93 | MPD-08,12,16 | 8,6 kg | P0-133000-00300 |
| MMP-600 | 600 kg | 224x115x120 | MPD-22,27 | 21 kg | P0-133000-00600 |

## Adaptery do uchwytu wiertarskiego

| MODEL | d | Stożek | A | INDEX |
|---|---|---|---|---|
| FZA19/JT2 | 19 | JT2 | 30 | R-FZA19/JT2 |
| FZA19/JT6 | 19 | JT6 | 30 | R-FZA19/JT6 |
| FZA31/JT6 | 31 | JT6 | 48 | R-FZA31/JT6 |

## Uchwyty wiertarskie




| MODEL | Stożek | A | H | d | INDEX |
|---|---|---|---|---|---|
| OW-JT2/D8 | JT2 | 38 | 68 | 0-8 | R-OW-JT2/D8 |
| OW-JT6/D13 | JT6 | 48 | 90 | 0-13 | R-OW-JT6/D13 |

## Pneumatyczne gwinciarki ręczne

**MPP-12-1**

**Z głowicą elastyczną**

**MPP-12-3**

**Z oprawką na zabieraki FZS**

| MODEL | M | n [1/min] | Stożek | Wydatek powietrza | Średnica przewodu zasil. | Masa | Wyposażenie | INDEX |
|---|---|---|---|---|---|---|---|---|
| MPP-12-1 | M2-M12 | 250 | B12 | 400 l/min | 9,5 mm | 2 kg | Rękojeść | P0-136000-00121 |
| MPP-12-3 | M2-M12 | 250 | B12 | 400 l/min | 9,5 mm | 1,5 kg | Rękojeść + FZS19/...M3,4,5,6,8,10 | P0-136000-00123 |



**Przykład zamawiania**

**P0-136000-00121**
**MPP-12-1**

## PMW-1300 Ć2mm¸ Ć13mm

**INDEX: PMW-1300**

**Wymiary**: 305x172x180 (mm)

**Zakres średnic wierteł:** Ć2¸ Ć13
**Zakres kątów wierzchołkowych:** 85°-140°
**Zasilanie:** 220¸ 230 V 50Hz
**Moc silnika:** 90 W
**Prędkość obrotu tarczy szlifierskiej:** 6000 obr/min
**Waga:** 10 kg
**Ściernica:** B200
**Tulejki:** ER-20

**Akcesoria w zestawie:**
Tulejki ER20 Ć2,5¸ Ć13 - 12 szt., Ściernica B200 - 1 szt.,
Klucz imbusowy 4mm i 6mm po 1 szt.

## PMW-2000 Ć3mm¸ Ć20mm

**INDEX: PMW-2000**

**Wymiary**: 480x260x240 (mm)

**Zakres średnic wierteł:** Ć3¸ Ć20
**Zakres kątów wierzchołkowych:** 85°-140°
**Zasilanie:** 220¸ 230 V 50Hz
**Moc silnika:** 450 W
**Prędkość obrotu tarczy szlifierskiej:** 4300 obr/min
**Waga:** 21 kg
**Ściernica:** CBN200
**Tulejki:** ER-25

**Akcesoria w zestawie:**
Tulejki ER25 Ć3¸ Ć20 - 18 szt., Ściernica CBN#200 - 1 szt.,
Klucz imbusowy 4mm i 6mm po 1 szt.

## PMW-3000 Ć12mm¸ Ć26mm

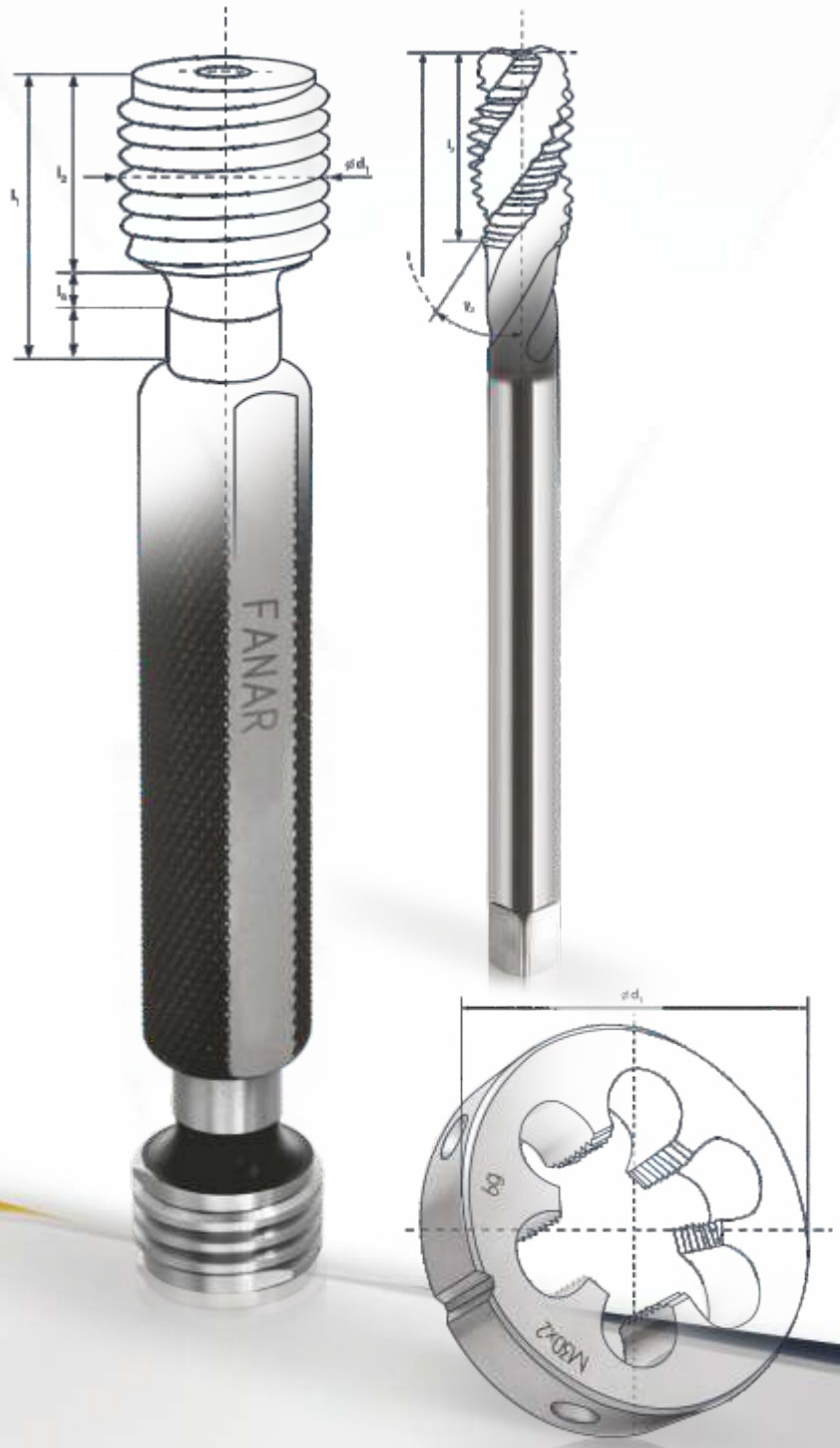
**INDEX: PMW-3000**

**Wymiary**: 470x260x235 (mm)

**Zakres średnic wierteł:** Ć12¸ Ć26, opcjonalnie Ć8¸ Ć30
**Zakres kątów wierzchołkowych:** 85°-140°
**Zasilanie:** 220¸ 230 V 50Hz
**Moc silnika:** 450 W
**Prędkość obrotu tarczy szlifierskiej:** 4300 obr/min
**Waga:** 25 kg
**Ściernica:** B150
**Tulejki:** ER-40

**Akcesoria w zestawie:**
Tulejki ER40 Ć12¸ Ć26 - 15 szt., Ściernica B150 - 1 szt.,
Klucz imbusowy 4mm i 6mm po 1 szt.

# Informacje techniczne



## SPIS TREŚCI

223-277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|---|---|---|
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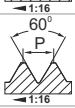
| | 12. Spis indeksów | 283-284 |

# 1. RODZAJE GWINTÓW

| | | |
|---|---|---|
| **M** | | Gwint metryczny zwykły ISO DIN-13 |
| **MF** | | Gwint metryczny drobnozwojny ISO DIN-13<br>(symbol używany tylko w katalogach dla odróżnienia od gwintów metrycznych zwykłych) |
| **UNC** | | Gwint amerykański zunifikowany ANSI B-1.1 |
| **UNF** | | Gwint amerykański zunifikowany drobnozwojny ANSI B-1.1 |
| **UNEF** | | Gwint amerykański zunifikowany ekstra drobnozwojny ANSI B-1.1 |
| **G** | | Gwint rurowy walcowy Whitwortha DIN-ISO 228<br>(identyczny z BSP) |
| **Rp** | | Gwint rurowy walcowy Whitwortha wewnętrzny<br>PN-ISO 7/1 i DIN EN 10226-1 (identyczny z BSPP) |
| **Rc** | | Gwint rurowy stożkowy Whitwortha wewnętrzny<br>PN-ISO 7/1, DIN EN 10226-2 (identyczny z BSPT) |
| **NPT** | | Gwint amerykański rurowy stożkowy<br>ze szczelnością nie uzyskiwaną na gwincie ANSI B-1.20.1 |
| **NPTF** |  | Gwint amerykański rurowy stożkowy  ze szczelnością uzyskiwaną na gwincie<br>ANSI B 1.20.4 |
| **NPSF** | | Gwint amerykański rurowy stożkowy  ze szczelnością uzyskiwaną na gwincie<br>ANSI B 1.20.3 |
| **BSW** | | Gwint calowy zwykły Whitwortha BS-84<br>(dawniej W) |
| **BSF** | | Gwint calowy drobnozwojny Whitwortha BS-84 |
| **EG M** | | Gwint do wkładek gwintowych V-Coil |
| **EG UNC** | | Gwint do wkładek gwintowych V-Coil |
| **EG UNF** | | Gwint do wkładek gwintowych V-Coil |
| **Pg** | | Gwint do rurek instalacyjnych stalowych DIN-40430<br>(pancerny P) |
| **Tr** | | Gwint trapezowy symetryczny DIN-103 |
| **R** | | Gwint rurowy stożkowy Whiwortha zewnętrzny ISO-7/1 (identyczny z BSPT) |
| **Rd** | | Gwint okrągły DIN 405 |

| | | |
|---|---|---|
| **FG** | | Gwint rowerowy<br>DIN 79012 |
| **BSC** | | Gwint rowerowy<br>BS 811 |
| **Ven** | | Gwint wentylowy PN-ISO 4570 |
| **Vg** | | Gwint wentylowy<br>DIN 7756 |
| **E** | | Gwint elektrotechniczny Edisona IEC 60061 |
| **UN** | | Gwint amerykański zunifikowany ANSI B-1.1<br>(o uprzywilejowanych skokach: 4, 6, 8, 12, 16, 20, 28, 32 zwoje na cal) |
| **UNS** | | Gwint amerykański zunifikowany specjalny ANSI B-1.1 |
| **Whit. S** | | Gwint Withwortha specjalny BS 84 |
| **S** | | Gwint trapezowy niesymetryczny |
| **Wzyl** | | Gwint walcowy do zaworów butli gazowych DIN 477 |
| **Wkeg** | | Gwint stożkowy do zaworów butli gazowych<br>PN-EN ISO 11363 DIN 477 |
| **NPSM (NPS)** | | Gwint amerykański rurowy walcowy ANSI B 1.20.1 |

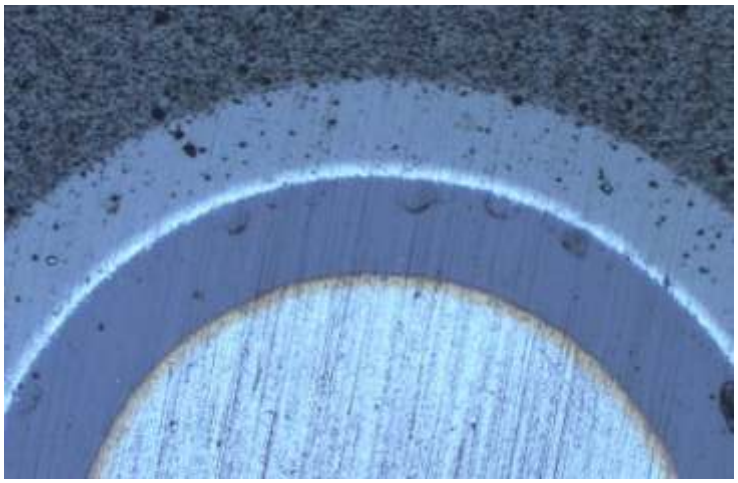
## 2. MATERIAŁY UŻYWANE DO PRODUKCJI NARZĘDZI

| Symbol | Nazwa | Opis |
|---|---|---|
| HSS | Stal szybkotnąca | Standardowy materiał na narzędzia skrawające ogólnego stosowania |
| HSSE (HSCo5) | Stal szybkotnąca | Materiał o podwyższonej odporności termicznej, zawartość kobaltu pozwala na podwyższenie temperatury hartowania oraz zwiększa stabilność ostrzy |
| HSSE-PM | Stal szybkotnąca proszkowa | Materiał narzędziowy o jednolitej strukturze, uzyskiwany w technologii metalurgii proszków, o wysokiej twardości oraz odporności na wysokie temperatury, narzędzia wykonane z tego materiału charakteryzuje wysoka stabilność ostrzy |
| VHM | Węglik spiekany drobnoziarnisty | Materiał narzędziowy o jednolitej strukturze, uzyskiwany w technologii metalurgii proszków z węglików wolframu, charakteryzują się wysoką odpornością na ścieranie oraz twardością, w porównaniu do stali szybkotnących jest bardziej kruchy, zwykle stosowany wraz z powłokami PVD |

## 3. POWŁOKI PVD STOSOWANE NA NARZĘDZIA

### POWŁOKA HL

| | |
|---|---|
| Powłoka | TiAIN + WC/C |
| Struktura | Wielowarstwowa nano-kompozytowa |
| Twardość | 3000 $HV_{0,05}$ |
| Max. temp. pracy | 800°C |
| Współczynnik tarcia | 0,15 |
| Kolor powłoki | Ciemnoszary |



Wysokie właściwości użytkowe powłoki HL osiągnięto dzięki zastosowaniu zaawansowanej struktury nano-kompozytowej. Warstwa TiAIN dzięki wysokiej twardości oraz odporności temperaturowej stanowi stabilną, odporną na ścieranie bazę powłoki. Warstwa wierzchnia WC/C składająca się z nanokrystalitów węglika wolframu otoczonych węglową osnową charakteryzuje się doskonałymi właściwościami tribologicznymi. Twarde wydzielenia WC zapewniają odporność na ścieranie przy znakomitych właściwościach ślizgowych węgla. Połączenie zalet obydwu warstw sprawia że powłoka HL doskonale sprawdza się w obróbce szerokiego spektrum materiałów, poprawia odprowadzanie wiórów, zmniejsza siły skrawania oraz chroni krawędzie skrawające przed wpływem wysokich temperatur. Narzędzia powlekane powłoką HL mogą pracować w warunkach minimalnej ilości chłodziwa (MQL).
Powłoka przeznaczona do obróbki materiałów z grup P, M, K,N, S.

# POWŁOKI PVD STOSOWANE NA NARZĘDZIA

## POWŁOKA TN2

| | |
|---|---|
| Powłoka | TiAlN + TiN |
| Struktura | Dwuwarstwowa nanostrukturalna |
| Twardość | 3500 $HV_{0,05}$ |
| Max. temp. pracy | 800°C |
| Współczynnik tarcia | 0,3 |
| Kolor powłoki | Złoty |

Dwuwarstwowa powłoka TN2 wytwarzana metodą bezkroplową podlegająca procesom uszlachetniania powierzchni charakteryzuje się bardzo dobrą odpornością na ścieranie, dużą odpornością termiczną oraz niskim współczynnik tarcia. Dzięki zmniejszeniu tarcia żywotność narzędzi znacząco się wydłuża, a jakość obrabianej powierzchni wzrasta. Łącząc wyjątkowo twardą warstwę TiAlN z podatną warstwą TiN, uzyskano inteligentną samonastawną strukturę powierzchni dopasowującą się do powstających podczas obróbki naprężeń zwiększając odporność napękanie.TN2 przeznaczona jest w szczególności na narzędzia do obróbki materiałów z grupy P (dla Rm <1000 MPa),oraz materiałów z grupy M, K, N.

## POWŁOKA TC

| | |
|---|---|
| Powłoka | TiN + TiCN |
| Struktura | Wielowarstwowa |
| Twardość | 3700 $HV_{0,05}$ |
| Max. temp. pracy | 400°C |
| Współczynnik tarcia | 0,2 |
| Kolor powłoki | Antracytowy |

TC to wielowarstwowa powłoka o uniwersalnym zastosowaniu. Charakteryzuje się bardzo wysoką twardością, dobrą wytrzymałością i niskim współczynnikiem tarcia. Bazowa warstwa TiN zapewnia wysoką przyczepność do narzędzia oraz znaczną odporność na dynamiczne obciążenia. Wierzchnia warstwa TiCN/TiC dzięki wysokiej twardości oraz niskiemu współczynnikowi tarcia zapewnia bardzo dobrą odporność na ścieranie. Połączenie tych właściwości pozwala na zabezpieczenie krawędzi przed narostem materiału obrabianego oraz wykruszaniem. Ze względu na stosunkowo niską odporność temperaturową należy stosować odpowiednie chłodzenie narzędzia. Przeznaczona głównie na narzędzia do obróbki materiałów z grupy P (w szczególności o podwyższonej wytrzymałości Rm >1000 MPa) K, N, H.

# POWŁOKI PVD STOSOWANE NA NARZĘDZIA

## POWŁOKA AT

| | |
|---|---|
| Powłoka | AlTiN |
| Struktura | Gradientowa |
| Twardość | 3700 $HV_{0,05}$ |
| Max. temp. pracy | 900°C |
| Współczynnik tarcia | 0,3 |
| Kolor powłoki | Fioletowo-szary |

Powłoka AT dzięki podwyższonej zawartości aluminium (Al) charakteryzuje się wysoką twardością oraz odpornością temperaturową. Wytwarzające się podczas eksploatacji powłoki, tlenki glinu stanowią dodatkowe smarowanie narzędzia jednocześnie tworząc barierę cieplną zapobiegającą degradacji powłoki nawet w najcięższych warunkach. Skład chemiczny oraz nanogradientowa struktura zapewnia wysoką twardość powłoki. W efekcie uzyskuje wysoką odporność na ścieranie co przekłada się na zwiększoną żywotność narzędzia. Powlekane nią mogą być narzędzia narażone na duże zmiany temperatury, odpowiednia zarówno do pracy z chłodziwem jak i na sucho. Powłoka przeznaczona jest do obróbki materiałów z grupy P, M, K, N, S.

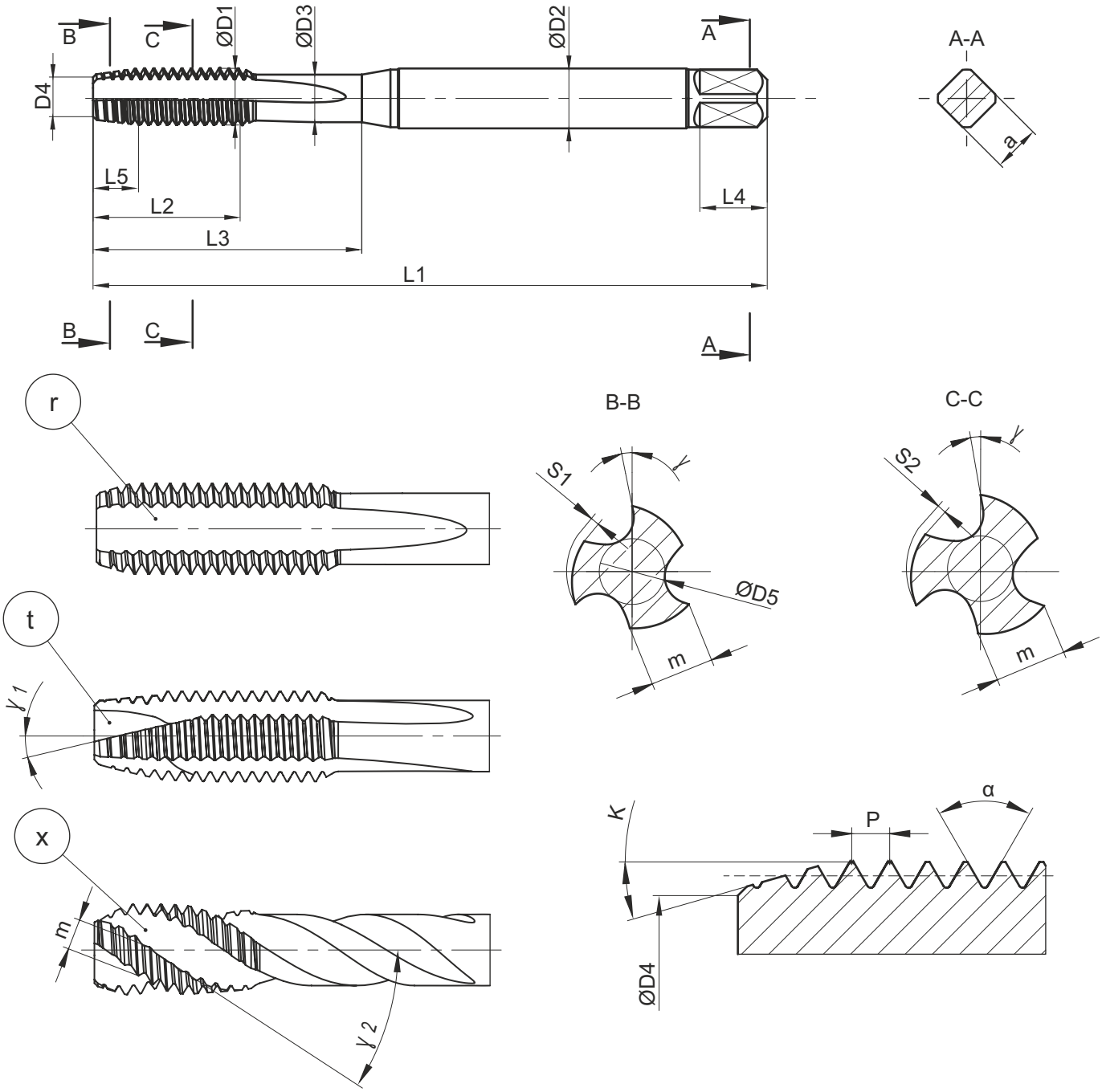
## POWŁOKA $TiB_2$

| | |
|---|---|
| Powłoka | $TiB_2$ |
| Struktura | Monowarstwowa |
| Twardość | 4000 $HV_{0,05}$ |
| Max. temp. pracy | 900°C |
| Kolor powłoki | Srebrny |

Materiał powłoki TB (dwuborek tytanu) jest ceramiką wyróżniającą się twardością oraz odpornością na ścieranie. Dzięki starannie dobranemu składowi (brak powinowactwa z aluminium), gwarantuje wysoką stabilność chemiczną oraz zapobiega występowaniu narostu obrabianego materiału na krawędziach skrawających. Bezkroplowa metoda wytwarzania powłoki pozwala na uzyskanie wysokiej gładkości co pozwala na uzyskanie bardzo dobrej jakości powierzchni obrabianych detali. Powłoka przeznaczona do obróbki materiałów z grupy N, głównie stopy aluminium (Si<12%) oraz tytanu niestopowego.

# 4. GWINTOWNIKI

## 4.1. Elementy konstrukcyjne gwintownika (na przykładzie DIN-371)




L1 - długość całkowita
L2 - długość części roboczej
L3 - długość użytkowa
L4 - długość zabieraka kwadratowego
L5 - długość części skrawającej (nakroju)
a - wielkość zabieraka kwadratowego
ØD1 - średnica znamionowa gwintu
ØD2 - średnica chwytu
ØD3 - średnica szyjki
ØD4 - średnica czołowa
ØD5 - średnica rdzenia
m - grubość ostrza

S1 - zatoczenie nakroju
S2 - zatoczenie gwintu
P - podziałka gwintu (skok)
α - kąt zarysu gwintu
γ - kąt natarcia
γ1 - kąt pochylenia skośnej powierzchni natarcia
γ2 - kąt pochylenia linii śrubowej
κ - kąt przystawienia (nakroju)
r - rowek wiórowy prosty
x - rowek wiórowy śrubowy
t - skośna powierzchnia natarcia
z - ilość ostrzy

## 4.2. Normy wymiarowe

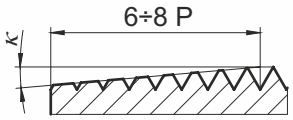
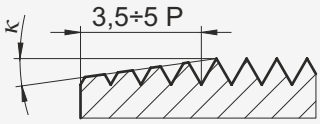
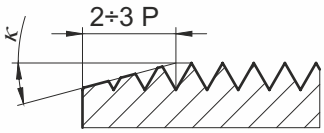
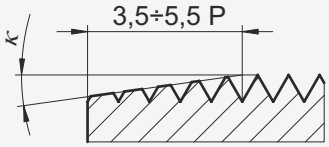
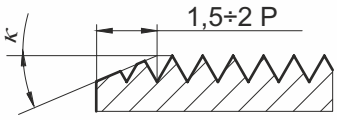
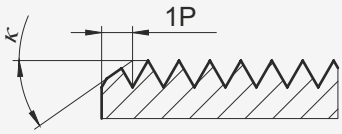
Normy wymiarowe przyporządkowują wymiarom nominalnym gwintów odpowiednie szeregi wymiarów zewnętrznych gwintowników (długość całkowitą, długość części roboczej, średnicę chwytu i wymiar zabieraka kwadratowego).

| Symbol | Opis |
|---|---|
| DIN-371 | Gwintowniki maszynowe z chwytem wzmocnionym do gwintów metrycznych zwykłych i drobnozwojnych M1 ÷ M10 oraz do gwintów UNC, UNF, BSW, BSF w zakresie średnic nominalnych 1/8” ÷ 3/8” |
| DIN-376 | Gwintowniki maszynowe z chwytem przelotowym do gwintów metrycznych zwykłych M oraz do gwintów UNC i BSW |
| DIN-374 | Gwintowniki maszynowe z chwytem przelotowym do gwintów metrycznych drobnozwojnych MF oraz do gwintów UNF i BSF |
| DIN-5156 | Gwintowniki maszynowe z chwytem przelotowym do gwintów G, Rp i Rc |
| DIN-352 | Gwintowniki ręczne do gwintu metrycznego zwykłego. Norma ta znajduje również zastosowanie do gwintów UNC i BSW |
| DIN-2181 | Gwintowniki ręczne do gwintu metrycznego drobnozwojnego. Norma ta znajduje również zastosowanie do gwintów UNF i BSF |
| DIN-5157 | Gwintowniki ręczne do gwintu rurowego G i Rp |

## 4.2. Grupy narzędzi według zastosowania

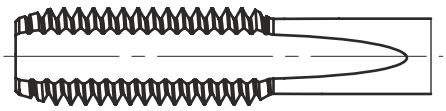
| | |
|---|---|
| MASTERTAP<br>P M K N S | Grupa gwintowników przeznaczona do wysokowydajnego gwintowania szerokiego spektrum materiałów takich jak **stale, stale nierdzewne, żeliwa, metale nieżelazne oraz stopy żaroodporne i stopy tytanu.**<br><br>Gwintowanie może być wykonywane zarówno na nowoczesnych wydajnych centrach obróbczych z dużymi prędkościami skrawania, jak i na maszynach numerycznych starszego typu oraz na konwencjonalnych obrabiarkach przy nieco niższych parametrach obróbki. |
| 800X<br>P M K N | Rozwojowa odmiana gwintownika 800, przeznaczona również do **obróbki stali nierdzewnej**. Wykorzystane innowacyjne technologie produkcji gwarantują nawet dwukrotnie wyższą od dotychczasowej trwałość oraz wydajność obróbki.<br><br>Wszystkie te cechy czynią gwintownik 800X najlepszym wyborem dla krótkich i średnich serii produkcyjnych, oferując w dalszym ciągu korzystną relację ceny do jakości. |
| 800<br>P K N | do stali konstrukcyjnych węglowych, automatowych i niskostopowych, o wytrzymałości ≤ Rm ≤ 800 Mpa |
| FAN-1200<br>P | do stali narzędziowych i trudnoobrabialnych o wytrzymałości 800 MPa ≤ Rm ≤ 1200 MPa oraz ulepszanych cieplnie do 38 HRC |
| 1400<br>P | do stali trudnoobrabialnych i żaroodpornych o wytrzymałości 1200 MPa ≤ Rm ≤ 1400 MPa oraz ulepszanych cieplnie do 44 HRC |
| INOX<br>P M | do stali wysokostopowych, nierdzewnych i kwasoodpornych o wytrzymałości Rm ≤ 1000 MPa |
| GG<br>K | do obróbki żeliwa szarego i sferoidalnego |
| GAL<br>N | do odlewniczych stopów aluminium o zawartości Si max 10% |
| HRC<br>H | do materiałów w stanie zahartowanym. Liczba obok symbolu oznacza maksymalną twardość materiału obrabianego w skali HRC |
| S-NC<br>P M K N S | do gwintowania synchronicznego na obrabiarkach CNC z funkcją „rigid tapping” szerokiej gamy materiałów z dużymi prędkościami skrawania |
| Ms<br>N | do mosiądzu i brązu krótkowiórowego |

## 4.3. Typ nakroi gwintowników maszynowych

| Symbol | Szkic | Długość nakroju wyrażona w ilości zwojów gwintu | Kąt nakroju |
|---|---|---|---|
| A |   | 6 ÷ 8 P | 5° |
| B |   | 3,5 ÷ 5,5 P | 8° |
| C |   | 2 ÷ 3 P | 17° |
| D |   | 3,5 ÷ 5 P | 8° |
| E |   | 1,5 ÷ 2 P | 23° |
| F |   | 1 P | 35° |

## 4.4. Rodzaje rowków wiórowych gwintowników maszynowych

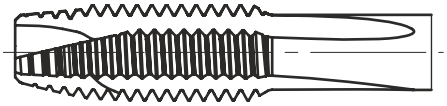
### Rowki proste



W połączeniu z nakrojem A lub D stosowane do otworów przelotowych natomiast z nakrojem E lub F do nieprzelotowych. Gwintownik z nakrojem C może być stosowany do obydwu rodzajów otworów.

