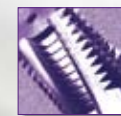
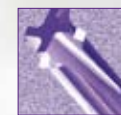
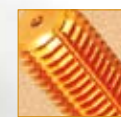


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**THREADING
TECHNOLOGY**

www.dcswiss.com

DC SWISS SA
DE-EN-ID-2014



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TECHNOLOGY**

www.dcswiss.com

**Gesamtkatalog
Main catalogue**
DE-EN-ID-2014



**THREADING
TECHNOLOGY**



Verfügbarkeit der Artikel

- ID** *Identifikationsnummer, ab Lager
lieferbar*
- * ID** *Identifikationsnummer, ab Lager
lieferbar solange Vorrat*

Availability of the articles

- ID** Identification number, available
from stock
- * ID** Identification number, available
from stock, while stock lasts



Certificate CH07/0649

The management system of

DC Swiss SA

Grand rue 19 CP 363
2735 Malleray, Switzerland



has been assessed and certified as meeting the requirements of

ISO 9001:2008

For the following activities

**Cutting tool designer and manufacturer,
expert in Threading Technology.**

This certificate is valid from 7 September 2013 until 6 September 2016
and remains valid subject to satisfactory surveillance audits
Recertification audit due before 25 August 2016
Issue 4. Certified since September 2007

Authorised by



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Page 1 of 1



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K



K613VS-3

M



K313TC-3
K413TC-3

MF

FPS-FAS



FPS581VS-3
FPS681VS-3

M



FPS584VS-3
FPS684VS-3

M



FAS581VS-3
FAS681VS-3

M



FAS584VS-3
FAS684VS-3

M

W



W320DL-4
W420DL-4

M



W360DL-3
W460DL-3
W460DL-5

M
G

FS



FS380DL-5

M



FS380DL-3

M

GW



GW3016
GW3016VS $\leq$ **M12**

MF



GW3019
GW3019VS

$\leq$ $\frac{1}{2}$ **UNC**
 $\leq$ $\frac{3}{8}$ **UNF**

AERO



SA320-4 **UNJF 3B**



N

Schaublin



N1110-3
N1210-3
N5120

SV

NEW

KODIERUNG - CODIFICATION

DC Gewindebohrer DC Taps

Beispiel - Example



Normale Werkstoffe	Normal materials	N							
Weiche Werkstoffe	Soft materials	W							
Zähe Werkstoffe	Tough materials	Z							
Hochfeste Werkstoffe	High tensile materials	H							
Sonderlegierte Werkstoffe	Special alloys	S							
Sonderlegierte Werkstoffe (Aero)	Special alloys (Aero)	SA							
Titanlegierungen (Aero)	Titanium alloys (Aero)	TL							
Grauguss und Alu-Guss	Cast iron and aluminium casting	GG							
Synchron-Gewindeschneiden	Rigid Tapping	RTS							
Spanbrecher	Swarf breaker	K							
MEGA-Gewindegrößen	MEGA tap sizes	MA							
Spezialausführung	Special execution		3						
Kurzer DIN-Schaft verstärkt	DIN short - reinforced shank			1					
Kurzer DIN-Schaft durchfallend	DIN short - reduced shank			2					
Langer DIN-Schaft verstärkt	DIN long - reinforced shank			3					
Langer DIN-Schaft durchfallend	DIN long - reduced shank			4					
Extra-langer DIN-Schaft verstärkt	DIN extra-long - reinforced shank			5					
Extra-langer DIN-Schaft durchfallend	DIN extra-long - reduced shank			6					
DC-Werksnorm	DC standards			9					
Kurzer ISO-Schaft verstärkt	ISO short - reinforced shank			11					
Kurzer ISO-Schaft durchfallend	ISO short - reduced shank			12					
Gerade Nuten	Straight flutes			1					
Gerade Nuten und Schälanschnitt	Straight flutes with spiral point			2					
Schälanschnitt	Spiral point			3					
Spiralnuten mit Linksdrill < 27°	< 27° left hand slow spiral flutes			4					
Spiralnuten mit Rechtsdrill < 27°	< 27° right hand slow spiral flutes			5					
Spiralnuten mit Rechtsdrill > 27°	> 27° right hand fast spiral flutes			6					
Spiralnuten mit Rechtsdrill > 40°	> 40° right hand fast spiral flutes			7					
Spiralnuten mit Rechtsdrill 10°, Schälän.	10° right hand fast spiral flutes, spiral point			9					
Standardausführung	Standard				0				
Ausgesetzte Zähne	Interrupted thread				1				
Verjüngtes Führungsgewinde	Truncated thread				2				
Innenkühlung	Internal coolant				3				
Ausgesetzte Zähne, Innenkühlung	Interrupted thread, internal coolant				4				
Verjüngtes Führungsgewinde, Innenkühlung	Truncated thread, internal coolant				5				
"V"-Oberflächenbehandlung	"V" surface treatment					V			
Verschleisschutzschicht	Wear-protective coating					VS			
Titannitrid-Beschichtung (TiN)	Titanium-nitride coating (TiN)					TN			
Titancarbonitrid-Beschichtung (TiCN)	Titanium carbonitride coating (TiCN)					TC			
Plasmanitrierung + "V"-Oberflächenbehandlung	Plasma nitriding + "V" surface treatment					NV			
DLC-Beschichtung	DLC-coating					DL			
Hardlube-Beschichtung	Hardlube-coating					HL			
Vorschneider	Taper tap							1	
Mittelschneider	Second tap							2	
Fertigschneider / 2 - 3 Gewindegänge	Bottoming tap / 2 - 3 chamfered threads							3	
3.5 - 5 Gewindegänge, Schälanschnitt	3.5 - 5 chamfered threads, spiral point							4	
1.5 - 2 Gewindegänge	1.5 - 2 chamfered threads							5	
6 - 8 Gewindegänge	6 - 8 chamfered threads							8	
Gewindebohrer-Satz	Thread taps set							S	

KODIERUNG - CODIFICATION

DC Gewindeformer DC Thread formers

Beispiel - Example



Standard Polygonform < Ø 3 mm	Standard polygon form < Ø 3 mm	FS							
Passive Polygonform ≥ Ø 3 mm	Passive polygon form ≥ Ø 3 mm	FPS							
Aktive Polygonform ≥ Ø 3 mm	Active polygon form ≥ Ø 3 mm	FAS							
Spezialausführung	Special execution		3						
Langer DIN-Schaft verstärkt	DIN long - reinforced shank			3					
Langer DIN-Schaft durchfallend	DIN long - reduced shank			4					
Extra-langer DIN-Schaft verstärkt	DIN extra-long - reinforced shank			5					
Extra-langer DIN-Schaft durchfallend	DIN extra-long - reduced shank			6					
Gewindeformer	Thread former				8				
Ohne Schmiernuten	Without lubrication grooves					0			
Mit Schmiernuten	With lubrication grooves					1			
Innenkühlung mit seitlichem Austritt	Internal coolant with radial outflow					4			
Verschleisschutzschicht	Wear-protective coating							VS	
Chromnitrid-Beschichtung (CrN)	Chromenitride coating (CrN)							CN	
DLC-Beschichtung	DLC-coating							DL	
2 - 3 Gewindegänge	2 - 3 chamfered threads								-3
1.5 - 2 Gewindegänge	1.5 - 2 chamfered threads								-5

PIKTOGRAMME - PICTOGRAPHS



Verstärkter Schaft gemäss DIN 371
Reinforced shank as per DIN 371



Durchfallender Schaft gemäss DIN 376
Reduced shank as per DIN 376



HSSE
HSSE



HSSE-PM
HSSE-PM



Anzahl Spannnuten (Z)
Number of flutes (Z)



Gerade Nuten
Straight flutes



Gerade Nuten und Schälanschnitt
Straight flutes with spiral point



Schälanschnitt
Spiral point only



Spiralnuten mit 40° Rechtsdrall
40° right hand spiral flutes



Verjüngtes Führungsgewinde
Truncated thread



Ausgesetzte Zähne
Interrupted thread



Gewindeformer
Thread former



Gewindeformer mit Schmiernuten
Thread former with lubrication grooves



Vorschneider
Taper tap



Mittelschneider
Second tap



Fertigschneider
Bottoming tap



Handgewindebohrer, Satz zu 2 Stück
Hand taps, set of 2 pieces



Handgewindebohrer, Satz zu 3 Stück
Hand taps, set of 3 pieces



Führungszapfen
Parallel pilot



Innenkühlung mit stirnseitigem Schmiermittelaustritt
Internal coolant with frontal outflow



Innenkühlung mit seitlichem Schmiermittelaustritt
Internal coolant with radial outflow

PIKTOGRAMME - PICTOGRAPHS



Für Werkstoffgruppen gemäss
DC-Anwendungstabelle

For material groups as per **DC**
 application chart

12	
1.0037	Si37-2 (S235JR)
1.0050	Si50-2 (E295)
1.0060	Si60-2 (E335)
1.5919	15CrNi6
1.7131	16MnCr5

22	
1.4301	X5CrNi18-10
1.4406	X2CrNiMoN17-12-2
1.4435	X2CrNiMo18-14-3
1.4541	X6CrNiTi18-10
1.4571	X6CrNiMoTi17-12-2



Extra-lang
 Extra-long



Durchgangsloch, langspanende Werkstoffe
 Through hole, long chipping materials



Durchgangsloch < 1.5 x D, kurzspanende Werkstoffe
 Through hole < 1.5 x D, short chipping materials



Sackloch < 1.5 x D, langspanende Werkstoffe
 Blind hole < 1.5 x D, long chipping materials



Sackloch < 2.5 x D, kurzspanende Werkstoffe
 Blind hole < 2.5 x D, short chipping materials



Durchgangs- und Sackloch < 2.5 x D
 Through / blind hole < 2.5 x D



Sackloch < 3 x D
 Blind hole < 3 x D



MEGA-Gewindeschneidkopf
 MEGA thread tapping head



Kronengewindebohrer
 Crown tap



Kombi-Gewindebohrer
 Combination drill/tap



Kernlochdurchmesser
 Core hole diameter



Radius auf Aussendurchmesser
 Radius on external diameter



Konisches Gewinde 1:16 (NPT - NPTF - Rc)
 Tapered thread 1:16 (NPT - NPTF - Rc)



EG-Gewinde
 Thread EG



Linksgewinde
 Left hand thread



3.5 - 5 Gewindegänge, Form B
 3.5 - 5 chamfered threads, form B



2 - 3 Gewindegänge, Form C
 2 - 3 chamfered threads, form C



1.5 - 2 Gewindegänge, Form E
 1.5 - 2 chamfered threads, form E



Toleranzklasse ISO 2 6H
 Tolerance class ISO 2 6H



Toleranzklasse ISO 2 6H + 0.1 mm
 Tolerance class ISO 2 6H + 0.1 mm



Toleranzklasse ISO 3 6G
 Tolerance class ISO 3 6G



DC -"V"-Oberflächenbehandlung
DC "V" surface treatment



DC -Verschleisschutzschicht
DC wear-protective coating



Titannitrid-Beschichtung
 Titanium-nitride coating



Titancarbonitrid-Beschichtung
 Titanium-carbonitride coating



Plasmanitrierung + "V"-Oberflächenbehandlung
 Plasma nitriding + "V" surface treatment



Chromnitrid-Beschichtung
 Chromenitride coating



DLC-Beschichtung
 DLC-coating



Hardlube-Beschichtung
 Hardlube-coating



Spanfragmente / regelmässige Spanaufteilung
 Swarf fragments / consistant chips



Für klassisches Gewindeschneiden
 For Classic Tapping



Für synchrones Gewindeschneiden
 For Rigid Tapping

ANWENDUNGSGRUPPEN

Beispiele für Anwendungsgruppen

11 Automatenstahl 1.0711 9S20 1.0715 9SMn28 1.0718 9SMnPb28 1.0726 35S20 1.0737 9SMnPb36	12 Baustahl, Einsatzstahl 1.0037 Si37-2 (S235JR) 1.0050 Si50-2 (E295) 1.0060 Si60-2 (E335) 1.5919 15CrNi6 1.7131 16MnCr5	13 Kohlenstoffstahl 1.0503 C45 1.0535 C55 1.0601 C60 1.1545 C105W1 1.2067 102Cr6 (100Cr6)	14 Stahl legiert < 850 N/mm ² 1.2363 X100CrMoV5-1 1.3551 80MoCrV42-16 1.7218 25CrMo4 1.7220 34CrMo4 1.7225 42CrMo4
15 Stahl legiert / vergütet > 850 - < 1150 N/mm ² 1.3553 X82WCrMoV6-5-4 1.6580 30CrNiMo8 1.7220 34CrMo4 1.7225 42CrMo4 1.8507 34CrAlMo5	16 Hochfester Stahl EN-GJS-1200-2 1.6582 34CrNiMo6v 1.7225 42CrMo4v 1.7228 50CrMo4v 1.8515 31CrMo12v	21 Rostfreier Stahl, geschwefelt 1.4005 X12CrS13 1.4104 X14CrMoS17 1.4305 X10CrNiS18-9	22 Austenitisch 1.4301 X5CrNi18-10 1.4406 X2CrNiMoN17-12-2 1.4435 X2CrNiMo18-14-3 1.4541 X6CrNiTi18-10 1.4571 X6CrNiMoTi17-12-2
23 Ferritisch, martensitisch < 850 N/mm ² 1.4112 X90CrMoV18 1.4540 X4CrNiCuNb16-4 1.4582 X4CrNiMoNb25-7 1.4762 X10CrAl24 1.4922 X20CrMo11-1	24 Ferritisch, martensitisch > 850 - < 1150 N/mm ² 1.4057 X17CrNi17-2 1.4125 X105CrMo17 1.4542 X5CrNiCuNb16-4 1.4548 X5CrNiCuNb17-4-4 1.4748 X85CrMoV18-2	31 Grauguss 0.6015 GG15 0.6020 GG20 0.6025 GG25 0.6030 GG30	32 Kugelgraphitguss, Temperguss 0.7040 GGG40 0.7043 GGG40.3 0.7050 GGG50 0.7060 GGG60 0.7080 GGG80
41 Reintitan 3.7024 Grad1 3.7034 Grad2 3.7055 Grad3 3.7065 Grad4	42 Titanlegierung 3.7124 TiCu2.5 Ti6Al7Nb 3.7164 TiAl6V4 (Grad5) 3.7174 TiAl6V6Sn2	51 Nickellegierung 1 < 850 N/mm ² 1.3912 Ni36 (Invar) 2.4360 NiCu30Fe (Monel 400) 2.4816 NiCr15Fe (Inconel 600) 1.4876 X10NiCrAlTi32-20	52 Nickellegierung 2 > 850 - < 1150 N/mm ² 2.4375 NiCu30Al (MonelK500) 2.4631 NiCr20TiAl (Nimonic 80) 2.4668 NiCr19NbMo (Inconel718)
53 Nickellegierung 3 > 1150 - ≤ 1600 N/mm ² 2.4631 NiCr20TiAl (Nimonic80) 2.4668 NiCr19NbMo (Inconel718)	61 Reinkupfer (Elektrolytkupfer) 2.0060 E-Cu57 (E-Cu)	62 Messing, Bronze, Rotguss (kurzspanend) 2.0401 CuZn39Pb3 (Ms58) 2.0402 CuZn40Pb2 (Ms58) 2.1030 CuSn8 (Bz) 2.1096 G-CuSn5ZnPb	63 Messing (langspanend) 2.0240 CuZn15 (Ms85) 2.0265 CuZn30 (Ms70) 2.0321 CuZn37 (Ms63)
71 Al unlegiert 3.0205 Al99 3.0255 Al99.5	72 Al legiert Si < 1.5% 3.1255 AlCuSiMn 3.1355 AlCuMg2 3.2315 AlMgSi1 3.3206 AlMgSi0.5 3.4345 AlZnMgCu0.5	73 Al legiert Si > 1.5% - < 10% 3.2161 G-AlSi8Cu3 3.2162 GD-AlSi8Cu3 3.2341 G-AlSi5Mg 3.2371 G-AlSi7Mg	74 Al legiert Si > 10% Mg-Legierung 3.2381 G-AlSi10Mg 3.2382 GD-AlSi10Mg 3.2581 G-AlSi12 3.2583 G-AlSi12 (Cu)
81 Thermoplaste Delrin (POM) Teflon Nylon	82 Duroplaste Bakelit Novopan	83 Faserverstärkte Kunststoffe Glasfaserverstärkte Thermo- und Duroplaste	

Referenz: DIN

APPLICATION GROUPS

Examples for application groups

11 Free-cutting steels 1.0711 1212 1.0715 1213 1.0718 12L13 1.0726 1140 1.0737 12L14	12 Structural, cementation steels 1.0037 1015 1.0050 A570 Gr.50 1.0060 A572 Gr.65 1.5919 3115 1.7131 5115	13 Carbon steels 1.0503 1045 1.0535 1055 1.0601 1060 1.1545 W110 1.2067 L3	14 Alloy steels < 850 N/mm ² 1.2363 A2 1.3551 M50 1.7218 4130 1.7220 4135 1.7225 4140
15 Alloy steels hard./temp. > 850 - < 1150 N/mm ² 1.3553 - 1.6580 4340 1.7220 4135 1.7225 4140 1.8507 A355CLD (K23510)	16 High tensile alloy steels EN-GJS-1200-2 1.6582 4340 1.7225 4140 1.7228 4150 1.8515 -	21 Free machining stainless steels 1.4005 416 1.4104 430F 1.4305 303	22 Austenitic stainless steels 1.4301 304 1.4406 316LN 1.4435 316L 1.4541 321 1.4571 316Ti
23 Ferritic and martensitic < 850 N/mm ² 1.4112 440B 1.4540 XM12 (15-5PH) 1.4582 - 1.4762 446 1.4821 4922	24 Ferritic and martensitic > 850 - < 1150 N/mm ² 1.4057 431 1.4125 440C 1.4542 630 (17-4PH) 1.4748 -	31 Cast iron 0.6015 A48-25B 0.6020 A48-30B 0.6025 A48-40B 0.6030 A48-45B	32 Spheroidal graphite + malleable cast iron 0.7040 60-40-18 0.7043 - 0.7050 65-45-12 0.7060 80-55-06 0.7080 120-90-02
41 Pure titanium 3.7024 Gr.1 3.7034 Gr.2 3.7055 Gr.3 3.7065 Gr.4	42 Titanium alloys 3.7124 Alloy 230 F-1295 3.7164 Gr.5 3.7174 -	51 Nickel alloys 1 < 850 N/mm ² 1.3912 K93600 2.4360 N04400 1.4816 N08800	52 Nickel alloys 2 > 850 - < 1150 N/mm ² 2.4375 N05500 (B865) 2.4631 N07080 (B637) 2.4668 N07718 (B637)
53 Nickel alloys 3 > 1150 - ≤ 1600 N/mm ² 2.4631 N07080 (B637) 2.4668 N07718 (B637)	61 Pure copper (electrolytic copper) 2.0060 C11000	62 Short chip brass + phosphor bronze + gun metal 2.0401 C38500 2.0402 C37800 2.1030 C52100 2.1096 -	63 Long chip brass 2.0240 C23000 2.0265 C26000 2.0321 C27200
71 Al unalloyed 3.0205 1200 3.0255 1050A	72 Al alloyed Si < 1.5% 3.1255 2014 3.1355 2024 3.2315 6082 3.3206 6060 3.4345 7020	73 Al alloyed Si > 1.5% - < 10% 3.2161 380.1 3.2162 - 3.2341 - 3.2371 A 356.2	74 Al alloyed Si > 10% Mg-alloys 3.2381 A360 3.2382 - 3.2581 A413 3.2583 413.1
81 Thermoplastics Delrin (POM) Teflon Nylon	82 Duroplastics Bakelit Novopan	83 Glass fibre reinforced plastics Glass fibre reinforced, Thermo and Duroplastics	

Reference: AISI/ASTM/UNS

SYNCHRON-GEWINDESCHNEIDEN - RIGID TAPPING

Ab Seite :
From page :

M
MF
UNC
UNF
UNEF/UN/UNS
G/Rp/Rc
NPT/NPTF
W
PG/TR/SV
EG M/EG UNC/EG UNF

K

[illegible]

Vc (m/min)			
Ø M6-M10	Ø M12-M16	Ø M20-M30	Ø M33-M42
32	28	22	18
30	25	20	15
24	20	16	12
24	20	16	12
15	12	8	6
30	25	20	15
30	25	20	15
35	30	25	20
32	28	22	18
30	25	20	15

K. 137c		K. 137s		
				
E	E			11
E	E			12
E	E			13
E	E			14
E	E			15
				16
				21
				22
				23
				24
E	E			31
E	E			32
				41
				42
				51
				52
				53
				61
E	E			62
E	E			63
				71
				72
				73
E	E			74
				81
				82
				83

V_c (m/min)
< Ø 20 mm
(Guide line)
Beschichtet VS
Coated VS

20 – 40
20 – 40
16 – 24
16 – 24
6 – 12
20 – 40
6 – 12
6 – 12
4 – 8
20 – 40
20 – 40
6 – 12
10 – 20
20 – 40
30 – 50
20 – 40
20 – 40

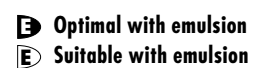
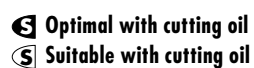
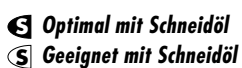
RTS



62	62	63	63	50	50
102		102		94	
126		126		120	
146		146		139	
		161		161	
				181	

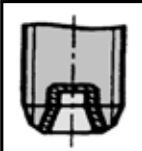
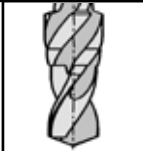


RTS. 20VS	RTS. 23VS	RTS. 62VS	RTS. 65VS	Z. 70VS	Z. 73VS	
						
						11
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						15
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						74
						81
						82
						83



GEWINDEFORMEN - THREAD FORMING

[illegible]

	Gewindeschneiden Thread Cutting 		Synchron-Gewindeschneiden Rigid Tapping 
M N 22-45/76-78/285 W 46-47 Z 48-51 H 52-55 S 56-57 SA 57-59 TL 58-59 GG 60-61 K 66-67 MF N 84-93/106-108 Z 94-95 H 96-97 S 98 SA 99-101 TL 100-101 K 103 UNC, UNC(J) N 114-117/128-129 Z 118-120 H 121 S 122-123 SA 124-125 TL 124 UNF, UNF(J), UNJF, UNEF, UN, UNS N 134-137/148-151 Z 138-139 H 140-141 S 142 SA 143-145 TL 143-144 G (BSP), Rp, Rc, W, SV Schaublin N 156-158/163-167 W 159 Z 160-161 H 159 GG 159 NPT, NPTF, PG, TR N 170-173 EG M, EG UNC, EG UNF N 176-177/180/183 Z 181/184 S 184 SA 178-179/182/184-185 TL 178/182/185		M RTS 62-65 Z.70/Z.73 50-51 K 66-67 MF RTS 102 Z.70 94-95 K 103 UNC RTS 126 Z.70 120 UNF RTS 146 Z.70 139 G (BSP) RTS 161 Z.70 161 EG UNC, EG UNF Z.70 181/184	
			Gewindeformen Thread Forming 
		M FS 68-69 FPS 70-72 FAS 73-75 MF FPS 104 FAS 105 UNC FS 127 FPS 127 FAS 127 UNF FS 147 FPS 147 FAS 147 G (BSP) FPS 162 FAS 162	
	Kronengewindebohrer Crown taps 		Kombi-Gewindebohrer Combination drill/taps 
M, MF N 187-188 UN, G (BSP) N 189		M, MF N 192 UNC, G (BSP), PG N 193	

2

Combination of drill/taps	EG M, EG UN	PG, TR	G, Rp, Rc, W, SV	UNC, UNC(J)	MF
Crown taps					
Combination drill/taps					

		N						
Merkmale Characteristics				 V	 TiN TiCN	 	 V	
					 		 	
Lochart Hole type								
		N310-3	N320-3 N320-4	N320V-3 N320V-4	N320TN-3/4 N320TC-3/4	N321-3 N321-4	N330-3 N330-4	N330V-3 N330V-4
DIN lang DIN long	DIN 371	22	22/24	24	24	30	30	30
Extra-lang Extra-long	DC							
ISO kurz ISO short	ISO 529							
DIN kurz DIN short	DIN 352							
DIN lang DIN long	~DIN 2174							
Toleranz Tolerance	ISO 2 6H	22	22/24	24	24	30	30	30
Überschuss Oversize	ISO 3 6G		28	28				
Überschuss Oversize	7G		28					
Überschuss Oversize	+ 0.10 mm + 0.20 mm		28					
Feintoleranz Fine tolerance	ISO 1 4H		26					
LH Linksgewinde LH Left hand thread	ISO 2 6H	22	26	26				
		N410-3	N420-4	N420V-4	N420TN-4 N420TC-4	N421-4	N430-4	N430V-4
DIN lang DIN long	DIN 376	23	25	25	25	31	31	31
Extra-lang Extra-long	DC							
ISO kurz ISO short	ISO 529							
DIN kurz DIN short	DIN 352							
DIN lang DIN long	~DIN 2174							
Toleranz Tolerance	ISO 2 6H	23	25	25	25	31	31	31
Überschuss Oversize	ISO 3 6G		29	29				
Überschuss Oversize	7G		29					
Überschuss Oversize	+ 0.10 mm + 0.20 mm		29/31					
Feintoleranz Fine tolerance	ISO 1 4H		27					
LH Linksgewinde LH Left hand thread	ISO 2 6H	23	27	27				

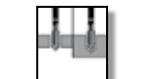
N

 R15 	 R40	 R40 	 R40  	 R40 	 R40 	 R40 	 N520 	 N520V 
 			 	 				
								
N350-3 N350V-3	N360-3	N360V-3	N360TN-3 N360TC-3	N360-5 N360V-5	N361-3	N362V-3	N520-4	N520V-4
32	34	34	34	40	40	40	42	42
32	34	34	34	40	40	40	42	42
	36	36						
	38	38						
	38							
	36	36						
N450-3 N450V-3	N460-3	N460V-3	N460TN-3 N460TC-3	N460-5 N460V-5	N461-3	N462V-3	N620-4	N620V-4
33	35	35	35	41	41	41	43	43
33	35	35	35	41	41	41	43	43
	37	37						
	39	39						
	39							
	37	37						

	N						
Merkmale Characteristics	 TiN	 R40	 R40 V	 TiN		 R40	
							
Lochart Hole type							
	N520TN-4	N560-3	N560V-3	N560TN-3	N1120-4	N1160-3	N1110 -1-2-3-S
DIN lang DIN long	DIN 371						
Extra-lang Extra-long	DC	42	44	44			
ISO kurz ISO short	ISO 529				78	78	76
DIN kurz DIN short	DIN 352						
DIN lang DIN long	~DIN 2174						
Toleranz Tolerance	ISO 2 6H	42	44	44	78	78	76
Übermass Oversize	ISO 3 6G						
Übermass Oversize	7G						
Übermass Oversize	+ 0.10 mm + 0.20 mm						
Feintoleranz Fine tolerance	ISO 1 4H						
LH Linksgewinde LH Left hand thread	ISO 2 6H						
	N620TN-4	N660-3	N660V-3	N660TN-3	N1220-4	N1260-3	N1210 -1-2-3-S
DIN lang DIN long	DIN 376						
Extra-lang Extra-long	DC	43	45	45			
ISO kurz ISO short	ISO 529				78	78	77
DIN kurz DIN short	DIN 352						
DIN lang DIN long	~DIN 2174						
Toleranz Tolerance	ISO 2 6H	43	45	45	78	78	77
Übermass Oversize	ISO 3 6G						
Übermass Oversize	7G						
Übermass Oversize	+ 0.10 mm + 0.20 mm						
Feintoleranz Fine tolerance	ISO 1 4H						
LH Linksgewinde LH Left hand thread	ISO 2 6H						

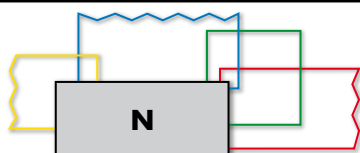
[illegible]

		Z		H		S		SA
Merkmale Characteristics		 VS	 VS	 TiCN	 TiCN	 VS	 VS	
								
Lochart Hole type								
		Z370VS-3	Z373VS-3	H320-4 H320TC-4	H350-3 H350TC-3	S320VS-4	S360VS-3	SA320-4
<i>DIN lang</i> DIN long	DIN 371	50	50	52	54	56	57	58
<i>Extra-lang</i> Extra-long	DC							
<i>ISO kurz</i> ISO short	ISO 529							
<i>DIN kurz</i> DIN short	DIN 352							
<i>DIN lang</i> DIN long	~DIN 2174							
<i>Toleranz</i> Tolerance	ISO 2 6H	50	50	52	54	56	57	58
<i>Übermass</i> Oversize	ISO 3 6G				54			
<i>Übermass</i> Oversize	7G							
<i>Übermass</i> Oversize	+ 0.10 mm + 0.20 mm							
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H	50				56		58
<i>LH Linksgewinde</i> LH Left hand thread	ISO 2 6H							
		Z470VS-3	Z473VS-3	H420-4 H420TC-4	H450-3 H450TC-3	S420VS-4	S460VS-3	SA420-4
<i>DIN lang</i> DIN long	DIN 376	51	51	53	55	56	57	59
<i>Extra-lang</i> Extra-long	DC							
<i>ISO kurz</i> ISO short	ISO 529							
<i>DIN kurz</i> DIN short	DIN 352							
<i>DIN lang</i> DIN long	~DIN 2174							
<i>Toleranz</i> Tolerance	ISO 2 6H	51	51	53	55	56	57	59
<i>Übermass</i> Oversize	ISO 3 6G				55			
<i>Übermass</i> Oversize	7G							
<i>Übermass</i> Oversize	+ 0.10 mm + 0.20 mm							
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H							59
<i>LH Linksgewinde</i> LH Left hand thread	ISO 2 6H							

SA		TL		GG			K	
								
								
								
SA350-3	SA390-3	TL320VS-4	TL351VS-3	GG350NV-3 GG550NV-3	GG350TC-3	GG353TC-3	K313TC-3	
58	57	58	58	60 60	60	60	66	
58	57	58	58	60	60	60	66	
58	57	58	58					
SA450-3		TL420VS-4	TL451VS-3	GG450NV-3 GG650NV-3	GG450TC-3	GG453TC-3	K413TC-3 K613TC-3	K613VS-3
59		59	59	61 61	61	61	66 67	67
59		59	59	61	61	61	66/67	67
59		59	59					

		RTS						
Merkmale Characteristics		 VS	 VS	 VS	 VS	 E 1.5 x P VS	 VS	 VS
								
Lochart Hole type								
		RTS320VS-4	RTS323VS-4	RTS360VS-3 RTS362VS-3	RTS365VS-3	RTS362VS-5 RTS365VS-5	RTS523VS-4	RTS565VS-3
DIN lang DIN long	DIN 371	62	62	63	63	64		
Extra-lang Extra-long	DC						65	65
ISO kurz ISO short	ISO 529							
DIN kurz DIN short	DIN 352							
DIN lang DIN long	~DIN 2174							
Toleranz Tolerance	ISO 2 6H	62	62	63	63	64	65	65
Übermass Oversize	ISO 3 6G			64				
Übermass Oversize	7G							
Übermass Oversize	+ 0.10 mm + 0.20 mm							
Feintoleranz Fine tolerance	ISO 1 4H							
LH Linksgewinde LH Left hand thread	ISO 2 6H							
		RTS420VS-4	RTS423VS-4	RTS462VS-3	RTS465VS-3		RTS623VS-4	RTS665VS-3
DIN lang DIN long	DIN 376	62	62	63	63			
Extra-lang Extra-long	DC						65	65
ISO kurz ISO short	ISO 529							
DIN kurz DIN short	DIN 352							
DIN lang DIN long	~DIN 2174							
Toleranz Tolerance	ISO 2 6H	62	62	63	63		65	65
Übermass Oversize	ISO 3 6G							
Übermass Oversize	7G							
Übermass Oversize	+ 0.10 mm + 0.20 mm							
Feintoleranz Fine tolerance	ISO 1 4H							
LH Linksgewinde LH Left hand thread	ISO 2 6H							

[illegible]



N310-3

N310-3 LH

N320-3

N310-3



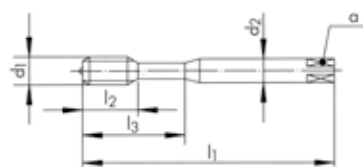
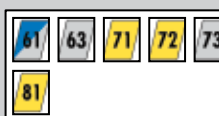
N310-3 LH



LH



N320-3



ISO 2
6H

ISO 2
6H

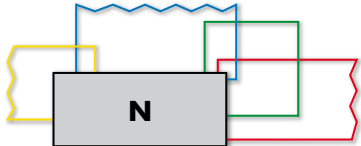
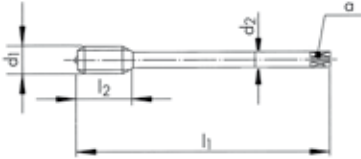
ISO 2
6H

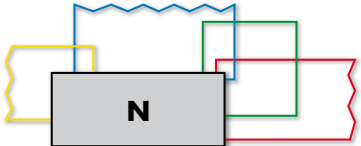
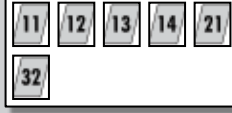
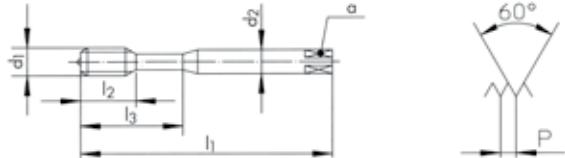
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1	0.25	40	5.5		2.5	2.1	3	0.75	150167		
1.1	0.25	40	5.5		2.5	2.1	3	0.85	174745		
1.2	0.25	40	5.5		2.5	2.1	3	0.95	150168		
1.4	0.30	40	7.0		2.5	2.1	3	1.10	150169		
1.5	0.30	40	7.0		2.5	2.1	3	1.20	174752		
1.6	0.35	40	8.0		2.5	2.1	3	1.25	174753		
1.7	0.35	40	8.0		2.5	2.1	3	1.35	174754		
1.8	0.35	40	8.0		2.5	2.1	3	1.45	174755		
2	0.40	45	8.0		2.8	2.1	3	1.60	101439	111460	
2.2	0.45	45	9.0		2.8	2.1	3	1.75	174756		
2.3	0.40	45	9.0		2.8	2.1	3	1.90	174757		
2.5	0.45	50	10.0		2.8	2.1	*3	2.05	101440	111461	* 101461
2.6	0.45	50	10.0		2.8	2.1	3	2.15	101441		
3	0.50	56	12.0	18	3.5	2.7	*3	2.50	101442	111462	* 101462
3.5	0.60	56	13.0	20	4.0	3.0	*3	2.90	101443		* 101463
4	0.70	63	14.0	21	4.5	3.4	*3	3.30	101444	111464	* 101464
5	0.80	70	15.0	25	6.0	4.9	*3	4.20	101445	111465	* 101465
6	1.00	80	17.0	30	6.0	4.9	*3	5.00	101446	111466	* 101466
8	1.25	90	20.0	35	8.0	6.2	3	6.80	101447		
10	1.50	100	22.0	39	10.0	8.0	3	8.50	101438		

* N320-3 = 2

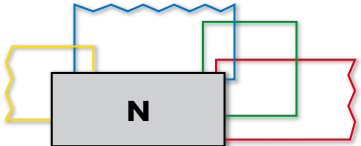
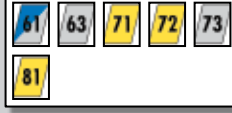
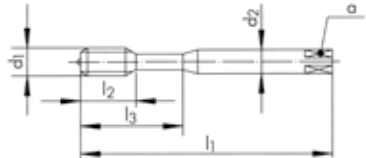
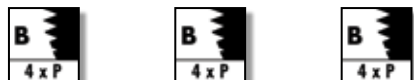
≤ M1.5

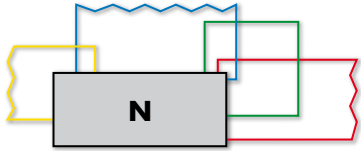
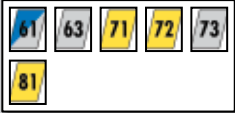
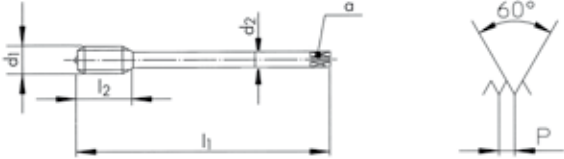
ISO 1
4H

								N410-3	N410-3 LH		
N410-3  											
N410-3 LH  LH 											
											
											
 											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID		
3	0.50	56	12.0	2.2	1.8	3	2.50	101897			
4	0.70	63	14.0	2.8	2.1	3	3.30	101924			
5	0.80	70	15.0	3.5	2.7	3	4.20	101942			
6	1.00	80	17.0	4.5	3.4	3	5.00	101953			
7	1.00	80	17.0	5.5	4.3	3	6.00	142645	111491		
8	1.25	90	20.0	6.0	4.9	3	6.80	101958	111492		
10	1.50	100	22.0	7.0	5.5	3	8.50	101866	111478		
12	1.75	110	24.0	9.0	7.0	3	10.20	101870	111479		
14	2.00	110	28.0	11.0	9.0	3	12.00	101874	111480		
16	2.00	110	30.0	12.0	9.0	3	14.00	101880	111481		
18	2.50	125	33.0	14.0	11.0	3	15.50	101883	111482		
20	2.50	140	36.0	16.0	12.0	3	17.50	101885	125530		
22	2.50	140	36.0	18.0	14.5	3	19.50	101888			
24	3.00	160	39.0	18.0	14.5	4	21.00	101891	111485		
27	3.00	160	42.0	20.0	16.0	4	24.00	101895	111486		
30	3.50	180	45.0	22.0	18.0	4	26.50	101901	111487		
33	3.50	180	48.0	25.0	20.0	4	29.50	101907			
36	4.00	200	51.0	28.0	22.0	4	32.00	101915	111488		
39	4.00	200	55.0	32.0	24.0	4	35.00	101922			
42	4.50	200	55.0	32.0	24.0	4	37.50	101932			
48	5.00	250	63.0	36.0	29.0	4	43.00	111489			
56	5.50	280	71.0	45.0	35.0	5	50.50	111447			

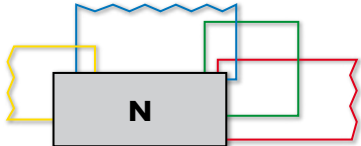
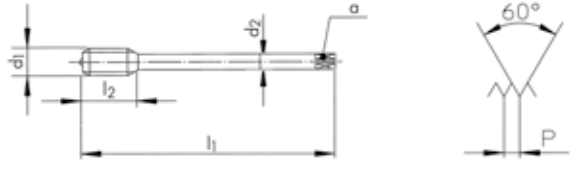
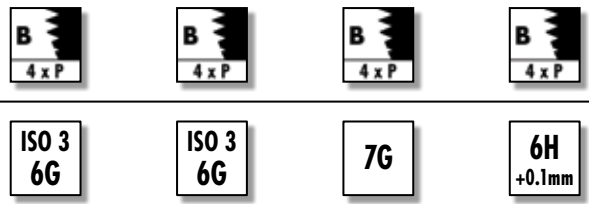
									N320-4	N320V-4	N320TN-4	N320TC-4
												
N320-4  												
N320V-4  												
N320TN-4  												
N320TC-4  												
												
												
												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
*1	0.25	40	5.5		2.5	2.1	2	0.75	111467			
*1.1	0.25	40	5.5		2.5	2.1	2	0.85	111468			
*1.2	0.25	40	5.5		2.5	2.1	2	0.95	111469			
*1.4	0.30	40	7.0		2.5	2.1	2	1.10	111470			
*1.5	0.30	40	7.0		2.5	2.1	2	1.20	111471			
*1.6	0.35	40	8.0		2.5	2.1	2	1.25	101454			
*1.7	0.35	40	8.0		2.5	2.1	2	1.35	101455			
*1.8	0.35	40	8.0		2.5	2.1	2	1.45	101456			
*2	0.40	45	8.0		2.8	2.1	2	1.60	101458	101536	101528	152900
*2.2	0.45	45	9.0		2.8	2.1	2	1.75	101459			
*2.3	0.40	45	9.0		2.8	2.1	2	1.90	101460			
2.5	0.45	50	10.0		2.8	2.1	3	2.05	101483	101545	101530	101522
2.6	0.45	50	10.0		2.8	2.1	3	2.15	101484			
3	0.50	56	12.0	18	3.5	2.7	3	2.50	101485	101546	101531	101523
3.5	0.60	56	13.0	20	4.0	3.0	3	2.90	101491	101547		
4	0.70	63	14.0	21	4.5	3.4	3	3.30	101495	101548	101532	101524
5	0.80	70	15.0	25	6.0	4.9	3	4.20	101499	101549	101533	101525
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101503	101550	101534	101526
8	1.25	90	20.0	35	8.0	6.2	3	6.80	101506	101551	101535	101527
10	1.50	100	22.0	39	10.0	8.0	3	8.50	101481	101544	101529	101521
* N320-3 / N320V-3 N320TN-3 / N320TC-3 									≤ M1.5 			

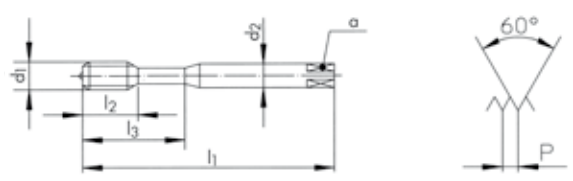
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N420-4											
N420V-4											
N420TN-4											
N420TC-4											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	ID	ID
3	0.50	56	12.0	2.2	1.8	3	2.50	102119	143418		
4	0.70	63	14.0	2.8	2.1	3	3.30	102146	102279		
5	0.80	70	15.0	3.5	2.7	3	4.20	102171	102280	146297	
6	1.00	80	17.0	4.5	3.4	3	5.00	102182	102282	147439	
7	1.00	80	17.0	5.5	4.3	3	6.00	102189	144713		
8	1.25	90	20.0	6.0	4.9	3	6.80	102195	102285	102251	102233
9	1.25	90	20.0	7.0	5.5	3	7.80	102202			
10	1.50	100	22.0	7.0	5.5	3	8.50	102061	102263	102240	102228
11	1.50	100	19.0	8.0	6.2	3	9.50	162770			
12	1.75	110	24.0	9.0	7.0	3	10.20	102072	102265	102243	102229
14	2.00	110	28.0	11.0	9.0	3	12.00	102081	102267	102245	
16	2.00	110	30.0	12.0	9.0	3	14.00	102090	102269	102247	102231
18	2.50	125	33.0	14.0	11.0	3	15.50	102097	102271		
20	2.50	140	36.0	16.0	12.0	3	17.50	102101	102273	102248	102232
22	2.50	140	36.0	18.0	14.5	3	19.50	102106	102275		
24	3.00	160	39.0	18.0	14.5	4	21.00	102110	102278	144220	163736
27	3.00	160	42.0	20.0	16.0	4	24.00	102117	143856		
30	3.50	180	45.0	22.0	18.0	4	26.50	102124	105124		
33	3.50	180	48.0	25.0	20.0	4	29.50	102130	146968		
36	4.00	200	51.0	28.0	22.0	4	32.00	102137	143430		
39	4.00	200	55.0	32.0	24.0	4	35.00	102144	158724		
42	4.50	200	55.0	32.0	24.0	4	37.50	102158	143107		
45	4.50	220	59.0	36.0	29.0	4	40.50	* 110225			
48	5.00	250	63.0	36.0	29.0	4	43.00	110226	157517		
56	5.50	280	71.0	45.0	35.0	5	50.50	110229	158178		

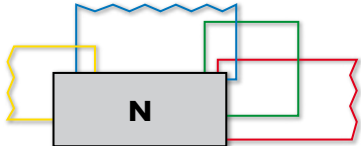
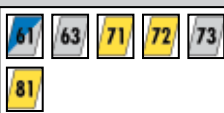
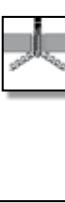
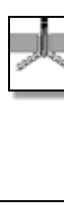
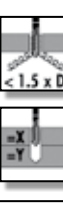
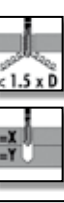
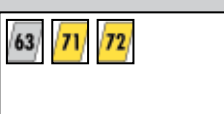
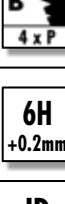
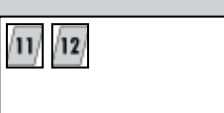
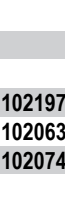
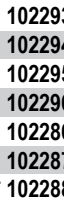
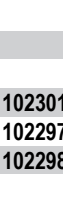
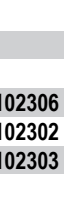
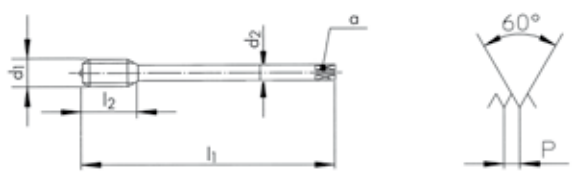
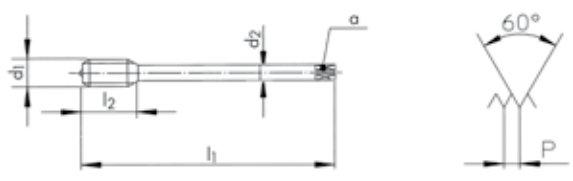
									N320-4	N320-4 LH	N320V-4 LH	
												
N320-4  												
N320-4 LH  LH 												
N320V-4 LH  V LH 												
 												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	
*2	0.40	45	8.0		2.8	2.1	2	1.60	162503	111472	162771	
2.5	0.45	50	10.0		2.8	2.1	3	2.05	159345			
3	0.50	56	12.0	18	3.5	2.7	3	2.50	101487	111473	162772	
4	0.70	63	14.0	21	4.5	3.4	3	3.30	101493	111474	162773	
5	0.80	70	15.0	25	6.0	4.9	3	4.20	101497	111475	162774	
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101501	111476	162775	
8	1.25	90	20.0	35	8.0	6.2	3	6.80	* 146482			
10	1.50	100	22.0	39	10.0	8.0	3	8.50	* 146484			
* N320-3  ISO 1 4H = 6.70												

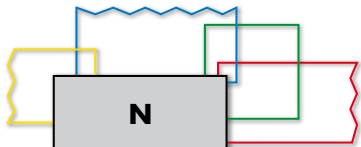
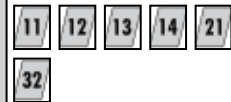
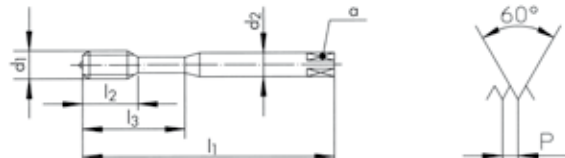
									N420-4	N420-4 LH	N420V-4 LH	
												
N420-4  												
N420-4 LH  LH 												
N420V-4 LH  V LH 												
												
												
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm				ID	ID	ID	
8	1.25	90	20.0	6.0	4.9	3	Δ	6.80	102193	102198	142621	
10	1.50	100	22.0	7.0	5.5	3		8.50	102059	102064	143287	
12	1.75	110	24.0	9.0	7.0	3		10.20	102070	102040	146583	
14	2.00	110	28.0	11.0	9.0	3		12.00		102084	146563	
16	2.00	110	30.0	12.0	9.0	3		14.00		102093	143108	
20	2.50	140	36.0	16.0	12.0	3		17.50		102103	145579	
24	3.00	160	39.0	18.0	14.5	4		21.00		111493	145578	
30	3.50	180	45.0	22.0	18.0	4		26.50		* 111494		
Δ ISO 1 4H = 6.70 												

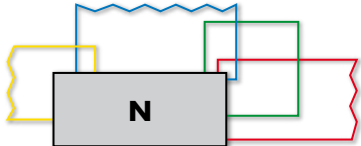
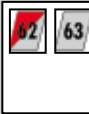
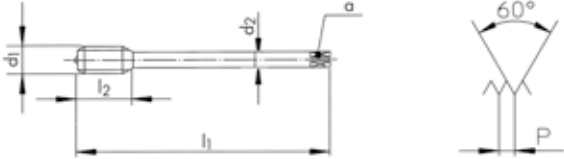
									N320-4	N320V-4	N320-4	N320-4			
N320-4 N320V-4															
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	6H + mm	ID	6H + mm	ID	6H + mm	ID
*2	0.40	45	8.0		2.8	2.1	2	1.60	101457	0.019	143584	0.019			
2.5	0.45	50	10.0		2.8	2.1	3	2.05	101482	0.020	150522	0.020			
3	0.50	56	12.0	18	3.5	2.7	3	2.50	101486	0.020	143116	0.020	101489	0.036	101488
3.5	0.60	56	13.0	20	4.0	3.0	3	2.95	101490	0.021					
4	0.70	63	14.0	21	4.5	3.4	3	3.35	101494	0.022	143087	0.022	101496	0.041	111522
5	0.80	70	15.0	25	6.0	4.9	3	4.25	101498	0.024	143088	0.024	101500	0.044	111523
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101502	0.026	143089	0.026	101504	0.050	111524
8	1.25	90	20.0	35	8.0	6.2	3	6.80	101505	0.028	143604	0.028			
* N320-3 / N320V-3															

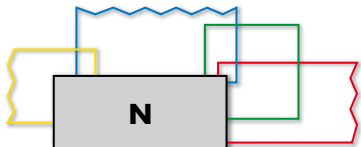
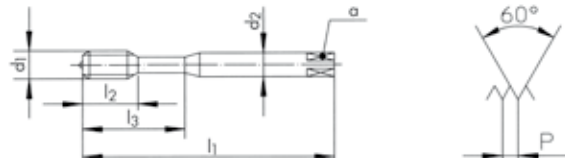
								N420-4	N420V-4	N420-4	N420-4
											
N420-4  N420V-4 											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		6H → ←	ID 6H + mm	ID 6H + mm	ID 6H + mm	ID 6H +0.1mm
8	1.25	90	20.0	6.0	4.9	3	6.80	102194 0.028	145246 0.028	102199 0.052	102196
10	1.50	100	22.0	7.0	5.5	3	8.50	102060 0.032	143726 0.032	102065 0.060	102062
12	1.75	110	24.0	9.0	7.0	3	10.30	102071 0.034	145655 0.034	102076 0.066	102073
16	2.00	110	30.0	12.0	9.0	3	14.00	135531 0.038	162795 0.038	102094 0.072	102091

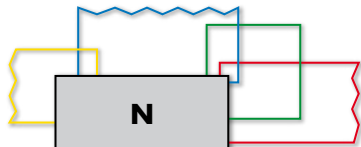
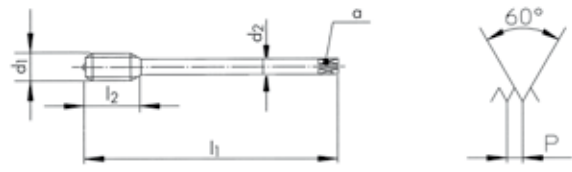
									N321-4	N330-4	N330V-4	
N321-4  61 63 71 72 73 81 N330-4  63 71 72 N330V-4  V 11 12												
										 	 	
												
												
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	
* 1	0.25	40	5.5		2.5	2.1	2	0.75		101558		
* 1.1	0.25	40	5.5		2.5	2.1	2	0.85		* 101559		
* 1.2	0.25	40	5.5		2.5	2.1	2	0.95		101560		
* 1.4	0.30	40	7.0		2.5	2.1	2	1.10		101561		
* 1.6	0.35	40	8.0		2.5	2.1	2	1.25		101562	151246	
* 1.7	0.35	40	8.0		2.5	2.1	2	1.35		* 101563		
* 2	0.40	45	8.0		2.8	2.1	2	1.60	101552	105125	101572	
* 2.2	0.45	45	9.0		2.8	2.1	2	1.75		* 105126		
* 2.3	0.40	45	9.0		2.8	2.1	2	1.90		* 105127		
2.5	0.45	50	10.0		2.8	2.1	* 3	2.05	101553	101565	101573	
2.6	0.45	50	10.0		2.8	2.1	2	2.15		* 101566		
3	0.50	56	12.0	18	3.5	2.7	* 3	2.50	101555	101567	101574	
3.5	0.60	56	13.0	20	4.0	3.0	2	2.90		101568		
4	0.70	63	14.0	21	4.5	3.4	3	3.30	101557	101569	101576	
5	0.80	70	15.0	25	6.0	4.9	3	4.20		101570	101577	
6	1.00	80	17.0	30	6.0	4.9	3	5.00		101571	101578	
* N321-3 / N330-3 / N330V-3  * N330-4 =  2 * N330V-4 =  2 ISO 1 4H ≤ M1.5												

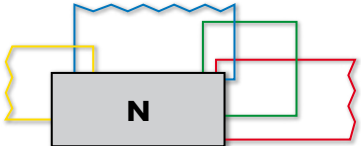
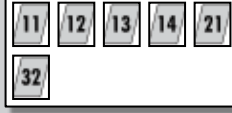
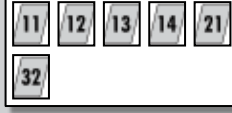
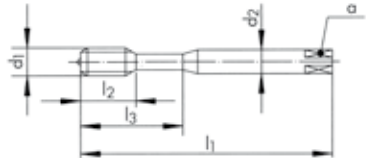
								N420-4	N421-4	N430-4	N430V-4
N420-4  											
N421-4  											
N430-4  											
N430V-4  											
											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	ID	ID
4	0.70	63	14.0	2.8	2.1	3	3.30		102293		
5	0.80	70	15.0	3.5	2.7	3	4.20		102294		
6	1.00	80	17.0	4.5	3.4	3	5.00		102295		
8	1.25	90	20.0	6.0	4.9	3	6.80	102197	102296	102301	102306
10	1.50	100	22.0	7.0	5.5	3	8.50	102063	102286	102297	102302
12	1.75	110	24.0	9.0	7.0	3	10.20	102074	102287	102298	102303
14	2.00	110	28.0	11.0	9.0	3	12.00		* 102288		
16	2.00	110	30.0	12.0	9.0	3	14.00	102092	102289		

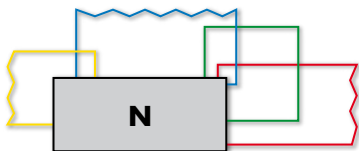
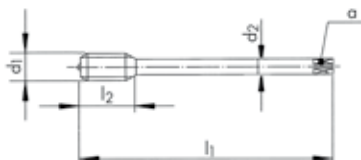
									N350-3	N350V-3		
N350-3   N350V-3   												
									 < 1.5 x D	 < 1.5 x D		
									 < 2.5 x D			
									 2.5 x P	 2.5 x P		
									 ISO 2 6H	 ISO 2 6H		
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID		
2	0.40	45	8.0		2.8	2.1	2	1.60	101580	101593		
2.3	0.40	45	9.0		2.8	2.1	2	1.90	101581			
2.5	0.45	50	10.0		2.8	2.1	2	2.05	101582	101594		
2.6	0.45	50	10.0		2.8	2.1	2	2.15	101583			
3	0.50	56	12.0	18	3.5	2.7	2	2.50	101584	101595		
3.5	0.60	56	13.0	20	4.0	3.0	2	2.90	101585			
4	0.70	63	14.0	21	4.5	3.4	2	3.30	101587	101596		
5	0.80	70	15.0	25	6.0	4.9	3	4.20	101589	101597		
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101591	101598		
8	1.25	90	20.0	35	8.0	6.2	3	6.80	101592	146810		
10	1.50	100	22.0	39	10.0	8.0	3	8.50	101579	147217		

								N450-3	N450V-3		
N450-3  											
N450V-3   											
											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID		
8	1.25	90	20.0	6.0	4.9	3	6.80	102327	102334		
10	1.50	100	22.0	7.0	5.5	3	8.50	102314	102329		
12	1.75	110	24.0	9.0	7.0	3	10.20	102317	102330		
14	2.00	110	28.0	11.0	9.0	3	12.00	102319	145487		
16	2.00	110	30.0	12.0	9.0	3	14.00	102321	102331		
20	2.50	140	36.0	16.0	12.0	4	17.50	102324	102332		
24	3.00	160	39.0	18.0	14.5	4	21.00	102325	102333		

									N360-3	N360V-3	N360TN-3	N360TC-3
N360-3  6163717273 81												
N360V-3  V 1112131421 32												
N360TN-3  TiN 1112131421 31327374												
N360TC-3  TiCN 111213142131 3273748283												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
2	0.40	45	7.0		2.8	2.1	2	1.60	101618	101708	101697	146842
2.2	0.45	45	8.0		2.8	2.1	2	1.75	101619			
2.3	0.40	45	8.0		2.8	2.1	2	1.90	101620			
2.5	0.45	50	9.0		2.8	2.1	2	2.05	101622	101709	101698	101689
2.6	0.45	50	9.0		2.8	2.1	2	2.15	101623	101710		
3	0.50	56	5.5	18	3.5	2.7	3	2.50	101626	101711	101699	101690
3.5	0.60	56	6.5	20	4.0	3.0	3	2.90	101630	142625		
4	0.70	63	7.5	21	4.5	3.4	3	3.30	101635	101713	101700	101691
4.5	0.75	70	9.0	25	6.0	4.9	3	3.75	101639			
5	0.80	70	9.0	25	6.0	4.9	3	4.20	101644	101715	101701	101692
6	1.00	80	11.0	30	6.0	4.9	3	5.00	101652	101717	101703	101693
7	1.00	80	11.0	30	7.0	5.5	3	6.00	101656	101718		
8	1.25	90	12.5	35	8.0	6.2	3	6.80	101663	101721	101705	101694
9	1.25	90	12.5	35	9.0	7.0	3	7.80	101668			
10	1.50	100	14.0	39	10.0	8.0	3	8.50	101612	101707	101696	101688

								N460-3	N460V-3	N460TN-3	N460TC-3
N460-3  6163717273 81 N460V-3  1112131421 32 N460TN-3  1112131421 31327374 N460TC-3  111213142131 3273748283											
								 < 2.5 x D	 < 2.5 x D	 < 2.5 x D	 < 2.5 x D
											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	ID	ID
5	0.80	70	9.0	3.5	2.7	3	4.20	102410	102489	160682	
6	1.00	80	11.0	4.5	3.4	3	5.00	102411	102491	152850	
8	1.25	90	12.5	6.0	4.9	3	6.80	102412	102492	152849	
10	1.50	100	14.0	7.0	5.5	3	8.50	102351	102461	150242	158687
12	1.75	110	14.0	9.0	7.0	3	10.20	102359	102465	102449	102438
14	2.00	110	14.0	11.0	9.0	3	12.00	102369	102468	102451	111615
16	2.00	110	18.0	12.0	9.0	3	14.00	102376	102471	102453	102440
18	2.50	125	21.0	14.0	11.0	3	15.50	102383	102473		
20	2.50	140	24.0	16.0	12.0	4	17.50	102389	102475	102454	143280
22	2.50	140	24.0	18.0	14.5	4	19.50	102394	102477		
24	3.00	160	27.0	18.0	14.5	4	21.00	102398	102480	143119	150018
27	3.00	160	27.0	20.0	16.0	4	24.00	175423	102481		
30	3.50	180	30.0	22.0	18.0	4	26.50	150246	102482		
33	3.50	180	33.0	25.0	20.0	4	29.50	167621	102483		
36	4.00	200	36.0	28.0	22.0	5	32.00	143914	102484		
39	4.00	200	40.0	32.0	24.0	5	35.00	175424	102485		
42	4.50	200	40.0	32.0	24.0	5	37.50	169122	102486		
45	4.50	220	44.0	36.0	29.0	5	40.50		102487		
48	5.00	250	48.0	36.0	29.0	5	43.00		102488		
52	5.00	250	52.0	40.0	32.0	5	47.00		110228		
56	5.50	280	56.0	45.0	35.0	6	50.50		102490		
64	6.00	315	64.0	50.0	39.0	6	58.00		143805		

									N360-3 LH	N360V-3 LH	N360-3	N360V-3
N360-3 LH  LH  N360V-3 LH  V LH  N360-3   N360V-3  V 												
												
 												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID ^{6H} + mm	ID ^{6H} + mm
2	0.40	45	7.0		2.8	2.1	2	1.60			101617 0.019	146000 0.019
2.5	0.45	50	9.0		2.8	2.1	2	2.05			101621 0.020	143294 0.020
3	0.50	56	5.5	18	3.5	2.7	3	2.50	101627	146811	101625 0.020	104816 0.020
3.5	0.60	56	6.5	20	4.0	3.0	3	2.95			101629 0.021	125829 0.021
4	0.70	63	7.5	21	4.5	3.4	3	3.30	101637	162540	101634 0.022	104817 0.022
5	0.80	70	9.0	25	6.0	4.9	3	4.20	101646	144003	101643 0.024	104818 0.024
6	1.00	80	11.0	30	6.0	4.9	3	5.00	101654	144004	101669 0.026	104819 0.026
8	1.25	90	12.5	35	8.0	6.2	3	6.80	101666	143925	101662 0.028	104820 0.028
10	1.50	100	14.0	39	10.0	8.0	3	8.50	101615	143587	101611 0.032	104821 0.032

								N460-3 LH		N460V-3 LH		N460-3		N460V-3	
N460-3 LH  LH 6163717273 81															
N460V-3 LH  V LH 1112131421 32															
N460-3  6163717273 81															
N460V-3  V 1112131421 32															
 															
															
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	ID	6H + mm	ID	6H + mm		
12	1.75	110	14.0	9.0	7.0	3	10.20	102362	146354	102358	0.034	143602	0.034		
14	2.00	110	14.0	11.0	9.0	3	12.00			102368	0.038	144712	0.038		
16	2.00	110	18.0	12.0	9.0	3	14.00	102378	143439	102375	0.038	150197	0.038		
20	2.50	140	24.0	16.0	12.0	4	17.50	102390	146564	102388	0.042	145420	0.042		

									N360-3	N360-3	N360V-3	N360-3		
N360-3 6163717273 81 N360V-3 1112131421 32														
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	^{6H} + mm	ID	^{6H} + mm	ID
3	0.50	56	5.5	18	3.5	2.7	3	2.50	101624	101628	0.036	144311	0.036	160847
4	0.70	63	7.5	21	4.5	3.4	3	3.30	101633	101638	0.041	144192	0.041	101636
5	0.80	70	9.0	25	6.0	4.9	3	4.20	101642	101647	0.044	143208	0.044	101645
6	1.00	80	11.0	30	6.0	4.9	3	5.00	101651	101655	0.050	146709	0.050	101653
8	1.25	90	12.5	35	8.0	6.2	3	Δ 6.80	101661	101667	0.052	146267	0.052	101664
10	1.50	100	14.0	39	10.0	8.0	3	8.50	101610	101616	0.060	142547	0.060	101613

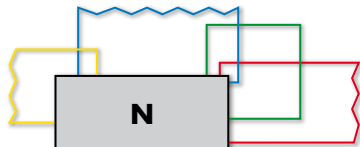
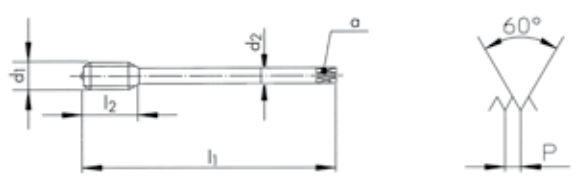
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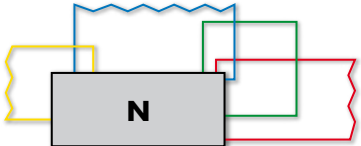
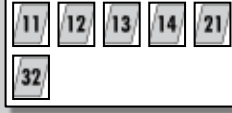
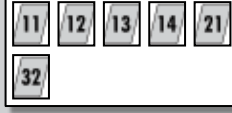
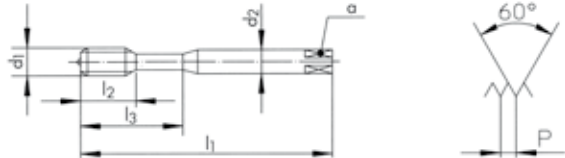
ISO 1
4H

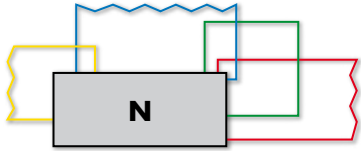
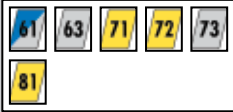
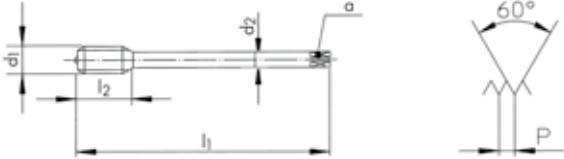
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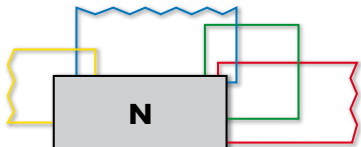
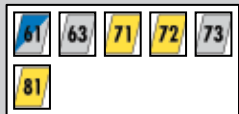
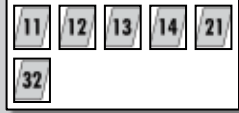
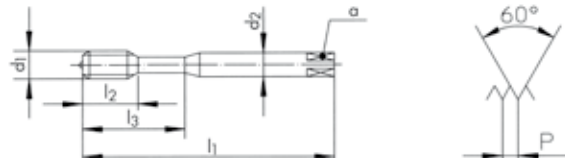
6.70

