APPLICATION

MACHINE TAPS

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Europa Tool 8TH EDITION

INDEX

MACHINE TAPS

HIGH PERFORMANCE APPLICATION TAPS

EXPLANATION OF ABBREVIATIONS

Working Materials

AL	Aluminium & Aluminium Alloys
GS	Steels with good machinability Rm<750N/mm²
VG	Heat treated and heat-resistant steels Rm>750N/mm²
VA	Stainless steels
NW	Carbon steels with low contents of alloy Rm<600N/mm²
GV	Any material with alleast 8-10% elongation
GG	Grey Cast Iron

Surface Treatment and Coating

vap	Steam Tempered
TiN	TiN-Coated (Titanium Nitride)
NI	Nitrided
TiCN	TiCN-Coating(Titanium Carbon Nitride)
TiAIN	TiAIN-Coating(Titanium Aluminium Nitride)

Chamfer Lead acc. To DIN2197

A	Form A (Chamfer Lead 5-6 Threads)
B	Form B (with GUN-Nose and Chamfer Lead 4-5 Threads)
C	Form C (Chamfer Lead 2-3 Threads)
D	Form D (Chamfer Lead 4-5 Threads)
E	Form E (Chamfer Lead 1.5-2 Threads)

SURFACE TREATMENT AND COATING

The High Speed Steels we use grant a good wear resistance and toughness. Therefore we normally deliver our taps with bright, untreated surface. In machining certain materials, various surface treatments are of advantage.

STEAM TEMPERED / vap

The Steam Tempered is a Fe_3O_4-oxyd-coating which reduces the friction between tool and workpiece and prevents cold welding.

NITRIDING / NI

We recommend this surface treatment for machining materials which effect a hard wear / abrasion, such as grey cast iron, alu-alloys with high Si-percentage more than 10%.

These are surface finishes of good value and suitable for many application. We do these surface treatments within our own company.

Further surface finishes are the various coatings.

TiN-COATING / TiN

The TiN-coating has a hardness of approx. **2,300 HV** and is temperature-resistant up to approx. **600** ℃. This is an excellent all-round coating for normal applications.
Colour : **Golden** Coefficient of friction against steel : 0.4

TiCN-COATING / TiCN

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness. The TiCN brings advantage in machining very difficult steels or cutting interrupted bores.
The TiCN-coating has a hardness of approx. **3,000 HV**, but is temperature-resistant up to approx. **400** ℃ only. That means TiCN needs an excellent cooling for long service life.
Colour : **Blue-Grey** Coefficient of friction against steel : 0.4

TiAIN-COATING / TiAIN

This is a special coating for machining abrasive materials such as : grey cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining under high temperatures, which means with insufficient cooling, or high speeds ≥ 600m/min. The TiAIN has a hardness of approx. **3,000 HV** and is temperature resistant up to approx. **800** ℃.
Colour : **Violet-Grey** Coefficient of friction against steel : 0.4

Hardslick-COATING / Hardslick

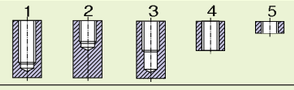
Hardslick combines in a novel way the advantages of an extremely hard, thermally stable TiAIN-coating with the sliding and lubricating properties of an outer WC/C(Tungsten carbide/carbon)-coating. The Hardslick coating has a hardness of approx. **3,000 HV** and is temperature-resistant up to approx. **800** ℃.
Colour : **Violet-Grey** Coefficient of friction against steel : 0.2