Zalecany do materiałów dających krótki wiór. Rowki odprowadzają tylko część wiórów, które nieznacznie przesuwają się wzdłuż osi. Nie należy stosować go do głębokich otworów nieprzelotowych i materiałów długowiórowych. Długość wykonywanych gwintów do ok 1,5xD

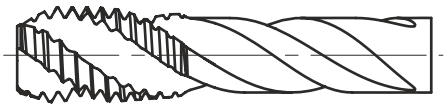
## Rowki proste ze skośną powierzchnią natarcia



Przeznaczone do otworów przelotowych z gwintem na pełnej długości otworu.

Wraz z nakrojem B zalecany do materiałów dających długi wiór. Skośna powierzchnia natarcia przemieszcza ciasno zgnieciony wiór w kierunku posuwu i zapobiega zapychaniu się rowków. Chłodziwo swobodnie dociera do strefy roboczej. Długość wykonywanych gwintów do ok. 2xD.

## Rowki śrubowe

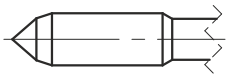
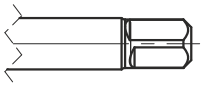
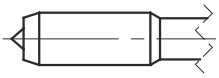
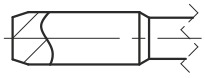
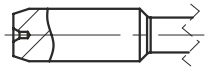
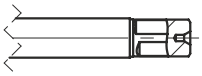


Wraz z nakrojem C i E stosowane do otworów nieprzelotowych.

Zalecany do materiałów dających długi wiór. Rowki śrubowe zapewniają dobre odprowadzanie wiórów z otworu w kierunku chwytu. W zależności od średnicy możliwe jest wykonywanie gwintów do 3xD.

Gwintownika z rowkami skrętnym nie należy stosować do otworów przelotowych.

### 4.6. Rodzaje nakiełków gwintowników wysokowydajnych w zależności od średnicy gwintu, nakroju oraz normy wykonania

| Część robocza | | | Chwyt | |
|---|---|---|---|---|
| Nakiełek pełny | 1 |  |  | 5 Faza |
| Nakiełek odsadzony | 2 |  | | |
| Nakrój E (bez nakiełka) | 3 |  | | |
| Nakiełek wewnętrzny | 4 |  |  | 6 Nakiełek wewnętrzny |

| | Średnica zewnętrzna gwintu (mm) | Rodzaj nakiełka po stronie części skrawającej | | | Rodzaj nakiełka po stronie chwytu |
|---|---|---|---|---|---|
| | | Nakroje A, C, D, | Nakrój B | Nakrój E | |
| DIN-371 | ≤7,2 | 1 | 1 | 3 | 5 |
| | 7,2≤8,2 | 2 | 1 | 3 | 5 |
| | 8,2<10,2 | 2 | 2 | 3 | 5 |
| DIN-374 DIN-376 DIN-5156 | ≤7,2 | 1 | 1 | 3 | 5 |
| | >7,2 | 4 | 4 | 3 | 6 |

**Długości nakiełków pełnych dla wybranych rodzajów gwintu (długość nakiełków odsadzonych Lnak=1,8 mm)**

| M | | MF | |
|---|---|---|---|
| M1 | 0,6 | M2,5 x 0,35 | 1,9 |
| M1,2 | 0,8 | M2,6 x 0,35 | 1,9 |
| M1,4 | 1,0 | M3 x 0,35 | 1,3 |
| M1,6 | 1,1 | M 3,5 x 0,35 | 1,6 |
| M1,7 | 1,1 | M4 x 0,5 | 1,8 |
| M1,8 | 1,3 | M5 x 0,5 | 2,3 |
| M2 | 1,4 | M6 x 0,75 | 2,6 |
| M2,5 | 1,8 | M7 x ,75 | 3,1 |
| M2,6 | 1,8 | | |
| M3 | 1,3 | | |
| M3,5 | 1,5 | | |
| M4 | 1,7 | | |
| M4,5 | 1,9 | | |
| M5 | 2,1 | | |
| M6 | 2,5 | | |
| M7 | 3,0 | | |
| **UNC** | | **UNF** | |
| No 4-40 | 2,0 | No 4-48 | 2,1 |
| No 5-40 | 1,3 | No 5-44 | 1,4 |
| No 6-32 | 1,4 | No 6-40 | 1,5 |
| No 8-32 | 1,8 | No 8-36 | 1,8 |
| No 10-24 | 2,0 | No 10-32 | 2,1 |
| No 12-24 | 2,3 | No 12-28 | 2,3 |
| 1/4-20 | 2,6 | 1/4 - 28 | 2,8 |
| 5/16-18 | 3,3 | 5/16 - 24 | 3,5 |
| **BSW** | | **BSF** | |
| 1/8 - 40 | 1,25 | 1/4 - 26 | 2,65 |
| 3/16 - 24 | 1,8 | 5/16 - 22 | 3,4 |
| 1/4 - 20 | 2,55 | | |
| 5/16 - 18 | 3,25 | | |

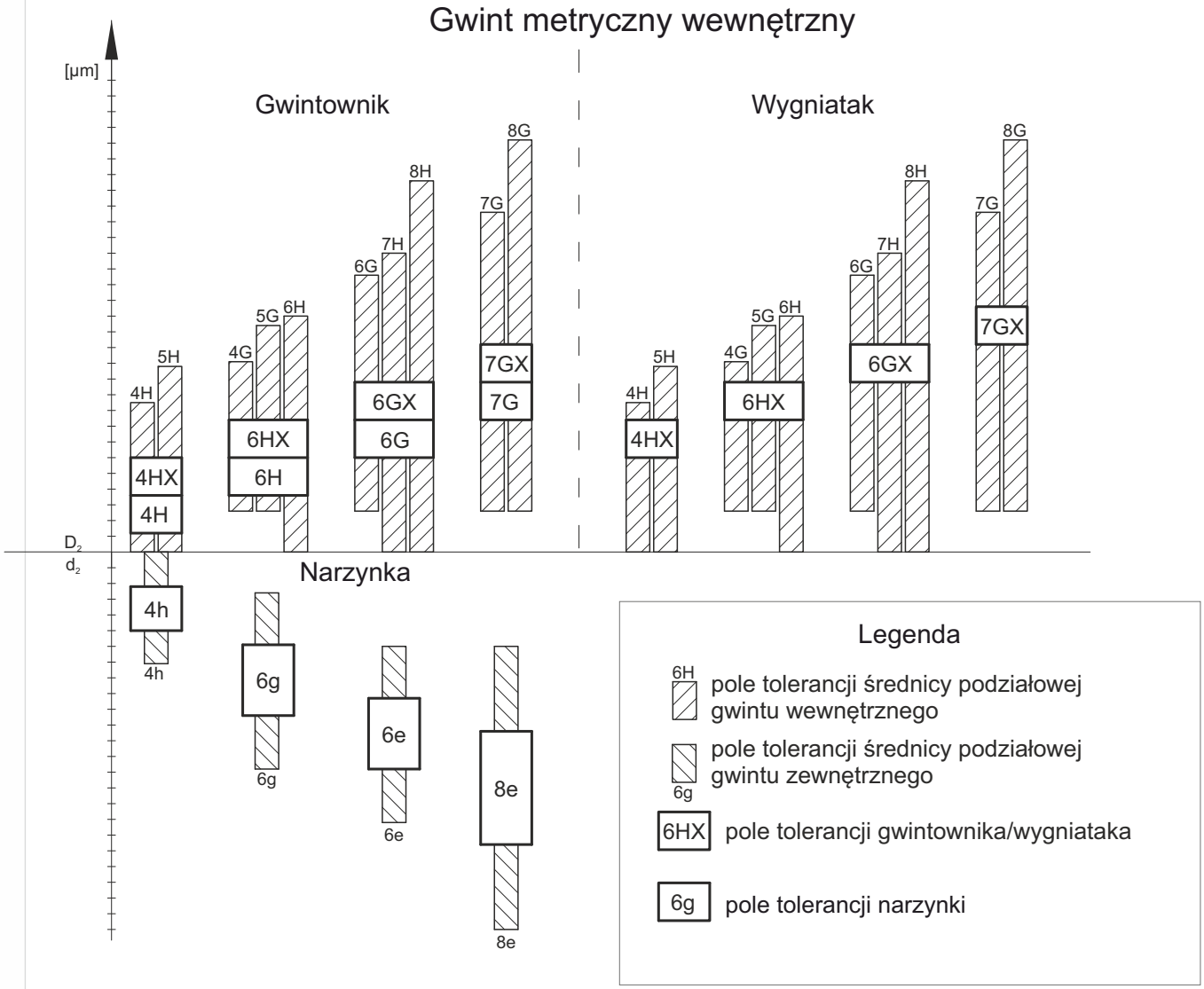
## 4.7. Zastosowanie narzędzi z wewnętrznymi kanałami doprowadzającymi chłodziwo IK/IKR

**IK** – centralny kanał doprowadzający chłodziwo, zalecany do otworów nieprzelotowych, ułatwia odprowadzanie wiórów w kierunku chwytu, poprawia warunki smarowania i chłodzenia, wpływa korzystnie na trwałość narzędzia.

**IKR** – centralny kanał doprowadzający chłodziwo rozdzielający się na kilka kanałów promieniowych, doprowadzających chłodziwo do każdego rowka wiórowego oddzielnie, rozwiązanie zalecane do gwintowania otworów przelotowych, ułatwia odprowadzanie wiórów w kierunku posuwu, poprawia warunki smarowania i chłodzenia, wpływa korzystnie na trwałość narzędzia.

## 4.8. Klasy gwintowników

Oferowane w naszym katalogu gwintowniki wykonywane są w klasie podstawowej przeznaczonej do najpowszechniej stosowanych tolerancji gwintu wewnętrznego, właściwych konkretnemu rodzajowi gwintu: dla gwintu metrycznego 6H, dla gwintu zunifikowanego UNC, UNF - 2B, dla gwintu Whitwortha BSW, BSF - „normal". Wykonanie w innych klasach jest możliwe na zamówienie.
Klasy gwintowników (tzn. pola tolerancji części roboczej) do gwintu metrycznego są zunifikowane normami międzynarodowymi i krajowymi. Określona klasa gwintownika pozwala uzyskać gwinty o dwóch lub trzech polach tolerancji (patrz rysunek i tabela poniżej).

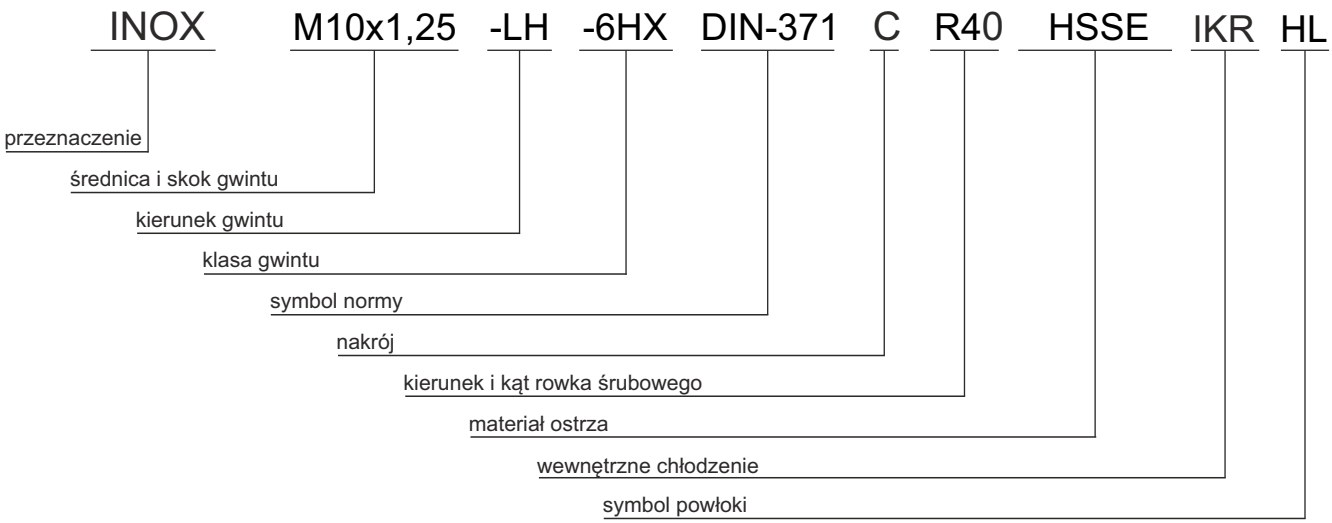



| Wg normy DIN 802 | Pole tolerancji gwintu wewnętrznego | | | | |
|---|---|---|---|---|---|
| 4H | 4H | 5H | - | - | - |
| **6H** | 4G | 5G | 6H | - | - |
| 6G | - | - | 6G | 7H | 8H |
| 7G* | - | - | - | 7G | 8G |

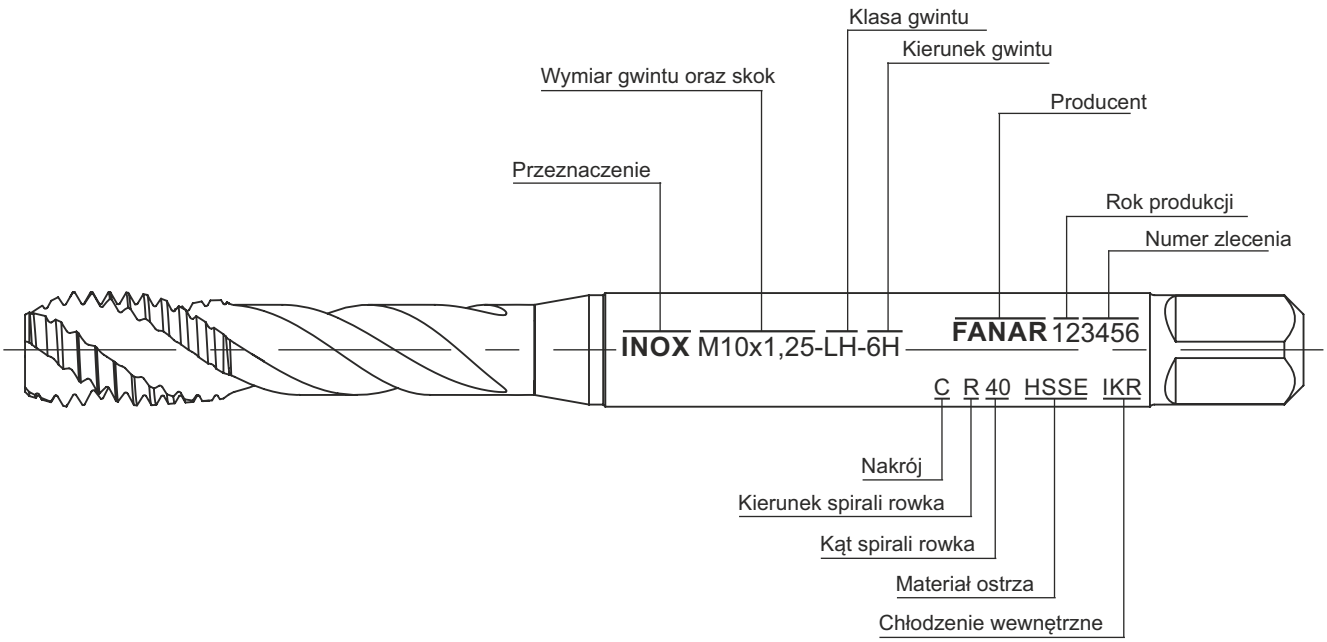
*DIN 802 przewiduje możliwość skorygowania tolerancji gwintownika w stosunku do wymagań normy w przypadku gdy wymagają tego szczególne warunki obróbki np. gatunek materiału obrabianego. Wtedy obowiązuje symbol klasy gwintownika ze znakiem „X" np.: 6HX, 6GX.

## 4.9. Oznaczenia i cechowanie gwintowników

### Oznaczenie



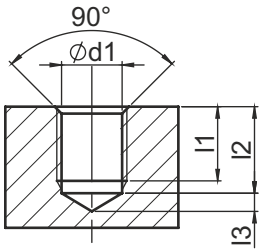
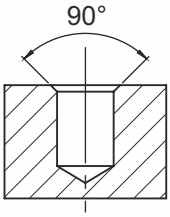
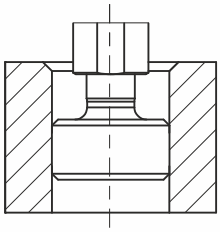

### Cechowanie

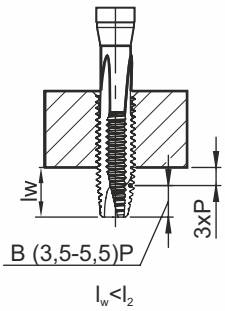
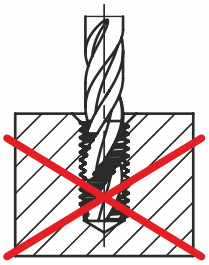
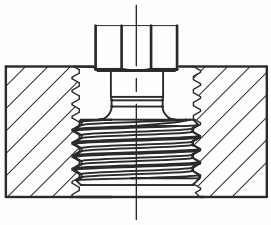


## 4.10. Zalecenia dotyczące procesu obróbki gwintownikami maszynowymi

Gwintowanie zwykle jest jedną z ostatnich operacji obróbki wiórowej detalu. Błąd podczas nacinania gwintu może skutkować dodatkowymi kosztami nie tylko związanymi z uszkodzonym gwintownikiem, ale często obrabianym materiałem, a także całą poprzedzającą gwintowanie obróbką. W celu uniknięcia takiego problemu zachęcamy do zapoznania się i stosowania poniższych zaleceń dotyczących procesu gwintowania.

## 4.11. Przebieg procesu gwintowania

| Operacja | Zalecenia |
|---|---|
| **10** **Wiercenie**<br>  <br><br>∅d1 - zalecana średnica pod gwint<br>l1 - głębokość gwintu<br>l2 - głębokość otworu pod gwint<br>l3 - długość wierzchołka | - Średnica wiertła (rozdział 6, str 141) powinna być zgodna z zalecaną wartością podaną na stronie katalogowej wykorzystywanego .<br>- W przypadku materiałów o Rm > 1200 MPa średnica otworu powinna być możliwie bliska górnej odchyłce jego tolerancji.<br><br>- W przypadku otworu nieprzelotowego w celu uzyskania pożądanej długości użytecznej gwintu, głębokość wierconego otworu powinna uwzględniać długość wierzchołka wiertła, długość nakiełka gwintownika (tabela na str 231) oraz nakroju. |
| **20** **Fazowanie krawędzi otworu**<br>  <br> | - W celu ułatwienia wprowadzenia gwintownika w otwór oraz zmniejszenia oporów w początkowej fazie jego pracy należy załamać krawędzie wywierconego otworu fazownikiem o kącie wierzchołkowym 90º (rozdział 6, str 152). |
| **30** **Sprawdzenie poprawności otworu pod gwint**<br>  | - Podczas nacinania gwintu gwintownikiem, średnica rdzeniowa wynika ze średnicy wywierconego otworu. Poprawność wykonanych otworów należy sprawdzić sprawdzianem gładkim do otworów pod gwinty (rozdział 7, str 162) zgodnie z zaleceniami zawartymi w sekcji technicznej dotyczącej sprawdzianów. |

| Operacja | | Zalecenia |
|---|---|---|
| **40** | **Gwintowanie** | - Podczas gwintowania otworów przelotowych gwintownikiem ze skośną powierzchnią natarcia, należy zwrócić szczególna uwagę na wybieg gwintownika z otworu. Dla prawidłowego nacięcia gwintu oraz wyprowadzenia wiórów wybieg gwintownika z otworu powinien wynosić całą długość skośnej powierzchni natarcia + około 3 zwoje gwintu |
|   | | |
|  | | - Podczas gwintowania otworów nieprzelotowych nie można dopuścić do kolizji czoła gwintownika i dna otworu<br><br>- W przypadku maszyn sterowanych numerycznie z cyklem gwintowania synchronicznego zaleca się stosowanie oprawki do gwintowania z minimalną kompensacją osiową (rozdział 8, str 179)<br><br>- Stosowane prędkości skrawania powinny uwzględniać warunki zamocowania detalu oraz gwintownika, rodzaj obrabianego materiału, rodzaj oraz stan wykorzystywanej maszyny, a także warunki smarowania gwintownika |
| **50** | **Sprawdzenie poprawności gwintu** | - Po wykonaniu gwintu, należy poddać go kontroli sprawdzianem do gwintów (rozdział 7, str 164) zgodnie z zaleceniami zawartymi w sekcji technicznej dotyczącej sprawdzianów. |
|  | | |

## 4.11. Rozwiązywanie problemów przy gwintowaniu.

| Problem: Otwory nagwintowane zbyt luźne (część nieprzechodnia sprawdzianu wkręca się bardzo głęboko) | |
|---|---|
| Niewłaściwy gwintownik dla wykonywanego gwintu i obrabianego materiału. | Zastosować gwintownik przeznaczony do typu otworu gwintowanego i rodzaju materiału zgodnie z tabelą doboru znajdującą się w katalogu. |
| Zbyt wysoka prędkość gwintowania. | Zmniejszyć prędkość gwintowania.<br>Zwiększyć ilość chłodziwa/środka smarującego. |
| Zimne naklejanie się materiału na flankach gwintownika. | Wymienić narzędzie na nowe.<br>Zastosować gwintownik pokryty.<br>Zwiększyć ilość chłodziwa/środka smarującego.<br>Usunąć w gwintowniku zatarte zwoje. |
| Zapychanie rowków wiórowych. | Zastosować gwintownik z inną geometrią rowków (kąt).<br>Możliwa konieczność zastosowania gwintowników kompletowych. |
| Zadzior szlifierski. | Usunąć zadzior szczotką drucianą. |
| Niewłaściwe zamocowanie lub umiejscowienie części obrabianej. | Zastosować uchwyt gwintownika z kompensacją poosiową i promieniową. Wyosiować i zamocować precyzyjnie element obrabiany. |
| Niewłaściwy posuw gwintownika. | Gwintować z kontrolowanym posuwem.<br>Sprawdzić parametry maszyny CNC (program). Sprawdzić luz śruby pociągowej.<br>Zastosować oprawkę kompensacyjną. |
| **Problem: Otwory nagwintowane luźne (część nieprzechodnia sprawdzianu wkręca się)** | |
| Zbyt wysoka tolerancja zastosowanego gwintownika w stosunku do wymaganej klasy gwintu. | Sprawdzić opis na gwintowniku i ustalić czy jest dostosowany do wykonania wymaganej klasy gwintu.<br>W razie wątpliwości skontaktować się z doradcą. |
| Niewłaściwie wykonane ostrzenie gwintownika. | Ostrzenie gwintownika wymaga, żeby wszystkie szlifowane powierzchnie miały zachowaną geometrię nadaną przez producenta.<br>Skontaktować się z doradcą w celu uzyskania instrukcji. |
| **Problem: Nagwintowany otwór jest zbyt ciasny (strona przechodnia nie chce się wkręcić, lub podczas wkręcania zakleszcza się).** | |
| Wybrany gwintownik ma geometrię nie pozwalającą na wielokrotne przeostrzenie. | Ograniczyć liczbę przeostrzeń gwintownika.<br>Zastosować nowy gwintownik. |
| Część powierzchni gwintownika nie została odnowiona podczas ostrzenia. | Ponownie ostrzyć gwintownik.<br>Zastosować nowy gwintownik. |
| Niewłaściwy gwintownik dla wykonywanego gwintu i obrabianego materiału. | Zastosować gwintownik przeznaczony do typu otworu gwintowanego i rodzaju materiału zgodnie z tabelą doboru znajdującą się w katalogu. |
| Zastosowany gwintownik ma zbyt mały wymiar nominalny (tolerancję). | Sprawdzić opis na gwintowniku i ustalić czy jest dostosowany do wykonania wymaganej klasy gwintu.<br>W razie wątpliwości skontaktować się z doradcą. |
| **Problem: Otwory nagwintowane rozszerzone u wejścia gwintu (pierwsze zwoje gwintu nadwymiarowe)** | |
| Zbyt wysoka tolerancja zastosowanego gwintownika w stosunku do obrabianego otworu. | Sprawdzić opis na gwintowniku i ustalić czy jest dostosowany do wykonania wymaganej klasy gwintu.<br>W razie wątpliwości skontaktować się z doradcą. |
| Niewłaściwie wykonane ostrzenie gwintownika. | Ostrzenie gwintownika wymaga, żeby wszystkie szlifowane powierzchnie miały zachowana geometrię nadaną przez producenta.<br>Skontaktować się z doradcą w celu uzyskania instrukcji. |
| **Problem: Krótka żywotność gwintownika** | |
| Wszystkie przyczyny wymienione w następnej tabeli „chropowaty i poszarpany gwint „. | Przeczytać informacje z następnej tabeli. |
| Utrata twardości gwintownika przez przegrzanie podczas ostrzenia. | Zmienić charakterystykę ściernicy.<br>Zastosować chłodziwo podczas ostrzenia. |
| Utrata właściwości pokrycia po ostrzeniu gwintownika. | Repokrycie gwintownika.<br>Sprawdzić cechy zastosowanej powłoki i jej użyteczność dla obróbki materiału gwintowanego. |
| Gwintowanie otworu utwardzonego na skutek procesu wiercenia. | Wymieniać lub częściej przeostrzać wiertło pod gwint.<br>Sprawdzić prędkość i posuw wiertła w czasie wiercenia.<br>Wyżarzyć element przed gwintowaniem. |

| Problem: Uszkodzenie ostrza gwintownika | |
|---|---|
| Niewłaściwy gwintownik dla wykonywanego gwintu i obrabianego materiału. | Zastosować gwintownik przeznaczony do typu otworu gwintowanego i rodzaju materiału zgodnie z tabelą doboru znajdującą się w katalogu. |
| Rozmiar wiertła zbyt mały. | Zastosować właściwe wiertło pod gwint.<br>Sprawdzić wymiar wiertła w katalogu (uwaga wymiary są inne dla gwintowników i dla wygniataków).<br>W razie wątpliwości skontaktować się z doradcą. |
| Zbyt płytki otwór pod gwint. | Sprawdzić głębokość wywierconego otworu (wiertło podczas pracy mogło się wsunąć w oprawkę). |
| Brak otworu pod gwint. | Sprawdzić czy otwór istnieje w rzeczywistości (częsty problem w automatycznych liniach produkcyjnych lub wielowrzecionowych centrach obróbczych). |
| Zapychanie rowków wiórowych. | Zastosować gwintownik z inną geometrią rowków (kąt).<br>Możliwa konieczność zastosowania gwintowników kompletowych. |
| Naklejanie się materiału na flankach gwintownika. | Wymienić narzędzie na nowe.<br>Zastosować gwintownik pokryty.<br>Zwiększyć ilość chłodziwa/środka smarującego.<br>Usunąć w gwintowniku zatarte zwoje. |
| Przeciążenie zębów na nakroju gwintownika. | Zastosować gwintownik z dłuższym nakrojem.<br>Zastosować gwintownik z większą liczbą zębów w celu rozłożenia obciążenia na nakroju. |
| Niewłaściwe zamocowanie lub umiejscowienie części obrabianej. | Zastosować uchwyt gwintownika z kompensacją poosiową i promieniową.<br>Wyosiować i zamocować precyzyjnie element obrabiany. |
| Uderzanie gwintownika o dno otworu. | Zastosować oprawkę z kompensacją długości i sprzęgłem przeciążeniowym. |
| Gwintowanie materiałów twardych i o wysokiej wytrzymałości na rozciąganie. | Sprawdzić poprawność doboru gwintownika.<br>Gwintowniki HSSE-PM i VHM mogą się okazać właściwsze niż HSSE. |