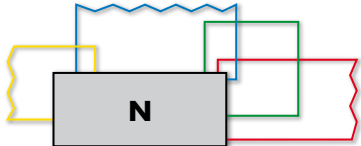
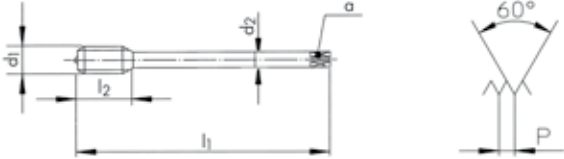
△ ISO 1 4H =  6.70

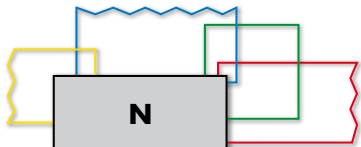
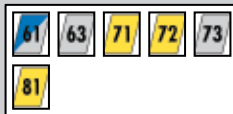
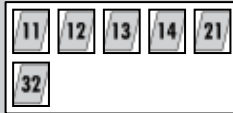
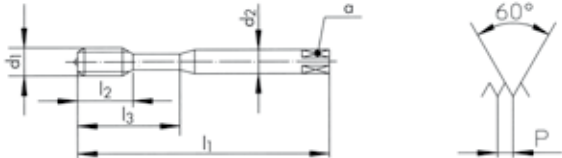
							N460-3	N460-3	N460V-3	N460-3			
N460-3  6163717273 81 N460V-3  1112131421 32													
													
													
													
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	6H + mm	ID	6H + mm	ID
12	1.75	110	14.0	9.0	7.0	3	10.20	* 124987	102363	0.066	142532	0.066	102360
16	2.00	110	18.0	12.0	9.0	3	14.00		102379	0.072	144956	0.072	102377

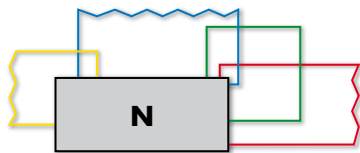
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N360-5  												
N360V-5   												
N361-3  												
N362V-3   												
												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
2	0.40	45	7.0		2.8	2.1	2	1.60	158079	150058		
3	0.50	56	5.5	18	3.5	2.7	3	2.50	104809	142646	101735	
4	0.70	63	7.5	21	4.5	3.4	3	3.30	104810	142647	101736	101741
5	0.80	70	9.0	25	6.0	4.9	3	4.20	104811	142648	101737	101742
6	1.00	80	11.0	30	6.0	4.9	3	5.00	104812	142649	101738	101743
8	1.25	90	12.5	35	8.0	6.2	3	6.80	104813	142650	101739	101744
10	1.50	100	14.0	39	10.0	8.0	3	8.50	104814	124899	101734	101740

								N460-5	N460V-5	N461-3	N462V-3
N460-5  											
N460V-5   											
N461-3   											
N462V-3    											
											
											
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm			ID	ID	ID	ID
12	1.75	110	14.0	9.0	7.0	3	10.20	104815	142651	102506	102512
14	2.00	110	14.0	11.0	9.0	3	12.00			* 102507	102513
16	2.00	110	18.0	12.0	9.0	3	14.00			* 102508	102514
18	2.50	125	21.0	14.0	11.0	3	15.50			* 111614	102515
20	2.50	140	24.0	16.0	12.0	4	17.50				102516
24	3.00	160	27.0	18.0	14.5	4	21.00				102517
27	3.00	160	27.0	20.0	16.0	4	24.00				159244
30	3.50	180	30.0	22.0	18.0	4	26.50				143090

										N520-4	N520V-4	N520TN-4					
										  			  				
N520-4																	
N520V-4	 V																
N520TN-4	 TiN																
										  			  				
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm				ID	ID	ID					
2.5	0.45	100	10.0		2.8	2.1	3		2.05	102594	142623						
3	0.50	112	12.0	18	3.5	2.7	3		2.50	102595	143399	162790					
4	0.70	112	14.0	21	4.5	3.4	3		3.30	102596	143400	146837					
5	0.80	125	15.0	25	6.0	4.9	3		4.20	102597	142654	150113					
6	1.00	125	17.0	30	6.0	4.9	3		5.00	102598	143137	148821					

								N620-4	N620V-4	N620TN-4	
N620-4  											
N620V-4  											
N620TN-4  											
											
											
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm			ID	ID	ID	
4	0.70	112	14.0	2.8	2.1	3	3.30	102619	142582	146442	
5	0.80	125	15.0	3.5	2.7	3	4.20	102620	142657	146443	
6	1.00	125	17.0	4.5	3.4	3	5.00	102621	142658	144591	
8	1.25	140	20.0	6.0	4.9	3	6.80	102622	143401	146262	
10	1.50	160	22.0	7.0	5.5	3	8.50	102614	142660	146849	
12	1.75	180	24.0	9.0	7.0	3	10.20	102615	143127	146295	
14	2.00	180	28.0	11.0	9.0	3	12.00	102616	151905		
16	2.00	200	30.0	12.0	9.0	3	14.00	102617	143106	143574	
20	2.50	224	36.0	16.0	12.0	3	17.50	102618	143596		

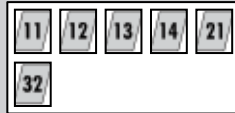
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N560-3													
N560V-3	 												
N560TN-3	 												
													
													
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm				ID	ID	ID	
2.5	0.45	100	9.0		2.8	2.1	2	2.05		102600	102607		
3	0.50	112	5.5	18	3.5	2.7	3	2.50		102601	102608	142663	
4	0.70	112	7.5	21	4.5	3.4	3	3.30		102602	102609	142664	
5	0.80	125	9.0	25	6.0	4.9	3	4.20		102603	102610	142665	
6	1.00	125	11.0	30	6.0	4.9	3	5.00		102604	102611	142666	
8	1.25	140	12.5	35	8.0	6.2	3	6.80		102605	102612	142667	
10	1.50	160	14.0	39	10.0	8.0	3	8.50		102599	102606	142668	



N660-3



N660V-3



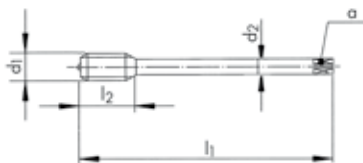
N660TN-3



N660-3

N660V-3

N660TN-3



$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		
6	1.00	125	11.0	4.5	3.4	3	5.00
8	1.25	140	12.5	6.0	4.9	3	6.80
10	1.50	160	14.0	7.0	5.5	3	8.50
12	1.75	180	14.0	9.0	7.0	3	10.20
14	2.00	180	14.0	11.0	9.0	3	12.00
16	2.00	200	18.0	12.0	9.0	3	14.00
20	2.50	224	24.0	16.0	12.0	4	17.50

ID

ID

ID

162792

115657

162793

115544

162794

135539

173484

102623

102626

142669

162253

147500

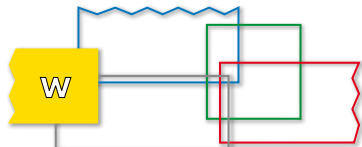
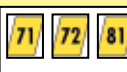
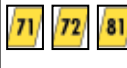
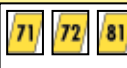
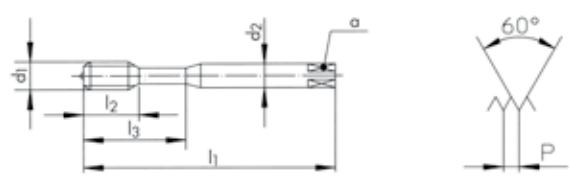
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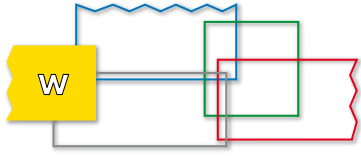
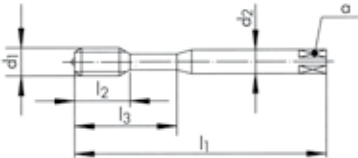
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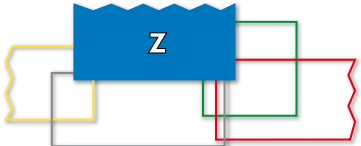
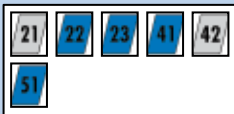
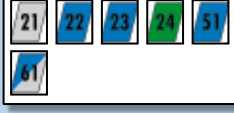
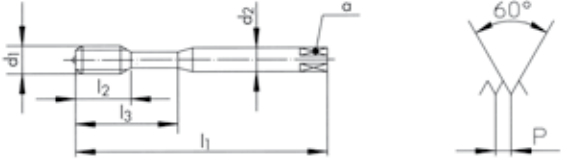
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102625

102628

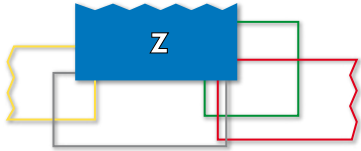
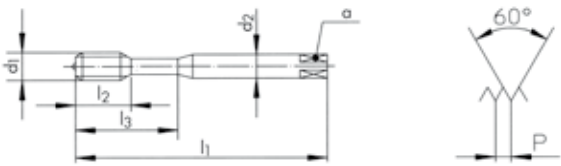
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W320-4												
W420-4											NEW	NEW
W320DL-4		DL										
W420DL-4		DL										
												
									ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
*2	0.40	45	8.0		2.8	2.1	2	1.60	104612		176688	
2.5	0.45	50	10.0		2.8	2.1	2	2.05	104613		176689	
2.6	0.45	50	10.0		2.8	2.1	2	2.15	* 104614			
3	0.50	56	12.0	18	3.5	2.7	2	2.50	104615		176690	
3.5	0.60	56	13.0	20	4.0	3.0	2	2.90	* 104616			
4	0.70	63	14.0	21	4.5	3.4	2	3.30	104617		176691	
5	0.80	70	15.0	25	6.0	4.9	2	4.20	104618		176354	
6	1.00	80	17.0	30	6.0	4.9	2	5.00	104619		175590	
8	1.25	90	20.0		6.0	4.9	2	6.80		104636		176692
10	1.50	100	22.0		7.0	5.5	2	8.50		104632		176693
12	1.75	110	24.0		9.0	7.0	3	10.20		104633		176694
16	2.00	110	30.0		12.0	9.0	3	14.00		104634		176695
* W320-3 												
* W320DL-3												

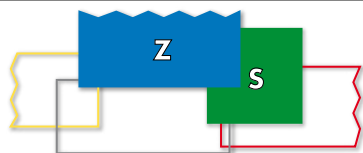
									W360-3	W460-3	W360DL-3	W460DL-3
W360-3  												
W460-3  											NEW	NEW
W360DL-3  DL 												
W460DL-3  DL 												
 												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm			ID	ID	ID	ID
2	0.40	45	7.0		2.8	2.1	2	1.60	104625		176719	
2.5	0.45	50	9.0		2.8	2.1	2	2.05	104626		176720	
3	0.50	56	5.5	18	3.5	2.7	2	2.50	104627		176721	
4	0.70	63	7.5	21	4.5	3.4	2	3.30	104628		176722	
5	0.80	70	9.0	25	6.0	4.9	2	4.20	104629		176723	
6	1.00	80	11.0	30	6.0	4.9	2	5.00	104630		176355	
8	1.25	90	12.5	35	8.0	6.2	2	6.80	104631		176724	
10	1.50	100	14.0	39	10.0	8.0	2	8.50	104624		176725	
12	1.75	110	14.0		9.0	7.0	3	10.20		104640		176726
16	2.00	110	18.0		12.0	9.0	3	14.00		104641		176727

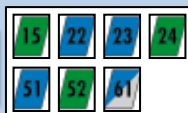
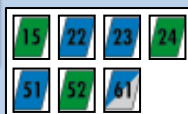
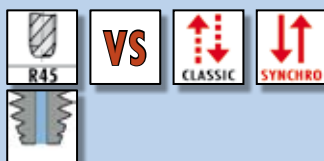
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Z320V-4   												
Z420V-4   												
Z320VS-4   												
Z420VS-4   												
												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
*1.6	0.35	40	8.0		2.5	2.1	2	1.25	142671			
*2	0.40	45	8.0		2.8	2.1	2	1.60	111613			
2.5	0.45	50	10.0		2.8	2.1	3	2.05	111455		143683	
2.6	0.45	50	10.0		2.8	2.1	3	2.15	142672			
3	0.50	56	12.0	18	3.5	2.7	3	2.50	104669		104830	
4	0.70	63	14.0	21	4.5	3.4	3	3.30	104670		104831	
5	0.80	70	15.0	25	6.0	4.9	3	4.20	104671		104832	
6	1.00	80	17.0	30	6.0	4.9	3	5.00	104672		104833	
8	1.25	90	20.0	35	8.0	6.2	3	6.80	104673		104834	
10	1.50	100	22.0	39	10.0	8.0	3	8.50	104668		104835	
12	1.75	110	24.0		9.0	7.0	3	10.20		104723		104836
14	2.00	110	28.0		11.0	9.0	3	12.00		142673		143684
16	2.00	110	30.0		12.0	9.0	3	14.00		105068		111569
18	2.50	125	33.0		14.0	11.0	4	15.50		142674		
20	2.50	140	36.0		16.0	12.0	4	17.50		105069		111570
22	2.50	140	36.0		18.0	14.5	4	19.50		146003		
24	3.00	160	39.0		18.0	14.5	4	21.00		142675		
30	3.50	180	45.0		22.0	18.0	4	26.50		142676		

* Z320V-3

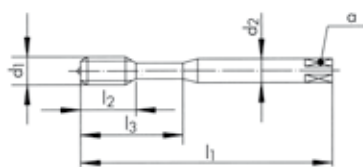


									Z360V-3	Z362V-3	Z462V-3	
Z360V-3  Z362V-3  Z462V-3 												
												
												
												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	
2	0.40	45	7.0		2.8	2.1	2	1.60	104684			
2.5	0.45	50	9.0		2.8	2.1	2	2.05	104685			
2.6	0.45	50	9.0		2.8	2.1	2	2.15	104686			
3	0.50	56	5.5	18	3.5	2.7	3	2.50	104687			
3.5	0.60	56	6.5	20	4.0	3.0	3	2.90		104688		
4	0.70	63	7.5	21	4.5	3.4	3	3.30		104689		
5	0.80	70	9.0	25	6.0	4.9	3	4.20		104690		
6	1.00	80	11.0	30	6.0	4.9	3	5.00		104691		
8	1.25	90	12.5	35	8.0	6.2	3	6.80		104692		
10	1.50	100	14.0	39	10.0	8.0	3	8.50		104683		
12	1.75	110	14.0		9.0	7.0	3	10.20			104742	
14	2.00	110	14.0		11.0	9.0	3	12.00			104743	
16	2.00	110	18.0		12.0	9.0	3	14.00			104744	
18	2.50	125	21.0		14.0	11.0	3	15.50			104745	
20	2.50	140	24.0		16.0	12.0	3	17.50			104746	
22	2.50	140	24.0		18.0	14.5	3	19.50			104752	
24	3.00	160	27.0		18.0	14.5	4	21.00			104747	
27	3.00	160	27.0		20.0	16.0	4	24.00			104748	
30	3.50	180	30.0		22.0	18.0	4	26.50			104749	
36	4.00	200	36.0		28.0	22.0	4	32.00			104750	
42	4.50	200	40.0		32.0	24.0	4	37.50			104751	


Z362VS-3

Z370VS-3

Z373VS-3

Z362VS-3
Z370VS-3
Z370VS-3
Z373VS-3

PM
PM
PM

6HX
6HX
4HX
6HX


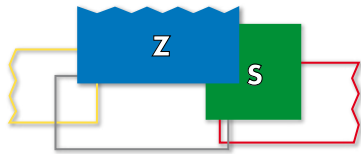
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
*3	0.50	56	5.5	18	3.5	2.7	3	2.50
4	0.70	63	7.5	21	4.5	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50

*** Z360VS-3**

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
3	0.50	56	5.5	18	3.5(h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5(h9)	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	Δ 6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50

Δ **4HX** = 6.70

ID
111504
111505
111506
111507
111508
111509
ID
162776
162777
162778
162779
162780
162781
ID
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165328
165438
ID
165236
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165238
165239
165240
165241



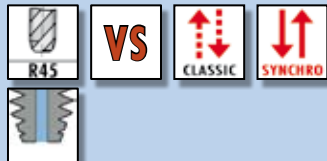
Z462VS-3



Z470VS-3



Z473VS-3



Z462VS-3

Z470VS-3

Z473VS-3



PM

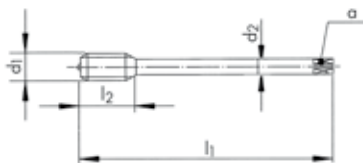
PM



6HX

6HX

6HX



Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm		
12	1.75	110	14.0	9.0	7.0	4	10.20
14	2.00	110	14.0	11.0	9.0	4	12.00
16	2.00	110	18.0	12.0	9.0	4	14.00
20	2.50	140	24.0	16.0	12.0	4	17.50
24	3.00	160	27.0	18.0	14.5	4	21.00

ID

111510

* 148169

111511

111512

* 111620

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ h6 mm	α mm		
12	1.75	110	14.0	* 10.0	* 8.0	4	10.20
14	2.00	110	14.0	* 12.0	* 9.0	4	12.00
16	2.00	110	18.0	12.0	9.0	4	14.00
18	2.50	125	21.0	14.0	11.0	4	15.50
20	2.50	140	24.0	16.0	12.0	4	17.50
22	2.50	140	24.0	16.0	12.0	4	19.50
24	3.00	160	27.0	16.0	12.0	4	21.00

ID

ID

162782

165242

162783

* 165243

162784

165244

170643

162785

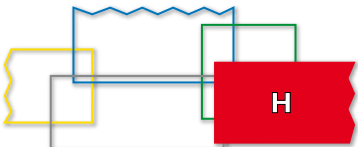
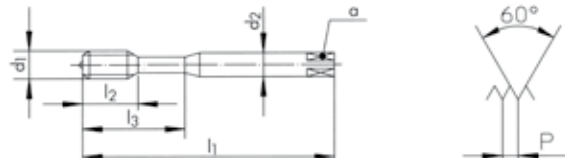
165234

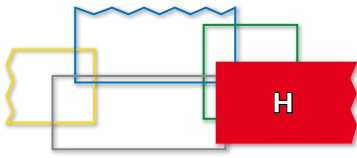
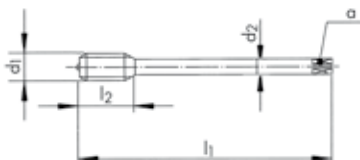
175190

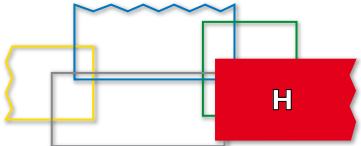
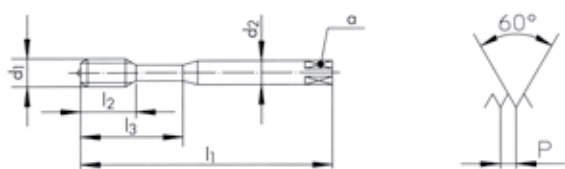
162786

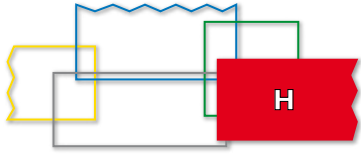
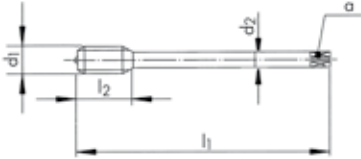
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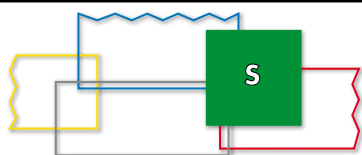
* Norme DC / * DC Norm / * Norma DC

									H320-4	H320TC-4		
H320-4   H320TC-4   									 			
									 			
									 			
									 			
$\varnothing d_1$	P	l_1	l_2	l_3	d_2	α			ID	ID		
M	mm	mm	mm	mm	mm	mm						
2	0.40	45	8.0		2.8	2.1	2	1.60	101206	151836		
2.2	0.45	45	9.0		2.8	2.1	2	1.75	111801			
2.5	0.45	50	10.0		2.8	2.1	3	2.05	101207	148603		
3	0.50	56	12.0	18	3.5	2.7	3	2.50	101209	111836		
3.5	0.60	56	13.0	20	4.0	3.0	3	2.90	101210			
4	0.70	63	14.0	21	4.5	3.4	3	3.30	101211	111502		
4.5	0.75	70	15.0	25	6.0	4.9	3	3.75	101212			
5	0.80	70	15.0	25	6.0	4.9	3	4.20	101213	111458		
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101215	111456		
8	1.25	90	20.0	35	8.0	6.2	3	6.80	101218	111453		
10	1.50	100	22.0	39	10.0	8.0	3	8.50	101205	110911		

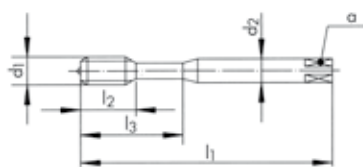
								H420-4	H420TC-4		
H420-4   H420TC-4   								 			
											
 											
											
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID		
12	1.75	110	24.0	9.0	7.0	4	10.20	101275	110912		
14	2.00	110	28.0	11.0	9.0	4	12.00	101277			
16	2.00	110	30.0	12.0	9.0	4	14.00	101279	111612		
18	2.50	125	33.0	14.0	11.0	4	15.50	101281			
20	2.50	140	36.0	16.0	12.0	4	17.50	101284			
24	3.00	160	39.0	18.0	14.5	4	21.00	101286			
27	3.00	160	42.0	20.0	16.0	4	24.00	101287			
30	3.50	180	45.0	22.0	18.0	4	26.50	101288			
36	4.00	200	51.0	28.0	22.0	4	32.00	101289			

									H350-3	H350-3	H350TC-3	
												
H350-3  												
H350TC-3   												
												
												
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	^{6H} + mm	ID
2	0.40	45	7.0		2.8	2.1	2	1.60	101238			146451
2.5	0.45	50	9.0		2.8	2.1	3	2.05	101239			144957
3	0.50	56	5.5	18	3.5	2.7	3	2.50	101242	101241	0.020	111835
3.5	0.60	56	6.5	20	4.0	3.0	3	2.90	101243			
4	0.70	63	7.5	21	4.5	3.4	3	3.30	101245	101244	0.022	111607
4.5	0.75	70	9.0	25	6.0	4.9	3	3.75	101246			
5	0.80	70	9.0	25	6.0	4.9	3	4.20	101248	101247	0.024	111610
6	1.00	80	11.0	30	6.0	4.9	3	5.00	101251	101250	0.026	111500
8	1.25	90	12.5	35	8.0	6.2	3	6.80	101255	101254	0.028	110963
10	1.50	100	14.0	39	10.0	8.0	3	8.50	101237	101236	0.032	111454

									H450-3	H450-3	H450TC-3	
												
H450-3  												
H450TC-3   												
												
 									  			
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm		6H		ID	ID	6H + mm	ID
12	1.75	110	14.0	9.0	7.0	4	10.20		101305	101304	0.034	111501
14	2.00	110	14.0	11.0	9.0	4	12.00		101307			
16	2.00	110	18.0	12.0	9.0	4	14.00		101309			111605
18	2.50	125	21.0	14.0	11.0	4	15.50		101311			
20	2.50	140	24.0	16.0	12.0	4	17.50		101313			
22	2.50	140	24.0	18.0	14.5	4	19.50		101315			
24	3.00	160	27.0	18.0	14.5	4	21.00		101318			
27	3.00	160	27.0	20.0	16.0	4	24.00		101320			
30	3.50	180	30.0	22.0	18.0	4	26.50		101323			
36	4.00	200	36.0	28.0	22.0	4	32.00		101324			
42	4.50	200	40.0	32.0	24.0	4	37.50		101325			


S320VS-4

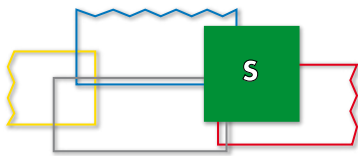
S420VS-4

S320VS-4
S320VS-4
S420VS-4

6HX
4HX
6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
3	0.50	56	12.0	18	3.5	2.7	3	2.50
4	0.70	63	14.0	21	4.5	3.4	3	3.30
5	0.80	70	15.0	25	6.0	4.9	3	4.20
6	1.00	80	17.0	30	6.0	4.9	3	5.00
8	1.25	90	20.0	35	8.0	6.2	3	Δ 6.80
10	1.50	100	22.0	39	10.0	8.0	3	8.50
12	1.75	110	24.0		9.0	7.0	4	10.20
14	2.00	110	30.0		11.0	9.0	4	12.50
16	2.00	110	30.0		12.0	9.0	4	14.00
20	2.50	140	36.0		16.0	12.0	4	17.50

ID
ID
ID
111596
*** 165318**
111597
165319
111598
165320
111599
165321
111600
165322
111601
165323
111602
*** 162537**
111603
111604

Δ **4HX** = 6.70



S360VS-3

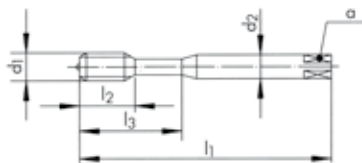


S460VS-3



aero

SA390-3



S360VS-3



S460VS-3



SA390-3



SA390-3



6HX

6HX

4HX

6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
3	0.50	56	5.5	18	3.5	2.7	3	2.50
4	0.70	63	7.5	21	4.5	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50
12	1.75	110	14.0		9.0	7.0	4	10.20
14	2.00	110	14.0		11.0	9.0	4	12.00
16	2.00	110	18.0		12.0	9.0	4	14.00
20	2.50	140	24.0		16.0	12.0	4	17.50
24	3.00	160	27.0		18.0	14.5	4	21.00

ID

ID

111513

111514

111515

111516

111517

111518

111519

148171

111520

111521

111606

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		
4	0.70	63	14.0	4.5	3.4	3	3.30
5	0.80	70	15.0	6.0	4.9	3	4.20
6	1.00	80	20.0	6.0	4.9	3	5.00
8	1.25	90	25.0	8.0	6.2	3	Δ 6.80
10	1.50	100	30.0	10.0	8.0	3	8.50
12	1.75	110	35.0	12.0	9.0	4	10.20
14	2.00	110	40.0	16.0	12.0	4	12.00
16	2.00	110	40.0	16.0	12.0	4	14.00

ID

ID

149673

149674

149693

149694

149707

149708

149736

149737

149754

149755

149775

* 149792

* 149816



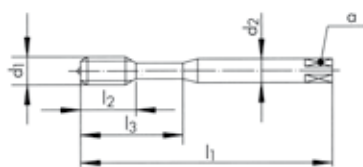
aero

SA320-4

S2 S3
SA350-3

S2 S3
TL320VS-4

VS
41 42
TL351VS-3

VS
41 42

SA320-4
SA350-3
TL320VS-4
TL351VS-3

4HX
4HX
4HX
4HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
3	0.50	56	12.0		3.5	2.7	3	2.50
4	0.70	63	14.0		4.5	3.4	3	3.30
5	0.80	70	15.0		6.0	4.9	3	4.20
6	1.00	80	15.0	23	6.0	4.9	3	5.00
8	1.25	90	18.0	29	8.0	6.2	3	6.70
10	1.50	100	20.0	33	10.0	8.0	3	8.50

ID
ID
ID
ID

147975	147987	152006	152012
147976	147988	152007	152013
147977	147989	152008	152014
147978	147990	152009	152015
147979	147991	152010	152016
147980	147992	152011	152017

6HX
6HX
6HX
6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
3	0.50	56	12.0		3.5	2.7	3	2.50
4	0.70	63	14.0		4.5	3.4	3	3.30
5	0.80	70	15.0		6.0	4.9	3	4.20
6	1.00	80	15.0	23	6.0	4.9	3	5.00
8	1.25	90	18.0	29	8.0	6.2	3	6.80
10	1.50	100	20.0	33	10.0	8.0	3	8.50

ID
ID
ID
ID

147981	147993	148001	148000
147982	147994	148003	148002
147983	147995	148007	148006
147984	147996	148011	148010
147985	147997	148020	148018
147986	147998	148027	148025

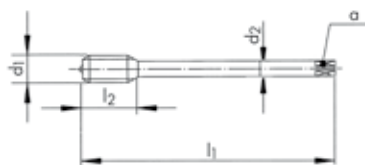
aero

SA420-4

S2 S3
SA450-3

S2 S3
TL420VS-4

VS
41 42
TL451VS-3

VS
41 42

SA420-4
SA450-3
TL420VS-4
TL451VS-3

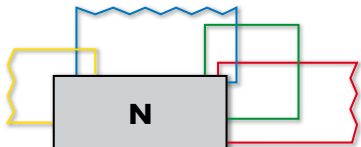
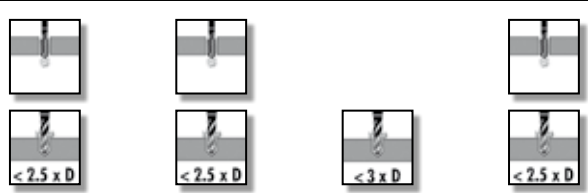
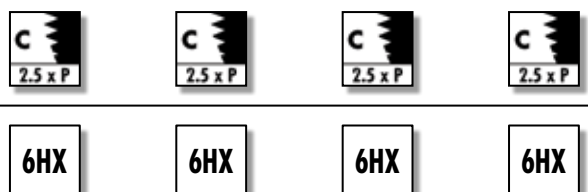
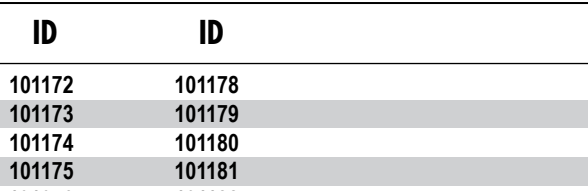
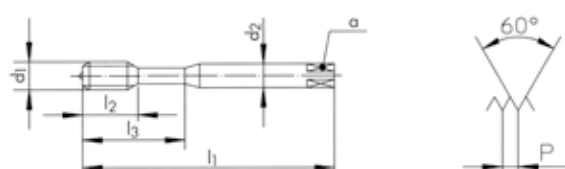
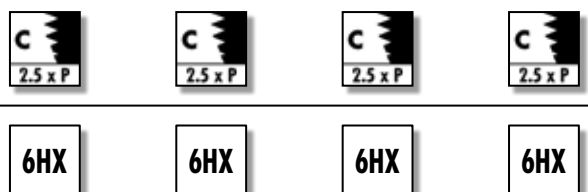
4HX
4HX
4HX
4HX

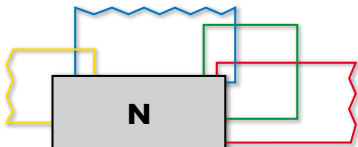
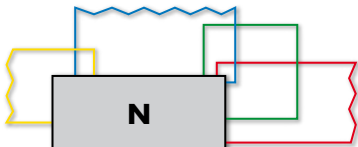
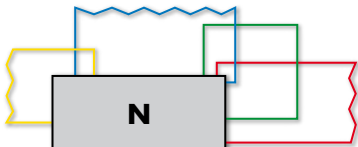
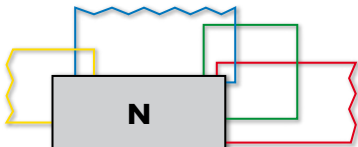
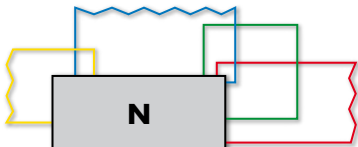
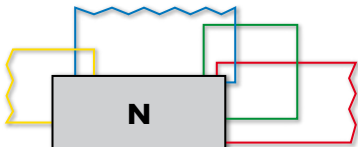
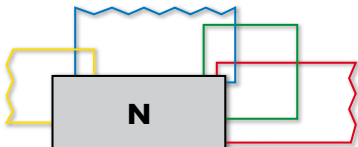
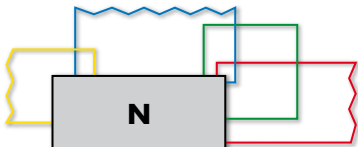
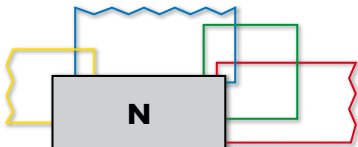
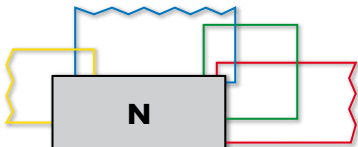
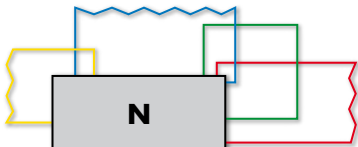
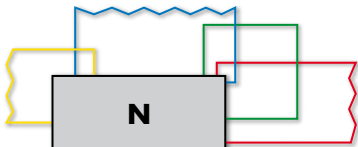
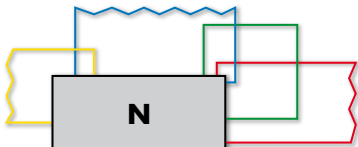
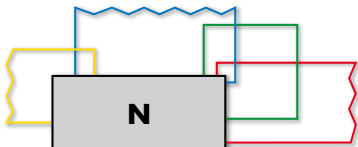
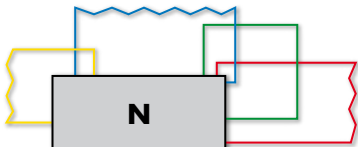
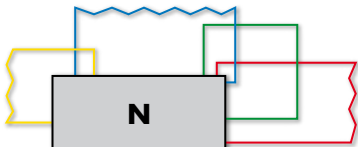
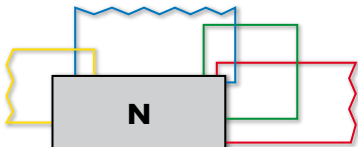
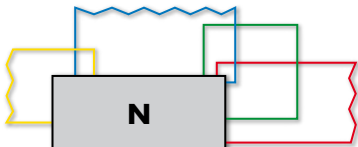
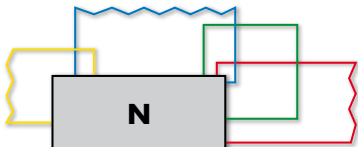
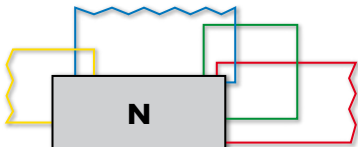
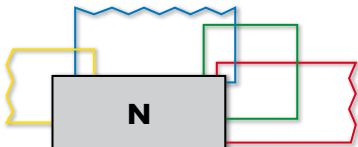
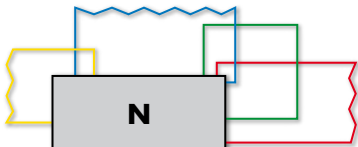
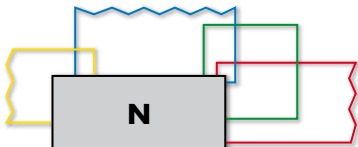
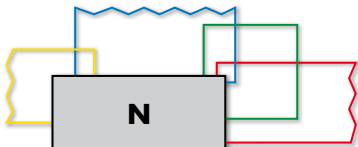
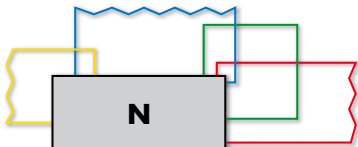
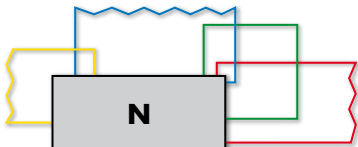
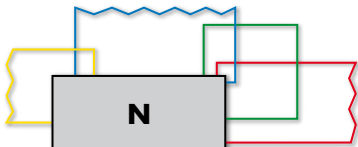
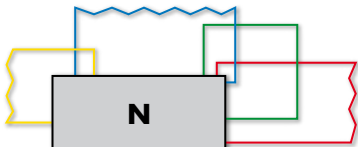
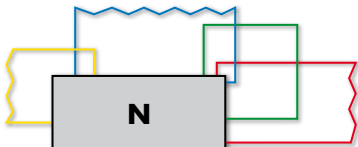
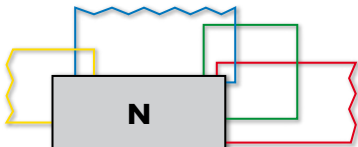
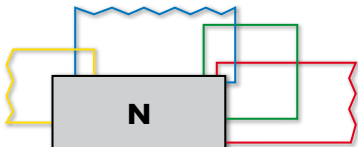
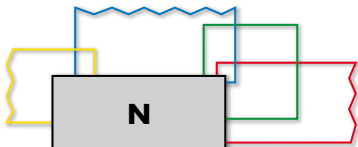
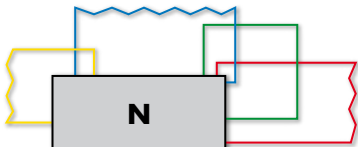
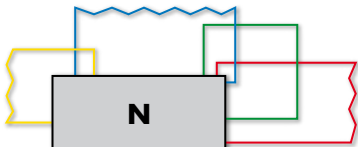
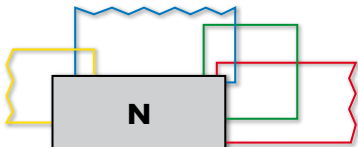
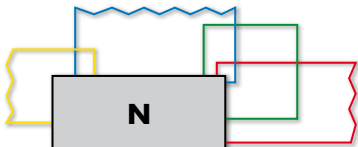
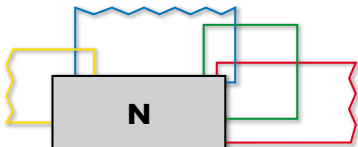
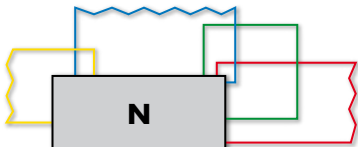
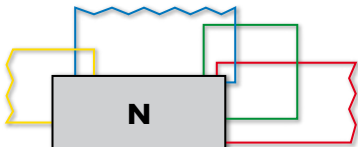
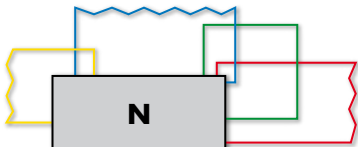
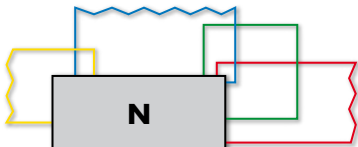
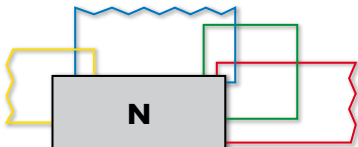
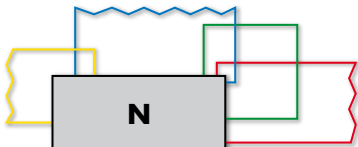
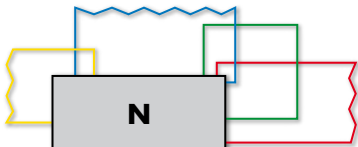
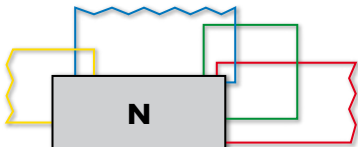
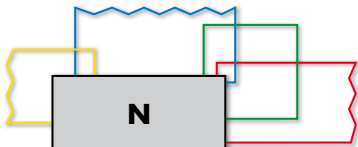
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		
12	1.75	110	24.0	9.0	7.0	4	10.20
14	2.00	110	28.0	11.0	9.0	4	12.00
16	2.00	110	30.0	12.0	9.0	4	14.00

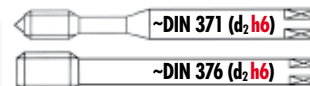
ID
ID
ID
ID
148096
152189
152192
152195
*** 152187**
*** 152188**
*** 152191**
152197
6HX
6HX
6HX
6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		
12	1.75	110	24.0	9.0	7.0	4	10.20
14	2.00	110	28.0	11.0	9.0	4	12.00
16	2.00	110	30.0	12.0	9.0	4	14.00

ID
ID
ID
ID
152198
152201
152204
148028
*** 152199**
*** 152202**
*** 152205**
152207
*** 152200**
152203
*** 152206**
148029

									GG350NV-3	GG350TC-3	GG353TC-3	GG550NV-3
GG350NV-3  NV 31 74												
GG350TC-3  TiCN 31 74												
GG353TC-3  TiCN 31 74												
GG550NV-3  NV 31 74												
												
$\varnothing d_1$	P	l_1	l_2	l_3	d_2	α			ID	ID		
M	mm	mm	mm	mm	mm	mm						
3	0.50	56	12.0	18	3.5	2.7	3	2.50	101172	101178		
4	0.70	63	14.0	21	4.5	3.4	3	3.30	101173	101179		
5	0.80	70	15.0	25	6.0	4.9	3	4.20	101174	101180		
6	1.00	80	17.0	30	6.0	4.9	3	5.00	101175	101181		
8	1.25	90	20.0	35	8.0	6.2	4	6.80	101076	101182		
10	1.50	100	22.0	39	10.0	8.0	4	8.50	101171	101177		
$\varnothing d_1$	P	l_1	l_2	l_3	d_2 h6	α			ID			
M	mm	mm	mm	mm	mm	mm						
5	0.80	70	15.0	25	6.0	4.9	3	4.20	144947			
6	1.00	80	17.0	30	6.0	4.9	3	5.00	147710			
8	1.25	90	20.0	35	8.0	6.2	4	6.80	147711			
10	1.50	100	22.0	39	10.0	8.0	4	8.50	146708			
$\varnothing d_1$	P	l_1	l_2	l_3	d_2	α			ID			
M	mm	mm	mm	mm	mm	mm						
4	0.70	112	14.0	21	4.5	3.4	3	3.30	101196			
5	0.80	125	15.0	25	6.0	4.9	3	4.20	101197			
6	1.00	125	17.0	30	6.0	4.9	3	5.00	101198			

								GG450NV-3		GG450TC-3		GG453TC-3		GG650NV-3	
															
															
															
															
															
								ID		ID					
								101189		101194					
								101183		101195					
								101184		101190					
								101185		101191					
								101186		101192					
								101187		101193					
								101188							
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															
															



RTS Rigid Tapping Synchro

RTS320VS-4



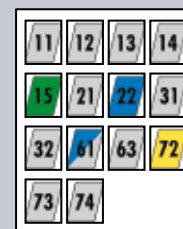
VS



RTS420VS-4



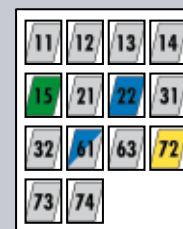
VS



RTS323VS-4



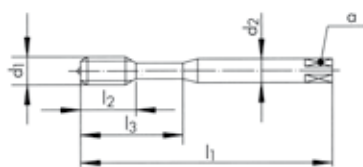
VS



RTS423VS-4



VS



RTS320VS-4

RTS420VS-4

RTS323VS-4

RTS423VS-4



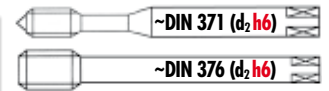
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ mm	α mm		
*2	0.40	45	8.0		2.8(h9)	2.1	2	1.60
2.5	0.45	50	10.0		2.8(h9)	2.1	3	2.05
3	0.50	56	5.5	18	3.5(h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5(h9)	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50
12	1.75	110	14.0		*10.0	*8.0	3	10.20
14	2.00	110	14.0		*12.0	*9.0	3	12.00
16	2.00	110	18.0		12.0	9.0	3	14.00
20	2.50	140	24.0		16.0	12.0	4	17.50
24	3.00	160	27.0		16.0	12.0	4	21.00

* Norme DC / * DC Norm / * Norma DC

* RTS320VS-3



sur demande
auf Anfrage
on request
su richiesta
sobre pedido

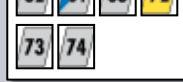


RTS Rigid Tapping Synchro

RTS362VS-3



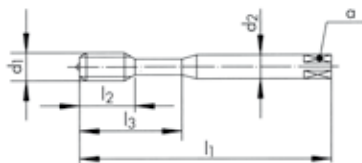
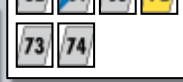
RTS462VS-3



RTS365VS-3



RTS465VS-3



RTS362VS-3



RTS462VS-3



RTS365VS-3



RTS465VS-3



6HX

6HX

6HX

6HX

Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	α mm		
*2	0.40	45	7.0		2.8 (h9)	2.1	3	1.60
*2.5	0.45	50	9.0		2.8 (h9)	2.1	3	2.05
3	0.50	56	5.5	18	3.5 (h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5 (h9)	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50
12	1.75	110	14.0		*10.0	*8.0	3	10.20
14	2.00	110	14.0		*12.0	*9.0	3	12.00
16	2.00	110	18.0		12.0	9.0	3	14.00
20	2.50	140	24.0		16.0	12.0	4	17.50
24	3.00	160	27.0		16.0	12.0	4	21.00

* Norme DC / * DC Norm / * Norma DC

* RTS360VS-3



sur demande
auf Anfrage
on request
su richiesta
sobre pedido



RTS

Rigid Tapping Synchro

RTS362VS-5



VS



RTS365VS-5



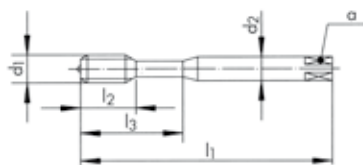
VS



RTS362VS-3



VS



RTS362VS-5

RTS365VS-5

RTS362VS-3



6HX

6HX

6GX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ mm	α mm		
3	0.50	56	5.5	18	3.5(h9)	2.7	3	2.50
4	0.70	63	7.5	21	4.5(h9)	3.4	3	3.30
5	0.80	70	9.0	25	6.0	4.9	3	4.20
6	1.00	80	11.0	30	6.0	4.9	3	5.00
8	1.25	90	12.5	35	8.0	6.2	3	6.80
10	1.50	100	14.0	39	10.0	8.0	3	8.50

ID

ID

157648

157650

157652

162791

158074

151803

158076

157821

153286

157823

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	$d_2 h_6$ mm	α mm			6H
3	0.50	56	5.5	18	3.5(h9)	2.7	3	2.50	
4	0.70	63	7.5	21	4.5(h9)	3.4	3	3.35	
5	0.80	70	9.0	25	6.0	4.9	3	4.25	
6	1.00	80	11.0	30	6.0	4.9	3	5.00	
8	1.25	90	12.5	35	8.0	6.2	3	6.80	
10	1.50	100	14.0	39	10.0	8.0	3	8.50	

ID

6H
+ mm

162797 0.020

162798 0.022

162799 0.024

162800 0.026

162801 0.028

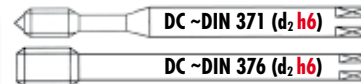
162802 0.032



sur demande
auf Anfrage
on request
su richiesta
sobre pedido



Uniquement pour taraudage synchrone
Nur für Synchrobearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado



RTS Rigid Tapping Synchro

RTS523VS-4



VS



RTS623VS-4



VS



RTS565VS-3



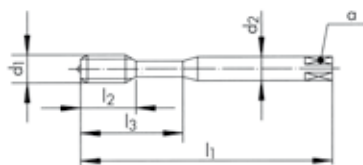
VS



RTS665VS-3



VS



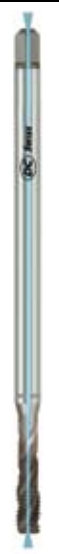
RTS523VS-4



RTS623VS-4



RTS565VS-3



RTS665VS-3



$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	α mm		
5	0.80	125	9.0	25	6.0	4.9	3	4.20
6	1.00	125	11.0	30	6.0	4.9	3	5.00
8	1.25	140	12.5	35	8.0	6.2	3	6.80
10	1.50	160	14.0	39	10.0	8.0	3	8.50
12	1.75	180	14.0		*10.0	*8.0	3	10.20
16	2.00	200	18.0		12.0	9.0	3	14.00

* Norme DC / * DC Norm / * Norma DC

ID

ID

161038

161041

161044

161047

161050

161053

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	α mm		
6	1.00	125	11.0	30	6.0	4.9	3	5.00
8	1.25	140	12.5	35	8.0	6.2	3	6.80
10	1.50	160	14.0	39	10.0	8.0	3	8.50
12	1.75	180	14.0		*10.0	*8.0	3	10.20
16	2.00	200	18.0		12.0	9.0	3	14.00

* Norme DC / * DC Norm / * Norma DC

ID

ID

150614

150624

150639

151867

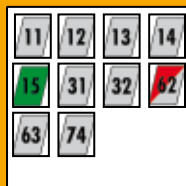
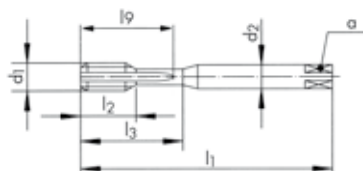
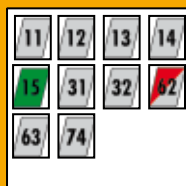
150674



sur demande
auf Anfrage
on request
su richiesta
sobre pedido

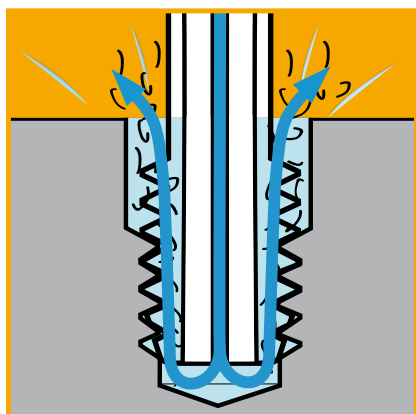
≥ Ø 6 mm

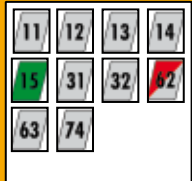
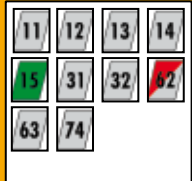
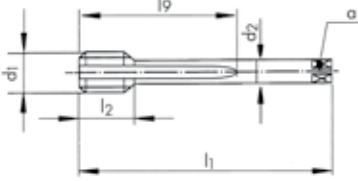
K

K313TC-3

K413TC-3

K313TC-3
K413TC-3

6HX
6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	l_9 mm	d_2 mm	α mm		
6	1.00	80	17.0	30	28.0	6.0	4.9	3	5.00
8	1.25	90	20.0	35	33.0	8.0	6.2	3	6.80
10	1.50	100	22.0	39	37.0	10.0	8.0	3	8.50
12	1.75	110	24.0		42.0	9.0	7.0	3	10.20
14	2.00	110	28.0		49.0	11.0	9.0	3	12.00
16	2.00	110	30.0		56.0	12.0	9.0	4	14.00
20	2.50	140	36.0		70.0	16.0	12.0	5	17.50
24	3.00	160	39.0		84.0	18.0	14.5	5	21.00

ID
ID
170766
170769
170772
165838
170778
170783
170786
170775


K									K613TC-3	K613VS-3		
K613TC-3     >20 bar 												
K613VS-3     >20 bar 										NEW		
 												
									6HX	6HX		
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm			ID	ID		
6	1.00	110	17.0	30	4.5	3.4	3	5.00	170646	172699		
8	1.25	110	20.0	40	6.0	4.9	3	6.80	170649	172700		
10	1.50	125	22.0	50	7.0	5.5	3	8.50	170652	172701		
12	1.75	140	24.0	60	9.0	7.0	3	10.20	167982	172702		
14	2.00	140	28.0	70	11.0	9.0	3	12.00	167983			
16	2.00	160	30.0	80	12.0	9.0	4	14.00	167984	170573		
20	2.50	180	36.0	100	16.0	12.0	5	17.50	167985	170576		
24	3.00	200	39.0	120	18.0	14.5	5	21.00	167986	172704		
27	3.00	225	42.0	135	20.0	16.0	5	24.00	167987			
30	3.50	250	45.0	150	22.0	18.0	5	26.50	165542			
33	3.50	280	48.0	165	25.0	20.0	5	29.50	167988			
36	4.00	300	51.0	180	28.0	22.0	6	32.00	167989			
39	4.00	300	55.0	195	32.0	24.0	6	35.00	167990			
42	4.50	355	55.0	210	32.0	24.0	6	37.50	167999			

Vc (m/min)				
M6 - M10		M12 - M16	M20 - M30	M33 - M42
	32	28	22	18
	30	25	20	15
	24	20	16	12
	15	12	8	6
	35	30	25	20

FS FORMING

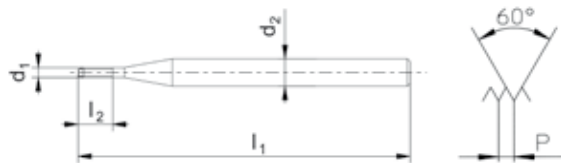
FS380VS-5

VS

FS380VS-3

VS

FS380VS-5
FS380VS-3
FS380VS-3
FS380VS-3

6HX
6HX
6HX
6GX


$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm	4HX Tol. 6HX	ID	ID	ID	ID 6H + mm
1	0.25	40	3.0	2.5		0.88 + 0.02	157171	173452		
1.2	0.25	40	3.6	2.5		1.08 + 0.02	157172	173455		
1.4	0.30	40	4.2	2.5		1.25 + 0.02	157173	173458		
1.6	0.35	40	4.8	2.5		1.45 + 0.02	157174	169779		
1.7	0.35	40	5.1	2.5		1.55 + 0.02		169782		
1.8	0.35	40	5.4	2.5		1.65 + 0.02	157175	169785		
2	0.40	45	8.0	2.8	2.1	1.80 + 0.02			157176	157180 0.019
2.5	0.45	50	10.0	2.8	2.1	2.30 + 0.02			157178	157181 0.020
2.6	0.45	50	10.0	2.8	2.1	2.40 + 0.02			157179	

≤ M1.5

4HX

FS FORMING

FS380DL-5

DL

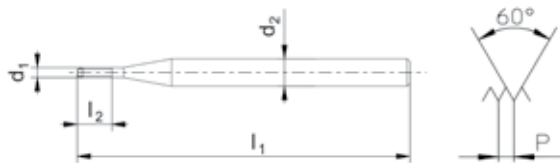
11	12	13	14
21	22	23	24
41	51	61	63
71	72	73	

FS380DL-3

DL

11	12	13	14
21	22	23	24
41	51	61	63
71	72	73	

FS380DL-5
FS380DL-3
FS380DL-3
FS380DL-3

NEW
NEW
NEW
NEW

6HX
6HX
6HX
6GX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm	4HX Tol. 6HX
1	0.25	40	3.0	2.5		0.88 + 0.02
1.2	0.25	40	3.6	2.5		1.08 + 0.02
1.4	0.30	40	4.2	2.5		1.25 + 0.02
1.6	0.35	40	4.8	2.5		1.45 + 0.02
1.7	0.35	40	5.1	2.5		1.55 + 0.02
1.8	0.35	40	5.4	2.5		1.65 + 0.02
2	0.40	45	8.0	2.8	2.1	1.80 + 0.02
2.5	0.45	50	10.0	2.8	2.1	2.30 + 0.02
2.6	0.45	50	10.0	2.8	2.1	2.40 + 0.02

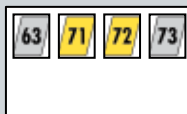
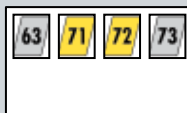
ID
ID
ID
ID
6H
+ mm

172839
173461
172840
173464
172841
173467
170585
170916
172843
172842
172844
158814
172849 0.019

172845
173246 0.020

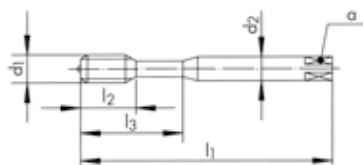
172846
≤ M1.5
4HX

FPS FORMING

FPS380CN-3

FPS381CN-3

FPS380VS-3

FPS381VS-3

FPS380CN-3
FPS381CN-3
FPS380VS-3
FPS381VS-3

6HX
6HX
6HX
6HX


$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.	ID	ID	ID	ID
3	0.50	56	12.0	18	3.5	2.7	2.80 + 0.03	166613	166615	166614	166616
3.5	0.60	56	13.0	20	4.0	3.0	3.25 + 0.03	166619	166621	166620	166622
4	0.70	63	14.0	21	4.5	3.4	3.70 + 0.03	166626	166628	166627	166629
5	0.80	70	15.0	25	6.0	4.9	4.65 + 0.03	166634	166636	166635	166637
6	1.00	80	17.0	30	6.0	4.9	5.55 + 0.05	166643	166645	166644	166646
8	1.25	90	20.0	35	8.0	6.2	7.40 + 0.05	166653	166655	166654	166656
10	1.50	100	22.0	39	10.0	8.0	9.30 + 0.05	166663	166665	166664	166666

6GX
6GX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.	ID 6H + mm	ID 6H + mm
3	0.50	56	12.0	18	3.5	2.7	2.80 + 0.03	166697 0.020	166617 0.020
3.5	0.60	56	13.0	20	4.0	3.0	3.25 + 0.03	166687 0.021	166623 0.021
4	0.70	63	14.0	21	4.5	3.4	3.70 + 0.03	166688 0.022	166630 0.022
5	0.80	70	15.0	25	6.0	4.9	4.65 + 0.03	166689 0.024	166638 0.024
6	1.00	80	17.0	30	6.0	4.9	5.55 + 0.05	166686 0.026	166647 0.026
8	1.25	90	20.0	35	8.0	6.2	7.40 + 0.05	166740 0.028	166657 0.028
10	1.50	100	22.0	39	10.0	8.0	9.30 + 0.05	166739 0.032	166667 0.032

FPS FORMING

FPS481VS-3



VS



FPS581VS-3



EL

VS



FPS681VS-3



EL

VS



FPS481VS-3



FPS581VS-3



NEW

FPS681VS-3



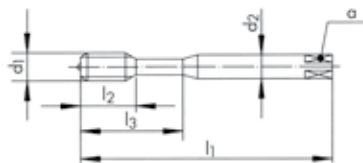
NEW



6HX

6HX

6HX



$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	α mm	6HX Tol.
12	1.75	110	24.0	9.0	7.0	11.20 + 0.05
14	2.00	110	28.0	11.0	9.0	13.10 + 0.05
16	2.00	110	30.0	12.0	9.0	15.10 + 0.05
20	2.50	140	36.0	16.0	12.0	18.85 + 0.05

ID

166673
166678
166683
168713

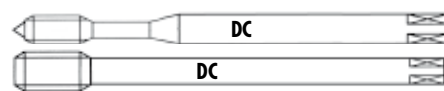
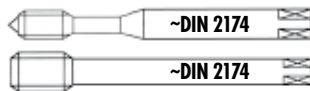
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.
3	0.50	100	12.0	18	3.5	2.7	2.80 + 0.03
4	0.70	125	14.0	21	4.5	3.4	3.70 + 0.03
5	0.80	140	15.0	25	6.0	4.9	4.65 + 0.03
6	1.00	160	17.0	30	6.0	4.9	5.55 + 0.05
8	1.25	180	20.0	35	8.0	6.2	7.40 + 0.05
10	1.50	200	22.0	39	10.0	8.0	9.30 + 0.05
12	1.75	224	24.0		9.0	7.0	11.20 + 0.05

ID

ID

172824
172826
172828
172830
172832
172834

172836



FPS FORMING

FPS384VS-3



VS



FPS484VS-3



VS



FPS584VS-3



EL

VS

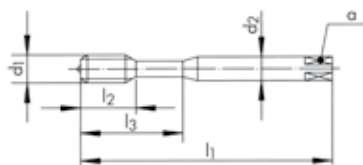


FPS684VS-3



EL

VS



FPS384VS-3

FPS484VS-3

FPS584VS-3

FPS684VS-3



NEW



NEW



6HX

6HX

6HX

6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol. → ←
3	0.50	56	12.0	18	3.5	2.7	2.80 + 0.03
4	0.70	63	14.0	21	4.5	3.4	3.70 + 0.03
5	0.80	70	15.0	25	6.0	4.9	4.65 + 0.03
6	1.00	80	17.0	30	6.0	4.9	5.55 + 0.05
8	1.25	90	20.0	35	8.0	6.2	7.40 + 0.05
10	1.50	100	22.0	39	10.0	8.0	9.30 + 0.05
12	1.75	110	24.0		9.0	7.0	11.20 + 0.05
14	2.00	110	28.0		11.0	9.0	13.10 + 0.05
16	2.00	110	30.0		12.0	9.0	15.10 + 0.05

ID

ID

166737

166738

166640

166650

166660

166670

166675

166680

166685

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol. → ←
3	0.50	100	12.0	18	3.5	2.7	2.80 + 0.03
4	0.70	125	14.0	21	4.5	3.4	3.70 + 0.03
5	0.80	140	15.0	25	6.0	4.9	4.65 + 0.03
6	1.00	160	17.0	30	6.0	4.9	5.55 + 0.05
8	1.25	180	20.0	35	8.0	6.2	7.40 + 0.05
10	1.50	200	22.0	39	10.0	8.0	9.30 + 0.05
12	1.75	224	24.0		9.0	7.0	11.20 + 0.05

ID

ID

172763

172766

172769

172772

172775

172778

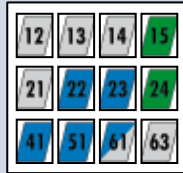
172781

FAS FORMING

FAS380VS-3



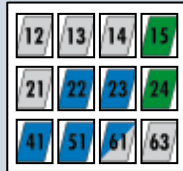
VS



FAS381VS-3



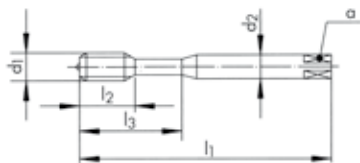
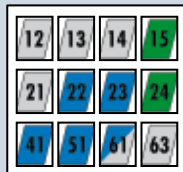
VS



FAS481VS-3



VS



FAS380VS-3



FAS381VS-3



FAS481VS-3



6HX

6HX

6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX → ←	Tol.
3	0.50	56	12.0	18	3.5	2.7	2.80	+ 0.03
3.5	0.60	56	13.0	20	4.0	3.0	3.25	+ 0.03
4	0.70	63	14.0	21	4.5	3.4	3.70	+ 0.03
5	0.80	70	15.0	25	6.0	4.9	4.65	+ 0.03
6	1.00	80	17.0	30	6.0	4.9	5.55	+ 0.05
8	1.25	90	20.0	35	8.0	6.2	7.40	+ 0.05
10	1.50	100	22.0	39	10.0	8.0	9.30	+ 0.05
12	1.75	110	24.0		9.0	7.0	11.20	+ 0.05
14	2.00	110	28.0		11.0	9.0	13.10	+ 0.05
16	2.00	110	30.0		12.0	9.0	15.10	+ 0.05
20	2.50	140	36.0		16.0	12.0	18.85	+ 0.05

ID

ID

ID

170603

166612

170605

166618

170607

166624

170609

166632

170611

166641

170616

166651

170618

166661

166671

166676

166681

168711

6GX

6GX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX → ←	Tol.
3	0.50	56	12.0	18	3.5	2.7	2.80	+ 0.03
3.5	0.60	56	13.0	20	4.0	3.0	3.25	+ 0.03
4	0.70	63	14.0	21	4.5	3.4	3.70	+ 0.03
5	0.80	70	15.0	25	6.0	4.9	4.65	+ 0.03
6	1.00	80	17.0	30	6.0	4.9	5.55	+ 0.05
8	1.25	90	20.0	35	8.0	6.2	7.40	+ 0.05
10	1.50	100	22.0	39	10.0	8.0	9.30	+ 0.05
12	1.75	110	24.0		9.0	7.0	11.20	+ 0.05
14	2.00	110	28.0		11.0	9.0	13.10	+ 0.05
16	2.00	110	30.0		12.0	9.0	15.10	+ 0.05

ID

6H

ID

6H

+ mm

+ mm

166703 0.020

* 166704 0.021

166705 0.022

166706 0.024

166707 0.026

166708 0.028

166709 0.032

166710 0.034

166711 0.038

166712 0.038

FAS FORMING

FAS384VS-3



VS

12	13	14	15
21	22	23	24
41	51	61	63

FAS484VS-3

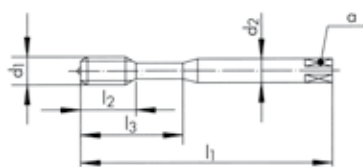


VS

12	13	14	15
21	22	23	24
41	51	61	63

FAS384VS-3

FAS484VS-3



6HX

6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.	ID	ID
3	0.50	56	12.0	18	3.5	2.7	2.80 + 0.03	166741	
4	0.70	63	14.0	21	4.5	3.4	3.70 + 0.03	166742	
5	0.80	70	15.0	25	6.0	4.9	4.65 + 0.03	166690	
6	1.00	80	17.0	30	6.0	4.9	5.55 + 0.05	166691	
8	1.25	90	20.0	35	8.0	6.2	7.40 + 0.05	166692	
10	1.50	100	22.0	39	10.0	8.0	9.30 + 0.05	166693	
12	1.75	110	24.0		9.0	7.0	11.20 + 0.05		166694
14	2.00	110	28.0		11.0	9.0	13.10 + 0.05		* 166695
16	2.00	110	30.0		12.0	9.0	15.10 + 0.05		166696