MACHINE TAPS RECOMMENDATION TABLE

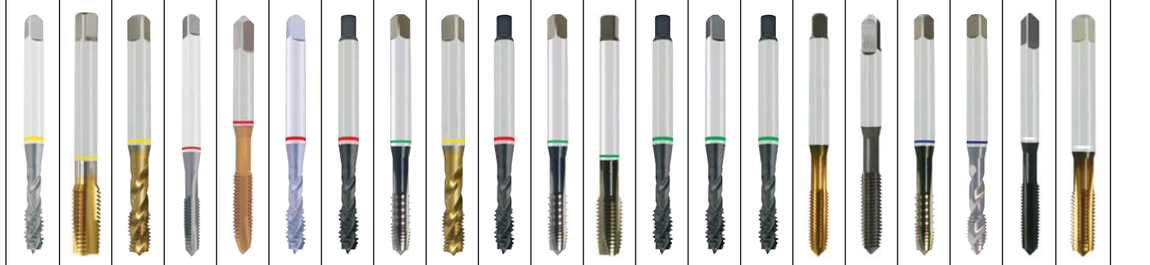
USE

● = RECOMMENDED

○ = SUITABLE



MATERIAL GROUPS			GS	GS	GS	GS	GS	GS	GS	GS	VG	VG	VG	VG	VG	VG	HR	VA+NW	VA+NW	VA+NW	VA+NW	NW	GV	GV	AI	AI	GG	GG
DIN 371/376	M	Cat.-No.	TM0316	TM0416		TM1316	TM1871	TM1716	TM1817	TM1917	TM2716	TM2917	TM6316	TM1530	TM2130	TM2817	TM2330	TM3130	TM8053	TM2530	TM8153	TM1730	TM3817	TM3827	TM0516	TM3716	TM0731	TM0917
DIN 371/376	EG-M	Cat.-No.																										
DIN 352	M	Cat.-No.	TM0116			TM0216																						
DIN 374	MF	Cat.-No.	TM3316					TM3416										TM3630		TM3830								
DIN 371/376	UNC	Cat.-No.	TM6416					TM6516										TM6430		TM6530								
DIN 371/376	EG-UNC	Cat.-No.																										
DIN 371/374	UNF	Cat.-No.	TM6716					TM6816										TM6730		TM6830								
DIN 371/376	EG-UNF	Cat.-No.																										
DIN 2182/2183	W(BSW)	Cat.-No.																										
DIN 357/5156	M/G(BSP)	Cat.-No.	TB0116		TM5016			TB0216																				
SURFACE TREATMENT / COATING							Tin		Tin	TiN		TiN		vap	vap	TiN	vap	vap	Hardslick	vap	Hardslick	vap	TiN	TiAlN			NI	TiN
SPIRAL FLUTE ANGLE						R20	R40	R40	R40	R40			R40	R40	R40	R40	R40			R40	R40	R40				R45/40		
CHAMFER LEAD ACC. DIN 2197			B	B	C/Long	C	B	C	C	C	B	B	C	C	C	C	C	B	B	C	C	C	C	C	B	C	C	C
HOLE TYPE			4-5	4-5	1-2-3 4-5	2-3	4-5	1-2-3	1-2-3	1-2-3	4-5	4-5	1-2-3	1-2-3	1-2-3	1-2-3	1-2-3	4-5	4-5	1-2-3	1-2-3	1-2-3	1-2-3 4-5	1-2-3 4-5	4-5	1-2-3	1-2-3 4-5	1-2-3 4-5



COOLANT

A = Cutting Oil
T = Oil Emulsion
X = Cutting Oil/Oil Emulsion
S = Dry
Z = Dry/Oil Emulsion

MATERIAL GROUPS		LIST OF MATERIALS	HARDNESS HB	TENSILE STRENGTH Rm N/mm²	CHIP	CUTTING SPEED Vc m/min	Coolant	GS	GS	GS	GS	GS	GS	GS	GS	VG	VG	VG	VG	VG	VG	HR	VA+NW	VA+NW	VA+NW	VA+NW	NW	GV	GV	AI	AI	GG	GG	
10. STEELS	11	Magnetic soft steels	< 120	< 400	Extra long	25-20	T			○													●	●	●	●	●	●	●	○	○			11
	12	Structure steels, case carburizing steels	< 200	< 700	Medium/long	15-20	T	●	●	○	●	●	●	●	●								●	●	●	●	●	●	●	○	○			12
	13	Plain carbon steels	< 250	< 850	Long	12-18	T	●	●	○	●	●	●	●	●													●	●	○	○			13
	14	Alloy steels	< 250	< 850	Long	10-15	X	●	●	○	●	●	●	●	●	○	○	○	○	○	○							●	●					14
	15	Alloy steels/Hardened & Tempered steels	< 350	< 1,200	Long	6-10	X									●	●	●	●	●	●	○												15
	16	Alloy steels/Hardened & Tempered steels	> 350	> 1,200	Long	3-5	A															●												16
20. STAINLESS STEELS	21	Free maching	< 250	< 850	Medium	7-10	A																●	●	●	●		●						21
	22	Austenitic	< 250	< 850	Long	5-8	A																●	●	●	●	●	●						22
	23	Ferritic, Ferritic+Austenitic,Martensitic	< 300	< 1,000	Long	4-6	A										○	○	○	○	○	○	●	●	●	●								23
30. CAST IRON	31	Grey cast irons	< 150	< 500	Extra short	10-15	X																									●	●	31
	32	Grey cast irons	< 300	< 1,000	Extra short	5-8	T																									●	●	32
	33	Nodular graphite, Melleable cast irons	< 200	< 700	Short	10-15	X	●	●	○	●	●	●	●	●																			33
	34	Nodular graphite, Malleable cast irons	< 300	< 1,000	Short	5-8	X	●	●	○	●	●	●	●	●																			34
40. TITANIUM	41	Titanium, unalloyed	< 200	< 700	Extra long	10-15	T	○	○		○	○	○	○	○													●	●	○	○			41
	42	Titanium, alloyed	< 270	< 900	Medium/Short	8-12	A									○	○	○	○	○	○		○	○	○	○								42
	43	Titanium, alloyed	< 350	< 1,250	Medium/Short	4-6	A																											43
50. NICKEL	51	Nickel, unalloyed	< 150	< 500	Extra long	8-12	A	○	○		○	○	○															●	●					51
	52	Nickel, alloyed	< 270	< 900	Long	10-15	A										○	○	○	○	○		○	○	○	○								52
	53	Nickel, alloyed	< 350	< 1,250	Long	2-4	A																											53
60. COPPER, BRASS BRONZE	61	Copper, unalloyed	< 100	< 350	Extra long	8-12	T	○	○		○	○	○														○	●	●	●	●			61
	62	Short chipping Brass, Bronze, Copper	< 200	< 700	Medium/Short	25-35	T			○												○										○	●	62
	63	Long chipping Brass, Bronze, Copper	< 200	< 700	Long	15-20	T	●	●	○	●	●	●	●	●													○	○					63
	64	AMPCO (Cu-Al-Fe alloys)	< 470	< 1,500	Short	3-5	A															●												64
70. ALUMINIUM	71	Aluminium, Megnesium, unalloyed	< 100	< 350	Extra long	10-15	T	○	○		○	○	○	○	○												○	●	●	●	●			71
	72	Aluminium, alloyed Si < 0.5%	< 150	< 500	Medium	25-35	T	○	○		○	○	○	○	○															●	●			72
	73	Aluminium, alloyed, Si < 10%	< 120	< 400	Medium/Short	15-20	T	○	○		○	○	○	○	○													○	○	●	●			73
	74	Aluminium, alloyed, Si > 10%	< 120	< 400	Short	10-15	T	●	●	○	●	●	●	●	●																			74
80. SINTETIC MATERIALS	81	Thermoplastics			Extra long	20-30	T	○	○		○	○	○	○	○																			81
	82	Thermosseting Plastics			Short	8-12	Z															○												82
	83	Reinforced plastic materials			Extra short	5-7	Z															○										●	●	83