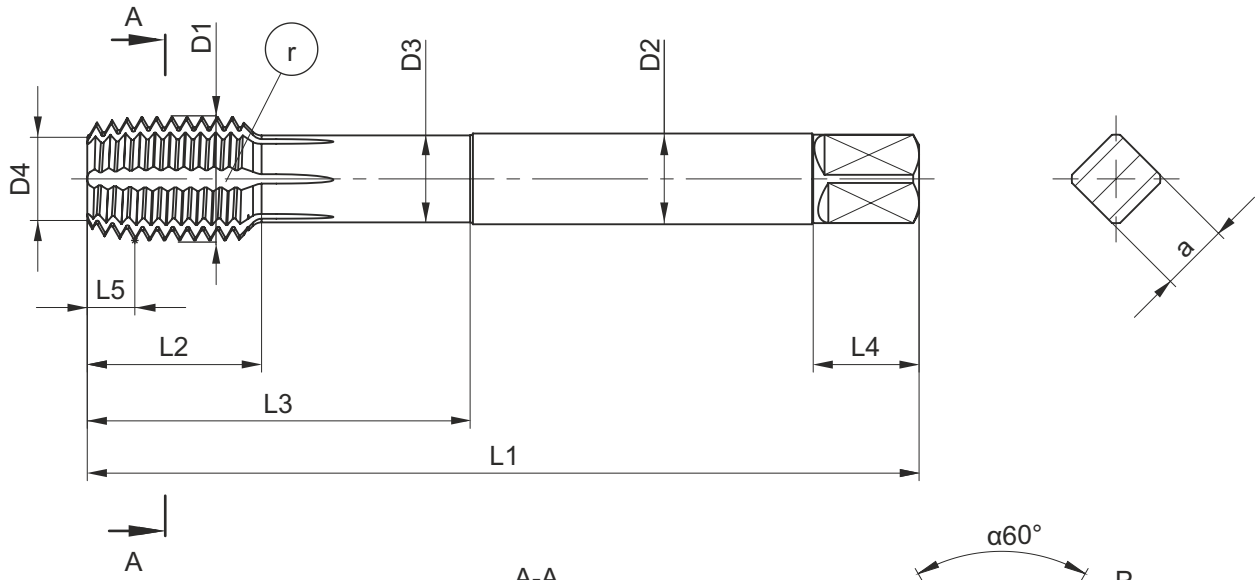
| Problem: Po gwintowaniu pozostaje chropowaty i poszarpany gwint | |
|---|---|
| Niewłaściwy gwintownik dla wykonywanego gwintu i obrabianego materiału. | Zastosować gwintownik przeznaczony do typu otworu gwintowanego i rodzaju materiału zgodnie z tabelą doboru znajdującą się w katalogu. |
| Zbyt wysoka lub zbyt niska prędkość gwintowania. | Dostosować prędkość gwintowania.<br>Zwiększyć ilość chłodziwa/środka smarującego dla zabezpieczenia skutków zmiany prędkości. |
| Naklejanie się materiału na flankach gwintownika. | Wymienić narzędzie na nowe.<br>Zastosować gwintownik pokryty.<br>Zwiększyć ilość chłodziwa/środka smarującego.<br>Usunąć w gwintowniku zatarte zwoje. |
| Zapychanie rowków wiórowych. | Zastosować gwintownik z inną geometrią rowków (kąt).<br>Możliwa konieczność zastosowania gwintowników kompletowych. |
| Zadzior szlifierski. | Usunąć zadzior szczotką drucianą. |
| Rozmiar wiertła zbyt mały. | Zastosować właściwe wiertło pod gwint.<br>Sprawdzić wymiar wiertła w katalogu (uwaga wymiary są inne dla gwintowników i dla wygniataków).<br>W razie wątpliwości skontaktować się z doradcą. |
| Niewłaściwe chłodzenie lub smarowanie podczas obróbki. | Dobrać chłodziwo zgodnie z zaleceniami w katalogu.<br>Stosować właściwą ilość chłodziwa. |
| Przeciążenie narzędzia spowodowane skokiem gwintu, twardością materiału lub krótkim nakrojem. | Zastosować komplet gwintowników. |

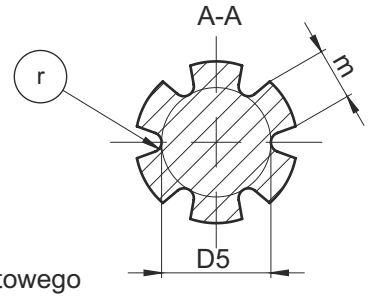
## 4.12. Regeneracja - Informacja o kątach natarcia

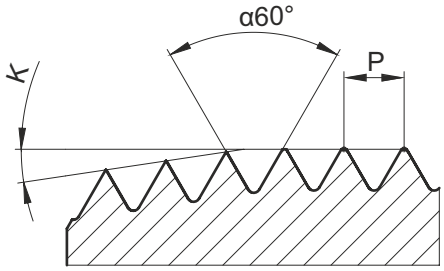
| Grupa Materiałowa | Materiał | Oznaczenie | $\gamma_p$ [°] |
|---|---|---|---|
| P | Stal | 800 | 10 – 13 |
| | | FAN-1200 | 7 – 10 |
| | | 1400 | 5 – 7 |
| M | Stal nierdzewna | INOX | 10 – 13 |
| K | Żeliwo | GG | 4 – 6 |
| N | Materiały nieżelazne | GAL | 7 – 9 |
| | | | 10 – 13 |
| | | | 4 – 6 |
| S | Stopy żaroodporne i stopy tytanowe | 1400 | 5 – 7 |
| H | Materiały twarde | HRC60 | -5 – -4 |

# 5. WYGNIATAKI

## 5.1. Elementy konstrukcyjne wygniataka



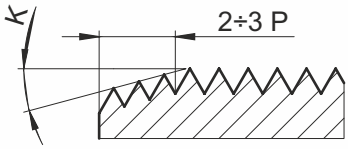
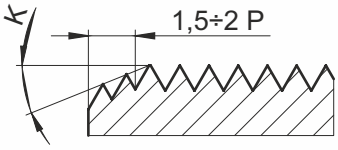




L1- długość całkowita
L2 - długość części roboczej
L3 - długość użytkowa
L4 - długość zabieraka kwadratowego
L5 - długość części skrawającej (nakroju)
∅ D1 - średnica znamionowa gwintu
∅ D2 - średnica chwytu
∅ D3 - średnica szyjki
∅ D4 - średnica czołowa
∅ D5 - średnica rdzenia

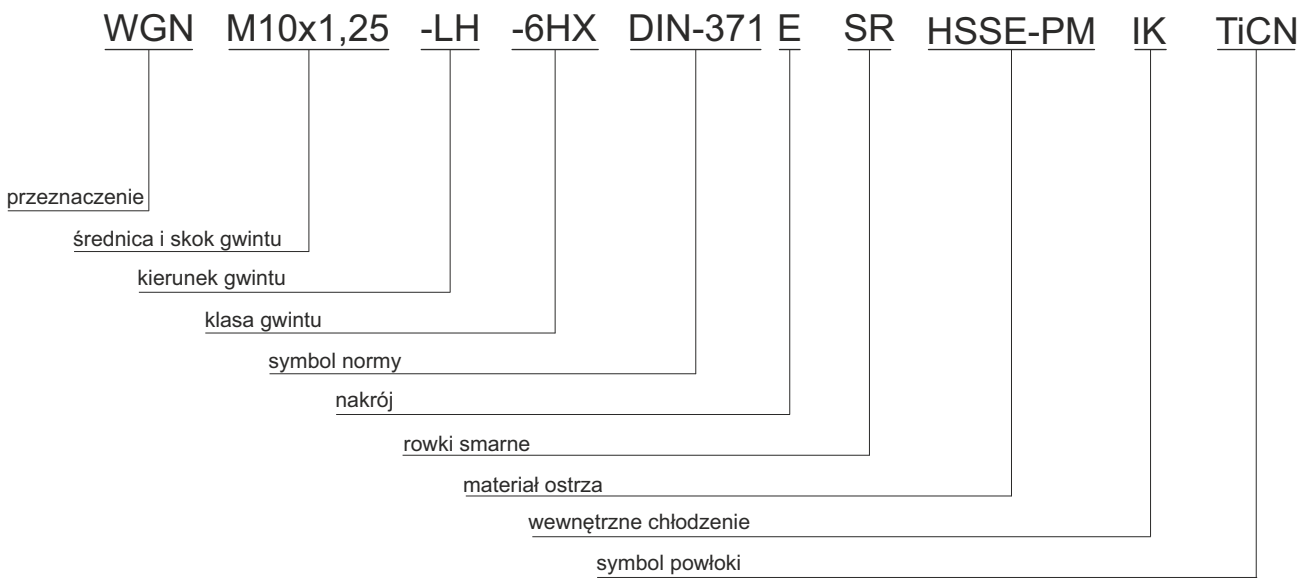
r - rowek olejowy
κ - kąt przystawienia (nakroju)
α - kąt zarysu gwintu
P - podziałka gwintu (skok)
m - szerokość ostrza
a - wielkość zabieraka kwadratowego

## 5.2. Rodzaje nakrojów wygniataków

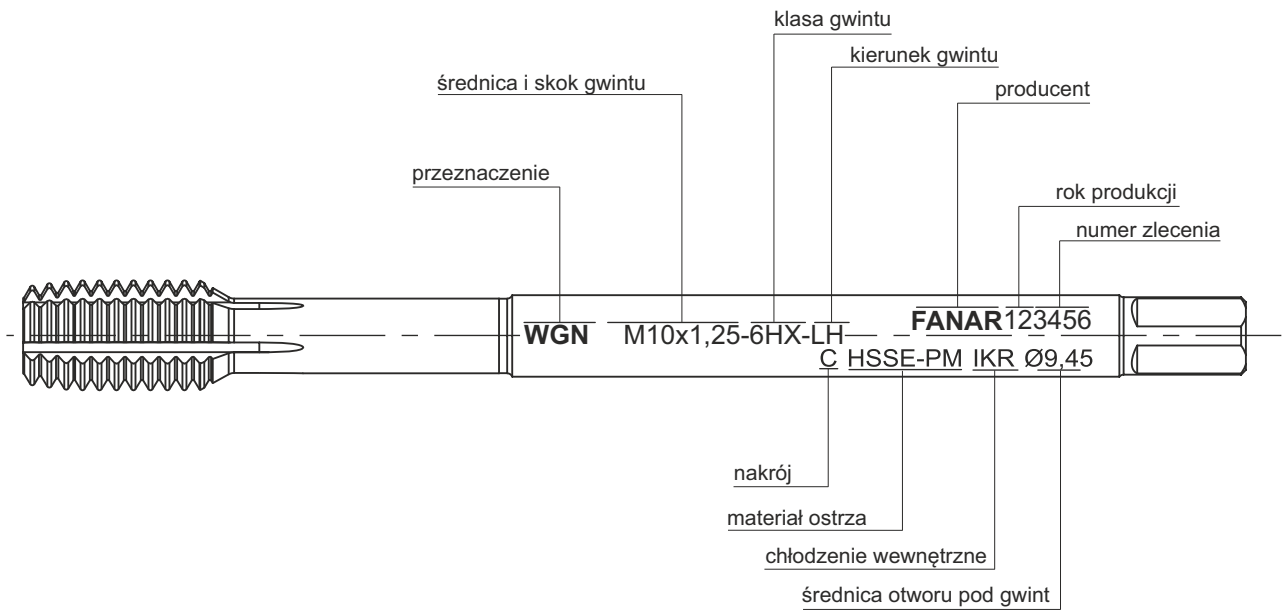
| Symbol rodzaju nakroju | Szkic | Długość nakroju wyrażona w ilości zwojów gwintu | Kąt nakroju |
|---|---|---|---|
| **C** |   | 2 ÷ 3 P | 8,5° |
| **E** |   | 1,5 ÷ 2 P | 11,5° |

## 5.3. Oznaczenie i cechowanie wygniataków

### Oznaczenie




### Cechowanie



## 5.4. Różnica między gwintem nacinanym, a wygniatanym

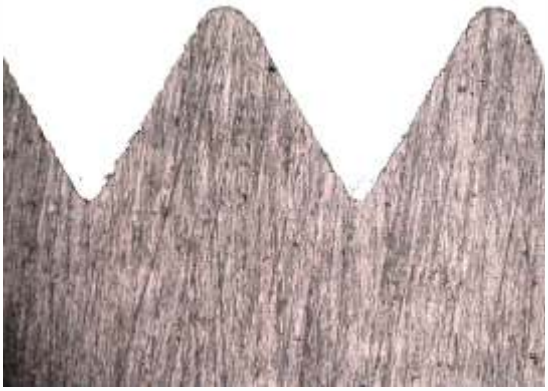
Proces wygniatania jest to obróbka bezwiórowa, gdzie materiał jest odciskany od przedmiotu obrabianego, gwint formowany jest przez odkształcenie plastyczne, bez konieczności odprowadzania wiórów. Materiał formowany jest na zimno, bez przerywania przebiegu włókien.

*Gwint nacinany*

*Gwint wygniatany*

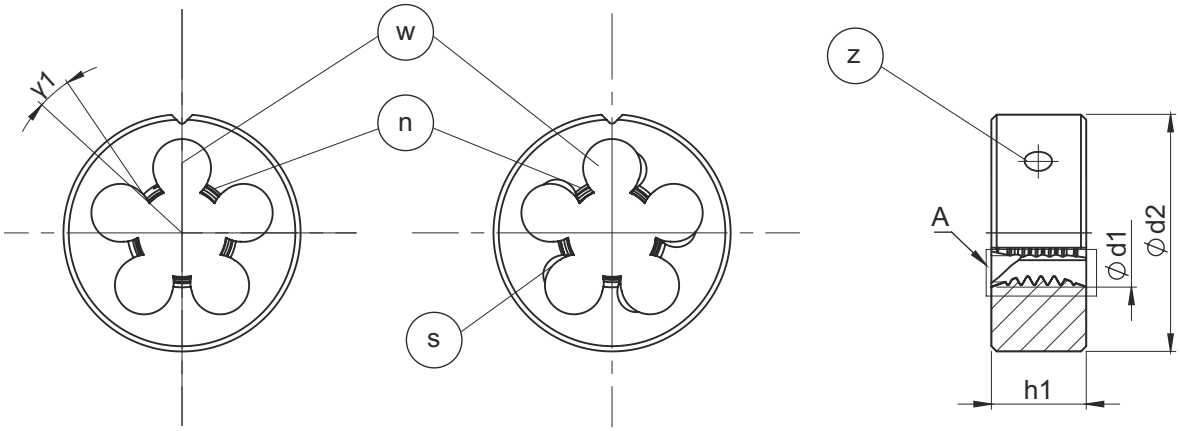
| Zalety wygniatania | Wady wygniatania |
|---|---|
| → obróbka bezwiórowa | → znacznie większe momenty wygniatania w porównaniu do nacinania |
| → jedno narzędzie do otworów przelotowych i nieprzelotowych | → niecałkowite uformowanie rdzenia gwintu |
| → możliwe gwintowanie głębokich otworów 4 x D | → nośność gwintu stanowi ok 80% nośności gwintu nacinanego, ale uzyskujemy znacznie większą wytrzymałość |
| → wysoka wytrzymałość gwintu, szczególnie na powierzchniach bocznych gwintu | → ograniczony obszar zastosowania do materiałów plastycznych |
| → lepsza powierzchnia gwintu | → wyższa tolerancja wykonywania gwintu |
| → brak błędów podziału podziałki i zarysu gwintu | → metoda niezalecana w przemyśle spożywczym i farmaceutycznym |
| → możliwość gwintowania ze znacznie wyższymi parametrami obróbki, ponieważ formowalność większości materiałów wzrasta wraz z prędkością formowania, nie ma to negatywnego wpływu na trwałość narzędzia | |
| → duża sztywność narzędzia zmniejsza ryzyko jego uszkodzenia | |

## 5.5. Rozwiązywanie problemów przy wygniataniu

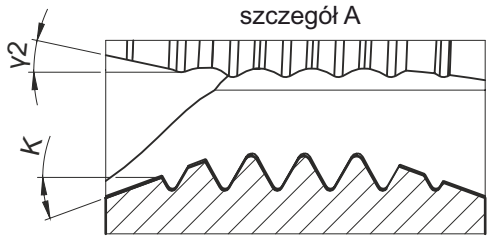
| Problem | Rozwiązanie |
|---|---|
| **Niepełny zarys gwintu** | |
| | Zmniejszyć średnicę wiertła pod gwint lub zastosować średnicę wiertła zgodną z tabelą doboru dla wygniataków str. 270. |
| **Przeformowany zarys gwintu, za mała średnica rdzenia** | |
|  | Zwiększyć średnicę wiertła pod gwint lub zastosować średnicę wiertła zgodną z tabelą doboru dla wygniataków str. 270. |
| **Niska jakość powierzchni gwintu, wyrwania na powierzchni gwintu** | |
| | Poprawa smarowania: zastosowanie wygniataka z rowkami olejowymi<br>Zwiększenie ilości chłodziwa/środka smarującego<br>Zastosować olej jako środek smarujący<br>Zastosować wygniatak pokryty |
| **Złamanie narzędzia** | |
| | Zwiększyć otwór pod gwint<br>Zwiększyć ilość chłodziwa/środka smarującego<br>Zastosowanie pokrycia zapobiegającego przywieraniu obrabianego materiału<br>Sprawdzić zgodność obrabianego materiału z zaleceniami co do plastyczności i twardości |

# 6. NARZYNKI

## 6.1. Elementy konstrukcyjne narzynki




⌀d1 - średnica nominalna gwintu
⌀d2 - średnica zewnętrzna
h1 - grubość narzynki
κ - kąt nakroju
γ1- kąt natarcia
γ2 - kąt pochylenia skośnej powierzchni natarcia
w - otwory wiórowe
n - nakrój
s - skośna powierzchnia natarcia
z - otwory zaciskowe




## 6.2. Normy wymiarowe

Normy wymiarowe przyporządkowują wymiarom nominalnym gwintów odpowiednie szeregi wymiarów zewnętrznych narzynki (średnice, grubości) oraz określają wymiary związane z mocowaniem narzynki w oprawce (położenie, wielkość otworów zaciskowych i kanałków).

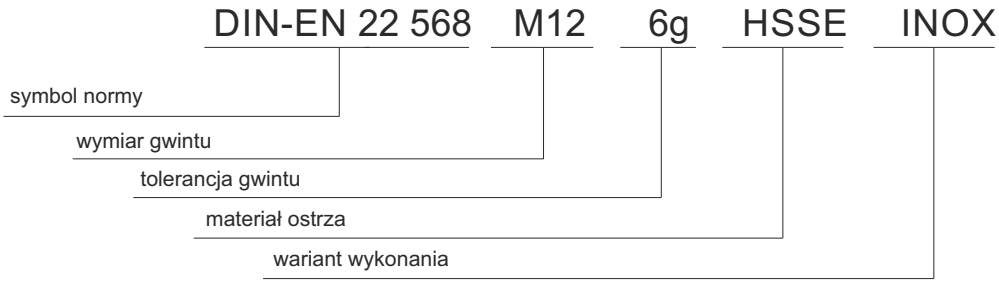
| Symbol | Normy | Przeznaczenie |
|---|---|---|
| DIN | EN 22 568<br>(dawniej DIN 223)<br>PN-92/M-58070<br>ISO 2568 | Narzynki okrągłe do gwintów metrycznych zwykłych i drobnozwojnych, UNC, UNF, BSW, BSF oraz innych gwintów z wyjątkiem gwintów rurowych G i R |
| DIN | EN 24 231<br>(dawniej DIN 5158)<br>PN-92/M-58161<br>ISO 4231 | Narzynki okrągłe do gwintów rurowych G |
| DIN | EN 24 230<br>(dawniej DIN 5159)<br>PN-92/M-58160<br>ISO 4230 | Narzynki okrągłe do gwintów rurowych stożkowych R |

## 6.3. Oznaczanie i cechowanie narzynek

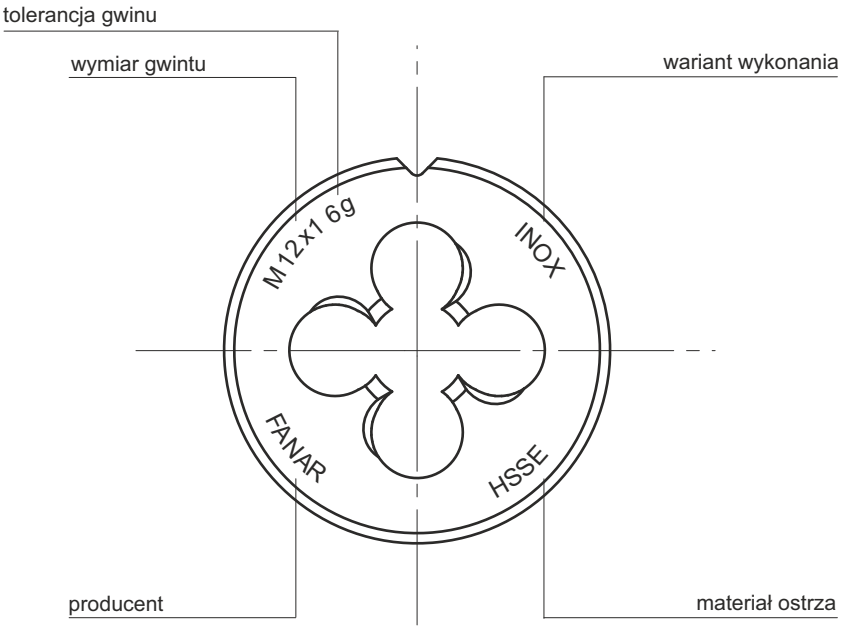
### Marking

**Przykład:** narzynka maszynowa wysokowydajna wg normy DIN-EN 22 568 do gwintu M12, tolerancja gwintu 6g, do stali nierdzewnej

Oznaczenie: podawane w zamówieniach, fakturach, specyfikacjach, na opakowaniach




### Cechowanie



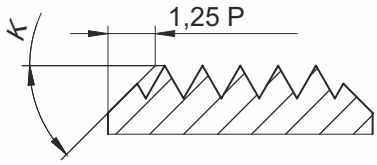
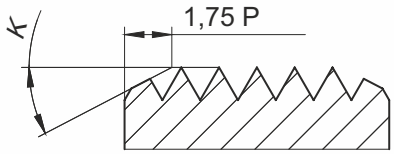
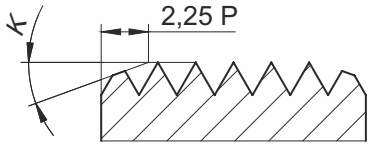
## 6.4. Tolerancje gwintu nacinanego

Narzynki w wydaniu katalogowym przeznaczone są do nacinania najczęściej występującej podstawowej dla danego rodzaju gwintu tolerancji: dla gwintu metrycznego 6g, dla gwintów UNC, UNF itd. 2A. Na życzenie możemy wykonać narzynki do innych niż powyższe pól tolerancji np. dla gwintów metrycznych: 4h dla gwintów ciasnych, 6e dla gwintów pod cienkie powłoki galwaniczne.

## 6.5. Grupy narzędzi według zastosowania

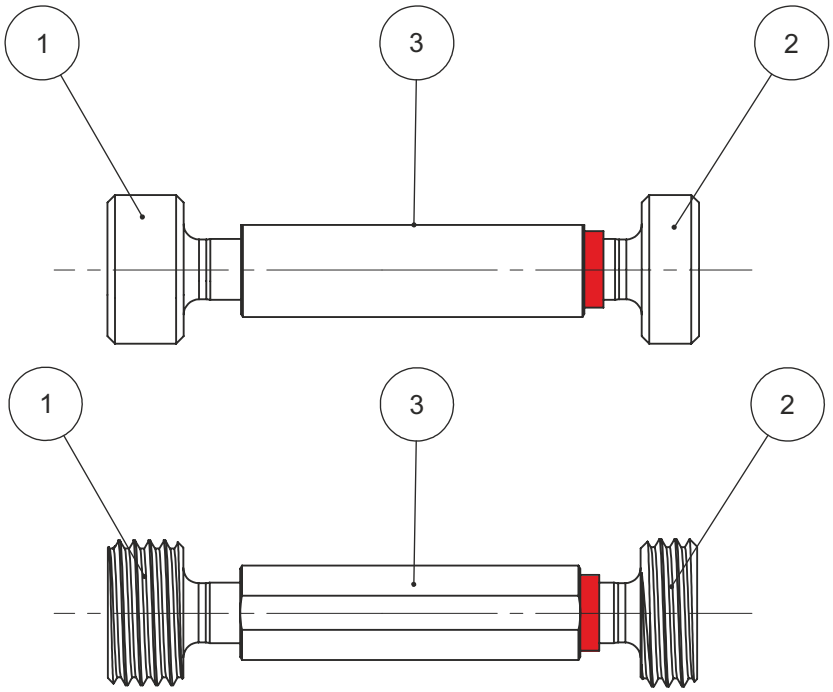
| | |
|---|---|
| 800<br>P N | Do obróbki stali konstrukcyjnych oraz staliwa o Rm≤800MPa. |
| 800 SPN<br>P N | Do obróbki stali konstrukcyjnych oraz staliwa o Rm≤800MPa.<br>Uzyskiwana lepsza jakość nacinanego gwintu, do stosowania na automatach tokarskich. |
| Ms<br>N | Do obróbki mosiądzu i brązu krótko wiórowego. |
| INOX<br>P M K N | Do obróbki stali nierdzewnych, aluminium odlewniczego oraz żeliwa sferoidalnego. |

## 6.6. Rodzaje nakrojów narzynek

| Długość | Zastosowanie | Szkic | Kąt |
|---|---|---|---|
| 1,25 P | Ms |  | 45° |
| 1,75 P | 800 |  | 27,5° |
| 2,25 P | INOX |  | 20° |

# 7. SPRAWDZIANY

## 7.1. Budowa sprawdzianów

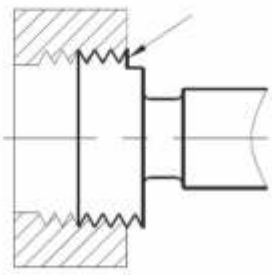



1 - tłoczek przechodni
2 - tłoczek nieprzechodni
3 - rękojeść

## 7.2. Rodzaje sprawdzianów

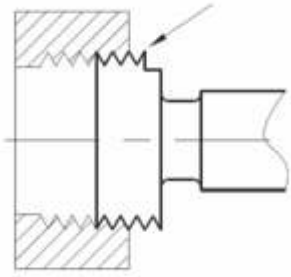
### 7.2.1 SPRAWDZIANY NPT

Spłaszczenie równo z płaszczyzną detalu



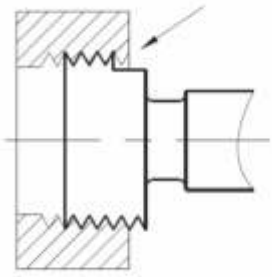
Głębokość bazowa

Spłaszczenie 1 zwój (obrót) powyżej płaszczyzny detalu



Minimalna głębokość gwintowania

Spłaszczenie 1 zwój (obrót) poniżej płaszczyzny detalu



Maksymalna głębokość gwintowania

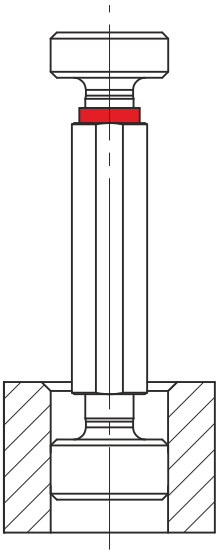
### 7.2.2 SPRAWDZIANY R, Rc/Rp

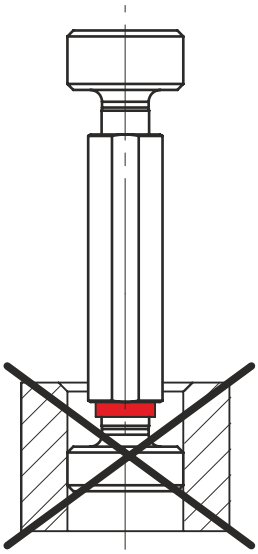
Gwint rurowy do połączeń ze szczelnością uzyskiwaną na gwincie wg PN-EN 10226-1, PN-EN 10226-2 (ISO7-1:2000). Weryfikacja sprawdzianami granicznymi wg PN-EN 10226-3 (ISO-7-2:2000)

| | |
|---|---|
| **Sprawdzian nr 1** | **Sprawdzian gwintowy stożkowy trzpieniowy o zarysie pełnym.** Ten sprawdzian trzpieniowy ma gwint stożkowy o zbieżności 1:16, o zarysie pełnym i jest przeznaczony do sprawdzania średnicy zewnętrznej (D) i podziałowej ($D_2$) w płaszczyźnie podstawowej gwintów walcowych wewnętrznych **(Rp)** i gwintów stożkowych wewnętrznych **(Rc)**. |
| **Sprawdzian nr 2** | **Sprawdzian gwintowy stożkowy trzpieniowy o zarysie pełnym z wybraniem.** Ten sprawdzian trzpieniowy ma gwint stożkowy o zbieżności 1:16, o zarysie pełnym z wybraniem i jest przeznaczony do sprawdzania średnicy zewnętrznej (D) i podziałowej (D płaszczyźnie podstawowej oraz długości akomodacji walcowych wewnętrznych **(Rp)** i gwintów stożkowych wewnętrznych **(Rc)**. *[1] Długość akomodacji: Odległość na przedmiocie z gwintem wewnętrznym od czoła przedmiotu do pierwszej przeszkody, którą podczas montażu napotka przedmiot z gwintem zewnętrznym* |
| **Sprawdzian nr 3** | **Sprawdzian gwintowy walcowy pierścieniowy o zarysie pełnym.** Ten sprawdzian pierścieniowy ma gwint o zarysie pełnym i jest przeznaczony do sprawdzania średnicy wewnętrznej ($d_1$) i średnicy podziałowej ($d_2$) w płaszczyźnie podstawowej gwintu stożkowego (**R**). |
| **Sprawdzian nr 4** | **Sprawdzian gładki stożkowy pierścieniowy.** Ten sprawdzian pierścieniowy ma gładki stożek o zbieżności 1:16 i jest przeznaczony do sprawdzania średnicy zewnętrznej (d) i długości użytecznej gwintów stożkowych zewnętrznych (**R**). |
| **Sprawdzian nr 5** | **Przeciwsprawdzian gwintowy stożkowy trzpieniowy o zarysie modyfikowanym.** Przeciwsprawdzian ten jest przeznaczony do sprawdzania wymiarów sprawdzianu gwintowego walcowego pierścieniowego o zarysie pełnym **(sprawdzian nr3)** podczas jego wykonywania i kontroli zużycia sprawdzianu pierścieniowego. |

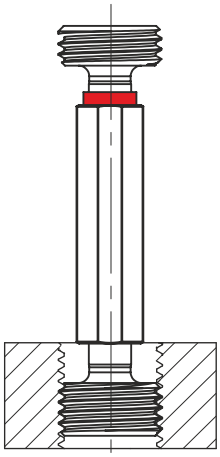
## 7.3. Sprawdzanie otworów

Do sprawdzania otworów przelotowych i nieprzelotowych stosuje się sprawdziany tłoczkowe przechodnie i nieprzechodnie. Sprawdzian przechodni powinien wsunąć się w otwór pod wpływem lekkiego ręcznego nacisku lub pod własnym ciężarem. Niedopuszczalne jest wciskanie sprawdzianu siłą, gdyż grozi to jego zakleszczeniem. Sprawdzian nieprzechodni nie powinien wsunąć się w otwór.