FAS FORMING

FAS581VS-3



EL

VS

12	13	14	15
21	22	23	24
41	51	61	63

FAS681VS-3



EL

VS

12	13	14	15
21	22	23	24
41	51	61	63

FAS584VS-3



EL

VS

12	13	14	15
21	22	23	24
41	51	61	63

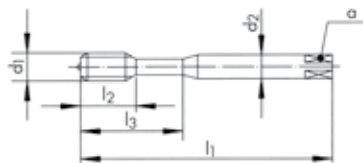
FAS684VS-3



EL

VS

12	13	14	15
21	22	23	24
41	51	61	63



FAS581VS-3

FAS681VS-3

FAS584VS-3

FAS684VS-3



NEW



NEW



NEW



NEW



< 2.5 x D



< 2.5 x D



< 3 x D



< 3 x D



2.5 x P



2.5 x P



2.5 x P



2.5 x P

6HX

6HX

6HX

6HX

$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	6HX Tol.
3	0.50	100	12.0	18	3.5	2.7	2.80 + 0.03
4	0.70	125	14.0	21	4.5	3.4	3.70 + 0.03
5	0.80	140	15.0	25	6.0	4.9	4.65 + 0.03
6	1.00	160	17.0	30	6.0	4.9	5.55 + 0.05
8	1.25	180	20.0	35	8.0	6.2	7.40 + 0.05
10	1.50	200	22.0	39	10.0	8.0	9.30 + 0.05
12	1.75	224	24.0		9.0	7.0	11.20 + 0.05

ID

ID

ID

ID

172784

172805

172787

172808

172790

172811

172793

172814

172796

172817

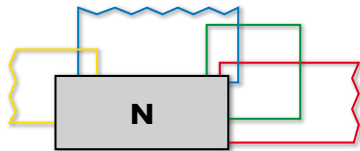
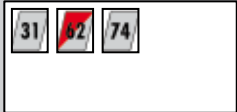
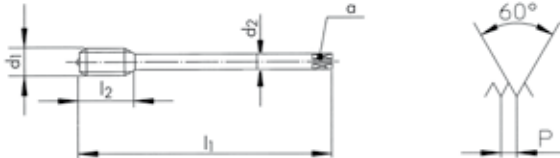
172799

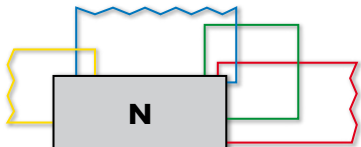
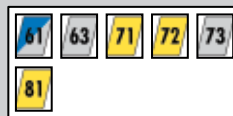
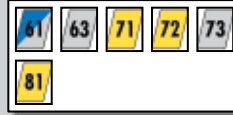
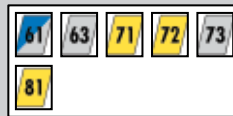
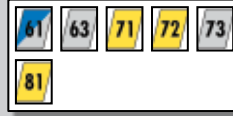
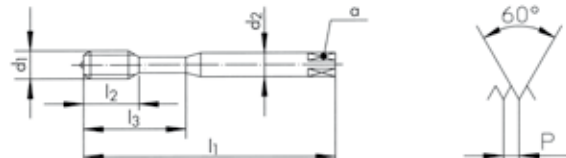
172820

172802

172822

									N1110-1	N1110-2	N1110-3	N1110-S
N1110-1												
N1110-2												
N1110-3												
N1110-S												
Ø d ₁ M	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
1	0.25	40	5.5		2.50	2.10	3	0.75	102744	102844	102917	111015
1.2	0.25	40	5.5		2.50	2.10	3	0.95	102746	102846	102919	111017
1.4	0.30	40	7.0		2.50	2.10	3	1.10	102747	102847	102920	111018
1.6	0.35	40	8.0		2.50	2.10	3	1.25	102749	102849	102922	111020
1.7	0.35	40	8.0		2.50	2.10	3	1.35	102750	102850	102923	111021
1.8	0.35	40	8.0		2.50	2.10	3	1.45	102751	102851	102924	111022
2	0.40	45	8.0		2.80	2.10	3	1.60	102759	102854	102934	111028
2.2	0.45	45	9.5		2.80	2.10	3	1.75	102761	102856	102937	111030
2.5	0.45	45	9.5		2.80	2.10	3	2.05	102763	102858	102941	111032
2.6	0.45	45	9.5		2.80	2.10	3	2.15	102765	102860	102944	111034
3	0.50	48	11.0	18	3.15	2.50	3	2.50	102766	102861	102947	111036
3.5	0.60	50	13.0	20	3.55	2.80	3	2.90	102769	102864	102950	111038
4	0.70	53	13.0	21	4.00	3.15	3	3.30	102771	102866	102956	111042
4.5	0.75	53	13.0	21	4.50	3.55	3	3.75	102775	102869	102959	111044
5	0.80	58	16.0	25	5.00	4.00	3	4.20	102776	102870	102965	111047
6	1.00	66	19.0	30	6.30	5.00	3	5.00	102781	102874	102973	111053
7	1.00	66	19.0	30	7.10	5.60	3	6.00	102786	102876	102978	111055
8	1.25	72	22.0	35	8.00	6.30	3	6.80	102788	102878	102986	111059
9	1.25	72	22.0	36	9.00	7.10	3	7.80	102792	102880	102991	111061
10	1.50	80	24.0	39	10.00	8.00	3	8.50	102752	102852	102931	111026

								N1210-1	N1210-2	N1210-3	N1210-S
N1210-1 											
N1210-2 											
N1210-3  											
N1210-S 											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											

									N1120-4	N1220-4	N1160-3	N1260-3
N1120-4												
N1220-4											NEW	NEW
N1160-3												
N1260-3												
												
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID		
3	0.50	48	11.0	18	3.15	2.50	3	2.50	103068			
4	0.70	53	13.0	21	4.00	3.15	3	3.30	103075			
4.5	0.75	53	13.0	21	4.50	3.55	3	3.75	* 103078			
5	0.80	58	16.0	25	5.00	4.00	3	4.20	103082			
6	1.00	66	19.0	30	6.30	5.00	3	5.00	103090			
8	1.25	72	22.0	35	8.00	6.30	3	6.80	103102			
10	1.50	80	24.0	39	10.00	8.00	3	8.50	103060			
11	1.50	85	22.0		8.00	6.30	3	9.50		* 103661		
12	1.75	89	24.0		9.00	7.10	3	10.20		103670		
14	2.00	95	24.0		11.20	9.00	3	12.00		103680		
16	2.00	102	32.0		12.50	10.00	3	14.00		103690		
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm			ID	ID	ID	ID
3	0.50	48	5.5	18	3.15	2.50	3	2.50		103177		
4	0.70	53	7.5	21	4.00	3.15	3	3.30		103178		
5	0.80	58	9.0	25	5.00	4.00	3	4.20		103179		
6	1.00	66	11.0	30	6.30	5.00	3	5.00		103180		
8	1.25	72	12.5	35	8.00	6.30	3	6.80		103181		
10	1.50	80	14.0	39	10.00	8.00	3	8.50		103174		
12	1.75	89	14.0		9.00	7.10	3	10.20			103781	
16	2.00	102	18.0		12.50	10.00	3	14.00			103782	



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MF Inhaltsverzeichnis - Maschinengewindebohrer DIN 13

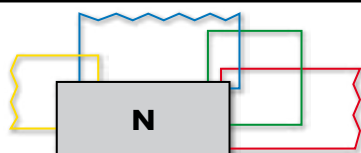
Directory - Machine taps DIN 13

	N						
Merkmale Characteristics				 V	 TiN	 R15	 R40
							
Lochart Hole type							
		N320-3	N320-4			N350-3	N360-3
<i>DIN lang</i> DIN long	DIN 371	84	84			84	91
<i>ISO kurz</i> ISO short	ISO 529						
<i>DIN lang</i> DIN long	~DIN 2174						
<i>Toleranz</i> Tolerance	ISO 2 6H		84			84	91
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H	84					
<i>Übermass</i> Oversize	ISO 3 6G						91
	N410-3	N420-3	N420-4	N420V-4	N420TN-4	N450-3	N460-3
<i>DIN lang</i> DIN long	DIN 374	85/90	88/89	85/90	85/88	85/86	84
<i>ISO kurz</i> ISO short	ISO 529						
<i>DIN lang</i> DIN long	~DIN 2174						
<i>Toleranz</i> Tolerance	ISO 2 6H	85/90		85/90	85/88	85/86	84
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H						
<i>Übermass</i> Oversize	ISO 3 6G						92
<i>Toleranz</i> Tolerance	7H (EN 60423)		88/89				
<i>LH Linksgewinde</i> LH Left hand thread	ISO 2 6H	90		90			

N					Z			
								
								
								
N360V-3	N360TN-3	N1110-1	N1110-3	N1110-S	Z320V-3 Z320V-4	Z320VS-4	Z360V-3	Z370VS-3
91	91	106	106	106	94	94	94	94
91	91		106	106	94	94	94	94
					94			
N460V-3	N460TN-3	N1210-1	N1210-3	N1210-S	Z420V-4	Z420VS-4	Z460V-3	Z470VS-3
92/93	92	107/108	107/108	107/108	95	95	95	95
92/93	92		107/108	107/108	95	95	95	95

	H		S		SA		
Merkmale Characteristics							
			VS	VS			
							
Lochart Hole type							
	H320-4	H350-3	S320VS-4	S360VS-3	SA320-4	SA350-3	SA390-3
<i>DIN lang</i> DIN long	DIN 371						
<i>ISO kurz</i> ISO short	ISO 529						
<i>DIN lang</i> DIN long	~DIN 2174						
<i>Toleranz</i> Tolerance	ISO 2 6H						
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H						
<i>Übermass</i> Oversize	ISO 3 6G						
	H420-4	H450-3	S420VS-4	S460VS-3	SA420-4	SA450-3	
<i>DIN lang</i> DIN long	DIN 374						
<i>ISO kurz</i> ISO short	ISO 529						
<i>DIN lang</i> DIN long	~DIN 2174						
<i>Toleranz</i> Tolerance	ISO 2 6H						
<i>Feintoleranz</i> Fine tolerance	ISO 1 4H						

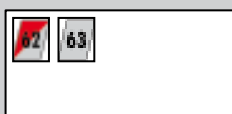
TL		K	RTS		FPS		FAS	
		 TiCN						
VS	VS		VS	VS	CrN	VS	VS	
		 NEW						
								
TL320VS-4	TL351VS-3	K313TC-3	RTS320VS-4	RTS362VS-3	FPS381CN-3	FPS381VS-3	FAS381VS-3	
100	100	103	102	102				
					104	104	105	
100	100	103	102	102	104	104	105	
100	100							
TL420VS-4	TL451VS-3	K413TC-3	RTS420VS-4	RTS462VS-3	FPS481CN-3	FPS481VS-3	FAS481VS-3	
101	101	103	102	102				
						104	105	
101	101	103	102	102		104	105	
101	101							



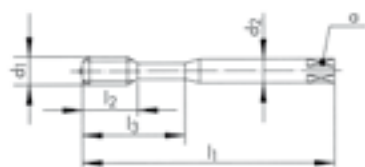
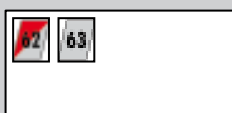
N320-4



N350-3



N450-3



N320-4

N350-3

N450-3



ISO 2
6H

ISO 2
6H

ISO 2
6H

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
*2	0.25	45	8.0		2.8	2.1	2	1.75
2.5	0.35	50	10.0		2.8	2.1	3	2.15
2.6	0.35	50	10.0		2.8	2.1	3	2.25
3	0.35	56	12.0	18	3.5	2.7	3	2.65
3.5	0.35	56	13.0	20	4.0	3.0	3	3.15

ID

142689
142691
142692
142693
142694

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.50	63	14.0	21	4.5	3.4	2	3.50
5	0.50	70	15.0	25	6.0	4.9	3	4.50
6	0.75	80	17.0	30	6.0	4.9	3	5.25
8	1.00	90	20.0		6.0	4.9	3	7.00
9	0.75	90	20.0		7.0	5.5	3	8.25
10	1.00	100	22.0		7.0	5.5	3	9.00
12	1.00	100	24.0		9.0	7.0	3	11.00
12	1.50	100	24.0		9.0	7.0	3	10.50
14	1.50	100	24.0		11.0	9.0	3	12.50
16	1.50	100	26.0		12.0	9.0	3	14.50
18	1.50	110	26.0		14.0	11.0	4	16.50
20	1.50	125	28.0		16.0	12.0	4	18.50

ID

ID

101586
101588
101590

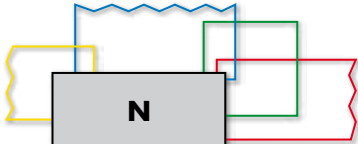
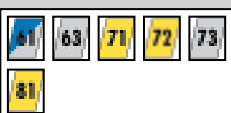
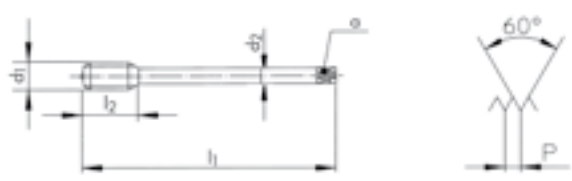
102326
102328
102313
* 102315
* 102316
* 102318
* 102320
* 102322
* 102323

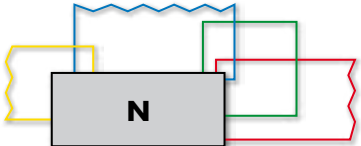
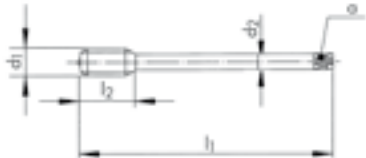
* N320-3



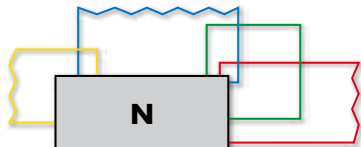
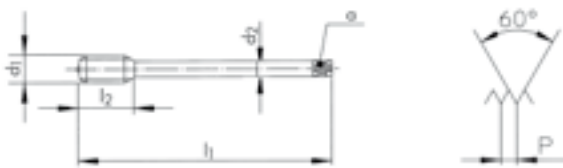
P 0.25

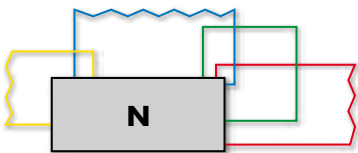
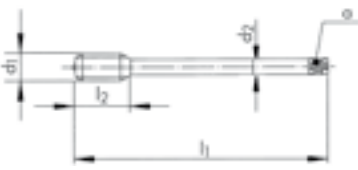


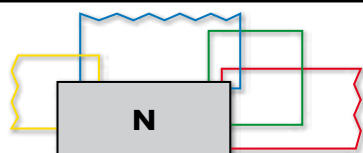
								N410-3	N420-4	N420V-4	N420TN-4
N410-3											
N420-4											
N420V-4											
N420TN-4											
											
											
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm			ID	ID	ID	ID
4	0.35	63	14.0	2.8	2.1	3	3.65		142695		
4	0.50	63	14.0	2.8	2.1	3	3.50	101923	102145	142715	
4.5	0.50	70	15.0	3.5	2.7	3	4.00		102150		
5	0.50	70	15.0	3.5	2.7	3	4.50	101941	102167	142716	
5	0.75	70	15.0	3.5	2.7	3	4.25		102168		
5.5	0.50	80	17.0	4.0	3.0	3	5.00		142696		
6	0.50	80	17.0	4.5	3.4	3	5.50	101951	102178	142717	
6	0.75	80	17.0	4.5	3.4	3	5.25	101952	102179	102281	102249
7	0.50	80	17.0	5.5	4.3	3	6.50		102187		
7	0.75	80	17.0	5.5	4.3	3	6.25	101954	102188		
8	0.50	90	20.0	6.0	4.9	3	7.50	101955	102190	142718	
8	0.75	90	20.0	6.0	4.9	3	7.25	101956	102191	102283	
8	1.00	90	20.0	6.0	4.9	3	7.00	101957	102192	102284	102250
9	0.50	90	20.0	7.0	5.5	3	8.50		142697		
9	0.75	90	20.0	7.0	5.5	3	8.25		102200		
9	1.00	90	20.0	7.0	5.5	3	8.00		102201	143935	
10	0.50	100	22.0	7.0	5.5	3	9.50		142698		
10	0.75	100	22.0	7.0	5.5	3	9.25	101863	102056		
10	1.00	100	22.0	7.0	5.5	3	9.00	101864	102057	102262	102239
10	1.25	100	22.0	7.0	5.5	3	8.80	101865	102058	142719	

								N410-3	N420-4	N420V-4	N420TN-4
N410-3  											
N420-4  											
N420V-4  V 											
N420TN-4  TiN 											
 											
											
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID	ID
11	0.50	100	19.0	8.0	6.2	3	10.50		142699		
11	0.75	100	19.0	8.0	6.2	3	10.25		142700		
11	1.00	100	19.0	8.0	6.2	3	10.00		142701		
11	1.25	100	19.0	8.0	6.2	3	9.80		142702		
12	0.50	100	14.0	9.0	7.0	3	11.50		102066		
12	0.75	100	24.0	9.0	7.0	3	11.25		142703		
12	1.00	100	24.0	9.0	7.0	3	11.00	101867	102067	142345	102241
12	1.25	100	24.0	9.0	7.0	3	10.80	101868	102068	142721	
12	1.50	100	24.0	9.0	7.0	3	10.50	101869	102069	102264	102242
13	1.00	100	21.0	11.0	9.0	3	12.00	158401	142704		
14	0.50	100	14.0	11.0	9.0	3	13.50		142705		
14	0.75	100	24.0	11.0	9.0	3	13.25		142706		
14	1.00	100	24.0	11.0	9.0	3	13.00	101871	102077		
14	1.25	100	24.0	11.0	9.0	3	12.80	101872	102078		
14	1.50	100	24.0	11.0	9.0	3	12.50	101873	102079	102266	102244
15	1.00	100	26.0	12.0	9.0	3	14.00	101875	102085		
15	1.50	100	26.0	12.0	9.0	3	13.50	101876	102086		
16	0.75	100	26.0	12.0	9.0	3	15.25		142708		
16	1.00	100	26.0	12.0	9.0	*3	15.00	101877	102087		
16	1.25	100	26.0	12.0	9.0	*3	14.80	101878	102088		
16	1.50	100	26.0	12.0	9.0	*3	14.50	101879	102089	102268	102246
17	1.00	100	26.0	12.0	9.0	3	16.00		142709		
17	1.50	100	26.0	12.0	9.0	3	15.50		142710		
18	0.75	110	26.0	14.0	11.0	4	17.25		142711		
18	1.00	110	26.0	14.0	11.0	4	17.00	101881	102095		
18	1.50	110	26.0	14.0	11.0	4	16.50	101882	102096	102270	
18	2.00	125	33.0	14.0	11.0	3	16.00		142712		
19	1.00	110	26.0	14.0	11.0	4	18.00		* 142713		

* N410-3 = 

								N410-3	N420-4	N420V-4							
N410-3																	
N420-4																	
N420V-4	 V							 ≤ 1.5 x D									
								 2.5 x P	 4 x P	 4 x P							
								ISO 2 6H	ISO 2 6H	ISO 2 6H							
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	α mm			ID	ID	ID							
20	1.00	125	28.0	16.0	12.0	4	19.00		102098								
20	1.50	125	28.0	16.0	12.0	4	18.50	101884	102099	102272							
20	2.00	140	36.0	16.0	12.0	3	18.00	105130	102100								
22	1.00	125	28.0	18.0	14.5	4	21.00		102104								
22	1.50	125	28.0	18.0	14.5	4	20.50	101886	102105	102274							
22	2.00	140	36.0	18.0	14.5	3	20.00	101887	142714								
24	1.00	140	30.0	18.0	14.5	4	23.00		102107								
24	1.50	140	30.0	18.0	14.5	4	22.50	101889	102108	102276							
24	2.00	140	34.0	18.0	14.5	4	22.00	101890	102109	102277							
25	1.00	140	30.0	18.0	14.5	4	24.00		142722								
25	1.50	140	30.0	18.0	14.5	4	23.50	101892	102112								
25	2.00	140	34.0	18.0	14.5	4	23.00		142723								
26	1.00	140	30.0	18.0	14.5	4	25.00		102113								
26	1.50	140	30.0	18.0	14.5	4	24.50	101893	102114	145896							
27	1.50	140	34.0	20.0	16.0	4	25.50		102115								
27	2.00	140	34.0	20.0	16.0	4	25.00	101894	102116								
28	1.00	140	30.0	20.0	16.0	4	27.00		142725								
28	1.50	140	30.0	20.0	16.0	4	26.50	101896	102118								
28	2.00	140	30.0	20.0	16.0	4	26.00	122023									

								N410-3	N420-4	N420V-4	N420-3
N410-3  											
N420-4  											
N420V-4   											
N420-3  											
 											
   								ID	ID	ID	ID
Ø d₁	P	l₁	l₂	d₂	a						
MF	mm	mm	mm	mm	mm						
30	1.00	150	32.0	22.0	18.0	4	29.00	101898	102121		
30	1.50	150	32.0	22.0	18.0	4	28.50	101899	102122	143978	
30	2.00	150	32.0	22.0	18.0	4	28.00	101900	102123	143766	
32	1.00	150	32.0	22.0	18.0	4	31.00	101902			
32	1.50	150	32.0	22.0	18.0	4	30.50	101903	102126		143812
32	2.00	150	32.0	22.0	18.0	4	30.00	101904	102127		
33	1.50	160	32.0	25.0	20.0	4	31.50	101905	102128		
33	2.00	160	32.0	25.0	20.0	4	31.00	101906	102129		
34	1.00	170	32.0	28.0	22.0	4	33.00	* 101908			
34	1.50	170	32.0	28.0	22.0	4	32.50	101909	* 102131		
35	1.50	170	32.0	28.0	22.0	4	33.50	101910	102132		
35	2.00	170	32.0	28.0	22.0	4	33.00	101911			
36	1.00	170	34.0	28.0	22.0	4	35.00		* 102133		
36	1.50	170	34.0	28.0	22.0	4	34.50	101912	102134		
36	2.00	170	34.0	28.0	22.0	4	34.00	101913	102135		
36	3.00	200	45.0	28.0	22.0	4	33.00	101914	102136		
38	1.00	170	34.0	28.0	22.0	4	37.00	* 101916	* 102138		
38	1.50	170	34.0	28.0	22.0	4	36.50	101917	102139		
38	2.00	170	34.0	28.0	22.0	4	36.00	101918			
39	2.00	170	34.0	32.0	24.0	4	37.00	101920			
39	3.00	200	45.0	32.0	24.0	4	36.00	101921			



N410-3

N420-4

N420-3

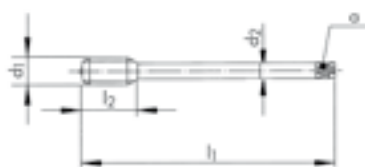
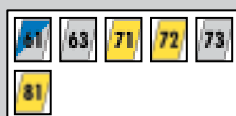
N410-3



N420-4



N420-3



∅ d ₁	P	l ₁	l ₂	d ₂	a		6H
MF	mm	mm	mm	mm	mm		
40	1.00	170	34.0	32.0	24.0	5	39.00
40	1.50	170	34.0	32.0	24.0	5	38.50
40	2.00	170	34.0	32.0	24.0	5	38.00
40	3.00	200	45.0	32.0	24.0	4	37.00
42	1.50	170	34.0	32.0	24.0	5	40.50
42	2.00	170	34.0	32.0	24.0	5	40.00
42	3.00	200	45.0	32.0	24.0	4	39.00
45	1.50	180	34.0	36.0	29.0	5	43.50
45	2.00	180	34.0	36.0	29.0	5	43.00
45	3.00	200	45.0	36.0	29.0	4	42.00
48	1.50	190	36.0	36.0	29.0	5	46.50
48	2.00	190	36.0	36.0	29.0	5	46.00
48	3.00	220	48.0	36.0	29.0	5	45.00
50	1.50	190	36.0	36.0	29.0	5	48.50
50	2.00	190	36.0	36.0	29.0	5	48.00
52	1.50	190	36.0	40.0	32.0	5	50.50
52	2.00	190	36.0	40.0	32.0	5	50.00
52	3.00	220	48.0	40.0	32.0	5	49.00
55	2.00	190	40.0	40.0	32.0	5	53.00
60	2.00	220	42.0	45.0	35.0	5	58.00
63	1.50	220	38.0	45.0	35.0	5	61.50

ID

ID

ID

101925

101926

102152

143813

101927

102153

* 101928

* 102154

101929

102155

101930

102156

101931

102157

101933

102159

101934

101935

* 102161

101937

102163

101938

102164

101939

102165

101943

102176

143814

* 101944

* 102177

* 101946

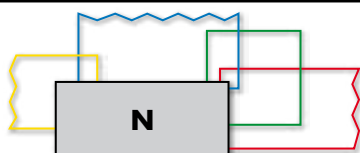
101947

* 101948

* 105131

105132

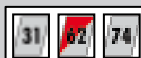
143815



N410-3 LH



LH



N420-4 LH

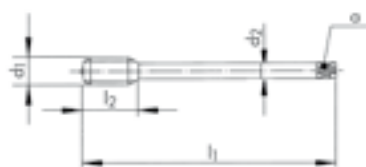


LH



N410-3 LH

N420-4 LH

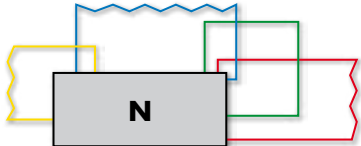
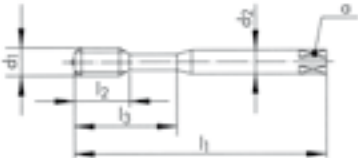


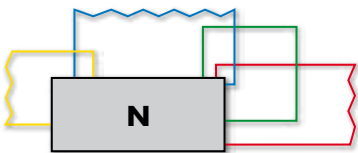
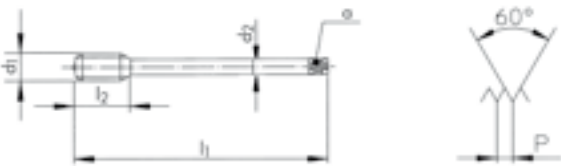
ISO 2
6H

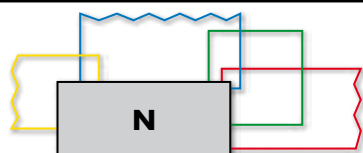
ISO 2
6H

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID
4	0.50	63	14.0	2.8	2.1	3	3.50	104844	
5	0.50	70	15.0	3.5	2.7	3	4.50	104845	
6	0.50	80	17.0	4.5	3.4	3	5.50	104846	104870
6	0.75	80	17.0	4.5	3.4	3	5.25	104847	105133
7	0.75	80	17.0	5.5	4.3	3	6.25	104848	
8	0.50	90	20.0	6.0	4.9	3	7.50	104849	
8	0.75	90	20.0	6.0	4.9	3	7.25	104850	104871
8	1.00	90	20.0	6.0	4.9	3	7.00	104851	104872
10	0.75	100	22.0	7.0	5.5	3	9.25	104852	
10	1.00	100	22.0	7.0	5.5	3	9.00	104853	104873
10	1.25	100	22.0	7.0	5.5	3	8.80		104874
12	1.00	100	24.0	9.0	7.0	3	11.00	104854	104875
12	1.25	100	24.0	9.0	7.0	3	10.80	104855	104876
12	1.50	100	24.0	9.0	7.0	3	10.50	104856	104877
14	1.00	100	24.0	11.0	9.0	3	13.00	104857	104878
14	1.25	100	24.0	11.0	9.0	3	12.80	104858	
14	1.50	100	24.0	11.0	9.0	3	12.50	104859	104879
16	1.00	100	26.0	12.0	9.0	*3	15.00	104860	104880
16	1.50	100	26.0	12.0	9.0	*3	14.50	104861	104881
18	1.00	110	26.0	14.0	11.0	4	17.00	104862	
18	1.50	110	26.0	14.0	11.0	4	16.50	104863	104882
20	1.00	125	28.0	16.0	12.0	4	19.00	104864	
20	1.50	125	28.0	16.0	12.0	4	18.50	104865	104883
22	1.50	125	28.0	18.0	14.5	4	20.50	104866	104884
24	1.50	140	30.0	18.0	14.5	4	22.50	104867	104885
24	2.00	140	34.0	18.0	14.5	4	22.00	104868	104886
28	1.50	140	30.0	20.0	16.0	4	26.50	105166	
30	1.50	150	32.0	22.0	18.0	4	28.50	105167	105165
30	2.00	150	32.0	22.0	18.0	4	28.00	105168	

* N410-3 LH = 4

									N360-3	N360V-3	N360TN-3	N360-3
N360-3  												
N360V-3  												
N360TN-3  												
												
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm			ID	ID	ID	ID ^{6H} + mm
4	0.50	63	7.5	21	4.5	3.4	3	3.50	101632	101712	111618	101631 0.020
5	0.50	70	9.0	25	6.0	4.9	3	4.50	101641	101714	111617	101640 0.020
6	0.50	80	11.0	30	6.0	4.9	3	5.50	101648	143990		
6	0.75	80	11.0	30	6.0	4.9	3	5.25	101650	101716	101702	101649 0.022
8	0.75	90	12.5	35	8.0	6.2	3	7.25	101658	101719		101657 0.022
8	1.00	90	12.5	35	8.0	6.2	3	7.00	101660	101720	101704	101659 0.026
10	0.75	100	14.0	39	10.0	8.0	3	9.25	101606	144401		
10	1.00	100	14.0	39	10.0	8.0	3	9.00	101608	101706	101695	101607 0.026
10	1.25	100	14.0	39	10.0	8.0	3	8.80	101609	105134	110965	

								N460-3	N460V-3	N460TN-3	N460-3
N460-3  											
N460V-3  											
N460TN-3  											
											
								ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 3 6G
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID	ID ^{6H} + mm
12	1.00	100	14.0	9.0	7.0	3	11.00	102353	102462	102447	102352 0.026
12	1.25	100	14.0	9.0	7.0	3	10.80	102354	102463	144202	
12	1.50	100	14.0	9.0	7.0	3	10.50	102356	102464	102448	102355 0.032
13	1.00	100	14.0	11.0	9.0	3	12.00	102364			
14	1.00	100	14.0	11.0	9.0	3	13.00	102365	102466		
14	1.50	100	14.0	11.0	9.0	3	12.50	102367	102467	102450	102366 0.032
15	1.00	100	14.0	12.0	9.0	3	14.00	102370			
15	1.50	100	18.0	12.0	9.0	3	13.50	102371			
16	1.00	100	14.0	12.0	9.0	4	15.00	102372	102469		
16	1.50	100	14.0	12.0	9.0	4	14.50	102374	102470	102452	102373 0.032
18	1.00	110	18.0	14.0	11.0	4	17.00	102380	143926		
18	1.50	110	18.0	14.0	11.0	4	16.50	102382	102472		102381 0.032
20	1.00	125	20.0	16.0	12.0	4	19.00	102384	146377		
20	1.50	125	20.0	16.0	12.0	4	18.50	102386	102474		
20	2.00	140	24.0	16.0	12.0	4	18.00	102387	143566		
22	1.00	125	20.0	18.0	14.5	4	21.00	102392	147702		
22	1.50	125	20.0	18.0	14.5	4	20.50	102393	102476		
24	1.50	140	22.0	18.0	14.5	4	22.50	102396	102478		
24	2.00	140	22.0	18.0	14.5	4	22.00	102397	102479		
25	1.50	140	22.0	18.0	14.5	4	23.50	102399	143810		
26	1.50	140	22.0	18.0	14.5	4	24.50	102400	143952		
27	1.50	140	22.0	20.0	16.0	4	25.50	102401	143965		
27	2.00	140	22.0	20.0	16.0	4	25.00	102402	144201		
28	1.50	140	22.0	20.0	16.0	4	26.50	102403	144997		



N460-3

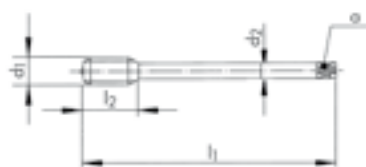


N460V-3



N460-3

N460V-3

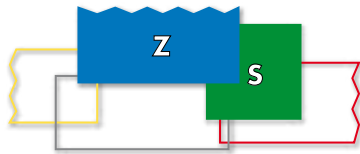


MF	Ø d ₁	P	l ₁	l ₂	d ₂	α	6H
	mm	mm	mm	mm	mm	mm	mm
30	1.50	150	24.0	22.0	18.0	4	28.50
30	2.00	150	24.0	22.0	18.0	4	28.00
32	1.50	150	24.0	22.0	18.0	4	30.50
33	2.00	160	26.0	25.0	20.0	4	31.00
33	3.00	180	33.0	25.0	20.0	4	30.00
35	1.50	170	24.0	28.0	22.0	5	33.50
36	1.50	170	24.0	28.0	22.0	5	34.50
36	2.00	170	28.0	28.0	22.0	5	34.00
36	3.00	200	36.0	28.0	22.0	4	33.00
39	3.00	200	40.0	32.0	24.0	5	36.00
42	3.00	200	40.0	32.0	24.0	5	39.00

ID

ID

102404	142524
102405	142581
102406	143605
102407	147604
175437	150448
102408	146846
102409	143824
175436	164870
115072	150453
174995	122669
174996	150436



Z320V-4



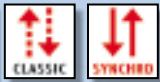
Z320VS-4



Z360V-3



Z370VS-3



Z320V-4



Z320VS-4



Z360V-3



Z370VS-3



NEW



PM


ISO 2
6H

ISO 2
6H

ISO 2
6H

6HX

$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
*2	0.20	45	8.0		2.8	2.1	2	1.80
*2	0.25	45	8.0		2.8	2.1	2	1.75
*2.2	0.25	45	9.0		2.8	2.1	2	1.95
2.5	0.20	50	10.0		2.8	2.1	3	2.30
2.5	0.25	50	10.0		2.8	2.1	3	2.25
3	0.35	56	12.0	18	3.5	2.7	3	2.65
6	0.75	80	17.0	30	6.0	4.9	3	5.25
8	1.00	90	20.0	35	8.0	6.2	3	7.00
10	1.00	100	22.0	39	10.0	8.0	3	9.00

ID

ID

$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
4	0.50	63	7.5	21	4.5	3.4	3	3.50
5	0.50	70	9.0	25	6.0	4.9	3	4.50
6	0.75	80	11.0	30	6.0	4.9	3	5.25
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00

ID

104675
104676
104677
104678
104674

$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
6	0.75	80	11.0	30	6.0	4.9	3	5.25
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00

ID

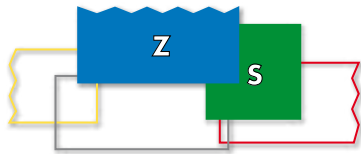
166117
166118
166119

* Z320V-3



P ≤ 0.25

ISO 1
4H



Z420V-4



V



Z420VS-4



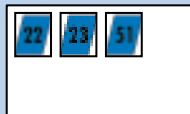
VS



Z460V-3



V



Z470VS-3



VS



Z420V-4

Z420VS-4

Z460V-3

Z470VS-3



NEW



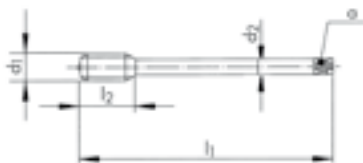
PM


ISO 2
6H

ISO 2
6H

ISO 2
6H

6HX



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
12	1.00	100	24.0	9.0	7.0	3	11.00
12	1.50	100	24.0	9.0	7.0	3	10.50
14	1.50	100	24.0	11.0	9.0	3	12.50
16	1.50	100	26.0	12.0	9.0	3	14.50

ID	ID
142729	
142730	120421
142731	120688
142732	120878

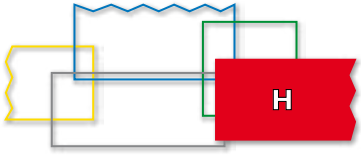
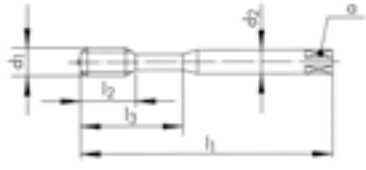
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
12	1.00	100	14.0	9.0	7.0	3	11.00
12	1.50	100	14.0	9.0	7.0	3	10.50
14	1.50	100	14.0	11.0	9.0	3	12.50
16	1.50	100	14.0	12.0	9.0	4	14.50
18	1.50	110	18.0	14.0	11.0	4	16.50
20	1.50	125	20.0	16.0	12.0	4	18.50
22	1.50	125	20.0	18.0	14.5	4	20.50
24	1.50	140	22.0	18.0	14.5	4	22.50
24	2.00	140	22.0	18.0	14.5	4	22.00

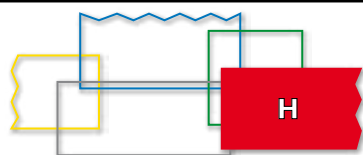
ID
104729
104730
104731
104732
104733
104734
104735
104736
104737

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ h6 mm	a mm		
12	1.50	110	14.0	*10.0	*8.0	4	10.50
14	1.50	110	14.0	*12.0	*9.0	4	12.50
16	1.50	110	18.0	12.0	9.0	4	14.50

ID
166120
166121
166122

* Norme DC / * DC Norm / * Norma DC

									H320-4	H420-4		
H320-4  												
H420-4  												
									 			
 									 			
									 			
Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID		
6	0.75	80	17.0	30	6.0	4.9	3	5.25	101214			
8	0.75	90	20.0	35	8.0	6.2	3	7.25	101216			
8	1.00	90	20.0	35	8.0	6.2	3	7.00	101217			
10	1.00	100	22.0	39	10.0	8.0	3	9.00	101204			
12	1.25	100	24.0		9.0	7.0	4	10.80		101273		
12	1.50	100	24.0		9.0	7.0	4	10.50		101274		
14	1.50	100	24.0		11.0	9.0	4	12.50		101276		
16	1.50	100	26.0		12.0	9.0	4	14.50		101278		
20	1.50	125	28.0		16.0	12.0	4	18.50		101282		
24	2.00	140	34.0		18.0	14.5	4	22.00		101285		



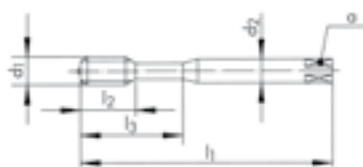
H350-3

H450-3

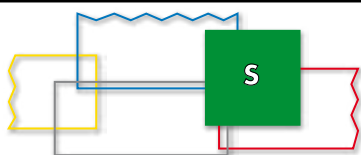
H350-3



H450-3

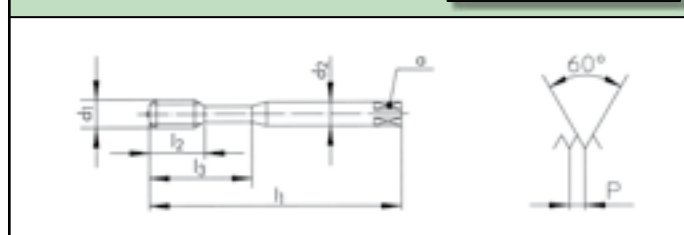


Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID
6	0.75	80	11.0	30	6.0	4.9	3	5.25	101249	
8	0.75	90	12.5	35	8.0	6.2	3	7.25	101252	
8	1.00	90	12.5	35	8.0	6.2	3	7.00	101253	
10	1.00	100	14.0	39	10.0	8.0	3	9.00	101235	
12	1.00	100	14.0		9.0	7.0	4	11.00		101302
12	1.50	100	14.0		9.0	7.0	4	10.50		101303
14	1.50	100	14.0		11.0	9.0	4	12.50		101306
16	1.50	100	14.0		12.0	9.0	4	14.50		101308
18	1.50	110	18.0		14.0	11.0	4	16.50		101310
20	1.50	125	20.0		16.0	12.0	4	18.50		101312
22	1.50	125	20.0		18.0	14.5	4	20.50		101314
24	1.50	140	22.0		18.0	14.5	4	22.50		101316
24	2.00	140	22.0		18.0	14.5	4	22.00		101317
27	2.00	140	22.0		20.0	16.0	4	25.00		101319
30	1.50	150	24.0		22.0	18.0	4	28.50		101321
30	2.00	150	24.0		22.0	18.0	4	28.00		101322



S320VS-4		VS	
S420VS-4		VS	
S360VS-3		VS	
S460VS-3		VS	

S320VS-4	S420VS-4	S360VS-3	S460VS-3
			
			



			
6HX	6HX	6HX	6HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
6	0.75	80	17.0	30	6.0	4.9	3	5.25
8	1.00	90	20.0	35	8.0	6.2	3	7.00
10	1.00	100	22.0	39	10.0	8.0	3	9.00
12	1.50	100	24.0		9.0	7.0	4	10.50
14	1.50	100	24.0		11.0	9.0	4	12.50
16	1.50	100	26.0		12.0	9.0	4	14.50

ID	ID
* 123690	
124288	
120059	
	120420
	120687
	120877

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00
12	1.50	100	14.0		9.0	7.0	4	10.50
14	1.50	100	14.0		11.0	9.0	4	12.50
16	1.50	100	14.0		12.0	9.0	4	14.50

ID	ID
	111528
	111529
	111540
	111541
	111542

aero

SA390-3



53

SA390-3



6HX



$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	α mm		
8	1.00	90	25.0	8.0	6.2	3	7.00
10	1.00	100	30.0	10.0	8.0	3	9.00
10	1.25	100	30.0	10.0	8.0	3	8.80
12	1.00	110	35.0	12.0	9.0	4	11.00
12	1.50	110	35.0	12.0	9.0	4	10.50
14	1.50	110	40.0	16.0	12.0	4	12.50

ID

* 149735

* 149751

* 149753

* 149769

* 149773

* 149790

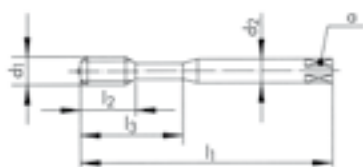
aero

SA320-4

52 53
SA350-3

52 53
TL320VS-4

VS
41 42
TL351VS-3

VS
41 42

SA320-4
SA350-3
TL320VS-4
TL351VS-3

4HX
4HX
4HX
4HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.50	63	14.0		4.5	3.4	3	3.50
5	0.50	70	15.0		6.0	4.9	3	4.50
6	0.50	80	15.0	23	6.0	4.9	3	5.50
8	1.00	90	18.0	29	8.0	6.2	3	7.00
10	1.00	100	20.0	33	10.0	8.0	3	9.00

ID
ID
ID
ID

	* 149079	* 152032	152033
* 149142	149144	* 152048	152049
* 149193		* 152058	152059
149304	149306	* 152079	152080
149362	149364	* 152092	152093

6HX
6HX
6HX
6HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	0.50	63	14.0		4.5	3.4	3	3.50
5	0.50	70	15.0		6.0	4.9	3	4.50
6	0.50	80	15.0	23	6.0	4.9	3	5.50
8	1.00	90	18.0	29	8.0	6.2	3	7.00
10	1.00	100	20.0	33	10.0	8.0	3	9.00

ID
ID
ID
ID

149081	149083	* 152034	152035
149146	149148	* 152050	152051
	* 149199	* 152060	152061
149308	149310		148019
149366	149368	* 152094	148026

aero

SA420-4



52 53

SA450-3



52 53

TL420VS-4



VS

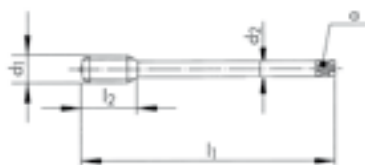
41 42

TL451VS-3



VS

41 42



SA420-4

SA450-3

TL420VS-4

TL451VS-3



$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
12	1.00	100	19.0	9.0	7.0	4	11.00
12	1.50	100	24.0	9.0	7.0	4	10.50
14	1.50	100	24.0	11.0	9.0	4	12.50
16	1.50	100	26.0	12.0	9.0	4	14.50

ID

ID

ID

ID

* 152209

* 152218

* 152208

* 152213

* 152210

* 152214

* 152224

* 152212

* 152216

* 152226

6HX

6HX

6HX

6HX

$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm		
12	1.00	100	19.0	9.0	7.0	4	11.00
12	1.50	100	24.0	9.0	7.0	4	10.50
14	1.50	100	24.0	11.0	9.0	4	12.50
16	1.00	100	23.0	12.0	9.0	4	15.00
16	1.50	100	26.0	12.0	9.0	4	14.50

ID

ID

ID

ID

* 152228

* 148967

* 152237

* 152242

* 152227

* 152232

* 152241

* 152229

* 152233

* 152238

* 152243

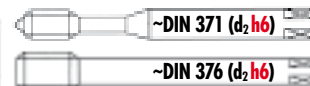
* 152239

* 152244

* 152235

* 152240

* 152245



RTS

Rigid Tapping Synchro

RTS320VS-4



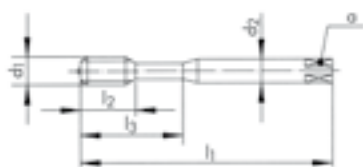
RTS420VS-4



RTS362VS-3



RTS462VS-3



$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00
12	1.50	110	14.0		*10.0	*8.0	3	10.50
14	1.50	110	14.0		*12.0	*9.0	3	12.50
16	1.50	110	18.0		12.0	9.0	3	14.50

* Norme DC / * DC Norm / * Norma DC

$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 h6 mm	a mm		
8	1.00	90	12.5	35	8.0	6.2	3	7.00
10	1.00	100	14.0	39	10.0	8.0	3	9.00
12	1.50	110	14.0		*10.0	*8.0	3	10.50
14	1.50	110	14.0		*12.0	*9.0	3	12.50
16	1.50	110	18.0		12.0	9.0	3	14.50

* Norme DC / * DC Norm / * Norma DC

RTS320VS-4

RTS420VS-4

RTS362VS-3

RTS462VS-3



6HX

6HX

6HX

6HX

ID

ID

150615

150630

150640

150655

150665

ID

ID

150617

150632

151862

151869

151871



sur demande
auf Anfrage
on request
su richiesta
sobre pedido

≥ Ø 6 mm

K

K313TC-3



TICN



>20
bar



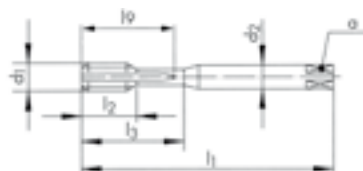
K413TC-3



TICN



>20
bar



K313TC-3

K413TC-3



NEW



NEW



<3 x D



<3 x D



C
2.5 x P



C
2.5 x P

6HX

6HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₄ mm	d ₂ mm	a mm	→	←
10	1.00	100	22.0	39	37	10.0	8.0	3	9.00
12	1.00	110	24.0		42	9.0	7.0	3	11.00
12	1.25	110	24.0		42	9.0	7.0	3	10.80
12	1.50	110	24.0		42	9.0	7.0	3	10.50
14	1.50	110	28.0		49	11.0	9.0	3	12.50
16	1.50	110	30.0		56	12.0	9.0	3	14.50
20	1.50	140	36.0		70	16.0	12.0	5	18.50

ID

ID

175729

175731

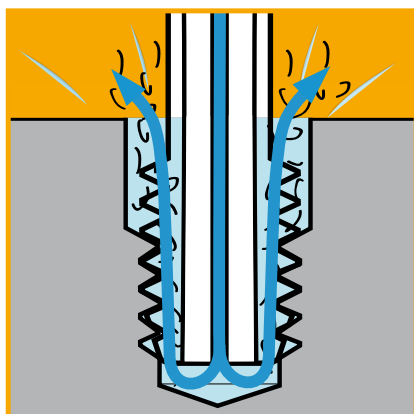
175733

175735

175737

175739

171205



> 20 bar



FPS FORMING

FPS381CN-3



63 71 72 73

FPS381VS-3



11 12 13 14 15
21 24 63

FPS481VS-3

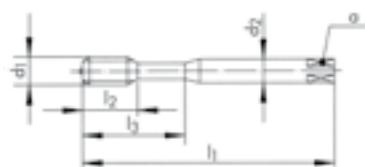


11 12 13 14 15
21 24 63

FPS381CN-3

FPS381VS-3

FPS481VS-3



6HX

6HX

6HX

Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm	6HX Tol.
4	0.50	63	14.0	21	4.5	3.4	3.80 + 0.03
5	0.50	70	15.0	25	6.0	4.9	4.80 + 0.03
6	0.50	80	17.0	30	6.0	4.9	5.80 + 0.03
6	0.75	80	17.0	30	6.0	4.9	5.65 + 0.03
8	0.75	90	20.0	35	8.0	6.2	7.65 + 0.03
8	1.00	90	20.0	35	8.0	6.2	7.55 + 0.05
10	1.00	100	22.0	39	10.0	8.0	9.55 + 0.05
12	1.00	100	19.0		9.0	7.0	11.55 + 0.05
14	1.50	100	24.0		11.0	9.0	13.30 + 0.05
16	1.50	100	26.0		12.0	9.0	15.30 + 0.05

ID

ID

ID

166631

166639

166699

166648

166649

166701

166702

166658

166659

166668

166669

166674

166679

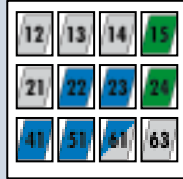
166684

FAS FORMING

FAS381VS-3



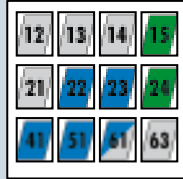
VS



FAS481VS-3



VS



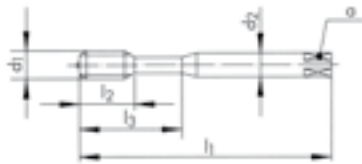
FAS381VS-3

FAS481VS-3



6HX

6HX



$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm	6HX Tol.	
4	0.50	63	14.0	21	4.5	3.4	3.80	+ 0.03
5	0.50	70	15.0	25	6.0	4.9	4.80	+ 0.03
6	0.50	80	17.0	30	6.0	4.9	5.80	+ 0.03
6	0.75	80	17.0	30	6.0	4.9	5.65	+ 0.03
8	0.75	90	20.0	35	8.0	6.2	7.65	+ 0.03
8	1.00	90	20.0	35	8.0	6.2	7.55	+ 0.05
10	1.00	100	22.0	39	10.0	8.0	9.55	+ 0.05
12	1.00	100	19.0		9.0	7.0	11.55	+ 0.05
14	1.50	100	24.0		11.0	9.0	13.30	+ 0.05
16	1.50	100	26.0		12.0	9.0	15.30	+ 0.05

ID

ID

166625

166633

166698

166642

166700

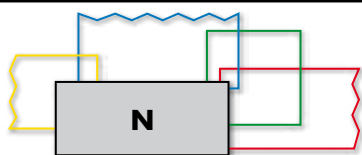
166652

166662

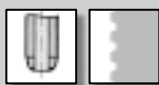
166672

166677

166682



N1110-1



N1110-3



N1110-S



N1110-1

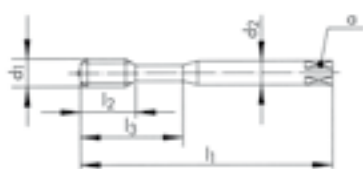
N1110-3

N1110-S



ISO 2
6H

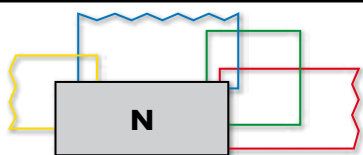
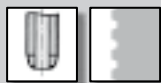
ISO 2
6H



Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID
2	0.25	45	8.0		2.80	2.10	3	1.75		102933	
2.2	0.25	45	9.5		2.80	2.10	3	1.95		102936	
2.3	0.25	45	9.5		2.80	2.10	3	2.05		* 102938	
2.5	0.35	45	9.5		2.80	2.10	3	2.15		102940	
3	0.35	48	11.0	18	3.15	2.50	3	2.65		102945	
3.5	0.35	50	13.0	20	3.55	2.80	3	3.15		102949	
4	0.35	53	13.0	21	4.00	3.15	3	3.65		102952	
4	0.50	53	13.0	21	4.00	3.15	3	3.50	102773	102953	111040
4.5	0.50	53	13.0	21	4.50	3.55	3	4.00		102958	
5	0.35	58	16.0	25	5.00	4.00	3	4.65		102960	
5	0.50	58	16.0	25	5.00	4.00	3	4.50	102778	102961	111045
5	0.75	58	16.0	25	5.00	4.00	3	4.25		102963	
5.5	0.50	62	17.0	26	5.60	4.50	3	5.00		102967	
6	0.50	66	19.0	30	6.30	5.00	3	5.50	102783	102969	111050
6	0.75	66	19.0	30	6.30	5.00	3	5.25	102784	102971	111051
7	0.50	66	19.0	30	7.10	5.60	3	6.50		102975	
8	0.75	72	22.0	35	8.00	6.30	3	7.25	102790	102982	111057
8	1.00	72	22.0	35	8.00	6.30	3	7.00	102791	102984	111058
9	0.50	72	22.0	36	9.00	7.10	3	8.50		102988	
9	0.75	72	22.0	36	9.00	7.10	3	8.25		102989	
9	1.00	72	22.0	36	9.00	7.10	3	8.00		102990	
10	0.50	80	24.0	39	10.00	8.00	3	9.50		102925	
10	1.00	80	24.0	39	10.00	8.00	3	9.00	102756	102928	111024
10	1.25	80	24.0	39	10.00	8.00	3	8.80	102758	102930	111025

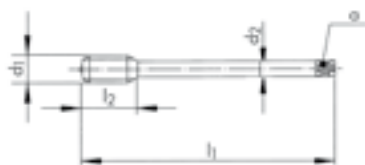
P 0.25

ISO 1
4H

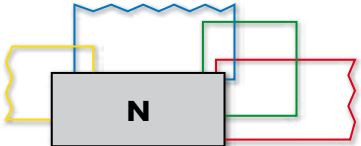
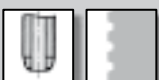

N1210-1

N1210-3

N1210-S

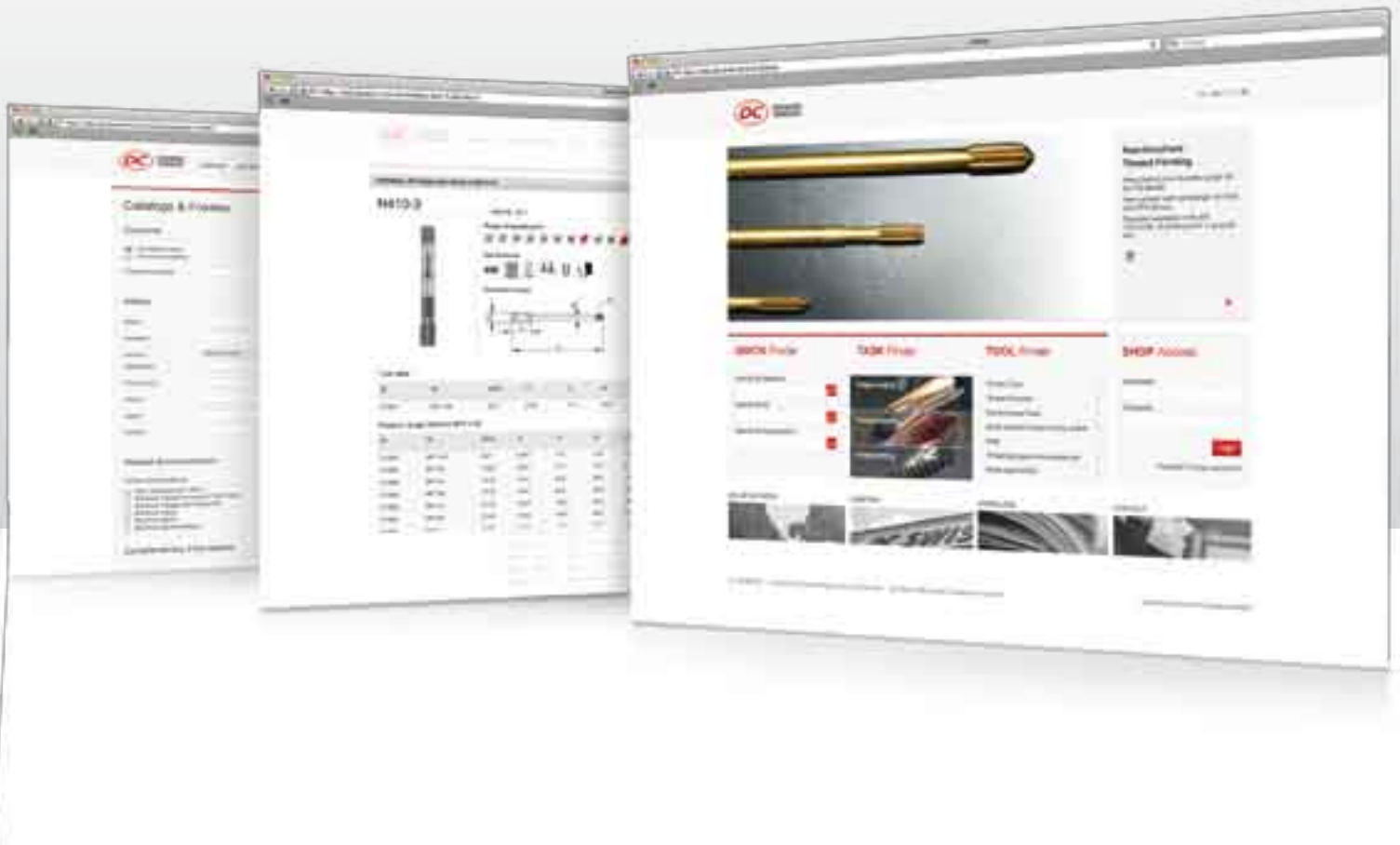
N1210-1
N1210-3
N1210-S

**ISO 2
6H**
**ISO 2
6H**


Ø d ₁ MF	P mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID
11	0.50	85	22.0	8.0	6.3	3	10.50		103485	
11	0.75	85	22.0	8.0	6.3	3	10.25		103486	
11	1.00	85	22.0	8.0	6.3	3	10.00		103487	
11	1.25	85	22.0	8.0	6.3	3	9.80		103488	
12	0.50	89	24.0	9.0	7.1	3	11.50		103490	
12	0.75	89	24.0	9.0	7.1	3	11.25		103491	
12	1.00	89	24.0	9.0	7.1	3	11.00	103305	103493	111169
12	1.25	89	24.0	9.0	7.1	3	10.80	103307	103495	111171
12	1.50	89	24.0	9.0	7.1	3	10.50	103308	103497	111172
14	0.50	95	24.0	11.2	9.0	3	13.50		103502	
14	0.75	95	24.0	11.2	9.0	3	13.25		103503	
14	1.00	95	24.0	11.2	9.0	3	13.00	103312	103504	111175
14	1.25	95	24.0	11.2	9.0	3	12.80	103314	103506	111177
14	1.50	95	24.0	11.2	9.0	3	12.50	103315	103508	111178
15	0.75	90	23.0	11.2	9.0	3	14.25		103512	
15	1.00	90	23.0	11.2	9.0	3	14.00		103513	
16	0.50	102	32.0	12.5	10.0	4	15.50		103515	
16	0.75	102	32.0	12.5	10.0	4	15.25		103516	
16	1.00	102	32.0	12.5	10.0	4	15.00	103321	103517	111183
16	1.50	102	32.0	12.5	10.0	4	14.50	103322	103520	111184
17	1.00	95	23.0	12.5	10.0	4	16.00		103525	
18	0.75	112	30.0	14.0	11.2	4	17.25		103527	
18	1.00	112	30.0	14.0	11.2	4	17.00	103326	103528	111187
18	1.50	112	30.0	14.0	11.2	4	16.50	103327	103531	111188
18	2.00	112	30.0	14.0	11.2	3	16.00		103533	
19	1.00	112	33.0	14.0	11.2	4	18.00		103536	

								N1210-1	N1210-3	N1210-S	
N1210-1 											
N1210-3 											
N1210-S 											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											
											

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	N					Z	
Merkmale Characteristics			 V	 R40 V	 	 V	 VS
				 	  		
Lochart Hole type							
	N310-3	N320-3 N320-4	N320V-4	N360-3 N360V-3	N1110 -1-2-3-S	Z320V-3 Z320V-4	Z320VS-4
DIN lang DIN long	DIN 371	114	114	114	116	118	118
ISO kurz ISO short	ISO 529				128		
Toleranz Tolerance	UNC 2B	114	114	114	116	128	118
Toleranz Tolerance	UNC 3B						
Toleranz Tolerance	UNC(J) 3B		114		116		
	N410-3	N420-4	N420V-4	N460-3 N460V-3	N1210 -1-2-3-S	Z420V-4	Z420VS-4
DIN lang DIN long	DIN 376	115	115	115	117	118	118
ISO kurz ISO short	ISO 529				129		
Toleranz Tolerance	UNC 2B	115	115	115	117	129	118
Toleranz Tolerance	UNC 3B						
Toleranz Tolerance	UNC(J) 3B						

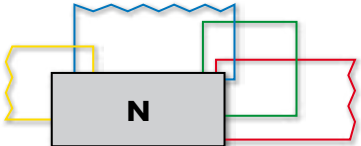
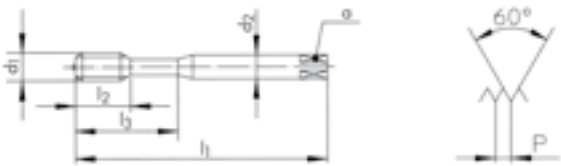
Z		H		S		SA		
								
								
								
								
Z360V-3 Z362V-3	Z370VS-3	H320-4	H350-3	S320VS-4	S360VS-3	SA320-4	SA350-3	SA390-3
119	120	121	121	122	123	124	124	125
119	120	121	121	122	123	124	124	
	120			122		124	124	125
Z462V-3	Z470VS-3	H420-4	H450-3	S420VS-4	S460VS-3	SA420-4	SA450-3	
119	120	121	121	122	123	125	125	
119	120	121	121	122	123	125	125	

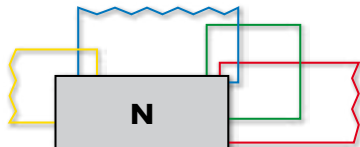
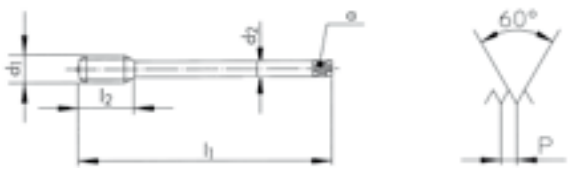
	TL		RTS		FS	FPS	FAS
Merkmale Characteristics							
							
							
Lochart Hole type							
	TL320VS-4	TL351VS-3	RTS320VS-4	RTS362VS-3	FS380VS-3	FPS381VS-3	FAS381VS-3
DIN lang DIN long	DIN 371	124	124	126	126		
DIN lang DIN long	~ DIN 2184-1				127	127	127
Toleranz Tolerance	UNC 2B	124	124	126	126	127	127
Toleranz Tolerance	UNC 3B						
Toleranz Tolerance	UNC(J) 3B	124	124				
			RTS420VS-4	RTS462VS-3			
DIN lang DIN long	DIN 376		126	126			
DIN lang DIN long	~ DIN 2184-1						
Toleranz Tolerance	UNC 2B		126	126			
Toleranz Tolerance	UNC 3B						
Toleranz Tolerance	UNC(J) 3B						

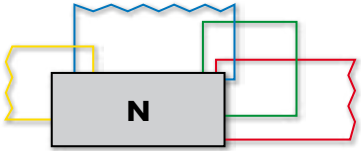
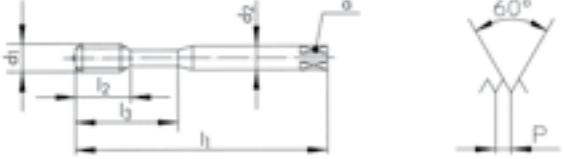
aero

THREADING TOOLS FOR AEROSPACE MATERIALS

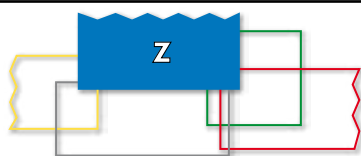


										N310-3	N320-4	N320V-4	
													
N310-3  													
N320-4  													
N320V-4  													
													
													
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	
*2	56	2.18	45	9.0		2.8	2.1	2	1.75		101469	143690	
*3	48	2.51	50	10.0		2.8	2.1	2	2.00		101470		
4	40	2.84	56	12.0	18	3.5	2.7	3	2.25	101450	101511	142738	
5	40	3.17	56	12.0	18	3.5	2.7	3	2.55		101512		
6	32	3.50	56	13.0	20	4.0	3.0	3	2.75	101451	101514	144402	
8	32	4.16	63	14.0	21	4.5	3.4	3	3.40	101452	101515	142739	
10	24	4.82	70	15.0	25	6.0	4.9	3	3.80	101449	101508	142740	
12	24	5.48	80	17.0	30	6.0	4.9	3	4.40		101509		
1/4	20	6.35	80	17.0	30	7.0	5.5	3	5.10	101448	101507	142741	
													
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	
4	40	2.84	56	12.0	18	3.5	2.7	3	2.30		145656		
6	32	3.50	56	13.0	20	4.0	3.0	3	2.80		155317		
8	32	4.16	63	14.0	21	4.5	3.4	3	3.45		155319		
* N320-3 													