With TiN / TiCN / TiAlN / Hardsilck coated taps the cutting Vc speed can be doubled

EXAMPLES FOR APPLICATION MATERIAL GROUPS

11 — Magnetic Soft Steels < 400 N/mm²

1.1013	RFe 100
1.1014	RFe 80
1.1015	RFe 60
1.0718	9 S MnPb 28

12 — Structure/Case Carburizing Steels < 700 N/mm²

1.0037	St 37-2
1.0050	St 50-2
1.0060	St 60-2
1.0070	St 70-2
1.0401	C 15
1.1141	Ck 15

13 — Plain Carbon Steels < 850 N/mm²

1.0501	C 35
1.0503	C 45
1.0535	C 55
1.0601	C 60
1.1181	Ck 35
1.1191	Ck 45

14 — Alloy Steels < 850 N/mm²

1.2080	X210Cr12
1.2363	X100CrMoV5-1
1.3243	S 6-5-2-5
1.3343	S 6-5-2
1.7218	25CrMo4
1.7220	34CrMo4

15 — Alloy, Hardened & Tempered Steels < 1,200 N/mm²

1.2581	X30WCrV9 3
1.2622	X60WCrMoV9
1.2550	60WCrV7
1.6580	30CrNiMo8
1.7361	32CrMo12
1.8515	31CrMo12

16 — Alloy, Hardened & Tempered Steels > 1,200 N/mm²

To this group belong most of the materials of group 15, but present a higher tensile strength.

21 — Free machining stainless Steels < 850 N/mm²

1.4005	X12CrS13
1.4006	X10Cr13
1.4016	X6Cr17
1.4104	X12CrMoS17
1.4305	X10CrNiS18 9

22 — Austenitic stainless Steels < 850 N/mm²

1.4301	X5CrNi18 10
1.4406	X2CrNiMoN17 12 2
1.4435	X2CrNiMo18 14 3
1.4541	X6CrNiTi18 10
1.4571	X6CrNiMoTi17 12 2
1.4828	X15CrNiSi20 12

23 — Matensitic/Ferritic/Fer.-Aus. Stainless Steels < 1,000 N/mm²

1.4112	X90CrMoV18
1.4125	X105CrMo17
1.4002	X6CrAl13
1.4512	X6CrTi12
1.4582	X4CrNiMoNb25 7
1.4821	X20CrNiSi25 4

31 — Grey graphite cast irons < 500 N/mm²

0.6015	GG-15
0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

32 — Grey graphite cast irons < 1,000 N/mm²

0.6020	GG-20
0.6025	GG-25
0.6030	GG-30
0.6035	GG-35
0.6040	GG-40

33 — Nodular graphite, Malleable cast irons < 700 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.8040	GTW-40
0.8065	GTW-65