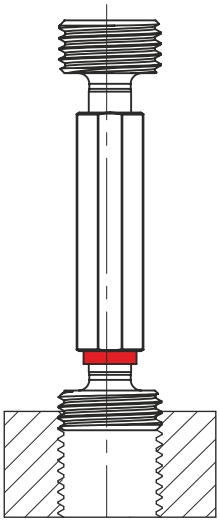




## Sprawdzanie gwintów wewnętrznych walcowych



Do sprawdzania gwintów wewnętrznych stosuje się sprawdziany gwintowe trzpieniowe przechodnie i nieprzechodnie. **Sprawdzianem gwintowym trzpieniowym przechodnim** sprawdza się wirtualny wymiar gwintu wewnętrznego przez sprawdzenie wymiaru dolnego średnicy podziałowej. Sprawdzian przechodni powinien przy ręcznym wkręcaniu bez nadmiernego wysiłku wkręcać się na całą długość gwintu. Gwint nie spełnia wymagań, gdy wkręcenie sprawdzianu jest niemożliwe.

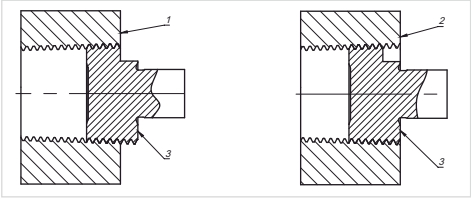


**Sprawdzianem gwintowym trzpieniowym nieprzechodnim** sprawdza się czy średnica podziałowa gwintu przekracza górny wymiar graniczny. Sprawdzian nieprzechodni przy ręcznym wkręcaniu bez nadmiernego wysiłku może wkręcać się w gwint nie **więcej niż na dwa zwoje**. Wkręcenie na więcej niż dwa zwoje gwintu powoduje nie spełnienie wymagań.

## 7.4. Stosowanie sprawdzianów i sprawdzanie gwintów

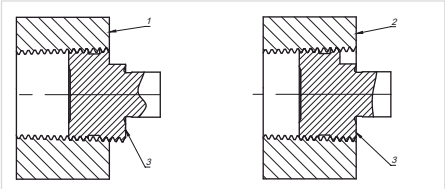
### Sprawdzanie gwintów wewnętrznych stożkowych (Rc) i walcowych (Rp)

**Etap 1:** Sprawdzian gwintowy stożkowy trzpieniowy (**Sprawdzian nr 1**) wkręca się ręcznie mocno w gwint wewnętrzny. Gwint wewnętrzny jest wykonany w granicach tolerancji, jeśli czoło przedmiotu z gwintem znajduje się między czołami progu lub pokrywa się z jednym z czół progu sprawdzianu.




Objaśnienia:
1 - czoło przedmiotu pokrywa się z progiem tolerancyjnym sprawdzianu,
2 - czoło przedmiotu pokrywa się z czołem sprawdzianu
3 - sprawdzian nr 1

**Etap 2:** Sprawdzian gwintowy trzpieniowy z wybraniem (**Sprawdzian nr 2**) wkręca się ręcznie mocno w gwint wewnętrzny. Gwint wewnętrzny jest wykonany w granicach tolerancji, jeśli czoło przedmiotu z gwintem znajduje się między czołami progu lub pokrywa się z jednym z czół progu sprawdzianu.




Objaśnienia:
1 - czoło przedmiotu pokrywa się z progiem tolerancyjnym sprawdzianu,
2 - czoło przedmiotu pokrywa się z czołem sprawdzianu
3 - sprawdzian nr 2

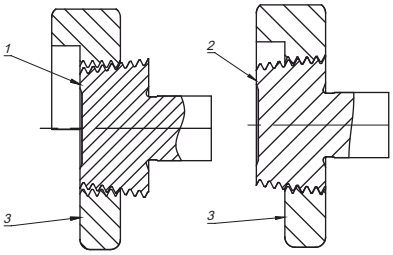
**Uwaga 1 :** Jeśli przedmiot został odrzucony przez sprawdzian nr2, lecz przyjęty przez sprawdzian nr 1, może wskazywać to na brak odpowiedniej długości akomodacji.

**Uwaga 2 :** Zmienność względnego położenia progów sprawdzianów nr 1 i nr 2 przekraczająca 0,5xP ale nie większa niż 1xP jest dopuszczalna, jeśli wytwórca i nabywca uzgodnią, że zastosowane do montażu szczeliwo skompensuje zwiększone różnice wyników sprawdzenia.

**Uwaga 3 :** W przypadku gwintów **Rp**, jeśli głębokość ścięcia na średnicy podziałowej odbiega od 0,5xP, wynik sprawdzenia może być znacznie zakłócony.

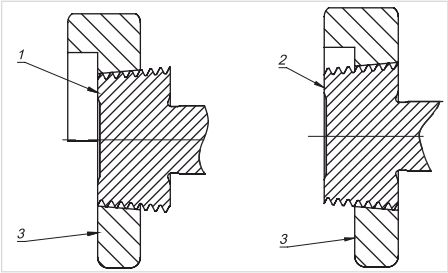
### Sprawdzanie gwintów zewnętrznych stożkowych (R)

**Etap 1:** Sprawdzian gwintowy walcowy pierścieniowy (**Sprawdzian nr 3**) wkręca się ręcznie mocno na gwint zewnętrzny. Gwint zewnętrzny jest wykonany w grnicach tolerancji, jeśli czoło przedmiotu z gwintem znajduje się między czołami progu lub pokrywa się z jednym z czół progu sprawdzianu.




Objaśnienia:
1 - czoło przedmiotu pokrywa się z progiem tolerancyjnym sprawdzianu,
2 - czoło przedmiotu pokrywa się z czołem sprawdzianu
3 - sprawdzian nr 3

**Etap 2:** Sprawdzian gładki stożkowy (**Sprawdzian nr 4**) osadza się ręcznie mocno na gwincie zewnętrznym. Gwint zewnętrzny jest wykonany w granicach tolerancji, jeśli czoło przedmiotu z gwintem znajduje się między czołami progu lub pokrywa się z jednym z czół progu sprawdzianu i dna bruzd wszystkich zwojów gwintu w obszarze pokrytym przez sprawdzian są w pełni ukształtowane

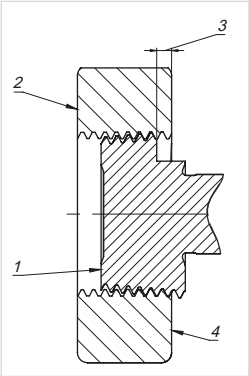



Objaśnienia:
1 - czoło przedmiotu pokrywa się z progiem tolerancyjnym sprawdzianu,
2 - czoło przedmiotu pokrywa się z czołem sprawdzianu
3 - sprawdzian nr 4

**Uwaga:** Zmienność względnego położenia progów sprawdzianów nr 3 i nr 4 przekraczająca 0,5xP, ale nie większa niż 1xP jest dopuszczalna jeśli wytwórca i nabywca uzgodnią, że zastosowane do montażu szczeliwo skompensuje zwiększone różnice wyników sprawdzenia.

## Sprawdzanie zużycia sprawdzianów gwintowych trzpieniowych stożkowych (Sprawdzian nr 1, Sprawdzian nr 2)

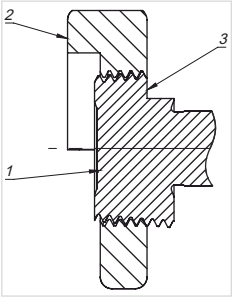
Średnicę podziałową sprawdzianów trzpieniowych z gwintem stożkowym można sprawdzać przeciwsprawdzianem gwintowym walcowym pierścieniowym o zarysie modyfikowanym (**Sprawdzian nr 6).** Średnicę zewnętrzną sprawdzianów gwintowych stożkowych trzpieniowych należy sprawdzać za pomocą pomiarów bezpośrednich.




Objaśnienia:
1 - sprawdziany nr 1 i nr 2,
2 - sprawdzian nr 6,
3 - odległość od czoła progu sprawdzianu trzpieniowego do czoła przeciwsprawdzianu pierścieniowego powinna być $l_{13}$ (Patrz PN-EN 10226-3:2005 tab.16)
4 - oznakowane czoło wskazujące położenie płaszczyzny podstawowej

## Sprawdzanie zużycia sprawdzianów gwintowych walcowych pierścieniowych (Sprawdzian nr 3)

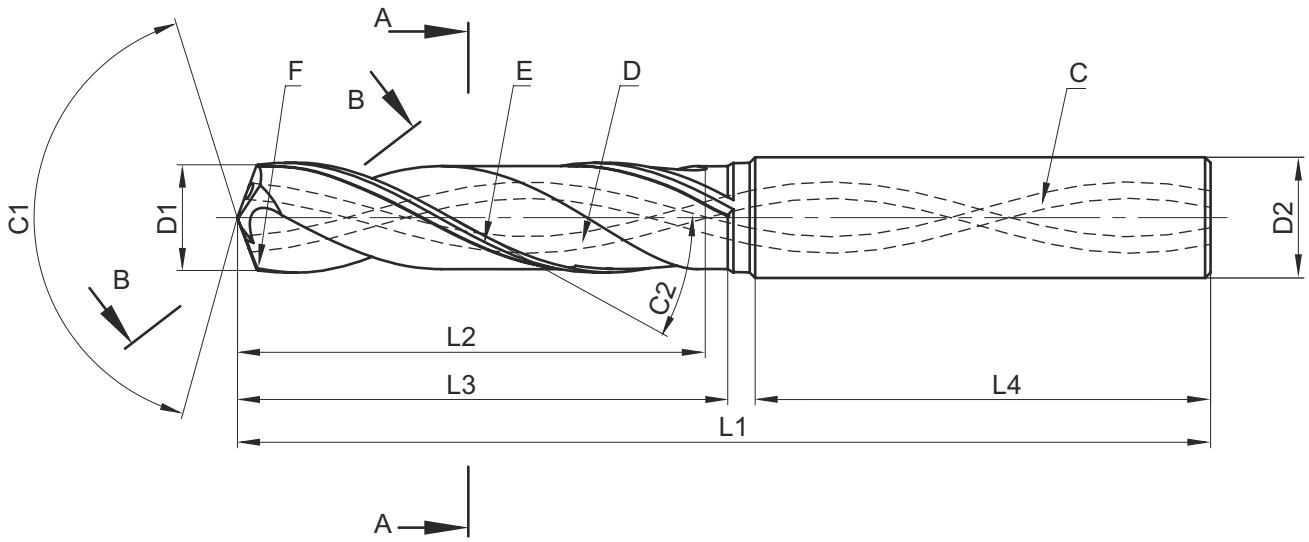
Sprawdziany gwintowe walcowe pierścieniowe o zarysie pełnym należy sprawdzać na średnicy podziałowej przeciwsprawdzianem gwintowym stożkowym, trzpieniowym o zarysie modyfikowanym **(Sprawdzian nr 5)**. Średnicę wewnętrzną należy sprawdzić za pomocą pomiarów bezpośrednich.




Objaśnienia:
1 - sprawdziany nr 5,
2 - sprawdzian nr 3,
3 - odległość od czoła progu przeciwsprawdzianu trzpieniowego do czoła przeciwsprawdzianu pierścieniowego powinna być $l_{14}$ (Patrz PN-EN 10226-3:2005 tab.16)
4 - oznakowane czoło wskazujące położenie płaszczyzny podstawowej

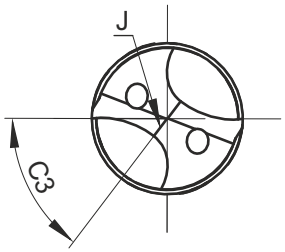
# 8. WIERTŁA

## 8.1. Elementy konstrukcyjne wiertła

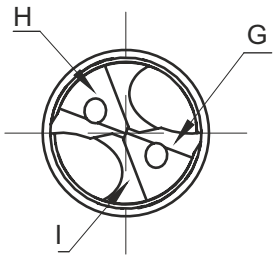



A - część chwytowa
B - część robocza
C - kanał doprowadzający chłodziwo
D - rowek wiórowy
E - łysinka (pomocnicza powierzchnia przyłożenia)
F - powierzchnia natarcia
G - pierwotna powierzchnia przyłożenia
H - wtórna powierzchnia przyłożenia
I - korekta ścinu
J - ścin

bez korekty ścinu

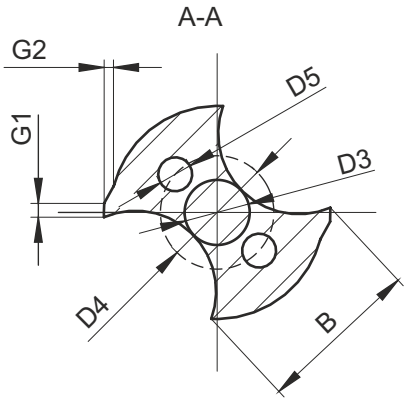



z korektą ścinu




L1 - długość całkowita
L2 - długość rowków wiórowych
L3 - długość łysinki
L4 - długość chwytu
D1 - średnica części roboczej
D2 - średnica chwytu
D3 - średnica rdzeniowa
D4 - rozstaw kanałów chłodzących
D5 - średnica kanałów chłodzących
C1 - kąt wierzchołkowy
C2 - kąt pochylenia rowka wiórowego
C3 - kąt ścinu
C4 - kąt przyłożenia
C5 - kąt pierwotnej powierzchni przyłożenia
C6 - kąt wtórnej powierzchni przyłożenia
G1 - szerokość łysinki
G2 - opuszczenie łysinki
B - szerokość ostrza (pióra)

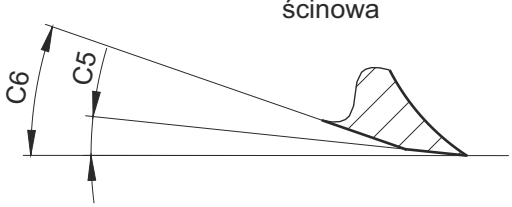
A-A



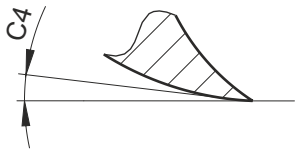

B-B

Formy powierzchni przyłożenia

ścinowa




zataczana



## 8.2. Warunki chłodzenia i smarowania

**Stosowanie chłodziwa:**

- Jest wskazane gdy głębokość wiercenia jest przynajmniej dwukrotnie większa od średnicy.
- Jest niezbędne przy głębokościach pięciokrotnie większych od średnicy wiertła
- Przy zewnętrznym chłodzeniu należy podawać chłodziwo nie tylko pod odpowiednim ciśnieniem, ale również w odpowiedni sposób.

**Metody podawania chłodziwa:**

**Wewnętrzne:**

- Powinno być stosowane zawsze, gdy głębokość otworu jest przynajmniej trzykrotnie większa od średnicy.
- Chłodzenie wewnętrzne jest zawsze zalecane w celu uniknięcia blokowania się wiórów.

**Zewnętrzne:**

- Aby poprawić usuwanie wiórów, przynajmniej jedna dysza chłodziwa (dwie, jeśli wiertło jest nieruchome) powinna być skierowana blisko osi narzędzia.
- Chłodzenie zewnętrzne pomaga uniknąć tworzenia się narostów na krawędziach z uwagi na obniżenie temperatury krawędzi.
- Dopuszcza się chłodzenie zewnętrzne przy materiałach dających krótki wiór.

## 8.3. Problemy i ich rozwiązywanie

| | |
|---|---|
| **Problem: Narost na krawędziac** | |
| Zbyt mała prędkość skrawania | Zwiększyć prędkość skrawania |
| Zbyt wysoka temperatura krawędzi narzędzia | Doprowadzić chłodzenie |
| Zbyt duży ujemny kąt natarcia | Naostrzyć krawędź skrawającą |
| Ścieranie się pokrycia | Pokryć część roboczą narzędzia |
| Zbyt mała ilość oleju w chłodziwie | Zwiększyć ilości oleju w chłodziwie |
| **Problem: Wykruszenia naroży** | |
| Zbyt duże bicie | Zastosować oprawkę o większej precyzji mocowania |
| Zbyt duży posuw | Zmniejszyć posuw |
| Przerywany proces skrawania | Zmniejszenie posuwu przy wyjściu z materiału |
| Niewystarczająca ilość chłodziwa (pękanie termiczne) | Sprawdzić ciśnienie chłodziwa |
| Mała sztywność układu OUPN | Sprawdzić sztywność zamocowania narzędzia w oprawce |
| **Problem: Nadmierne zużycie krawędzi skrawającej** | |
| Zbyt duża prędkość skrawania | Zmniejszyć prędkość skrawania |
| Zbyt mały posuw | Zwiększyć posuw / zwiększyć kąt przyłożenia |
| Zbyt miękki materiał | Dobrać narzędzie odpowiednie do obrabianego materiału |
| Zbyt mała ilość chłodziwa | Sprawdzić ciśnienie chłodziwa i ustawienie dysz |

| | |
|---|---|
| **Problem: Wykruszenia krawędzi skrawającej** | |
| Zbyt duże bicie | Zastosować oprawkę o większej precyzji mocowania |
| Niestabilne warunki skrawania | Sprawdzić parametry skrawania |
| Krytyczne zużycie narzędzia | Częściej wymieniać narzędzie |
| Zbyt twardy materiał | Dobrać narzędzie odpowiednie do obrabianego materiału |
| **Problem: Ścieranie się łysinki** | |
| Zbyt duże bicie | Zastosować oprawkę o większej precyzji mocowania |
| Niskie ciśnienie chłodziwa | Używać czystego oleju albo emulsji o większej zawartości oleju |
| Zbyt wysoka prędkość skrawania | Zmniejszyć prędkość skrawania |
| Nalepianie się materiału obrabianego | Dobrać narzędzie odpowiednie do obrabianego materiału |
| **Problem: Zużycie wierzchołka (ścinu)** | |
| Zbyt niska prędkość skrawania | Zwiększyć prędkość skrawania |
| Zbyt duży posuw | Zmniejszyć posuw |
| Zbyt mały ścin | Sprawdzić wymiary |
| Drgania narzędzia | Zmniejszyć długość niepodpartą |
| **Problem: Odkształcenie plastyczne** | |
| Zbyt duża prędkość skrawania | Zmniejszyć prędkość skrawania |
| Zbyt duży posuw | Zmniejszyć posuw |
| Słabe doprowadzenie chłodziwa | Sprawdzić ciśnienie chłodziwa i ustawienie dysz |
| Zbyt mała sztywność układu OUPN | Zastosować wiertło VHM |
| **Problem: Odkształcenie plastyczne** | |
| Zbyt duża prędkość skrawania | Zmniejszyć prędkość skrawania |
| Zbyt duży posuw | Zmniejszyć posuw |
| Słabe doprowadzenie chłodziwa | Sprawdzić ciśnienie chłodziwa i ustawienie dysz |
| Zbyt mała sztywność układu OUPN | Zastosować wiertło VHM |
| **Problem: Ścieranie się powłoki z krawędzi** | |
| Zbyt duże tarcie | Stosować chłoddziwo o wższej zawartości oleju lub dodatków |
| Skośne wyjście | Zmniejszyć posuw na wyjściu |
| Nalepianie się materiału obrabianego | Zmniejszyć liczbę regeneracji narzędzia |
| **Problem: Zator wiórów** | |
| Zbyt mała prędkość skrawania | Zwiększyć prędkość skrawania |
| Zbyt duży posuw | Zmniejszyć posuw |
| Zbyt małe rowki wiórowe | Dobrać narzędzie o odpowiedniej geometrii |
| Słabe wypłukiwanie wiórów | Zastosować chłodzenie wewnętrzne |

# 9. OPRAWKI MASZYNOWE

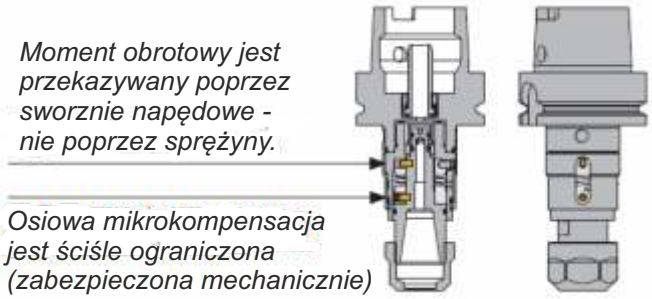
## 9.1. Oprawki do gwintowania synchronicznego

MASTERSYNC

### Zasady działania

Ideą MasterSYNC jest zastosowanie elementu sprężystego, który zapewnia osiowe i promieniowe kompensowanie nieuniknionych rozbieżności pomiędzy obrotami wrzeciona, a rzeczywistym skokiem gwintownika oraz zmniejszenie siły wzdłużnej działającej na gwintownik. Rezultatem jest zwiększenie żywotności gwintownika i poprawa jakości gwintu.

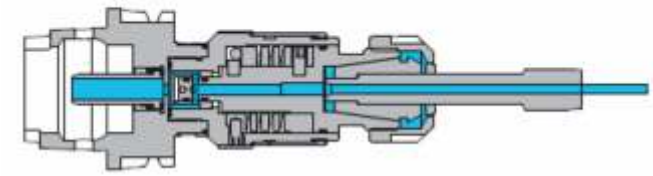
Poprzez ograniczenie kompensacji osiowej i sił skręcających działających na sprężyny, otwory mogą być gwintowane bez narażania oprawki MasterSYNC na zmęczenie, odkształcenie lub zniszczenie.




### Wewnętrzne doprowadzenie chłodziwa i MQL

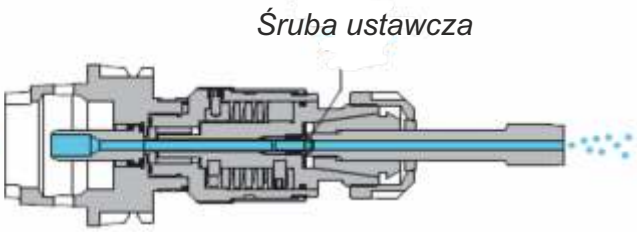
Oprawki z wewnętrznym doprowadzeniem chłodziwa mogą pracować z ciśnieniem 80bar bez wpływu na kompensację osiową.
Oprawki MQL przystosowane są do pracy z minimalną ilością chłodziwa.

**IK**



*Wewnętrzne chłodzenie wysokim ciśnieniem ze zwiększoną prędkością przepływu*

**MQL**

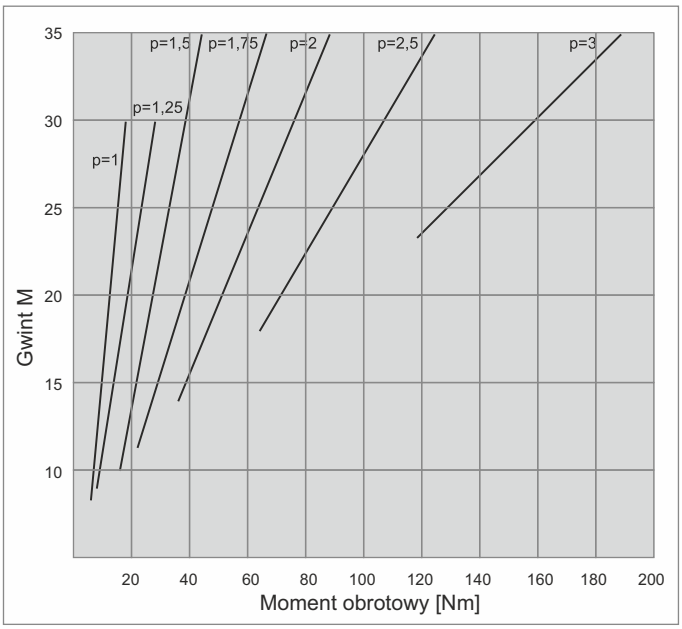



*System MQL (Minimum Quantity Lubrication ) - smarowanie minimalną ilością chłodziwa*

## 9.2. Zabieraki ze sprzęgłem przeciążeniowym

### ZALECANE WARTOŚCI USTAWIENIA MOMENTÓW OBROTOWYCH PRZY GWINTOWANIU MATERIAŁU O WYTRZYMAŁOŚCI RM=1000MPA

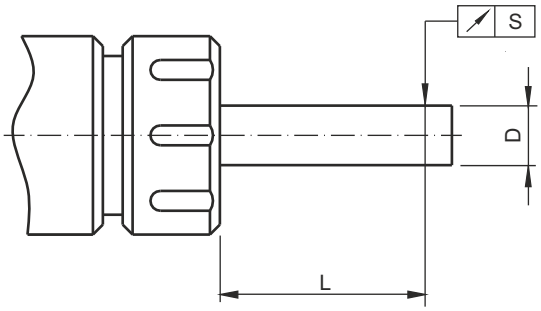
| Gwint M | Moment obrotowy [Nm] |
|---|---|
| 3 | 0,5 |
| 4 | 1,2 |
| 5 | 2 |
| 6 | 4 |
| 8 | 8 |
| 10 | 16 |
| 12 | 22 |
| 14 | 36 |
| 16 | 40 |
| 18 | 63 |
| 20 | 70 |
| 22 | 80 |
| 24 | 125 |
| 27 | 140 |
| 30 | 220 |
| 33 | 240 |




Podane wartości są orientacyjne i mogą się różnić w zależności od konkretnych warunków pracy

## 9.3. Mocowanie w tulejkach ER

### BICIE CHWYTU NARZĘDZIA ZAMOCOWANEGO W TULEJCE ER




| D | L | S |
|---|---|---|
| 1-1,6 | 6 | 0,015 |
| 1,6-3 | 10 | 0,015 |
| 3-6 | 16 | 0,015 |
| 6-10 | 25 | 0,015 |
| 10-18 | 40 | 0,020 |
| 18-26 | 50 | 0,020 |
| 26-40 | 60 | 0,020 |

## 9.4. Wyważenie oprawek

### Pojęcie niewyważenia

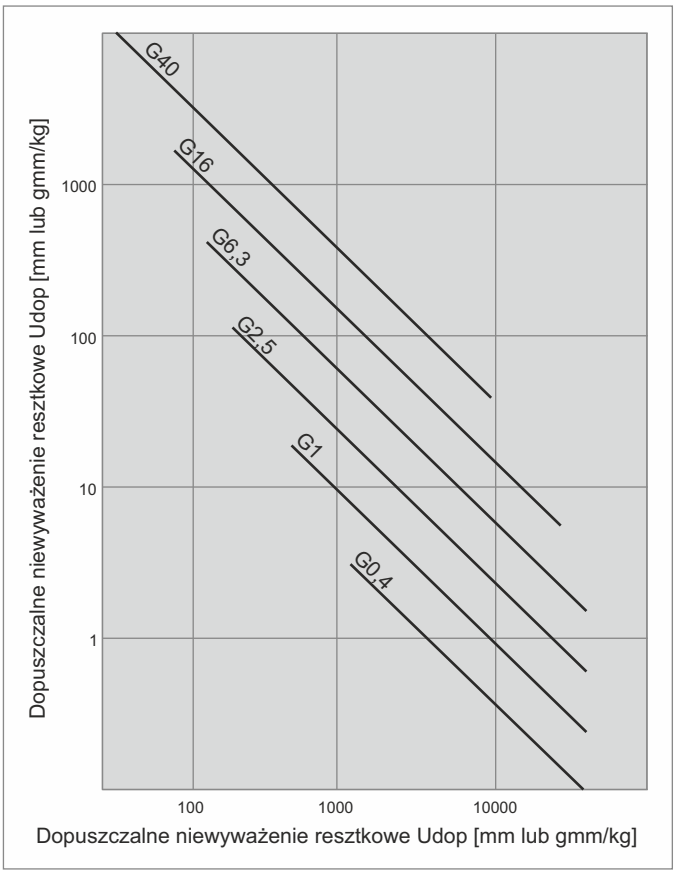
Niewyważenie jest to przesunięcie środka ciężkości masy wirującej od jej osi obrotu.
W skład masy wirującej wchodzi: wrzeciono maszyny, oprawka, elementy pośrednie (tulejki), inne elementy dodatkowe oprawek (nakrętki) oraz narzędzie.
Przyczyną niewyważenia jest niesymetryczność geometryczna, tolerancja wykonania, błędy zamocowania itp.
Niewyważenie powoduje drgania układu, które przenosząc się na narzędzie powodują obniżenie jego trwałości oraz pogorszenie jakości obróbki.
W celu ograniczenia niewyważenia do akceptowalnego poziomu należy zminimalizować luzy na wrzecionie oraz stosować właściwe oprawki i narzędzia. Do najbardziej wymagających aplikacji może okazać się konieczne wyważanie nie tylko oprawek, ale również narzędzi.