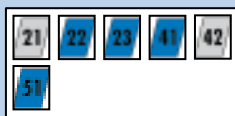
									N410-3	N420-4	N420V-4							
																		
N410-3																		
N420-4																		
N420V-4																		
																		
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID							
5/16	18	7.93	90	20.0	6.0	4.9	3	6.50	101997	102213	142742							
3/8	16	9.52	100	22.0	7.0	5.5	3	8.00	101996	102212	142743							
7/16	14	11.11	100	19.0	8.0	6.2	3	9.30		102215	142744							
1/2	13	12.70	110	24.0	9.0	7.0	3	10.80	101993	102208	142745							
9/16	12	14.28	110	28.0	11.0	9.0	3	12.20		102217								
5/8	11	15.87	110	30.0	12.0	9.0	3	13.60	101998	102214	142746							
3/4	10	19.05	125	33.0	14.0	11.0	3	16.60	101995	102211	142747							
7/8	9	22.22	140	36.0	18.0	14.5	3	19.50		102216	142748							
1	8	25.40	160	39.0	18.0	14.5	4	22.30	101994	102209	142749							
1 1/8	7	28.57	180	45.0	22.0	18.0	4	25.00		102205								
1 1/4	7	31.75	180	45.0	22.0	18.0	4	28.20	* 101991	102204								
1 1/2	6	38.10	200	55.0	32.0	24.0	4	34.00	* 101990	102203								
1 3/4	5	44.45	220	59.0	36.0	29.0	4	39.50	* 101992	102206								
2	4.5	50.80	250	67.0	40.0	32.0	4	45.30		102210								

										N360-3	N360V-3	N360-3	
													
N360-3  													
N360V-3   													
N360-3  													
										ID	ID	ID	
Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	a						
UNC	TPI	mm	mm	mm	mm	mm	mm						
2	56	2.18	45	8.0		2.8	2.1	2	1.75	101673	148887		
3	48	2.51	50	9.0		2.8	2.1	2	2.00	101674			
4	40	2.84	56	5.5	18	3.5	2.7	3	¹ 2.25	101676	101725	155316	
5	40	3.17	56	5.5	18	3.5	2.7	3	2.55	101677			
6	32	3.50	56	6.5	20	4.0	3.0	3	² 2.75	101679	101727	155318	
8	32	4.16	63	7.5	21	4.5	3.4	3	³ 3.40	101680	101728	155320	
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80	101671	101723		
12	24	5.48	80	11.0	30	6.0	4.9	3	4.40	101672			
1/4	20	6.35	80	11.0	30	7.0	5.5	3	5.10	101670	101722		
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50	101678	101726		
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00	101675	101724		
UNJC ¹2.30 ²2.80 ³3.45													





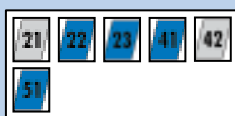
Z320V-4



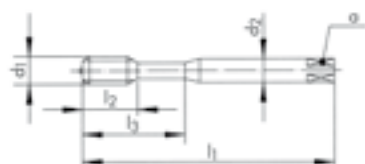
Z320VS-4



Z420V-4



Z420VS-4



Z320V-4

Z320VS-4

Z420V-4

Z420VS-4



2B

2B

2B

2B

$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
*2	56	2.18	45	9.0		2.8	2.1	2	1.75
4	40	2.84	56	12.0	18	3.5	2.7	3	2.25
6	32	3.50	56	13.0	20	4.0	3.0	3	2.75
8	32	4.16	63	14.0	21	4.5	3.4	3	3.40
10	24	4.82	70	15.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	17.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	20.0	35	8.0	6.2	3	6.50
3/8	16	9.52	100	22.0	39	10.0	8.0	3	8.00
1/2	13	12.70	110	24.0		9.0	7.0	3	10.80
5/8	11	15.87	110	30.0		12.0	9.0	3	13.60
3/4	10	19.05	125	33.0		14.0	11.0	4	16.60
7/8	9	22.22	140	36.0		18.0	14.5	4	19.50
1	8	25.40	160	39.0		18.0	14.5	4	22.30

ID

ID

ID

ID

142750

142751

142752

111560

142753

111561

142754

111562

142755

111563

142756

111564

142757

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142758

111566

142759

111567

142760

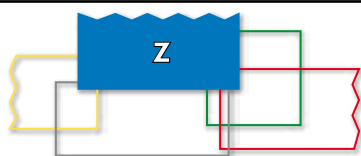
111568

142761

142762

* Z320V-3





Z362V-3

Z362VS-3

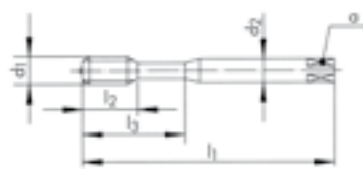
Z462V-3



2B

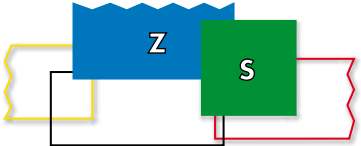
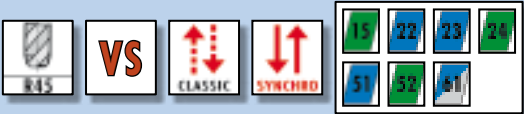
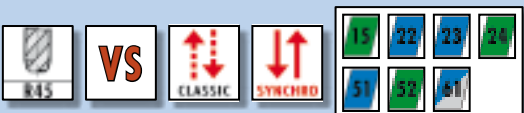
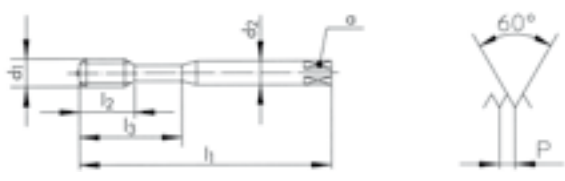
2BX

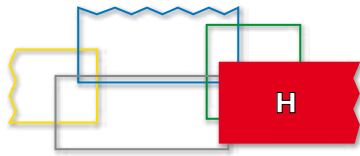
2B



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
*2	56	2.18	45	8.0		2.8	2.1	2	1.75
*4	40	2.84	56	5.5	18	3.5	2.7	3	2.25
6	32	3.50	56	6.5	20	4.0	3.0	3	2.75
8	32	4.16	63	7.5	21	4.5	3.4	3	3.40
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	11.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00
7/16	14	11.11	100	14.0		8.0	6.2	3	9.30
1/2	13	12.70	110	14.0		9.0	7.0	3	10.80
5/8	11	15.87	110	18.0		12.0	9.0	3	13.60
3/4	10	19.05	125	21.0		14.0	11.0	3	16.60
7/8	9	22.22	140	24.0		18.0	14.5	3	19.50
1	8	25.40	160	27.0		18.0	14.5	4	22.30

* Z360V-3

										Z370VS-3	Z470VS-3		
Z370VS-3  Z470VS-3 													
													
													
													
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm			ID	ID		
6	32	3.50	56	6.5	20	4.0(h9)	3.0	3	2.75	166123			
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.40	166124			
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80	166125			
1/4	20	6.35	80	11.0	30	*6.0	*4.9	3	5.10	166126			
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50	166127			
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00	166128			
7/16	14	11.11	100	14.0		8.0	6.2	3	9.30		166129		
1/2	13	12.70	110	14.0		*10.0	*8.0	4	10.80		166130		
5/8	11	15.87	110	18.0		12.0	9.0	4	13.60		166131		
3/4	10	19.05	125	21.0		14.0	11.0	4	16.60		166132		
1	8	25.40	160	27.0		16.0	12.0	4	22.30		175703		
* Norme DC / * DC Norm / * Norma DC													
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm			ID			
4	40	2.84	56	5.5	18	3.5(h9)	2.7	3	2.30	165114			
6	32	3.50	56	6.5	20	4.0(h9)	3.0	3	2.80	165115			
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.45	165116			
1/4	20	6.35	80	11.0	30	*6.0	*4.9	3	5.20	165117			
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.70	165118			
* Norme DC / * DC Norm / * Norma DC													



H320-4

H420-4

H350-3

H450-3

H320-4



H420-4



H350-3



H450-3

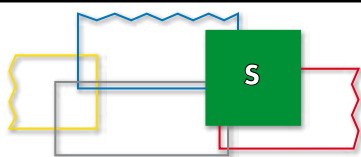


Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm		
2	56	2.18	45	8.0		2.8	2.1	2	1.75
4	40	2.84	56	10.0	18	3.5	2.7	3	2.25
6	32	3.50	56	13.0	20	4.0	3.0	3	2.75
8	32	4.16	63	14.0	21	4.5	3.4	3	3.40
10	24	4.82	70	15.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	17.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	20.0	35	8.0	6.2	3	6.50
3/8	16	9.52	100	22.0	39	10.0	8.0	3	8.00
1/2	13	12.70	110	24.0		9.0	7.0	4	10.80

ID	ID
101221	
101223	
101225	
101226	
101220	
101219	
101224	
101222	
	101290

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm		
2	56	2.18	45	8.0		2.8	2.1	2	1.75
4	40	2.84	56	5.5	18	3.5	2.7	3	2.25
6	32	3.50	56	6.5	20	4.0	3.0	3	2.75
8	32	4.16	63	7.5	21	4.5	3.4	3	3.40
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	11.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00
7/16	14	11.11	100	14.0		8.0	6.2	3	9.30
1/2	13	12.70	110	14.0		9.0	7.0	4	10.80
5/8	11	15.87	110	18.0		12.0	9.0	4	13.60
3/4	10	19.05	125	21.0		14.0	11.0	4	16.60
1	8	25.40	160	27.0		18.0	14.5	4	22.30

ID	ID
101258	
101260	
101262	
101263	
101257	
101256	
101261	
101259	
	101330
	101326
	101329
	101328
	101327



S320VS-4

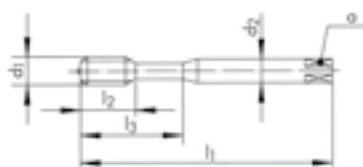


S420VS-4



S320VS-4

S420VS-4



2B

2B

$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
6	32	3.50	56	13.0	20	4.0	3.0	3	2.75
8	32	4.16	63	14.0	21	4.5	3.4	3	3.40
10	24	4.82	70	15.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	17.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	20.0	35	8.0	6.2	3	6.50
3/8	16	9.52	100	22.0	39	10.0	8.0	3	8.00
1/2	13	12.70	110	24.0		9.0	7.0	4	10.80
5/8	11	15.87	110	30.0		12.0	9.0	4	13.60
3/4	10	19.05	125	33.0		14.0	11.0	4	16.60

ID

ID

111587

111588

* 111589

111590

111591

111592

111593

111594

111595

3B
UNC(J)

$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
4	40	2.84	56	12.0	18	3.5	2.7	3	2.30
6	32	3.50	56	13.0	20	4.0	3.0	3	2.80
8	32	4.16	63	14.0	21	4.5	3.4	3	3.45
1/4	20	6.35	80	17.0	30	7.0	5.5	3	5.20
5/16	18	7.93	90	20.0	35	8.0	6.2	3	6.70

ID

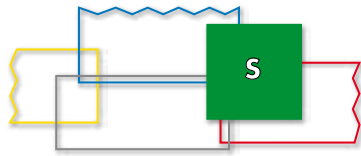
165314

165315

165316

165317

* 143761



S360VS-3



VS



S460VS-3



VS



S360VS-3

S460VS-3



2B

2B

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
6	32	3.50	56	6.5	20	4.0	3.0	3	2.75
8	32	4.16	63	7.5	21	4.5	3.4	3	3.40
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	11.0	30	7.0	5.5	3	5.10
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00
1/2	13	12.70	110	14.0		9.0	7.0	4	10.80
3/4	10	19.05	125	21.0		14.0	11.0	4	16.60

ID

ID

111530

111531

* 111532

111533

111534

111535

111537

* 111539

aero

SA320-4



SA350-3



TL320VS-4



VS



TL351VS-3



VS



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
4	40	2.84	56	12.0		3.5	2.7	3	2.25
5	40	3.17	56	12.0		3.5	2.7	3	2.55
6	32	3.50	56	13.0		4.0	3.0	3	2.75
8	32	4.16	63	14.0		4.5	3.4	3	3.40
10	24	4.82	70	15.0		6.0	4.9	3	3.80
1/4	20	6.35	80	15.0	23	7.0	5.5	3	5.10
5/16	18	7.93	90	18.0	29	8.0	6.2	3	6.50
3/8	16	9.52	100	20.0	33	10.0	8.0	3	8.00

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		UNC
4	40	2.84	56	12.0		3.5	2.7	3	2.30
6	32	3.50	56	13.0		4.0	3.0	3	2.80
8	32	4.16	63	14.0		4.5	3.4	3	3.45
10	24	4.82	70	15.0		6.0	4.9	3	3.90
1/4	20	6.35	80	15.0	23	7.0	5.5	3	5.20
5/16	18	7.93	90	18.0	29	8.0	6.2	3	6.70
3/8	16	9.52	100	20.0	33	10.0	8.0	3	8.10

SA320-4

SA350-3

TL320VS-4

TL351VS-3



2B

2B

2B

2B

ID

ID

ID

ID

147271

149003

152018

* 149031

* 149033

* 152023

* 152024

149055

149057

* 152027

152028

149093

149095

* 152036

152037

149125

* 149127

* 152042

* 152043

149222

149224

* 152062

127972

149269

149271

152068

149346

149348

* 152084

152085

3B
UNC(J)

3B
UNC(J)

3B
UNC(J)

3B
UNC(J)

ID

ID

ID

ID

149005

149007

* 148804

150194

149059

149061

* 152029

150210

149097

149099

* 152038

152039

* 149129

* 149131

* 152045

149226

149228

* 152063

152064

149273

149275

* 152069

152070

149350

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* 152086

152087

aero

SA420-4



52 53

SA450-3



52 53

SA390-3



53

SA420-4

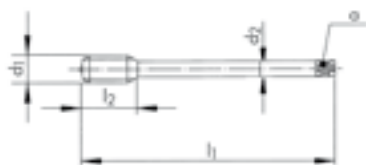
SA450-3

SA390-3



2B

2B



$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm		
7/16	14	11.11	100	22.0	8.0	6.2	3	9.30
1/2	13	12.70	110	24.0	9.0	7.0	4	10.80
5/8	11	15.87	110	30.0	12.0	9.0	4	13.60
3/4	10	19.05	125	33.0	14.0	11.0	4	16.60

ID

ID

* 152246

152247

152252

152249

152254

* 152250



$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm		
4	40	2.84	56	12.0	3.5	2.7	3	2.30
6	32	3.50	56	13.0	4.0	3.0	3	2.80
8	32	4.16	63	14.0	4.5	3.4	3	3.45
10	24	4.82	70	15.0	6.0	4.9	3	3.90
1/4	20	6.35	80	20.0	7.0	5.5	3	5.20
5/16	18	7.93	90	25.0	8.0	6.2	3	6.70
3/8	16	9.52	100	30.0	10.0	8.0	3	8.10

3B
UNC(J)

ID

149652

149666

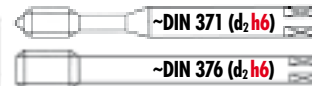
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149685

149713

149726

149747



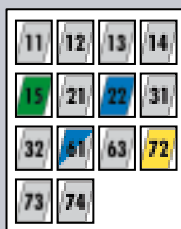
RTS

Rigid Tapping Synchro

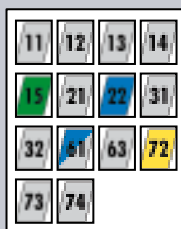
RTS320VS-4



RTS420VS-4



RTS362VS-3



RTS462VS-3



RTS320VS-4

RTS420VS-4

RTS362VS-3

RTS462VS-3



Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
6	32	3.50	56	6.5	20	4.0(h9)	3.0	3	2.75
8	32	4.16	63	7.5	21	4.5(h9)	3.4	3	3.40
10	24	4.82	70	9.0	25	6.0	4.9	3	3.80
1/4	20	6.35	80	11.0	30	*6.0	*4.9	3	5.10
5/16	18	7.93	90	12.5	35	8.0	6.2	3	6.50
3/8	16	9.52	100	14.0	39	10.0	8.0	3	8.00
1/2	13	12.70	110	14.0		*10.0	*8.0	3	10.80

* Norme DC / * DC Norm / * Norma DC

ID	ID	ID	ID
157395		157402	
157396		157403	
157397		157404	
157398		157405	
157399		157406	
157400		157407	
	157401		157408



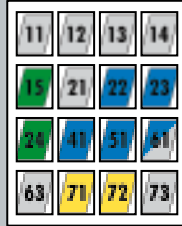
sur demande
auf Anfrage
on request
su richiesta
sobre pedido

FS FPS FAS FORMING

FS380VS-3



VS



FPS381VS-3



VS



FAS381VS-3



VS



FS380VS-3



FPS381VS-3



FAS381VS-3



2BX

2BX

2BX

$\varnothing'' d_1$ UNC	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	β mm	2BX Tol.
2	56	2.18	45	9.0		2.8	2.1	1.95	+ 0.02
4	40	2.84	56	12.0	18	3.5	2.7	2.55	+ 0.03
6	32	3.50	56	13.0	20	4.0	3.0	3.15	+ 0.03
8	32	4.16	63	14.0	21	4.5	3.4	3.80	+ 0.03
10	24	4.82	70	15.0	25	6.0	4.9	4.35	+ 0.05
1/4	20	6.35	80	17.0	30	7.0	5.5	5.75	+ 0.05
5/16	18	7.93	90	20.0	35	8.0	6.2	7.30	+ 0.05

ID

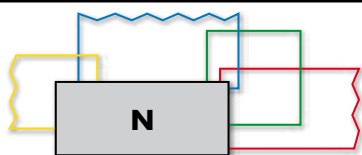
157285

ID

170063
166713
166714
166715
166716
* 166717

ID

170065
166725
166726
166727
166728
* 166729



N1110-1

N1110-2

N1110-3

N1110-S

N1110-1



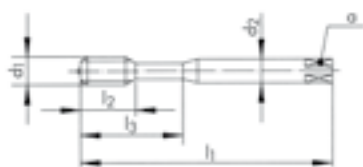
N1110-2



N1110-3



N1110-S



2B

2B

Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
2	56	2.18	45	9.5		2.80	2.10	3	1.75
3	48	2.51	45	9.5		2.80	2.10	3	2.00
4	40	2.84	48	11.0	18	3.15	2.50	3	2.25
5	40	3.17	48	11.0	18	3.15	2.50	3	2.55
6	32	3.50	50	13.0	20	3.55	2.80	3	2.75
8	32	4.16	53	13.0	21	4.50	3.55	3	3.40
10	24	4.82	58	16.0	25	5.00	4.00	3	3.80
1/4	20	6.35	66	19.0	30	6.30	5.00	3	5.10
5/16	18	7.93	72	22.0	35	8.00	6.30	3	6.50
3/8	16	9.52	80	24.0	39	10.00	8.00	3	8.00

ID

ID

ID

ID

102799

102885

102998

111067

* 102800

* 102886

* 102999

* 111068

102802

102888

103001

111070

103002

102805

102891

103004

111073

102806

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111064

102804

102890

103003

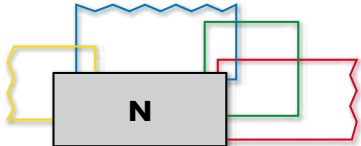
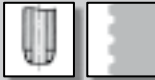
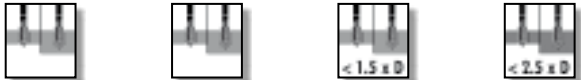
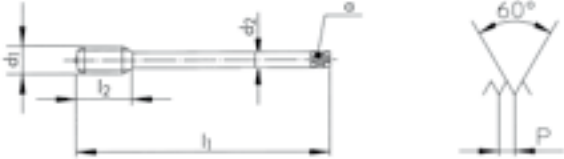
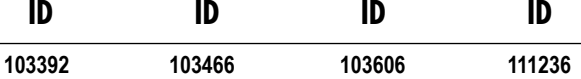
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102887

103000

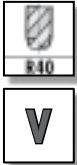
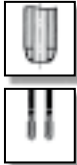
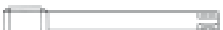
111069

									N1210-1	N1210-2	N1210-3	N1210-S
N1210-1 												
N1210-2 												
N1210-3  												
N1210-S 												
												
Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID	ID
7/16	14	11.11	85	22.0	8.0	6.3	3	9.30	103392	103466	103606	111236
1/2	13	12.70	89	24.0	9.0	7.1	3	10.80	103387	103461	103601	111229
5/8	11	15.87	102	32.0	12.5	10.0	3	13.60	103391	103465	103605	111235
3/4	10	19.05	112	33.0	14.0	11.2	3	16.60	103390	103464	103604	111234
1	8	25.40	130	45.0	18.0	14.0	4	22.30	103388	103462	103602	111230

UNF, UNEF, UNS, UN

Inhaltsverzeichnis - Maschinen- und Handgewindebohrer ANSI B1.1

Directory - Machine and hand taps ANSI B1.1

		N						
Merkmale Characteristics								
								
Lochart Hole type								
		N310-3	N320-3 N320-4	N320V-4	N360-3	N360V-3	N1110 -1-3-S	N1120-4
DIN lang DIN long	DIN 371	134	134	134	136	136		
ISO kurz ISO short	ISO 529						148	150
Toleranz Tolerance	UNF 2B	134	134	134	136	136	148	
Toleranz Tolerance	UNJF 3B							
Toleranz Tolerance	UNF(J) 3B		134		136			
Toleranz Tolerance	UNEF 2B						150	150
Toleranz Tolerance	UNS 2B							
Toleranz Tolerance	UN 2B							
		N410-3	N420-4	N420V-4	N460-3	N460V-3	N1210 -1-3-S	N1220-4
DIN lang DIN long	DIN 374	135/151	135	135	137	137		
ISO kurz ISO short	ISO 529						149	150
Toleranz Tolerance	UNF 2B	135	135	135	137	137	149	
Toleranz Tolerance	UNJF 3B							
Toleranz Tolerance	UNF(J) 3B		135		137			
Toleranz Tolerance	UNEF 2B						150	150
Toleranz Tolerance	UNS 2B	151			151	151		
Toleranz Tolerance	UN 2B				151	151		

UNF, UNJF

Inhaltsverzeichnis - Maschinengewindebohrer ANSI B1.1 / ASME B1.15
Directory - Machine taps ANSI B1.1 / ASME B1.15

Z			H		S		SA	
								
								
								
								
Z320V-4	Z360V-3	Z370VS-3	H320-4	H350-3	S320VS-4	S360VS-3	SA320-4	SA320-4
138	138	139	140	141	142	142	143	145
138	138	139	140	141		142	143	
								145
		139			142	142	143	
Z420V-4	Z460V-3	Z470VS-3	H420-4	H450-3	S420VS-4	S460VS-3	SA420-4	
138	138	139	140	141	142	142	144	
138	138	139	140	141		142	144	
					142	142	144	

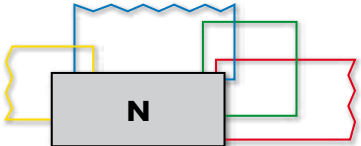
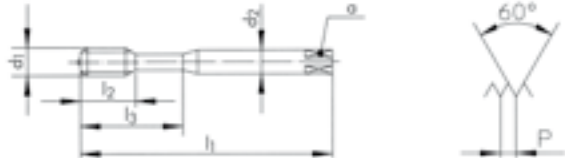
UNF,
UNJF, UNS, UN

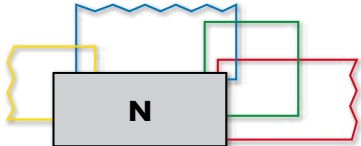
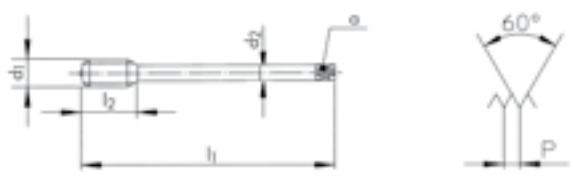
	SA		TL		RTS		
Merkmale Characteristics			 VS	 VS	 VS	 VS	
							
Lochart Hole type							
	SA350-3	SA390-3	TL320VS-4	TL351VS-3	RTS320VS-4	RTS362VS-3	
DIN lang DIN long	DIN 371	143	145	143	143	146	146
DIN lang DIN long	~ DIN 2184-1						
Toleranz Tolerance	UNF 2B	143		143	143	146	146
Toleranz Tolerance	UNF(J) 3B	143	145	143	143		
Toleranz Tolerance	UNEF 2B						
Toleranz Tolerance	UNS 2B						
Toleranz Tolerance	UN 2B						
	SA450-3		TL420VS-4	TL451VS-3	RTS420VS-4	RTS462VS-3	
DIN lang DIN long	DIN 374	144		144	144	146	146
DIN lang DIN long	~ DIN 2184-1						
Toleranz Tolerance	UNF 2B	144		144	144	146	146
Toleranz Tolerance	UNF(J) 3B	144		144	144		
Toleranz Tolerance	UNEF 2B						
Toleranz Tolerance	UNS 2B						
Toleranz Tolerance	UN 2B						

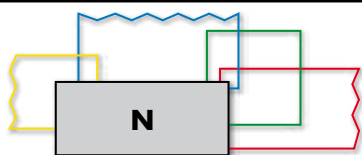
UNF

Directory - Machine thread formers ANSI B1.1

[illegible]

										N310-3	N320-3	N320-4	N320V-4
N310-3  													
N320-3  													
N320-4  													
N320V-4  													
													
													
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
0	80	1.52	40	7.0		2.5	2.1	2	1.20		101475		
1	72	1.85	40	8.0		2.5	2.1	2	1.50		* 101476		
2	64	2.18	45	9.0		2.8	2.1	2	1.80		101477		
4	48	2.84	56	12.0	18	3.5	2.7	3	2.35			128847	
5	44	3.17	56	12.0	18	3.5	2.7	3	2.60			142764	
6	40	3.50	56	13.0	20	4.0	3.0	3	2.90			101519	142765
8	36	4.16	63	14.0	21	4.5	3.4	3	3.50			101520	
10	32	4.82	70	15.0	25	6.0	4.9	3	4.05			101517	142766
12	28	5.48	80	17.0	30	6.0	4.9	3	4.60			101518	
1/4	28	6.35	80	17.0	30	7.0	5.5	3	5.50	101453		101516	142767
													
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID			
10	32	4.82	70	15.0	25	6.0	4.9	3	4.15	135506			
1/4	28	6.35	80	17.0	30	7.0	5.5	3	5.55	155323			

									N410-3	N420-4	N420V-4	
												
N410-3  												
N420-4  												
N420V-4   												
												
												
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID	ID	ID	
5/16	24	7.93	90	20.0	6.0	4.9	3	6.90	102004	102223	142774	
3/8	24	9.52	100	22.0	7.0	5.5	3	8.50	102003	102222	142775	
7/16	20	11.11	100	19.0	8.0	6.2	3	9.80	102006	102225	142776	
1/2	20	12.70	100	24.0	9.0	7.0	3	11.40	102000	102219	142777	
9/16	18	14.28	100	24.0	11.0	9.0	3	12.90		102227		
5/8	18	15.87	100	26.0	12.0	9.0	3	14.50	102005	102224	142778	
3/4	16	19.05	125	33.0	14.0	11.0	4	17.50	102002	102221	142779	
7/8	14	22.22	140	36.0	18.0	14.5	4	20.40	* 102007	102226		
1	12	25.40	160	39.0	18.0	14.5	4	23.30		102220	142780	
1 1/8	12	28.57	180	39.0	22.0	18.0	4	26.50		142773		
1 1/4	12	31.75	180	39.0	22.0	18.0	4	29.70		102218		
1 3/8	12	34.92	200	36.0	28.0	22.0	4	32.80		105137		
1 1/2	12	38.10	200	41.0	32.0	24.0	4	36.00	* 110986	105138		
												
Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			ID			
5/16	24	7.93	90	20.0	6.0	4.9	3	7.00		155328		
3/8	24	9.52	100	22.0	7.0	5.5	3	8.60		155326		
7/16	20	11.11	100	19.0	8.0	6.2	3	10.00		155330		
1/2	20	12.70	100	24.0	9.0	7.0	3	11.55		155321		



N360-3

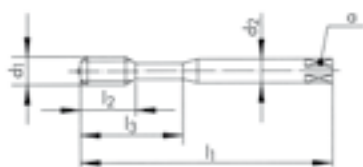


N360V-3



N360-3

N360V-3



2B

2B

$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
6	40	3.50	56	6.5	20	4.0	3.0	3	2.90
8	36	4.16	63	7.5	21	4.5	3.4	3	3.50
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
12	28	5.48	80	11.0	30	6.0	4.9	3	4.60
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.50

ID

ID

101686

* 101687 * 101733

101682 101730

101683

101681 101729

101685 101732

101684 101731

3B

UNF(J)

$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	a mm		
10	32	4.82	70	9.0	25	6.0	4.9	3	4.15
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.55
5/16	24	7.93	90	12.5	35	8.0	6.2	3	7.00
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.60

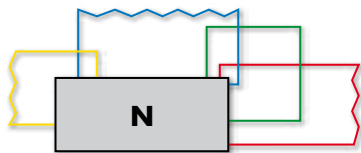
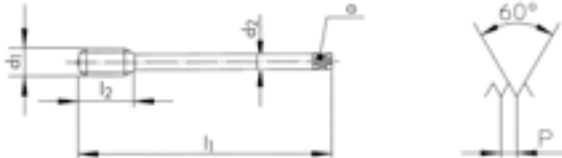
ID

155325

155324

155329

155327

									N460-3	N460V-3		
N460-3  61 63 71 72 73 81 N460V-3  11 12 13 14 21 32									 			
												
												
									2B	2B		
Ø" d₁ UNF	P TPI	d₁ mm	l₁ mm	l₂ mm	d₂ mm	a mm			ID	ID		
7/16	20	11.11	100	14.0	8.0	6.2	3	9.80	102434	142781		
1/2	20	12.70	100	14.0	9.0	7.0	3	11.40	102430	102503		
9/16	18	14.28	100	14.0	11.0	9.0	3	12.90	102436	143422		
5/8	18	15.87	100	14.0	12.0	9.0	3	14.50	102433	143097		
3/4	16	19.05	125	18.0	14.0	11.0	4	17.50	102432	102505		
7/8	14	22.22	140	20.0	18.0	14.5	4	20.40	102435	144714		
1	12	25.40	160	27.0	18.0	14.5	4	23.30	102431	102504		
1 1/8	12	28.57	180	24.0	22.0	18.0	4	26.50	102429	144414		
1 1/4	12	31.75	180	24.0	22.0	18.0	4	29.70	102428	151709		
1 1/2	12	38.10	200	30.0	32.0	24.0	5	36.00	102427	148793		
									3B UNF(J)			
Ø" d₁ UNF	P TPI	d₁ mm	l₁ mm	l₂ mm	d₂ mm	a mm			ID			
7/16	20	11.11	100	14.0	8.0	6.2	3	10.00	155331			
1/2	20	12.70	100	14.0	9.0	7.0	3	11.55	155322			

UNF

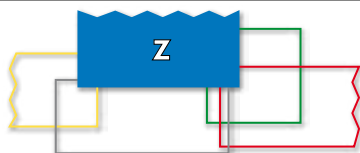
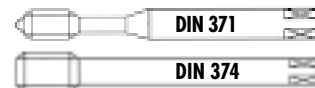
ANSI B1.1

Z .20

Z .60

PM

HSSE



Z320V-4



Z420V-4



Z360V-3



Z460V-3



Z320V-4

Z420V-4

Z360V-3

Z460V-3



2B

2B

2B

2B

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	a		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	4.82	70	15.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	17.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	20.0	35	8.0	6.2	3	6.90
3/8	24	9.52	100	22.0	39	10.0	8.0	3	8.50
7/16	20	11.11	100	19.0		8.0	6.2	3	9.80
1/2	20	12.70	100	24.0		9.0	7.0	3	11.40

ID

ID

142783

142784

142785

142786

142787

142788

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	a		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.50
7/16	20	11.11	100	14.0		8.0	6.2	3	9.80
1/2	20	12.70	100	14.0		9.0	7.0	3	11.40
5/8	18	15.87	100	14.0		12.0	9.0	3	14.50
3/4	16	19.05	125	18.0		14.0	11.0	4	17.50

ID

ID

104680

104679

104682

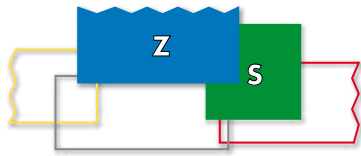
104681

104741

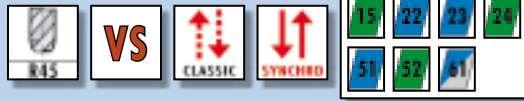
104738

104740

104739



Z370VS-3

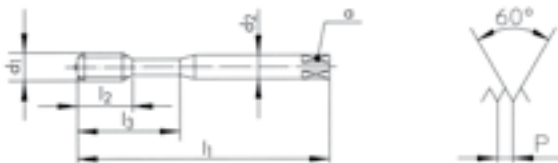


Z470VS-3



Z370VS-3

Z470VS-3



2BX

2BX

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	11.0	30	*6.0	*4.9	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.50
7/16	20	11.11	100	14.0		8.0	6.2	3	9.80
1/2	20	12.70	110	14.0		*10.0	*8.0	4	11.40

* Norme DC / * DC Norm / * Norma DC

ID

ID

166136

166135

166134

166133

166138

166137

3B

UNF(J)

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		UNF → ←
10	32	4.82	70	9.0	25	6.0	4.9	3	4.15
1/4	28	6.35	80	11.0	30	*6.0	*4.9	3	5.55
5/16	24	7.93	90	12.5	35	8.0	6.2	3	7.00
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.60

* Norme DC / * DC Norm / * Norma DC

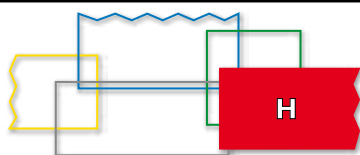
ID

165121

165122

165123

165124



H320-4



H420-4



H320-4

H420-4



2B

2B

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm		
10	32	4.82	70	15.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	17.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	20.0	35	8.0	6.2	3	6.90
3/8	24	9.52	100	22.0	39	10.0	8.0	3	8.50
1/2	20	12.70	100	24.0		9.0	7.0	4	11.40

ID

ID

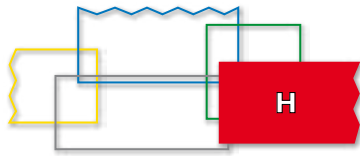
101228

101227

105139

101229

101291



H350-3



H450-3



H350-3

H450-3



2B

2B

$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.50
7/16	20	11.11	100	14.0		8.0	6.2	3	9.80
1/2	20	12.70	100	14.0		9.0	7.0	4	11.40
5/8	18	15.87	100	14.0		12.0	9.0	4	14.50
3/4	16	19.05	125	18.0		14.0	11.0	4	17.50

ID

ID

101265

101264

101267

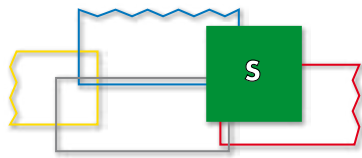
101266

101334

101331

101333

101332



S320VS-4



VS

13 15 24 52

S420VS-4



VS

13 15 24 52

S360VS-3



VS

13 15 24 52

S460VS-3



VS

13 15 24 52

S320VS-4

S420VS-4

S360VS-3

S460VS-3



Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		UNF
10	32	4.82	70	15.0	25	6.0	4.9	3	4.15
1/4	28	6.35	80	17.0	30	7.0	5.5	3	5.55
5/16	24	7.93	90	20.0	35	8.0	6.2	3	7.00
3/8	24	9.52	100	22.0	39	10.0	8.0	3	8.60
7/16	20	11.11	100	22.0		8.0	6.2	3	10.00

ID

ID

111814

111813

111816

111818

111837

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		UNF
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
7/16	20	11.11	100	14.0		8.0	6.2	3	9.80
1/2	20	12.70	100	14.0		9.0	7.0	4	11.40

ID

ID

* 111581

* 111582

* 111583

* 111585

* 111586



Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		UNF
10	32	4.82	70	9.0	25	6.0	4.9	3	4.15
1/4	28	6.35	80	11.0	30	7.0	5.5	3	5.55
5/16	24	7.93	90	12.5	35	8.0	6.2	3	7.00
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.60
7/16	20	11.11	100	14.0		8.0	6.2	3	10.00

ID

ID

111815

111820

111817

111819

111833

aero

SA320-4



52 53

SA350-3



52 53

TL320VS-4



VS

41 42

TL351VS-3



VS

41 42



SA320-4

SA350-3

TL320VS-4

TL351VS-3



2B

2B

2B

2B

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	α		
UNF	TPI	mm	mm	mm	mm	mm	mm		UNF
10	32	4.82	70	15.0		6.0	4.9	3	4.05
1/4	28	6.35	80	15.0	23	7.0	5.5	3	5.50
5/16	24	7.93	90	18.0	29	8.0	6.2	3	6.90
3/8	24	9.52	100	20.0	33	10.0	8.0	3	8.50

ID

ID

ID

ID

149133

149135

* 152046

152047

149230

149232

* 152065

152066

149277

149279

* 152071

152072

149339

149341

* 152082

152083

3B
UNF(J)

3B
UNF(J)

3B
UNF(J)

3B
UNF(J)

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	α		
UNF	TPI	mm	mm	mm	mm	mm	mm		UNF
4	48	2.84	56	12.0		3.5	2.7	3	2.35
10	32	4.82	70	15.0		6.0	4.9	3	4.15
1/4	28	6.35	80	15.0	23	7.0	5.5	3	5.55
5/16	24	7.93	90	18.0	29	8.0	6.2	3	7.00
3/8	24	9.52	100	20.0	33	10.0	8.0	3	8.60

ID

ID

ID

ID

146098

149015

* 148005

148004

146404

149235

* 148013

148012

146393

149282

* 148017

148016

147165

149344

* 148024

148023

aero

SA420-4



SA450-3



TL420VS-4



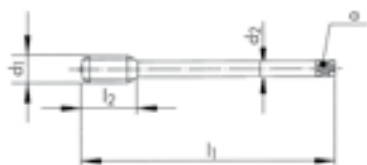
VS



TL451VS-3



VS



SA420-4

SA450-3

TL420VS-4

TL451VS-3



2B

2B

2B

Ø" d ₁	P	d ₁	l ₁	l ₂	d ₂	α		
UNF	TPI	mm	mm	mm	mm	mm		
7/16	20	11.11	100	22.0	8.0	6.2	* 4	9.80
1/2	20	12.70	100	24.0	9.0	7.0	4	11.40
9/16	18	14.28	100	24.0	11.0	9.0	4	12.90
5/8	18	15.87	100	26.0	12.0	9.0	4	14.50

ID

ID

ID

152286

152290

* 152298

152287

152291

* 152299

* 152288

* 152289

3B
UNF(J)

3B
UNF(J)

3B
UNF(J)

3B
UNF(J)

Ø" d ₁	P	d ₁	l ₁	l ₂	d ₂	α		UNF
UNF	TPI	mm	mm	mm	mm	mm		
7/16	20	11.11	100	22.0	8.0	6.2	* 4	10.00
1/2	20	12.70	100	24.0	9.0	7.0	4	11.55
9/16	18	14.28	100	24.0	11.0	9.0	4	13.05
5/8	18	15.87	100	26.0	12.0	9.0	4	14.60

ID

ID

ID

ID

147187

152302

* 152306

148031

147189

152303

* 152307

152310

146395

147169

* SA420-4 = 3

* TL420VS-4 = 3

aero

SA320-4



52 53

SA390-3



53

SA320-4

SA390-3



NEW



$\varnothing'' d_1$ UNJF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
10	32	4.82	70	15.0		6.0	4.9	3	4.15
1/4	28	6.35	80	15.0	23	7.0	5.5	3	5.55
5/16	24	7.93	90	18.0	29	8.0	6.2	3	7.00
3/8	24	9.52	100	20.0	33	10.0	8.0	3	8.60

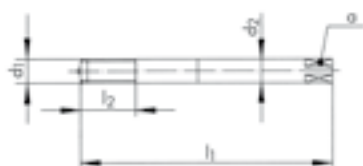
ID

174976

175993

175995

175997



$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm		
10	32	4.82	70	15.0	6.0	4.9	3	4.15
1/4	28	6.35	80	20.0	7.0	5.5	3	5.55
5/16	24	7.93	90	25.0	8.0	6.2	3	7.00
3/8	24	9.52	100	30.0	10.0	8.0	3	8.60

ID

149687

149715

149728

149745

UNF

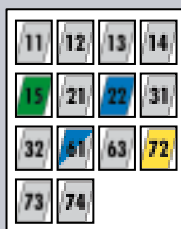
RTS

Rigid Tapping Synchro

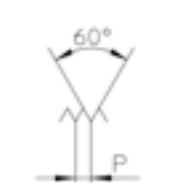
RTS320VS-4



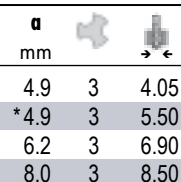
RTS420VS-4



RTS362VS-3



RTS462VS-3



RTS320VS-4

RTS420VS-4

RTS362VS-3

RTS462VS-3



2BX

2BX

2BX

2BX

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂ h6	α		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	4.82	70	9.0	25	6.0	4.9	3	4.05
1/4	28	6.35	80	11.0	30	*6.0	*4.9	3	5.50
5/16	24	7.93	90	12.5	35	8.0	6.2	3	6.90
3/8	24	9.52	100	14.0	39	10.0	8.0	3	8.50
1/2	20	12.70	110	14.0		*10.0	*8.0	3	11.40

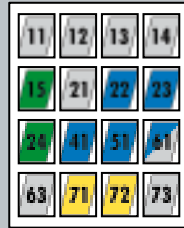
* Norme DC / * DC Norm / * Norma DC



sur demande
auf Anfrage
on request
su richiesta
sobre pedido

FS FPS FAS FORMING

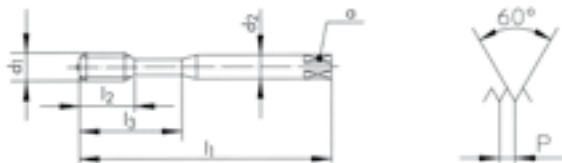
FS380VS-5



FPS381VS-3



FAS381VS-3



$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm	$\rightarrow \leftarrow$	Tol.
0	80	1.52	40	4.6		2.5	1.37		+ 0.02
10	32	4.82	70	15.0	25	6.0	4.9	4.45	+ 0.03
1/4	28	6.35	80	17.0	30	7.0	5.5	5.95	+ 0.05
5/16	24	7.93	90	20.0	35	8.0	6.2	7.45	+ 0.05

FS380VS-5



FPS381VS-3



FAS381VS-3



2BX

2BX

2BX

ID

ID

ID

161498

166718

166730

166719

166731

166720

166732

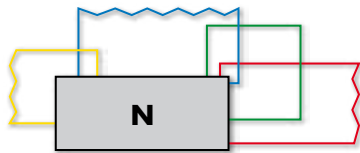
UNF

ANSI B1.1

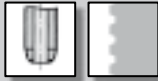
≤ Ø 2.8 > Ø 2.8

PM

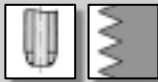
HSS



N1110-1



N1110-3



N1110-S



N1110-1

N1110-3

N1110-S



2B

2B

Ø" d ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
0	80	1.52	40	7.0		2.50	2.10	3	1.20
1	72	1.85	40	8.0		2.50	2.10	3	1.50
4	48	2.84	48	11.0	18	3.15	2.50	3	2.35
8	36	4.16	53	13.0	21	4.50	3.55	3	3.50
10	32	4.82	58	16.0	25	5.00	4.00	3	4.05
12	28	5.48	62	17.0	26	5.60	4.50	3	4.60
1/4	28	6.35	66	19.0	30	6.30	5.00	3	5.50
5/16	24	7.93	72	22.0	35	8.00	6.30	3	6.90
3/8	24	9.52	80	24.0	39	10.00	8.00	3	8.50

ID

ID

ID

102811

103010

111079

102812

103011

111080

* 103018

* 103022

102814

103013

111082

* 102815

* 103014

* 111083

102813

103012

111081

102821

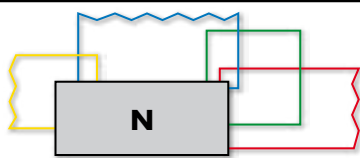
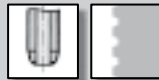
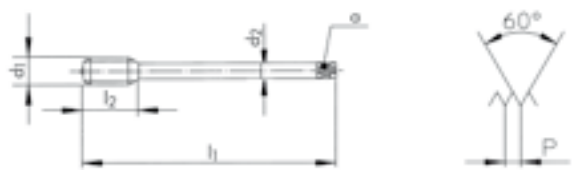
103020

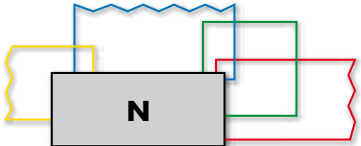
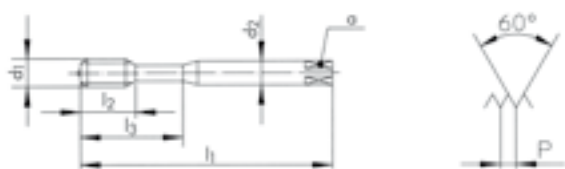
111089

102818

103017

111086

									N1210-1	N1210-3	N1210-S	
N1210-1 N1210-3 31 62 74 N1210-S												
												
												
										2B	2B	
$\varnothing'' d_1$ UNF	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	
7/16	20	11.11	85	22.0	8.0	6.3	3	9.80	103411	103626	111255	
1/2	20	12.70	89	24.0	9.0	7.1	3	11.40	103407	103622	111251	
5/8	18	15.87	102	32.0	12.5	10.0	3	14.50	103410	103625	111254	
3/4	16	19.05	112	33.0	14.0	11.2	4	17.50	103409	103624	111253	
7/8	14	22.22	115	32.0	16.0	12.5	4	20.40	103412	103627	111256	
1	12	25.40	130	45.0	18.0	14.0	4	23.30	103408	103623	111252	

										N1110-3	N1120-4	N1210-3	N1220-4
N1110-3  													
N1120-4  													
N1210-3  													
N1220-4  													
													
													
Ø" d ₁ UNEF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
12	32	5.48	62	17.0	26	5.6	4.5	3	4.70	103007	103118		
1/4	32	6.35	66	19.0	30	6.3	5.0	3	5.60	103006	103117		
5/16	32	7.93	72	22.0	35	8.0	6.3	3	7.20	103009	103120		
3/8	32	9.52	80	24.0	39	10.0	8.0	3	8.75	103008	103119		
7/16	28	11.11	85	22.0		8.0	6.3	3	10.25			103615	103754
1/2	28	12.70	89	24.0		9.0	7.1	3	11.85			103609	103749
9/16	24	14.28	95	24.0		11.2	9.0	3	13.20			103617	103756
5/8	24	15.87	102	32.0		12.5	10.0	3	14.80			103614	103753
11/16	24	17.46	104	26.0		14.0	11.2	4	16.40			103611	
3/4	20	19.05	112	33.0		14.0	11.2	4	17.80			103613	* 103752
7/8	20	22.22	115	32.0		16.0	12.5	4	21.00			103616	* 103755
1	20	25.40	120	30.0		18.0	14.0	4	24.10			103610	* 103750

UNS, UN ANSI B1.1

HSSE



									N410-3	N460-3	N460V-3	
N410-3												
N460-3												
N460V-3												
Ø" d ₁	P	d ₁	l ₁	l ₂	d ₂	α			ID	ID	ID	
UNS	TPI	mm	mm	mm	mm	mm						
1/4	36	6.35	80	17.0	4.5	3.4	3	5.65	104899			
1/2	24	12.70	100	24.0	9.0	7.0	3	11.60	104900			
1	14	25.40	140	34.0	18.0	14.5	4	23.60	104898			
1	14	25.40	140	22.0	18.0	14.5	4	23.60		102437	142789	
Ø" d ₁	P	d ₁	l ₁	l ₂	d ₂	α			ID	ID		
UN	TPI	mm	mm	mm	mm	mm						
1 1/8	8	28.57	180	30.0	22.0	18.0	4	25.50	102415	142790		
1 1/4	8	31.75	180	30.0	22.0	18.0	4	28.70	102414	142520		
1 3/8	8	34.92	200	36.0	28.0	22.0	5	31.80	104896	142792		
1 1/2	8	38.10	200	40.0	32.0	24.0	5	35.00	102413	142793		
1 3/4	8	44.45	220	44.0	36.0	29.0	5	41.40		115198		
2	8	50.80	250	38.0	40.0	32.0	5	47.70		111622		

UNJF, UNS, UN

G Inhaltsverzeichnis - Maschinengewindebohrer G (Rohr) DIN ISO 228

Directory - Machine taps G (BSP) DIN ISO 228

	N						
Merkmale Characteristics		 V	 TiN	 R40	 R40 V	 R40 V	 R40 TiN
							
Lochart Hole type							
							
	N410-3	N420-4 N420V-4	N420TN-4	N460-3	N460V-3	N462V-3	N460TN-3
DIN lang DIN long DIN 5156	156	157	157	158	158	158	158
DIN kurz DIN short DIN 5157							
LH Linksgewinde LH Left hand thread DIN 5156	156						

G Inhaltsverzeichnis - Maschinen- und Handgewindebohrer G (Rohr) DIN ISO 228 Directory - Machine and hand taps G (BSP) DIN ISO 228

N			W		Z			
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								

G Inhaltsverzeichnis - Maschinengewindebohrer und Gewindeformer G (Rohr) DIN ISO 228

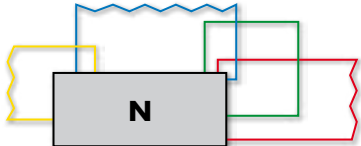
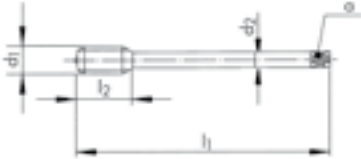
Directory - Machine taps and thread formers G (BSP) DIN ISO 228

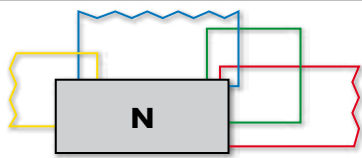
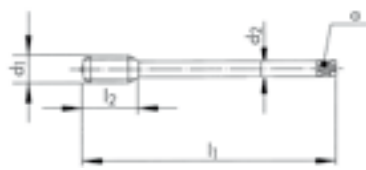
	H	GG	RTS	RTS	FPS	FAS	
Merkmale Characteristics		 	 	  	 	 	
							
Lochart Hole type							
							
	H450-3	GG450NV-3	RTS462VS-3	RTS462VS-5	FPS481VS-3	FAS481VS-3	
DIN lang DIN long	DIN 5156	159	159				
DIN lang DIN long	~DIN 376		161	161			
DIN lang DIN long	~DIN 2189				162	162	

	N						
Merkmale Characteristics		 		 		 	
							
Lochart Hole type							
				N1110-3	N1120-4	N5120	
ISO kurz ISO short ISO 529				166	166		
W ISO 529				166/167	166		
SV ISO 529				167			
	N420-3	N410-3	D5800	N1210-3	N1220-4		
DIN lang DIN long DIN 5156	164						
DIN lang DIN long DC		164	165				
ISO kurz ISO short ISO 529				166	166		
Rp DIN 5156	164						
Rc DC		164	165				
W ISO 529				166	166		
SV ISO 529/DC				167		167	



									N410-3		N410-3 LH			
N410-3 N410-3 LH														
$\varnothing'' d_1$ G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID				
1/8	28	9.72	90	22.0	7.0	5.5	3	8.75	101855					
1/4	19	13.15	100	20.0	11.0	9.0	3	11.60	101853	101854				
3/8	19	16.66	100	20.0	12.0	9.0	4	15.20	101861	101862				
1/2	14	20.95	125	22.0	16.0	12.0	4	18.90	101851	101852				
3/4	14	26.44	140	28.0	20.0	16.0	4	24.40	101859	* 101860				
1	11	33.24	160	32.0	25.0	20.0	4	30.70	101857	* 101858				
1 1/4	11	41.91	170	32.0	32.0	24.0	5	39.30	101850					
1 1/2	11	47.80	190	32.0	36.0	29.0	5	45.20	101849					

									N420-4	N420V-4	N420TN-4	
N420-4  												
N420V-4  V 												
N420TN-4  TiN 												
 												
$\varnothing'' d_1$ G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm			ID	ID	ID	
1/16	28	7.72	90	18.0	6.0	4.9	3	6.75	102045			
1/8	28	9.72	90	22.0	7.0	5.5	3	8.75	102048	102258	102236	
1/4	19	13.15	100	20.0	11.0	9.0	3	11.60	102047	102257	102235	
3/8	19	16.66	100	20.0	12.0	9.0	3	15.20	102053	102261	102238	
1/2	14	20.95	125	22.0	16.0	12.0	4	18.90	102046	102256	102234	
5/8	14	22.91	125	25.0	18.0	14.5	4	20.90	102054	144722		
3/4	14	26.44	140	28.0	20.0	16.0	4	24.40	102052	102260	102237	
1	11	33.24	160	32.0	25.0	20.0	4	30.70	102049	102259		
1 1/4	11	41.91	170	32.0	32.0	24.0	5	39.30	102043			
1 1/2	11	47.80	190	32.0	36.0	29.0	5	45.20	102042			
2	11	59.61	220	36.0	45.0	35.0	5	57.00	102051			
2 1/2	11	75.18	280	36.0	50.0	39.0	6	72.60	102050			

									N460-3		N460V-3		N460TN-3		N462V-3																																																																																																																																																													
N460-3  6163717273 81									 		 		 		 																																																																																																																																																													
N460V-3  1112131421 32																																																																																																																																																																												
N460TN-3  1112131421 31327374																																																																																																																																																																												
N462V-3  1112131421 32																																																																																																																																																																												
																																																																																																																																																																												
<table><tr><th>$\frac{\text{Ø}''}{G}$ d_1</th><th>P TPI</th><th>d_1 mm</th><th>l_1 mm</th><th>l_2 mm</th><th>d_2 mm</th><th>a mm</th><th></th><th></th><th>ID</th><th>ID</th><th>ID</th><th>ID</th></tr><tr><td>1/16</td><td>28</td><td>7.72</td><td>90</td><td>12.5</td><td>6.0</td><td>4.9</td><td>3</td><td>6.75</td><td>102341</td><td></td><td></td><td></td></tr><tr><td>1/8</td><td>28</td><td>9.72</td><td>90</td><td>14.0</td><td>7.0</td><td>5.5</td><td>3</td><td>8.75</td><td>102344</td><td>102457</td><td>102444</td><td>143687</td></tr><tr><td>1/4</td><td>19</td><td>13.15</td><td>100</td><td>14.0</td><td>11.0</td><td>9.0</td><td>3</td><td>11.60</td><td>102343</td><td>102456</td><td>102443</td><td>143600</td></tr><tr><td>3/8</td><td>19</td><td>16.66</td><td>100</td><td>14.0</td><td>12.0</td><td>9.0</td><td>4</td><td>15.20</td><td>102348</td><td>102460</td><td>102446</td><td>143431</td></tr><tr><td>1/2</td><td>14</td><td>20.95</td><td>125</td><td>20.0</td><td>16.0</td><td>12.0</td><td>4</td><td>18.90</td><td>102342</td><td>102455</td><td>102442</td><td>143921</td></tr><tr><td>5/8</td><td>14</td><td>22.91</td><td>125</td><td>20.0</td><td>18.0</td><td>14.5</td><td>4</td><td>20.90</td><td>102349</td><td>143711</td><td></td><td></td></tr><tr><td>3/4</td><td>14</td><td>26.44</td><td>140</td><td>22.0</td><td>20.0</td><td>16.0</td><td>4</td><td>24.40</td><td>102347</td><td>102459</td><td>102445</td><td>143688</td></tr><tr><td>1</td><td>11</td><td>33.24</td><td>160</td><td>26.0</td><td>25.0</td><td>20.0</td><td>4</td><td>30.70</td><td>102345</td><td>102458</td><td></td><td></td></tr><tr><td>1 1/4</td><td>11</td><td>41.91</td><td>170</td><td>30.0</td><td>32.0</td><td>24.0</td><td>5</td><td>39.30</td><td>102340</td><td>111608</td><td></td><td></td></tr><tr><td>1 1/2</td><td>11</td><td>47.80</td><td>190</td><td>35.0</td><td>36.0</td><td>29.0</td><td>5</td><td>45.20</td><td>102339</td><td>111609</td><td></td><td></td></tr><tr><td>2</td><td>11</td><td>59.61</td><td>220</td><td>41.0</td><td>45.0</td><td>35.0</td><td>6</td><td>57.00</td><td>102346</td><td>111503</td><td></td><td></td></tr></table>									$\frac{\text{Ø}''}{G}$ d_1	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	ID	1/16	28	7.72	90	12.5	6.0	4.9	3	6.75	102341				1/8	28	9.72	90	14.0	7.0	5.5	3	8.75	102344	102457	102444	143687	1/4	19	13.15	100	14.0	11.0	9.0	3	11.60	102343	102456	102443	143600	3/8	19	16.66	100	14.0	12.0	9.0	4	15.20	102348	102460	102446	143431	1/2	14	20.95	125	20.0	16.0	12.0	4	18.90	102342	102455	102442	143921	5/8	14	22.91	125	20.0	18.0	14.5	4	20.90	102349	143711			3/4	14	26.44	140	22.0	20.0	16.0	4	24.40	102347	102459	102445	143688	1	11	33.24	160	26.0	25.0	20.0	4	30.70	102345	102458			1 1/4	11	41.91	170	30.0	32.0	24.0	5	39.30	102340	111608			1 1/2	11	47.80	190	35.0	36.0	29.0	5	45.20	102339	111609			2	11	59.61	220	41.0	45.0	35.0	6	57.00	102346	111503										
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2	11	59.61	220	41.0	45.0	35.0	6	57.00	102346	111503																																																																																																																																																																		

G DIN ISO 228 (BSP)

≤ Ø 25.4 > Ø 25.4

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DIN 5156

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<table><thead><tr><th>Ø" d₁ G</th><th>P TPI</th><th>d₁ mm</th><th>l₁ mm</th><th>l₂ mm</th><th>d₂ mm</th><th>a mm</th><th></th><th></th></tr></thead><tbody><tr><td>1/8</td><td>28</td><td>9.72</td><td>90</td><td>14.0</td><td>7.0</td><td>5.5</td><td>3</td><td>8.75</td></tr><tr><td>1/4</td><td>19</td><td>13.15</td><td>100</td><td>14.0</td><td>11.0</td><td>9.0</td><td>*4</td><td>11.60</td></tr><tr><td>3/8</td><td>19</td><td>16.66</td><td>100</td><td>14.0</td><td>12.0</td><td>9.0</td><td>4</td><td>15.20</td></tr><tr><td>1/2</td><td>14</td><td>20.95</td><td>125</td><td>20.0</td><td>16.0</td><td>12.0</td><td>4</td><td>18.90</td></tr><tr><td>3/4</td><td>14</td><td>26.44</td><td>140</td><td>22.0</td><td>20.0</td><td>16.0</td><td>4</td><td>24.40</td></tr><tr><td>1</td><td>11</td><td>33.24</td><td>160</td><td>26.0</td><td>25.0</td><td>20.0</td><td>4</td><td>30.70</td></tr></tbody></table>									Ø" d ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			1/8	28	9.72	90	14.0	7.0	5.5	3	8.75	1/4	19	13.15	100	14.0	11.0	9.0	*4	11.60	3/8	19	16.66	100	14.0	12.0	9.0	4	15.20	1/2	14	20.95	125	20.0	16.0	12.0	4	18.90	3/4	14	26.44	140	22.0	20.0	16.0	4	24.40	1	11	33.24	160	26.0	25.0	20.0	4	30.70	ID		ID		ID			
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G DIN ISO 228 (BSP)

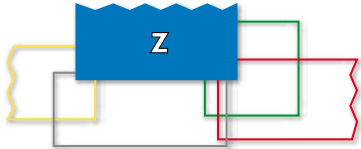
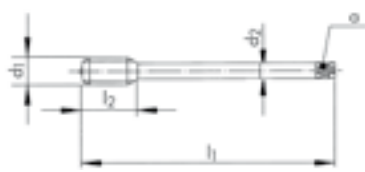
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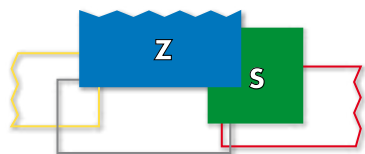
PM
Z420

HSSE
Z420

HSSE
Z460



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Z420V-4  21 22 23 41 42 51 Z420VS-4  21 22 23 24 51 61 Z460V-3  22 23 51												
												
Ø" d₁ G P TPI d₁ mm l₁ mm l₂ mm d₂ mm a mm  	ID	ID										
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Z470VS-3



VS

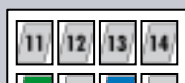


RTS
Rigid Tapping Synchro

RTS462VS-3



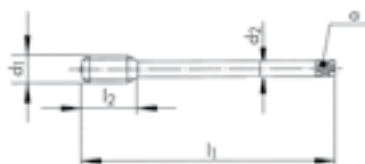
VS



RTS462VS-5



VS



Z470VS-3

RTS462VS-3

RTS462VS-5



Ø" d ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ h6 mm	α mm		
1/8	28	9.72	100	14.0	*8.0	*6.2	3	8.75
1/4	19	13.15	110	14.0	*12.0	*9.0	4	11.60
3/8	19	16.66	110	18.0	12.0	9.0	4	15.20
1/2	14	20.95	125	20.0	16.0	12.0	4	18.90

* Norme DC / * DC Norm / * Norma DC

ID

165198

165199

165200

165201

Ø" d ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ h6 mm	α mm		
1/8	28	9.72	100	14.0	*8.0	*6.2	3	8.75
1/4	19	13.15	110	14.0	*12.0	*9.0	3	11.60
3/8	19	16.66	110	18.0	12.0	9.0	4	15.20
1/2	14	20.95	125	20.0	16.0	12.0	4	18.90

* Norme DC / * DC Norm / * Norma DC

ID

ID

151861

170629

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170631

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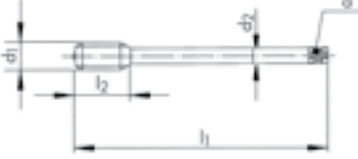
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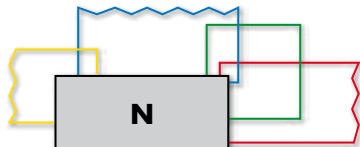
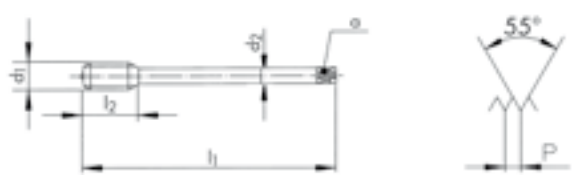
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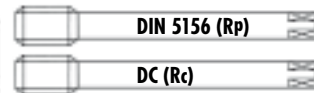
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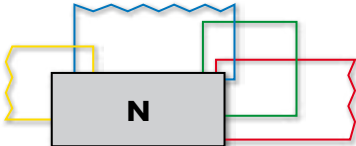
FPS FAS FORMING								FPS481VS-3	FAS481VS-3
FPS481VS-3  VS 11 12 13 14 15 21 24 63									
FAS481VS-3  VS 12 13 14 15 21 22 23 24 41 51 61 63									
 									
$\varnothing'' d_1$ G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm	 Tol.	ID	ID
1/8	28	9.72	90	22.0	7.0	5.5	9.25 + 0.05	166721	166733
1/4	19	13.15	100	20.0	11.0	9.0	12.50 + 0.05	166722	166734
3/8	19	16.66	100	20.0	12.0	9.0	16.00 + 0.05	166723	166735
1/2	14	20.95	125	22.0	16.0	12.0	20.00 + 0.05	166724	166736

									N210-1	N210-3	N210-S	
N210-1 												
N210-3  												
N210-S 												
												
												
$\varnothing'' d_1$ G	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID	ID	ID	
1/16	28	7.72	63	18.0	6.0	4.9	3	6.75		101418		
1/8	28	9.72	63	22.0	7.0	5.5	3	8.75	101404	101421	119386	
1/4	19	13.15	70	20.0	11.0	9.0	3	11.60	101403	101420	119336	
3/8	19	16.66	70	20.0	12.0	9.0	4	15.20	101409	101427	110938	
1/2	14	20.95	80	22.0	16.0	12.0	4	18.90	101402	101419	119264	
5/8	14	22.91	80	25.0	18.0	14.5	4	20.90	101411	105140	110940	
3/4	14	26.44	90	28.0	20.0	16.0	4	24.40	101408	101426	110937	
7/8	14	30.20	90	28.0	22.0	18.0	4	28.20	* 101412	* 101429		
1	11	33.24	100	32.0	25.0	20.0	4	30.70	101405	101422	110933	
1 1/8	11	37.89	125	32.0	28.0	22.0	4	35.30		101415		
1 1/4	11	41.91	125	32.0	32.0	24.0	5	39.30	101400	101414	111425	
1 3/8	11	44.32	125	32.0	36.0	29.0	5	41.80		* 101417		
1 1/2	11	47.80	140	32.0	36.0	29.0	5	45.20	101399	101413	110934	
1 3/4	11	53.74	140	36.0	40.0	32.0	5	51.20		* 101416		
2	11	59.61	160	36.0	45.0	35.0	5	57.00	101407	101425	110935	
2 1/2	11	75.18	160	36.0	50.0	39.0	6	72.60		101423		
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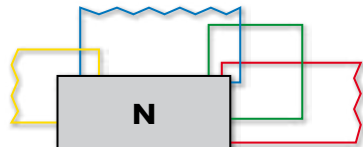
Rp, Rc DIN EN 10226