34 — Nodular graphite, Malleable cast irons < 1,000 N/mm²

0.7040	GGG-40
0.7043	GGG-40.3
0.7050	GGG-50
0.7060	GGG-60
0.7070	GGG-70
0.7080	GGG-80

41 — Titanium unalloys < 700 N/mm²

3.7024	Ti99.5
3.7034	Ti99.7
3.7035	Ti2
3.7055	Ti99.4
3.7064	Ti99.2
3.7065	Ti4

42 — Titanium alloys < 900 N/mm²

	TiA14Mn4
3.7114	TiA15Sn2
3.7124	TiCu2
3.7164	TiA16V4
3.7174	TiA16V6Sn2

43 — Titanium alloys < 1,300 N/mm²

3.7124	TiCu2
3.7144	TiA16Sn2Zr4Mo2
3.7154	TiAl6Zr5
3.7164	TiA16V4
3.7174	TiA16V6Sn2
3.7184	TiAl4Mo4Sn2

51 — Nickel unalloys < 500 N/mm²

2.1504	NiAlBz
2.4042	Ni99CSi
2.4060	Ni99.6
2.4062	Ni99.4Fe

52 — Heat resisting Nickel alloys < 900 N/mm²

2.4360	Monel 400
2.4374	Monel 500
2.4665	Hastelloy X
2.4812	Hastelloy C
2.4816	Inconel 600
1.4876	Incoloy 800

53 — Heat resisting Nickel alloys < 1,400 N/mm²

2.4631	Nimonic80A
2.4632	Nimonic90
2.4634	Nimonic105
2.4662	Nimonic901
2.4668	Inconel 718
2.4669	Inconel X-750

61 — Copper unalloys < 350 N/mm²

2.0060	E-Cu57
2.0070	SE-Cu
2.0090	SF-Cu
2.1356	CuMn3
2.1522	CuSi2Mn

62 — Short chip Brass, Bronze copper alloys < 700N/mm²

2.0360	CuZn40 (Ms60)
2.0380	CuZn39Pb2 (Ms58)
2.0410	CuZn44Pb2
2.0580	CuZn40Mn1Pb
2.1086	G-CuSn10Zn
2.1096	G-CuSn5ZnPb

63 — Long chip Brass, Bronze copper alloys < 700 N/mm²

2.0250	CuZn20
2.0321	CuZn37
2.1020	CuSn6
2.1080	CuSn6Zn6
2.1245	CuBel.7
2.1293	CuCrZr

64 — Cu-Al-Fe alloys < 1,500 N/mm²

Ampco 18
Ampco 20
Ampco 25

71 — Aluminium-Magnesium unalloys < 350 N/mm²

3.0250	Al99.5H
3.0280	Al99.8H
3.0305	Al99.9
3.3308	Al99.9Mg0.5

72 — Aluminium alloys, Si < 0.5% < 600 N/mm²

3.0515	AlMn1
3.0525	AlMn1Mg0.5
3.1325	AlCuMg1
3.3315	AlMg1
3.3241	G-AlMg3Si
3.3292	GD-AlMg9

73 — Aluminium alloys, 0.5-10% Si < 600 N/mm²

3.2134	G-AlSi5Cu1Mg
3.2152	GD-AlSi6Cu4
3.2162	GD-AlSi8Cu3
3.2373	G-AlSi9Mg

74 — Aluminium alloys, Si > 10% < 600 N/mm²

3.2381	G-AlSi10Mg
3.2383	G-AlSi10Mg(Cu)
3.2581	G-AlSi12
3.2583	G-AlSi12(Cu)
3.5662	G-MgA16
3.5812	G-MgA18Zn1

81 — Thermoplastics

Delrin(POM)
Teflon
Nylon

82 — Thermosseting plastics

Bakelit
Novopan

83 — Reinforced plastics materials

Glass fiber reinforced
Thermo and Duroplastics

Referance:DIN

NEW TOLERANCE NOTATIONS TO DIN EN 22857

For taps with metric ISO threads

The standard DIN 802 part 1 has been withdrawn and replaced by DIN EN 22857.

The following chart gives a comparison between the new standard DIN EN 22857 and the withdrawn standard DIN 802 part 1. An important change is the re-classification from tap tolerance classes to tap application classes.

Application classes for taps to DIN EN 22857		Tolerance classes to withdrawn standard DIN 802 part 1	Allotment of the tolerance zones of the nut thread to be cut				
Name	Code						
Class 1	ISO 1	4H	4H	5H	-	-	-
Class 2	ISO 2	6H	4G	5G	6H	-	-
Class 3	ISO 3	6G	-	-	6G	7H	8H
-	-	7G	-	-	-	7G	8G

A suitable transition period is to be expected.