### Wyważanie

Wyważanie polega na zmniejszaniu niewyważenia poprzez przesunięcie środka masy wirującej w kierunku osi obrotu. Odbywa się to poprzez zapewnienie właściwej geometrii oraz dodawanie lub ujmowanie mas dodatkowych. Cel ten można osiągnąć jedynie do pewnego stopnia, gdyż zawsze pozostanie niewyważenie resztkowe.

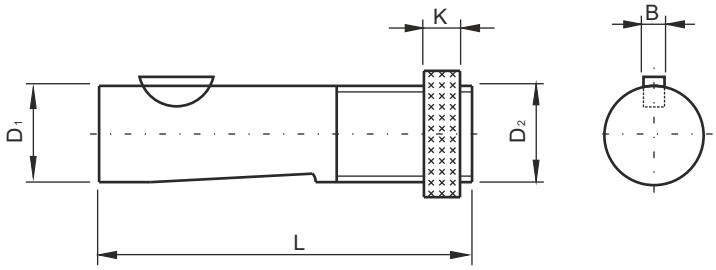
### Klasy dokładności wyważenia

Z punktu widzenia ekonomicznego nie jest opłacalne zbytnie zaostrzanie wymagań co do wyważenia masy wirującej. W celu osiągnięcia pewnego kompromisu pomiędzy aspektami technicznymi i ekonomicznymi wprowadzono normą ISO 1940 klasy dokładności wyważenia. Określono w niej typy zastosowań dla poszczególnych klas, i tak:
- klasa G6,3 przeznaczona jest dla części maszyn i obrabiarek ogólnego zastosowania,
- klasa G2,5 przeznaczona jest dla wysokoobrotowych części maszyn.



## 9.5. Chwyty oprawek

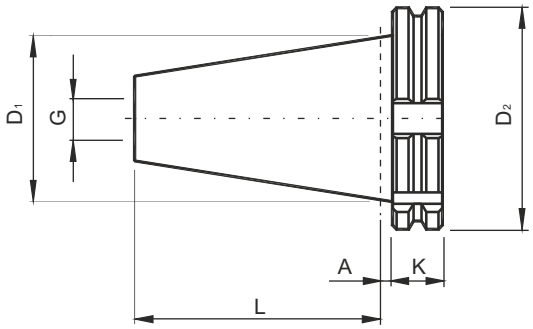
### *TR wg DIN-6327*




| Chwyt | $D_1$ | $D_2$ | L | B | K |
|---|---|---|---|---|---|
| TR20 | 20 | TR20x1,5 | 88 | 5 | 12 |
| TR28 | 28 | TR28x2 | 95 | 6 | 12 |
| TR36 | 36 | TR36x2 | 118 | 8 | 14 |
| TR48 | 48 | TR48x2 | 144 | 10 | 18 |

**Charakterystyka:**
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Chwyt precyzyjnie szlifowany w tolerancji g5

### *ISO wg DIN-69871 A*

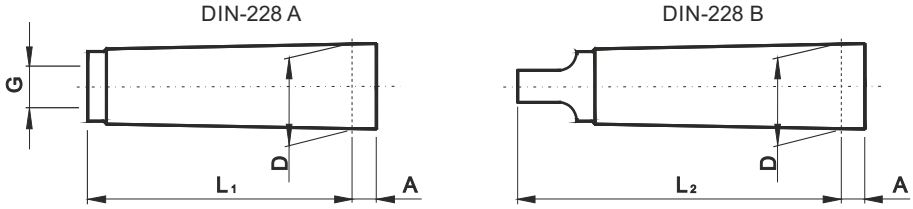



| Stożek | $D_1$ | $D_2$ | L | A | K | G |
|---|---|---|---|---|---|---|
| ISO30 | 31,75 | 50,00 | 47,80 | 3,2 | 15,9 | M12 |
| ISO40 | 44,45 | 63,55 | 68,40 | 3,2 | 15,9 | M16 |
| ISO50 | 69,85 | 97,50 | 101,75 | 3,2 | 15,9 | M24 |

**Wersje wykonania:**
- DIN-69871 A - chwyt bez wewnętrznego chłodzenia
- DIN-69871 AD - z otworem centralnym
- DIN-69871 AD+B - z otworem centralnym i otworami w kołnierzu

**Charakterystyka:**
- Oprawki przeznaczone do obrabiarek z automatyczną wymianą narzędzi
- Do mocowania oprawek w obrabiarce służą czopy
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnia stożka precyzyjnie szlifowana w klasie AT3
- Gniazda narzędziowe wykonane z maksymalnym biciem 0,007mm
- W standardowym wykonaniu korpus wyważony w klasie G6,3/8000obr/min

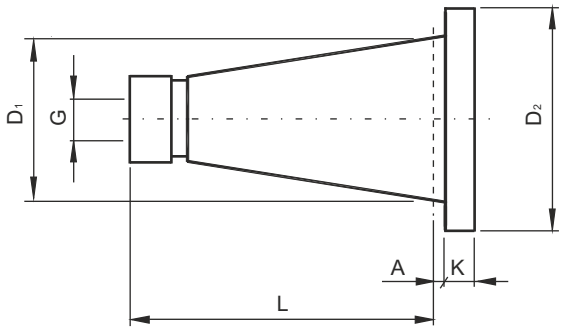
## MORSE'A wg DIN-228




| Stożek | D | A | $L_1$ | $L_2$ | G |
|---|---|---|---|---|---|
| MK1 | 12,065 | 3,5 | 53,5 | 62,0 | M6 |
| MK2 | 17,780 | 5,0 | 64,0 | 75,0 | M10 |
| MK3 | 23,825 | 5,0 | 81,0 | 94,0 | M12 |
| MK4 | 31,267 | 6,5 | 102,5 | 117,5 | M16 |
| MK5 | 44,399 | 6,5 | 129,5 | 149,5 | M20 |

**Charakterystyka:**
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnie przyłączeniowe precyzyjnie szlifowane w klasie AT3

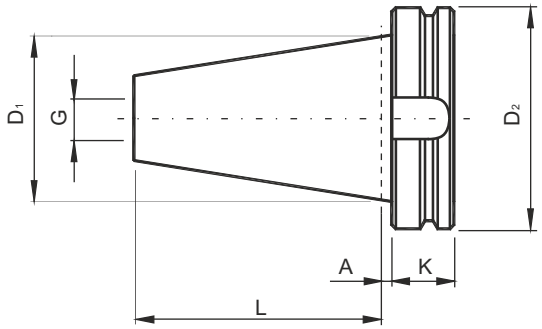
## DIN wg DIN-2080




| Stożek | $D_1$ | $D_2$ | L | A | K | G |
|---|---|---|---|---|---|---|
| DIN30 | 31,75 | 50,0 | 68,4 | 1,6 | 8 | M12 |
| DIN40 | 44,45 | 63,0 | 93,4 | 1,6 | 10 | M16 |
| DIN50 | 69,85 | 97,5 | 126,8 | 3,2 | 12 | M24 |

**Charakterystyka:**
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnia stożka precyzyjnie szlifowana w klasie AT3
- Gniazda narzędziowe wykonane z maksymalnym biciem 0,007mm

## MAS BT wg JIS B6339

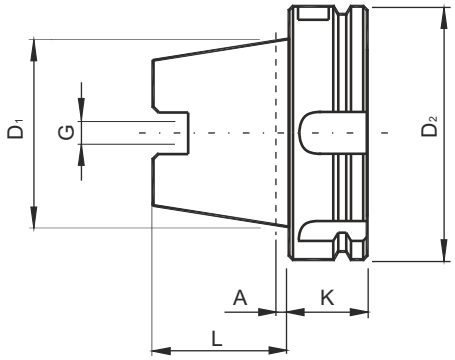



| Stożek | $D_1$ | $D_2$ | L | A | K | G |
|---|---|---|---|---|---|---|
| BT30 | 31,75 | 46 | 48,4 | 2 | 22 | M12 |
| BT40 | 44,45 | 63 | 65,4 | 2 | 27 | M16 |
| BT50 | 69,85 | 100 | 101,8 | 3 | 38 | M24 |

**Wersje wykonania:**
- chwyt bez wewnętrznego chłodzenia
- z otworem centralnym
- z otworem centralnym i otworami w kołnierzu

**Charakterystyka:**
- Oprawki przeznaczone do obrabiarek z automatyczną wymianą narzędzi
- Do mocowania oprawek w obrabiarce służą czopy
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnia stożka precyzyjnie szlifowana w klasie AT3
- Gniazda narzędziowe wykonane z maksymalnym biciem 0,007mm
- W standardowym wykonaniu maksymalna prędkość obrotowa 10000obr/min

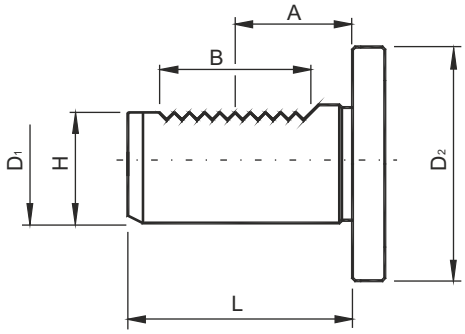
## HSK wg DIN-69893 A




| Stożek | $D_1$ | $D_2$ | L | A | K | G |
|---|---|---|---|---|---|---|
| HSK40 | 30 | 40 | 20 | 4,0 | 20 | M12x1 |
| HSK50 | 38 | 50 | 25 | 5,0 | 26 | M16x1 |
| HSK63 | 48 | 63 | 32 | 6,3 | 26 | M18x1 |
| HSK80 | 60 | 80 | 40 | 8,0 | 26 | M20x1,5 |
| HSK100 | 75 | 100 | 50 | 10,0 | 29 | M24x1,5 |

**Charakterystyka:**
- Oprawki przeznaczone do obrabiarek z automatyczną wymianą narzędzi
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnia stożka precyzyjnie szlifowana w klasie AT3
- Gniazda narzędziowe wykonane z maksymalnym biciem 0,007mm
- W standardowym wykonaniu korpus wyważony w klasie G6,3/8000obr/min
- Konstrukcja chwytu zapewnia dokładność pozycjonowania osiowego, wysoką sztywność, przenoszenie dużych momentów obrotowych przy wysokich prędkościach obrotowych

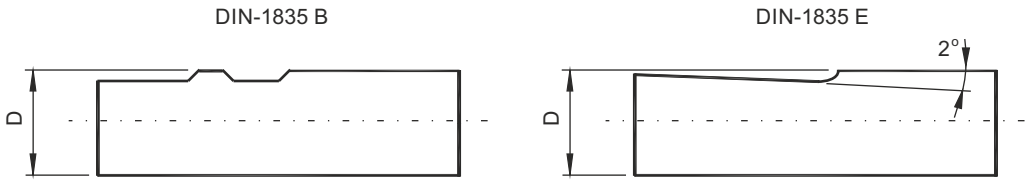
## VDI wg DIN-69880




| Chwyt | $D_1$ | $D_2$ | H | L | A | B |
|---|---|---|---|---|---|---|
| VDI20 | 20 | 50 | 18 | 40 | 21,7 | 24 |
| VDI25 | 25 | 58 | 23,5 | 48 | 21,7 | 24 |
| VDI30 | 30 | 68 | 27 | 55 | 29,7 | 40 |
| VDI40 | 40 | 83 | 36 | 63 | 29,7 | 40 |
| VDI50 | 50 | 98 | 45 | 78 | 35,7 | 48 |

**Charakterystyka:**
- Oprawki wykonane ze stali chromowo-manganowej, nawęglane i hartowane na 58HRC
- Powierzchnia cylindryczna chwytu szlifowana w tolerancji h6

## CYLINDRYCZNY wg DIN-1835




| Chwyt Weldon | D |
|---|---|
| W20 | 20 |
| W25 | 25 |
| W32 | 32 |
| W40 | 40 |
| W50 | 50 |

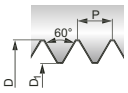
**Wersje wykonania:**
- DIN-1835 A - chwyt cylindryczny prosty
- DIN-1835 B - WELDON: chwyt cylindryczny ze spłaszczeniami równoległymi do osi walca
- DIN-1835 E - WHISTLE-NOTCH: chwyt cylindryczny ze spłaszczeniem 2

**Charakterystyka:**
- Oprawki wykonane ze stali niklowo-chromowo-molibdenowej, nawęglane i hartowane na 58HRC
- Powierzchnia cylindryczna chwytu szlifowana w tolerancji h6

# 10. TABELE INFORMACYJNE

## 10.1. Zalecane średnice otworów pod gwintowniki

### Gwint metryczny ISO




**M** Gwint metryczny zwykły ISO DIN-13

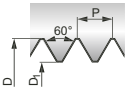
| Wymiar nominalny D mm | P mm | $D_1$ (6H) min. mm | max. mm | mm |
|---|---|---|---|---|
| M 1 | 0,25 | 0,729 | 0,785 | 0,75 |
| 1,1 | 0,25 | 0,829 | 0,885 | 0,85 |
| 1,2 | 0,25 | 0,929 | 0,985 | 0,95 |
| 1,4 | 0,3 | 1,075 | 1,142 | 1,1 |
| 1,6 | 0,35 | 1,221 | 1,321 | 1,25 |
| 1,7 | 0,35 | 1,321 | 1,421 | 1,35 |
| 1,8 | 0,35 | 1,421 | 1,521 | 1,45 |
| 2 | 0,4 | 1,567 | 1,679 | 1,6 |
| 2,2 | 0,45 | 1,713 | 1,838 | 1,75 |
| 2,3 | 0,4 | 1,867 | 1,979 | 1,9 |
| 2,5 | 0,45 | 2,013 | 2,138 | 2,05 |
| 2,6 | 0,45 | 2,113 | 2,238 | 2,15 |
| 3 | 0,5 | 2,459 | 2,599 | 2,5 |
| 3,5 | 0,6 | 2,850 | 3,010 | 2,9 |
| 4 | 0,7 | 3,242 | 3,422 | 3,3 |
| 4,5 | 0,75 | 3,688 | 3,878 | 3,7 |
| 5 | 0,8 | 4,134 | 4,334 | 4,2 |
| 5,5 | 0,9 | 4,526 | 4,750 | 4,6 |
| 6 | 1 | 4,917 | 5,153 | 5 |
| 7 | 1 | 5,917 | 6,153 | 6 |
| 8 | 1,25 | 6,647 | 6,912 | 6,8 |
| 9 | 1,25 | 7,647 | 7,912 | 7,8 |
| 10 | 1,5 | 8,376 | 8,676 | 8,5 |
| 11 | 1,5 | 9,376 | 9,676 | 9,5 |
| 12 | 1,75 | 10,106 | 10,441 | 10,2 |
| 14 | 2 | 11,835 | 12,210 | 12 |
| 16 | 2 | 13,835 | 14,210 | 14 |
| 18 | 2,5 | 15,294 | 15,744 | 15,5 |
| 20 | 2,5 | 17,294 | 17,744 | 17,5 |
| 22 | 2,5 | 19,294 | 19,744 | 19,5 |
| 24 | 3 | 20,752 | 21,252 | 21 |
| 27 | 3 | 23,752 | 24,252 | 24 |
| 30 | 3,5 | 26,211 | 26,771 | 26,5 |
| 33 | 3,5 | 29,211 | 29,771 | 29,5 |
| 36 | 4 | 31,670 | 32,270 | 32 |
| 39 | 4 | 34,670 | 35,270 | 35 |
| 42 | 4,5 | 37,129 | 37,799 | 37,5 |
| 45 | 4,5 | 40,129 | 40,799 | 40,5 |
| 48 | 5 | 42,587 | 43,297 | 43 |
| 52 | 5 | 46,587 | 47,297 | 47 |
| 56 | 5,5 | 50,046 | 50,796 | 50,5 |
| 60 | 5,5 | 54,046 | 54,796 | 54,5 |
| 64 | 6 | 57,505 | 58,305 | 58 |
| 68 | 6 | 61,505 | 62,305 | 62 |

**MF** Gwint metryczny drobnozwojny ISO DIN-13

| Wymiar nominalny D mm | x | P mm | $D_1$ (6H) min. mm | max. mm | mm | Nom. size D mm | x | P mm | $D_1$ (6H) min. mm | max. mm | mm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M 2,5 | x | 0,35 | 2,121 | 2,221 | 2,15 | M 35 | x | 1,5 | 33,376 | 33,676 | 33,5 |
| 2,6 | x | 0,35 | 2,221 | 2,321 | 2,25 | 36 | x | 1,5 | 34,376 | 34,676 | 34,5 |
| 3 | x | 0,35 | 2,621 | 2,721 | 2,65 | 36 | x | 2 | 33,835 | 34,210 | 34 |
| 3,5 | x | 0,35 | 3,121 | 3,221 | 3,15 | 36 | x | 3 | 32,752 | 33,252 | 33 |
| 4 | x | 0,35 | 3,621 | 3,721 | 3,65 | 38 | x | 1,5 | 36,376 | 36,676 | 36,5 |
| 4 | x | 0,5 | 3,459 | 3,599 | 3,5 | 39 | x | 1,5 | 37,376 | 37,676 | 37,5 |
| 5 | x | 0,5 | 4,459 | 4,599 | 4,5 | 39 | x | 2 | 36,835 | 37,210 | 37 |
| 6 | x | 0,5 | 5,459 | 5,599 | 5,5 | 39 | x | 3 | 35,752 | 36,252 | 36 |
| 6 | x | 0,75 | 5,188 | 5,378 | 5,2 | 40 | x | 1,5 | 38,376 | 38,676 | 38,5 |
| 7 | x | 0,75 | 6,188 | 6,378 | 6,2 | 40 | x | 2 | 37,835 | 38,210 | 38 |
| 8 | x | 0,75 | 7,188 | 7,378 | 7,2 | 42 | x | 1,5 | 40,376 | 40,676 | 40,5 |
| 8 | x | 1 | 6,917 | 7,153 | 7 | 42 | x | 2 | 39,835 | 40,210 | 40 |
| 9 | x | 0,75 | 8,188 | 8,378 | 8,2 | 42 | x | 3 | 38,752 | 39,252 | 39 |
| 9 | x | 1 | 7,917 | 8,153 | 8 | 45 | x | 1,5 | 43,376 | 43,676 | 43,5 |
| 10 | x | 0,75 | 9,188 | 9,378 | 9,2 | 45 | x | 2 | 42,835 | 43,210 | 43 |
| 10 | x | 1 | 8,917 | 9,153 | 9 | 45 | x | 3 | 41,752 | 42,252 | 42 |
| 10 | x | 1,25 | 8,647 | 8,912 | 8,8 | 48 | x | 1,5 | 46,376 | 46,676 | 46,5 |
| 11 | x | 1 | 9,917 | 10,153 | 10 | 48 | x | 2 | 45,835 | 46,210 | 46 |
| 12 | x | 1 | 10,917 | 11,153 | 11 | 48 | x | 3 | 44,752 | 45,252 | 45 |
| 12 | x | 1,25 | 10,647 | 10,912 | 10,8 | 50 | x | 1,5 | 48,376 | 48,676 | 48,5 |
| 12 | x | 1,5 | 10,376 | 10,676 | 10,5 | 50 | x | 2 | 47,835 | 48,210 | 48 |
| 14 | x | 1 | 12,917 | 13,153 | 13 | 52 | x | 1,5 | 50,376 | 50,676 | 50,5 |
| 14 | x | 1,25 | 12,647 | 12,912 | 12,8 | 52 | x | 2 | 49,835 | 50,210 | 50 |
| 14 | x | 1,5 | 12,376 | 12,676 | 12,5 | 52 | x | 3 | 48,752 | 49,252 | 49 |
| 15 | x | 1 | 13,917 | 14,153 | 14 | 56 | x | 3 | 52,752 | 53,252 | 53 |
| 16 | x | 1 | 14,917 | 15,153 | 15 | 56 | x | 4 | 51,670 | 52,270 | 52 |
| 16 | x | 1,5 | 14,376 | 14,676 | 14,5 | 60 | x | 4 | 55,670 | 56,270 | 56 |
| 18 | x | 1 | 16,917 | 17,153 | 17 | 64 | x | 3 | 60,752 | 61,252 | 61 |
| 18 | x | 1,5 | 16,376 | 16,676 | 16,5 | 64 | x | 4 | 59,670 | 60,270 | 60 |
| 18 | x | 2 | 15,835 | 16,210 | 16 | 68 | x | 4 | 63,670 | 64,270 | 64 |
| 20 | x | 1 | 18,917 | 19,153 | 19 | 70 | x | 3 | 66,752 | 67,252 | 67 |
| 20 | x | 1,5 | 18,376 | 18,676 | 18,5 | 70 | x | 4 | 65,670 | 66,270 | 66 |
| 20 | x | 2 | 17,835 | 18,210 | 18 | 72 | x | 3 | 68,752 | 69,252 | 69 |
| 22 | x | 1 | 20,917 | 21,153 | 21 | 72 | x | 4 | 67,670 | 68,270 | 68 |
| 22 | x | 1,5 | 20,376 | 20,676 | 20,5 | 72 | x | 6 | 65,505 | 66,305 | 66 |
| 22 | x | 2 | 19,835 | 20,210 | 20 | 76 | x | 3 | 72,752 | 73,252 | 73 |
| 24 | x | 1 | 22,917 | 23,153 | 23 | 76 | x | 4 | 71,670 | 72,270 | 72 |
| 24 | x | 1,5 | 22,376 | 22,676 | 22,5 | 76 | x | 6 | 69,505 | 70,305 | 70 |
| 24 | x | 2 | 21,835 | 22,210 | 22 | 80 | x | 4 | 75,670 | 76,270 | 76 |
| 25 | x | 1,5 | 23,376 | 23,676 | 23,5 | 80 | x | 6 | 73,505 | 74,305 | 74 |
| 26 | x | 1,5 | 24,376 | 24,676 | 24,5 | 85 | x | 3 | 81,752 | 82,252 | 82 |
| 27 | x | 1,5 | 25,376 | 25,676 | 25,5 | 85 | x | 4 | 80,670 | 81,270 | 81 |
| 27 | x | 2 | 24,835 | 25,210 | 25 | 90 | x | 3 | 86,752 | 87,252 | 87 |
| 28 | x | 1,5 | 26,376 | 26,676 | 26,5 | 90 | x | 4 | 85,670 | 86,270 | 86 |
| 28 | x | 2 | 25,835 | 26,210 | 26 | 90 | x | 6 | 83,505 | 84,305 | 84 |
| 30 | x | 1,5 | 28,376 | 28,676 | 28,5 | 95 | x | 6 | 88,505 | 89,305 | 89 |
| 30 | x | 2 | 27,835 | 28,210 | 28 | 100 | x | 4 | 95,670 | 96,270 | 96 |
| 32 | x | 1,5 | 30,376 | 30,676 | 30,5 | 100 | x | 6 | 93,505 | 94,305 | 94 |
| 32 | x | 2 | 29,835 | 30,210 | 30 | 110 | x | 6 | 103,505 | 104,305 | 104 |
| 33 | x | 1,5 | 31,376 | 31,676 | 31,5 | 115 | x | 3 | 111,752 | 112,252 | 112 |
| 33 | x | 2 | 30,835 | 31,210 | 31 | 120 | x | 4 | 115,670 | 116,270 | 116 |
| 34 | x | 1,5 | 32,376 | 32,676 | 32,5 | 120 | x | 6 | 113,505 | 114,305 | 114 |

## 10.1. Zalecane średnice otworów pod gwintowniki

Gwint zunifikowany




### UNC Gwint amerykaski zunifikowany ANSI B-1.1

| Wymiar nominalny D cal | Gg/1" (tpi) | $D_1$ (2B) min. mm | $D_1$ (2B) max. mm | mm |
|---|---|---|---|---|
| Nr. 1 | 64 | 1,425 | 1,582 | 1,55 |
| Nr. 2 | 56 | 1,694 | 1,872 | 1,85 |
| Nr. 3 | 48 | 1,941 | 2,146 | 2,1 |
| Nr. 4 | 40 | 2,156 | 2,385 | 2,35 |
| Nr. 5 | 40 | 2,487 | 2,697 | 2,65 |
| Nr. 6 | 32 | 2,647 | 2,896 | 2,85 |
| Nr. 8 | 32 | 3,307 | 3,528 | 3,5 |
| Nr. 10 | 24 | 3,680 | 3,949 | 3,9 |
| Nr. 12 | 24 | 4,341 | 4,590 | 4,5 |
| 1/4 | 20 | 4,976 | 5,268 | 5,1 |
| 5/16 | 18 | 6,411 | 6,734 | 6,6 |
| 3/8 | 16 | 7,805 | 8,164 | 8 |
| 7/16 | 14 | 9,149 | 9,550 | 9,4 |
| 1/2 | 13 | 10,584 | 11,016 | 10,8 |
| 9/16 | 12 | 11,996 | 12,456 | 12,2 |
| 5/8 | 11 | 13,376 | 13,868 | 13,5 |
| 3/4 | 10 | 16,299 | 16,833 | 16,5 |
| 7/8 | 9 | 19,169 | 19,748 | 19,5 |
| 1" | 8 | 21,963 | 22,598 | 22,25 |
| 1 1/8 | 7 | 24,648 | 25,349 | 25 |
| 1 1/4 | 7 | 27,823 | 28,524 | 28 |
| 1 3/8 | 6 | 30,343 | 31,120 | 30,75 |
| 1 1/2 | 6 | 33,518 | 34,295 | 34 |
| 1 3/4 | 5 | 38,951 | 39,814 | 39,5 |
| 2" | 4 1/2 | 44,689 | 45,598 | 45 |