HSSE



		N420-3				N410-3		
N420-3 								
N410-3 				 		 		
								
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1/4	19	13.15	100	20.0	11.0	9.0	3 11.50	104912
3/8	19	16.66	100	20.0	12.0	9.0	3 15.00	104913
1/2	14	20.95	125	22.0	16.0	12.0	4 18.50	104914
3/4	14	26.44	140	28.0	20.0	16.0	4 24.00	104915
1	11	33.24	160	32.0	25.0	20.0	4 30.25	104916
$\varnothing'' d_1$ Rc	P TPI	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm		ID
1/8	28	9.72	71	13.0	8.0	6.2	5	104917
1/4	19	13.15	80	20.0	11.0	9.0	5	104918
3/8	19	16.66	90	20.0	12.0	9.0	5	104919
1/2	14	20.95	100	26.0	16.0	12.0	5	104920
3/4	14	26.44	110	26.0	20.0	16.0	5	104921
1	11	33.24	125	32.0	25.0	20.0	5	104922

Vc (m/min) Ø d1				
Rc	1/16" - 1/4"	3/8" - 1/2"	3/4" - 1"	1.1/4" - 2"
31 74	10	8	7	5
62	18	15	13	10

					D5800			
D5800 								
								
Ø" Rc	l ₁ mm	l ₂ mm	d ₂ mm	a mm	ID			
1/16	70	17.0	6.0	4.9	118701			
1/8	70	17.0	8.0	6.2	110531			
1/4	80	27.0	10.0	8.0	110530			
3/8	85	27.0	12.0	9.0	110535			
1/2	95	35.0	16.0	12.0	110529			
3/4	105	35.0	20.0	16.0	110534			
1	130	43.0	25.0	20.0	110532			

Kernloch-Durchmesser für kegeliges Rohrgewinde nach DIN EN 10226

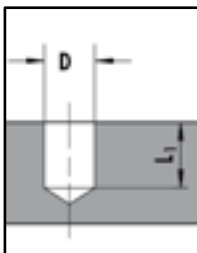
Core hole diameters for tapered pipe thread to DIN EN 10226

Bohrung zylindrisch

Vermeiden, da schnellere Abnutzung des Gewindebohrers und Klemmen

Parallel hole

Increased tap wear, not recommended

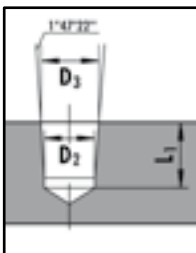


Bohrung konisch 1:16

Zylindrisch bohren nach Ø D₂ und konisch aufreiben auf Ø D₃

Tapered hole 1:16

Pre-drill at Ø D₂ and taper-ream to Ø D₃

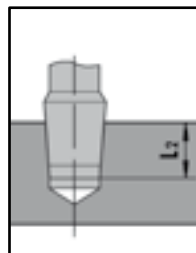


Gewindeschneiden

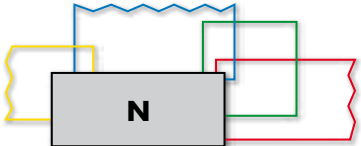
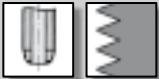
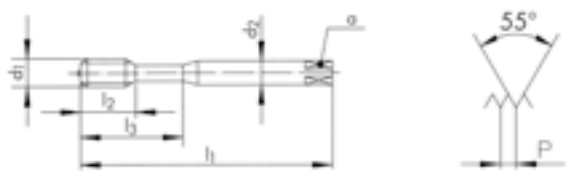
Gewindebohrer auf Nennmaß L₂ eindrehen

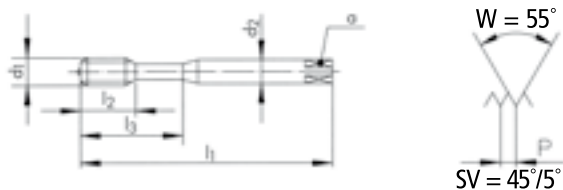
Tapped hole

Engage tap to hole depth L₂ = nominal Ø



Ø" Rc	L ₁ min. mm	D ₁ mm	D ₂ mm	D ₃ mm	L ₂ mm
1/16	11.90	6.20	6.10	6.56	10.60
1/8	11.90	8.20	8.10	8.57	10.60
1/4	17.70	11.00	10.75	11.45	15.70
3/8	18.10	14.50	14.25	14.95	16.10
1/2	24.00	18.00	17.75	18.63	21.40
3/4	25.30	23.50	23.00	24.12	21.50
1	30.60	29.50	29.00	30.29	26.30

										N1110-3	N1210-3	N1120-4	N1220-4
N1110-3  													
N1210-3  													
N1120-4  													
N1220-4  													
													
Ø" d ₁ W	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
1/8	40	3.17	48	11.0	18	3.15	2.50	3	2.50	103025		103126	
5/32	32	3.96	53	13.0	21	4.00	3.15	3	3.10	103031		103130	
3/16	24	4.76	58	16.0	25	5.00	4.00	3	3.60	103026		103127	
1/4	20	6.35	66	19.0	30	6.30	5.00	3	4.90	103024		103125	
5/16	18	7.93	72	22.0	35	8.00	6.30	3	6.40	103030		103129	
3/8	16	9.52	80	24.0	39	10.00	8.00	3	7.70	103028		103128	
7/16	14	11.11	85	22.0		8.00	6.30	3	9.10		103642		103771
1/2	12	12.70	89	24.0		9.00	7.10	3	10.30		103634		103767
9/16	12	14.28	95	24.0		11.20	9.00	3	11.90		* 103644		
5/8	11	15.87	102	32.0		12.50	10.00	3	13.30		103641		103770
3/4	10	19.05	112	33.0		14.00	11.20	3	16.20		103640		103769
1	8	25.40	130	45.0		18.00	14.00	4	21.90		* 103635		

										N1110-3		N1210-3		N5120																																																																									
N1110-3 N1210-3 N5120										 NEW		 NEW		 NEW																																																																									
																																																																																							
																																																																																							
<table><tr><th>Ø" d₁</th><th>P</th><th></th><th>l₁</th><th>l₂</th><th>l₃</th><th>d₂</th><th>a</th><th></th><th></th></tr><tr><th>W</th><th>TPI/mm</th><th></th><th>mm</th><th>mm</th><th>mm</th><th>mm</th><th>mm</th><th></th><th>→ ←</th></tr><tr><td>5</td><td>36 TPI/1"</td><td>B6</td><td>58</td><td>16.0</td><td>25</td><td>5.0</td><td>4.0</td><td>3</td><td>4.20*</td></tr><tr><td>6.82</td><td>0.625</td><td>B8</td><td>66</td><td>19.0</td><td>30</td><td>7.1</td><td>5.6</td><td>3</td><td>6.15*</td></tr></table>										Ø" d ₁	P		l ₁	l ₂	l ₃	d ₂	a			W	TPI/mm		mm	mm	mm	mm	mm		→ ←	5	36 TPI/1"	B6	58	16.0	25	5.0	4.0	3	4.20*	6.82	0.625	B8	66	19.0	30	7.1	5.6	3	6.15*	ID																																					
Ø" d ₁	P		l ₁	l ₂	l ₃	d ₂	a																																																																																
W	TPI/mm		mm	mm	mm	mm	mm		→ ←																																																																														
5	36 TPI/1"	B6	58	16.0	25	5.0	4.0	3	4.20*																																																																														
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										111143																																																																													
<table><tr><th>Ø" d₁</th><th>P</th><th></th><th>l₁</th><th>l₂</th><th>l₃</th><th>d₂</th><th>a</th><th></th><th></th></tr><tr><th>SV</th><th>mm</th><th></th><th>mm</th><th>mm</th><th>mm</th><th>mm</th><th>mm</th><th></th><th>→ ←</th></tr><tr><td>10</td><td>0.833</td><td>W10</td><td>80</td><td>24.0</td><td>39</td><td>10.0</td><td>8.0</td><td>3</td><td>8.80*</td></tr><tr><td>12</td><td>1.250</td><td>W12</td><td>89</td><td>24.0</td><td></td><td>9.0</td><td>7.1</td><td>3</td><td>10.50*</td></tr><tr><td>15</td><td>1.250</td><td>W15</td><td>90</td><td>23.0</td><td></td><td>11.2</td><td>9.0</td><td>3</td><td>13.50*</td></tr><tr><td>20</td><td>1.666</td><td>W20</td><td>112</td><td>37.0</td><td></td><td>14.0</td><td>11.2</td><td>4</td><td>17.80*</td></tr><tr><td>25</td><td>1.693</td><td>W25</td><td>120</td><td>30.0</td><td></td><td>18.0</td><td>14.0</td><td>4</td><td>22.70*</td></tr></table>										Ø" d ₁	P		l ₁	l ₂	l ₃	d ₂	a			SV	mm		mm	mm	mm	mm	mm		→ ←	10	0.833	W10	80	24.0	39	10.0	8.0	3	8.80*	12	1.250	W12	89	24.0		9.0	7.1	3	10.50*	15	1.250	W15	90	23.0		11.2	9.0	3	13.50*	20	1.666	W20	112	37.0		14.0	11.2	4	17.80*	25	1.693	W25	120	30.0		18.0	14.0	4	22.70*	ID		ID					
Ø" d ₁	P		l ₁	l ₂	l ₃	d ₂	a																																																																																
SV	mm		mm	mm	mm	mm	mm		→ ←																																																																														
10	0.833	W10	80	24.0	39	10.0	8.0	3	8.80*																																																																														
12	1.250	W12	89	24.0		9.0	7.1	3	10.50*																																																																														
15	1.250	W15	90	23.0		11.2	9.0	3	13.50*																																																																														
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*Tol. $\begin{matrix} +0.1 \text{ mm} \\ 0 \end{matrix}$																																																																																							
																																																																																							
<table><tr><th>Ø d₁</th><th>P</th><th></th><th>d₂</th><th>l₁</th><th></th><th></th></tr><tr><th>W</th><th>mm</th><th></th><th>mm</th><th>mm</th><th></th><th></th></tr><tr><td>6.82</td><td>0.625</td><td>B6</td><td>25.0</td><td>9.0</td><td>4</td><td>6.77</td></tr></table>										Ø d ₁	P		d ₂	l ₁			W	mm		mm	mm			6.82	0.625	B6	25.0	9.0	4	6.77			ID																																																						
Ø d ₁	P		d ₂	l ₁																																																																																			
W	mm		mm	mm																																																																																			
6.82	0.625	B6	25.0	9.0	4	6.77																																																																																	
												130215																																																																											

NPT, NPTF

Maschinengewindebohrer, NPT ANSI B1.20.1 und NPTF B1.20.3
Directory - Machine taps, NPT ANSI B1.20.1 and NPTF B1.20.3

	N						
Merkmale Characteristics		 	 				
							
Lochart Hole type							
							
	N410-3	N410V-3	N411V-3	D5800			
NPT DIN lang NPT DIN long DC	170	170	170	171			
NPTF DIN lang NPTF DIN long DC	170			171			

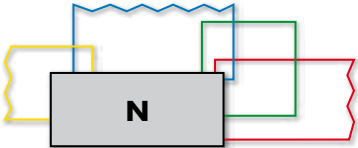
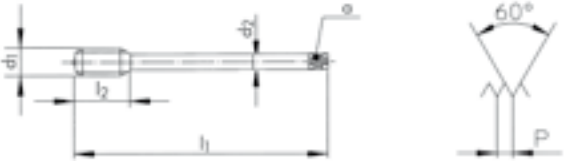
	N						
Merkmale Characteristics		 	 	 	 		
							
Lochart Hole type							
							
	N420-3	N410-1	N410-2	N410-3	N410-S	N410-8	
PG DIN lang PG DIN long DIN 40433	172						
TR DIN lang TR DIN long DC		173	173	173	173	172	
Toleranz Tolerance TR 7H				173	173	172	

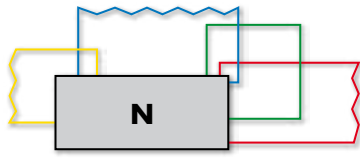
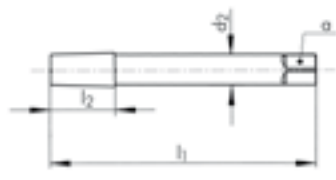
NPT, NPTF

ANSI B1.20.1, ANSI B1.20.3

HSSE



							N410-3	N410V-3	N411V-3	N410-3
N410-3  31 62 74										
N410V-3  V 11 12 14 21 32										
N411V-3  V 11 12 14 21 32										
N410-3  31 62 74										
							   			
							NPT NPT NPT NPTF			
Ø" d₁ NPT, NPTF P TPI l₁ mm l₂ mm d₂ mm a mm 							ID	ID	ID	ID
1/16							101961	102021	102031	101971
1/8							101964	102024	102034	101974
1/4							101963	102023	102033	101973
3/8							101968	102028	102038	101978
1/2							101962	102022	102032	101972
3/4							101967	102027	102037	101977
1							101965	102025	102035	101975
1 1/4							101960	102020		
1 1/2							101959	102019		
2							101966	102026		

					D5800			
D5800 								
								
Ø" NPT, NPTF	l ₁ mm	l ₂ mm	d ₂ mm	a mm	ID			
1/16	70	17.0	6.0	4.9	118701			
1/8	70	17.0	8.0	6.2	110531			
1/4	80	27.0	10.0	8.0	110530			
3/8	85	27.0	12.0	9.0	110535			
1/2	95	35.0	16.0	12.0	110529			
3/4	105	35.0	20.0	16.0	110534			
1	130	43.0	25.0	20.0	110532			

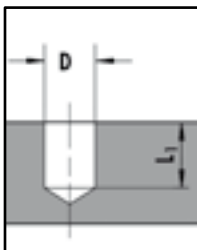
Kernloch-Durchmesser für NPT- und NPTF-Gewinde Core hole diameters for NPT and NPTF threads

Bohrung zylindrisch

Vermeiden, da schnellere Abnutzung des Gewindebohrers und Klemmen

Parallel hole

Increased tap wear, not recommended



*Es wird empfohlen, das Kernloch auf D₃ maxi konisch aufzureiben.

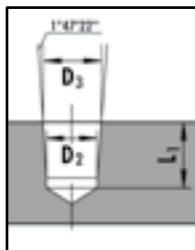
*Taper-ream at upper limit D₃ is recommended

Bohrung konisch 1:16

Zylindrisch bohren nach Ø D₂ und konisch aufreiben auf Ø D₃

Tapered hole 1:16

Pre-drill at Ø D₂ and taper-ream to Ø D₃

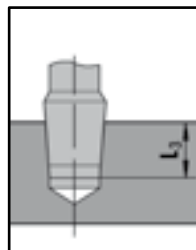


Gewindeschneiden

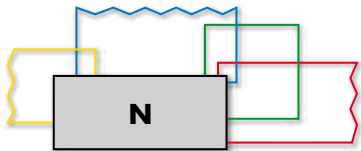
Gewindebohrer auf Nennmass L₃ eindrehen

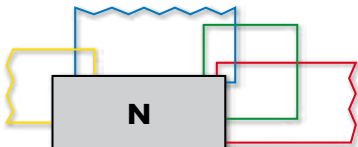
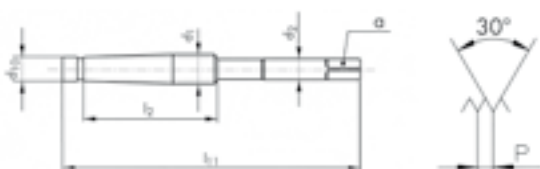
Tapped hole

Engage tap to hole depth L₃ = nominal Ø



Ø" NPT, NPTF	D mm	L ₁ mm	D ₂ mm	NPT D ₃ (+0.05) mm	NPTF D ₃ (+0.05) mm	L ₃ mm
1/16	6.15	12.00	6.00	6.39	6.41	10.20
1/8	8.50	12.00	8.30	8.74	8.76	10.30
1/4	11.00	17.50	10.80	11.36	11.40	15.10
3/8	14.50	17.50	14.20	14.80	14.84	15.30
1/2	17.90	23.00	17.50	18.32	18.33	20.00
3/4	23.20	23.00	22.80	23.67	23.68	20.50
1	29.00	28.00	28.60	29.69	29.72	24.60

		N420-3			N410-8
N420-3  					
N410-8  					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					

									N410-1	N410-2	N410-3	N410-S
N410-1 N410-2 N410-3 N410-S									   			
												
									7H		7H	
$\varnothing d_1$ TR	P mm	l_1 mm	l_2 mm	d_{10} mm	d_2 mm	α mm			ID	ID	ID	ID
10	2.00	85	30.0	8.20	7.0	5.5	3	8.20	* 101827	* 101838	* 101979	* 110972
12	3.00	115	45.0	9.25	8.0	6.2	3	9.25	* 101828	* 101839	* 101980	* 110973
16	4.00	165	65.0	12.25	11.0	9.0	3	12.25	* 101830	* 101841	* 101982	* 110975
20	4.00	175	65.0	16.25	14.0	11.0	3	16.25	* 101832	* 101843	* 101984	* 110977

EG

Maschinengewindebohrer, Aufnahmegewinde für Gewindeeinsätze EG M, EG UNC, EG UNF Directory - Machine taps for wire screw thread inserts EG M, EG UNC, EG UNF

	N				Z	S	
Merkmale Characteristics 	 	 	 	 	 	 	 
							
Lochart Hole type 							
	N320-4	N320V-4	N360-3	N360V-3	Z370VS-3	S320VS-4	S360VS-3
DIN lang DIN long	~DIN 40435	176	176	177	177		
DIN lang DIN long	~DIN 2184-1	180/183		180/183	181/184	184	184
Gewinde Thread	EG M	176	176	177	177		
Gewinde Thread	EG UNC	180		180	181		
Gewinde Thread	EG UNF	183		183	184	184	184
	N420-4	N420V-4	N460-3	N460V-3			
DIN lang DIN long	~DIN 40435	176	176	177	177		
DIN lang DIN long	~DIN 2184-1	180/183		180/183			
Gewinde Thread	EG M	176	176	177	177		
Gewinde Thread	EG UNC	180		180			
Gewinde Thread	EG UNF	183		183			

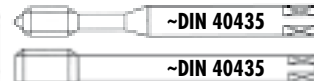


≤ Ø 2.8

> Ø 2.8

PM

HSSE



~DIN 40435

~DIN 40435

										N320-4		N320V-4		N420-4		N420V-4	
N320-4 N320V-4 V N420-4 N420V-4 V																	



										N360-3	N360V-3	N460-3	N460V-3
N360-3 													
N360V-3 													
N460-3 													
N460V-3 													
Ø d ₁ EG M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm			ID	ID	ID	ID
2	0.40	2.520	50	9.0		2.8	2.1	2	2.10	101599			
2.5	0.45	3.084	56	5.5	18	3.5	2.7	3	2.65	101600			
3	0.50	3.650	56	6.5	20	4.0	3.0	3	3.15	101601	142813		
4	0.70	4.910	70	9.0	25	6.0	4.9	3	4.20	101602	142814		
5	0.80	6.040	80	11.0	30	6.0	4.9	3	5.25	101603	142815		
6	1.00	7.300	80	11.0	30	7.0	5.5	3	6.30	101604	142816		
8	1.25	9.624	100	14.0	39	10.0	8.0	3	8.40	101605	142817		
10	1.50	11.948	100	14.0		9.0	7.0	3	10.40			102335	142818
12	1.75	14.274	110	14.0		11.0	9.0	3	12.50			102336	142819
14	2.00	16.598	110	18.0		12.0	9.0	3	14.60			102337	142820
16	2.00	18.598	125	21.0		14.0	11.0	3	16.60			102338	142821



aero

SA320-4

SA350-3

TL320VS-4

VS

TL351VS-3

VS

SA320-4
SA350-3
TL320VS-4
TL351VS-3


$\varnothing d_1$ EG M	P mm	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	α mm		
3	0.50	3.650	56	13.0		4.0	3.0	3	3.15
4	0.70	4.910	70	15.0		6.0	4.9	3	4.20
5	0.80	6.040	80	15.0	23	6.0	4.9	3	5.25
6	1.00	7.300	80	15.0	23	7.0	5.5	3	6.30
8	1.25	9.624	100	20.0	33	10.0	8.0	3	8.40

ID
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147676
147682
*** 152001**
150478
147678
147684
*** 152002**
152003
147680
147686
150184
147688
147692
*** 152004**
152005
149354
149356
*** 152088**
152089



aero

SA390-3



53

SA390-3



$\varnothing d_1$ EG M	P mm	d_1 mm	l_1 mm	l_2 mm	d_2 mm	α mm		
3	0.50	3.650	56	13.0	4.0	3.0	3	3.15
4	0.70	4.910	70	15.0	6.0	4.9	3	4.20
5	0.80	6.040	80	20.0	6.0	4.9	3	5.25
6	1.00	7.300	80	20.0	7.0	5.5	3	6.30
8	1.25	9.624	100	30.0	10.0	8.0	3	8.40
10	1.50	11.948	110	35.0	12.0	9.0	3	10.40

ID

149669

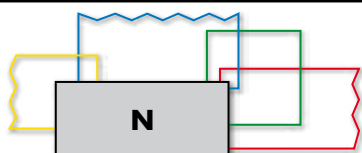
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149710

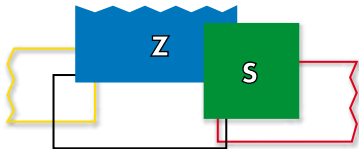
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149748

149767



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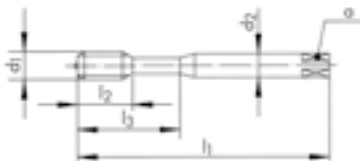
Z370VS-3



Z370VS-3



3B



Ø" d ₁ EG UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	α mm		
4	40	3.67	56	6.5	20	4.0 (h9)	3.0	3	3.05
6	32	4.53	70	9.0	25	6.0	4.9	3	3.75
8	32	5.19	70	9.0	25	6.0	4.9	3	4.45

ID

165126
165127
165128



aero

SA320-4



SA350-3



TL320VS-4



VS



TL351VS-3



VS



SA320-4

SA350-3

TL320VS-4

TL351VS-3



3B

3B

3B

3B

Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	a		
EG UNC	TPI	mm	mm	mm	mm	mm	mm		
4	40	3.67	56	13.0		4.0	3.0	3	3.05
6	32	4.53	70	15.0		6.0	4.9	3	3.75
8	32	5.19	70	15.0		6.0	4.9	3	4.45
1/4	20	8.00	90	18.0	29	8.0	6.2	3	6.70
5/16	18	9.77	100	20.0	33	10.0	8.0	3	8.40

ID

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149073

149075

* 152030

152031

149121

149123

* 152040

152041

149170

149172

* 152052

152053

149284

149286

* 152073

152074

* 149358

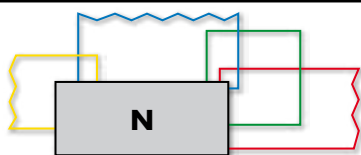
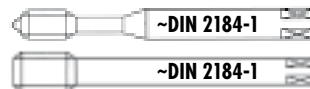
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* 152090

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HSSE



N320-4

N420-4

N360-3

N460-3



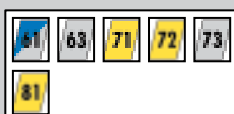
N320-4



N420-4



N360-3



N460-3



Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm		
6	40	4.33	63	14.0	21	4.5	3.4	3	3.70
8	36	5.08	70	15.0	25	6.0	4.9	3	4.40
10	32	5.85	80	17.0	30	6.0	4.9	3	5.10
1/4	28	7.52	90	20.0	35	8.0	6.2	3	6.65
5/16	24	9.31	90	20.0	35	9.0	7.0	3	8.20
3/8	24	10.89	100	19.0		8.0	6.2	3	9.80
1/2	20	14.35	100	24.0		11.0	9.0	3	13.10

ID	ID
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118882	
104941	
110234	
118876	
	118873
	118865

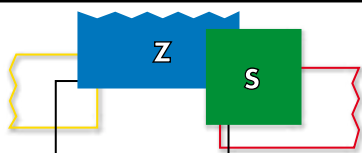
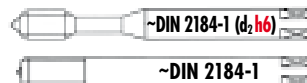
Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	α mm		
6	40	4.33	63	7.5	21	4.5	3.4	3	3.70
8	36	5.08	70	9.0	25	6.0	4.9	3	4.40
10	32	5.85	80	11.0	30	6.0	4.9	3	5.10
1/4	28	7.52	90	12.5	35	8.0	6.2	3	6.65
5/16	24	9.31	90	12.5	35	9.0	7.0	3	8.20
3/8	24	10.89	100	19.0		8.0	6.2	3	9.80
1/2	20	14.35	100	14.0		11.0	9.0	3	13.10

ID	ID
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110960	
104946	
110020	
111619	
	110027
	104951

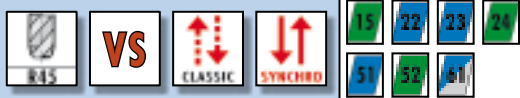
EG UNC
EG UNF



PM



Z370VS-3



S320VS-4



S360VS-3



SA390-3



Z370VS-3

S320VS-4

S360VS-3

SA390-3

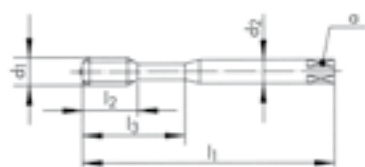


3B

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3B



Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h6 mm	a mm		
10	32	5.85	80	11.0	30	6.0	4.9	3	5.10
1/4	28	7.52	90	12.5	35	8.0	6.2	3	6.65
5/16	24	9.31	90	12.5	35	*8.0	*6.2	3	8.20

* Norme DC / * DC Norm / * Norma DC

Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	5.85	80	17.0	30	6.0	4.9	3	5.10
1/4	28	7.52	90	20.0	35	8.0	6.2	3	6.65
5/16	24	9.31	90	20.0	35	9.0	7.0	3	8.20

Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	a mm		
10	32	5.85	80	11.0	30	6.0	4.9	3	5.10
1/4	28	7.52	90	12.5	35	8.0	6.2	3	6.65
5/16	24	9.31	90	12.5	35	9.0	7.0	3	8.20

Ø" d ₁ EG UNF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm			
10	32	5.85	80	20.0	6.0	4.9	3	5.10	
1/4	28	7.52	90	25.0	8.0	6.2	3	6.65	

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165129

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165131

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SA350-3

TL320VS-4

TL351VS-3

SA320-4



52 53

SA350-3



52 53

TL320VS-4



VS

41 42

TL351VS-3



VS

41 42



Ø" d ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂	a		
EG UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	5.85	80	15.0	23	6.0	4.9	3	5.10
1/4	28	7.52	90	18.0	29	8.0	6.2	3	6.65
5/16	24	9.31	90	20.0	31	9.0	7.0	3	8.20

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149192

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148008

146099

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148014

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Allgemeines

Der DC-Kronengewindebohrer mit "V"-Oberflächenbehandlung ist ein Hochleistungswerkzeug, das eine sichere Toleranzhaltigkeit und eine sehr saubere Oberflächenqualität garantiert.

Anwendungsbereich

Dank der stirnseitigen Aussparung, die die Spanaufnahme erlaubt, kann der Kronengewindebohrer sowohl für das Schneiden von Durchgangs- als auch von Sacklöchern verwendet werden. Er ist bestimmt für die Bearbeitung von Werkstoffen mit einer Zugfestigkeit von bis zu 850 N/mm² und einer Bruchdehnung von maximal 30 %.

Einsatz

Der DC-Kronengewindebohrer kann für Durchgangslöcher jeglicher Gewindetiefe eingesetzt werden. Für einwandfreie Sacklochgewinde muss jedoch die Tiefe der Kernlochbohrung jeweils entsprechend angepasst und die nachstehenden Hinweise befolgt werden:

- Gewinde schneiden, bis Rutschkupplung anspricht
- Gewindebohrer zurückdrehen und Späne entfernen
- Gewinde fertig schneiden.

Spezielle Anforderungen

Das einwandfreie Funktionieren der DC-Kronengewindebohrer und der damit erzielten Gewindequalität sind abhängig von folgenden Voraussetzungen:

- Zentrierfehler darf 0.1 mm nicht überschreiten
- Einsatz eines entsprechenden Gewindeschneidfutters, das einen einwandfreien Rundlauf ermöglicht
- Korrekte Schnittgeschwindigkeit wählen
- Schneidöl dem Werkstoff anpassen
- Einspannen in einem Gewindeschneidfutter mit Längenausgleich und Überlastungskupplung
- Überlastungskupplung so einstellen, dass das Ansprechdrehmoment nur leicht höher liegt als das Schneiddrehmoment.

Es ist empfehlenswert, beim ersten Gewinde die Rutschkupplung bis zum Gleiten zu entlasten und dann schrittweise anzuziehen, bis der Gewindebohrer mitgenommen wird.

Spanaufnahme

Die Spanaufnahmekapazität der stirnseitigen Krone ist ausreichend für:

Gewindedurchmesser	Ø 20 - 29 mm	≥ Ø 30 mm
M	-	1.4 x D
MF	1.2 x D	1.4 x D
UN-8	-	1.4 x D
G	1.2 x D	1.4 x D

Schnittgeschwindigkeiten und Drehzahlen (Richtwerte) - Cutting and spindle speeds (guide values)

M	P	V _c (m/min)	n (U/min)	MF	P	V _c (m/min)	n (U/min)	MF	P	V _c (m/min)	n (U/min)	UN-8	P	V _c (m/min)	n (U/min)
30	3.5	7.9	84	22	1.5	8.0	116	45	1.5	6.9	49	1 1/4"	8.0	7.8	77
33	3.5	7.7	74	24	1.5	8.0	106	45	2.0	6.9	49	1 3/8"	8.0	7.6	69
36	4.0	7.5	66	26	1.5	7.9	97	48	1.5	6.6	44	1 1/2"	8.0	7.3	62
39	4.0	7.3	60	28	1.5	7.9	90	48	2.0	6.6	44	1 5/8"	8.0	7.1	55
42	4.5	7.1	54	30	1.5	7.9	84	48	3.0	6.6	44	1 3/4"	8.0	6.9	49
45	4.5	6.9	49	30	2.0	7.9	84	48	4.0	6.6	44	1 7/8"	8.0	6.7	45
48	5.0	6.6	44	32	1.5	7.8	77	50	1.5	6.5	41	2"	8.0	6.4	40
52	5.0	6.4	39	32	2.0	7.8	77	52	1.5	6.4	39				
56	5.5	6.1	35	33	1.5	7.7	74	52	3.0	6.4	39				
60	5.5	5.8	31	33	2.0	7.7	74	55	1.5	6.2	36				
64	6.0	5.5	28	34	1.5	7.6	71	56	4.0	6.1	35				
68	6.0	5.2	25	35	1.5	7.6	69	60	2.0	5.8	31				
				36	1.5	7.5	66	64	4.0	5.5	28				
				36	2.0	7.5	66	68	4.0	5.2	25				
				36	3.0	7.5	66	72	6.0	5.0	22				
				38	1.5	7.3	62	76	6.0	4.7	20				
				40	1.5	7.2	57	80	2.0	4.4	18				
				40	2.0	7.2	57	80	4.0	4.4	18				
				42	1.5	7.1	54	80	6.0	4.4	18				
				42	2.0	7.1	54	90	6.0	3.7	13				
				42	3.0	7.1	54	100	6.0	3.0	10				
				42	4.0	7.1	54	110	6.0	2.5	7				

G	P	V _c (m/min)	n (U/min)
	TPI		
1"	11.0	7.7	74
1 1/4"	11.0	7.1	54
1 1/2"	11.0	6.6	44
2"	11.0	5.8	31
2 1/4"	11.0	5.4	26
2 1/2"	11.0	4.8	20
2 3/4"	11.0	4.3	17
3"	11.0	3.8	14

General information

The DC crown tap with "V" surface treatment to prevent cold welding is a tool of high performance, which offers a very high quality surface finish of the tapped threads.

Application rang

Thanks to the front recess providing space for the chip collection, the DC crown tap is suitable for both, through and blind hole tapping. The crown tap can be used for materials with a tensile strength up to 850 N/mm² and an elongation of maximum 30 %.

Utilization

The crown tap can be used for through holes of any depth. However, for an optimal blind hole threading, the core hole depth must be adapted accordingly and the following application instructions must be followed:

- Tap until tapping head clutch slips
- Retract tap and clear chips
- Tap to the full depth.

General hints

The efficient operation of DC crown taps, as well as the quality of the cut threads, depend on observation of the following rules:

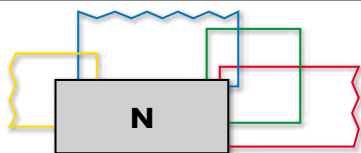
- Do not exceed the maximum permissible centering error of 0.1 mm
- The tap must run concentrically, use a suitable tapping head
- Tap at the correct cutting speed
- Select a coolant to suit the material being tapped
- Use a tapping head with axial compensation and safety clutch
- Set the safety clutch so that it will slip at just above the tapping torque.

When tapping the first hole, slacken the clutch until it slips, then gradually tighten it until the tap is driven.

Chip accumulation

The chip accumulation capacity of the recess is the following :

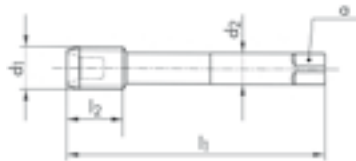
Thread diameter	Ø 20 - 29 mm	≥ Ø 30 mm
M	-	1.4 x D
MF	1.2 x D	1.4 x D
UN-8	-	1.4 x D
G	1.2 x D	1.4 x D



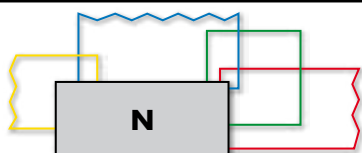
N470V-4

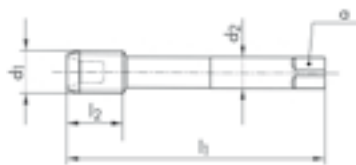


N470V-4



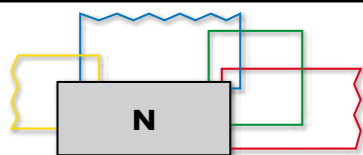
$\varnothing d_1$ M	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
30	3.50	180	39.0	22.0	18.0	5	26.50	102575
33	3.50	180	39.0	22.0	18.0	5	29.50	* 102576
36	4.00	200	43.0	25.0	20.0	5	32.00	102577
39	4.00	200	43.0	25.0	20.0	5	35.00	102578
42	4.50	220	47.0	28.0	22.0	5	37.50	102579
45	4.50	220	47.0	28.0	22.0	5	40.50	102580
48	5.00	240	52.0	32.0	24.0	5	43.00	102581
52	5.00	240	52.0	32.0	24.0	5	47.00	102582
56	5.50	260	58.0	36.0	29.0	6	50.50	102583
60	5.50	260	58.0	36.0	29.0	6	54.50	102584
64	6.00	290	64.0	40.0	32.0	6	58.00	102585
68	6.00	290	64.0	40.0	32.0	6	62.00	* 102586


N470V-3

N470V-3


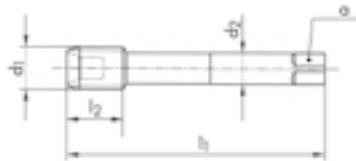
$\varnothing d_1$ MF	P mm	l_1 mm	l_2 mm	d_2 mm	a mm			ID
$\Delta 22$	1.50	125	28.0	18.0	14.5	4	20.50	* 102526
$\Delta 26$	1.50	140	30.0	18.0	14.5	4	24.50	* 102529
$\Delta 28$	1.50	140	30.0	20.0	16.0	4	26.50	* 102530
30	1.50	160	32.0	22.0	18.0	5	28.50	* 102531
32	1.50	160	32.0	22.0	18.0	5	30.50	* 102533
34	1.50	160	26.0	22.0	18.0	5	32.50	* 102537
35	1.50	175	28.0	25.0	20.0	5	33.50	* 102538
36	2.00	175	35.0	25.0	20.0	5	34.00	102540
36	3.00	200	43.0	25.0	20.0	5	33.00	102541
38	1.50	175	28.0	25.0	20.0	5	36.50	* 102542
40	1.50	190	31.0	28.0	22.0	5	38.50	* 102543
40	2.00	190	38.0	28.0	22.0	5	38.00	* 102544
42	2.00	190	38.0	28.0	22.0	5	40.00	102546
42	3.00	220	47.0	28.0	22.0	5	39.00	102547
48	1.50	205	34.0	32.0	24.0	5	46.50	* 102551
48	3.00	205	41.0	32.0	24.0	5	45.00	102553
52	3.00	205	41.0	32.0	24.0	5	49.00	102557
56	4.00	260	58.0	36.0	29.0	6	52.00	102559
64	4.00	290	64.0	40.0	32.0	6	60.00	102561
80	4.00	270	56.0	45.0	35.0	7	76.00	* 102564





N470V-3

N470V-3



Ø" d ₁ UN	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
1 1/4	8	31.75	180	39.0	22.0	18.0	5	28.70
1 3/8	8	34.92	180	39.0	22.0	18.0	5	31.80
1 1/2	8	38.10	200	43.0	25.0	20.0	5	35.00
1 5/8	8	41.27	220	47.0	28.0	22.0	5	38.20
1 3/4	8	44.45	220	47.0	28.0	22.0	5	41.40
1 7/8	8	47.62	240	52.0	32.0	24.0	5	44.50
2	8	50.80	205	41.0	32.0	24.0	5	47.70
2 1/4	8	57.15	220	45.0	36.0	29.0	6	54.10
2 1/2	8	63.50	220	45.0	36.0	29.0	6	60.40

ID

102566

102568

102565

102569

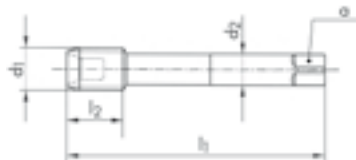
102567

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111879



Ø" d ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	a mm		
Δ 1/2	14	20.95	140	32.0	16.0	12.0	4	18.90
Δ 3/4	14	26.44	150	34.0	20.0	16.0	4	24.40
1	11	33.24	160	32.0	22.0	18.0	5	30.70
1 1/4	11	41.91	190	38.0	28.0	22.0	5	39.30
1 1/2	11	47.80	205	41.0	32.0	24.0	5	45.20
1 3/4	11	53.74	205	41.0	32.0	24.0	5	51.20
2	11	59.61	220	45.0	36.0	29.0	6	57.00

ID

* 102521

102525

102522

102519

102518

* 102520

102524

Δ



KOMBI-GEWINDEBOHRER

Allgemeines

Der DC-Kombi-Gewindebohrer ist ein Werkzeug, das das Schneiden des Kernloches und des Gewindes in einem Arbeitsgang erlaubt, ohne dass ein Werkzeugwechsel notwendig ist.

Er ist ideal für den Einsatz auf CNC-Maschinen, Bohrtasteinheiten, Drehbänken mit Revolverkopf und Gewindeschneidmaschinen.

Anwendungsbereich

Werkstoffe mit einer Zugfestigkeit bis 750 N/mm² lassen sich mit dem DC-Kombi-Gewindebohrer bearbeiten, also gewisse Stähle, Grauguss, Messing, Aluminium.

Spezielle Anforderungen

- Das Kernloch muss vollständig durchbohrt sein, bevor der Gewindebohrer zu schneiden beginnt.
- Bei der Bearbeitung von kurzspanenden Werkstoffen darf die Gewindetiefe $1.8 \times D$ nicht überschreiten (Typ N5952 bis $2 \times D$).
- Bei der Bearbeitung von langspanenden Werkstoffen darf die Gewindetiefe $1.2 \times D$ nicht überschreiten.
- Schmieren wie beim Gewindeschneiden.

Schnittgeschwindigkeiten

Wenn die Maschine, auf der die Kombiboherer eingesetzt werden, es erlaubt, ist es vorteilhaft, die idealste Drehzahl für das Gewindeschneiden zu wählen. (Siehe dazu unsere Anwendungstabelle auf Seite 7).

Für Maschinen, auf denen eine unterschiedliche Drehzahl für das Bohren und Gewindeschneiden nicht eingestellt werden kann, empfehlen wir die nachstehend aufgeführten Schnittwerte.

Programmierungs-Instruktionen

Ansenkung:

Gleichzeitig zentrieren und ansenken.

Programmschritte bei Spindelvorschub und Rotation, 100 % synchronisiert (Idealfall):

- 1) Kombi-Gewindebohrer im Eilgang in Arbeitsposition bringen
- 2) Bohren:
 - Drehzahl einstellen
 - Vorschub einstellen
 - lange Späne vermeiden
 - Späne entfernen
- 3) Gewindeanschnitt in Startposition bringen
- 4) Gewindeschneiden:
 - Drehzahl einstellen
 - Vorschub (100 %) einstellen
 - Gewindetiefe einstellen
 - Gewindebohrer muss vor Arbeitsbeginn spanfrei sein
- 5) Kombi-Gewindebohrer zurück in Startposition.

Programmschritte bei nicht voller Synchronisation von Spindelvorschub und Rotation:

Wichtig: Kombi-Gewindebohrer in Futter spannen, mit blockierter Andrucksfeder, jedoch mit Längenausgleich.

- 1) Kombi-Gewindebohrer im Eilgang in Arbeitsposition bringen
- 2) Bohren:
 - Drehzahl einstellen
 - Vorschub einstellen
 - lange Späne vermeiden
 - Späne entfernen
- 3) Gewindeanschnitt in Startposition bringen
- 4) Gewindeschneiden:
 - Drehzahl einstellen
 - Vorschub = 90 - 95 %
 - Gewindetiefe einstellen
- 5) Kombi-Gewindebohrer zurück in Startposition.

Schnittgeschwindigkeiten und Drehzahlen (Richtwerte)

Werkstoffgruppen	Vc (m/min)	Durchmesser und Drehzahl U/min										
		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Stähle bis 500 N/mm ²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Stähle über 500 N/mm ²	15	1600	1200	950	800	600	480	400	340	300	270	240
Grauguss weich	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Grauguss hart	15	1600	1200	950	800	600	480	400	340	300	270	240
Messing	25	2650	2000	1600	1330	950	800	660	570	500	450	400
Aluminium	25	2650	2000	1600	1330	950	800	660	570	500	450	400

COMBINATION DRILL/TAPS

General information

DC combination drill/taps - two tools in one, which allows the drilling and the threading of a workpiece without changing the tool.

It is the optimal solution for CNC-machines, drilling heads, turret lathes and tapping machines.

Application rang

DC combination drill/taps are recommended for use in materials with a tensile strenght up to 750 N/mm², such as certain steels, cast iron, aluminium, brass.

General hints

- The core hole must be completely drilled through before the tap starts cutting.
- In short chipping materials, the depth of thread should not exceed 1.8 x D (type N5952 up to 2 x D).
- In long chipping materials, the depth of thread should not exceed 1.2 x D.
- Lubricate as for tapping.

Cutting speeds

On drilling heads and CNC-machines, the ideal speeds for drilling and tapping are selected (see our application chart on page 7).

If the same speed is selected for both drilling and tapping, we recommend the values indicated below.

Programming instructions

Countersinking:

Center and countersink simultaneously.

Programming steps for spindle feed and rotation 100 % synchronised (ideal case):

- 1) Combi-drill-tap in rapid to start position
- 2) Drilling:
 - set speed
 - set feed
 - avoid long chips
 - clear shavings
- 3) Tapping section in start position
- 4) Tapping:
 - set speed
 - feed = 100 % pitch
 - set thread depth
 - tap must be free of swarf before starting to cut
- 5) Combi-drill-tap returns to start position.

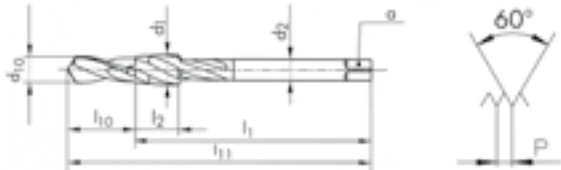
Programming steps for spindle feed rotation not fully synchronised:

Important: Mount combination drill-tap in chuck with locked pressure spring, but with axial compensation on pull.

- 1) Combi-drill-tap in rapid to start position
- 2) Drilling:
 - set speed
 - set feed
 - avoid long chips
 - clear shavings
- 3) Tapping section in start position
- 4) Tapping:
 - set speed
 - feed = 90 - 95 % pitch
 - set thread depth
- 5) Combi-drill-tap returns to start position.

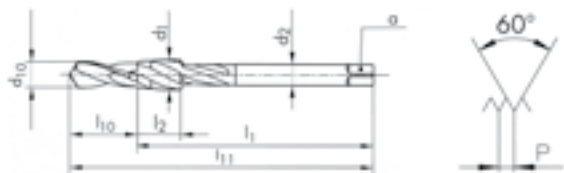
Cutting and spindle speeds (guide values)

Material groups	Vc (m/min)	Speeds for different diameters										
		M3	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20
Steels up to 500 N/mm ²	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Steels over 500 N/mm ²	15	1600	1200	950	800	600	480	400	340	300	270	240
Cast iron, soft	20	2120	1600	1270	1060	800	640	530	460	400	360	320
Cast iron, hard	15	1600	1200	950	800	600	480	400	340	300	270	240
Brass	25	2650	2000	1600	1330	950	800	660	570	500	450	400
Aluminium	25	2650	2000	1600	1330	950	800	660	570	500	450	400

								N5951	N5952	N5951	
N5951 											
N5952 											
N5951 											
								ISO 2 6H	ISO 2 6H	7H EN 60423	
Ø d ₁ M	P mm	l ₁₁ mm	l ₂ mm	d ₂ mm	α mm	d ₁₀ mm	l ₁₀ mm	ID			
3	0.50	62.0	12.5	3.5	2.7	2.55	9.0	104578			
4	0.70	66.0	16.0	4.5	3.4	3.36	10.0	104580			
5	0.80	75.5	18.0	6.0	4.9	4.26	12.5	104583			
6	1.00	81.0	20.0	6.0	4.9	5.05	14.0	104585			
8	1.25	93.0	12.0	6.0	4.9	6.80	20.0	104588			
10	1.50	99.0	14.0	7.0	5.5	8.55	22.0	104571			
12	1.75	106.0	16.0	9.0	7.0	10.30	25.0	104573			
16	2.00	123.0	20.0	12.0	9.0	14.10	32.0	104576			
20	2.50	132.0	22.0	16.0	12.0	17.60	36.0	104577			
Ø d ₁ M	P mm	l ₁₁ mm	l ₂ mm	d ₂ mm	α mm	d ₁₀ mm	l ₁₀ mm	ID			
4	0.70	77.0	16.0	4.5	3.4	3.36	21.0	104608			
5	0.80	87.0	18.0	6.0	4.9	4.26	24.0	104609			
6	1.00	94.0	20.0	6.0	4.9	5.05	27.0	104610			
8	1.25	109.0	12.0	6.0	4.9	6.80	36.0	104611			
10	1.50	118.0	14.0	7.0	5.5	8.55	41.0	104603			
Ø d ₁ MF	P mm	l ₁₁ mm	l ₂ mm	d ₂ mm	α mm	d ₁₀ mm	l ₁₀ mm	ID			
4	0.50	66.0	16.0	4.5	3.4	3.55	10.0	* 104579			
5	0.75	75.5	18.0	6.0	4.9	4.31	12.5	* 123379			
8	1.00	93.0	12.0	6.0	4.9	7.05	20.0	104587			
10	1.00	99.0	14.0	7.0	5.5	9.05	22.0	104570			
Ø d ₁ MF	P mm	l ₁₁ mm	l ₂ mm	d ₂ mm	α mm	d ₁₀ mm	l ₁₀ mm	ID			
12	1.50	106.0	16.0	9.0	7.0	10.55	25.0	142825			
16	1.50	123.0	16.0	12.0	9.0	14.55	32.0	142826			
20	1.50	132.0	18.0	16.0	12.0	18.55	36.0	111844			
25	1.50	155.0	22.0	18.0	14.5	23.55	45.0	111845			
32	1.50	170.0	24.0	22.0	18.0	30.55	50.0	111846			

N5951

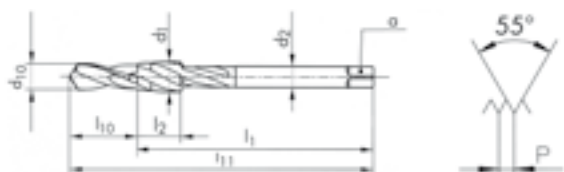
N5951

2B


Ø" d ₁ UNC	P TPI	d ₁ mm	l ₁₁ mm	l ₂ mm	d ₂ mm	a mm	d ₁₀ mm	l ₁₀ mm
6	32	3.50	66.0	16.0	4.0	3.0	2.80	10.0
10	24	4.82	75.5	18.0	4.5	3.4	3.86	12.5
1/4	20	6.35	81.0	20.0	7.0	5.5	5.15	14.0
1/2	13	12.70	106.0	16.0	9.0	7.0	10.85	25.0

ID

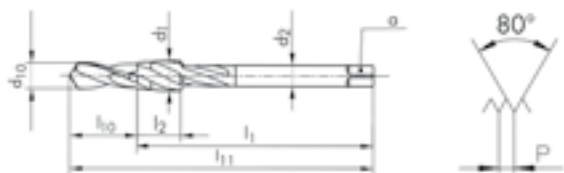
* 104601
* 104598
* 104597
* 104596



Ø" d ₁ G	P TPI	d ₁ mm	l ₁₁ mm	l ₂ mm	d ₂ mm	a mm	d ₁₀ mm	l ₁₀ mm
1/8	28	9.72	93.0	12.0	7.0	5.5	8.75	20.0
1/4	19	13.15	106.0	14.0	11.0	9.0	11.75	25.0
3/8	19	16.66	123.0	16.0	12.0	9.0	15.25	32.0
1/2	14	20.95	132.0	18.0	16.0	12.0	19.00	36.0
3/4	14	26.44	155.0	22.0	18.0	14.5	24.45	45.0

ID

104567
104566
104569
104565
* 104568



Ø d ₁ PG	P TPI	d ₁ mm	l ₁₁ mm	l ₂ mm	d ₂ mm	a mm	d ₁₀ mm	l ₁₀ mm
7	20	12.50	106.0	14.0	9.0	7.0	11.40	25.0
9	18	15.20	114.0	15.0	12.0	9.0	13.95	28.0
13.5	18	20.40	132.0	18.0	16.0	12.0	19.15	36.0
16	18	22.50	142.0	20.0	18.0	14.5	21.25	40.0
29	16	37.00	203.0	28.0	28.0	22.0	35.65	63.0

ID

* 104594
* 104595
* 104590
* 104591
* 104593



KODIERUNG - CODIFICATION

DC VHM-Gewindewirbler DC Solid carbide thread whirl cutters



Beispiel - Example

Gewindewirbler	Thread whirl cutter	GW				
Einzahn	Single tooth		10			
Mehrzahn-Einzelprofil	Single profile, multi toothed		20			
Mehrzahn-Doppelprofil	Double pitch with multi flutes		30			
Mehrzahn-Vollprofil	Multi fluted with full profile		40			
Gewindelänge 2.5 x D _i	Thread length 2.5 x D _i			16		
Gewindelänge 4 x D _i	Thread length 4 x D _i			19		
Verschleisschutzschicht	Wear-protective coating				VS	
Spezialausführung	Special execution					SP

DC VHM-Gewindefräser DC Solid carbide thread milling cutters



Beispiel - Example

Standardausführung	Standard execution	GF				
Für gehärteten Stahl (55 - 63 HRC)	For hardened steels (55 - 63 HRC)	GFH				
Mit 45° Senkfase	With 45° chamfer for countersinking	GFS				
Polyvalenter Gewindefräser	For multi sizes thread milling cutters	GFM				
Bohrgewindefräser	Thrillers	BGF				
Spiralnuten 27° (GF), 10° (GFH)	Spiral flutes 27° (GF), 10° (GFH)		61			
Spiralnuten 27° (GFS)	Spiral flutes 27° (GFS)		66			
Spiralnuten 15° (GFM)	Spiral flutes 15° (GFM)		62			
Bohrgewindefräser zweilippig	Thrillers 2 flutes		67			
Bohrgewindefräser dreilippig	Thrillers 3 flutes		68			
Aussenkühlung	External lubrication			1		
Innenkühlung	Internal lubrication			6		
Gewindelänge 1.5 x D _i	Thread length 1.5 x D _i				0	
Gewindelänge 2 x D _i	Thread length 2 x D _i				5	
Gewindelänge 2.5 x D _i	Thread length 2.5 x D _i				6	
Verschleisschutzschicht	Wear-protective coating					VS
Spezialausführung	Special execution					SP

Piktogramme - Pictographs

	Vollhartmetall Solid carbide		Gewindelänge 1.5 x D ₁ Thread length 1.5 x D ₁
	10° Rechtsspiralnuten 10° right hand spiral flutes		Gewindelänge 2 x D ₁ Thread length 2 x D ₁
	15° Rechtsspiralnuten 15° right hand spiral flutes		Gewindelänge 2.5 x D ₁ Thread length 2.5 x D ₁
	27° Rechtsspiralnuten 27° right hand spiral flutes		Innengewinde Internal thread
	27° Rechtsspiralnuten 27° right hand spiral flutes		Aussengewinde External thread
	Mit 45° Senker zum Anfasen des Gewindes With 45° chamfer for countersinking		Sacklöcher (BGF) Blind holes (BGF)
	Anzahl Spannnuten (Z) Number of flutes (Z)		Durchgangslöcher (BGF) Through holes (BGF)
	Kühlkanal Internal cooling channel		BGF, 2 Spannnuten BGF, 2 flutes
	Kühlkanal (BGF, 2 Spannnuten) Internal cooling channel (BGF, 2 flutes)		BGF, 3 Spannnuten BGF, 3 flutes
	Kühlkanal (BGF, 3 Spannnuten) Internal cooling channel (BGF, 3 flutes)		Für Werkstoffe ≤ 63 HRC (GFH) For materials ≤ 63 HRC (GFH)
	DC -Verschleisschutzschicht DC wear-protective coating		Konisches Gewinde 1:16 (NPT - NPTF) Tapered thread 1:16 (NPT - NPTF)
	EG-Gewinde Thread EG (for wire screw thread inserts)		Rundlaufgenauigkeit Shape accuracy
	Gewindelänge 2.5 x D ₁ Thread length 2.5 x D ₁		Toleranzklasse h5 Tolerance class h5
	Gewindelänge 4 x D ₁ Thread length 4 x D ₁		Drallwinkel Helix angle
	Kernlochdurchmesser Core hole diameter		Schweizerische Uhrenindustrie-Norm Norm of Swiss Watch Industry

Bemerkung GFM

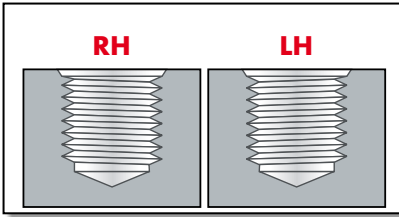
 Zur Vermeidung grösserer Profilüberfräsungen darf der Fräser-Ø für Regelgewinde nicht grösser als 2/3 (Feingewinde 3/4) des zu fräsenden Gewinde-Ø sein.

Notice GFM

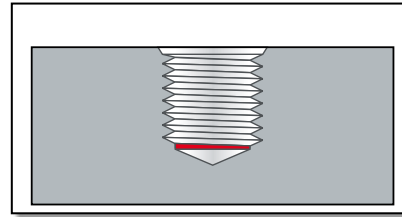
 In order to avoid profile defects it is important that the tool diameter does not exceed 2/3 of the diameter of the work-piece thread for coarse threads (3/4 for fine threads).

VORTEILE - ADVANTAGES

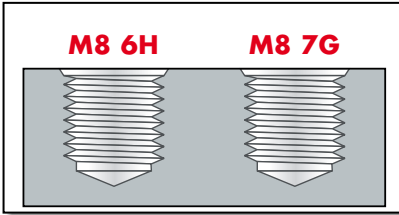
GW-GF-GFH-GFS-GFM



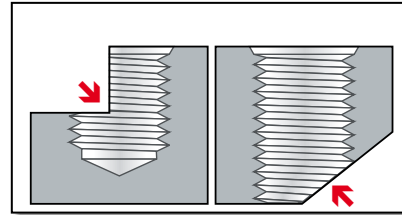
Ein einziger Gewindefräser für Rechts- und Linksgewinde
The same cutter can be used for right and left hand threads



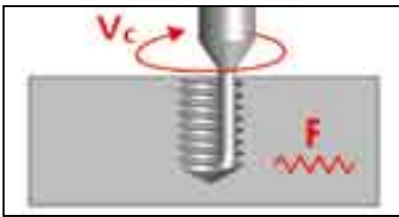
Für Gewinde bis fast auf den Grund der Vorbohrung
For threads to be cut near to the bottom of blind holes



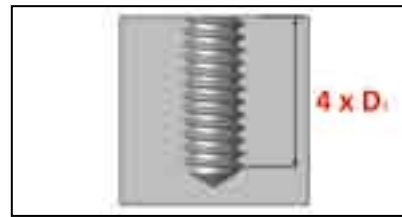
Je nach Wahl, gewünschte Toleranz einstellbar
Required tolerance adjustable as per users choice



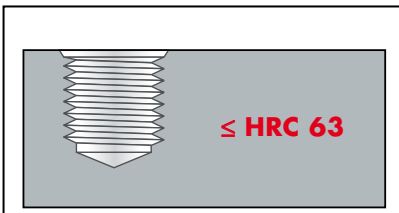
Für Gewinde mit unterbrochenem Schnitt, mit schrägem Anschnitt oder Austritt
For threads with interrupted cut or with oblique entrance or exit



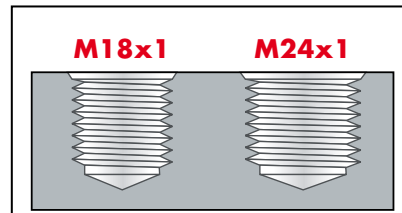
Schnittgeschwindigkeit und Vorschub können dem zu bearbeitenden Werkstoff individuell angepasst werden.
The cutting speed and feed rate can be matched individually to each work-piece material.



Ideal für tiefe Sacklöcher.
Ideal for deep blind holes.

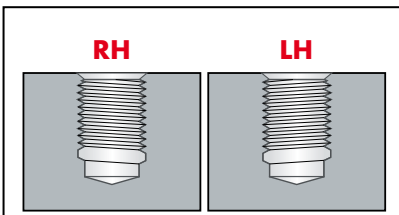


Gewinde in hochfeste Werkstoffe können realisiert werden
To realise threads in hardened materials

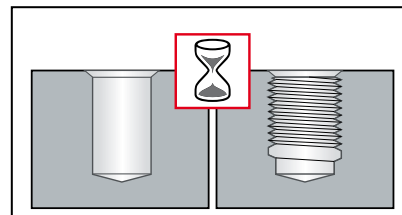


Ein einziger Gewindefräser für einen grossen Durchmesserbereich
One only tool for threads of a wide range of diameters with the same pitch

BGF



Ein einziger Gewindefräser für Rechts- und Linksgewinde
The same cutter can be used for right and left hand threads

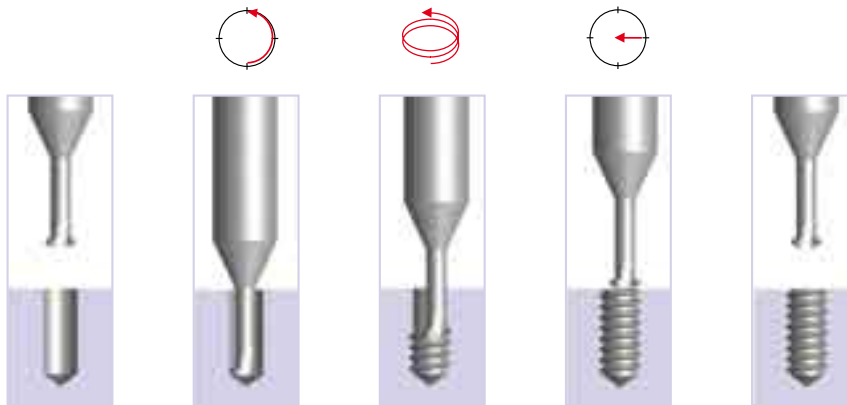


Platzgewinn im Werkzeugmagazin der Maschine und Einsparung von Bearbeitungszeit
Time-saving when tool changing and space-saving in the tool carousel

PROGRAMMIERZYKLUS - PROGRAMMING CYCLE

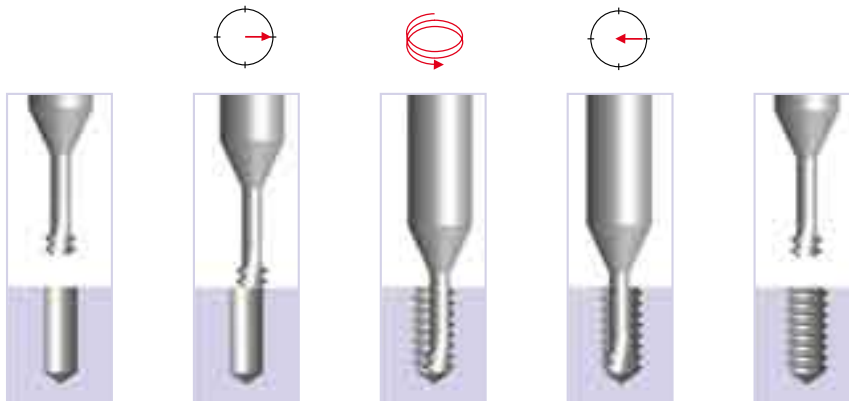
Rechtsgewinde im Gleichlauf – Right hand thread climb milling

GW1016
GW1016VS
GW2016
GW2016VS

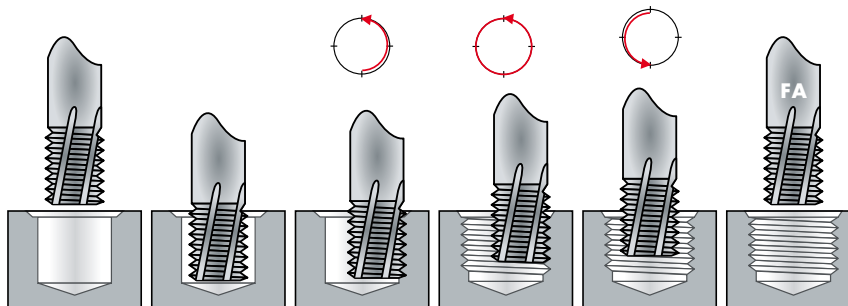


Rechtsgewinde im Gegenlauf – Conventional right hand thread milling

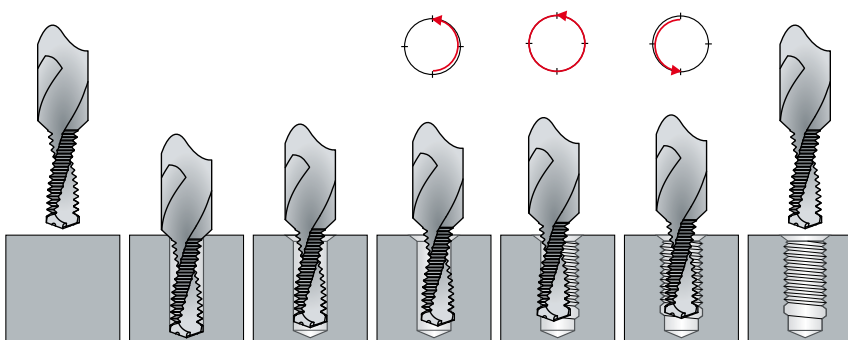
GW3016
GW3016VS
GW3019
GW3019VS
GW4016
GW4016VS
GW4019
GW4019VS



Programmierzcyklus für Typ GF - Operating cycle type GF



Programmierzcyklus für Typ BGF - Operating cycle type BGF



SCHNITTGESCHWINDIGKEITEN UND VORSCHÜBE CUTTING SPEEDS AND FEED RATES

Besondere Anforderungen – Specific requirements



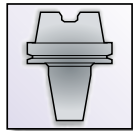
CNC-Bearbeitungsmaschine
mit 3-Achsen-Bahnsteuerung

CNC machine with 3-D continuous
path control



HSC-Bearbeitung

High speed cutting



Absoluter Rundlauf des Auf-
spannfutters

Perfect concentricity of fixture

DC -Anwendungstabelle für Gewindewirbler DC Application chart for thread whirling

Werkstoff-Gruppen Material groups	Werkstoffbezeichnung	Material designation	Härte Hardness (HB)	Festigkeit Tensile strength Rm (N/mm ²)
10 Stahl Steels	11 Automatenstahl	Free-cutting steels	< 200	< 700
	12 Baustahl, Einsatzstahl	Structural / cementation steels	< 200	< 700
	13 Kohlenstoffstahl	Carbon steels	< 300	<1000
	14 Stahl legiert <850 N/mm ²	Alloy steels <850 N/mm ²	< 250	< 850
	15 Stahl legiert / vergütet >850 - <1150 N/mm ²	Alloy steels hard. / temp. >850 - <1150 N/mm ²	> 250	> 850
	16 Hochfester Stahl <55 HRC	High tensile alloy steels <55 HRC	> 250	> 850
20 Rostfreier Stahl Stainless Steels	21 Rostfreier Stahl / geschwefelt	Free machining stainless steels	< 250	< 850
	22 Austenitisch	Austenitic stainless steels	< 250	< 850
	23 Ferritisch, martensitisch <850 N/mm ²	Ferritic and martensitic <850 N/mm ²	< 250	< 850
	24 Ferritisch, martensitisch >850 - <1150 N/mm ²	Ferritic and martens. >850 - <1150 N/mm ²	> 250	> 850
30 Guss Cast iron	31 Grauguss	Cast iron	< 250	< 850
	32 Kugelgraphitguss	Spheroidal graphite + malleable cast iron	< 250	< 850
40 Titan Titanium	41 Reintitan	Pure titanium	< 250	< 850
	42 Titanlegierung	Titanium alloys	> 250	> 850
50 Nickel Nickel	51 Nickellegierung 1 <850 N/mm ²	Nickel alloys 1 <850 N/mm ²	< 250	< 850
	52 Nickellegierung 2 >850 - <1150 N/mm ²	Nickel alloys 2 >850 - <1150 N/mm ²	> 250	> 850
	53 Nickellegierung 3 >1150 - ≤1600 N/mm ²	Nickel alloys 3 >1150 - ≤1600 N/mm ²	> 340	> 1150
60 Kupfer Copper	61 Reinkupfer (Elektrolytkupfer)	Pure copper (electrolytic copper)	< 120	< 400
	62 Messing, Bronze, Rotguss (kurzspanend)	Short chip brass, phosphor bronze, gun metal	< 200	< 700
	63 Messing (langspanend)	Long chip brass	< 200	< 700
70 Aluminium Magnesium Aluminium Magnesium	71 Al unlegiert	Al unalloyed	< 100	< 350
	72 Al legiert Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500
	73 Al legiert Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400
	74 Al legiert Si > 10 %, Mg-Legierung	Al alloyed Si > 10 %, Mg-Alloys	< 120	< 400
80 Kunststoff Plastic compounds	81 Thermoplaste	Thermoplastics	-	-
	82 Duroplaste	Duroplastics	-	-
	83 Faserverstärkte Kunststoffe	Glass fibre reinforced plastics	-	-
90 Edelm. - M. Prec.	91 Gelbgold	Yellow gold	-	-
	92 Rotgold	Red gold	-	-
	93 Weissgold	White gold	-	-
	94 Silber	Silver	-	-

Einsatz – Use

Optimal mit Schneidöl
 Geeignet mit Schneidöl

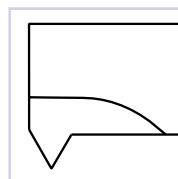
Optimal with cutting oil
 Suitable with cutting oil

Optimal mit Emulsion
 Geeignet mit Emulsion

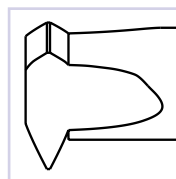
Optimal with emulsion
 Suitable with emulsion

GW

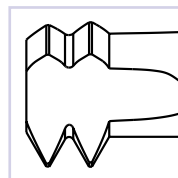
GW1016



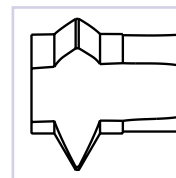
GW2016



GW3016/19



GW4016/19



GW								Vc (m/min)		Vorschub fz (mm/Zahn)		Milling fz (mm/tooth)		
GW1016	GW1016S	GW2016	GW2016S	GW3016	GW3019	GW3016S	GW3019S	Standard	Beschichtet Coated	Ø 0.3 - 1.0	Ø 1.01 - 3.0	Ø 3.01 - 6.0	Ø 6.01 - 12.0	
								60 - 80	80 - 100	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	11
								60 - 80	80 - 100	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	12
								50 - 70	70 - 90	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	13
								50 - 70	70 - 90	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	14
								15 - 35	30 - 50	0.004 - 0.01	0.01 - 0.05	0.02 - 0.08	0.04 - 0.15	15
									15 - 40	0.003 - 0.01	0.006 - 0.03	0.008 - 0.05	0.01 - 0.08	16
									40 - 60	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	21
									30 - 50	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	22
									30 - 50	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	23
									30 - 50	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	24
								60 - 90	90 - 120	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	31
								50 - 70	70 - 90	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	32
								15 - 35	20 - 40	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	41
								10 - 30	15 - 35	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	42
									20 - 40	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	51
									20 - 40	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	52
									20 - 30	0.003 - 0.01	0.006 - 0.03	0.008 - 0.05	0.01 - 0.08	53
								150 - 200	200 - 250	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	61
								100 - 150	150 - 200	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	62
								100 - 150	150 - 200	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.05 - 0.15	63
								150 - 250		0.004 - 0.01	0.01 - 0.05	0.05 - 0.10	0.10 - 0.20	71
								150 - 250		0.004 - 0.01	0.01 - 0.05	0.05 - 0.10	0.10 - 0.20	72
								150 - 250	200 - 300	0.004 - 0.01	0.01 - 0.05	0.05 - 0.10	0.10 - 0.20	73
								150 - 250	200 - 300	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	74
								150 - 250	200 - 300	0.004 - 0.01	0.01 - 0.05	0.05 - 0.10	0.10 - 0.20	81
								80 - 150	100 - 200	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	82
									80 - 100	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	83
								100 - 150	150 - 200	0.004 - 0.01	0.01 - 0.05	0.04 - 0.10	0.08 - 0.15	91
								60 - 90	90 - 120	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.04 - 0.15	92
									30 - 50	0.004 - 0.01	0.01 - 0.03	0.02 - 0.05	0.03 - 0.08	93
								60 - 90	90 - 120	0.004 - 0.01	0.01 - 0.05	0.02 - 0.10	0.04 - 0.15	94

Bei den oben aufgeführten Daten handelt es sich um Richtwerte. The indicated values are a guideline.