Codes for tolerance classes 7G/8G and <X> tolerance zones have not yet been standardised within DIN EN 22857 and the values from DIN 802 part 1 will continue to be valid.

CUTTING SPEED TABLE

Cutting Speeds m/min. into revolutions per minute

Cutting Speed m/min.																
Tool Dia.	Tool r.p.m.															
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	50	60
1	318	637	955	1274	1592	1910	2548	3185	3822	4777	6396	7962	9554	12739	15924	19108
2	159	318	478	637	796	955	1274	1592	1911	2388	3185	3981	4777	6369	7962	9554
3	106	212	318	425	531	637	849	1062	1274	1592	2123	2654	3185	4246	5308	6369
4	80	159	239	318	398	478	637	796	955	1194	1592	1990	2389	3185	3981	4777
5	64	127	191	255	318	382	510	637	764	955	1274	1592	1911	2548	3185	3822
6	53	106	159	212	265	318	425	531	637	796	1062	1327	1592	2123	2653	3185
8	40	80	119	159	199	239	318	398	478	597	796	955	1194	1592	1990	2388
10	31	64	96	127	159	191	255	318	382	478	637	796	955	1274	1592	1911
12	26	53	80	106	133	159	212	265	318	398	531	663	796	1062	1327	1592
14	23	45	68	91	114	136	182	227	273	341	455	569	682	910	1137	1365
16	20	40	60	80	100	119	159	199	239	299	398	498	597	796	995	1194
18	18	35	53	71	88	106	142	177	212	265	354	442	531	708	885	1062
20	16	32	48	64	80	96	127	159	191	239	318	398	478	637	796	955
25	13	25	38	51	64	76	102	127	153	191	255	318	382	510	637	764
30	11	21	32	42	53	64	85	106	127	159	212	265	318	425	531	637
35	9	18	27	36	45	55	73	91	109	136	182	227	273	364	455	546
40	8	16	24	32	40	48	64	80	96	119	159	199	239	118	398	478

STANDARDS

10. STEEL

11. Magnetic soft steels - Hardness < 120 HB 30 - Tensile strength < 400 N/mm²

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
1.1013	RFe 100		OSOA12	EN2	
1.1014	RFe 80				
1.1015	RFe 60		230Mo7	EN1	
1.0718	9 S MnPb 28				

12. Structural steels - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²

12.1 - Structural steels

1.0034	RSt 34-2	A34-2 EN	1449 34/20 HR		
1.0035	St 33	A33	Fe 310-0		
1.0036	St 37-2		060A35	EN3A,4,5,6,7,8	
1.0037	RSt 37-2				
1.0044	St 44-2				
1.0050	St 50-2		4360-50B	EN 207	
1.0060	St 60-2				
1.0070	St 70-2				
1.0116	St 37-3				
1.0144	St 44-3				

12.2 - Case carburizing steels

1.0301	C 10	AF 34 C 10	040 A 10		M 1010
1.0401	C 15	AF 37 C 12	080 A 15		M 1015
1.1121	Ck 10	XC 10	040 A 10		1010
1.1141	Ck 15	XC 12	040 A 15		1015
1.5732	14 Ni Cr 10	14 NC 11			3415
1.7015	15 Cr 3	12 C 3	523 M 15		5015
1.7131	16 Mn Cr 5	16 MC 4	527 M 17	EN 32	5115
1.7147	20 Mn Cr 5	20 MC 5			5120

12.3 - Free machining steels

1.0710	15 S 10				
1.0715	9 S Mn 28	S 250	230 M 07		1213
1.0718	9 S Mn Pb 28	S 250 Pb			12 L 13
1.0721	10 S 20	10 F1	210 M 15		1108 1109
1.0722	10 S Pb 20	10 Pb F 2			11 L 08
1.0723	15 S 20	.....	210 A 15		
1.0726	35 S 20	35 MF 6	212 M 36		1140
1.0727	45 S 20	45 MF 4			1146
1.0736	9 S Mn 36	S 300			1215
1.0737	9 S Mn Pb 36	S 300 Pb			12 L 14