### UNF Gwint amerykański zunifikowany drobnozwojny ANSI B-1.1

| Wymiar nominalny D cal | Gg/1" (tpi) | $D_1$ (2B) min. mm | $D_1$ (2B) max. mm | mm |
|---|---|---|---|---|
| Nr. 2 | 64 | 1,755 | 1,913 | 1,85 |
| Nr. 3 | 56 | 2,024 | 2,197 | 2,15 |
| Nr. 4 | 48 | 2,271 | 2,459 | 2,4 |
| Nr. 5 | 44 | 2,550 | 2,741 | 2,7 |
| Nr. 6 | 40 | 2,817 | 3,012 | 2,95 |
| Nr. 8 | 36 | 3,401 | 3,597 | 3,5 |
| Nr. 10 | 32 | 3,967 | 4,168 | 4,1 |
| Nr. 12 | 28 | 4,503 | 4,716 | 4,6 |
| 1/4 | 28 | 5,367 | 5,580 | 5,5 |
| 5/16 | 24 | 6,792 | 7,038 | 6,9 |
| 3/8 | 24 | 8,379 | 8,626 | 8,5 |
| 7/16 | 20 | 9,738 | 10,030 | 9,9 |
| 1/2 | 20 | 11,326 | 11,618 | 11,5 |
| 9/16 | 18 | 12,761 | 13,084 | 12,9 |
| 5/8 | 18 | 14,348 | 14,671 | 14,5 |
| 3/4 | 16 | 17,330 | 17,689 | 17,5 |
| 7/8 | 14 | 20,262 | 20,663 | 20,4 |
| 1" | 12 | 23,109 | 23,569 | 23,25 |
| 1 1/8 | 12 | 26,284 | 26,744 | 26,5 |
| 1 1/4 | 12 | 29,459 | 29,919 | 29,5 |
| 1 3/8 | 12 | 32,634 | 33,094 | 32,75 |
| 1 1/2 | 12 | 35,809 | 36,269 | 36 |

### UN-8

| Wymiar nominalny D cal | Gg/1" (tpi) | $D_1$ (2B) min. mm | $D_1$ (2B) max. mm | mm |
|---|---|---|---|---|
| 1 1/8 | 8 | 25,138 | 25,773 | 25,4 |
| 1 1/4 | 8 | 28,313 | 28,948 | 28,6 |
| 1 1/2 | 8 | 34,663 | 35,298 | 35 |
| 1 3/4 | 8 | 41,013 | 41,648 | 41,3 |
| 2" | 8 | 47,363 | 47,998 | 47,7 |

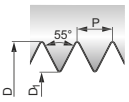
### UNEF

| Wymiar nominalny D cal | Gg/1" (tpi) | $D_1$ (2B) min. mm | $D_1$ (2B) max. mm | mm |
|---|---|---|---|---|
| 1/4 | 32 | 5,491 | 5,679 | 5,55 |
| 5/16 | 32 | 7,079 | 7,267 | 7,15 |
| 3/8 | 32 | 8,666 | 8,854 | 8,7 |
| 7/16 | 28 | 10,130 | 10,343 | 10,2 |
| 1/2 | 28 | 11,717 | 11,930 | 11,8 |
| 9/16 | 24 | 13,142 | 13,388 | 13,2 |
| 5/8 | 24 | 14,729 | 14,975 | 14,8 |
| 3/4 | 20 | 17,676 | 17,968 | 17,8 |
| 7/8 | 20 | 20,851 | 21,143 | 20,95 |
| 1" | 20 | 24,026 | 24,318 | 24,15 |

## Cylindrical PipeThreads

### G

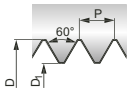
Gwint rurowy walcowy Whitwortha DIN-ISO 228




| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| G 1/16 | - | 28 | 6,561 | 6,843 | 6,8 |
| 1/8 | - | 28 | 8,566 | 8,848 | 8,8 |
| 1/4 | - | 19 | 11,445 | 11,890 | 11,8 |
| 3/8 | - | 19 | 14,950 | 15,395 | 15,25 |
| 1/2 | - | 14 | 18,631 | 19,172 | 19 |
| 5/8 | - | 14 | 20,587 | 21,128 | 21 |
| 3/4 | - | 14 | 24,117 | 24,658 | 24,5 |
| 7/8 | - | 14 | 27,877 | 28,418 | 28,25 |
| 1" | - | 11 | 30,291 | 30,931 | 30,75 |
| 1 1/8 | - | 11 | 34,939 | 35,579 | 35,5 |
| 1 1/4 | - | 11 | 38,952 | 39,592 | 39,5 |
| 1 3/8 | - | 11 | 41,365 | 42,005 | 41,75 |
| 1 1/2 | - | 11 | 44,845 | 45,485 | 45,25 |
| 1 5/8 | - | 11 | 49,030 | 49,670 | 49,5 |
| 1 3/4 | - | 11 | 50,788 | 51,428 | 51 |
| 2" | - | 11 | 56,656 | 57,296 | 57 |
| 2 1/4 | - | 11 | 62,752 | 63,392 | 63,3 |
| 2 1/2 | - | 11 | 72,226 | 72,866 | 72,8 |
| 2 3/4 | - | 11 | 78,576 | 79,216 | 79,1 |
| 3" | - | 11 | 84,926 | 85,566 | 85,5 |

### NPSM

Gwint amerykański rurowy walcowy
ANSI/ASME B1.20.1




| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| 1/8 | - | 27 | 9,093 | 9,246 | 9,1 |
| 1/4 | - | 18 | 11,887 | 12,217 | 12 |
| 3/8 | - | 18 | 15,316 | 15,545 | 15,5 |
| 1/2 | - | 14 | 18,974 | 19,279 | 19 |
| 3/4 | - | 14 | 24,333 | 24,638 | 24,5 |
| 1" | - | 11 1/2 | 30,505 | 30,759 | 30,5 |

### NPSF

American Standard straight pipe thread
ANSI B1.20.3

| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| 1/16 | - | 27 | 6,304 | 6,393 | 6,35 |
| 1/8 | - | 27 | 8,651 | 8,740 | 8,7 |
| 1/4 | - | 18 | 11,232 | 11,364 | 11,3 |
| 3/8 | - | 18 | 14,671 | 14,803 | 14,75 |
| 1/2 | - | 14 | 18,118 | 18,288 | 18,2 |
| 3/4 | - | 14 | 23,465 | 23,635 | 23,5 |
| 1" | - | 11 1/2 | 29,464 | 29,670 | 29,5 |

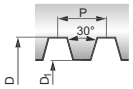
### Rp (BSPP)

Gwint rurowy walcowy Whitwortha wewnętrzny
PN-ISO 7/1 i DIN EN 10226-1 (identyczny z BSPP)

| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| Rp 1/16 | - | 28 | 6,490 | 6,632 | 6,55 |
| 1/8 | - | 28 | 8,495 | 8,637 | 8,6 |
| 1/4 | - | 19 | 11,341 | 11,549 | 11,5 |
| 3/8 | - | 19 | 14,846 | 15,054 | 15 |
| 1/2 | - | 14 | 18,489 | 18,773 | 18,5 |
| 3/4 | - | 14 | 23,975 | 24,259 | 24 |
| 1" | - | 11 | 30,111 | 30,471 | 30,25 |

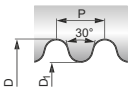
## Gwint trapezowy i okrągły

### Tr Gwint Trapezowy symetryczny DIN-103




| Wymiar nominalny D x P mm | $D_1$ (7H) min. mm | $D_1$ (7H) max. mm | mm |
|---|---|---|---|
| Tr 8 x 1,5 | 6,5 | 6,69 | 6,6 |
| 9 x 2 | 7 | 7,236 | 7,2 |
| 10 x 2 | 8 | 8,236 | 8,2 |
| 10 x 3 | 7 | 7,315 | 7,25 |
| 11 x 3 | 8 | 8,315 | 8,25 |
| 12 x 3 | 9 | 9,315 | 9,25 |
| 14 x 3 | 11 | 11,315 | 11,25 |
| 14 x 4 | 10 | 10,375 | 10,25 |
| 16 x 4 | 12 | 12,375 | 12,25 |
| 18 x 4 | 14 | 14,375 | 14,25 |
| 20 x 4 | 16 | 16,375 | 16,25 |
| 22 x 5 | 17 | 17,45 | 17,25 |
| 24 x 5 | 19 | 19,45 | 19,25 |
| 26 x 5 | 21 | 21,45 | 21,25 |
| 28 x 5 | 23 | 23,45 | 23,25 |
| 30 x 6 | 24 | 24,5 | 24,25 |
| 32 x 6 | 26 | 26,5 | 26,25 |
| 34 x 6 | 28 | 28,5 | 28,25 |
| 36 x 6 | 30 | 30,5 | 30,25 |
| 38 x 7 | 31 | 31,56 | 31,5 |
| 40 x 7 | 33 | 33,56 | 33,5 |
| 42 x 7 | 35 | 35,56 | 35,5 |
| 44 x 7 | 37 | 37,56 | 37,5 |
| 46 x 8 | 38 | 38,63 | 38,5 |
| 48 x 8 | 40 | 40,63 | 40,5 |
| 50 x 8 | 42 | 42,63 | 42,5 |
| 52 x 8 | 44 | 44,63 | 44,5 |

### Rd Gwint okrągły PN-84/M-02035 i DIN 405




| Wymiar nominalny D x P/1" (tpi) | $D_1$ (7H) min. mm | $D_1$ (7H) max. mm | mm |
|---|---|---|---|
| Rd 8 x 10 | 5,714 | 6,164 | 6 |
| 9 x 10 | 6,714 | 7,164 | 7 |
| 10 x 10 | 7,714 | 8,164 | 8 |
| 11 x 10 | 8,714 | 9,164 | 9 |
| 12 x 10 | 9,714 | 10,164 | 10 |
| 14 x 8 | 11,142 | 11,672 | 11,5 |
| 16 x 8 | 13,142 | 13,672 | 13,5 |
| 18 x 8 | 15,142 | 15,672 | 15,5 |
| 20 x 8 | 17,142 | 17,672 | 17,5 |
| 22 x 8 | 19,142 | 19,672 | 19,5 |
| 24 x 8 | 21,142 | 21,672 | 21,5 |
| 26 x 8 | 23,142 | 23,672 | 23,5 |
| 28 x 8 | 25,142 | 25,672 | 25,5 |
| 30 x 8 | 27,142 | 27,672 | 27,5 |

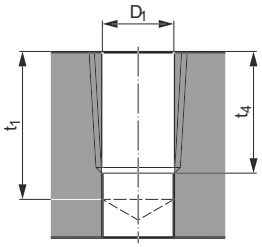
## BSF

| Wymiar nominalny D - P/1" (tpi) | $D_1$ min. mm | $D_1$ max. mm | mm |
|---|---|---|---|
| BSF 3/16 - 32 | 3,747 | 4,006 | 4 |
| 1/4 - 26 | 5,100 | 5,398 | 5,3 |
| 5/16 - 22 | 6,459 | 6,817 | 6,8 |
| 3/8 - 20 | 7,899 | 8,331 | 8,3 |
| 7/16 - 18 | 9,304 | 9,764 | 9,7 |
| 1/2 - 16 | 10,668 | 11,163 | 11,1 |
| 5/8 - 14 | 13,553 | 14,094 | 14 |
| 3/4 - 12 | 16,337 | 16,939 | 16,75 |
| 7/8 - 11 | 19,268 | 19,909 | 19,75 |
| 1" - 10 | 22,149 | 22,835 | 22,75 |

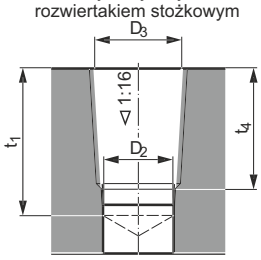
## BSW

| Wymiar nominalny D - P/1" (tpi) | $D_1$ min. mm | $D_1$ max. mm | mm |
|---|---|---|---|
| BSW 1/16 - 60 | 1,045 | 1,230 | 1,15 |
| 3/32 - 48 | 1,704 | 1,912 | 1,85 |
| 1/8 - 40 | 2,362 | 2,591 | 2,55 |
| 5/32 - 32 | 2,952 | 3,214 | 3,2 |
| 3/16 - 24 | 3,406 | 3,744 | 3,7 |
| 7/32 - 24 | 4,201 | 4,539 | 4,5 |
| 1/4 - 20 | 4,724 | 5,156 | 5,1 |
| 5/16 - 18 | 6,129 | 6,589 | 6,5 |
| 3/8 - 16 | 7,493 | 7,988 | 7,9 |
| 7/16 - 14 | 8,791 | 9,332 | 9,25 |
| 1/2 - 12 | 9,987 | 10,589 | 10,5 |
| 9/16 - 12 | 11,575 | 12,177 | 12 |
| 5/8 - 11 | 12,918 | 13,559 | 13,5 |
| 3/4 - 10 | 15,799 | 16,485 | 16,4 |
| 7/8 - 9 | 18,613 | 19,355 | 19,25 |
| 1" - 8 | 21,336 | 22,149 | 22 |
| 1 1/8 - 7 | 23,927 | 24,831 | 24,75 |
| 1 1/4 - 7 | 27,102 | 28,006 | 27,75 |
| 1 3/8 - 6 | 29,504 | 30,528 | 30,5 |
| 1 1/2 - 6 | 32,680 | 33,703 | 33,5 |
| 1 5/8 - 5 | 34,769 | 35,963 | 35,5 |
| 1 3/4 - 5 | 37,943 | 39,136 | 39 |
| 1 7/8 - 4 1/ | 40,396 | 41,702 | 41,5 |
| 2" - 4 1/ | 43,571 | 44,877 | 44,5 |

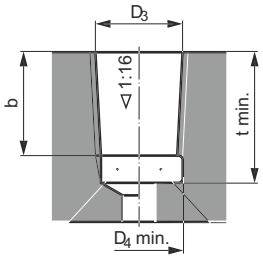
Otwór cylindryczny bez zastosowania rozwiertaka




Otwór cylindryczny rozwiercany rozwiertakiem stożkowym




Otwór wstępny zalecany przy otworach nieprzelotowych




## Rc (BSPT)

Gwint rurowy stożkowy Whitwortha wewnętrzny

| Wymiar nominalny D cal - P/1" (tpi) | $D_1$ mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|
| Rc1/16 - 28 | 6,15 | 11,1 | 9,5 |
| 1/8 - 28 | 8,15 | 11,1 | 9,5 |
| 1/4 - 19 | 10,85 | 16,3 | 14 |
| 3/8 - 19 | 14,3 | 16,7 | 14,4 |
| 1/2 - 14 | 17,8 | 22,3 | 19,1 |
| 3/4 - 14 | 23,2 | 23,6 | 20,4 |
| 1" - 11 | 29,2 | 28,3 | 24,3 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_2$ mm | $D_3$ (JS11) mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|---|
| Rc1/16 - 28 | 6,1 | 6,56 | 11,1 | 9,5 |
| 1/8 - 28 | 8,1 | 8,57 | 11,1 | 9,5 |
| 1/4 - 19 | 10,75 | 11,45 | 16,3 | 14 |
| 3/8 - 19 | 14,25 | 14,95 | 16,7 | 14,4 |
| 1/2 - 14 | 17,7 | 18,63 | 22,3 | 19,1 |
| 3/4 - 14 | 23,1 | 24,12 | 23,6 | 20,4 |
| 1" - 11 | 29,1 | 30,29 | 28,3 | 24,3 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_3$ (JS11) mm | b | t min. mm | $D_4$ min. mm |
|---|---|---|---|---|
| Rc1/16 - 28 | 6,56 | 5,6 | 9,9 | $7,6^{+0,3}$ |
| 1/8 - 28 | 8,57 | 5,6 | 9,9 | $9,6^{+0,3}$ |
| 1/4 - 19 | 11,45 | 8,4 | 14,6 | $13^{+0,5}$ |
| 3/8 - 19 | 14,95 | 8,8 | 15 | $16,5^{+0,5}$ |
| 1/2 - 14 | 18,63 | 11,4 | 20 | $20,6^{+0,5}$ |
| 3/4 - 14 | 24,12 | 12,7 | 21,3 | $26^{+0,5}$ |
| 1" - 11 | 30,29 | 14,5 | 25,4 | $32,8^{+0,5}$ |

## NPT

Gwint amerykański rurowy stożkowy ANSI/ASME B1.20.1

| Wymiar nominalny D cal - P/1" (tpi) | $D_1$ mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|
| 1/16 - 27 | 6,15 | 11,8 | 9,7 |
| 1/8 - 27 | 8,5 | 11,9 | 9,75 |
| 1/4 - 18 | 11 | 17,4 | 14,25 |
| 3/8 - 18 | 14,4 | 17,7 | 14,55 |
| 1/2 - 14 | 17,8 | 23,1 | 19 |
| 3/4 - 14 | 23,15 | 23,6 | 19,5 |
| 1" - 11 1/2 | 29,05 | 28,4 | 23,4 |
| 1 1/4 - 11 1/2 | 37,8 | 28,9 | 23,9 |
| 1 1/2 - 11 1/2 | 43,85 | 28,9 | 23,9 |
| 2" - 11 1/2 | 55,85 | 29,3 | 24,35 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_2$ mm | $D_3$ +0,05 mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|---|
| 1/16 - 27 | 5,95 | 6,39 | 11,8 | 9,7 |
| 1/8 - 27 | 8,3 | 8,74 | 11,9 | 9,75 |
| 1/4 - 18 | 10,75 | 11,36 | 17,4 | 14,25 |
| 3/8 - 18 | 14,15 | 14,8 | 17,7 | 14,55 |
| 1/2 - 14 | 17,45 | 18,32 | 23,1 | 19 |
| 3/4 - 14 | 22,8 | 23,67 | 23,6 | 19,5 |
| 1" - 11 1/2 | 28,65 | 29,69 | 28,4 | 23,4 |
| 1 1/4 - 11 1/2 | 37,35 | 38,45 | 28,9 | 23,9 |
| 1 1/2 - 11 1/2 | 43,45 | 44,52 | 28,9 | 23,9 |
| 2" - 11 1/2 | 55,45 | 56,56 | 29,3 | 24,35 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_3$ +0,05 mm | b | t min. mm | $D_4$ min. mm |
|---|---|---|---|---|
| 1/16 - 27 | 6,39 | 7 | 10 | 7,6 |
| 1/8 - 27 | 8,74 | 7 | 10 | 10 |
| 1/4 - 18 | 11,36 | 10,2 | 14,5 | 13,1 |
| 3/8 - 18 | 14,8 | 10,6 | 15 | 16,5 |
| 1/2 - 14 | 18,32 | 13,8 | 19 | 20,5 |
| 3/4 - 14 | 23,67 | 14,2 | 20 | 25,8 |
| 1" - 11 1/2 | 29,69 | 17 | 24 | 32,2 |
| 1 1/4 - 11 1/2 | 38,45 | 17,5 | 24,5 | 41 |
| 1 1/2 - 11 1/2 | 44,52 | 17,5 | 24,5 | 47,2 |
| 2" - 11 1/2 | 56,56 | 18 | 25 | 59,2 |

## NPTF

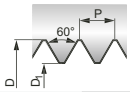
Gwint amerykański rurowy stożkowy ze szczelnością uzyskiwaną na gwincie ANSI B 1.2.4

| Wymiar nominalny D cal - P/1" (tpi) | $D_1$ mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|
| 1/16 - 27 | 6,1 | 13 | 10,65 |
| 1/8 - 27 | 8,45 | 13 | 10,7 |
| 1/4 - 18 | 10,9 | 19,2 | 15,65 |
| 3/8 - 18 | 14,3 | 19,5 | 16 |
| 1/2 - 14 | 17,6 | 25,4 | 20,85 |
| 3/4 - 14 | 23 | 25,9 | 21,3 |
| 1" - 11 1/2 | 28,75 | 31,1 | 25,6 |
| 1 1/4 - 11 1/2 | 37,5 | 31,7 | 26,15 |
| 1 1/2 - 11 1/2 | 43,75 | 31,7 | 26,15 |
| 2" - 11 1/2 | 55,75 | 32,1 | 26,55 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_2$ mm | $D_3$ +0,05 mm | $t_1$ mm | $t_4$ mm |
|---|---|---|---|---|
| 1/16 - 27 | 5,95 | 6,41 | 13 | 10,65 |
| 1/8 - 27 | 8,3 | 8,76 | 13 | 10,7 |
| 1/4 - 18 | 10,75 | 11,4 | 19,2 | 15,65 |
| 3/8 - 18 | 14,15 | 14,84 | 19,5 | 16 |
| 1/2 - 14 | 17,45 | 18,33 | 25,4 | 20,85 |
| 3/4 - 14 | 22,8 | 23,68 | 25,9 | 21,3 |
| 1" - 11 1/2 | 28,65 | 29,72 | 31,1 | 25,6 |
| 1 1/4 - 11 1/2 | 37,35 | 38,48 | 31,7 | 26,15 |
| 1 1/2 - 11 1/2 | 43,45 | 44,55 | 31,7 | 26,15 |
| 2" - 11 1/2 | 55,45 | 56,59 | 32,1 | 26,55 |

| Wymiar nominalny D cal - P/1" (tpi) | $D_3$ +0,05 mm | b | t min. mm | $D_4$ min. mm |
|---|---|---|---|---|
| 1/16 - 27 | 6,41 | 8 | 11 | 7,4 |
| 1/8 - 27 | 8,76 | 8 | 11 | 9,8 |
| 1/4 - 18 | 11,4 | 11,6 | 15,5 | 12,9 |
| 3/8 - 18 | 14,84 | 12 | 16 | 16,3 |
| 1/2 - 14 | 18,33 | 15,6 | 20,5 | 20,3 |
| 3/4 - 14 | 23,68 | 16 | 21,5 | 25,6 |
| 1" - 11 1/2 | 29,72 | 19,2 | 26 | 32 |
| 1 1/4 - 11 1/2 | 38,48 | 19,7 | 26,5 | 40,8 |
| 1 1/2 - 11 1/2 | 44,55 | 19,7 | 26,5 | 47 |
| 2" - 11 1/2 | 56,59 | 20,2 | 27 | 59 |

# MJ MJ gwint DIN ISO 5855




| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D mm | x | P mm | min. mm | max. mm | mm |
| MJ 3 | x | 0,5 | 2,513 | 2,653 | 2,6 |
| 4 | x | 0,7 | 3,318 | 3,498 | 3,4 |
| 5 | x | 0,8 | 4,221 | 4,421 | 4,3 |
| 6 | x | 1 | 5,026 | 5,216 | 5,1 |
| 8 | x | 1 | 7,026 | 7,216 | 7,1 |
| 8 | x | 1,25 | 6,782 | 6,994 | 6,9 |
| 10 | x | 1,25 | 8,782 | 8,994 | 8,9 |
| 10 | x | 1,5 | 8,539 | 8,775 | 8,6 |

# UNJF Gwint zunifikowany drobnozwojny ASME B1.15

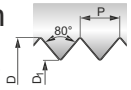
| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| Nr. 4 | - | 48 | 2,329 | 2,466 | 2,4 |
| Nr. 6 | - | 40 | 2,888 | 3,053 | 3 |
| Nr. 8 | - | 36 | 3,480 | 3,663 | 3,55 |
| Nr. 10 | - | 32 | 4,054 | 4,255 | 4,15 |
| 1/4 | - | 28 | 5,466 | 5,662 | 5,55 |
| 5/16 | - | 24 | 6,906 | 7,109 | 7 |
| 3/8 | - | 24 | 8,494 | 8,679 | 8,6 |

# UNJC Gwint znifikowany ASME B1.15

| Wymiar nominalny | | | $D_1$ | | |
|---|---|---|---|---|---|
| D cal | - | P/1" (tpi) | min. mm | max. mm | mm |
| Nr. 4 | - | 40 | 2,228 | 2,393 | 2,3 |
| Nr. 6 | - | 32 | 2,733 | 2,939 | 2,85 |
| Nr. 8 | - | 32 | 3,393 | 3,599 | 3,5 |
| Nr. 10 | - | 24 | 3,795 | 4,064 | 3,9 |
| 1/4 | - | 20 | 5,113 | 5,387 | 5,25 |
| 5/16 | - | 18 | 6,563 | 6,833 | 6,7 |
| 3/8 | - | 16 | 7,978 | 8,255 | 8,1 |

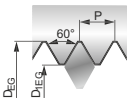
## Gwint do rurek instalacyjnych

# Pg Gwint do rurek instalacyjnych DIN 40430




| Wymiar nominalny | | $D_1$ | | |
|---|---|---|---|---|
| D mm | P/1" (tpi) | min. mm | max. mm | mm |
| Pg 7 | 20 | 11,28 | 11,43 | 11,35 |
| 9 | 18 | 13,86 | 14,01 | 13,95 |
| 11 | 18 | 17,26 | 17,41 | 17,35 |
| 13,5 | 18 | 19,06 | 19,21 | 19,15 |
| 16 | 18 | 21,16 | 21,31 | 21,25 |
| 21 | 16 | 26,78 | 27,03 | 26,95 |
| 29 | 16 | 35,48 | 35,73 | 35,6 |
| 36 | 16 | 45,48 | 45,73 | 45,6 |
| 42 | 16 | 52,48 | 52,73 | 52,6 |
| 48 | 16 | 57,78 | 58,03 | 57,9 |

# EG M (STI) ISO Gwint metryczny zwykły DIN 8140-2




| Wymiar nominalny | | $D_{EG}$ | $D_{1EG}$ | | |
|---|---|---|---|---|---|
| D mm | P mm | min. mm | min. mm | max. mm | mm |
| EG M2,5 | 0,45 | 3,084 | 2,597 | 2,697 | 2,65 |
| 3 | 0,5 | 3,650 | 3,108 | 3,220 | 3,15 |
| 4 | 0,7 | 4,910 | 4,152 | 4,292 | 4,2 |
| 5 | 0,8 | 6,040 | 5,174 | 5,334 | 5,25 |
| 6 | 1 | 7,300 | 6,217 | 6,407 | 6,3 |
| 8 | 1,25 | 9,624 | 8,271 | 8,483 | 8,4 |
| 10 | 1,5 | 11,948 | 10,324 | 10,560 | 10,5 |
| 12 | 1,75 | 14,274 | 12,379 | 12,644 | 12,5 |
| 14 | 2 | 16,598 | 14,433 | 14,733 | 14,5 |
| 16 | 2 | 18,598 | 16,433 | 16,733 | 16,5 |
| 18 | 2,5 | 21,248 | 18,541 | 18,896 | 18,75 |
| 20 | 2,5 | 23,248 | 20,541 | 20,896 | 20,75 |

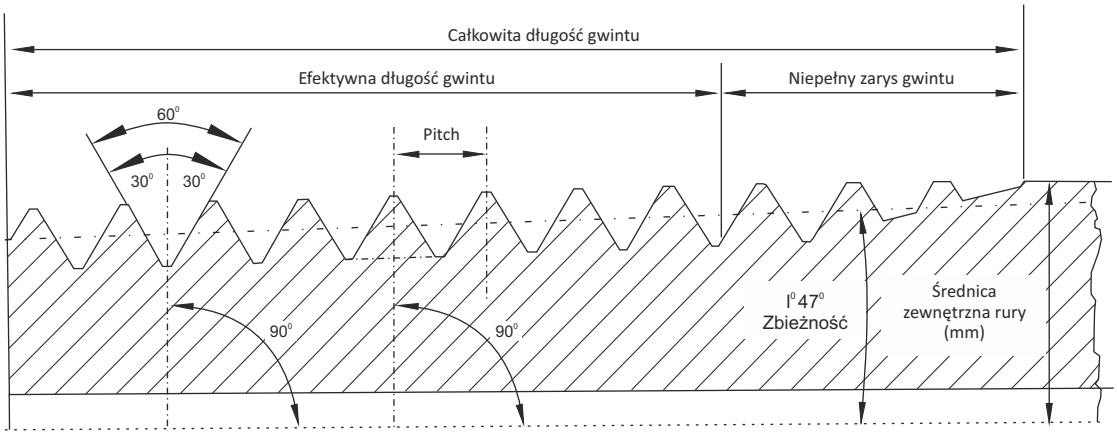
# EG UNC (STI) Gwint zunifikowany ASME B18.29.1

| Wymiar nominalny | | | $D_{EG}$ | $D_{1EG}$ | | |
|---|---|---|---|---|---|---|
| D mm | | P/1" (tpi) | min. mm | min. mm | max. mm | mm |
| EG Nr. 4 | - | 40 | 3,671 | 2,982 | 3,178 | 3,1 |
| Nr. 6 | - | 32 | 4,536 | 3,678 | 3,879 | 3,8 |
| Nr. 8 | - | 32 | 5,197 | 4,338 | 4,523 | 4,4 |
| Nr. 10 | - | 24 | 6,200 | 5,054 | 5,283 | 5,2 |
| 1/4 | - | 20 | 8,002 | 6,628 | 6,872 | 6,7 |
| 5/16 | - | 18 | 9,771 | 8,244 | 8,490 | 8,4 |
| 3/8 | - | 16 | 11,587 | 9,867 | 10,126 | 10 |
| 7/16 | - | 14 | 13,469 | 11,506 | 11,783 | 11,6 |
| 1/2 | - | 13 | 15,237 | 13,121 | 13,393 | 13,3 |
| 9/16 | - | 12 | 17,039 | 14,747 | 15,031 | 14,9 |
| 5/8 | - | 11 | 18,875 | 16,376 | 16,673 | 16,5 |
| 3/4 | - | 10 | 22,349 | 19,598 | 19,908 | 19,75 |