SCHNITTGESCHWINDIGKEITEN UND VORSCHÜBE CUTTING SPEEDS AND FEED RATES

DC -Anwendungstabelle für Gewindefräser und Bohrgewindefräser

DC Application chart for thread milling cutters and thrillers

Werkstoff-Gruppen Material groups	Werkstoffbezeichnung Für Werkstoffbeispiele siehe Seiten 5 - 6.	Material designation Examples for application groups, pag. 5 - 6.	Härte Hardness (HB)	Festigkeit Tensile strength Rm (N/mm ²)
10 Stahl Steels	11 Automatenstahl	Free-cutting steels	< 200	< 700
	12 Baustahl, Einsatzstahl	Structural / cementation steels	< 200	< 700
	13 Kohlenstoffstahl	Carbon steels	< 300	< 1000
	14 Stahl legiert <850 N/mm ²	Alloy steels <850 N/mm ²	< 250	< 850
	15 Stahl legiert / vergütet >850 - <1150 N/mm ²	Alloy steels hard. / temp. >850 - <1150 N/mm ²	> 250	> 850
	16 Hochfester Stahl	High tensile alloy steels	> 250	> 850
	* Hochfester Stahl 55 - 63 HRC	High tensile alloy steels 55 - 63 HRC	> 560	> 2000
20 Rostfreier Stahl Stainless Steels	21 Rostfreier Stahl / geschwefelt	Free machining stainless steels	< 250	< 850
	22 Austenitisch	Austenitic stainless steels	< 250	< 850
	23 Ferritisch, martensitisch <850 N/mm ²	Ferritic and martensitic <850 N/mm ²	< 250	< 850
	24 Ferritisch, martensitisch >850 - <1150 N/mm ²	Ferritic and martens. >850 - <1150 N/mm ²	> 250	> 850
30 Guss Cast iron	31 Grauguss	Cast iron	< 250	< 850
	32 Kugelgraphitguss, Temperguss	Spheroidal graphite + malleable cast iron	< 250	< 850
40 Titan Titanium	41 Reintitan	Pure titanium	< 250	< 850
	42 Titanlegierung	Titanium alloys	> 250	> 850
50 Nickel Nickel	51 Nickellegierung 1 <850 N/mm ²	Nickel alloys 1 <850 N/mm ²	< 250	< 850
	52 Nickellegierung 2 >850 - <1150 N/mm ²	Nickel alloys 2 >850 - <1150 N/mm ²	> 250	> 850
	53 Nickellegierung 3 >1150 - ≤1600 N/mm ²	Nickel alloys 3 >1150 - ≤1600 N/mm ²	> 340	> 1150
60 Kupfer Copper	61 Reinkupfer (Elektrolytkupfer)	Pure copper (electrolytic copper)	< 120	< 400
	62 Messing, Bronze, Rotguss (kurzspanend)	Short chip brass, phosphor bronze, gun metal	< 200	< 700
	63 Messing (langspanend)	Long chip brass	< 200	< 700
70 Aluminium Magnesium Aluminium Magnesium	71 Al unlegiert	Al / Mg unalloyed	< 100	< 350
	72 Al legiert Si < 1.5 %	Al alloyed Si < 1.5 %	< 150	< 500
	73 Al legiert Si > 1.5 % - < 10 %	Al alloyed Si > 1.5 % - < 10 %	< 120	< 400
	74 Al legiert Si > 10 %, Mg-Legierung	Al alloyed Si > 10 %, Mg-Alloys	< 120	< 400
80 Kunststoff Plastic compounds	81 Thermoplaste	Thermoplastics	-	-
	82 Duroplaste	Duroplastics	-	-
	83 Faserverstärkte Kunststoffe	Glass fibre reinforced plastics	-	-

* Gewindefräser Typ GFH

Thread milling cutter type GFH

Formel zur Berechnung des "Fräsvorschubes"

$$\text{Vorschub} \quad V_{fk} = f_z \times Z \times n$$

$$\text{Vorschub der Werkzeugmitte} \quad V_{fm} = \frac{V_{fk} \times (\text{Nenndurchmesser des Gewindes} - \text{Fräserdurchmesser})}{\text{Nenndurchmesser des Gewindes}}$$

Auf CNC-Maschinen, die den Vorschub der Werkzeugmitte nicht automatisch berechnen, muss der Wert "Vorschub Werkzeugmitte V_{fm} " berücksichtigt werden.

Thread milling feed rates

$$\text{Feed rate} \quad V_{fk} = f_z \times Z \times n$$

$$\text{Feed rate of the tool middle} \quad V_{fm} = \frac{V_{fk} \times (\text{nominal thread } \varnothing - \varnothing \text{ of the thread milling cutter})}{\text{nominal thread } \varnothing}$$

On CNC machines, which do not calculate for themselves the feed rate at the tool-centre, the value "centre of the tool V_{fm} " must be considered.

Bohrgewindefräser Thrillers

Vc (m/min)		Bohrvorschub f (mm/U) Drilling f (mm/rev.)	Fräsvorschub fz (mm/Zahn) Milling fz (mm/tooth)
Standard Standard	Beschichtet VS Coated VS		
50 - 100	80 - 150	0.1 - 0.3	0.05 - 0.15
50 - 80	80 - 120	0.1 - 0.2	0.02 - 0.10
100 - 250	150 - 300	0.1 - 0.4	0.05 - 0.20
100 - 250	150 - 300	0.1 - 0.4	0.05 - 0.20
100 - 250	150 - 300	0.1 - 0.4	0.05 - 0.20
100 - 250	150 - 300	0.1 - 0.4	0.05 - 0.20
100 - 250	150 - 300	0.1 - 0.4	0.05 - 0.20
100 - 200	150 - 250	0.1 - 0.3	0.05 - 0.15

Technische Hinweise

- ## Technical notes

- 

Inhaltsverzeichnis - VHM-Gewindewirbler Typ GW
Directory - Solid carbide thread whirl cutters type GW

		GW					
Typ Type		GW1016 GW1016VS	GW2016 GW2016VS	GW3016 GW3016VS	GW3019 GW3019VS	GW4016 GW4016VS	GW4019 GW4019VS
Beschichtung Coating							
							
Gewindelänge Thread length							
Merkmale Characteristics		  	  	  	  	  	  
M	ISO DIN 13 ISO DIN 14		207	208/209	208/209	212	212
MF	ISO DIN 13			208/209	208/209		
UNC	ANSI B1.1			210	210	213	213
UNF	ANSI B1.1			211	211	213	213
S	NIHS	206	207				

Inhaltsverzeichnis - VHM-Gewindefräser Typ GF

Directory - Solid carbide thread milling cutters type GF

GW-GF-GFH-
GFS-GFM-BGF

		GF					
Typ Type		GF6110 GF6110VS	GF6160 GF6160VS	GF6115 GF6115VS	GF6165 GF6165VS	GF6116 GF6116VS	GF6166 GF6166VS
Beschichtung Coating							
							
Gewindelänge Thread length							
Merkmale Characteristics							
M	ISO DIN 13	214		215	215	216	216
MF	ISO DIN 13	217			218		218
UNC	ANSI B1.1	219			220		220
UNF	ANSI B1.1	221			222		222
UN	ANSI B1.1						
G (BSP)	DIN ISO 228				223		223
PG	DIN 40430						
NPT	ANSI B1.20.1		224				
NPTF	ANSI B1.20.3		224				
EG M	DIN 8140						

Inhaltsverzeichnis - VHM-Gewindfräser Typ GFH und GFS
Directory - Solid carbide thread milling cutters type GFH and GFS

		GFH		GFS							
Typ Type		GFH6110VS	GFS6610 GFS6610VS	GFS6660 GFS6660VS	GFS6615 GFS6615VS	GFS6665 GFS6665VS	GFS6616 GFS6616VS				
Beschichtung Coating											
			 	 	 	 	 				
Gewindelänge Thread length											
Merkmale Characteristics											
M	ISO DIN 13	214	225	225	226	226	227				
MF	ISO DIN 13		228	228	229	229					
UNC	ANSI B1.1		230	230	231	231					
UNF	ANSI B1.1		232	232	233	233					
UN/EF/S	ANSI B1.1										
G (BSP)	DIN ISO 228			234		234					
PG	DIN 40430										
NPT	ANSI B1.20.1			235							
NPTF	ANSI B1.20.3			235							
EG M	DIN 8140										

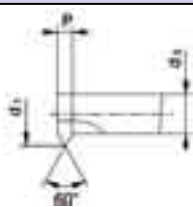
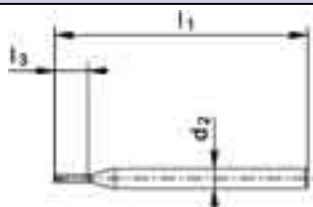
Inhaltsverzeichnis - VHM-Gewindefräser und VHM-Bohrgewindefräser Typ GFM und BGF
Directory - Solid carbide thread milling cutters and thrillers type GFM and BGF

GW-GF-GFH-
GFS-GFM-BGF

		GFM		BGF									
GFS6666	GFS6666VS	GFM6260	GFM6260VS	BGF6760	BGF6760VS	BGF6765	BGF6765VS	BGF6766	BGF6766VS	BGF6865	BGF6865VS	BGF6866	BGF6866VS
VS		VS		VS		VS		VS		VS		VS	
													
													
		 		 		 		 		 		 	
227		236		240		241		241		242		242	
		236		243		243							
		237											
		237											
		237											
		238											
		239											
		239											

GW

GW1016

GW1016VS

GW1016
GW1016VS


$\varnothing D_1$ S	P mm	d_1 mm	l_1 mm	l_3 mm	d_2 h5 mm	d_3 mm		
0.3	0.08	0.21	39	0.9	3	0.10	1	0.23 *
0.4	0.10	0.29	39	1.2	3	0.15	1	0.32 *
0.5	0.125	0.36	39	1.5	3	0.19	1	0.40 *
0.6	0.15	0.43	39	1.7	3	0.23	1	0.48 *
0.7	0.175	0.50	39	2.0	3	0.27	1	0.56 *
0.8	0.20	0.57	39	2.3	3	0.31	1	0.64 *
0.9	0.225	0.64	39	2.6	3	0.34	1	0.72 *
1.0	0.25	0.71	39	2.9	3	0.38	1	0.80 *
1.2	0.25	0.91	39	3.4	3	0.58	1	1.00 *
1.4	0.30	1.06	39	3.9	3	0.66	1	1.15 *

ID
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166930
166940
166931
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166949
***Tol.**

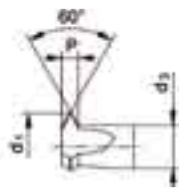
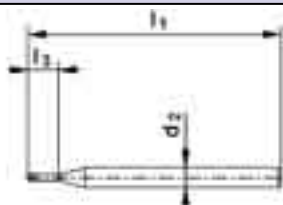
+0.02 mm
0

GW

GW2016



GW2016VS



GW2016

GW2016VS



Ø D ₁	P	d ₁	l ₁	l ₃	d ₂ h5	d ₃		
S	mm	mm	mm	mm	mm	mm	→	←
0.8	0.20	0.57	39	2.3	3	0.29	3	0.64 *
0.9	0.225	0.64	39	2.6	3	0.33	3	0.72 *
1.0	0.25	0.71	39	2.9	3	0.36	3	0.80 *
1.2	0.25	0.91	39	3.4	3	0.56	3	1.00 *
1.4	0.30	1.06	39	3.9	3	0.64	3	1.15 *

ID

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166969	166988
166970	166989
166971	166990
166972	166991
166973	166992

Ø D ₁	P	d ₁	l ₁	l ₃	d ₂ h5	d ₃		
M	mm	mm	mm	mm	mm	mm	→	←
0.8	0.20	0.57	39	2.3	3	0.29	3	0.62
0.9	0.225	0.64	39	2.6	3	0.33	3	0.70
1.0	0.25	0.71	39	2.9	3	0.36	3	0.75
1.2	0.25	0.91	39	3.4	3	0.56	3	0.95
1.4	0.30	1.06	39	3.9	3	0.64	3	1.10
1.6	0.35	1.20	39	4.5	3	0.71	3	1.25
1.8	0.35	1.40	39	5.0	3	0.91	3	1.45
2.0	0.40	1.54	39	5.6	3	0.98	3	1.60
2.5	0.45	1.98	39	6.9	3	1.35	3	2.05
3.0	0.50	2.43	51	8.4	5	1.73	4	2.50
3.5	0.60	2.81	51	9.9	5	1.97	4	2.90
4.0	0.70	3.20	51	11.3	5	2.22	4	3.30
5.0	0.80	4.08	51	14.0	5	2.96	4	4.20
6.0	1.00	4.90	51	16.8	5	3.50	4	5.00

ID

ID

166974	166993
166975	166994
166976	166995
166977	166996
166978	166997
166979	166998
166980	166999
166981	167000
166982	167001
166983	167002
166984	167003
166985	167004
166986	167005
166987	167006

*Tol. +0.02 mm
0

GW

GW3016



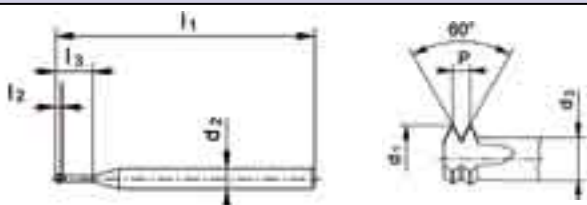
GW3016VS



GW3019



GW3019VS



GW3016

GW3016VS

GW3019

GW3019VS



Ø D ₁ M, MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
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0.8	0.20	0.57	39	2.3	3	0.29	3	0.62
0.9	0.225	0.64	39	2.6	3	0.33	3	0.70
1.0	0.25	0.71	39	2.9	3	0.36	3	0.75
1.2	0.25	0.91	39	3.4	3	0.56	3	0.95
1.4	0.30	1.06	39	3.9	3	0.64	3	1.10
1.6	0.35	1.20	39	4.5	3	0.71	3	1.25
1.8	0.35	1.40	39	5.0	3	0.91	3	1.45
2.0	0.20	1.77	39	5.3	3	1.49	3	1.80
2.0	0.40	1.54	39	5.6	3	0.98	3	1.60
2.5	0.20	2.27	39	6.6	3	1.99	3	2.30
2.5	0.25	2.21	39	6.6	3	1.86	3	2.25
2.5	0.45	1.98	39	6.9	3	1.35	3	2.05

ID

ID

167021	167035
167022	167036
167023	167037
167024	167038
167025	167039
167026	167040
167027	167041
175225	171442
167028	167042
175226	175241
175227	167299
167029	167043

Ø D ₁ M, MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
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0.8	0.20	0.57	39	3.5	3	0.29	3	0.62
0.9	0.225	0.64	39	3.9	3	0.33	3	0.70
1.0	0.25	0.71	39	4.4	3	0.36	3	0.75
1.2	0.25	0.91	39	5.2	3	0.56	3	0.95
1.4	0.30	1.06	39	6.0	3	0.64	3	1.10
1.6	0.35	1.20	39	6.9	3	0.71	3	1.25
1.8	0.35	1.40	39	7.7	3	0.91	3	1.45
2.0	0.20	1.77	39	8.3	3	1.49	3	1.80
2.0	0.40	1.54	39	8.6	3	0.98	3	1.60
2.5	0.20	2.27	39	10.3	3	1.99	3	2.30
2.5	0.25	2.21	39	10.4	3	1.86	3	2.25
2.5	0.45	1.98	39	10.6	3	1.35	3	2.05

ID

ID

167063	167077
167064	167078
167065	167079
167066	167080
167067	167081
167068	167082
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175254	175270
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175255	175271
175256	175272
167071	167085

GW

GW3016



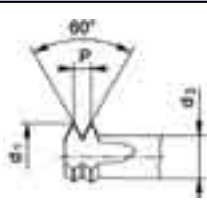
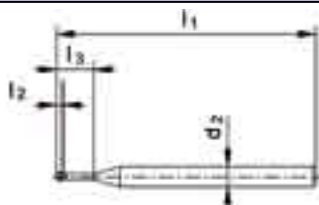
GW3016VS



GW3019



GW3019VS



GW3016

GW3016VS

GW3019

GW3019VS



Ø D ₁ M, MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
3.0	0.35	2.60	51	8.2	5	2.11	4	2.65
3.0	0.50	2.43	51	8.4	5	1.73	4	2.50
3.5	0.60	2.81	51	9.9	5	1.97	4	2.90
4.0	0.70	3.20	51	11.3	5	2.22	4	3.30
5.0	0.80	4.08	51	14.0	5	2.96	4	4.20
6.0	1.00	4.85	51	16.8	5	3.45	4	5.00
8.0	1.25	5.95	63	23.0	6*	4.20	5	6.80
10.0	1.50	7.95	67	28.0	8*	5.85	5	8.50
12.0	1.75	9.95	76	34.0	10*	7.50	5	10.20

ID

ID

175228

175242

167030

167044

167031

167045

167032

167046

167033

167047

167034

167048

175229

175243

175230

175244

175231

175245

Ø D ₁ M, MF	P mm	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
3.0	0.35	2.60	51	12.7	5	2.11	4	2.65
3.0	0.50	2.43	51	12.9	5	1.73	4	2.50
3.5	0.60	2.81	51	15.1	5	1.97	4	2.90
4.0	0.70	3.20	51	17.3	5	2.22	4	3.30
5.0	0.80	4.08	51	21.5	5	2.96	4	4.20
6.0	1.00	4.85	51	25.8	5	3.45	4	5.00
8.0	1.25	5.95	75	35.0	6*	4.20	5	6.80
10.0	1.50	7.95	83	43.0	8*	5.85	5	8.50
12.0	1.75	9.95	95	52.0	10*	7.50	5	10.20

ID

ID

175257

175273

167072

167086

167073

167087

167074

167088

167075

167089

167076

167090

175258

175274

175259

175275

175260

175276

*Tol. h6

GW

GW3016



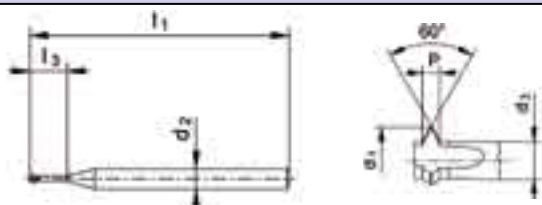
GW3016VS



GW3019



GW3019VS



GW3016

GW3016VS

GW3019

GW3019VS



Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
2	56	1.66	39	6.1	3	1.02	3	1.75
4	40	2.11	39	8.0	3	1.22	3	2.25
6	32	2.59	51	10.2	5	1.48	4	2.75
8	32	3.25	51	11.9	5	2.14	4	3.40
10	24	3.60	51	14.0	5	2.12	4	3.80
1/4	20	4.89	51	18.2	5	3.11	4	5.10
5/16	18	5.95	63	23.0	6*	3.97	5	6.50
3/8	16	7.10	67	27.0	8*	4.87	5	8.00
1/2	13	9.95	76	36.0	10*	7.21	5	10.80

ID

ID

167472

167500

167473

167501

167474

167502

167475

167503

173983

173986

167476

167504

175232

175246

175233

173546

175234

175247

Ø D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
2	56	1.66	39	9.4	3	1.02	3	1.75
4	40	2.11	39	12.2	3	1.22	3	2.25
6	32	2.59	51	15.5	5	1.48	4	2.75
8	32	3.25	51	18.1	5	2.14	4	3.40
10	24	3.60	51	21.3	5	2.12	4	3.80
1/4	20	4.89	51	27.7	5	3.11	4	5.10
5/16	18	5.95	75	35.0	6*	3.97	5	6.50
3/8	16	7.10	83	41.0	8*	4.87	5	8.00
1/2	13	9.95	95	55.0	10*	7.21	5	10.80

ID

ID

167479

167507

167480

167508

167481

167509

167482

167510

173982

173979

167483

167511

175261

175277

175262

175278

175263

175279

*Tol. h6

GW

GW3016



GW3016VS



VS

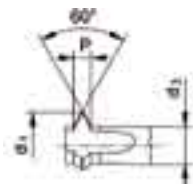
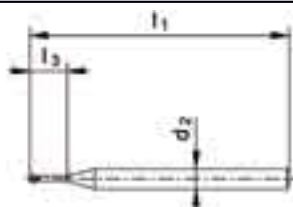
GW3019



GW3019VS



VS



GW3016

GW3016VS

GW3019

GW3019VS



Ø D ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0	80	1.15	39	4.3	3	0.71	3	1.20
1	72	1.44	39	5.1	3	0.95	3	1.50
4	48	2.23	39	7.9	3	1.49	3	2.35
8	36	3.35	51	11.7	5	2.36	4	3.50
10	32	3.91	51	13.5	5	2.80	4	4.05
1/4	28	4.95	51	17.6	5	3.68	4	5.50
5/16	24	5.95	63	22.0	6*	4.47	5	6.90
3/8	24	7.10	67	26.0	8*	5.62	5	8.50

ID

ID

175235	175248
175236	175249
175237	175250
175238	175251
167477	167505
167478	167506
175239	175252
175240	175253

Ø D ₁ UNF	P TPI	d ₁ mm	l ₁ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0	80	1.15	39	6.6	3	0.71	3	1.20
1	72	1.44	39	7.9	3	0.95	3	1.50
4	48	2.23	39	12.1	3	1.49	3	2.35
8	36	3.35	51	18.0	5	2.36	4	3.50
10	32	3.91	51	20.8	5	2.80	4	4.05
1/4	28	4.95	51	27.1	5	3.68	4	5.50
5/16	24	5.95	75	34.0	6*	4.47	5	6.90
3/8	24	7.10	83	40.0	8*	5.62	5	8.50

ID

ID

175264	175280
175265	175281
175266	175282
175267	175283
167484	167512
167485	167513
175268	175284
175269	175285

*Tol. h6

GW

GW4016



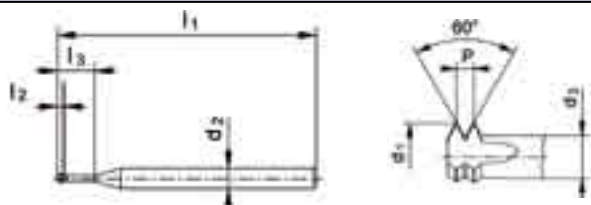
GW4016VS



GW4019



GW4019VS



GW4016

GW4016VS

GW4019

GW4019VS



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.20	0.51	39	0.40	2.3	3	0.23	3	0.58 *
0.9	0.225	0.57	39	0.45	2.6	3	0.26	3	0.65 *
1.0	0.25	0.64	39	0.50	2.9	3	0.29	3	0.70 *
1.2	0.25	0.84	39	0.50	3.4	3	0.49	3	0.90 *
1.4	0.30	0.97	39	0.60	4.0	3	0.55	3	1.05 *
1.6	0.35	1.09	39	0.70	4.6	3	0.60	3	1.19 *
1.8	0.35	1.29	39	0.70	5.1	3	0.80	3	1.39 *
2.0	0.40	1.42	39	0.80	5.6	3	0.86	3	1.54 *
2.5	0.45	1.85	39	0.90	7.0	3	1.22	3	1.98 *
3.0	0.50	2.28	51	1.00	8.5	5	1.58	4	2.43 *
3.5	0.60	2.63	51	1.20	10.0	5	1.79	4	2.80 *
4.0	0.70	2.99	51	1.40	11.4	5	2.01	4	3.20 *
5.0	0.80	3.84	51	1.60	14.1	5	2.72	4	4.10 *
6.0	1.00	4.55	51	2.00	17.0	5	3.15	4	4.90 *

ID

ID

Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ h5 mm	d ₃ mm		
0.8	0.20	0.51	39	0.40	3.5	3	0.23	3	0.58 *
0.9	0.225	0.57	39	0.45	4.0	3	0.26	3	0.65 *
1.0	0.25	0.64	39	0.50	4.4	3	0.29	3	0.70 *
1.2	0.25	0.84	39	0.50	5.2	3	0.49	3	0.90 *
1.4	0.30	0.97	39	0.60	6.1	3	0.55	3	1.05 *
1.6	0.35	1.09	39	0.70	7.0	3	0.60	3	1.19 *
1.8	0.35	1.29	39	0.70	7.8	3	0.80	3	1.39 *
2.0	0.40	1.42	39	0.80	8.6	3	0.86	3	1.54 *
2.5	0.45	1.85	39	0.90	10.7	3	1.22	3	1.98 *
3.0	0.50	2.28	51	1.00	13.0	5	1.58	4	2.43 *
3.5	0.60	2.63	51	1.20	15.2	5	1.79	4	2.80 *
4.0	0.70	2.99	51	1.40	17.4	5	2.01	4	3.20 *
5.0	0.80	3.84	51	1.60	21.6	5	2.72	4	4.10 *
6.0	1.00	4.55	51	2.00	26.0	5	3.15	4	4.90 *

ID

ID

*Tol.
+0.03 mm
0

UNC-UNF

ANSI B1.1



h5

GW

GW4016



GW4016VS



VS

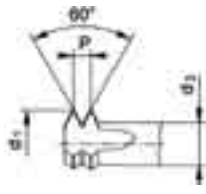
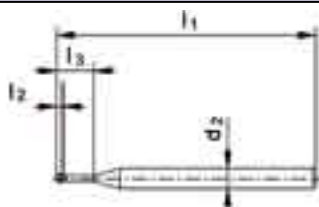
GW4019



GW4019VS



VS



GW4016

GW4016VS

GW4019

GW4019VS



Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂ h5	d ₃		
UNC	TPI	mm	mm	mm	mm	mm	mm		
2	56	1.52	39	0.91	6.2	3	0.89	3	1.65*
4	40	1.92	39	1.27	8.1	3	1.03	3	2.10*
6	32	2.35	51	1.59	10.4	5	1.24	4	2.60*
1/4	20	4.51	51	2.54	18.5	5	2.73	4	5.00*

ID

ID

167486

167514

167487

167515

167488

167516

167490

167518

Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂ h5	d ₃		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	3.67	51	1.59	13.7	5	2.56	4	3.95*
1/4	28	4.95	51	1.81	17.7	5	3.68	4	5.35*

ID

ID

167491

167519

167492

167520

Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂ h5	d ₃		
UNC	TPI	mm	mm	mm	mm	mm	mm		
2	56	1.52	39	0.90	9.5	3	0.89	3	1.65*
4	40	1.92	39	1.27	12.4	3	1.03	3	2.10*
6	32	2.35	51	1.59	15.6	5	1.24	4	2.60*
1/4	20	4.51	51	2.54	28.0	5	2.73	4	5.00*

ID

ID

167493

167521

167494

167522

167495

167523

167497

167525

Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₂ h5	d ₃		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	3.67	51	1.59	20.9	5	2.56	4	3.95*
1/4	28	4.95	51	1.81	27.3	5	3.68	4	5.35*

ID

ID

167498

167526

167499

167527

*Tol. +0.03 mm
0



GF - GFH

GF6110



GF6110VS

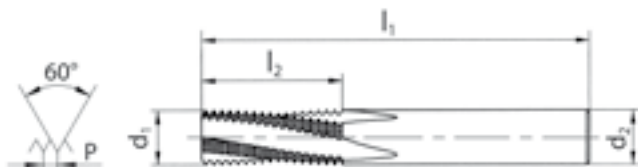


VS

GFH6110VS



VS



GF6110

GF6110VS

GFH6110VS



HRC
≤ 63



Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	GF	GFH	
2	0.40	1.50	48	3.4	6	2		1.60
2.5	0.45	1.90	48	4.3	6	3		2.05
3	0.50	2.30	48	5.3	6	3	3	2.50
3.5	0.60	2.70	48	6.3	6	3		2.90
4	0.70	3.00	48	7.4	6	3	3	3.30
5	0.80	3.80	48	9.2	6	3	4	4.20
6	1.00	4.50	54	10.5	6		4	5.00
8	1.25	5.95	54	13.1	6		5	6.80
10	1.50	7.95	64	17.3	8		5	8.50
12	1.75	9.95	74	20.1	10		5	10.20

ID

ID

ID

125233

115993

150565

152124

125660

116395

150072

116350

135217

125944

116396

150073

126158

116397

150074

150075

150076

150077

151326

GF

GF6115



GF6115VS



VS

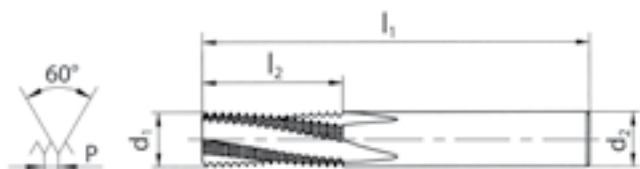
GF6165



GF6165VS



VS



GF6115

GF6115VS

GF6165

GF6165VS



ID

ID

ID

ID

Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
4	0.70	3.00	48	8.8	6	3	3.30
5	0.80	3.80	48	10.8	6	3	4.20
6	1.00	4.50	54	13.5	6	3	5.00
8	1.25	5.95	54	18.1	6	3	6.80
10	1.50	7.95	64	21.8	8	4	8.50
12	1.75	9.95	72	25.4	10	4	10.20
14	2.00	9.95	74	31.0	10	4	12.00
16	2.00	11.95	80	35.0	12	4	14.00
18	2.50	13.95	90	41.3	14	4	15.50
20							17.50

146298

146969

146299

146970

146300

146971

126350

116398

146321

146972

126586

116399

146322

146973

124836

116400

116342

116401

125066

116402

125114

115990

125229

116403

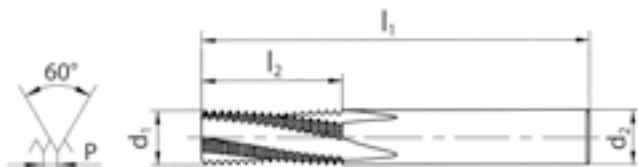


GF

GF6116

GF6116VS

GF6166

GF6166VS

GF6116
GF6116VS
GF6166
GF6166VS


$\varnothing D_1$ M	P mm	d_1 mm	l_1 mm	l_2 mm	d_2 mm		
4	0.70	3.00	48	10.9	6	3	3.30
5	0.80	3.80	48	13.2	6	3	4.20
6	1.00	4.50	54	16.5	6	3	5.00
8	1.25	5.95	54	21.9	6	3	6.80
10	1.50	7.95	64	26.3	8	4	8.50
12	1.75	9.95	74	32.4	10	4	10.20
14	2.00	9.95	74	37.0	10	4	12.00
16	2.00	11.95	90	43.0	12	4	14.00
18	2.50	13.95	105	53.8	14	4	15.50
20							17.50

ID
ID
ID
ID

155365

155370

155366

155371

155367

155372

155375

155382

155368

155373

155376

155383

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155374

155377

155384

155378

155385

155379

155386

155380

155387

155381

155388



GF

GF6110



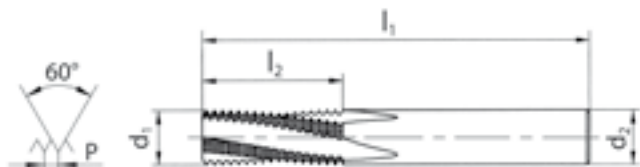
GF6110VS



VS

GF6110

GF6110VS



Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
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4	0.50	3.00	48	7.3	6	3	3.50
5	0.50	3.80	48	8.8	6	3	4.50

ID

ID

135218

135219

135069

135220

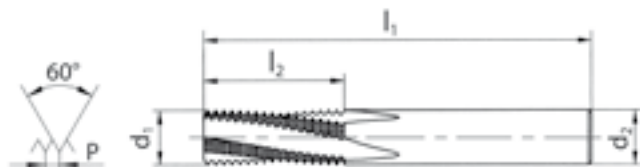


GF

GF6165

GF6165VS

GF6166

GF6166VS


Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
6	0.50	4.50	54	12.8	6	3	5.50
6	0.75	4.50	54	13.1	6	3	5.25
8	0.50	5.95	54	17.8	6	3	7.50
8	0.75	5.95	54	16.9	6	3	7.25
8	1.00	5.95	54	17.5	6	3	7.00
10	1.00	7.95	64	21.5	8	4	9.00
10	1.25	7.95	64	21.9	8	4	8.80
12	1.00	9.95	72	25.5	10	4	11.00
12	1.50	9.95	72	26.3	10	4	10.50

Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
6	0.50	4.50	54	15.8	6	3	5.50
6	0.75	4.50	54	16.1	6	3	5.25
8	0.50	5.95	54	20.8	6	3	7.50
8	0.75	5.95	54	20.6	6	3	7.25
8	1.00	5.95	54	21.5	6	3	7.00
10	1.00	7.95	64	26.5	8	4	9.00
10	1.25	7.95	64	26.9	8	4	8.80
12	1.00	9.95	74	31.5	10	4	11.00
12	1.50	9.95	74	32.3	10	4	10.50

GF6165

GF6165VS

GF6166

GF6166VS

ID
ID

135221

135222

123664

123665

135002

135223

143110

135224

124239

116404

119986

116405

120102

116406

120303

116407

120392

120393

ID
ID

155389

155398

155390

155399

155391

155400

155392

155401

155393

155402

155394

155403

155395

155404

155396

155405

155397

155406



GF

GF6110



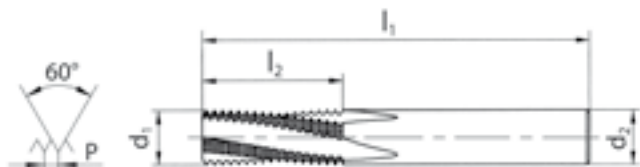
GF6110VS



VS

GF6110

GF6110VS



Ø" D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
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10	24	3.60	48	10.1	6.0	3	3.80
12	24	4.10	48	10.1	6.0	3	4.40
1/4	20	4.80	54	12.1	6.0	3	5.10

ID

ID

135225

135226

135227

135228

135229

135230



GF

GF6165



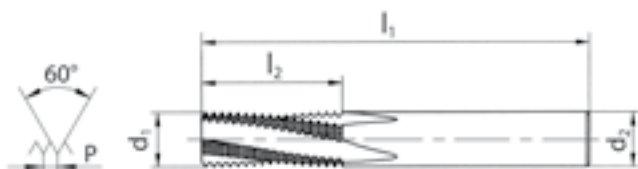
GF6165VS



GF6166



GF6166VS



Ø" D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
1/4	20	4.80	54	14.6	6.0	3	5.10
5/16	18	5.95	54	17.6	6.0	3	6.50
3/8	16	7.10	64	21.5	8.0	4	8.00
7/16	14	7.95	64	24.5	8.0	4	9.30
1/2	13	9.95	72	28.4	10.0	4	10.80

Ø" D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
1/4	20	4.80	54	17.1	6.0	3	5.10
5/16	18	5.95	54	21.9	6.0	3	6.50
3/8	16	7.10	64	26.2	8.0	4	8.00
7/16	14	7.95	64	29.9	8.0	4	9.30
1/2	13	9.95	74	34.2	10.0	4	10.80

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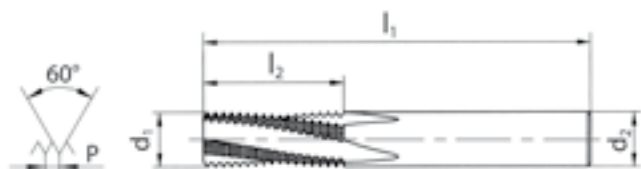
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Ø" D ₁	P	d ₁	l ₁	l ₂	d ₂		
UNF	TPI	mm	mm	mm	mm		

10	32	3.60	48	8.3	6.0	3	4.05
12	28	4.10	48	9.5	6.0	3	4.60
1/4	28	4.80	54	11.3	6.0	3	5.50

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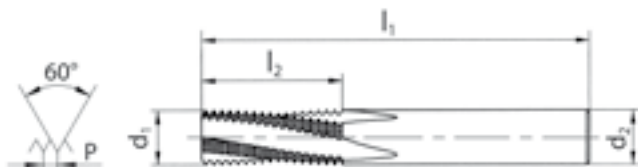
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Ø" D ₁	P	d ₁	l ₁	l ₂	d ₂		
UNF	TPI	mm	mm	mm	mm		
1/4	28	4.80	54	14.1	6.0	3	5.50
5/16	24	5.95	54	17.5	6.0	3	6.90
3/8	24	7.10	64	20.6	8.0	4	8.50
7/16	20	7.95	64	24.8	8.0	4	9.80
1/2	20	9.95	72	27.3	10.0	4	11.40

Ø" D ₁	P	d ₁	l ₁	l ₂	d ₂		
UNF	TPI	mm	mm	mm	mm		
1/4	28	4.80	54	16.8	6.0	3	5.50
5/16	24	5.95	54	20.6	6.0	3	6.90
3/8	24	7.10	64	24.9	8.0	4	8.50
7/16	20	7.95	64	28.6	8.0	4	9.80
1/2	20	9.95	74	33.7	10.0	4	11.40

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GF6166VS



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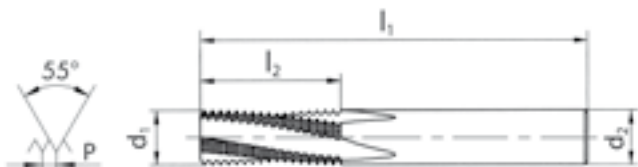
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Ø" D ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
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1/8	28	7.95	64	21.3	8.0	4	8.75
1/4	19	9.95	72	28.7	10.0	4	11.60
3/8	19	13.60	80	35.4	14.0	4	15.20

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Ø" D ₁ G	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm		
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1/8	28	7.95	64	24.9	8.0	4	8.75
1/4	19	9.95	74	34.1	10.0	4	11.60
3/8	19	13.60	90	43.4	14.0	4	15.20

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GF6160

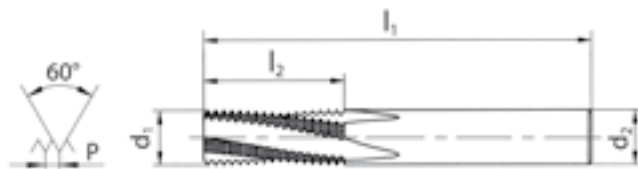


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Ø" D ₁ NPT	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	
1/8	27	7.30	64	9.9	8.0	4
1/4	18	9.95	72	14.8	12.0	4
3/8	18	12.50	80	14.8	14.0	4
1/2	14	14.70	90	19.1	16.0	4

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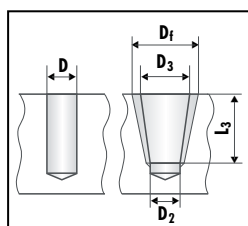
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135252	135253
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Ø" D ₁ NPTF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	d ₂ mm	
1/8	27	7.30	64	9.9	8.0	4
1/4	18	9.95	72	14.8	12.0	4
3/8	18	12.50	80	14.8	14.0	4
1/2	14	14.70	90	19.1	16.0	4

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Vorbereitung Core hole				
Ø D ₁	D	D ₂	NPT NPTF D ₃ (+0.05)	
1/8	8.5	8.3	8.74	8.76
1/4	11.0	10.8	11.36	11.40
3/8	14.5	14.2	14.80	14.84
1/2	17.9	17.5	18.32	18.33

Fräsen Milling	
D _f	L ₃
9.81	6.92
12.99	10.02
16.41	10.33
20.37	13.57



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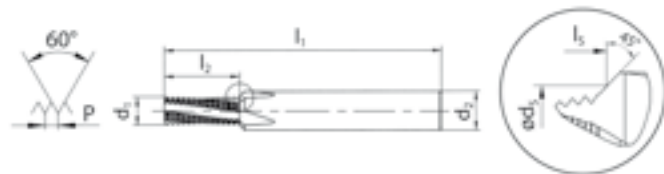
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Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm		
2	0.40	1.50	48	3.4	3.7	2.1	6	2	1.60
2.5	0.45	1.90	48	4.3	4.7	2.6	6	3	2.05
3	0.50	2.30	48	5.3	5.6	3.1	6	3	2.50
3.5	0.60	2.70	48	5.7	6.2	3.6	6	3	2.90
4	0.70	3.00	48	7.3	7.9	4.1	6	3	3.30
5	0.80	3.80	54	9.2	9.9	5.1	6	3	4.20
6	1.00	4.50	62	10.5	11.3	6.2	8	3	5.00
8	1.25	5.95	74	13.1	14.3	8.2	10	3	6.80
10	1.50	7.95	80	17.3	18.4	10.3	12	4	8.50
12	1.75	9.95	90	20.1	21.3	12.3	14	4	10.20
14	2.00	10.80	102	25.0	26.8	14.4	16	4	12.00
16	2.00	12.80	102	27.0	28.8	16.4	18	4	14.00
18	2.50	13.95	125	33.8	36.0	18.5	25	4	15.50
20					37.0	20.5			17.50

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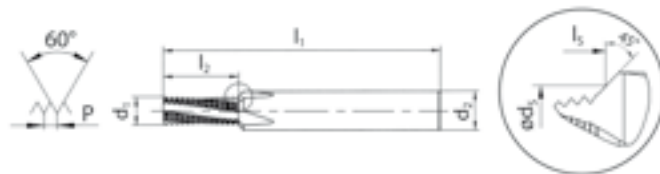
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Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm		
2	0.40	1.50	48	4.6	4.9	2.1	6	2	1.60
2.5	0.45	1.90	48	5.6	6.0	2.6	6	3	2.05
3	0.50	2.30	48	6.8	7.1	3.1	6	3	2.50
3.5	0.60	2.70	48	7.5	8.0	3.6	6	3	2.90
4	0.70	3.00	48	8.8	9.3	4.1	6	3	3.30
5	0.80	3.80	54	10.8	11.5	5.1	6	3	4.20
6	1.00	4.50	62	13.5	14.3	6.2	8	3	5.00
8	1.25	5.95	74	18.1	19.3	8.2	10	3	6.80
10	1.50	7.95	80	21.8	22.9	10.3	12	4	8.50
12	1.75	9.95	90	25.4	26.6	12.3	14	4	10.20
14	2.00	10.80	102	31.0	32.8	14.4	16	4	12.00
16	2.00	12.80	102	35.0	36.8	16.4	18	4	14.00
18	2.50	13.95	125	41.3	43.5	18.5	25	4	15.50
20					44.5	20.5			17.50

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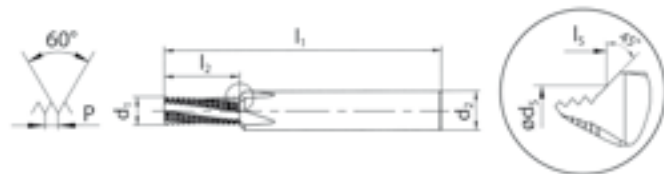
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Ø D ₁ M	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₅ mm	d ₂ mm		
3	0.50	2.30	48	8.3	8.7	3.1	6	3	2.50
4	0.70	3.00	48	10.9	11.5	4.1	6	3	3.30
5	0.80	3.80	54	13.2	13.9	5.1	6	3	4.20
6	1.00	4.50	62	16.5	17.4	6.2	8	3	5.00
8	1.25	5.95	74	21.9	23.0	8.2	10	3	6.80
10	1.50	7.95	80	26.3	27.5	10.3	12	4	8.50
12	1.75	9.95	90	32.4	33.6	12.3	14	4	10.20
14	2.00	10.80	102	37.0	38.8	14.4	16	4	12.00
16	2.00	12.80	102	43.0	44.8	16.4	18	4	14.00
18	2.50	13.95	125	53.8	56.1	18.5	25	4	15.50
20					57.1	20.5			17.50

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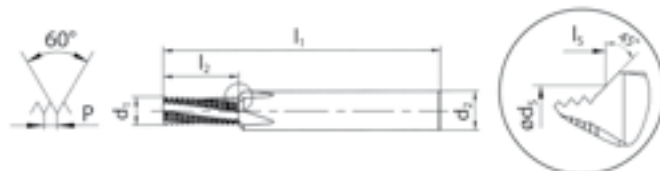
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Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm		
4	0.50	3.00	48	7.3	7.8	4.1	6	3	3.50
5	0.50	3.80	54	8.8	9.4	5.1	6	3	4.50
6	0.50	4.50	62	9.8	10.6	6.2	8	3	5.50
6	0.75	4.50	62	10.1	11.0	6.2	8	3	5.25
8	0.50	5.95	74	12.8	13.9	8.2	10	3	7.50
8	0.75	5.95	74	13.1	14.3	8.2	10	3	7.25
8	1.00	5.95	74	13.5	14.6	8.2	10	3	7.00
10	1.00	7.95	80	16.5	17.7	10.3	12	4	9.00
10	1.25	7.95	80	16.9	18.1	10.3	12	4	8.80
12	1.00	9.95	90	19.5	20.7	12.3	14	4	11.00
12	1.50	9.95	90	20.3	21.4	12.3	14	4	10.50
14	1.50	10.80	102	23.3	25.0	14.4	16	4	12.50
16	1.50	12.80	102	26.3	28.1	16.4	18	4	14.50

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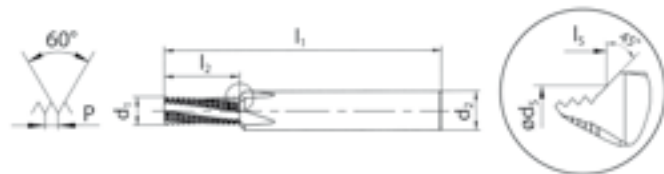
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Ø D ₁ MF	P mm	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm		
4	0.50	3.00	48	8.8	9.3	4.1	6	3	3.50
5	0.50	3.80	54	10.8	11.4	5.1	6	3	4.50
6	0.50	4.50	62	12.8	13.6	6.2	8	3	5.50
6	0.75	4.50	62	13.1	14.0	6.2	8	3	5.25
8	0.50	5.95	74	17.8	18.9	8.2	10	3	7.50
8	0.75	5.95	74	16.9	18.0	8.2	10	3	7.25
8	1.00	5.95	74	17.5	18.6	8.2	10	3	7.00
10	1.00	7.95	80	21.5	22.7	10.3	12	4	9.00
10	1.25	7.95	80	21.9	23.0	10.3	12	4	8.80
12	1.00	9.95	90	25.5	26.7	12.3	14	4	11.00
12	1.50	9.95	90	26.3	27.4	12.3	14	4	10.50
14	1.50	10.80	102	30.8	32.5	14.4	16	4	12.50
16	1.50	12.80	102	33.8	35.6	16.4	18	4	14.50

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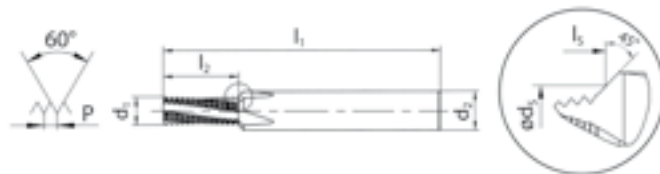
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Ø" D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm		
10	24	3.60	54	10.1	10.7	4.9	6	3	3.80
12	24	4.10	54	10.1	10.8	5.6	6	3	4.40
1/4	20	4.80	62	12.1	12.9	6.5	8	3	5.10
5/16	18	5.95	74	14.8	15.9	8.1	10	3	6.50
3/8	16	7.10	80	16.7	18.0	9.8	12	4	8.00
7/16	14	7.95	80	19.0	20.8	11.4	12	4	9.30
1/2	13	9.95	90	22.5	24.0	13.0	14	4	10.80
9/16	12	10.80	102	24.4	26.3	14.6	16	4	12.20
5/8	11	11.90	102	26.5	28.8	16.3	18	4	13.60

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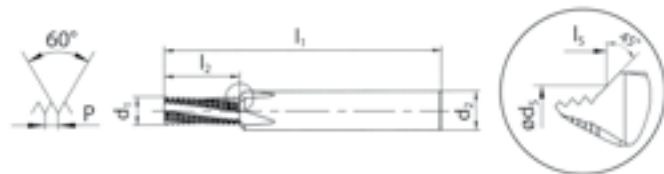
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Ø" D ₁ UNC	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₅ mm	d ₂ mm		
10	24	3.60	54	12.2	12.8	4.9	6	3	3.80
12	24	4.10	54	13.2	14.0	5.6	6	3	4.40
1/4	20	4.80	62	14.6	15.5	6.5	8	3	5.10
5/16	18	5.95	74	17.6	18.7	8.1	10	3	6.50
3/8	16	7.10	80	21.5	22.8	9.8	12	4	8.00
7/16	14	7.95	80	24.5	26.2	11.4	12	4	9.30
1/2	13	9.95	90	28.4	29.9	13.0	14	4	10.80
9/16	12	10.80	102	32.8	34.7	14.6	16	4	12.20
5/8	11	11.90	102	35.8	38.0	16.3	18	4	13.60

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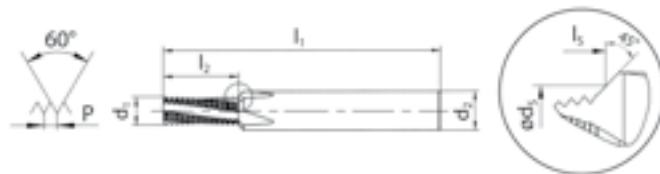
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Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₃	d ₂		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	3.60	54	8.3	9.0	4.9	6	3	4.05
12	28	4.10	54	9.5	10.3	5.6	6	3	4.60
1/4	28	4.80	62	11.3	12.2	6.5	8	3	5.50
5/16	24	5.95	74	13.2	14.3	8.1	10	3	6.90
3/8	24	7.10	80	16.4	17.3	9.8	12	4	8.50
7/16	20	7.95	80	18.4	20.1	11.4	12	4	9.80
1/2	20	9.95	90	21.0	22.5	13.0	14	4	11.40
9/16	18	11.60	102	23.3	24.8	14.6	16	4	12.90
5/8	18	11.90	102	26.1	28.3	16.3	18	4	14.50

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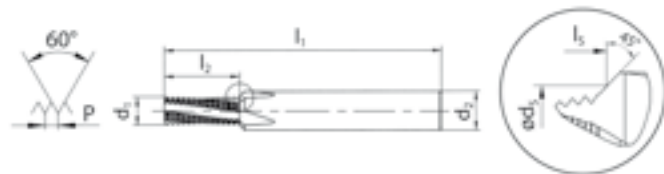
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GFS6665

GFS6665VS



Ø" D ₁	P	d ₁	l ₁	l ₂	l ₃	d ₅	d ₂		
UNF	TPI	mm	mm	mm	mm	mm	mm		
10	32	3.60	54	11.5	12.2	4.9	6	3	4.05
12	28	4.10	54	12.3	13.0	5.6	6	3	4.60
1/4	28	4.80	62	14.1	14.9	6.5	8	3	5.50
5/16	24	5.95	74	17.5	18.6	8.1	10	3	6.90
3/8	24	7.10	80	20.6	21.5	9.8	12	4	8.50
7/16	20	7.95	80	24.8	26.5	11.4	12	4	9.80
1/2	20	9.95	90	27.3	28.8	13.0	14	4	11.40
9/16	18	11.60	102	30.4	31.9	14.6	16	4	12.90
5/8	18	11.90	102	34.6	36.8	16.3	18	4	14.50

ID

ID

ID

ID

128660

135474

* 135475

* 135476

128578

135477

155488

155491

135478

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155489

155492

135480

135481

155490

155493

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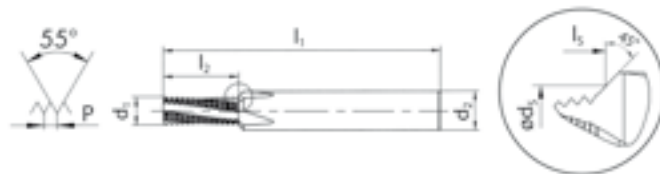


GFS

GFS6660

GFS6660VS

GFS6665

GFS6665VS


$\varnothing''$ G	D_1 TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_3 mm	d_2 mm	$\frac{d_2}{d_1}$	$\frac{l_1}{d_1}$
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1/8	28	7.95	80	15.9	16.9	10.0	12	4	8.75
1/4	19	9.95	90	22.1	23.8	13.5	14	4	11.60
3/8	19	12.80	102	27.4	29.5	17.1	18	4	15.20

GFS6660
GFS6660VS
GFS6665
GFS6665VS

ID
ID

* 135411

* 135412

* 135413

* 135414

* 135415

* 135416

$\varnothing''$ G	D_1 TPI	d_1 mm	l_1 mm	l_2 mm	l_3 mm	d_3 mm	d_2 mm	$\frac{d_2}{d_1}$	$\frac{l_1}{d_1}$
----------------------	--------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------------	-------------------

1/8	28	7.95	80	21.3	22.3	10.0	12	4	8.75
1/4	19	9.95	90	28.7	30.5	13.5	14	4	11.60
3/8	19	12.80	102	35.4	37.6	17.1	18	4	15.20

ID
ID

* 119349

* 135417

* 119298

* 135418

* 119680

* 135419



GFS

GFS6660

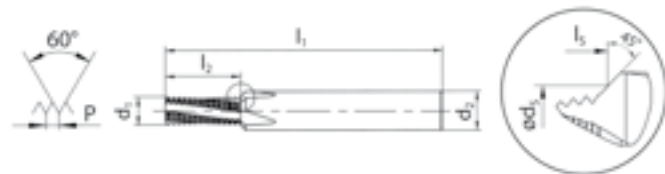


GFS6660VS



GFS6660

GFS6660VS



Ø" D ₁ NPT	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	d ₃ mm	
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1/8	27	7.30	70	9.9	11.2	10.6	12	4
1/4	18	9.95	80	14.8	16.4	14.0	16	4
3/8	18	12.50	80	14.8	16.9	17.6	18	4

ID

ID

* 126910	* 135490
* 126899	* 135491
* 126928	* 135492

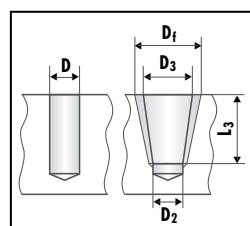
Ø" D ₁ NPTF	P TPI	d ₁ mm	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	d ₃ mm	
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1/8	27	7.30	70	9.9	11.2	10.6	12	4
1/4	18	9.95	80	14.8	16.4	14.0	16	4
3/8	18	12.50	80	14.8	16.9	17.6	18	4

ID

ID

* 135493	* 135494
* 135495	* 135496
* 135497	* 135498

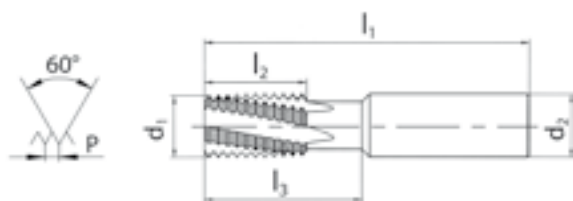


Vorbohrung Core hole				
Ø D ₁	D	D ₂	NPT NPTF D ₃ (+0.05)	
1/8	8.5	8.3	8.74	8.76
1/4	11.0	10.8	11.36	11.40
3/8	14.5	14.2	14.80	14.84

Fräsen Milling	
D _f	L ₃
9.81	6.92
12.99	10.02
16.41	10.33

GFM

GFM6260

GFM6260VS

GFM6260
GFM6260VS


d_1 mm	P mm	$\varnothing D_1$ mm	l_1 mm	l_2 mm	l_3 mm	d_2 mm	
8	0.50	10	64	16.0	16	8.0	4
8	0.75	10	64	15.8	16	8.0	4
10	0.75	14	70	15.8	26	10.0	4
10	1.00	14	70	16.0	26	10.0	4
10	1.25	14	70	16.3	26	10.0	4
10	1.50	14	70	16.5	26	10.0	4
12	0.50	18	80	20.0	32	12.0	4
12	0.75	18	80	20.3	32	12.0	4
12	1.00	18	80	20.0	32	12.0	4
12	1.50	18	80	21.0	32	12.0	4
12	2.00	18	80	20.0	32	12.0	4
16	1.00	24	90	25.0	42	16.0	4
16	1.50	24	90	25.5	42	16.0	4
16	2.00	24	90	26.0	42	16.0	4
16	2.50	24	90	25.0	42	16.0	4
16	3.00	24	90	27.0	42	16.0	4
20	1.00	30	105	33.0	52	20.0	5
20	1.50	30	105	33.0	52	20.0	5
20	2.00	30	105	34.0	52	20.0	5
20	2.50	30	105	32.5	52	20.0	5
20	3.00	30	105	33.0	52	20.0	5
20	3.50	30	105	38.5	52	20.0	5

ID
ID

116450	135260
116340	135261
116128	135262
118657	135263
118659	135264
118661	135265
116129	135214
155526	155527
118664	135007
118669	135181
118673	135269
118680	135270
118682	116017
118684	135271
118689	135272
158760	150564
135273	135274
118694	135275
116338	135276
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118699	135279
144195	144065

GFM

GFM6260

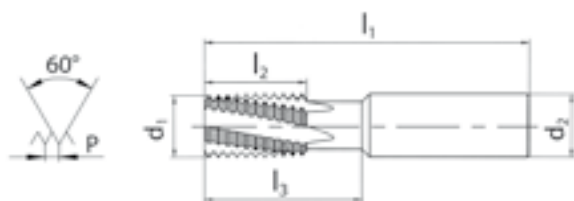


GFM6260VS



GFM6260

GFM6260VS



d ₁ mm	P TPI	Ø" D ₁ ≥ UN	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm		ID	ID
10	24	1/2	70	15.9	26	10	4	135288	135289
12	24	3/4	80	20.1	32	12	4	135290	135291
12	20	3/4	80	20.3	32	12	4	135292	135293
12	18	3/4	80	19.8	32	12	4	135294	135295
12	16	3/4	80	20.6	32	12	4	135296	135297
12	10	3/4	80	20.3	32	12	4	150963	155494
16	24	1	90	25.4	42	16	4	135298	135299
16	20	1	90	25.4	42	16	4	135300	135301
16	18	1	90	25.4	42	16	4	135302	135303
16	16	1	90	25.4	42	16	4	135304	135305
16	14	1	90	25.4	42	16	4	135306	135307
16	12	1	90	25.4	42	16	4	135308	135309
16	9	1	90	25.4	42	16	4	150964	155495
16	8	1	90	25.4	42	16	4	150965	155496
20	24	1 1/4	105	32.8	52	20	5	* 135310	* 135311
20	20	1 1/4	105	33.0	52	20	5	* 135312	* 135313
20	18	1 1/4	105	32.5	52	20	5	135314	135315
20	16	1 1/4	105	33.4	52	20	5	118697	135316
20	14	1 1/4	105	32.7	52	20	5	135317	135318
20	12	1 1/4	105	31.8	52	20	5	135319	135320
20	8	1 1/4	105	31.8	52	20	5	135321	135322
20	7	1 1/4	105	32.7	52	20	5	150962	155497

GFM

GFM6260

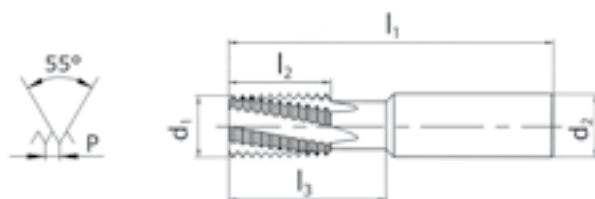


GFM6260VS



GFM6260

GFM6260VS



d ₁ mm	P TPI	Ø" D ₁ G	l ₁ mm	l ₂ mm	l ₃ mm	d ₂ mm	
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10	19	1/4 - 3/8	70	16.0	26	10	4
16	14	1/2 - 7/8	90	25.4	42	16	4
20	11	≥ 1	105	32.3	52	20	5

ID

ID

118655

135280

118678

135281

118691

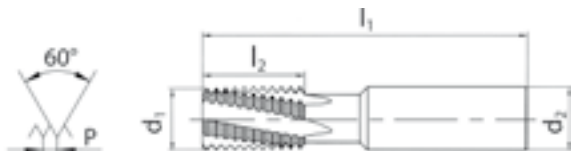
135282

GFM

GFM6260



GFM6260VS



GFM6260

GFM6260VS



ID

ID

d ₁ mm	P TPI	Ø" D ₁ ≥ NPT	l ₁ mm	l ₂ mm	d ₂ mm	
14.5	14	1/2	90	19.1	16	4
18.5	11.5	1	90	23.2	20	5

135323

135324

135325

135326

d ₁ mm	P TPI	Ø" D ₁ ≥ NPTF	l ₁ mm	l ₂ mm	d ₂ mm	
14.5	14	1/2	90	19.1	16	4
18.5	11.5	1	90	23.2	20	5