12.4 - Cast structural steels

1.0416	GS - 38				
1.0446	GS - 45				
1.0552	GS - 52				
1.0553	GS - 60	E 36 - 3			
1.0554	GS - 70				

13. Plain carbon steels - tempered

13.1 - Steels, tempered - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²

1.0402	C 22	1 C 22	070 M 20		M 1023
1.0501	C 35	1 C 35	080 A 32		1035
1.0503	C 45	1 C 45	060 A 47		1045
1.0535	C 55	1 C 55	070 M 55		1055
1.0601	C 60	1 C 60	060 A 62	EN 43	1060
1.1157	40 Mn 4	35 M 5	150 M 36		1035 1041
1.1151	Ck 22	2 C 22	055 M 15		1020 1023
1.1181	Ck 35	2 C 35	080 A 35		1035 1038
1.1191	Ck 45	2 C 45	080 M 46	EN 9, 10	1045
1.1203	Ck 55	2 C 55	060 A 57		1055
1.1221	Ck 60	2 C 60	060 A 62		1060 1064

MATERIAL GROUP

STANDARDS

14. Alloy steels - Hardness < 250 HB 30, < 25 HRC - Tensile strength < 850 N/mm²

14.1 - Cold work tool steels

1.2056	90 Cr 3				
1.2067	100 Cr 6	Y 100 C 6	BL 3		L 1 L 3
1.2080	X 210 Cr 12	Z 200 C 12	BD 3		D3
1.2083	X 42 Cr 13	Z 40 C 14			420
1.2363	X 100 CrMoV5 1	Z 100 CDV 5	BA 2		A 2
1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2		D 2
1.2510	100 MnCrW 4	90 MWCV 5	BO 1		O1
1.2550	60 WCrV 7	55WC 20	BS 1		S1
1.2823	70 Si 7				
1.2826	60 Mn Si Cr 4				
1.2842	90 MnCrV 8	90 MV 8	BO 2		O 2

14.2 - High speed steels

1.3202	S 12-4-4-5	Z 130 WKCV 12-05-04-04	BT 15		T 15
1.3207	S 10-4-3-10	Z130 WKCDV10-10-04-04-03	BT 42		T 42
1.3243	S 6-5-2-5	Z85 WDKCV 06-05-05-04-02	BM 35		M 35
1.3247	S 2-10-1-8	Z110 DKCWV 09-08-04-02-01	BM 42		M 42
1.3343	S 6-5-2	Z 85 WDCV 06-05-04-02	BM 2		M 2
1.3344	S 6-5-3	Z 120 WDCV 06-05-04-03			M 3 / 2
1.3348	S 2-9-2	Z 100 DCWV 09-04-02-02			M 7
ASP 23	(S 6-5-3)				
ASP 30					
ASP 60					

14.3 - Alloy cast irons

1.5919	GS-15Cr Ni 6	16 NC 6			3115
1.7218	GS-25Cr Mo 4	25 C D 4	70 8A 25		4130
1.7220	GS-34Cr Mo 4	35 C D 4	70 8A 37		4135 4137
1.7379	GS-18 Cr Mo 9 10				

14.4 - Tempered steels

1.0503	C 45	1 C 45	060 A 47		1045
1.7220	34 Cr Mo 4	34 Cr Mo 4	708 A 37		4135, 4137
1.7225	42 Cr Mo 4	42 CD 4	708 A 42	EN 16, 17, 19	4140, 4142
1.7228	50 Cr Mo 4	50 Cr Mo 4	708 A 47		4150

14.5 - Nitriding steels

1.7779	20 Cr Mo V 13.5				
1.8504	34 Cr Al 6				
1.8506	34 Cr Al S 5				
1.8507	34 Cr Al Mo 5	30 CAD 6.12			A 355 Cl.D
1.8509	41 Cr Al Mo 7	40 CAD 6.12	905 M 39		A 355 Cl.A
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		

15. Alloy steels / Tempered steels - Hardness 250-350 HB 30, 25-38 HRC - Tensile strength 850-1,200 N/mm²

15.1 - Alloy steels for tools

1.2311	40 Cr Mn Mo 7				
1.2312	40 Cr Mn Mo S 86				
1.2436	X 210 Cr W 12	Z 200 CW 12			
1.2711	54 Ni Cr Mo V 6				
1.2713	55 Ni Cr Mo V 6	55 NCDV 7	826 M 40	S 95, S 97, S 98	L 6
1.2714	56 Ni Cr Mo V 7				
1.2743	60 Ni Cr Mo V 12 4				
1.2766	35 Ni Cr Mo 16				

15.2 - Alloy steels for hot work

1.2343	X 38 Cr Mo V 5 1	Z 38 CDV 5	BH 11		H 11
1.2344	X 40 Cr Mo V 5 1	Z 40 CDV 5	BH 13		H 13
1.2365	X 32 Cr Mo V 3 3	32 DCV 28	BH 10		H 10
1.2367	X 40 Cr Mo V 5 3	Z 38 CDV 5.3			
1.2581	X 30 W Cr V 9 3	Z 30 WCV 9.3	BH 21		H 21
1.2622	X 60 W Cr Mo V 9				
1.2678	X 45 CoCrWV 5 5 5				
1.2550	60 WCr V 7	55 WC 20	BS 1		S 1
1.2567	X 30 W Cr V 5 3	Z 32 WCV 5			