# EG UNF (STI) Gwint zunifikowany ASME B18.29.1

| Wymiar nominalny | | | $D_{EG}$ | $D_{1EG}$ | | |
|---|---|---|---|---|---|---|
| D mm | | P/1" (tpi) | min. mm | min. mm | max. mm | mm |
| EG Nr. 4 | - | 48 | 3,533 | 2,959 | 3,119 | 3 |
| Nr. 6 | - | 40 | 4,330 | 3,642 | 3,815 | 3,7 |
| Nr. 8 | - | 36 | 5,083 | 4,318 | 4,496 | 4,4 |
| Nr. 10 | - | 32 | 5,858 | 4,999 | 5,184 | 5,1 |
| 1/4 | - | 28 | 7,528 | 6,545 | 6,720 | 6,6 |
| 5/16 | - | 24 | 9,312 | 8,166 | 8,351 | 8,25 |
| 3/8 | - | 24 | 10,899 | 9,753 | 9,931 | 9,8 |
| 7/16 | - | 20 | 12,763 | 11,389 | 11,587 | 11,5 |
| 1/2 | - | 20 | 14,352 | 12,978 | 13,176 | 13,1 |
| 9/16 | - | 18 | 16,121 | 14,594 | 14,800 | 14,7 |
| 5/8 | - | 18 | 17,709 | 16,182 | 16,388 | 16,25 |
| 3/4 | - | 16 | 21,112 | 19,392 | 19,608 | 19,5 |

# ZARYS GWINTU STOŻKOWEGO ZEWNĘTRZNEGO NPT




| Średnica gwintu (cal) | Skok gwintu (T.P.I) | Średnica zewnętrzna rury (mm) | Całkowita długość gwintu (mm) |
|---|---|---|---|
| 1/16 | 27 | 7,950 | 9,896 |
| 1/8 | 27 | 10,287 | 9,967 |
| 1/4 | 18 | 13,716 | 15,103 |
| 3/8 | 18 | 17,145 | 15,255 |
| 1/2 | 14 | 21,336 | 19,850 |
| 3/4 | 14 | 26,670 | 20,155 |
| 1 | 11.1/2 | 33,401 | 25,006 |
| 1.1/4 | 11.1/2 | 42,164 | 25,616 |
| 1.1/2 | 11.1/2 | 48,260 | 26,040 |
| 2 | 11.1/2 | 60,325 | 26,878 |
| 2.1/2 | 8 | 73,025 | 39,908 |
| 3 | 8 | 88,900 | 41,496 |
| 3.1/2 | 8 | 101,600 | 42,766 |
| 4 | 8 | 114,300 | 44,036 |

## 10.3. Zalecane średnice otworów pod wygniataki

### M

| Wymiar nominalny D mm | P mm | mm |
|---|---|---|
| M 1 | 0,25 | 0,9 |
| 1,1 | 0,25 | 1 |
| 1,2 | 0,25 | 1,1 |
| 1,4 | 0,3 | 1,28 |
| 1,6 | 0,35 | 1,47 |
| 1,7 | 0,35 | 1,57 |
| 1,8 | 0,35 | 1,67 |
| 2 | 0,4 | 1,85 |
| 2,2 | 0,45 | 2,03 |
| 2,3 | 0,4 | 2,15 |
| 2,5 | 0,45 | 2,33 |
| 2,6 | 0,45 | 2,43 |
| 3 | 0,5 | 2,8 |
| 3,5 | 0,6 | 3,25 |
| 4 | 0,7 | 3,7 |
| 4,5 | 0,75 | 4,2 |
| 5 | 0,8 | 4,65 |
| 5,5 | 0,9 | 5,1 |
| 6 | 1 | 5,6 |
| 7 | 1 | 6,6 |
| 8 | 1,25 | 7,45 |
| 9 | 1,25 | 8,45 |
| 10 | 1,5 | 9,35 |
| 12 | 1,75 | 11,25 |
| 14 | 2 | 13,1 |
| 16 | 2 | 15,1 |
| 18 | 2,5 | 16,85 |
| 20 | 2,5 | 18,85 |
| 22 | 2,5 | 20,85 |
| 24 | 3 | 22,65 |
| 27 | 3 | 25,65 |
| 30 | 3,5 | 28,4 |
| 33 | 3,5 | 31,4 |
| 36 | 4 | 34,15 |
| 39 | 4 | 37,15 |
| 42 | 4,5 | 39,9 |
| 45 | 4,5 | 42,9 |
| 48 | 5 | 45,65 |

### MF

| Wymiar nominalny D mm | x | P mm | mm |
|---|---|---|---|
| M 2,5 | x | 0,35 | 2,37 |
| 2,6 | x | 0,35 | 2,47 |
| 3 | x | 0,35 | 2,88 |
| 3,5 | x | 0,35 | 3,38 |
| 4 | x | 0,5 | 3,8 |
| 5 | x | 0,5 | 4,8 |
| 6 | x | 0,5 | 5,8 |
| 6 | x | 0,75 | 5,7 |
| 7 | x | 0,75 | 6,7 |
| 8 | x | 0,75 | 7,7 |
| 8 | x | 1 | 7,6 |
| 9 | x | 0,75 | 8,7 |
| 9 | x | 1 | 8,6 |
| 10 | x | 0,75 | 9,7 |
| 10 | x | 1 | 9,6 |
| 10 | x | 1,25 | 9,45 |
| 11 | x | 1 | 10,6 |
| 12 | x | 1 | 11,6 |
| 12 | x | 1,25 | 11,45 |
| 12 | x | 1,5 | 11,35 |
| 14 | x | 1 | 13,6 |
| 14 | x | 1,25 | 13,45 |
| 14 | x | 1,5 | 13,35 |
| 15 | x | 1 | 14,6 |
| 15 | x | 1,5 | 14,35 |
| 16 | x | 1 | 15,6 |
| 16 | x | 1,5 | 15,35 |
| 18 | x | 1 | 17,6 |
| 18 | x | 1,5 | 17,35 |
| 18 | x | 2 | 17,1 |
| 20 | x | 1 | 19,6 |
| 20 | x | 1,5 | 19,35 |
| 20 | x | 2 | 19,1 |
| 24 | x | 2 | 23,1 |
| 30 | x | 2 | 29,1 |
| 36 | x | 3 | 34,65 |
| 42 | x | 4 | 40,15 |
| 48 | x | 3 | 46,65 |

### UNC

| Wymiar nominalny D cal | - | P/1" (tpi) | mm |
|---|---|---|---|
| Nr. 4 | - | 40 | 2,55 |
| Nr. 5 | - | 40 | 2,9 |
| Nr. 6 | - | 32 | 3,15 |
| Nr. 8 | - | 32 | 3,8 |
| Nr. 10 | - | 24 | 4,35 |
| Nr. 12 | - | 24 | 5 |
| 1/4 | - | 20 | 5,75 |
| 5/16 | - | 18 | 7,3 |
| 3/8 | - | 16 | 8,8 |
| 7/16 | - | 14 | 10,25 |
| 1/2 | - | 13 | 11,8 |
| 9/16 | - | 12 | 13,3 |
| 5/8 | - | 11 | 14,8 |
| 3/4 | - | 10 | 17,85 |
| 7/8 | - | 9 | 20,9 |
| 1" | - | 8 | 23,9 |

### UNF

| Wymiar nominalny D cal | - | P/1" (tpi) | mm |
|---|---|---|---|
| Nr. 2 | - | 64 | 2,02 |
| Nr. 3 | - | 56 | 2,32 |
| Nr. 4 | - | 48 | 2,62 |
| Nr. 5 | - | 44 | 2,92 |
| Nr. 6 | - | 40 | 3,22 |
| Nr. 8 | - | 36 | 3,85 |
| Nr. 10 | - | 32 | 4,45 |
| Nr. 12 | - | 28 | 5,1 |
| 1/4 | - | 28 | 5,95 |
| 5/16 | - | 24 | 7,45 |
| 3/8 | - | 24 | 9,05 |
| 7/16 | - | 20 | 10,55 |
| 1/2 | - | 20 | 12,15 |
| 9/16 | - | 18 | 13,65 |
| 5/8 | - | 18 | 15,25 |
| 3/4 | - | 16 | 18,35 |
| 7/8 | - | 14 | 21,4 |
| 1" | - | 12 | 24,45 |

### G

| Wymiar nominalny D | - | P/1" (tpi) | mm |
|---|---|---|---|
| G 1/16 | - | 28 | 7,25 |
| 1/8 | - | 28 | 9,25 |
| 1/4 | - | 19 | 12,55 |
| 3/8 | - | 19 | 16,05 |
| 1/2 | - | 14 | 20,1 |
| 5/8 | - | 14 | 22,05 |
| 3/4 | - | 14 | 25,6 |
| 7/8 | - | 14 | 29,35 |
| 1" | - | 11 | 32,15 |

## 10.4. Wzory do obliczania parametrów technologicznych przy wierceniu i gwintowaniu

### Zależność prędkości obrotowej od prędkości obwodowej i średnicy narzędzia

**Prędkość skrawania $V_c$ [m/min]**

$$v_c = \frac{d_1 \times \pi \times n}{1000}$$

**Prędkość obrotowa wrzeciona n [obr/min]**

$$n = \frac{1000 \times v_c}{d_1 \times \pi}$$

**Prędkość posuwu $V_f$ [mm/min]**

- przy gwintowaniu

$$v_f = p \times n$$

- przy wierceniu

$$v_f = f_o \times n$$

$$f_o = \frac{v_f}{n}$$

**Moment obrotowy przy gwintowaniu $M_d$ [Nm]**

$$M_d = \frac{p^2 \times d_1 \times k_c}{8000}$$

**Moment obrotowy przy wierceniu $M_c$ [Nm]**

$$M_c = \frac{F_c \times z \times d_1}{4000}$$

**Siła skrawania przypadająca na jedno ostrze $F_c$ [N]**

$$F_c = \frac{d_1 \times f_o \times k_c}{2}$$

**Moc P [kW]**

$$P = \frac{M_{c,d} \times 2 \times \pi \times n}{60000}$$

**Objaśnienia:**

$d_1$ - średnica nominalna narzędzia [mm]

$v_c$ - prędkość skrawania [m/min]

n - prędkość obrotowa wrzeciona [obr/min]

p - skok gwintu [mm]

P - moc [kW]

$v_f$ - prędkość posuwu [m/min]

$f_o$ - posuw na obrot [mm/obr]

$k_c$ - opór właściwy obrabianego materiału [MPa]

$M_d$ - moment obrotowy przy gwintowaniu [Nm]

z - liczba ostrzy

## 10.5. Zalecane średnice prętów do nacinania gwintów narzynkami

### M

| GWINT | ø d |
|---|---|
| M 1 | 0,96 |
| M 1,1 | 1,05 |
| M 1,2 | 1,15 |
| M 1,4 | 1,35 |
| M 1,6 | 1,55 |
| M 1,8 | 1,75 |
| M 2 | 1,95 |
| M 2,2 | 2,15 |
| M 2,5 | 2,42 |
| M 3 | 2,92 |
| M 3,5 | 3,41 |
| M 4 | 3,90 |
| M 4,5 | 4,40 |
| M 5 | 4,90 |
| M 6 | 5,88 |
| M 7 | 6,88 |
| M 8 | 7,86 |
| M 9 | 8,86 |
| M 10 | 9,85 |
| M 11 | 10,85 |
| M 12 | 11,83 |
| M 14 | 13,82 |
| M 16 | 15,82 |
| M 18 | 17,79 |
| M 20 | 19,79 |
| M 22 | 21,79 |
| M 24 | 23,76 |
| M 27 | 26,76 |
| M 30 | 29,73 |
| M 33 | 32,73 |
| M 36 | 35,70 |
| M 39 | 38,70 |
| M 42 | 41,68 |
| M 45 | 44,68 |
| M 48 | 47,66 |
| M 52 | 51,66 |
| M 56 | 55,65 |
| M 60 | 59,65 |
| M 64 | 63,62 |
| M 68 | 67,62 |

### MF

| GWINT | ø d |
|---|---|
| M3,5x0,5 | 3,43 |
| M4x0,5 | 3,92 |
| M4,5x0,5 | 4,43 |
| M5x0,5 | 4,92 |
| M5x0,75 | 4,91 |
| M5,5x0,5 | 5,43 |
| M5,5x0,75 | 5,42 |
| M6x0,5 | 5,92 |
| M6x0,75 | 5,90 |
| M7x0,75 | 6,90 |
| M8x0,5 | 7,92 |
| M8x0,75 | 7,90 |
| M8x1 | 7,88 |
| M9x0,75 | 8,90 |
| M9x1 | 8,88 |
| M10x0,75 | 9,90 |
| M10x1 | 9,88 |
| M10x1,25 | 9,86 |
| M11x0,75 | 10,91 |
| M11x1 | 10,88 |
| M12x1 | 11,88 |
| M12x1,25 | 11,86 |
| M12x1,5 | 11,85 |
| M14x1 | 13,88 |
| M14x1,5 | 13,85 |

### MF cd.

| GWINT | ø d |
|---|---|
| M15x1 | 14,88 |
| M15x1,5 | 14,85 |
| M16x1 | 15,88 |
| M16x1,5 | 15,85 |
| M17x1 | 16,88 |
| M17x1,5 | 16,85 |
| M18x1 | 17,88 |
| M18 x1,5 | 17,85 |
| M18x2 | 17,82 |
| M20x1 | 19,88 |
| M20x1,5 | 19,85 |
| M20x2 | 19,82 |
| M22x1 | 21,88 |
| M22x1,5 | 21,85 |
| M22x2 | 21,82 |
| M24x1 | 23,88 |
| M24x1,5 | 23,85 |
| M24x2 | 23,82 |
| M25x1 | 24,88 |
| M25x1,5 | 24,85 |
| M25x2 | 24,82 |
| M26x1,5 | 25,85 |
| M27x1 | 26,88 |
| M27x1,5 | 26,85 |
| M27x2 | 26,82 |
| M28x1 | 27,88 |
| M28x1,5 | 27,85 |
| M28x2 | 27,82 |
| M30x1 | 29,88 |
| M30x1,5 | 29,85 |
| M30x2 | 29,82 |
| M30x3 | 29,76 |
| M32x1,5 | 31,85 |
| M32x2 | 31,82 |
| M33x1,5 | 32,85 |
| M33x2 | 32,82 |
| M33x3 | 32,76 |
| M35x1,5 | 34,85 |
| M36x1,5 | 35,85 |
| M36x2 | 35,82 |
| M36x3 | 35,76 |
| M38x1,5 | 37,85 |
| M39x1,5 | 38,85 |
| M39x2 | 38,82 |
| M39x3 | 38,76 |
| M40x1,5 | 39,85 |
| M40x2 | 39,82 |
| M40x3 | 39,76 |
| M42x1,5 | 41,85 |
| M42x2 | 41,82 |
| M42x3 | 41,76 |
| M45x1,5 | 44,85 |
| M45x2 | 44,82 |
| M45x3 | 44,76 |
| M48x1,5 | 47,85 |
| M48x2 | 47,82 |
| M48x3 | 47,76 |
| M48x4 | 47,73 |
| M50x1,5 | 49,85 |
| M50x2 | 49,82 |
| M50x3 | 49,76 |
| M52x1,5 | 51,85 |
| M52x2 | 51,82 |
| M52x3 | 51,76 |
| M52x4 | 51,73 |
| M55x1,5 | 54,85 |
| M55x2 | 54,82 |
| M55x3 | 54,76 |
| M55x4 | 54,73 |
| M56x1,5 | 55,85 |
| M56x2 | 55,82 |
| M56x3 | 55,76 |
| M56x4 | 55,73 |

### G

| GWINT | ø d |
|---|---|
| G - 1/8" | 9,62 |
| G - 1/4" | 13,03 |
| G - 3/8" | 16,54 |
| G - 1/2" | 20,81 |
| G - 5/8" | 22,77 |
| G - 3/4" | 26,30 |
| G - 7/8" | 30,06 |
| G - 1" | 33,07 |
| G - 1.1/8" | 37,72 |
| G - 1.1/4" | 41,73 |
| G - 1.3/8" | 44,14 |
| G - 1.1/2" | 47,62 |
| G - 1.3/4" | 53,57 |
| G - 2" | 59,43 |
| G - 2.1/4" | 65,49 |

### BSW

| GWINT | ø d |
|---|---|
| 1/8 - 40 | 3,09 |
| 3/16 - 24 | 4,66 |
| 1/4 - 20 | 6,24 |
| 5/16 - 18 | 7,82 |
| 3/8 - 16 | 9,40 |
| 7/16 - 14 | 10,98 |
| 1/2 - 12 | 12,56 |
| 9/16 - 12 | 14,14 |
| 5/8 - 11 | 15,72 |
| 3/4 - 10 | 18,89 |
| 7/8 - 9 | 22,10 |
| 1 - 8 | 25,27 |

### NPT

| GWINT | ø d |
|---|---|
| 1/8" | 9,99 |
| 1/4" | 13,26 |
| 3/8" | 16,67 |
| 1/2" | 20,71 |
| 3/4" | 26,03 |
| 1" | 32,59 |

### UNC

| GWINT | ø d |
|---|---|
| No 5 - 40 | 3,09 |
| No 6 - 32 | 3,41 |
| No 8 - 32 | 4,07 |
| No 10 - 24 | 4,71 |
| No 12 - 24 | 5,37 |
| 1/4 - 20 | 6,22 |
| 5/16 - 18 | 7,80 |
| 3/8 - 16 | 9,37 |
| 7/16 - 14 | 10,95 |
| 1/2 - 13 | 12,52 |
| 9/16 - 12 | 14,10 |
| 5/8 - 11 | 15,68 |
| 3/4 - 10 | 18,84 |
| 7/8 - 9 | 22,00 |
| 1 - 8 | 25,16 |
| 1.1/8 - 7 | 28,31 |
| 1.1/4 - 7 | 31,49 |
| 1.3/8 - 6 | 34,63 |
| 1.1/2 - 6 | 37,80 |
| 1.3/4 - 5 | 44,12 |
| 2 - 4.1/2 | 50,45 |

### UNF

| GWINT | ø d |
|---|---|
| No 5 - 44 | 3,10 |
| No 6 - 40 | 3,42 |
| No 8 - 36 | 4,08 |
| No 10 - 32 | 4,73 |
| No 12 - 28 | 5,38 |
| 1/4 - 28 | 6,24 |
| 5/16 - 24 | 7,82 |
| 3/8 - 24 | 9,41 |
| 7/16 - 20 | 10,98 |
| 1/2 - 20 | 12,56 |
| 9/16 - 18 | 14,14 |
| 5/8 - 18 | 15,73 |
| 3/4 - 16 | 18,89 |
| 7/8 - 14 | 22,05 |
| 1 - 12 | 25,21 |
| 1.1/8 - 12 | 28,38 |
| 1.1/4 - 12 | 31,55 |
| 1.3/8 - 12 | 34,73 |
| 1.1/2 - 12 | 37,90 |

### R

| GWINT | ø d |
|---|---|
| R - 1/8" | 9,48 |
| R - 1/4" | 12,78 |
| R - 3/8" | 16,26 |
| R - 1/2" | 20,44 |
| R - 3/4" | 25,85 |
| R - 1" | 32,60 |

### BSF

| GWINT | ø d |
|---|---|
| 3/16 - 32 | 4,76 |
| 1/4 - 26 | 6,25 |
| 5/16 - 22 | 7,83 |
| 3/8 - 20 | 9,41 |
| 7/16 - 18 | 10,99 |
| 1/2 - 16 | 12,57 |
| 9/16 -16 | 14,16 |
| 5/8 - 14 | 15,73 |
| 3/4 - 12 | 18,89 |
| 7/8 - 11 | 22,11 |
| 1 - 10 | 25,28 |

### Pg

| GWINT | ø d |
|---|---|
| Pg 7 | 12,40 |
| Pg 9 | 15,10 |
| Pg 11 | 18,50 |
| Pg 13,5 | 20,30 |
| Pg 16 | 22,40 |
| Pg 21 | 28,15 |
| Pg 29 | 36,85 |
| Pg 36 | 46,85 |
| Pg 42 | 53,85 |
| Pg 48 | 59,15 |

## 10.6. Zależność prędkości obrotowej od prędkości obwodowej i średnicy narzędzia

| Ćd$_1$ [mm] | V = p˙ · d$_1$n / 1000 [m/min] | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 | 40 |
| 3 | 212 | 318 | 424 | 531 | 637 | 849 | 1061 | 1273 | 1592 | 1910 | 2122 | 2653 | 3183 | 3714 | 4244 |
| 3,5 | 182 | 273 | 364 | 455 | 546 | 728 | 909 | 1091 | 1364 | 1637 | 1819 | 2274 | 2728 | 3183 | 3638 |
| 4 | 159 | 239 | 318 | 398 | 477 | 637 | 796 | 955 | 1194 | 1432 | 1592 | 1989 | 2387 | 2785 | 3183 |
| 4,5 | 141 | 212 | 283 | 354 | 424 | 566 | 707 | 849 | 1061 | 1273 | 1415 | 1768 | 2122 | 2476 | 2829 |
| 5 | 127 | 191 | 255 | 318 | 382 | 509 | 637 | 764 | 955 | 1146 | 1273 | 1592 | 1910 | 2228 | 2546 |
| 6 | 106 | 159 | 212 | 265 | 318 | 424 | 531 | 637 | 796 | 955 | 1061 | 1326 | 1592 | 1857 | 2122 |
| 7 | 91 | 136 | 182 | 227 | 273 | 364 | 455 | 546 | 682 | 819 | 909 | 1137 | 1364 | 1592 | 1819 |
| 8 | 80 | 119 | 159 | 199 | 239 | 318 | 398 | 477 | 597 | 716 | 796 | 995 | 1194 | 1393 | 1592 |
| 9 | 71 | 106 | 141 | 177 | 212 | 283 | 354 | 424 | 531 | 673 | 707 | 884 | 1061 | 1238 | 1415 |
| 10 | 64 | 95 | 127 | 159 | 191 | 255 | 318 | 382 | 477 | 573 | 637 | 796 | 955 | 1114 | 1273 |
| 11 | 58 | 87 | 116 | 145 | 174 | 231 | 289 | 347 | 434 | 521 | 579 | 723 | 868 | 1013 | 1157 |
| 12 | 53 | 80 | 106 | 133 | 159 | 212 | 265 | 318 | 398 | 477 | 531 | 663 | 796 | 928 | 1061 |
| 14 | 45 | 68 | 91 | 114 | 136 | 182 | 227 | 273 | 341 | 409 | 455 | 568 | 682 | 796 | 909 |
| 16 | 40 | 60 | 80 | 99 | 119 | 159 | 199 | 239 | 298 | 358 | 398 | 497 | 597 | 696 | 796 |
| 18 | 35 | 53 | 71 | 88 | 106 | 141 | 177 | 212 | 265 | 318 | 354 | 442 | 531 | 619 | 707 |
| 20 | 32 | 48 | 94 | 80 | 95 | 127 | 159 | 191 | 239 | 286 | 318 | 398 | 477 | 557 | 637 |
| 22 | 29 | 43 | 58 | 72 | 87 | 116 | 145 | 174 | 217 | 260 | 289 | 362 | 434 | 506 | 579 |
| 24 | 27 | 40 | 53 | 66 | 80 | 106 | 133 | 159 | 199 | 239 | 265 | 332 | 398 | 464 | 531 |
| 27 | 24 | 35 | 47 | 59 | 71 | 94 | 118 | 141 | 177 | 212 | 236 | 295 | 354 | 413 | 472 |
| 30 | 21 | 32 | 42 | 53 | 64 | 85 | 106 | 127 | 159 | 191 | 212 | 265 | 318 | 371 | 424 |
| 33 | 19 | 29 | 39 | 48 | 58 | 77 | 96 | 116 | 145 | 174 | 193 | 241 | 289 | 338 | 386 |
| 36 | 18 | 27 | 35 | 44 | 53 | 71 | 88 | 106 | 133 | 159 | 177 | 221 | 265 | 309 | 354 |
| 39 | 16 | 24 | 33 | 41 | 49 | 65 | 82 | 98 | 122 | 147 | 163 | 204 | 245 | 286 | 326 |
| 42 | 15 | 23 | 30 | 38 | 45 | 61 | 76 | 91 | 114 | 136 | 152 | 189 | 227 | 265 | 303 |
| 45 | 14 | 21 | 28 | 35 | 42 | 57 | 71 | 85 | 106 | 127 | 141 | 177 | 212 | 248 | 283 |
| 48 | 13 | 20 | 27 | 33 | 40 | 53 | 66 | 80 | 99 | 119 | 133 | 166 | 199 | 232 | 265 |
| 52 | 12 | 18 | 24 | 31 | 37 | 49 | 61 | 73 | 92 | 110 | 122 | 153 | 184 | 214 | 245 |

### ZALEŻNOŚĆ WYTRZYMAŁOŚCI Rm, HRC, HB, HV 10

| Rm [MPa] | HRC | HB | HV 10 | Rm [MPa] | HRC | HB | HV 10 | Rm [MPa] | HRC | HB | HV 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 240 | | 71 | 75 | 690 | | 204 | 215 | 1360 | 43 | 402 | 423 |
| 255 | | 76 | 80 | 705 | | 209 | 220 | 1400 | 44 | 413 | 434 |
| 270 | | 81 | 85 | 720 | | 214 | 225 | 1440 | 45 | 424 | 446 |
| 285 | | 86 | 90 | 740 | | 219 | 230 | 1480 | 46 | 435 | 458 |
| 305 | | 90 | 95 | 755 | | 223 | 235 | 1530 | 47 | 449 | 473 |
| 320 | | 95 | 100 | 770 | | 228 | 240 | 1570 | 48 | 460 | 484 |
| 335 | | 100 | 105 | 785 | | 233 | 245 | 1620 | 49 | 472 | 497 |
| 350 | | 105 | 110 | 800 | 22 | 238 | 250 | 1680 | 50 | 488 | 514 |
| 370 | | 109 | 115 | 820 | 23 | 242 | 255 | 1730 | 51 | 501 | 527 |
| 385 | | 114 | 120 | 835 | 24 | 247 | 260 | 1890 | 52 | 517 | 544 |
| 400 | | 119 | 125 | 860 | 25 | 255 | 268 | 1845 | 53 | 532 | 560 |
| 415 | | 124 | 130 | 870 | 26 | 258 | 272 | 1910 | 54 | 549 | 578 |
| 430 | | 128 | 135 | 900 | 27 | 266 | 280 | 1980 | 55 | 567 | 596 |
| 450 | | 133 | 140 | 920 | 28 | 273 | 287 | 2050 | 56 | 584 | 615 |
| 465 | | 138 | 145 | 940 | 29 | 278 | 293 | 2140 | 57 | 607 | 639 |
| 480 | | 143 | 150 | 970 | 30 | 287 | 302 | | 58 | 622 | 655 |
| 495 | | 147 | 155 | 995 | 31 | 295 | 310 | | 59 | | 675 |
| 510 | | 152 | 160 | 1020 | 32 | 301 | 317 | | 60 | | 698 |
| 530 | | 157 | 165 | 1050 | 33 | 311 | 327 | | 61 | | 720 |
| 545 | | 162 | 170 | 1080 | 34 | 319 | 336 | | 62 | | 745 |
| 560 | | 166 | 175 | 1110 | 35 | 328 | 345 | | 63 | | 773 |
| 575 | | 171 | 180 | 1140 | 36 | 337 | 355 | | 64 | | 800 |
| 595 | | 176 | 185 | 1170 | 37 | 346 | 364 | | 65 | | 829 |
| 610 | | 181 | 190 | 1200 | 38 | 354 | 373 | | 66 | | 864 |
| 625 | | 185 | 195 | 1230 | 39 | 363 | 382 | | 67 | | 900 |
| 640 | | 190 | 200 | 1260 | 40 | 372 | 392 | | 68 | | 940 |
| 660 | | 195 | 205 | 1300 | 41 | 383 | 403 | | | | |
| 675 | | 199 | 210 | 1330 | 42 | 393 | 413 | | | | |