ID

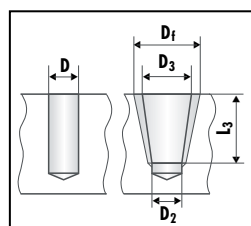
ID

* 135327

* 135328

* 135329

* 135330



Vorbereitung Core hole				
Ø D ₁	D	D ₂	NPT NPTF D ₃ (+0.05)	
1/2	17.9	17.5	18.32	18.33
3/4	23.2	22.8	23.67	23.68
1	29.0	28.6	29.69	29.72
1 1/4	37.7	37.3	38.45	38.48
1 1/2	44.0	43.5	44.52	44.55
2	56.0	55.5	56.56	56.59

Fräsen
Milling

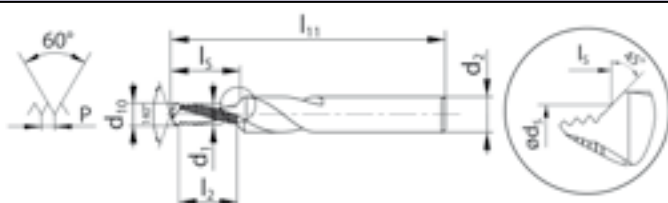
D _f	L ₃
20.37	13.57
25.69	14.05
32.18	16.79
40.90	17.30
49.67	17.30
58.99	17.70

BGF

BGF6760



BGF6760VS



BGF6760

BGF6760VS



Ø D ₁ M	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l ₃ mm	d ₃ mm	d ₂ mm	
4	0.70	3.10	3.30	48	5.6	7.4	4.1	6	2
5	0.80	4.00	4.20	54	7.2	9.4	5.1	6	2
6	1.00	4.75	5.00	62	9.0	11.7	6.2	8	2
8	1.25	6.50	6.75	74	11.2	14.6	8.2	10	2
10	1.50	8.25	8.50	80	14.9	19.1	10.3	12	2
12	1.75	9.95	10.25	90	17.4	22.1	12.3	14	2
14	2.00	11.60	12.00	102	19.9	25.1	14.4	16	2
16	2.00	13.60	14.00	102	23.9	29.5	16.4	18	2

ID

ID

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153401	153416
153402	153417
151911	153418
153403	151442
153404	153419
* 153405	* 153420
* 153406	* 153421

153400

153415

153401

153416

153402

153417

151911

153418

153403

151442

153404

153419

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* 153406

* 153421



BGF

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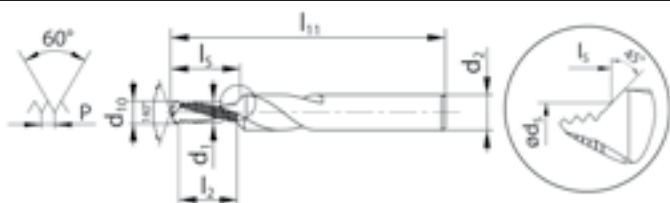
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Ø D ₁ M	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l _s mm	d _s mm	d ₂ mm	
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4	0.70	3.10	3.30	48	7.7	9.5	4.1	6	2
5	0.80	4.00	4.20	54	9.6	11.8	5.1	6	2
6	1.00	4.75	5.00	62	12.0	14.7	6.2	8	2
8	1.25	6.50	6.75	74	15.0	18.4	8.2	10	2
10	1.50	8.25	8.50	80	19.4	23.6	10.3	12	2
12	1.75	9.95	10.25	90	22.7	27.3	12.3	14	2
14	2.00	11.60	12.00	102	27.9	33.1	14.4	16	2
16	2.00	13.60	14.00	102	31.9	37.5	16.4	18	2

ID

ID

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150933	151776
153431	150588
153432	150589
153433	150927
* 153434	* 153443
* 153435	* 151324

Ø D ₁ M	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l _s mm	d _s mm	d ₂ mm	
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6	1.00	4.75	5.00	62	15.0	17.7	6.2	8	2
8	1.25	6.50	6.75	74	20.0	23.4	8.2	10	2
10	1.50	8.25	8.50	80	23.9	28.1	10.3	12	2
12	1.75	9.95	10.25	90	29.7	34.3	12.3	14	2
14	2.00	11.60	12.00	102	35.9	41.1	14.4	16	2
16	2.00	13.60	14.00	102	39.9	45.5	16.4	18	2

ID

ID

153451	153467
153452	153468
153453	153469
153454	153470
* 153455	* 153471
* 153456	* 153472



BGF

BGF6865



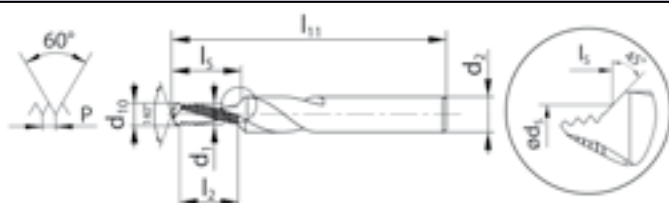
BGF6865VS



BGF6866



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Ø D ₁ M	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l ₃ mm	d ₅ mm	d ₂ mm	
6	1.00	4.75	5.00	62	12.0	14.7	6.2	8	3
8	1.25	6.50	6.75	74	14.9	18.4	8.2	10	3
10	1.50	8.25	8.50	80	19.4	23.6	10.3	12	3
12	1.75	9.95	10.25	90	22.7	27.3	12.3	14	3
14	2.00	11.60	12.00	102	27.9	33.1	14.4	16	3
16	2.00	13.60	14.00	102	31.9	37.5	16.4	18	3

Ø D ₁ M	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l ₃ mm	d ₅ mm	d ₂ mm	
6	1.00	4.75	5.00	62	15.0	17.7	6.2	8	3
8	1.25	6.50	6.75	74	20.0	23.4	8.2	10	3
10	1.50	8.25	8.50	80	23.9	28.1	10.3	12	3
12	1.75	9.95	10.25	90	29.7	34.3	12.3	14	3
14	2.00	11.60	12.00	102	35.9	41.1	14.4	16	3
16	2.00	13.60	14.00	102	39.9	45.5	16.4	18	3

BGF6865

BGF6865VS

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BGF6866VS



ID

ID

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* 153589

* 153578

* 153590

* 153579

* 153591

* 153580

* 153592

* 153581

* 153593

* 153582

* 153594

ID

ID

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* 153613

* 153602

* 153614

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BGF

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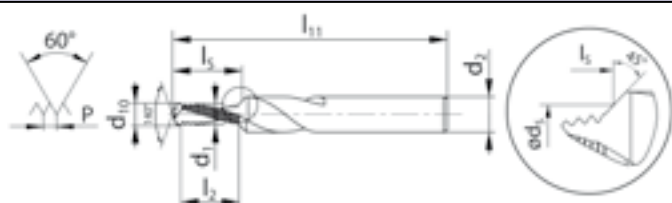
BGF6760VS



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BGF6760VS



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Ø D ₁ MF	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l _s mm	d _s mm	d ₂ mm	
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6	0.75	5.00	5.25	62	9.0	11.4	6.2	8	2
8	1.00	6.75	7.00	74	12.0	15.0	8.2	10	2
10	1.00	8.75	9.00	80	15.0	18.5	10.3	12	2
12	1.00	10.70	11.00	90	18.0	21.9	12.3	14	2
12	1.50	10.20	10.50	90	17.9	22.5	12.3	14	2
14	1.50	12.10	12.50	102	20.9	26.0	14.4	16	2
16	1.50	14.10	14.50	102	23.9	29.4	16.4	18	2

ID

ID

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* 153764	* 153785
* 153765	* 153786
* 153766	* 153787
* 153767	* 153788

Ø D ₁ MF	P mm	d ₁ mm	d ₁₀ mm	l ₁₁ mm	l ₂ mm	l _s mm	d _s mm	d ₂ mm	
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6	0.75	5.00	5.25	62	9.0	11.4	6.2	8	2
8	1.00	6.75	7.00	74	12.0	15.0	8.2	10	2
10	1.00	8.75	9.00	80	15.0	18.5	10.3	12	2
12	1.00	10.70	11.00	90	18.0	21.9	12.3	14	2
12	1.50	10.20	10.50	90	17.9	22.5	12.3	14	2
14	1.50	12.10	12.50	102	20.9	26.0	14.4	16	2
16	1.50	14.10	14.50	102	23.9	29.4	16.4	18	2

ID

ID

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* 153805	* 153827
* 153807	* 153829
* 153808	* 153830
* 153809	* 153831
* 153810	* 153832

Inhaltsverzeichnis - Runde-, Automaten-, Sechskant- und Glocken-Schneideisen

Directory - Round dies, button dies for Swiss automatics, hexagon die nuts and bell form dies

		N		MS	Z		N	Z
Merkmale Characteristics								
								
								
								
								
		N5110	N5120	MS5120	Z5120	Z5120LL	N5220	Z5220
M 6g	DIN 13	246	246		247	247	260	260
M 6e	DIN 13		246				260	
M 6g LH	DIN 13		246					
MF 6g	DIN 13	248	248-250		248-249		261	
MF 6e	DIN 13		248-249					
MF 6g LH	DIN 13		248-250					
UNC	ANSI B1.1	251	251					
UNF	ANSI B1.1	252	252					
UNEF	ANSI B1.1		253					
UN	ANSI B1.1		253					
UNS	ANSI B1.1		253					
G (BSP)	DIN ISO 228		254	255	255			
G (BSP) LH	DIN ISO 228		254					
G (BSP) -0.1 mm	DIN ISO 228			255				
R (BSPT)	DIN EN 10226		256					
NPT	ANSI B1.20.1		257					
NPTF	ANSI B1.20.3		257					
PG	DIN 40430		258					
TR	DIN 103		258					
W (BSW)	BS 84		259					
W (BSW) LH	BS 84		259					

N	
	
	
	
	
N5310	N5420
262	263
262	
263	
263	

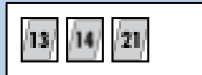
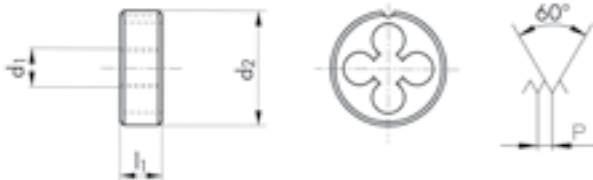
Piktogramme - Pictographs

	HSS HSS
	HSSE HSSE
	1.25 Gewindegänge 1.25 chamfered threads
	1.75 Gewindegänge 1.75 chamfered threads
	2 Gewindegänge 2 chamfered threads
	Schälanschnitt ab Ø 3 mm Peeling cut from Ø 3 mm
	Schälanschnitt, beidseitig, ab Ø 3 mm Peeling cut on both sides from Ø 3 mm
	Anzahl Spannuten Number of flutes
	Vordrehdurchmesser Turned diameters
	Nitriert ($d_1 \geq 3 \text{ mm}$, $P \geq 0.5 \text{ mm}$) Nitrided ($d_1 \geq 3 \text{ mm}$, $P \geq 0.5 \text{ mm}$)
	Schneideisen mit 2 Aufschraublöchern Die with 2 securing holes
	Toleranz 6g Tolerance 6g
	Toleranz 6e Tolerance 6e
	Toleranz "Medium Class" Tolerance "Medium Class"
	Toleranz A Tolerance A
	Konisches Gewinde 1:16 (NPT - NPTF - R) Tapered thread 1:16 (NPT - NPTF - R)
	Linksgewinde Left hand thread

N5110 11 12 N5120 11 12 N5120 LH 11 12 LH N5120 11 12								N5110	N5120	N5120 LH	N5120
											
6g 6g 6g 6e								ID	ID	ID	ID 6g - mm
1	0.25	16.0	5.0	3		0.97		103851			
1.1	0.25	16.0	5.0	3		1.07		124659			
1.2	0.25	16.0	5.0	3		1.17		103852			
1.4	0.30	16.0	5.0	3		1.36		103853			
1.6	0.35	16.0	5.0	3		1.54		103855			
1.7	0.35	16.0	5.0	3		1.64		103856			
1.8	0.35	16.0	5.0	3		1.74		103857			
2	0.40	16.0	5.0	3		1.93	1.90	103864			
2.2	0.45	16.0	5.0	3		2.13		103867			
2.3	0.40	16.0	5.0	3		2.23		103869			
2.5	0.45	16.0	5.0	3		2.43	2.40	103872			
2.6	0.45	16.0	5.0	3		2.53		103876			
3	0.50	20.0	5.0	3	4	2.92	2.90	103879	104067	104068	104066 0.030
3.5	0.60	20.0	5.0	3	4	3.41	3.38	103880	104071	104072	* 104070 0.030
4	0.70	20.0	5.0	3	4	3.91	3.87	103881	104114	104115	104113 0.035
4.5	0.75	20.0	7.0	4		4.40		103882	104117		
5	0.80	20.0	7.0	4	4	4.90	4.87	103883	104146	104147	104145 0.035
5.5	0.90	20.0	7.0	4		5.40		103884			
6	1.00	20.0	7.0	4	4	5.88	5.85	103885	104165	104166	104164 0.035
7	1.00	25.0	9.0	4	4	6.88		103886	104174	104175	
8	1.25	25.0	9.0	4	4	7.87	7.83	103887	104186	104187	104185 0.035
9	1.25	25.0	9.0	4		8.87		103888	104191		
10	1.50	30.0	11.0	4	4	9.85	9.82	103858	103953	103954	103952 0.035
12	1.75	38.0	14.0	4	4	11.83	11.80	103859	103973	103974	103972 0.035
14	2.00	38.0	14.0	4	4	13.82		103860	103989	103990	
16	2.00	45.0	18.0	4	4	15.82	15.79		104003	104004	* 104002 0.035
18	2.50	45.0	18.0	5		17.79		* 103862	104015		
20	2.50	45.0	18.0	5	5	19.79		103878	104028	104029	
22	2.50	55.0	22.0	5		21.79			104035		
24	3.00	55.0	22.0	5	5	23.76			104043	104044	
27	3.00	65.0	25.0	5		26.76			104058		
30	3.50	65.0	25.0	5	5	29.73			104079	104080	
33	3.50	65.0	25.0	6		32.73			104089		
36	4.00	65.0	25.0	7		35.70			104100		

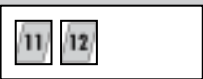
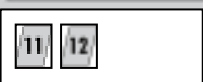
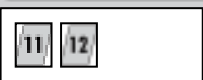
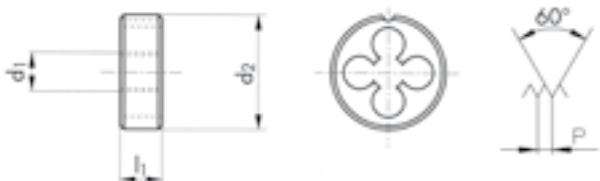
≤ M1.4

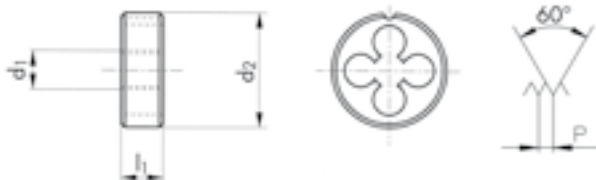
6h

Z5120		NI		Z5120	Z5120 LL			
Z5120 LL		NI						
								
								
$\varnothing d_1$ M	P mm	d_2 mm	l_1 mm	 Z5120	 Z5120 LL		ID	ID
2	0.40	16.0	3.5	4	4	1.93	125269	105115
2.5	0.45	16.0	5.0	4	4	2.43	104779	105116
2.6	0.45	16.0	5.0	4		2.53	104780	
3	0.50	20.0	5.0	4	5	2.92	104788	105117
3.5	0.60	20.0	5.0	4		3.41	104789	
4	0.70	20.0	5.0	4	5	3.91	104790	105118
5	0.80	20.0	7.0	4	5	4.90	104792	105119
6	1.00	20.0	7.0	4	5	5.88	104795	105120
7	1.00	25.0	9.0	4		6.88	111424	
8	1.25	25.0	9.0	5	6	7.87	104798	105121
10	1.50	30.0	11.0	5	6	9.85	104767	105122
12	1.75	38.0	14.0	5	6	11.83	104770	105123
14	2.00	38.0	14.0	5		13.82	104773	
16	2.00	45.0	18.0	5		15.82	104776	
18	2.50	45.0	18.0	5		17.79	104778	
20	2.50	45.0	18.0	5		19.79	104783	
24	3.00	55.0	22.0	6		23.76	104787	



N5120 ≥03 LH ≥03 N5120 ≥03 Z5120 ≥02 NI 13 14 21								N5120 N5120 LH N5120 Z5120			
≥03 LH ≥03 ≥03 13 14 21								1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g			
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
1.75 x P 6g 1.75 x P 6g 1.75 x P 6e 2 x P 6g											
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N5120									N5120	N5120 LH	N5120	Z5120	
N5120 LH						LH							
N5120									   				
Z5120						NI							
										   			
										   			
Ø d ₁ MF	P mm	d ₂ mm	l ₁ mm	 N	 Z	 → 6g ←	 → 6e ←	ID	ID	ID	6g - mm	ID	
14	0.50	38.0	10.0	5		13.93		103977					
14	0.75	38.0	10.0	5		13.90		103979					
14	1.00	38.0	10.0	5	5	13.88		103981	103982			104771	
14	1.25	38.0	10.0	5		13.86		103983					
14	1.50	38.0	10.0	5	5	13.85		103986	103987			104772	
15	1.00	38.0	10.0	5		14.88		103991					
15	1.50	38.0	10.0	5		14.85		103992					
16	1.00	45.0	14.0	5	5	15.88	15.85	103996	103997	* 103995	0.035	104774	
16	1.25	45.0	14.0	5		15.87		103998					
16	1.50	45.0	14.0	5	5	15.85		104000	104001			104775	
17	1.00	45.0	14.0	5		16.88		104005					
18	1.00	45.0	14.0	5		17.88		104008					
18	1.50	45.0	14.0	5	5	17.85		104011	104012				
18	2.00	45.0	14.0	5		17.82		104013					
19	1.00	45.0	14.0	6		18.88		104017					
20	1.00	45.0	14.0	6	6	19.88		104021	104022			104781	
20	1.50	45.0	14.0	6	6	19.85		104024	104025			104782	
20	2.00	45.0	14.0	6		19.82		104026	* 104027				
21	1.00	45.0	14.0	7		20.88		111386					
22	1.00	55.0	16.0	6		21.88		104030					
22	1.50	55.0	16.0	5	6	21.85		104032					
22	2.00	55.0	16.0	5		21.82		104034					
23	1.00	55.0	16.0	6		22.88		121704					
24	1.00	55.0	16.0	6		23.88		104037					
24	1.50	55.0	16.0	6	6	23.85		104039					
24	2.00	55.0	16.0	6		23.82		104041	104042				
25	1.00	55.0	16.0	6		24.88		104045					
25	1.50	55.0	16.0	6		24.85		104046					
26	1.00	55.0	16.0	7		25.88		104049					
26	1.50	55.0	16.0	6		25.85		104050					
26	2.00	55.0	16.0	6		25.82		104052					
27	1.00	65.0	18.0	6		26.88		104053					
27	1.50	65.0	18.0	6		26.85		104054	* 104055				
27	2.00	65.0	18.0	6		26.82		104056					

N5120  11 12 N5120 LH  LH 11 12						N5120	N5120 LH		
									
									
									
$\varnothing d_1$ MF	P mm	d ₂ mm	l ₁ mm		 → 6g ←	ID	ID		
28	1.00	65.0	18.0	6	27.88	104060			
28	1.50	65.0	18.0	6	27.85	104061			
30	1.00	65.0	18.0	7	29.88	104073			
30	1.50	65.0	18.0	6	29.85	104074			
30	2.00	65.0	18.0	6	29.82	104076			
32	1.50	65.0	18.0	7	31.85	104082	* 104083		
33	1.50	65.0	18.0	7	32.85	104085			
33	2.00	65.0	18.0	7	32.82	104086			
33	3.00	65.0	25.0	7	32.76	* 104088			
34	1.50	65.0	18.0	7	33.85	104091			
35	1.50	65.0	18.0	8	34.85	104092	* 104093		
36	1.50	65.0	18.0	8	35.85	104095	* 104096		
36	2.00	65.0	18.0	8	35.82	104097			
36	3.00	65.0	25.0	7	35.76	104099			
38	1.50	75.0	20.0	7	37.85	104101			
39	1.50	75.0	20.0	7	38.85	104104			
40	1.50	75.0	20.0	8	39.85	104118	* 104119		
40	2.00	75.0	20.0	7	39.82	104120			
42	1.50	75.0	20.0	8	41.85	104122			
42	3.00	75.0	20.0	8	41.76	104125			
45	1.50	90.0	22.0	7	44.85	104127			
45	2.00	90.0	22.0	7	44.82	104129			
48	1.50	90.0	22.0	8	47.85	104133	* 104134		
48	2.00	90.0	22.0	8	47.82	104135			
48	3.00	90.0	22.0	7	47.76	104137			
50	1.50	90.0	22.0	8	49.85	104150			
60	2.00	105.0	22.0	9	59.82	104168			

N5110						N5110		N5120			
N5120											
											
											
Ø" d ₁ UNC	P TPI	d ₂ mm	l ₁ mm		 → 2A ←	ID	ID				
1	64	16.0	5.0	3	1.79	103893					
2	56	16.0	5.0	4	2.12	103894					
3	48	16.0	5.0	4	2.44	103895					
4	40	16.0	5.0	4	2.76	103896					
5	40	20.0	5.0	4	3.09		104263				
6	32	20.0	7.0	4	3.41		104266				
8	32	20.0	7.0	4	4.07		104269				
10	24	20.0	7.0	4	4.71		104258				
12	24	20.0	7.0	4	5.37		104259				
1/4	20	20.0	7.0	4	6.22		104256				
5/16	18	25.0	9.0	4	7.80		104264				
3/8	16	30.0	11.0	4	9.37		104262				
7/16	14	30.0	11.0	4	10.95		104267				
1/2	13	38.0	14.0	4	12.52		111387				
9/16	12	38.0	14.0	4	14.10		104270				
5/8	11	45.0	18.0	4	15.68		104265				
3/4	10	45.0	18.0	5	18.84		104261				
7/8	9	55.0	22.0	5	22.00		104268				
1	8	55.0	22.0	5	25.16		104257				
1 1/4	7	65.0	25.0	6	31.49		104251				
1 1/2	6	75.0	30.0	6	37.81		104250				
2	4.5	90.0	36.0	7	50.45		* 104260				

N5110						N5110		N5120			
N5120											
											
											
Ø" d ₁ UNF	P TPI	d ₂ mm	l ₁ mm			ID	ID				
0	80	16.0	5.0	3	1.47	103897					
1	72	16.0	5.0	3	1.79	103898					
2	64	16.0	5.0	4	2.12	103899					
3	56	16.0	5.0	4	2.44	103900					
4	48	16.0	5.0	4	2.77	103901					
5	44	20.0	5.0	4	3.10		104299				
6	40	20.0	5.0	4	3.42		104302				
8	36	20.0	7.0	4	4.08		104305				
10	32	20.0	7.0	4	4.73		104295				
12	28	20.0	7.0	4	5.38		104296				
1/4	28	20.0	7.0	4	6.24		104293				
5/16	24	25.0	9.0	4	7.82		104300				
3/8	24	30.0	11.0	4	9.41		104298				
7/16	20	30.0	11.0	5	10.98		104303				
1/2	20	38.0	10.0	5	12.56		104292				
9/16	18	38.0	10.0	5	14.14		104306				
5/8	18	45.0	14.0	5	15.73		104301				
3/4	16	45.0	14.0	6	18.89		104297				
7/8	14	55.0	16.0	5	22.05		104304				
1	12	55.0	16.0	6	25.21		104294				
1 1/4	12	65.0	18.0	7	31.56		104289				
1 1/2	12	75.0	20.0	7	37.91		111390				

UNEF, UNS, UN

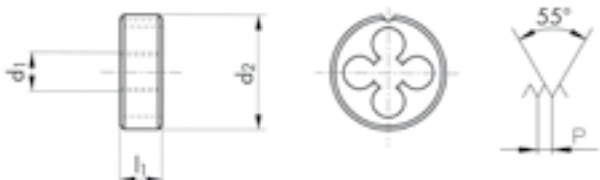
ANSI B1.1

HSS



N5120  						N5120			
									
									
									
Ø" d ₁ UNEF	P TPI	d ₂ mm	l ₁ mm	⊕	→2A←	ID			
12	32	20.0	7.0	4	5.39	104278			
1/4	32	20.0	7.0	4	6.25	104275			
5/16	32	25.0	9.0	4	7.84	104283			
3/8	32	30.0	11.0	4	9.42	104282			
7/16	28	30.0	11.0	5	11.00	104285			
1/2	28	38.0	10.0	5	12.59	104274			
9/16	24	38.0	10.0	5	14.17	104287			
5/8	24	45.0	14.0	5	15.75	104284			
3/4	20	45.0	14.0	5	18.91	104281			
13/16	20	45.0	14.0	6	20.50	* 104279			
7/8	20	55.0	16.0	5	22.09	* 104286			
1	20	55.0	16.0	6	25.26	* 104276			
Ø" d ₁ UNS	P TPI	d ₂ mm	l ₁ mm	⊕	→2A←	ID			
1/4	40	20.0	5.0	4	6.26	104309			
1/4	36	20.0	5.0	4	6.26	104308			
7/16	24	30.0	11.0	5	10.99	104311			
1/2	24	38.0	10.0	5	12.58	104307			
1	14	55.0	16.0	6	25.23	104310			
Ø" d ₁ UN	P TPI	d ₂ mm	l ₁ mm	⊕	→2A←	ID			
1 1/8	8	65.0	25.0	5	28.33	104246			
1 1/4	8	65.0	25.0	6	31.51	104245			
1 1/2	8	75.0	20.0	7	37.85	104244			
1 3/4	8	90.0	22.0	7	44.20	104247			

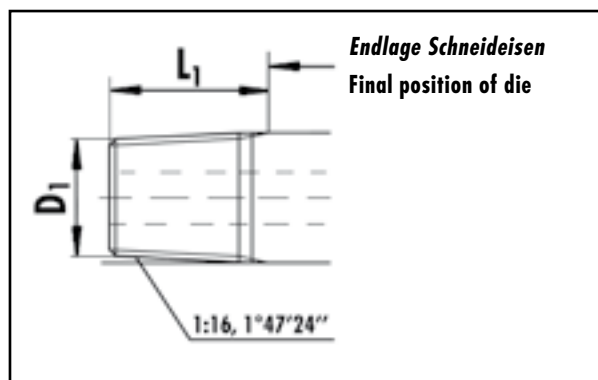
N5120  11 12 N5120 LH  LH 11 12						N5120	N5120 LH		
									
									
$\varnothing'' d_1$ G	P TPI	d ₂ mm	l ₁ mm			ID	ID		
1/8	28	30.0	11.0	5	9.62	103926			
1/4	19	38.0	10.0	5	13.03	103924	103925		
3/8	19	45.0	14.0	5	16.54	103935	103936		
1/2	14	45.0	14.0	6	20.81	103922	103923		
5/8	14	55.0	16.0	5	22.77	103938			
3/4	14	55.0	16.0	6	26.30	103933	103934		
7/8	14	65.0	18.0	6	30.06	103940			
1	11	65.0	18.0	7	33.07	103928			
1 1/4	11	75.0	20.0	8	41.73	103918			
1 3/8	11	90.0	22.0	7	44.14	* 103921			
1 1/2	11	90.0	22.0	8	47.62	103917			
2	11	105.0	22.0	9	59.43	103932			
2 1/2	11	120.0	22.0	10	74.97	103930			

Z5120		NI				Z5120	MS5120	MS5120	
MS5120									
MS5120									
									
									
$\frac{\text{Ø}}{\text{G}}$ d ₁	P TPI	d ₂ mm	l ₁ mm				ID	ID	ID
1/8	28	30.0	11.0	5	5	9.62	104761	* 101339	* 142831
1/4	19	38.0	10.0	5	5	13.03	104760	101338	* 142832
3/8	19	45.0	14.0	5	5	16.54	104764	101342	119716
1/2	14	45.0	14.0	6	6	20.81	104759	101337	119243
3/4	14	55.0	16.0	6	6	26.30	104763	101341	119648
1	11	65.0	18.0	8	7	33.07	104762	101340	135186
1 1/2	11	90.0	22.0		8	47.62		* 142830	

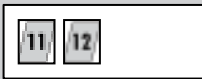
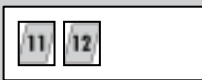
N5120  					N5120 																																													
					 																																													
<table><tr><th>Ø" d₁ R</th><th>P TPI</th><th>d₂ mm</th><th>l₁ mm</th><th>⊕</th></tr><tr><td>1/8</td><td>28</td><td>30.0</td><td>11.0</td><td>5</td></tr><tr><td>1/4</td><td>19</td><td>38.0</td><td>14.0</td><td>5</td></tr><tr><td>3/8</td><td>19</td><td>45.0</td><td>14.0</td><td>5</td></tr><tr><td>1/2</td><td>14</td><td>45.0</td><td>18.0</td><td>6</td></tr><tr><td>3/4</td><td>14</td><td>55.0</td><td>22.0</td><td>6</td></tr><tr><td>1</td><td>11</td><td>65.0</td><td>25.0</td><td>7</td></tr></table>					Ø" d ₁ R	P TPI	d ₂ mm	l ₁ mm	⊕	1/8	28	30.0	11.0	5	1/4	19	38.0	14.0	5	3/8	19	45.0	14.0	5	1/2	14	45.0	18.0	6	3/4	14	55.0	22.0	6	1	11	65.0	25.0	7	<table><tr><th>ID</th></tr><tr><td>104226</td></tr><tr><td>104225</td></tr><tr><td>104230</td></tr><tr><td>104224</td></tr><tr><td>104229</td></tr><tr><td>104227</td></tr></table>				ID	104226	104225	104230	104224	104229	104227
Ø" d ₁ R	P TPI	d ₂ mm	l ₁ mm	⊕																																														
1/8	28	30.0	11.0	5																																														
1/4	19	38.0	14.0	5																																														
3/8	19	45.0	14.0	5																																														
1/2	14	45.0	18.0	6																																														
3/4	14	55.0	22.0	6																																														
1	11	65.0	25.0	7																																														
ID																																																		
104226																																																		
104225																																																		
104230																																																		
104224																																																		
104229																																																		
104227																																																		

Richtwerte für den Drehdurchmesser

Turning dimensions for R threads (in mm)

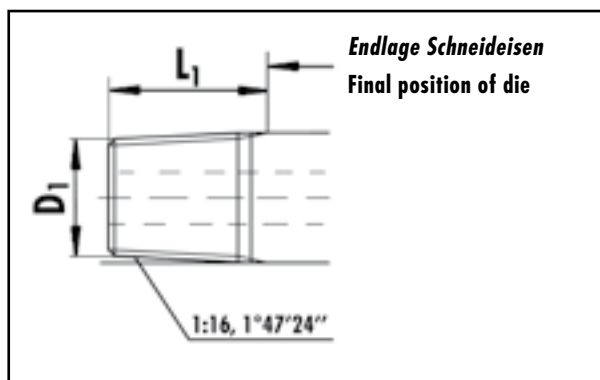


Ø" R	D ₁ mini mm	D ₁ maxi mm	D ₁ (guide line) mm	L ₁ (guide line) mm
1/8	9.422	9.534	9.48	8.2
1/4	12.700	12.863	12.78	12.1
3/8	16.181	16.343	16.26	12.5
1/2	20.330	20.555	20.44	16.4
3/4	25.735	25.960	25.85	17.7
1	32.455	32.743	32.60	20.9

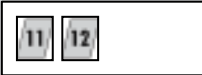
N5120			N5120	N5120		
N5120			NPT	NPTF		
						
						
Ø" d ₁ NPT, NPTF	P TPI	d ₂ mm	l ₁ mm	⊕	ID	ID
1/16	27	25.0	9.0	4	104194	
1/8	27	30.0	11.0	5	104197	* 104207
1/4	18	38.0	14.0	5	104196	
3/8	18	45.0	14.0	5	104201	
1/2	14	45.0	18.0	6	104195	* 104205
3/4	14	55.0	22.0	6	104200	
1	11.5	65.0	25.0	7	104198	* 104208
1 1/4	11.5	75.0	26.0	8	104193	

Richtwerte für den Drehdurchmesser

Turning dimensions for NPT and NPTF threads (in mm)



Ø" NPT	D ₁ mini mm	D ₁ maxi mm	D ₁ (guide line) mm	L ₁ (guide line) mm	Ø" NPTF	D ₁ mini mm	D ₁ maxi mm	D ₁ (guide line) mm	L ₁ (guide line) mm
1/16	7.521	7.643	7.58	8.4	1/16	7.525	7.617	7.57	8.4
1/8	9.866	9.988	9.93	8.5	1/8	9.870	9.962	9.92	8.5
1/4	13.099	13.255	13.18	12.7	1/4	13.129	13.215	13.17	12.7
3/8	16.518	16.674	16.60	12.9	3/8	16.548	16.634	16.59	12.9
1/2	20.551	20.713	20.63	16.8	1/2	20.617	20.703	20.66	16.8
3/4	25.866	26.028	25.95	17.1	3/4	25.932	26.018	25.98	17.1
1	32.419	32.591	32.51	21.3	1	32.475	32.561	32.52	21.3
1 1/4	41.144	41.316	41.23	21.9					

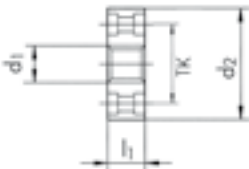
N5120   N5120  						N5120 N5120 PG TR  		
  								
Ø d₁ PG	P	d ₂	l ₁	⊕ → ←	→ ←	ID		
7	20	38.0	10.0	5	12.40	104220		
9	18	38.0	10.0	5	15.10	104221		
11	18	45.0	14.0	5	18.50	104212		
13.5	18	45.0	14.0	6	20.30	104213		
16	18	55.0	16.0	5	22.40	104214		
21	16	65.0	18.0	6	28.15	* 104215		
29	16	65.0	18.0	8	36.85	* 104216		
36	16	90.0	22.0	8	46.85	* 104217		
42	16	90.0	22.0	10	53.85	* 104218		
48	16	105.0	22.0	9	59.15	* 104219		
  								
						7e		
Ø d₁ TR	P	d ₂	l ₁	⊕ → ←	→ ←	ID		
* 10	2	38.0	14.0	4	9.91	* 104231		
12	3	38.0	14.0	4	11.88	* 104232		
16	4	45.0	18.0	4	15.85	* 104234		
26	5	65.0	25.0	5	25.83	* 104239		
28	5	65.0	25.0	5	27.83	* 104240		
32	6	65.0	25.0	6	31.81	* 104242		
36	6	65.0	25.0	6	35.81	* 104243		
* 								

N5120  11 12 N5120 LH  LH 11 12						N5120	N5120 LH		
 									
									
									
$\varnothing'' d_1$ W	P TPI	d_2 mm	l_1 mm			ID	ID		
1/8	40	20.0	5.0	4	3.09	104320			
5/32	32	20.0	7.0	4	3.88	104333			
3/16	24	20.0	7.0	4	4.66	104325			
1/4	20	20.0	7.0	4	6.24	104318			
5/16	18	25.0	9.0	4	7.82	104331			
3/8	16	30.0	11.0	4	9.40	104329			
7/16	14	30.0	11.0	4	10.98	104336			
1/2	12	38.0	14.0	4	12.56	104316			
5/8	11	45.0	18.0	4	15.72	104334	* 104335		
3/4	10	45.0	18.0	5	18.89	104327	* 104328		
7/8	9	55.0	22.0	5	22.10	* 104338			
1	8	55.0	22.0	5	25.27	104322			
1 3/8	6	65.0	25.0	6	34.77	* 104315			



N5220					N5220	N5220	Z5220	
N5220								
Z5220			NI					
$\varnothing d_1$ M	P mm	d ₂ mm	l ₁ mm		TK mm	 → 6g ←	 → 6e ←	ID ID ^{6g} - mm ID
1.4	0.30	16.0	2.6	4	12.2	1.36		104346
1.6	0.35	16.0	2.6	4	12.2	1.54		104347
1.7	0.35	16.0	2.6	4	12.2	1.64		* 104348
2	0.40	16.0	3.5	4	12.2	1.93	1.90	104367
2.3	0.40	16.0	3.5	4	12.2	2.23		104369
2.5	0.45	16.0	3.5	4	12.2	2.43	2.40	104371
2.6	0.45	16.0	3.5	4	12.2	2.53		* 104370 0.030 104803
3	0.50	16.0	3.5	4	12.2	2.92	2.90	104372
3.5	0.60	16.0	4.0	4	12.2	3.41		104375 104374 0.030 104804
4	0.70	16.0	5.0	4	12.2	3.91	3.87	104376
5	0.80	20.0	7.0	4	15.0	4.90	4.87	104380 104379 0.035 104805
6	1.00	20.0	7.0	4	15.0	5.88	5.85	104384 104383 0.035 104806
7	1.00	25.0	7.0	4	19.0	6.88		104388 104387 0.035 104807
8	1.25	25.0	9.0	4	19.0	7.87	7.83	* 104392
10	1.50	30.0	11.0	6	23.0	9.85	9.82	104397 104396 0.035 104808
12	1.75	30.0	11.0	6	23.0	11.83		104354 104353 0.035
								104358

≤ M1.4

N5220							N5220			
  										
  										
										
$\varnothing d_1$ MF	P mm	d ₂ mm	l ₁ mm		TK mm		ID			
3	0.35	16.0	3.0	4	12.2	2.94	104373			
4	0.35	16.0	3.5	4	12.2	3.94	* 104377			
4	0.50	16.0	4.0	4	12.2	3.93	104378			
5	0.50	20.0	5.0	4	15.0	4.93	104382			
6	0.50	20.0	5.0	4	15.0	5.93	104385			
6	0.75	20.0	7.0	4	15.0	5.90	104386			
7	0.50	25.0	7.0	4	19.0	6.93	* 104389			
7	0.75	25.0	7.0	4	19.0	6.90	* 104390			
8	0.75	25.0	7.0	4	19.0	7.90	* 104394			
8	1.00	25.0	7.0	4	19.0	7.88	* 104395			
10	0.75	30.0	7.0	6	23.0	9.90	* 104350			
10	1.00	30.0	7.0	6	23.0	9.88	* 104351			
10	1.25	25.0	9.0	6	19.0	9.86	* 104352			
12	1.00	30.0	7.0	6	23.0	11.88	* 104355			
12	1.50	30.0	11.0	6	23.0	11.85	* 104356			
14	1.00	35.0	10.0	6	27.5	13.88	* 104359			
14	1.50	35.0	10.0	6	27.5	13.85	* 104360			



N5310						N5310			

G

DIN ISO 228 (BSP)

W

BS 84

M

ISO DIN 13

HSS



N5310						N5310	N5310		N5420
N5310									
N5420									
Ø" d ₁ G	P TPI	s mm	l ₁ mm	⊕	→ ←	ID			
1/4	19	36.0	10.0	5	13.03	104428			
3/8	19	41.0	14.0	5	16.54	104433			
1/2	14	41.0	14.0	6	20.81	104427			
5/8	14	50.0	16.0	6	22.77	* 104434			
3/4	14	50.0	16.0	6	26.30	104432			
7/8	14	60.0	18.0	6	30.06	* 104435			
1	11	60.0	18.0	7	33.07	104430			
1 3/8	11	85.0	22.0	7	44.14	* 104426			
1 3/4	11	100.0	22.0	8	53.57	* 104425			
Ø" d ₁ W	P TPI	s mm	l ₁ mm	⊕	→ ←	ID			
1/8	40	18.0	5.0	3	3.09	* 104512			
3/16	24	18.0	7.0	3	4.66	* 104515			
7/16	14	27.0	11.0	5	10.98	* 104520			
9/16	12	36.0	14.0	4	14.14	* 104522			
7/8	9	50.0	22.0	5	22.10	* 104521			
1 3/8	6	60.0	25.0	6	34.77	* 104508			
1 1/2	6	70.0	30.0	6	37.95	* 104504			
1 3/4	5	85.0	36.0	6	44.28	* 104507			
2	4.5	85.0	36.0	7	50.63	* 104514			
Ø d ₁ M	P mm	d ₂ mm	l ₁ mm	⊕	→ ←	ID			
2.5	0.45	16.0	8.0	4	2.43	* 104527			
3.5	0.60	16.0	9.5	4	3.41	* 104530			
4	0.70	16.0	9.5	4	3.90	* 104531			
8	1.25	25.0	14.0	5	7.86	* 104535			

Inhaltsverzeichnis - Gewindelehrdorne und Gewindelehrringe

Directory - Screw thread plug and ring gauges

Merkmale Characteristics								
								
		D5701-1	D5701-2	D5703		D5720	D5722	D5725
M 6H / 6g	ISO DIN 13	266	266	266				
M 6G / 6e	ISO DIN 13			266				
M 6H / 6g LH	ISO DIN 13			266				
MF 6H / 6g	ISO DIN 13	268-269	269	268-269				
MF 6G / 6e	ISO DIN 13			268				
MF 6H / 6g LH	ISO DIN 13			268				
UNC	ANSI B1.1	272		272				
UNF	ANSI B1.1	273		273				
UNEF	ANSI B1.1			273				
NPT	ANSI B1.20.1					275		
NPTF	ANSI B1.20.3					275		
G (BSP)	DIN ISO 228	274	274	274				
PG	DIN 40430							274
EG M	ISO DIN 8140			276				
EG UNC	NASM 33537			276				
EG UNF	NASM 33537			276				

			
			
D5704	D5714	D5721	D5723
267	267		
267	267		
267			
270-271	270-271		
270			
272	272		
273	273		
273	273		
		275	
		275	
274	274		
274			

Piktogramme - Pictographs



"Gut"

"Go"



"Ausschuss"

"No-go"



"Gut / Ausschuss"

"Go" / "No-go"



Toleranz 6H, "Gut"

Tolerance 6H, "Go"



Toleranz 6G, "Gut" / "Ausschuss"

Tolerance 6G, "Go" / "No-go"



Toleranz 6g, "Ausschuss"

Tolerance 6g, "No-go"



Linksgewinde

Left hand thread



		D5701-1	D5701-2	D5703	D5703 LH	D5703	
D5701-1 M1 - M1.4 =  D5703 M1 - M1.4 = 		    					
					 LH		
Ø d ₁ M	P mm	ID	ID	ID	ID	ID	
1	0.25			100242			
1.1	0.25			100243			
1.2	0.25			100244			
1.4	0.30			100245			
1.6	0.35			100246	* 110168		
1.7	0.35			100247			
1.8	0.35			100248	* 110169		
2	0.40			100278	105159	104982	
2.2	0.45			100280			
2.3	0.40			100281			
2.5	0.45			100283	105160	104979	
2.6	0.45	* 100064		100285			
3	0.50			100310	104964	104976	
3.5	0.60			100312		104977	
4	0.70			100333	104966	104978	
4.5	0.75	* 100114					
5	0.80			100348	104967	104980	
6	1.00			100363	104968	104981	
7	1.00			100369	* 110186		
8	1.25			100373	104969	104983	
9	1.25			100375			
10	1.50			100253	104970	104984	
11	1.50			* 100256			
12	1.75			100261	104971	104985	
14	2.00	* 100045		100266		104986	
16	2.00			100271	104973	104987	
18	2.50	* 100055		100276		* 104988	
20	2.50	* 100068		100289	104975	104989	
22	2.50	* 100072		100293	* 110178		
24	3.00	* 100076		100297	110179		
27	3.00			100305	* 110180		
30	3.50			100316			
33	3.50	* 100101		100322			
36	4.00	* 100107		100328			
39	4.00	* 100109		100330			
42	4.50	100119	142843				
45	4.50	100122	142844				
48	5.00	100125	142845				
52	5.00	100132	142846				
56	5.50	100137	142847				

		D5704	D5704 LH	D5704	D5714	D5714	
D5704 M1 - M1.4 = 6h							
D5714 M1 - M1.4 = 6h							
		6g	6g	LH	6e	6g	6e
Ø d ₁ M	P mm	ID	ID	ID	ID	ID	
1	0.25	100480			110419		
1.2	0.25	100481			110420		
1.4	0.30	100482			110421		
1.6	0.35	100483			110422		
1.7	0.35	100484			111439		
1.8	0.35	100485			110423		
2	0.40	100515	105006	* 104997	100734	* 142833	
2.2	0.45	100517			100735		
2.3	0.40	100518			100736		
2.5	0.45	100520		* 104991	100737	* 142834	
2.6	0.45	100522			100738		
3	0.50	100547	105001	* 104990	100763	* 142835	
3.5	0.60	100549	110302	* 110301	100765	* 142836	
4	0.70	100570	105003	* 104992	100774	* 142837	
5	0.80	100585	105004	* 104993	100778	* 143406	
6	1.00	100600	105005	* 104994	100781	* 135556	
7	1.00	100605	* 126560	* 104995	100783	* 142840	
8	1.25	100611	105007	* 104996	100786	* 142841	
9	1.25	100610			100788		
10	1.50	100490	105008	* 104998	100711	* 142842	
11	1.50	* 100493			* 100713		
12	1.75	100498	105009		100718		
14	2.00	100503	105010		100723		
16	2.00	100508	105011	* 105000	100728		
18	2.50	100513	105012		100733		
20	2.50	100526	105013		100742		
22	2.50	100530	110298		100746		
24	3.00	100534			100750		
27	3.00	100542			100758		
30	3.50	100553			100769		
33	3.50	* 100559			* 100770		
36	4.00		* 110305				
39	4.00				* 110440		
42	4.50	* 100577					
45	4.50	* 100580			* 110448		
48	5.00				* 110451		
52	5.00	* 100590			* 110456		
56	5.50	* 100595			* 110461		



		D5701-1	D5703	D5703 LH	D5703		
							
				 			
Ø d ₁ MF	P mm	ID	ID	ID	ID		
2.5	0.35		100282				
3	0.35		100309				
4	0.35		100331				
4	0.50		100332				
4.5	0.50		* 100334				
5	0.50		100347	105016	105045		
6	0.50	* 100140	100361	110184			
6	0.75		100362		105046		
7	0.50		100367				
7	0.75	* 100147	100368				
8	0.50	* 100149	100370				
8	0.75		100371	105018	105047		
8	1.00	* 100151	100372	105019	105048		
9	1.00		100374				
10	0.50		100249				
10	0.75		100250				
10	1.00		100251	105020	105049		
10	1.25	* 100031	100252				
11	0.75	* 100033					
11	1.00	* 100034	100255				
12	0.75	* 100036	100257				
12	1.00		100258	105021	105050		
12	1.25		100259				
12	1.50	* 100039	100260	105022			
14	1.00		100263	110171			
14	1.25		100264				
14	1.50	* 100044	100265	105023	105052		
15	1.00	* 100046	100267				
15	1.50		100268				
16	1.00		100269	110172			
16	1.50	* 100049	100270	105024	105053		
17	1.00		100272				
18	1.00		100273				
18	1.50	* 100053	100274	105025	105054		
18	2.00	* 100054	100275				
20	1.00	* 100065	100286				
20	1.50		100287	105026			
20	2.00	* 100067	100288		* 110176		
22	1.00		100290				
22	1.50		100291	110177			
22	2.00		100292				
24	1.00		100294				
24	1.50		100295				
24	2.00		100296				

		D5701-1	D5701-2	D5703			
							
							
Ø d ₁ MF	P mm	ID	ID	ID			
25	1.00	* 100077		100298			
25	1.50			100299			
25	2.00			100300			
26	1.00			100301			
26	1.50	* 100081		100302			
27	1.50	* 100082		100303			
27	2.00	* 100083		100304			
28	1.00			100306			
28	1.50	* 100086		100307			
28	2.00	* 100087		100308			
30	1.00	* 100092		100313			
30	1.50			100314			
30	2.00			100315			
32	1.00			100317			
32	1.50	* 100097		100318			
32	2.00			100319			
33	1.50			100320			
33	2.00	* 100100		100321			
35	1.50	* 100102		100323			
36	1.50	* 100104		100325			
36	2.00			100326			
36	3.00			100327			
38	1.50	* 100108		100329			
40	1.50			100336			
40	2.00			100337			
42	1.50	100117	142848				
42	2.00	100118	142849				
45	1.50	100120	110127				
45	2.00	100121	142851				
48	1.50	100123	123180				
48	2.00	100124	142853				
50	1.50	100128	142854				
50	2.00	100129	142855				
52	1.50	100130	123428				
52	2.00	100131	142857				
55	1.50	100133	123468				
55	2.00	100134	142859				
56	1.50	100135	142860				
56	2.00	100136	142861				
58	1.50	100138	142862				
58	2.00	100139	142863				
60	1.50	100143	142864				
60	2.00	100144	142865				



		D5704	D5704 LH	D5714			
							
		   					
Ø d ₁ MF	P mm	ID	ID	ID			
2.5	0.35	100519		110427			
3	0.35	100546		100762			
3.5	0.35	100548		100764			
4	0.35	100568		100772			
4	0.50	100569		100773			
4.5	0.50	100571		100775			
5	0.50	100584	105057	100777			
6	0.50	100598	110307	100779			
6	0.75	100599	105058	100780			
7	0.50	100603		110467			
7	0.75	100604		100782			
8	0.50	100606					
8	0.75	100607	* 105059	100784			
8	1.00	100608	105060	100785			
9	1.00	100609		100787			
10	0.50	100486		100707			
10	0.75	100487		100708			
10	1.00	100488	105061	100709			
10	1.25	100489		100710			
11	1.00	100492		100712			
12	0.75	100494		100714			
12	1.00	100495	105062	100715			
12	1.25	100496		100716			
12	1.50	100497	105063	100717			
13	1.00	100499		100719			
14	1.00	100500	110290	100720			
14	1.25	100501		100721			
14	1.50	100502	105064	100722			
15	1.00	100504		100724			
15	1.50	100505		100725			
16	1.00	100506	110292	100726			
16	1.50	100507	105065	100727			
17	1.00	100509		100729			
18	1.00	100510		100730			
18	1.50	100511	105066	100731			
20	1.00	100523	110295	100739			
20	1.50	100524	105067	100740			
20	2.00	100525		100741			
22	1.00	100527		100743			
22	1.50	100528		100744			
22	2.00	100529		100745			
24	1.00	100531		100747			
24	1.50	100532		100748			
24	2.00	100533					

		D5704	D5714				
							
							
Ø d ₁ MF	P mm	ID	ID				
25	1.00	100535					
25	1.50	100536					
26	1.00	100538	* 100754				
26	1.50	100539	* 100755				
27	1.50	100540	* 100756				
27	2.00	100541	* 100757				
28	1.00	100543					
28	1.50	100544	* 100760				
30	1.00	100550					
30	1.50	100551					
30	2.00	100552	* 100768				
32	1.00	100554					
32	1.50	100555					
32	2.00	100556	* 110431				
33	1.50	100557	* 110432				
33	2.00	100558	* 110433				
35	1.50	100560					
36	1.50	100562					
36	2.00	100563					
36	3.00	100564					
38	1.50	100566	* 110439				
40	1.50	100573	* 110441				
42	1.50	100575					
42	2.00	100576					
45	1.50	100578					
45	2.00	100579	* 110447				
48	1.50	100581	* 110449				
48	2.00	100582					
50	1.50	100586	* 110452				
50	2.00	100587	* 110453				
52	1.50		* 110454				
52	2.00	100589					
55	1.50	100591					
55	2.00	100592	* 110458				
56	1.50	100593	* 110459				
56	2.00	100594	* 110460				
58	1.50	100596					
58	2.00	100597	* 110463				
60	1.50	100601	* 110464				
60	2.00	105014					



		D5701-1	D5703	D5704	D5714		
							
							
Ø" d ₁ UNC	P TPI	ID	ID	ID	ID		
1	64		100408	110347	110473		
2	56	* 110076	100414	110353	110479		
3	48	* 110077	100416		* 110480		
4	40	* 110080	110224	110357	110483		
5	40		100420	* 110358	* 110484		
6	32	* 110084	100423	110361	110487		
8	32	* 110087	100426	110364	110490		
10	24	* 110074	100412	110351	110477		
12	24		100413				
1/4	20		100410	110349	110475		
5/16	18	* 110082	100421	110359	110485		
3/8	16	* 110079	100418	110356	110482		
7/16	14	* 110085	100424	110362	110488		
1/2	13	* 110071	100409	110348	110474		
9/16	12		100427	110365	* 110491		
5/8	11	* 110083	100422	110360			
3/4	10	* 110078	100417	110355	* 110481		
7/8	9		100425	110363	* 110489		
1	8	* 110073	100411	110350	* 110476		
1 1/8	7	* 110068	100405	* 110345	* 110471		
1 1/4	7	* 110067	100404	* 110344	* 110470		
1 3/8	6	* 110069	100407	* 110346	* 110472		
1 1/2	6	* 110066	100403	* 110343	* 110469		

UNF, UNEF

ANSI B1.1

ANSI B1.2

		D5701-1	D5703	D5704	D5714		
							
							
Ø" d ₁ UNF	P TPI	ID	ID	ID	ID		
0	80		110246	* 110378	* 110503		
1	72	* 110105	110251	110383	110508		
2	64		110256	110389	110514		
3	56	* 110112	110257	110390	110515		
4	48		110260	110393	110518		
5	44	* 110116	* 110261				
6	40		110264	110397	110522		
8	36	* 110122	110267	* 110400			
10	32		110254	110387	110512		
12	28		110255	110388	110513		
1/4	28	* 110107	110006	110385	110510		
5/16	24	* 110117	110262	110395	110520		
3/8	24	* 110114	110259	110392	110517		
7/16	20	* 110120	110265	110398	111440		
1/2	20	* 110106	110252	110384	110509		
9/16	18		110268	110401			
5/8	18	* 110118	110263	110396			
3/4	16		110258	110391	* 110516		
7/8	14		110266	110399			
1	12		128646	110386			
1 1/8	12	* 110103	110249	110381	* 110506		
1 1/4	12	* 110102	110248	110380	* 110505		
1 3/8	12	* 110104	110250	* 110382	* 110507		
1 1/2	12		110247	110379			
Ø" d ₁ UNEF	P TPI	ID	ID	ID	ID		
12	32	110238	* 110370	* 110495			
1/4	32	110236	110368	110493			
5/16	32	110241	110373	110498			
3/8	32	110240	110372	110497			
7/16	28	110243	110375	110500			
1/2	28	110235	110367	110492			
9/16	24	110245	110377	110502			
5/8	24	110242	110374	110499			
3/4	20	110239	110371	110496			
7/8	20	110244		* 110501			
1	20	110253	110369	110494			



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NPT, NPTF

ANSI B1.20.1 / ANSI B1.20.3

ANSI B1.20.1 / ANSI B1.20.5

		D5720	D5721				
							
							
Ø" d ₁ NPT	P TPI	ID	ID				
1/16	27	110190	110313				
1/8	27	110193	110316				
1/4	18	110192	110315				
3/8	18	110197	110320				
1/2	14	110191	110314				
3/4	14	110196	110319				
1	11.5	110194	110317				
1 1/4	11.5	110189	110312				
1 1/2	11.5	110188	110311				
2	11.5	110195	110318				
Ø" d ₁ NPTF	P TPI	ID	ID				
1/8	27	110201	* 110324				
1/4	18	110200	* 110323				
3/8	18	110204	* 110327				
1/2	14	110199	* 110322				
3/4	14	110203	* 110326				
1	11.5	110202	* 110325				



EG M ISO DIN 8140 ISO DIN 1502 EG UNC, EG UNF NASM 33537

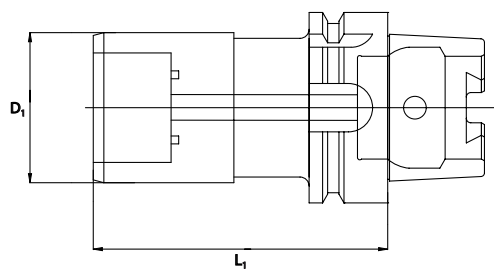
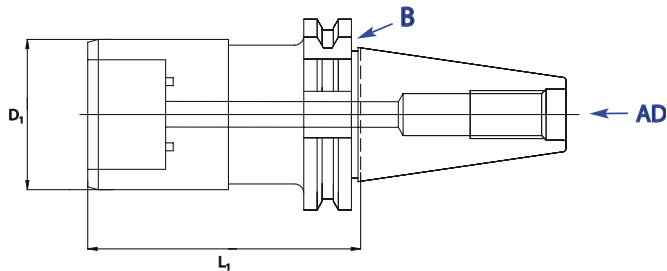
		D5703	D5703	D5703			
							
							
Ø d ₁ EG M	P mm	ID					
2.5	0.45	110132					
3	0.50	110133					
4	0.70	110134					
5	0.80	110135					
6	1.00	110136					
8	1.25	110137					
10	1.50	110128					
12	1.75	110129					
16	2.00	110131					
Ø" d ₁ EG UNC	P TPI	ID					
4	40	170252					
6	32	170253					
8	32	170254					
10	24	170255					
1/4	20	170256					
5/16	18	170257					
3/8	16	170258					
Ø" d ₁ EG UNF	P TPI	ID					
6	40	170259					
8	36	170260					
10	32	161020					
1/4	28	151790					
5/16	24	170261					
3/8	24	160134					



SRT *Synchron-Gewindeschneidfutter mit Axial-Stossdämpfer* Tapping chucks with axial shock absorber



Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado

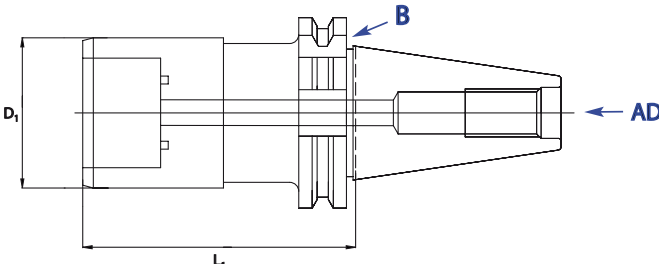
DIN 69 893 A						SRT-HSK63-312	SRT-HSK63-520	SRT-HSK63-1433
HSK								
								
								
D_1 mm L_1 mm  282						ID	ID	ID
M3 - M12 36 72.0 HSK A 63 S1						170111		
M5 - M20 53 89.0 HSK A 63 S2							170112	
M14 - M33 78 121.0 HSK A 63 S3								170114
MAS/BT Form AD + B						SRT-BT40-312	SRT-BT40-520	SRT-BT40-1433
BT								
								
								
D_1 mm L_1 mm  282						ID	ID	ID
M3 - M12 36 71.0 BT 40 S1						170133		
M5 - M20 53 85.0 BT 40 S2							170134	
M14 - M33 78 121.0 BT 40 S3								170135

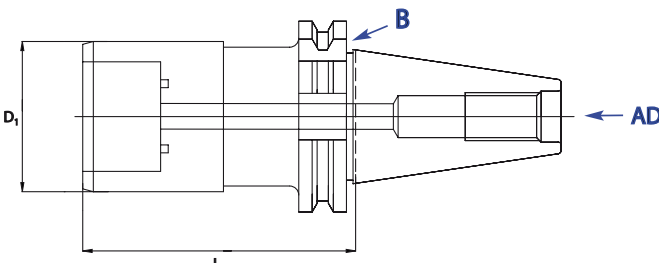
SRT Synchron-Gewindeschneidfutter mit Axial-Stossdämpfer

Tapping chucks with axial shock absorber



Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado

DIN 69 871 Form AD + B						SRT-SK40-312	SRT-SK40-520	SRT-SK40-1433
SK								
						 <50 bar <50 bar <50 bar		
D₁ mm L₁ mm   282						ID	ID	ID
M3 - M12 36 65.0 SK 40 S1						170124		
M5 - M20 53 79.0 SK 40 S2							170125	
M14 - M33 78 115.0 SK 40 S3								170126

DIN 69 871 Form AD + B						SRT-SK50-520	SRT-SK50-1433	SRT-SK50-2248
SK								
						 <50 bar <50 bar <50 bar		
D₁ mm L₁ mm   282						ID	ID	ID
M5 - M20 53 79.0 SK 50 S2						170128		
M14 - M33 78 115.0 SK 50 S3							170129	
M22 - M48 96 170.0 SK 50 S4								170130

SRT Synchron-Gewindeschneidfutter mit Axial-Stossdämpfer

Tapping chucks with axial shock absorber

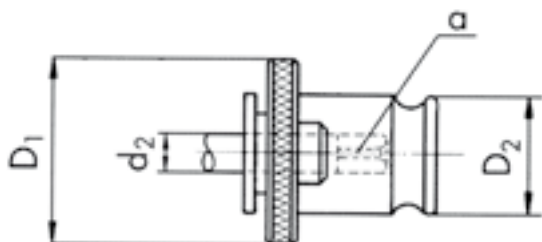


Uniquement pour taraudage synchrone
Nur für Synchronbearbeitung
Only for rigid tapping
Solo per maschiatura sincrona
Solo para roscado sincronizado

DIN 1835 B						SRT-1D20-312	SRT-1D25-312	SRT-2D25-520
SRT								

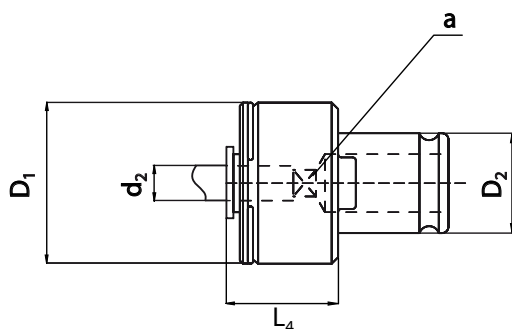


SRT


S1-
S2-
S3-
S4-


No	D ₁ mm	D ₂ mm	d ₂ mm	α mm	ID	ID	ID	ID
S1-0028	30	19.0	2.8	2.1	129915			
S1-0035	30	19.0	3.5	2.7	129916			
S1-0045	30	19.0	4.5	3.4	129918			
S1-0060	30	19.0	6.0	4.9	129920			
S1-0070	30	19.0	7.0	5.5	129921			
S1-0080	30	19.0	8.0	6.2	129922			
S1-0090	30	19.0	9.0	7.0	129923			
S1-0100	30	19.0	10.0	8.0	129924			
S1-0110	30	19.0	11.0	9.0	129925			
S2-0060	48	31.0	6.0	4.9		129927		
S2-0070	48	31.0	7.0	5.5		129928		
S2-0080	48	31.0	8.0	6.2		129929		
S2-0090	48	31.0	9.0	7.0		129930		
S2-0100	48	31.0	10.0	8.0		129931		
S2-0110	48	31.0	11.0	9.0		148303		
S2-0120	48	31.0	12.0	9.0		129932		
S2-0140	48	31.0	14.0	11.0		129933		
S2-0160	48	31.0	16.0	12.0		129934		
S2-0180	48	31.0	18.0	14.5		151355		
S3-0110	70	48.0	11.0	9.0			170145	
S3-0120	70	48.0	12.0	9.0			170146	
S3-0140	70	48.0	14.0	11.0			170147	
S3-0160	70	48.0	16.0	12.0			170148	
S3-0180	70	48.0	18.0	14.5			170149	
S3-0200	70	48.0	20.0	16.0			170150	
S3-0220	70	48.0	22.0	18.0			170151	
S3-0250	70	48.0	25.0	20.0			170152	
S4-0180	96	60.0	18.0	14.5				170153
S4-0200	96	60.0	20.0	16.0				170154
S4-0220	96	60.0	22.0	18.0				170155
S4-0250	96	60.0	25.0	20.0				170156
S4-0280	96	60.0	28.0	22.0				170157
S4-0320	96	60.0	32.0	24.0				170158
S4-0360	96	60.0	36.0	29.0				170159

CLASSIC



SC1-

SC2-

SC3-

SC4-



No	D ₁ mm	D ₂ mm	d ₂ mm	a mm	L ₄ mm	ID	ID	ID	ID
SC1-0028	32	19.0	2.8	2.1	25	170160			
SC1-0035	32	19.0	3.5	2.7	25	170161			
SC1-0045	32	19.0	4.5	3.4	25	170162			
SC1-0060	32	19.0	6.0	4.9	25	170163			
SC1-0070	32	19.0	7.0	5.5	25	170164			
SC1-0080	32	19.0	8.0	6.2	25	170165			
SC1-0090	32	19.0	9.0	7.0	25	170166			
SC1-0100	32	19.0	10.0	8.0	25	170167			
SC2-0060	50	31.0	6.0	4.9	34		170168		
SC2-0070	50	31.0	7.0	5.5	34		170169		
SC2-0080	50	31.0	8.0	6.2	34		170170		
SC2-0090	50	31.0	9.0	7.0	34		170171		
SC2-0100	50	31.0	10.0	8.0	34		170172		
SC2-0110	50	31.0	11.0	9.0	34		170173		
SC2-0120	50	31.0	12.0	9.0	34		170174		
SC2-0140	50	31.0	14.0	11.0	34		170175		
SC2-0160	50	31.0	16.0	12.0	34		170176		
SC2-0180	50	31.0	18.0	14.5	34		170177		
SC3-0110	72	48.0	11.0	9.0	45			170178	
SC3-0120	72	48.0	12.0	9.0	45			170179	
SC3-0140	72	48.0	14.0	11.0	45			170180	
SC3-0160	72	48.0	16.0	12.0	45			170181	
SC3-0180	72	48.0	18.0	14.5	45			170182	
SC3-0200	72	48.0	20.0	16.0	45			170183	
SC3-0220	72	48.0	22.0	18.0	45			170184	
SC3-0250	72	48.0	25.0	20.0	45			170185	
SC4-0180	96	60.0	18.0	14.5	68				170186
SC4-0200	96	60.0	20.0	16.0	68				170187
SC4-0220	96	60.0	22.0	18.0	68				170188
SC4-0250	96	60.0	25.0	20.0	68				170189
SC4-0280	96	60.0	28.0	22.0	68				170190
SC4-0320	96	60.0	32.0	24.0	68				170191
SC4-0360	96	60.0	36.0	29.0	68				170192