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
15.3 -Hardened tempered steels - Hardness may be different according to pressentation and dimensions of material					
1.5864	35 Ni Cr 18				
1.6580	30 Cr Ni Mo 8	30 Cr Ni Mo 8			
1.7361	32 Cr Mo 12	30 CD 12	722 M 24		
1.7707	30 Cr Mo V 9				
1.8161	58 Cr V 4				
15.4 - Nitriding steels					
1.8515	31 Cr Mo 12	30 CD 12	722 M 24		
1.8519	31 Cr Mo V 9		830 M 31		
1.8523	39 Cr Mo V 13 9		897 M 39		
1.8550	34 Cr Al Ni 7		826 M 40		
16. Alloy steels / Hardened tempered steels - Hardness > 38 HRC - Tensile strength > 1,200 N/mm²					
To this group belong most of the materials of group 15, but pressent a higher tensile strength					
20. STAINLESS STEELS					
21. Free machining stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4104	X 12 Cr Mo S 17	Z 13 CF 17	416 S 37	EN 56	430 F
1.4305	X 10 Cr Ni S 18 09	Z 8 CNF 18-09	303 S 21	EN 60	303
22. Austenitic stainless steels - Hardness < 250 HB 30 - Tensile strength < 850 N/mm²					
1.4300	X 12 Cr Ni 18 8		320 S 12		
1.4301	X 5 Cr Ni 18 10	Z 6 CN 18-09	304 S 15	EN 80, EN 58 + C	304
1.4311	X 2 CrNiN 18 10	Z 3 CN 18-07 Az	304 S 61		304 LN
1.4406	X 2 CrNiMoN 17 12 2	Z 3 CND 17 11 02	316 S 61		316 LN
1.4433	X 2 CrNiMo 18 15		316 S		
1.4435	X 2 CrNiMo 18 14 3	Z3 CND 17-12-03	316 S 11		316 L
1.4539	X 1 CrNiMoCu 25 20 5	Z 1 NCDU 25-20	321 S 17		UNS N08904
1.4541	X 6 CrNiTi 18 10	Z 6 CNT 18 10	321 S 18	EN 58 J, 316	321
1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNDT 17 12	320 S 18		316 Ti
1.4573	X 10 CrNiMoTi 18 12		320 S 33		
1.4828	X 15 CrNiSi 20 12	Z 15 CNS 20-12	309 S 24		309
22.1 - Cast austenitic stainless steels					
1.4308	G-X 6 CrNi 18 9	Z 6 CN 18.10 M	304 C 15(LT196)		CF-8
1.4313	G-X 5 CrNi 13 4	Z 8 CD 17-01	425 C 12		CA 6 -NM
1.4408	G-X 6 CrNiMo 18 10		316 C 16(LT196)		CF-8M
1.4581	G-X 5 CrNiMoNb 18 10	Z 4 CNDNb 18.12M	318 C 17		
23. Martensitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4021	X 20 Cr 13	Z 20 C 13	420 S 37		420
1.4034	X 46 Cr 13	Z 44 C 14	(420 S 45)		
1.4057	X 20 CrNi 17 2	Z 15 CN 16-02	431 S 29		431
1.4112	X 90 CrMoV 18				
1.4116	X 45 CrMoV 15			EN 58, b.e.j.t	
1.4125	X 105 CrMo 17	Z 100 CD 17		Duplex alloys	440 C
1.4718	X 45 CrSi 9 3	Z 45 CS 9	401 S 45		HNV 3
1.4747	X 80 CrNiSi 20	Z 80 CSN 20-02	443 S 65		HNV 6
1.4086	G-X 120 Cr 29				
1.4106	G-X 10 CrMo 13				
1.4138	G-X 120 CrMo 29 2				
24. Ferritic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4002	X 6 Cr Al 13	Z 8 CA 12	405 S 17		405
1.4006	X 10 Cr 13	Z 10 C 13	410 C 21		410
1.4016	X 6 Cr 17	Z 8 C 17	430 S 17		430
1.4510	X 6 Cr Ti 17	Z 8 CT 17			430 Ti
1.4512	X 6 Cr Ti 12	Z 6 CT 12	409 S 19		409
25. Ferritic-Austenitic stainless steels - Hardness < 320 HB 30 - Tensile strength < 1,100 N/mm²					
1.4460	X 8 CrNiMo 27 5	Z 5 CND 27-05 Az			329
1.4582	X 4 CrNiMoNb 25 7				
1.4821	X 20 CrNiSi 25 4				
30. CAST IRONS					
31. Grey graphite cast irons - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
0.6010	GG-10	Ft 10 D			A 48-20 B
0.6015	GG-15	Ft 20 D	Grade 150	Grey cast iron soft	A 48-25 B
0.6020	GG-20	Ft 25 D	Grade 220		A 48-30 B
0.6025	GG-25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG-30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG-35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG-40	Ft 40 D	Grade 400		A 48-60 B