## 10.7. Wymiary graniczne średnicy podziałowej gwintu wewnętrznego

Gwint metryczny ISO

| Wymiar nominalny | | 6H | | 6G | |
|---|---|---|---|---|---|
| M | MF | min | max | min | max |
| M 2 | | 1,740 | 1,830 | 1,759 | 1,849 |
| M 2,2 | | 1,908 | 2,003 | 1,928 | 2,023 |
| M 2,5 | | 2,208 | 2,303 | 2,228 | 2,323 |
| M 3 | | 2,675 | 2,775 | 2,695 | 2,795 |
| M 3,5 | | 3,110 | 3,222 | 3,131 | 3,243 |
| M 4 | | 3,545 | 3,663 | 3,567 | 3,685 |
| | M 4x0,5 | 3,675 | 3,775 | 3,695 | 3,795 |
| M 4,5 | | 4,013 | 4,131 | 4,035 | 4,153 |
| M 5 | | 4,480 | 4,605 | 4,504 | 4,629 |
| | M 5x0,5 | 4,675 | 4,775 | 4,695 | 4,795 |
| M 6 | | 5,350 | 5,500 | 5,376 | 5,526 |
| | M 6x0,75 | 5,513 | 5,645 | 5,535 | 5,667 |
| M 7 | | 6,350 | 6,500 | 6,376 | 6,526 |
| M 8 | | 7,188 | 7,348 | 7,216 | 7,376 |
| | M 8x0,75 | 7,513 | 7,645 | 7,535 | 7,667 |
| | M 8x1 | 7,350 | 7,500 | 7,376 | 7,526 |
| M 9 | | 8,188 | 8,348 | 8,216 | 8,376 |
| M 10 | | 9,026 | 9,206 | 9,058 | 9,238 |
| | M 10x0,75 | 9,513 | 9,645 | 9,535 | 9,667 |
| | M 10x1 | 9,350 | 9,500 | 9,376 | 9,526 |
| | M 10x1,25 | 9,188 | 9,348 | 9,216 | 9,376 |
| M 12 | | 10,863 | 11,063 | 10,897 | 11,097 |
| | M 12x1 | 11,350 | 11,510 | 11,376 | 11,536 |
| | M 12x1,25 | 11,188 | 11,368 | 11,216 | 11,396 |
| | M 12x1,5 | 11,026 | 11,216 | 11,058 | 11,248 |
| M 14 | | 12,701 | 12,913 | 12,739 | 12,951 |
| | M 14x1,5 | 13,026 | 13,216 | 13,058 | 13,248 |
| M 16 | | 14,701 | 14,913 | 14,739 | 14,951 |
| | M 16x1,5 | 15,026 | 15,216 | 15,058 | 15,248 |
| M 18 | | 16,376 | 16,600 | 16,418 | 16,642 |
| | M 18x1,5 | 17,026 | 17,216 | 17,058 | 17,248 |
| M 20 | | 18,376 | 18,600 | 18,418 | 18,642 |
| | M 20x1,5 | 19,026 | 19,216 | 19,058 | 19,248 |
| | M 20x2 | 18,701 | 18,913 | 18,739 | 18,951 |
| M 22 | | 20,376 | 20,600 | 20,418 | 20,642 |
| | M 22x1,5 | 21,026 | 21,216 | 21,058 | 21,248 |
| M 24 | | 22,051 | 22,316 | 22,099 | 22,364 |
| | M 24x1,5 | 23,026 | 23,226 | 23,058 | 23,258 |
| | M 24x2 | 22,701 | 22,925 | 22,739 | 22,963 |
| | M 26x1,5 | 25,026 | 25,226 | 25,058 | 25,258 |
| M 27 | | 25,051 | 25,316 | 25,099 | 25,364 |
| | M 27x1,5 | 26,026 | 26,226 | 26,058 | 26,258 |
| | M 27x2 | 25,701 | 25,925 | 25,739 | 25,963 |
| | M 28x1,5 | 27,026 | 27,226 | 27,058 | 27,258 |
| M 30 | | 27,727 | 28,007 | 27,780 | 28,060 |
| | M 30x1,5 | 29,026 | 29,226 | 29,058 | 29,258 |
| | M 30x2 | 28,701 | 28,925 | 28,739 | 28,963 |
| | M 32x1,5 | 31,026 | 31,226 | 31,058 | 31,258 |
| | M 32x2 | 30,701 | 30,925 | 30,739 | 30,963 |
| M 33 | | 30,727 | 31,007 | 30,780 | 31,060 |
| | M 33x1,5 | 32,026 | 32,226 | 32,058 | 32,258 |
| | M 33x2 | 31,701 | 31,925 | 31,739 | 31,963 |
| M 36 | | 33,402 | 33,702 | 33,462 | 33,762 |
| | M 36x1,5 | 35,026 | 35,226 | 35,058 | 35,258 |
| | M 36x2 | 34,701 | 34,925 | 34,739 | 34,963 |
| | M 36x3 | 34,051 | 34,316 | 34,099 | 34,364 |
| M 39 | | 36,402 | 36,702 | 36,462 | 36,762 |
| | M 39x1,5 | 38,026 | 38,226 | 38,058 | 38,258 |
| | M 39x2 | 37,701 | 37,925 | 37,739 | 37,963 |
| | M 39x3 | 37,051 | 37,316 | 37,099 | 37,364 |
| | M 40x1,5 | 39,026 | 39,226 | 39,058 | 39,258 |
| M 42 | | 39,077 | 39,392 | 39,140 | 39,455 |
| | M 42x1,5 | 41,026 | 41,226 | 41,058 | 41,258 |
| | M 42x2 | 40,701 | 40,925 | 40,739 | 40,963 |
| | M 42x3 | 40,051 | 40,316 | 40,099 | 40,364 |
| M 45 | | 42,077 | 42,392 | 42,140 | 42,455 |
| | M 45x1,5 | 44,026 | 44,226 | 44,058 | 44,258 |
| | M 45x2 | 43,701 | 43,925 | 43,739 | 43,963 |
| | M 45x3 | 43,051 | 43,316 | 43,099 | 43,364 |
| M 48 | | 44,752 | 45,087 | 44,823 | 45,158 |
| | M 48x1,5 | 47,026 | 47,238 | 47,058 | 47,270 |
| | M 48x2 | 46,701 | 46,937 | 46,739 | 46,975 |
| | M 48x3 | 46,051 | 46,331 | 46,099 | 46,379 |
| M 52 | | 48,752 | 49,087 | 48,823 | 49,158 |
| | M 52x2 | 50,701 | 50,937 | 50,739 | 50,975 |
| | M 52x3 | 50,051 | 50,331 | 50,099 | 50,379 |

Gwint amerykański zunifikowany UNC i UNF

| Wymiar nominalny | | 2B / 3B | 2B | 3B |
|---|---|---|---|---|
| UNC | UNF | min | max | max |
| No 5 - 40 | | 2,764 | 2,847 | 2,827 |
| | No 5 - 44 | 2,799 | 2,880 | 2,860 |
| No 6 - 32 | | 2,990 | 3,084 | 3,058 |
| | No 6 - 40 | 3,094 | 3,180 | 3,157 |
| No 8 - 32 | | 3,650 | 3,746 | 3,721 |
| | No 8 - 36 | 3,708 | 3,800 | 3,777 |
| No 10 - 24 | | 4,138 | 4,247 | 4,219 |
| | No 10 - 32 | 4,310 | 4,409 | 4,384 |
| No 12 - 24 | | 4,798 | 4,910 | 4,882 |
| | No 12 - 28 | 4,897 | 5,004 | 4,976 |
| 1/4 - 20 | | 5,524 | 5,648 | 5,616 |
| | 1/4 - 28 | 5,761 | 5,870 | 5,842 |
| 5/16 - 18 | | 7,021 | 7,155 | 7,120 |
| | 5/16 - 24 | 7,249 | 7,371 | 7,341 |
| 3/8 - 16 | | 8,494 | 8,639 | 8,603 |
| | 3/8 - 24 | 8,837 | 8,961 | 8,931 |
| 7/16 - 14 | | 9,934 | 10,089 | 10,051 |
| | 7/16 - 20 | 10,287 | 10,424 | 10,391 |
| 1/2 - 13 | | 11,430 | 11,595 | 11,552 |
| | 1/2 - 20 | 11,874 | 12,017 | 11,981 |
| 9/16 - 12 | | 12,913 | 13,086 | 13,043 |
| | 9/16 - 18 | 13,371 | 13,520 | 13,482 |
| 5/8 - 11 | | 14,376 | 14,559 | 14,514 |
| | 5/8 - 18 | 14,958 | 15,110 | 15,072 |
| 3/4 - 10 | | 17,399 | 17,595 | 17,544 |
| | 3/4 - 16 | 18,019 | 18,184 | 18,143 |
| 7/8 - 9 | | 20,391 | 20,599 | 20,546 |
| | 7/8 - 14 | 21,026 | 21,224 | 21,181 |
| 1 - 8 | | 23,338 | 23,561 | 23,505 |
| | 1 - 12 | 24,026 | 21,224 | 24,171 |
| 1.1/8 - 7 | | 26,218 | 26,457 | 26,398 |
| | 1.1/8 - 12 | 27,201 | 21,224 | 27,351 |
| 1.1/4 - 7 | | 29,393 | 29,637 | 29,576 |
| | 1.1/4 - 12 | 30,376 | 24,219 | 30,528 |
| 1.3/8 - 6 | | 32,174 | 32,438 | 32,372 |
| | 1.3/8 - 12 | 33,551 | 27,399 | 33,706 |
| 1.1/2 - 6 | | 35,349 | 35,616 | 35,550 |
| | 1.1/2 - 12 | 36,726 | 36,937 | 36,886 |
| 1.3/4 - 5 | | 41,151 | 41,445 | 41,372 |
| 2 - 4.1/2 | | 47,135 | 47,450 | 47,371 |

Gwint rurowy walcowy G

| Wymiar nominalny | min | max |
|---|---|---|
| G-1/16” | 7,142 | 7,249 |
| G-1/8” | 9,147 | 9,254 |
| G-1/4” | 12,301 | 12,426 |
| G-3/8” | 15,806 | 15,931 |
| G-1/2” | 19,793 | 19,935 |
| G-5/8” | 21,749 | 21,891 |
| G-3/4” | 25,279 | 25,421 |
| G-7/8” | 29,039 | 29,181 |
| G-1” | 31,770 | 31,950 |
| G-1.1/8” | 36,418 | 36,598 |
| G-1.1/4” | 40,431 | 40,611 |
| G-1.3/8” | 42,844 | 43,024 |
| G-1.1/2” | 46,324 | 46,504 |
| G-1.3/4” | 52,267 | 52,447 |
| G-2” | 58,135 | 58,315 |

# FORMULARZ DOBORU NARZĘDZIA

Wypełnia FANAR
Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: ..... GWINTOWNIK ☐ WYGNIATAK ☐

## DANE KLIENTA

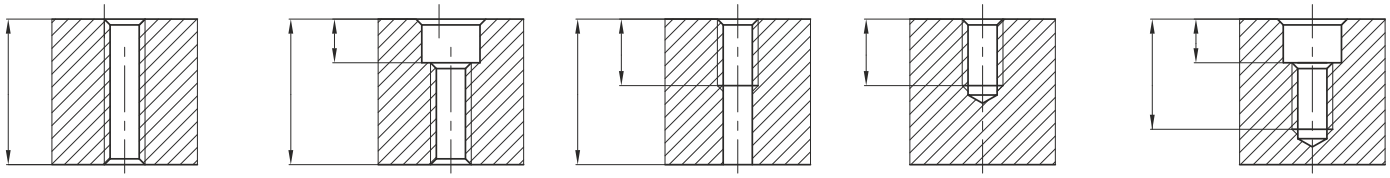
Nazwa i adres firmy: .....

Osoba kontaktowa: .....tel.....

## 1. Typ gwintu

1.1. Wymiar: ..... 1.2. Tolerancja: .....

1.3. Cechy i wymiary otworu / wałka gwintowanego:



☐ ☐ ☐ ☐ ☐

## 2. Obrabiarka i osprzęt do gwintowania

2.1. Typ obrabiarki: .....

2.2. Metoda gwintowania: poziomo ☐ pionowo ☐ 2.3. Posuw wymuszony: tak ☐ nie ☐

2.4. Typ oprawki / uchwytu: .....

Kompensacja osiowa: tak ☐ nie ☐
Kompensacja współosiowości: tak ☐ nie ☐
Sprzęgło przeciążeniowe: tak ☐ nie ☐

2.5. Prędkość skrawania: .....m/min, .....obr/min

2.6. Smarowanie: ręczne ☐ automatyczne ☐ Środek smarny: .....

## 3. Materiał obrabiany

3.1. Rodzaj obrabianego elementu: .....

3.2. Materiał (symbol): .....

3.3. Twardość: .....HB .....HRC; Extension strength Rm.....N/mm$^2$

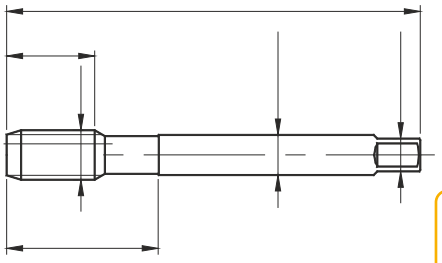
3.4. Przygotowanie otworu/wałka gwintowanego: Wiercony ☐ Rozwiercany ☐ Odlew ☐ Inny: .....

## 4. Narzędzie

4.1. Narzędzie obecnie stosowane (typ): .....

4.2. Żywotność: .....

4.3. Oczekiwane wymiary narzędzia:



Wypełnij w wersji online

## 5. Uwagi

# FORMULARZ DOBORU NARZĘDZIA

Wypełnia FANAR
Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: .....

**NARZYNKA**

## DANE KLIENTA

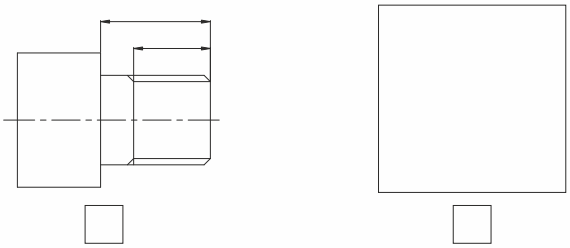
Nazwa i adres firmy: .....

Osoba kontaktowa: .....tel.....

## 1. Typ gwintu

1.1. Wymiar: ..... 1.2. Tolerancja: .....

1.3. Cechy i wymiary otworu / wałka gwintowanego:



## 2. Obrabiarka i osprzęt do gwintowania

2.1. Typ obrabiarki: .....

2.2. Metoda gwintowania: poziomo ☐ pionowo ☐ 2.3. Posuw wymuszony: tak ☐ nie ☐

2.4. Typ oprawki / uchwytu: .....

Kompensacja osiowa: tak ☐ nie ☐
Kompensacja współosiowości: tak ☐ nie ☐
Sprzęgło przeciążeniowe: tak ☐ nie ☐

2.5. Prędkość skrawania: .....m/min, .....obr/min

2.6. Smarowanie: ręczne ☐ automatyczne ☐ Środek smarny: .....

## 3. Materiał obrabiany

3.1. Rodzaj obrabianego elementu: .....

3.2. Materiał (symbol): .....

3.3. Twardość: .....HB .....HRC; Wytrzymałość na rozciąganie Rm.....N/mm$^2$

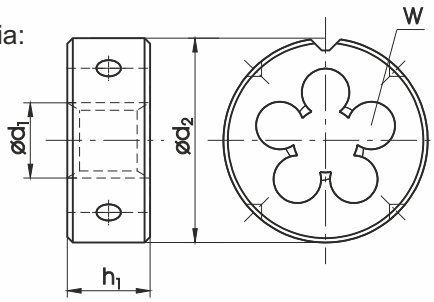
3.4. Przygotowanie otworu/wałka gwintowanego: Wiercony☐ Rozwiercany☐ Odlew☐ Inny: .....

## 4. Narzędzie

4.1. Narzędzie obecnie stosowane (typ): .....

4.2. Żywotność: .....

4.3. Oczekiwane wymiary narzędzia:




Wypełnij w wersji online

## 5. Uwagi

# FORMULARZ DOBORU NARZĘDZIA

Wypełnia FANAR
Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: .....

## WIERTŁO SPECJALNE

## DANE KLIENTA

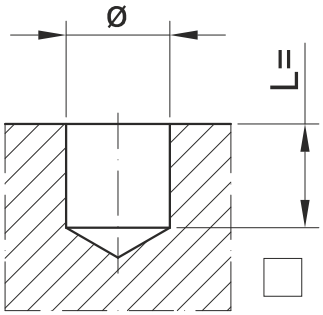
Nazwa i adres firmy: .....

Osoba kontaktowa: .....tel.....

## 1. Szkic obrabianej części

1.1. Nazwa detalu:..... 1.2. Materiał obrabiany:.....

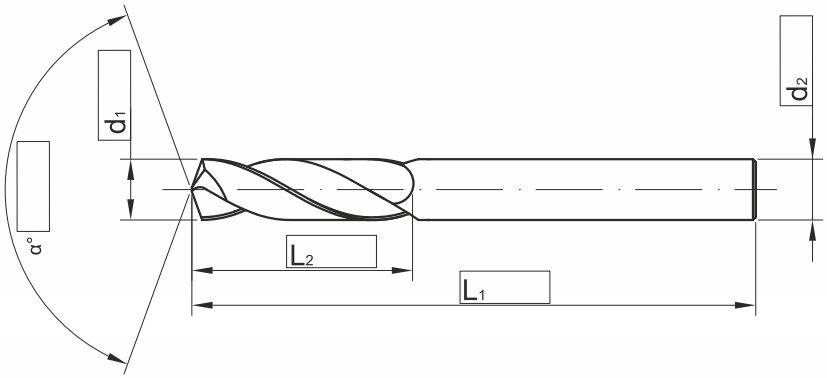
1.3. Twardość:




## 2. Narzędzie:

2.1. Nr. rysunku narzędzia:.....

2.2. Sugerowany materiał: 2.3. Sugerowana powłoka PVD:.....




## 3. Wykonanie:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3.1. Rowki: | prawoskrętne | ☐ | Lewoskrętne | ☐ | Proste | ☐ | Kąt lini śrubowej: ..... |
| 3.2. Kierunek Cięcia: | Prawotnące | ☐ | Lewotnące | ☐ | | | |
| 3.3. Chłodzenie: | Zewnętrzne | ☐ | Wewnętrzne | ☐ | Bez chłodzenia | ☐ | |
| 3.4. Chwyt: | DIN-6535-HA | ☐ | DIN-6535-HB | ☐ | DIN-65350HE | ☐ | |

## 4. Maszyna:

4.1.Typ maszyny: .....

4.2. Typ/wielkość wrzeciona: .....

4.3. Moc maszyny[kW]: .....

4.4. Max prędkość obr[obr/min]: .....

## 5. Uwagi

Wypełnij w wersji online

# FORMULARZ DOBORU NARZĘDZIA

Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: .....

## SPECJALNE WIERTŁO 1-STOPNIOWE

### DANE KLIENTA

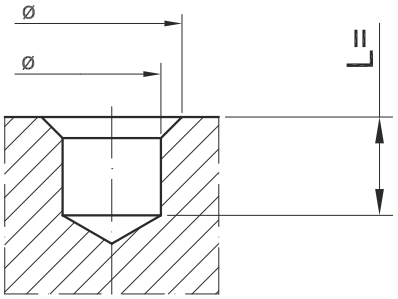
Nazwa i adres firmy: .....

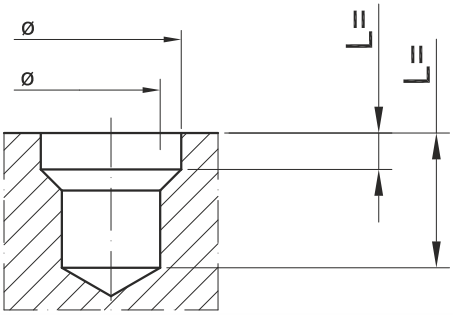
Osoba kontaktowa: .....tel.....

### 1. Szkic obrabianej części

1.1. Nazwa detalu:..... 1.2. Materiał obrabiany:.....

1.3. Twardość:

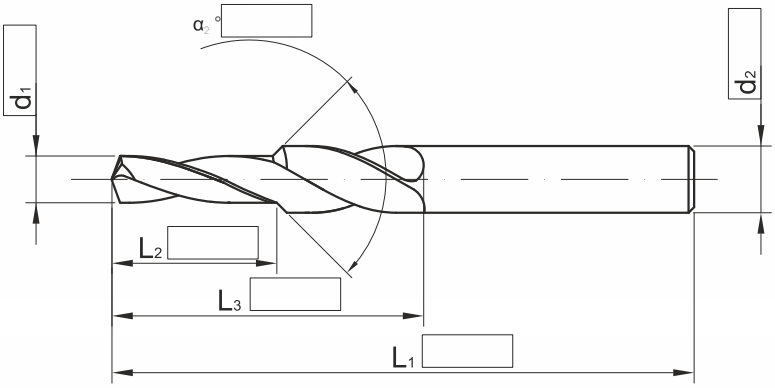



### 2. Narzędzie:

2.1. Nr. rysunku narzędzia:.....

2.2. Sugerowany materiał: 2.3. Sugerowana powłoka PVD:.....




### 3. Wykonanie:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3.1. Rowki: | prawoskrętne | ☐ | Lewoskrętne | ☐ | Proste | ☐ | Kąt lini śrubowej: ..... |
| 3.2. Kierunek Cięcia: | Prawotnące | ☐ | Lewotnące | ☐ | | | |
| 3.3. Chłodzenie: | Zewnętrzne | ☐ | Wewnętrzne | ☐ | Bez chłodzenia | ☐ | |
| 3.4. Chwyt: | DIN-6535-HA | ☐ | DIN-6535-HB | ☐ | DIN-65350HE | ☐ | |

### 4. Maszyna:

4.1.Typ maszyny: .....

4.2. Typ/wielkość wrzeciona: .....

4.3. Moc maszyny[kW]: .....

4.4. Max prędkość obr[obr/min]: .....

### 5. Uwagi

Wypełnij w wersji online

# FORMULARZ DOBORU NARZĘDZIA

Wypełnia FANAR
Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: .....

## SPECJALNE WIERTŁO 2-STOPNIOWE

## DANE KLIENTA

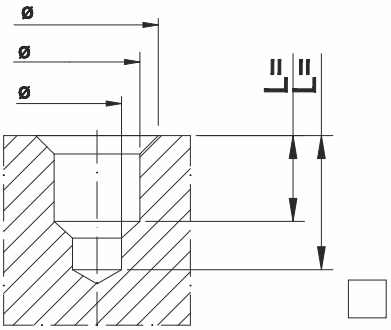
Nazwa i adres firmy: .....

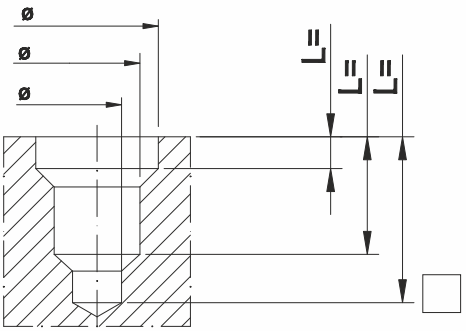
Osoba kontaktowa: .....tel.....

## 1. Szkic obrabianej części

1.1. Nazwa detalu:..... 1.2. Materiał obrabiany:.....

1.3. Twardość:

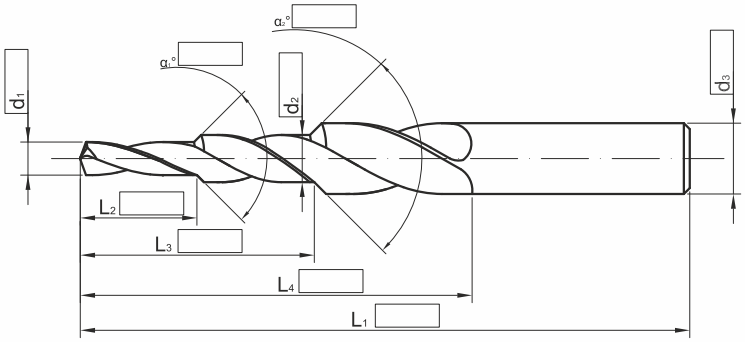



## 2. Narzędzie:

2.1. Nr. rysunku narzędzia:.....

2.2. Sugerowany materiał: 2.3. Sugerowana powłoka PVD:.....




## 3. Wykonanie:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3.1. Rowki: | prawoskrętne | ☐ | Lewoskrętne | ☐ | Proste | ☐ | Kąt lini śrubowej: ..... |
| 3.2. Kierunek Cięcia: | Prawotnące | ☐ | Lewotnące | ☐ | | | |
| 3.3. Chłodzenie: | Zewnętrzne | ☐ | Wewnętrzne | ☐ | Bez chłodzenia | ☐ | |
| 3.4. Chwyt: | DIN-6535-HA | ☐ | DIN-6535-HB | ☐ | DIN-65350HE | ☐ | |

## 4. Maszyna:

4.1.Typ maszyny: .....

4.2. Typ/wielkość wrzeciona: .....

4.3. Moc maszyny[kW]: .....

4.4. Max prędkość obr[obr/min]: .....

## 5. Uwagi

Wypełnij w wersji online

# FORMULARZ DOBORU NARZĘDZIA

Wypełnia FANAR
Data wpłynięcia:..... Sprawę przyjął:..... Nr zapytania .....

Data: .....

## WIERTŁO SPECJALNE

## DANE KLIENTA

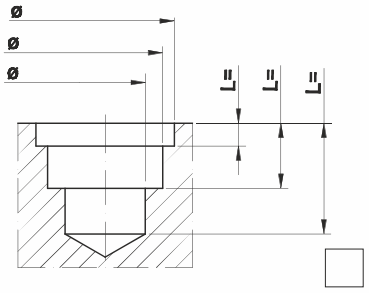
Nazwa i adres firmy: .....

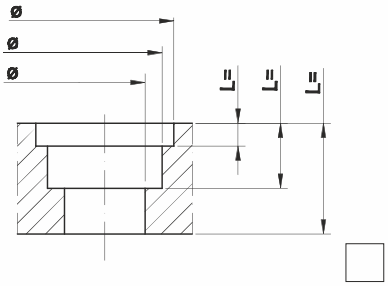
Osoba kontaktowa: .....tel.....

## 1. Szkic obrabianej części

1.1. Nazwa detalu:..... 1.2. Materiał obrabiany:.....

1.3. Twardość:

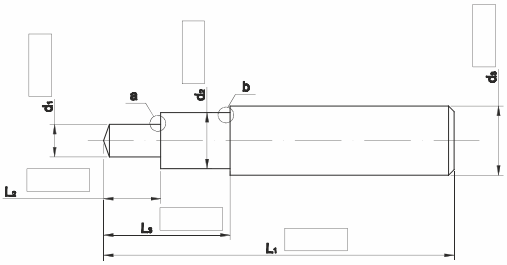


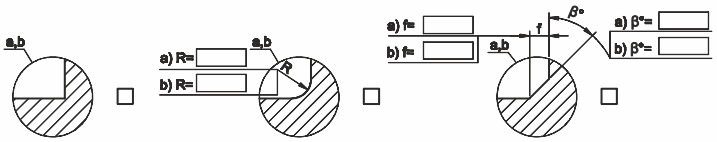




## 2. Narzędzie:

2.1. Nr. rysunku narzędzia:.....

2.2. Sugerowany materiał: 2.3. Sugerowana powłoka PVD:.....




## 3. Wykonanie:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3.1. Rowki: | Prawoskrętne | ☐ | Lewoskrętne | ☐ | Proste | ☐ | Kąt lini śrubowej: ..... |
| 3.2. Kierunek Cięcia: | Prawotnące | ☐ | Lewotnące | ☐ | | | |
| 3.3. Chłodzenie: | Zewnętrzne | ☐ | Wewnętrzne | ☐ | Bez chłodzenia | ☐ | |
| 3.4. Chwyt: | DIN-6535-HA | ☐ | DIN-6535-HB | ☐ | DIN-65350HE | ☐ | |

## 4. Maszyna:

4.1.Typ maszyny: .....

4.2. Typ/wielkość wrzeciona: .....

4.3. Moc maszyny[kW]: .....

4.4. Max prędkość obr[obr/min]: .....

## 5. Uwagi

Wypełnij w wersji online

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| D2-111121 | M | 23 |
| D2-111801 | M | 26 |
| D2-111801 | MF | 46 |
| D2-111801 | MF | 47 |
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| D2-113X01 | MF | 39 |
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| D2-513X01 | MF | 39 |
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| D2-513X01 | UNF | 63 |
| D2-513X01 | G | 69 |
| D2-518801 | M | 26 |
| D2-518801 | MF | 46 |
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| D2-923105 | UNC | 87 |
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| D4-115001 | MF | 44 |
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| D4-528M01 | MF | 36 |
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| D4-528M01 | UNF | 62 |
| D4-528M01 | G | 68 |
| D4-528M01 | EG M | 79 |
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| D4-565001 | M | 24 |
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| D4-655601 | MF | 49 |
| D4-655651 | M | 27 |
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| D4-718M01 | MF | 36 |
| D4-718M01 | UNC | 80 |
| D4-718M01 | EG UNF | 81 |
| D4-718M51 | M | 16 |
| D4-718M51 | MF | 36 |
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| D4-923006 | M | 85 |
| D4-925005 | MF | 86 |
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| N1-121001 | MF | 117 |
| N1-121001 | MF | 118 |
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| N1-141001 | MF | 117 |
| N1-141001 | MF | 118 |
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