Vollhartmetall-Spiralbohrer

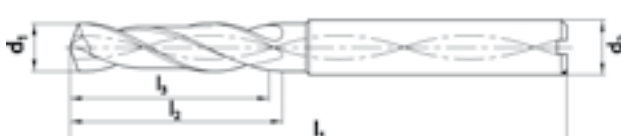
Solid carbide twist drills

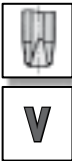
VHM
CAR

DC
DIN 6537 HAK

HBK
HEK

sur demande
auf Anfrage
on request
su richiesta
sobre pedido

							F313VS	F285VS	F286VS	
F313VS   VS 11 12 13 14 15 21 22 23 24 41 51 63 71 72 73 74							  			
F285VS F286VS   VS 11 12 13 14 15 16 21 22 23 24 31 32 51 52 71 72 73 74										
							  			
							 			
$\varnothing d_1$ (h ₇)	d_2 (h ₆) mm	l_1 mm	l_2 mm				ID			
0.88	3.0	38.0	8.0	2	M 1		158515			
1.08	3.0	38.0	10.0	2	M 1.2		158516			
1.25	3.0	38.0	12.0	2	M 1.4		158517			
1.45	3.0	38.0	12.0	2	M 1.6		158518			
1.65	3.0	38.0	12.0	2	M 1.8		158519			
1.80	3.0	38.0	12.0	2	M 2		158520			
1.95	3.0	38.0	12.0	2	UNC 2-56		158521			
2.30	3.0	38.0	16.0	2	M 2.5		158522			
2.55	3.0	38.0	16.0	2	UNC 4-40		158523			
2.80	3.0	38.0	16.0	2	M 3		158524			
										
$\varnothing d_1$ (m ₇)	d_2 (h ₆) mm	l_1 mm	l_2 mm	l_3 mm			ID			
3.25	6.0	62.0	20.0	14.0	2	M 3.5	158527			
3.70	6.0	62.0	20.0	14.0	2	M 4	158528			
4.65	6.0	66.0	24.0	17.0	2	M 5	158532			
5.55	6.0	66.0	28.0	20.0	2	M 6	158534			
7.40	8.0	79.0	41.0	29.0	2	M 8	158540			
9.30	10.0	89.0	47.0	35.0	2	M 10	158544			
11.20	12.0	102.0	55.0	40.0	2	M 12	158546			
$\varnothing d_1$ (m ₇)	d_2 (h ₆) mm	l_1 mm	l_2 mm	l_3 mm			ID			
3.30	6.0	66.0	28.0	23.0	2	M 4	160989			
4.20	6.0	74.0	36.0	29.0	2	M 5	160990			
5.00	6.0	82.0	44.0	35.0	2	M 6	160991			
6.80	8.0	91.0	53.0	43.0	2	M 8	160992			
8.50	10.0	103.0	61.0	49.0	2	M 10	160993			
10.20	12.0	118.0	71.0	56.0	2	M 12	160994			

Boxset				D5855	D5860	D5891
D5855		ISO 2 6H	N1110-S N1210-S	M3, M4, M5, M6, M8, M10 M12		
D5860		ISO 2 6H	N1110-S N1210-S	M3, M4, M5, M6, M8, M10 M12		
		HSS	FO DIN 338 FO DIN 338	D2.5, 3.3, 4.2, 5.0, 6.8, 8.5, 10.2		
D5891		ISO 2 6H	N310-3 N410-3	M3, M4, M5, M6, M8, M10 M12		
No D5855 / D5860 / D5891				ID	ID	ID
M3 - M12				118728	118733	170922
Boxset				D5892		
D5892			ISO 2 6H	N320V-4	M3, M4, M5, M6, M8, M10	
No D5892				ID		
M3 - M10				170921		
Boxset				D5896		
D5896			ISO 2 6H	N360V-3	M3, M4, M5, M6, M8, M10	
No D5896				ID		
M3 - M10				167599		

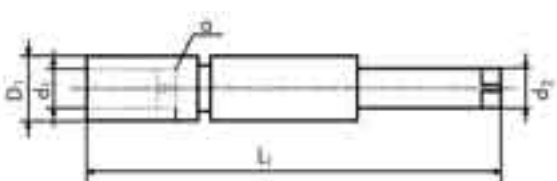
Schneideisenhalter und Windeisen

Die stocks and tap wrenches

D5810- <i>Schneideisenhalter für runde Schneideisen nach DIN EN 22568, DIN EN 24230, DIN EN 24231, DIN EN 40434.</i> Die stocks for round dies to DIN EN 22568, DIN EN 24230, DIN EN 24231, DIN EN 40434.									D5810-	D5820-
D5820- <i>Windeisen verstellbar DIN 1814</i> Tap wrenches, adjustable DIN 1814										
DIN EN No D5810-	Ø	M Ø	MF Ø	UNC Ø	UNF Ø	UNEF UNS UN Ø	W Ø	G (BSP) Ø	NPT NPTF R (BSPT) Ø	ID
1	16 x 5	1 - 2.6	2 - 2.6	No 1 - 4	No 1 - 4		1/16" - 3/32"			170712
2	20 x 5	3 - 4	3 - 6	No 5	No 5 - 6		1/8"			170713
3	20 x 7	4.5 - 6		No 6 - 1/4"	No 8 - 1/4"	No 12 - 1/4"	5/32" - 1/4"			170714
4	25 x 9	7 - 9	7 - 9	5/16"	5/16"	5/16"	5/16"		1/16"	170715
5	30 x 11	10 - 11	10 - 11	3/8" - 7/16"	3/8" - 7/16"	3/8" - 7/16"	3/8" - 7/16"	1/8"	1/8"	170716
6	38 x 10		12 - 15		1/2" - 9/16"	1/2" - 9/16"		1/4"		170717
7	38 x 14	12 - 14		1/2" - 9/16"			1/2" - 9/16"		1/4"	170718
8	45 x 14		16 - 20		5/8" - 3/4"	5/8" - 13/16"		3/8" - 1/2"	3/8"	170719
9	45 x 18	16 - 20		5/8" - 3/4"			5/8" - 3/4"		1/2"	170720
10	55 x 16		22 - 26		7/8" - 1"	7/8" - 1"		5/8" - 3/4"		170721
11	55 x 22	22 - 24		7/8" - 1"			7/8" - 1"		3/4"	170722
12	65 x 18		*27 - 36		1 1/8" - 1 3/8"	1 1/16" - 1 3/8"		7/8" - 1"		170723
13	65 x 25	27 - 36		1 1/8" - 1 3/8"			1 1/8" - 1 3/8"		1"	170724
14	75 x 20		38 - 42		1 1/2"	1 7/16" - 1 1/2"		1 1/8" - 1 1/4"		170725
15	75 x 30	39 - 42		1 1/2"			1 1/2" - 1 5/8"			170726
16	90 x 22		45 - 52			1 3/4" - 2"		1 3/8" - 1 3/4"		170727
17	90 x 36	45 - 52		1 3/4" - 2"			1 3/4" - 2"			170728
18	105 x 22		55 - 65					2" - 2 1/4"		170729
* Ausnahme Steigung 3 mm (Nr. 13 verlangen). For 3 mm pitches use No. 13.										
No D5820-	a mm									ID
0	1.9 - 3.0									170730
1	2.5 - 5.5									170731
2	4.3 - 8.0									170732
3	5.5 - 12.0									170733
4	9.5 - 15.5									170734
5	12.5 - 22.4									170735

Verlängerungen

Tap extension sleeves

D5830- Verlängerungen für Gewindebohrer, ~DIN 377. Tap extension sleeves ~DIN 377. D5840- Verlängerungen für Gewindebohrer. Tap extension sleeves.				D5830-	D5840-		
							
No	a	L ₁	D ₁	ID			
D5830-	mm	mm	mm				
1	2.10	60	6	110571			
2	2.24	70	6	110572			
3	2.40	70	6	110573			
4	2.50	80	7	110574			
5	2.80	90	7	110575			
6	3.00	90	7	110579			
7	3.15	95	7	110580			
8	3.40	95	8	110581			
9	3.55	100	8	118706			
10	3.80	100	9	118707			
11	4.00	105	10	118708			
12	4.30	105	10	118709			
13	4.50	105	10	118710			
14	4.90	110	10	118711			
15	5.00	110	11	118712			
16	5.50	115	12	118713			
17	5.60	110	12	118714			
18	6.20	120	14	118715			
19	6.30	120	14	118716			
20	7.00	125	15	118717			
21	7.10	120	15	118718			
22	7.50	120	15	118719			
23	8.00	125	17	118720			
24	9.00	130	19	118721			
25	10.00	140	21	110562			
26	11.00	150	23	110563			
27	11.20	145	23	110564			
28	12.00	155	25	110565			
29	12.50	160	25	110566			
30	14.00	165	28	110567			
31	14.50	175	29	110568			
32	16.00	180	30	110569			
33	18.00	200	33	110570			
34	20.00	220	36	110576			
35	22.00	220	40	110577			
36	22.40	240	40	110578			
No	a	L ₁	d ₂	d ₁	D ₁	ID	
D5840-	mm	mm	mm	mm	mm		
10	2.70	130	6	3.5	7.5	169928	
11	3.40	130	6	4.5	8.5	169929	
1	4.90	130	6	6.0	12.0	142137	
2	5.50	130	7	7.0	13.0	142138	
3	6.20	130	8	8.0	13.0	142139	
4	7.00	130	9	9.0	17.0	142140	
5	8.00	130	10	10.0	17.0	142141	
6	9.00	130	11	11.0	17.0	142142	
7	9.00	130	12	12.0	20.0	142143	
8	11.00	130	14	14.0	20.0	142144	
9	12.00	130	16	16.0	25.0	142145	

HÄRTEVERGLEICHSTABELLE - HARDNESS CHART

HRC <i>Rockwellhärte</i> Hardness Rockwell	HB <i>Brinellhärte</i> Hardness Brinell	HV <i>Vickershärte</i> Hardness Vickers	N/mm ² Mpa <i>Zugfestigkeit</i> Tensile strength
25	253	266	854
26	254	273	873
27	265	279	897
28	272	286	914
29	274	294	944
30	287	302	970
31	295	310	995
32	302	318	1024
33	311	327	1052
34	320	336	1082
35	329	345	1111
36	337	355	1139
37	346	364	1168
38	354	373	1198
39	363	382	1227
40	373	392	1262
41	382	402	1296
42	392	412	1327
43	402	423	1362
44	413	434	1401
45	424	446	1442
46	436	459	1481
47	448	471	1524
48	460	484	1572
49	474	499	1625
50	488	513	1668
51	502	528	1733
52	518	545	1793
53	532	560	1845
54	548	578	1912
55	566	596	1979
56	585	615	2050
57	603	634	2121
58		654	
59		675	
60		698	

Umrechnungstabelle für Härtewerte, Auszug aus DIN 50150
Conversion chart for hardness values, according to DIN 50150

ZOLL-MM - INCHES-MM

Ø" d ₁	Ø mm	TPI UN													W(BSW)	BSF	G (BSP) Rp	Ø mm
		UNC	UNF	UNEF	4	6	8	12	16	20	28	32						
0 1/16"	1.52 1.59		80										48		28	7.72		
1 2 3/32"	1.85 2.18 2.38	64 56	72 64															
3 4 5 1/8"	2.51 2.84 3.17 3.17 3.50	48 40 40 32	56 48 44 40										40		28	9.72		
5/32"	3.96												32					
8 3/16"	4.16 4.76	32	36										24	32				
10 12	4.82 5.48	24 24	32 28	32														
7/32"	5.55												24	28				
1/4"	6.35	20	28	32									20	26	19	13.15		
9/32"	7.14													26				
5/16"	7.93	18	24	32						20	28		16	20	19	16.66		
3/8"	9.52	16	24	32						20	28							
7/16"	11.11	14	20	28					16			32	14	18				
1/2"	12.70	13	20	28					16			32	12	16	14	20.95		
9/16"	14.28	12	18	24					16	20	28	32	12	16				
5/8"	15.87	11	18	24				12	16	20	28	32	11	14	14	22.91		
11/16"	17.46			24				12	16	20	28	32		14				
3/4"	19.05	10	16	20				12			28	32	10	12	14	26.44		
13/16"	20.64			20				12	16		28	32		12				
7/8"	22.22	9	14	20				12	16		28	32	9	11	14	30.20		
15/16"	23.81			20				12	16		28	32						
1"	25.40	8	12	20					16		28	32	8	10	11	33.24		
1 1/16"	26.99			18			8	12	16	20	28							
1 1/8"	28.57	7	12	18			8		16	20	28		7	9	11	37.89		
1 3/16"	30.16			18			8	12	16	20	28							
1 1/4"	31.75	7	12	18			8		16	20	28		7	9	11	41.91		
1 5/16"	33.34			18			8	12	16	20	28							
1 3/8"	34.92	6	12	18			8		16	20	28		6	8	11	44.32		
1 7/16"	36.51			18		6	8	12	16	20	28							
1 1/2"	38.10	6	12	18			8		16	20	28		6	8	11	47.80		
1 9/16"	39.69			18		6	8	12	16	20								
1 5/8"	41.28			18		6	8	12	16	20			5	8				
1 11/16"	42.86			18		6	8	12	16	20								
1 3/4"	44.45	5				6	8	12	16	20			5	7	11	53.74		
1 13/16"	46.04					6	8	12	16	20								
1 7/8"	47.63					6	8	12	16	20			4 1/2					
1 15/16"	49.21					6	8	12	16	20								
2"	50.80	4 1/2				6	8	12	16	20			4 1/2	7	11	59.61		
2 1/8"	53.97					6	8	12	16	20								
2 1/4"	57.15	4 1/2				6	8	12	16	20			4	6	11	65.71		
2 3/8"	60.32					6	8	12	16	20								
2 1/2"	63.50	4				6	8	12	16	20			4	6	11	75.18		
2 5/8"	66.67				4	6	8	12	16	20								
2 3/4"	69.85	4				6	8	12	16	20			3 1/2	6	11	81.53		
2 7/8"	73.02				4	6	8	12	16	20								
3"	76.20	4				6	8	12	16	20			3 1/2	5	11	87.88		
3 1/8"	79.37				4	6	8	12	16									
3 1/4"	82.55	4				6	8	12	16				3 1/4	5	11	93.98		
3 3/8"	85.72				4	6	8	12	16									
3 1/2"	88.90	4				6	8	12	16				3 1/4	4 1/2	11	100.33		
3 5/8"	92.07				4	6	8	12	16									
3 3/4"	95.25	4				6	8	12	16				3	4 1/2	11	106.68		
3 7/8"	98.42				4	6	8	12	16									
4"	101.60	4				6	8	12	16				3	4 1/2	11	113.03		



UMRECHNUNGSTABELLE - CONVERSION TABLE

		Vc m/min															
		1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
		min ⁻¹															
Ø d _r	1	318	637	955	1273	1592	1910	2546	3183	3820	4775	6366	7958	9549	12732	15915	19099
	2	159	318	477	637	796	955	1273	1592	1910	2387	3183	3979	4775	6366	7958	9549
3	3	106	212	318	424	531	637	849	1061	1273	1592	2122	2653	3183	4244	5305	6366
	4	80	159	239	318	398	477	637	796	955	1194	1592	1989	2387	3183	3979	4775
5	5	64	127	191	255	318	382	509	637	764	955	1273	1592	1910	2546	3183	3820
	6	53	106	159	212	265	318	424	531	637	796	1061	1326	1592	2122	2653	3183
8	8	40	80	119	159	199	239	318	398	477	597	796	995	1194	1592	1989	2387
	10	32	64	95	127	159	191	255	318	382	477	637	796	955	1273	1592	1910
12	12	27	53	80	106	133	159	212	265	318	398	531	663	796	1061	1326	1592
	14	23	45	68	91	114	136	182	227	273	341	455	568	682	909	1137	1364
16	16	20	40	60	80	99	119	159	199	239	298	398	497	597	796	995	1194
	18	18	35	53	71	88	106	141	177	212	265	354	442	531	707	884	1061
20	20	16	32	48	64	80	95	127	159	191	239	318	398	477	637	796	955
	25	13	25	38	51	64	76	102	127	153	191	255	318	382	509	637	764
30	30	11	21	32	42	53	64	85	106	127	159	212	265	318	424	531	637
	35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	40	8	16	24	32	40	48	64	80	95	119	159	199	239	318	398	477
	45	7	14	21	28	35	42	57	71	85	106	141	177	212	283	354	424
50	50	6	13	19	25	32	38	51	64	76	95	127	159	191	255	318	382

KERNLOCHBOHRUNGEN - CORE HOLES

M DIN 13, ISO 261, *5H / 6H

Ø	P	Kern-Ø Mutter - Core Ø nut			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
* 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	0.30	1.075	1.142	1.10	
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	0.40	1.567	1.679	1.60	
2.2	0.45	1.713	1.838	1.75	
2.3	0.40	1.867	1.979	1.90	
2.5	0.45	2.013	2.138	2.05	
2.6	0.45	2.113	2.238	2.15	
3	0.50	2.459	2.599	2.50	
3.5	0.60	2.850	3.010	2.90	
4	0.70	3.242	3.422	3.30	
4.5	0.75	3.688	3.878	3.75	
5	0.80	4.134	4.334	4.20	
6	1.00	4.917	5.153	5.00	
7	1.00	5.917	6.153	6.00	
8	1.25	6.647	6.912	6.80	
9	1.25	7.647	7.912	7.80	
10	1.50	8.376	8.676	8.50	
11	1.50	9.376	9.676	9.50	
12	1.75	10.106	10.441	10.20	
14	2.00	11.835	12.210	12.00	
16	2.00	13.835	14.210	14.00	
18	2.50	15.294	15.744	15.50	
20	2.50	17.294	17.744	17.50	
22	2.50	19.294	19.744	19.50	
24	3.00	20.752	21.252	21.00	
27	3.00	23.752	24.252	24.00	
30	3.50	26.211	26.771	26.50	
33	3.50	29.211	29.771	29.50	
36	4.00	31.670	32.270	32.00	
39	4.00	34.670	35.270	35.00	
42	4.50	37.129	37.799	37.50	
45	4.50	40.129	40.799	40.50	
48	5.00	42.587	43.297	43.00	
52	5.00	46.587	47.297	47.00	
56	5.50	50.046	50.796	50.50	

MF DIN 13, ISO 261, 6H

Ø	P	Kern-Ø Mutter - Core Ø nut			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
2.5	0.35	2.121	2.221	2.15	
3	0.35	2.621	2.721	2.65	
3.5	0.35	3.121	3.221	3.15	
4	0.50	3.459	3.599	3.50	
4.5	0.50	3.959	4.099	4.00	
5	0.50	4.459	4.599	4.50	
5.5	0.50	4.959	5.099	5.00	
6	0.75	5.188	5.378	5.25	
7	0.75	6.188	6.378	6.25	
8	0.75	7.188	7.378	7.25	

MF DIN 13, ISO 261, 6H

Ø	P	Kern-Ø Mutter - Core Ø nut			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
8	1.00	6.917	7.153	7.00	
9	0.75	8.188	8.378	8.25	
9	1.00	7.917	8.153	8.00	
10	0.75	9.188	9.378	9.25	
10	1.00	8.917	9.153	9.00	
10	1.25	8.647	8.912	8.80	
11	0.75	10.188	10.378	10.25	
11	1.00	9.917	10.153	10.00	
12	1.00	10.917	11.153	11.00	
12	1.25	10.647	10.912	10.80	
12	1.50	10.376	10.676	10.50	
14	1.00	12.917	13.153	13.00	
14	1.25	12.647	12.912	12.80	
14	1.50	12.376	12.676	12.50	
15	1.00	13.917	14.153	14.00	
15	1.50	13.376	13.676	13.50	
16	1.00	14.917	15.153	15.00	
16	1.50	14.376	14.676	14.50	
17	1.00	15.917	16.153	16.00	
17	1.50	15.376	15.676	15.50	
18	1.00	16.917	17.153	17.00	
18	1.50	16.376	16.676	16.50	
18	2.00	15.835	16.210	16.00	
20	1.00	18.917	19.153	19.00	
20	1.50	18.376	18.676	18.50	
20	2.00	17.835	18.210	18.00	
22	1.00	20.917	21.153	21.00	
22	1.50	20.376	20.676	20.50	
22	2.00	19.835	20.210	20.00	
24	1.00	22.917	23.153	23.00	
24	1.50	22.376	22.676	22.50	
24	2.00	21.835	22.210	22.00	
25	1.00	23.917	24.153	24.00	
25	1.50	23.376	23.676	23.50	
25	2.00	22.835	23.210	23.00	
27	1.50	25.376	25.676	25.50	
27	2.00	24.835	25.210	25.00	
28	1.00	26.917	27.153	27.00	
28	1.50	26.376	26.676	26.50	
28	2.00	25.835	26.210	26.00	
30	1.00	28.917	29.153	29.00	
30	1.50	28.376	28.676	28.50	
30	2.00	27.835	28.210	28.00	
32	1.50	30.376	30.676	30.50	
32	2.00	29.835	30.210	30.00	
33	1.50	31.376	31.676	31.50	
33	2.00	30.835	31.210	31.00	
35	1.50	33.376	33.676	33.50	
36	1.50	34.376	34.676	34.50	
36	2.00	33.835	34.210	34.00	
36	3.00	32.752	33.252	33.00	
39	1.50	37.376	37.676	37.50	
39	2.00	36.835	37.210	37.00	
39	3.00	35.752	36.252	36.00	
40	1.50	38.376	38.676	38.50	



KERNLOCHBOHRUNGEN - CORE HOLES

MF DIN 13, ISO 261, 6H

Ø	P	Kern-Ø Mutter - Core Ø nut			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
40	2.00	37.835	38.210	38.00	
40	3.00	36.752	37.252	37.00	
42	1.50	40.376	40.676	40.50	
42	2.00	39.835	40.210	40.00	
42	3.00	38.752	39.252	39.00	
45	1.50	43.376	43.676	43.50	
45	2.00	42.835	43.210	43.00	
45	3.00	41.752	42.252	42.00	
48	1.50	46.376	46.676	46.50	
48	2.00	45.835	46.210	46.00	
48	3.00	44.752	45.252	45.00	
50	1.50	48.376	48.676	48.50	
50	2.00	47.835	48.210	48.00	
50	3.00	46.752	47.252	47.00	
52	1.50	50.376	50.676	50.50	
52	2.00	49.835	50.210	50.00	
52	3.00	48.752	49.252	49.00	
55	2.00	52.835	53.210	53.00	
60	2.00	57.835	58.210	58.00	

MF EN 60423:1994, 7H

Ø	P	Kern-Ø Mutter - Core Ø nut			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
8	1.00	6.917	7.217	7.00	
10	1.00	8.917	9.217	9.00	
12	1.50	10.376	10.751	10.50	
16	1.50	14.376	14.751	14.50	
20	1.50	18.376	18.751	18.50	
25	1.50	23.376	23.751	23.50	
32	1.50	30.376	30.751	30.50	
40	1.50	38.376	38.751	38.50	
63	1.50	61.376	61.751	61.50	

UNC ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line	
1	64	0.397	1.425	1.582	1.45	
2	56	0.454	1.695	1.871	1.75	
3	48	0.529	1.941	2.146	2.00	
4	40	0.635	2.157	2.385	2.25	
5	40	0.635	2.487	2.697	2.55	
6	32	0.794	2.642	2.895	2.75	
8	32	0.794	3.302	3.530	3.40	
10	24	1.058	3.683	3.962	3.80	
12	24	1.058	4.344	4.597	4.40	
1/4"	20	1.270	4.979	5.257	5.10	
5/16"	18	1.411	6.401	6.731	6.50	

UNC ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line	
3/8"	16	1.588	7.798	8.153	8.00	
7/16"	14	1.814	9.144	9.550	9.30	
1/2"	13	1.954	10.592	11.023	10.80	
9/16"	12	2.117	11.989	12.446	12.20	
5/8"	11	2.309	13.386	13.868	13.60	
3/4"	10	2.540	16.307	16.840	16.60	
7/8"	9	2.822	19.177	19.761	19.50	
1"	8	3.175	21.971	22.606	22.30	
1 1/8"	7	3.629	24.638	25.349	25.00	
1 1/4"	7	3.629	27.813	28.524	28.20	
1 3/8"	6	4.233	30.353	31.115	30.80	
1 1/2"	6	4.233	33.528	34.290	34.00	
1 3/4"	5	5.080	38.964	39.827	39.50	
2"	4.5	5.644	44.679	45.593	45.30	

UNJC ISO 3161:1999, 3B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line	
4	40	0.635	2.228	2.393	2.30	
5	40	0.635	2.558	2.723	2.60	
6	32	0.794	2.733	2.939	2.80	
8	32	0.794	3.393	3.599	3.45	
10	24	1.058	3.795	4.064	3.90	
12	24	1.058	4.455	4.704	4.55	
1/4"	20	1.270	5.113	5.387	5.20	
5/16"	18	1.411	6.563	6.833	6.70	
3/8"	16	1.588	7.978	8.255	8.10	
7/16"	14	1.814	9.347	9.639	9.40	
1/2"	13	1.954	10.798	11.095	10.90	
9/16"	12	2.117	12.228	12.482	12.40	
5/8"	11	2.309	13.627	13.904	13.80	
3/4"	10	2.540	16.576	16.881	16.70	

KERNLOCHBOHRUNGEN - CORE HOLES

UNF ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	80	0.318	1.182	1.305	1.20
1	72	0.353	1.474	1.612	1.50
2	64	0.397	1.756	1.912	1.80
3	56	0.454	2.025	2.197	2.10
4	48	0.529	2.271	2.458	2.35
5	44	0.577	2.551	2.740	2.60
6	40	0.635	2.820	3.022	2.90
8	36	0.706	3.404	3.606	3.50
10	32	0.794	3.963	4.165	4.05
12	28	0.907	4.496	4.724	4.60
1/4"	28	0.907	5.360	5.588	5.50
5/16"	24	1.058	6.782	7.035	6.90
3/8"	24	1.058	8.382	8.636	8.50
7/16"	20	1.270	9.729	10.033	9.80
1/2"	20	1.270	11.329	11.607	11.40
9/16"	18	1.411	12.751	13.081	12.90
5/8"	18	1.411	14.351	14.681	14.50
3/4"	16	1.588	17.323	17.678	17.50
7/8"	14	1.814	20.270	20.675	20.40
1"	12	2.117	23.114	23.571	23.30
1 1/8"	12	2.117	26.289	26.746	26.50
1 1/4"	12	2.117	29.464	29.921	29.70
1 3/8"	12	2.117	32.639	33.096	32.80
1 1/2"	12	2.117	35.814	36.271	36.00

UNJF ISO 3161:1999, 3B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	80	0.318	1.217	1.298	1.25
1	72	0.353	1.511	1.603	1.55
2	64	0.397	1.798	1.902	1.85
3	56	0.454	2.073	2.189	2.15
4	48	0.529	2.329	2.466	2.35
5	44	0.577	2.614	2.764	2.70
6	40	0.635	2.888	3.053	2.95
8	36	0.706	3.480	3.663	3.60
10	32	0.794	4.054	4.255	4.10
12	28	0.907	4.602	4.816	4.70
1/4"	28	0.907	5.466	5.662	5.55
5/16"	24	1.058	6.906	7.109	7.00
3/8"	24	1.058	8.494	8.679	8.60
7/16"	20	1.270	9.876	10.084	10.00
1/2"	20	1.270	11.463	11.661	11.55
9/16"	18	1.411	12.913	13.122	13.05
5/8"	18	1.411	14.501	14.702	14.60
3/4"	16	1.588	17.506	17.722	17.60
7/8"	14	1.814	20.460	20.706	20.50
1"	12	2.117	23.340	23.594	23.40

UNEF ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
12	32	0.794	4.623	4.826	4.70
1/4"	32	0.794	5.487	5.689	5.60
5/16"	32	0.794	7.087	7.264	7.20
3/8"	32	0.794	8.662	8.864	8.75
7/16"	28	0.907	10.135	10.337	10.25
1/2"	28	0.907	11.710	11.938	11.85
9/16"	24	1.058	13.132	13.385	13.20
5/8"	24	1.058	14.732	14.986	14.80
11/16"	24	1.058	16.307	16.560	16.40
3/4"	20	1.270	17.679	17.957	17.80
13/16"	20	1.270	19.254	19.558	19.40
7/8"	20	1.270	20.854	21.132	21.00
1"	20	1.270	24.029	24.307	24.10

UN ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
5/16"	20	1.270	6.554	6.858	6.70
3/8"	20	1.270	8.154	8.432	8.30
9/16"	20	1.270	12.904	13.208	13.00
5/8"	20	1.270	14.504	14.782	14.60
1 1/8"	8	3.175	25.146	25.781	25.50
1 1/4"	8	3.175	28.321	28.956	28.70
1 3/8"	8	3.175	31.496	32.131	31.80
1 1/2"	8	3.175	34.671	35.306	35.00
1 5/8"	8	3.175	37.846	38.481	38.20
1 3/4"	8	3.175	41.021	41.656	41.40
1 7/8"	8	3.175	44.196	44.831	44.50
2"	8	3.175	47.371	48.006	47.70
2 1/4"	8	3.175	53.721	54.356	54.10
2 1/2"	8	3.175	60.071	60.706	60.40



KERNLOCHBOHRUNGEN - CORE HOLES

UNS ANSI B1.1, 2B

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
10	36	0.706	4.064	4.216	4.10
10	40	0.635	4.141	4.292	4.20
10	56	0.454	4.344	4.445	4.40
1/4"	36	0.706	5.588	5.740	5.65
1/4"	40	0.635	5.665	5.816	5.70
1/4"	48	0.529	5.766	5.892	5.80
1/4"	56	0.454	5.868	5.969	5.90
5/16"	36	0.706	7.163	7.340	7.25
3/8"	36	0.706	8.763	8.940	8.80
7/16"	24	1.058	9.957	10.210	10.00
1/2"	24	1.058	11.557	11.811	11.60
1"	14	1.814	23.445	23.825	23.60

G (BSP) DIN ISO 228

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/16"	28	0.907	6.561	6.843	6.75
1/8"	28	0.907	8.566	8.848	8.75
1/4"	19	1.337	11.445	11.890	11.60
3/8"	19	1.337	14.950	15.395	15.20
1/2"	14	1.814	18.631	19.172	18.90
5/8"	14	1.814	20.587	21.128	20.90
3/4"	14	1.814	24.117	24.658	24.40
7/8"	14	1.814	27.877	28.418	28.20
1"	11	2.309	30.291	30.931	30.70
1 1/8"	11	2.309	34.939	35.579	35.30
1 1/4"	11	2.309	38.952	39.592	39.30
1 3/8"	11	2.309	41.365	42.005	41.80
1 1/2"	11	2.309	44.845	45.485	45.20
1 3/4"	11	2.309	50.788	51.428	51.20
2"	11	2.309	56.656	57.296	57.00
2 1/4"	11	2.309	62.752	63.392	63.10
2 1/2"	11	2.309	72.226	72.866	72.60
3"	11	2.309	84.926	85.566	85.30

W (BSW) BS 84, (DIN11 - 1970)

Ø"	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
(3/32")	48				1.80
1/8"	40	0.635	2.362	2.591	2.50
(5/32")	32				3.10
3/16"	24	1.058	3.406	3.744	3.60
(7/32")	24				4.40
1/4"	20	1.270	4.724	5.156	4.90
5/16"	18	1.411	6.129	6.588	6.40
3/8"	16	1.588	7.493	7.988	7.70
7/16"	14	1.814	8.791	9.332	9.10
1/2"	12	2.117	9.987	10.589	10.30
5/8"	11	2.309	12.918	13.558	13.30
3/4"	10	2.540	15.799	16.484	16.20
7/8"	9	2.822	18.613	19.355	19.25
1"	8	3.175	21.336	22.149	21.90

PG DIN 40430

Ø	P	P	Kern-Ø Mutter - Core Ø nut		
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
7	20	1.270	11.28	11.43	11.35
9	18	1.411	13.86	14.01	13.90
11	18	1.411	17.26	17.41	17.30
13.5	18	1.411	19.06	19.21	19.10
16	18	1.411	21.16	21.31	21.20
21	16	1.588	26.78	27.03	26.80
29	16	1.588	35.48	35.73	35.50
36	16	1.588	45.48	45.73	45.50
42	16	1.588	52.48	52.73	52.50
48	16	1.588	57.78	58.03	57.80

TR ISO 2901-2904, DIN 103, 7H

Ø	P	Kern-Ø Mutter - Core Ø nut		
d _i	mm	Ø mini	Ø maxi	Ø guide line
10	2	8	8.236	8.20
12	3	9	9.315	9.25
14	3	11	11.315	11.25
16	4	12	12.375	12.25
18	4	14	14.375	14.25
20	4	16	16.375	16.25
22	5	17	17.450	17.25
24	5	19	19.450	19.25
26	5	21	21.450	21.25
28	5	23	23.450	23.25
30	6	24	24.500	24.25
32	6	26	26.500	26.25

AUSSENDURCHMESSER - TURNED DIAMETERS

M DIN 13, ISO 261, *6h / 6g

Ø	P	Aussen-Ø Bolzen - Thread outside Ø 		
d ₁	mm	Ø mini	Ø maxi	Ø guide line
* 1	0.25	0.933	1.000	0.97
* 1.1	0.25	1.033	1.100	1.07
* 1.2	0.25	1.133	1.200	1.17
* 1.4	0.30	1.325	1.400	1.36
1.6	0.35	1.496	1.581	1.54
1.7	0.35	1.596	1.681	1.64
1.8	0.35	1.696	1.781	1.74
2	0.40	1.886	1.981	1.93
2.2	0.45	2.080	2.180	2.13
2.3	0.40	2.186	2.300	2.23
2.5	0.45	2.380	2.480	2.43
2.6	0.45	2.480	2.600	2.53
3	0.50	2.874	2.980	2.92
3.5	0.60	3.354	3.479	3.41
4	0.70	3.838	3.978	3.91
4.5	0.75	4.338	4.478	4.40
5	0.80	4.826	4.976	4.90
6	1.00	5.794	5.974	5.88
7	1.00	6.794	6.974	6.88
8	1.25	7.760	7.972	7.87
9	1.25	8.760	8.972	8.87
10	1.50	9.732	9.968	9.85
11	1.50	10.732	10.968	10.85
12	1.75	11.701	11.966	11.83
14	2.00	13.682	13.962	13.82
16	2.00	15.682	15.962	15.82
18	2.50	17.623	17.958	17.79
20	2.50	19.623	19.958	19.79
22	2.50	21.623	21.958	21.79
24	3.00	23.577	23.952	23.76
27	3.00	26.577	26.952	26.76
30	3.50	29.522	29.947	29.73
33	3.50	32.522	32.947	32.73
36	4.00	35.465	35.940	35.70
39	4.00	38.465	38.940	38.70
42	4.50	41.437	41.937	41.69
45	4.50	44.437	44.937	44.69
48	5.00	47.399	47.929	47.66
52	5.00	51.399	51.929	51.66
56	5.50	55.365	55.925	55.65

MF DIN 13, ISO 261, 6g

Ø	P	Aussen-Ø Bolzen - Thread outside Ø 		
d ₁	mm	Ø mini	Ø maxi	Ø guide line
2.5	0.35	2.396	2.481	2.44
3	0.35	2.896	2.981	2.94
3.5	0.35	3.396	3.481	3.44
4	0.50	3.874	3.980	3.93
4.5	0.50	4.374	4.480	4.43
5	0.50	4.874	4.980	4.93
5.5	0.50	5.374	5.480	5.43
6	0.75	5.838	5.978	5.90
7	0.75	6.838	6.978	6.90
8	0.75	7.838	7.978	7.90

MF DIN 13, ISO 261, 6g

Ø	P	Aussen-Ø Bolzen - Thread outside Ø 		
d ₁	mm	Ø mini	Ø maxi	Ø guide line
8	1.00	7.794	7.974	7.88
9	0.75	8.838	8.978	8.90
9	1.00	8.794	8.974	8.88
10	0.75	9.838	9.978	9.90
10	1.00	9.794	9.974	9.88
10	1.25	9.760	9.972	9.86
11	0.75	10.838	10.978	10.90
11	1.00	10.794	10.974	10.88
12	1.00	11.794	11.974	11.88
12	1.25	11.760	11.972	11.86
12	1.50	11.732	11.968	11.85
14	1.00	13.794	13.974	13.88
14	1.25	13.760	13.972	13.86
14	1.50	13.732	13.968	13.85
15	1.00	14.794	14.974	14.88
15	1.50	14.732	14.968	14.85
16	1.00	15.794	15.974	15.88
16	1.50	15.732	15.968	15.85
17	1.00	16.794	16.974	16.88
17	1.50	16.732	16.968	16.85
18	1.00	17.794	17.974	17.88
18	1.50	17.732	17.968	17.85
18	2.00	17.682	17.962	17.82
20	1.00	19.794	19.974	19.88
20	1.50	19.732	19.968	19.85
20	2.00	19.682	19.962	19.82
22	1.00	21.794	21.974	21.88
22	1.50	21.732	21.968	21.85
22	2.00	21.682	21.962	21.82
24	1.00	23.794	23.974	23.88
24	1.50	23.732	23.968	23.85
24	2.00	23.682	23.962	23.82
25	1.00	24.794	24.974	24.88
25	1.50	24.732	24.968	24.85
25	2.00	24.682	24.962	24.82
27	1.00	26.794	26.974	26.88
27	1.50	26.732	26.968	26.85
27	2.00	26.682	26.962	26.82
28	1.00	27.794	27.974	27.88
28	1.50	27.732	27.968	27.85
28	2.00	27.682	27.962	27.82
30	1.00	29.794	29.974	29.88
30	1.50	29.732	29.968	29.85
30	2.00	29.682	29.962	29.82
30	3.00	29.577	29.952	29.76
32	1.50	31.732	31.968	31.85
32	2.00	31.682	31.962	31.82
33	1.50	32.732	32.968	32.85
33	2.00	32.682	32.962	32.82
33	3.00	32.577	32.952	32.76
35	1.50	34.732	34.968	34.85
36	1.50	35.732	35.968	35.85
36	2.00	35.682	35.962	35.82
36	3.00	35.577	35.952	35.76
39	1.50	38.732	38.968	38.85
39	2.00	38.682	38.962	38.82
39	3.00	38.577	38.952	38.76



AUSSENDURCHMESSER - TURNED DIAMETERS

MF DIN 13, ISO 261, 6g

Ø	P	Aussen-Ø Bolzen - Thread outside Ø 			
d ₁	mm	Ø mini	Ø maxi	Ø guide line	
40	1.50	39.732	39.968	39.85	
40	2.00	39.682	39.962	39.82	
40	3.00	39.577	39.952	39.76	
42	1.50	41.732	41.968	41.85	
42	2.00	41.682	41.962	41.82	
42	3.00	41.577	41.952	41.76	
45	1.50	44.732	44.968	44.85	
45	2.00	44.682	44.962	44.82	
45	3.00	44.577	44.952	44.76	
48	1.50	47.732	47.968	47.85	
48	2.00	47.682	47.962	47.82	
48	3.00	47.577	47.952	47.76	
50	1.50	49.732	49.968	49.85	
50	2.00	49.682	49.962	49.82	
50	3.00	49.577	49.952	49.76	
52	1.50	51.732	51.968	51.85	
52	2.00	51.682	51.962	51.82	
52	3.00	51.577	51.952	51.76	
52	4.00	51.465	51.940	51.70	

UNC ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line
1	64	0.397	1.743	1.838	1.79
2	56	0.454	2.066	2.169	2.12
3	48	0.529	2.383	2.496	2.44
4	40	0.635	2.695	2.824	2.76
5	40	0.635	3.026	3.154	3.09
6	32	0.794	3.333	3.484	3.41
8	32	0.794	3.991	4.142	4.07
10	24	1.058	4.618	4.800	4.71
12	24	1.058	5.279	5.461	5.37
1/4"	20	1.270	6.117	6.322	6.22
5/16"	18	1.411	7.687	7.907	7.80
3/8"	16	1.588	9.254	9.491	9.37
7/16"	14	1.814	10.816	11.076	10.95
1/2"	13	1.954	12.386	12.661	12.52
9/16"	12	2.117	13.958	14.246	14.10
5/8"	11	2.309	15.528	15.834	15.68
3/4"	10	2.540	18.677	19.004	18.84
7/8"	9	2.822	21.824	22.176	22.00
1"	8	3.175	24.969	25.349	25.16
1 1/8"	7	3.629	28.103	28.519	28.31
1 1/4"	7	3.629	31.278	31.694	31.49
1 3/8"	6	4.233	34.402	34.864	34.63
1 1/2"	6	4.233	37.577	38.039	37.81
1 3/4"	5	5.080	43.860	44.381	44.12
2"	4.5	5.644	50.168	50.726	50.45
2 1/4"	4.5	5.644	56.518	57.076	56.80
2 1/2"	4	6.350	62.817	63.421	63.12
2 3/4"	4	6.350	69.165	69.768	69.47
3"	4	6.350	75.515	76.118	75.82
3 1/4"	4	6.350	81.862	82.466	82.16
3 1/2"	4	6.350	88.212	88.816	88.51

UNC ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line
3 3/4"	4	6.350	94.560	95.163	94.86
4"	4	6.350	100.910	101.513	101.21

UNF ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line
0	80	0.318	1.431	1.511	1.47
1	72	0.353	1.751	1.838	1.79
2	64	0.397	2.073	2.169	2.12
3	56	0.454	2.393	2.496	2.44
4	48	0.529	2.713	2.827	2.77
5	44	0.577	3.036	3.157	3.10
6	40	0.635	3.356	3.484	3.42
8	36	0.706	4.006	4.145	4.08
10	32	0.794	4.651	4.803	4.73
12	28	0.907	5.296	5.461	5.38
1/4"	28	0.907	6.160	6.324	6.24
5/16"	24	1.058	7.727	7.909	7.82
3/8"	24	1.058	9.315	9.497	9.41
7/16"	20	1.270	10.874	11.079	10.98
1/2"	20	1.270	12.462	12.666	12.56
9/16"	18	1.411	14.031	14.251	14.14
5/8"	18	1.411	15.619	15.839	15.73
3/4"	16	1.588	18.774	19.011	18.89
7/8"	14	1.814	21.923	22.184	22.05
1"	12	2.117	25.065	25.354	25.21
1 1/8"	12	2.117	28.240	28.529	28.38
1 1/4"	12	2.117	31.415	31.704	31.56
1 3/8"	12	2.117	34.588	34.876	34.73
1 1/2"	12	2.117	37.763	38.051	37.91

UNEF ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d ₁	TPI	mm	Ø mini	Ø maxi	Ø guide line
12	32	0.794	5.312	5.463	5.39
1/4"	32	0.794	6.173	6.324	6.25
5/16"	32	0.794	7.760	7.912	7.84
3/8"	32	0.794	9.348	9.499	9.42
7/16"	28	0.907	10.920	11.084	11.00
1/2"	28	0.907	12.507	12.672	12.59
9/16"	24	1.058	14.075	14.257	14.17
5/8"	24	1.058	15.662	15.844	15.75
11/16"	24	1.058	17.250	17.432	17.34
3/4"	20	1.270	18.812	19.016	18.91
13/16"	20	1.270	20.339	20.604	20.50
7/8"	20	1.270	21.987	22.191	22.09
15/16"	20	1.270	23.572	23.776	23.67
1"	20	1.270	25.159	25.364	25.26
1 1/8"	18	1.411	28.319	28.539	28.43
1 1/4"	18	1.411	31.491	31.711	31.60
1 1/2"	18	1.411	37.841	38.061	37.95

AUSSENDURCHMESSER - TURNED DIAMETERS

UN ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
5/16"	20	1.270	7.702	7.907	7.80
3/8"	20	1.270	9.289	9.494	9.39
9/16"	20	1.270	14.049	14.254	14.15
5/8"	20	1.270	15.637	15.841	15.74
1 1/8"	8	3.175	28.141	28.521	28.33
1 1/4"	8	3.175	31.316	31.696	31.51
1 3/8"	8	3.175	34.489	34.869	34.68
1 1/2"	8	3.175	37.664	38.044	37.85
1 5/8"	8	3.175	40.839	41.219	41.03
1 3/4"	8	3.175	44.011	44.391	44.20
1 7/8"	8	3.175	47.186	47.566	47.38
2"	8	3.175	50.361	50.741	50.55
2 1/4"	8	3.175	56.709	57.089	56.90
2 1/2"	8	3.175	63.059	63.439	63.25
2 3/4"	8	3.175	69.406	69.786	69.60
3"	8	3.175	75.753	76.133	75.94

UNS ANSI B1.1, 2A

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
10	36	0.706	4.664	4.803	4.73
10	40	0.635	4.674	4.803	4.74
10	56	0.454	4.705	4.808	4.76
1/4"	36	0.706	6.188	6.327	6.26
1/4"	40	0.635	6.198	6.327	6.26
1/4"	48	0.529	6.216	6.329	6.27
1/4"	56	0.454	6.226	6.329	6.28
5/16"	36	0.706	7.775	7.914	7.84
3/8"	36	0.706	9.360	9.499	9.43
7/16"	24	1.058	10.902	11.084	10.99
1/2"	24	1.058	12.487	12.669	12.58
1"	14	1.814	25.096	25.356	25.23

G (BSP) DIN ISO 228

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/16"	28	0.907	7.509	7.723	7.62
1/8"	28	0.907	9.514	9.728	9.62
1/4"	19	1.337	12.907	13.157	13.03
3/8"	19	1.337	16.412	16.662	16.54
1/2"	14	1.814	20.671	20.955	20.81
5/8"	14	1.814	22.627	22.911	22.77
3/4"	14	1.814	26.157	26.441	26.30
7/8"	14	1.814	29.917	30.201	30.06
1"	11	2.309	32.889	33.249	33.07
1 1/8"	11	2.309	37.537	37.897	37.72
1 1/4"	11	2.309	41.550	40.910	41.73
1 3/8"	11	2.309	43.963	44.323	44.14
1 1/2"	11	2.309	47.443	47.803	47.62
1 3/4"	11	2.309	53.386	53.746	53.57
2"	11	2.309	59.254	59.614	59.43
2 1/4"	11	2.309	65.276	65.710	65.49
2 1/2"	11	2.309	74.750	75.184	74.97
2 3/4"	11	2.309	81.100	81.534	81.32
3"	11	2.309	87.450	87.884	87.67
3 1/2"	11	2.309	99.896	100.330	100.11

W (BSW) BS 84

Ø"	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
1/4"	20	1.270	6.165	6.319	6.24
5/16"	18	1.411	7.737	7.904	7.82
3/8"	16	1.588	9.312	9.489	9.40
7/16"	14	1.814	10.884	11.074	10.98
1/2"	12	2.117	12.456	12.662	12.56
5/8"	11	2.309	15.613	15.832	15.72
3/4"	10	2.540	18.771	19.004	18.89
7/8"	9	2.822	21.979	22.225	22.10
1"	8	3.175	25.138	25.400	25.27
1 1/8"	7	3.629	28.296	28.575	28.44
1 1/4"	7	3.629	31.465	31.750	31.61
1 1/2"	6	4.233	37.793	38.100	37.95
1 3/4"	5	5.080	44.117	44.450	44.28
2"	4.5	5.644	50.449	50.800	50.62
2 1/4"	4	6.350	56.779	57.150	56.96
2 1/2"	4	6.350	63.119	63.500	63.31

PG DIN 40430

Ø	P	P Aussen-Ø Bolzen - Thread outside Ø 			
d _i	TPI	mm	Ø mini	Ø maxi	Ø guide line
7	20	1.270	12.3	12.5	12.40
9	18	1.411	15.0	15.2	15.10
11	18	1.411	18.4	18.6	18.50
13.5	18	1.411	20.2	20.4	20.30
16	18	1.411	22.3	22.5	22.40
21	16	1.588	28.0	28.3	28.15
29	16	1.588	36.7	37.0	36.85
36	16	1.588	46.7	47.0	46.85
42	16	1.588	53.7	54.0	53.85
48	16	1.588	59.0	59.3	59.15

TR ISO 2901-2904, DIN 103, 7e

Ø	P	Aussen-Ø Bolzen - Thread outside Ø			
d _i	mm	Ø mini	Ø maxi	Ø guide line	
10	2	9.820	10.000	9.91	
12	3	11.764	12.000	11.88	
14	3	13.764	14.000	13.88	
16	4	15.700	16.000	15.85	
18	4	17.700	18.000	17.85	
20	4	19.700	20.000	19.85	
22	5	21.665	22.000	21.83	
24	5	23.665	24.000	23.83	
26	5	25.665	26.000	25.83	
28	5	27.665	28.000	27.83	
30	6	29.625	30.000	29.81	
32	6	31.625	32.000	31.81	



Angebotsanfrage ☐

Versuchsergebnis ☐

Beanstandung ☐

Vertretung : _____
Kunde : _____
Tel.- /Fax-Nr : _____

Kontaktperson : _____
E-Mail : _____
Datum : _____

1. Werkzeug-Typ : _____
Besonderheit : _____

Abmessung : _____
Toleranzklasse : _____

2. Werkstoffgruppe : _____
Werkstoff-Nr : _____
Norm : _____

Härte : _____ N/mm² /HB/HRC
Bruchdehnung : _____ %

3. Gewinde : ☐ Sackloch ☐ Durchgangsloch
Kernloch-Ø : _____
Aufbohrungs-Ø : _____

Gewindelänge : _____ mm
Tiefe : _____ mm
Tiefe : _____ mm

4. Schnittgeschwindigkeit (V_c) : _____ m/min _____ l/min
Vorschub (f) : _____ %

5. Maschine : _____
Arbeitsrichtung : ☐ horizontal ☐ vertikal
Synchro-Gewindeschneiden : ☐ Soft-Rigidfutter ☐ Spannzange ☐ Weldon ☐ Schrumpffutter

☐ Innenkühlung
Gewindeschneidspindel : ☐ Längenausgleich ☐ Ausklinkbar ☐ Rutschkupplung ☐ Automat. Umschaltung

6. Schmierung : ☐ Emulsion ☐ Schneidöl ☐ Luft ☐ MMS
Produkt : _____

7. Grund des Werkzeugwechsels : ☐ Werkzeugverschleiss ☐ Gewinde nicht korrekt (kontrolliert mit Lehre) ☐ Maschinenfehler

☐ Werkzeugbruch ☐ Zahnausbrüche im Anschnittbereich ☐ Zahnausbrüche im Führungsgewinde

8. Standzeitvergleich

Vergleichswerkzeug : _____
Resultat und Befund : _____

Bemerkungen : _____

TECHNICAL QUESTIONNAIRE

THREAD CUTTING AND THREAD FORMING

Enquiry ☐

Test result ☐

Complaint ☐

Agency : _____
 Customer : _____
 Phone or fax : _____

Contact : _____
 E-mail : _____
 Date : _____

1. Tool type : _____ Thread size : _____
 Particularity : _____ Class of tolerance : _____

2. Material group : _____
 Material N° : _____ Hardness : _____ N/mm² /HB/HRC
 Norm : _____ Elongation : _____ %

3. Thread : ☐ blind hole ☐ through hole Threaded length : _____ mm
 Core hole Ø : _____ Depth : _____ mm
 Counter-bore Ø : _____ Depth : _____ mm

4. Cutting speed (V_c) : _____ m/min _____ l/min
 Feed (f) : _____ %

5. Machine : _____ ☐ internal coolant
 Working position : ☐ horizontal ☐ vertical
 Rigid Tapping : ☐ "Soft Rigid Tapping"
 ☐ collet ☐ axial compensation
 ☐ Weldon ☐ de-clutching
 ☐ hot / cold shrunk ☐ reversible
 ☐ sliding clutch

6. Lubricant : ☐ emulsion ☐ oil ☐ air ☐ mist
 Product : _____

7. Tool change reason : ☐ tool wear ☐ tool breakage
 ☐ thread not correct (checked with thread plug gauge) ☐ tooth breakage in the chamfer lead
 ☐ machine error ☐ tooth breakage in the guiding thread

8. Efficiency comparison

Tool under test : _____
 Performance and observations : _____

Remarks : _____

Angebotsanfrage ☐

Versuchsergebnis ☐

Beanstandung ☐

Vertretung : _____

Kontaktperson : _____

Kunde : _____

E-Mail : _____

Tel.- /Fax-Nr : _____

Datum : _____

1. Werkzeug-Typ : _____

Nenn-Ø : _____

Steigung : _____

Serie : _____

Beschichtung : _____

2. Werkstoffgruppe : _____

Werkstoff-Nr : _____

Härte : _____ N/mm² /HB/HRC

Norm : _____

Bruchdehnung : _____ %

3. Gewinde : ☐ Innen

☐ Aussen

Lochart : ☐ Sackloch

☐ Durchgangsloch

Gewindelänge : _____ mm

Kernloch-Ø : _____ Tiefe : _____ mm

Aufbohrungs-Ø : _____ Tiefe : _____ mm

4. Schnittgeschwindigkeit (V_c) : _____ m/min _____ 1/min

Vorschub (f) : _____ mm/U

Vorschub (f_z) : _____ mm/Zahn

5. Maschine : _____

☐ Innenkühlung

Arbeitsrichtung : ☐ horizontal

Werkzeugaufnahme : _____

☐ Spannzange

☐ Weldon / Whistle Notch

☐ vertikal

☐ Hydrodehnspannfutter

☐ Schrumpffutter

6. Schmierung : ☐ Emulsion

☐ Schneidöl

☐ Luft

☐ MMS

Produkt : _____

7. Grund des Werkzeugwechsels

☐ Werkzeugverschleiss

☐ Werkzeugbruch

☐ Gewinde nicht korrekt (kontrolliert mit Lehre)

☐ Maschinenfehler

8. Standzeitvergleich

Vergleichswerkzeug : _____

Resultat und Befund : _____

Bemerkungen : _____

TECHNICAL QUESTIONNAIRE

THREAD MILLING AND THREAD WHIRLING

Enquiry ☐

Test result ☐

Complaint ☐

Agency : _____
Customer : _____
Phone or fax : _____

Contact : _____
E-mail : _____
Date : _____

1. Tool type : _____

Tool Ø : _____
Serie : _____

Pitch : _____
Coating : _____

2. Material group : _____

Material N° : _____
Norm : _____

Hardness : _____ N/mm² /HB/HRC
Elongation : _____ %

3. Thread : ☐ internal ☐ external

Hole : ☐ blind ☐ through

Threaded length : _____ mm

Core hole Ø : _____ Depth : _____ mm

Counter-bore Ø : _____ Depth : _____ mm

4. Cutting speed (V_c) : _____ m/min _____ 1/min

Feed (f) : _____ mm/rev. Feed (f_z) : _____ mm/tooth

5. Machine : _____ ☐ internal coolant

Working position : ☐ horizontal
☐ vertical

Tool attachment : ☐ collet
☐ hydraulic chuck

☐ Weldon / Whistle Notch
☐ hot / cold shrunk

6. Lubricant : ☐ emulsion

☐ oil

☐ air

☐ mist

Product : _____

7. Tool change reason :

☐ tool wear

☐ tool breakage

☐ incorrect threading (inspected with gauge)

☐ programme error

8. Efficiency comparison

Tool under test : _____

Performance and observations : _____

Remarks : _____

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Erfolgt auf Rechnung und Gefahr des Bestellers.

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Garantie

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Streitigkeiten unterstehen ausschliesslich dem Schweizerischen Obligationenrecht.

DELIVERY AND PAYMENT CONDITIONS

Orders	Orders, which cannot be delivered from stock, will be acknowledged. Items, which do not belong any more to our standard programme, although still featured in the catalogue, will be invoiced as «specials». Orders may only be cancelled by mutual written agreement.
Quotations and acknowledgements	For reasons of constant development in this field, all descriptions mentioned in our quotations, annexed documents, weight indications, measurements as well as illustrations and drawings are approximate indications. These technical data have binding value only if expressly specified.
Prices	Our prices are quoted for deliveries ex works Malleray, excluding VAT, packing, insurance, freight, customs' and legalisation duties. Should prices increase, we reserve the right to invoice tools already acknowledged at the new prices.
Payment	Payments must be made in advance or against irrevocable and confirmed documentary credit to be opened in our favour with a Swiss bank. All banking commissions and charges have to be borne by the buyer.
Right of ownership	We reserve the right of ownership of all goods supplied until the sales price, plus all incidental charges, have fully been paid.
Despatch	Deliveries take place at the purchaser's risk.
Delivery	Confirmed delivery dates are non-binding. We will do our utmost to maintain them. However, we cannot accept responsibility of direct or consequential losses due to delayed deliveries.
Special orders	For all special tools we reserve the right to over or under supply the ordered quantity by up to 15 %, or on small quantities by 1 or 2 pieces.
Guarantee	Tools recognised to be defective by DC will be replaced free of charge, but without prejudice.
Complaints	Complaints will be considered only within 15 days after receipt of the goods.
Drawings and sketches	The reproduction or transmission of drawings and other documents to a third party are prohibited. The information (drawings and prints) in our catalogue is for guidance only and is not binding.
Special conditions	In the case of partial or total disruption of our production; we reserve the right to partially or totally cancel our delivery commitments.
Tribunal	All disputes are subject to Swiss Law. The seat of court of law will be Moutier (Switzerland).

ZUSCHLÄGE - PRICE SUPPLEMENTS

Zuschläge für Abänderungen von blanken Gewindebohren und Oberflächen-Behandlungen

	Auf Bruttopreis pro Stück	Anteil an Einrichtkosten pro Typ und Abmessung (netto)
Abändern des Spanwinkels (Ø 5 - 20 mm)	10 %	auf Anfrage
Verlängern des Anschnittes (bis Ø 20 mm)	10 %	auf Anfrage
Kürzen des Anschnittes (Ø 3 - 20 mm)	20 %	auf Anfrage
Schälanschnitt anschleifen (Ø 5 - 20 mm)	10 %	auf Anfrage
Abschleifen der Zentrierspitze	3 %	auf Anfrage
Verjüngen des Führungsgewindes ab Ø 4 mm	12 %	auf Anfrage
NV-Plasmanitrierung + "V"-Oberflächenbehandlung	10 %	auf Anfrage
DC-"V"-Oberflächenbehandlung	8 %	auf Anfrage
Zusätzliche Markierung	5 %	auf Anfrage
Kühlkanal, mit stirnseitigem Schmiermittelaustritt	auf Anfrage	auf Anfrage
Kühlkanal, mit seitlichem Schmiermittelaustritt	auf Anfrage	auf Anfrage
Beschichtungen TiN, TiCN, VS, CrN, HL	auf Anfrage	auf Anfrage

Price supplements for modifications for bright finished taps and surface treatments

	On gross price each	Participation of set-up costs per type and size (net)
Modification of cutting angle (Ø 5 - 20 mm)	10 %	on request
Lengthening of chamfer (up to Ø 20 mm)	10 %	on request
Shortening of chamfer (Ø 3 - 20 mm)	20 %	on request
Grinding of peeling cut (Ø 5 - 20 mm)	10 %	on request
Removal of centre point	3 %	on request
Truncated thread from Ø 4 mm	12 %	on request
NV-Plasma nitriding + "V" surface treatment	10 %	on request
DC "V" surface treatment	8 %	on request
Additional marking	5 %	on request
Internal coolant, with frontal outflow	on request	on request
Internal coolant, with radial outflow	on request	on request
Coatings TiN, TiCN, VS, CrN, HL	on request	on request

Kosten für Prüfzertifikate - Prices for gauge test certificates

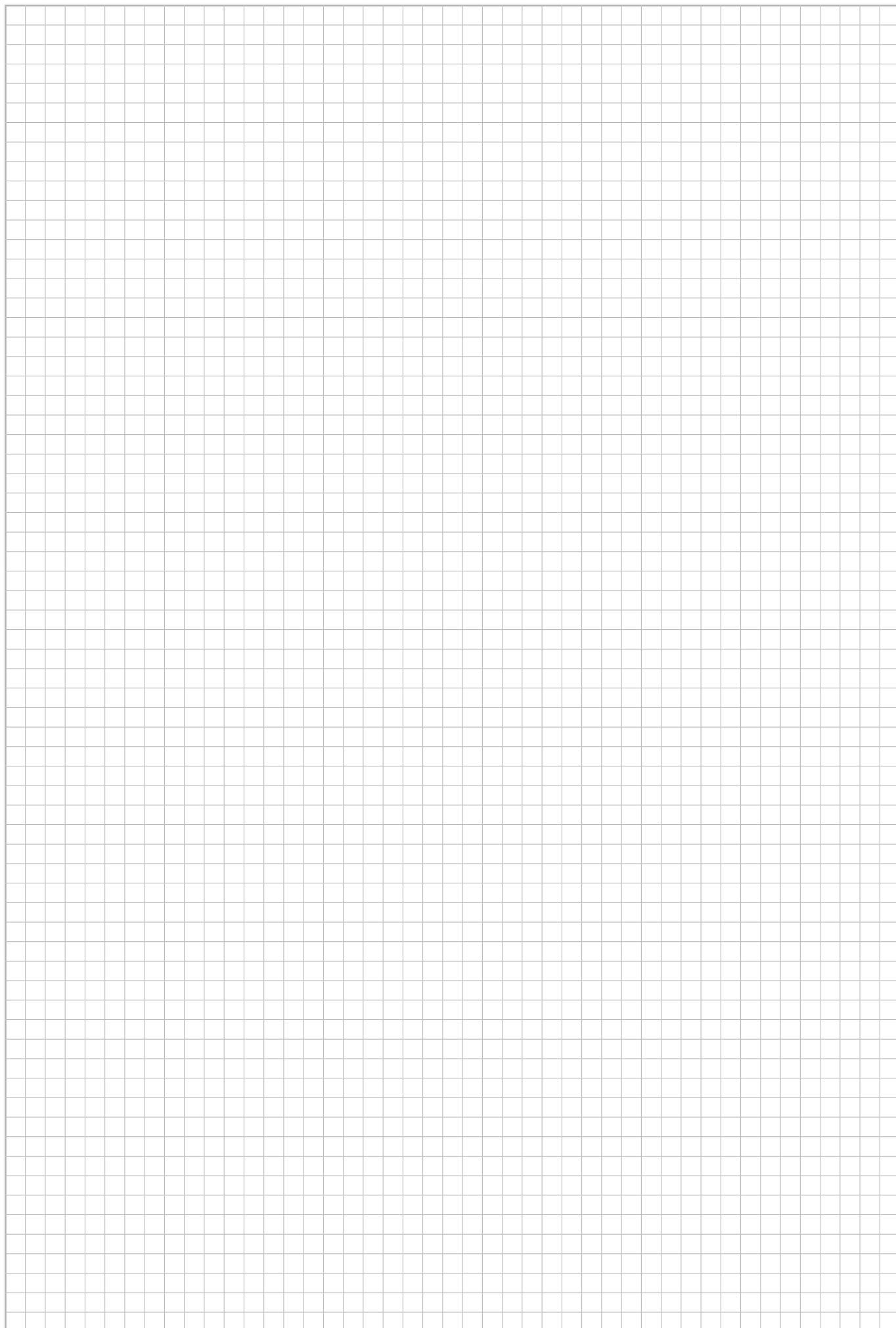
Für neue Gewindelehren (Neulieferung) / Messunsicherheit U95

For new ordered thread gauges / Measuring uncertainty U95

			Nettopreise / Net prices
D5703	D5725	Ø 1 - 2.9 mm	auf Anfrage / on request
		Ø 3 - 40 mm	auf Anfrage / on request
D5701-1	D5701-2	Ø 1 - 2.9 mm	auf Anfrage / on request
		Ø 3 - 40 mm	auf Anfrage / on request
		Ø 41 - 80 mm	auf Anfrage / on request
		Ø 81 - 200 mm	auf Anfrage / on request
D5704	D5714	Ø 1 - 2.9 mm	auf Anfrage / on request
		Ø 3 - 40 mm	auf Anfrage / on request
		Ø 41 - 80 mm	auf Anfrage / on request
		Ø 81 - 200 mm	auf Anfrage / on request
D5720 / D5721	D5722 / D5723	Ø 3 - 40 mm	auf Anfrage / on request
		Ø 41 - 80 mm	auf Anfrage / on request
		Ø > 80 mm	auf Anfrage / on request

Alle zertifizierten Gewindelehren werden mit der auf dem entsprechenden Prüfzertifikat aufgeführten Identnummer beschriftet.

All "certified" gauges will be marked with the identity number of the corresponding test certificate.





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Warnung

Gewindewerkzeuge können durch technisches Versagen oder durch Fahrlässigkeit brechen oder zersplittern und die Gesundheit des Mitarbeitenden gefährden. Befolgen Sie daher die gesetzlichen Sicherheits- und Gesundheitsvorschriften. Zudem ist das Tragen der Schutzbrille unerlässlich.

Das Schleifen von Gewindewerkzeugen verursacht gefährlichen Staub und darf nur unter gewissenhaftesten Sicherheitsrichtlinien verrichtet werden.

Warning

Thread tools can break or shatter either through technical failure or negligence, and can endanger the health of the operator. Always obey the safety and health regulations, also the wearing of safety glasses is compulsory.

The grinding of threading tools causes hazardous particles, and must be performed only under most rigorous safety standards.

Eventuelle Druckfehler technischer Daten oder zwischenzeitlich eintretende Änderungen jeder Art berechtigen nicht zu Ansprüchen.

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