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI
31.1 - Meehanite - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
.....	GF - 150				
.....	GD - 260				
32. Grey graphite cast irons - Hardness 150 - 300 HB 30 - Tensile strength 500 - 1,000 N/mm²					
0.6020	GG - 20	Ft 25 D	Grade 220	Grey cast iron hard	A 48-30 B
0.6025	GG - 25	Ft 30 D	Grade 260		A 48-40 B
0.6030	GG - 30	Ft 30 D	Grade 300		A 48-45 B
0.6035	GG - 35	Ft 35 D	Grade 350		A 48-50 B
0.6040	GG - 40	Ft 40 D	Grade 400		A 48-60 B
32.1 - Meehanite - Hardness 150-300 HB 30 - Tensile strength 500-1,000 N/mm²					
.....	GF - 150				
.....	GD - 260				
33. Nodular graphite, malleable cast irons - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
0.7033	GGG-35.3				
0.7040	GGG-40	FGS 400-12	420 / 12		60-40-18
0.7043	GGG-40.3	FGS 370-17	370 / 17		
0.7050	GGG-50	FGS 500-7	500 / 7		65-45-12
0.7060	GGG-60	FGS 600-3	600 / 3	S.G.iron, Meehanite	80-55-06
0.8035	GTW-35		700/2,30g/72	Black & White Heart	
0.8040	GTW-40				
0.8045	GTW-45				
0.8065	GTW-65				
0.8135	GTS-35				
0.8145	GTS-45				
0.8155	GTS-55				
0.8165	GTS-65				
33.1 - Meehanite - Hardness < 200 HB 30 -Tensile strength < 700 N/mm²					
	SF 400				
	SPF 600				
34. Nodular graphite, tempered malleable cast irons - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
0.7070	GGG-70	FGS 700-2	700 / 2	S.G.iron,Meehanite	100-70-03
0.7080	GGG-80	FGS 800-2	800 / 2	Black & White Heart	120-90-02
And materials from group 33 tempered					
34.1 - Meehanite - Hardness 200-300 HB 30 - Tensile strength 700-1,000 N/mm²					
	SH 800		420/12, P 440/7		
	SH 1000				
40. TITANIUM					
41. Titanium, unalloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²					
3.7024.1LN	Ti 99.5				
3.7034.1LN	Ti 99.7				
3.7035	Ti 2				
3.7055	Ti 99.4		TA 1-9	Ti 99.0	
3.7064.1LN	Ti 99.2				
3.7065	Ti 4				
3.7255	Ti 3 Pd				
42. Titanium, alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²					
	Ti Al 4 Mn 4				
3.7144 LN	Ti Al 5 Sn 2				
3.7124 LN	Ti Cu 2		TA 10-14, TA 17	Ti - 2AL	
3.7164 LN	Ti Al 6 V 4		TA 18		
3.7174 LN	Ti Al 6 V 6 Sn 2				
43. Titanium, alloys - Hardness 270-300 HB 30 - Tensile strength 900-1,300 N/mm²					
3.7124 LN	Ti Cu 2				
3.7144 LN	Ti Al 6 Sn 2 Zr4 Mo2			Ti AL	
3.7154 LN	Ti Al 6 Zr 5		TA 10-13, TA 28	3.7174LN, 3.7148LN	
3.7164 LN	Ti Al 6 V 4				
3.7174 LN	Ti Al 6 V Sn 2				
3.7184 LN	Ti Al 4 Mo 4 Sn 2				
50. NICKEL					
51. Nickel, unalloys - Hardness < 150 HB 30 - Tensile strength < 500 N/mm²					
2.1504 LN	Ni Al Bz				
2.4042	Ni 99 CSi		NA 11, NA 12	Nickel 200	
2.4060	Ni 99.6			Nickel 270	
2.4062	Ni 99.4 Fe				

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI

52. Heat resisting nickel alloys - Hardness < 270 HB 30 - Tensile strength < 900 N/mm²

2.4360 LN	Monel 400				
2.4374 LN	Monel 500				
2.4617	Hastelloy B 2			Nimonic 75	
2.4665	Hastelloy X		HR 203		
2.4812	Hastelloy C		3027-76	Hastelloy C	
2.4816	Inconel 600			Haynes Alloys 263	
1.4876	Incoloy 800				
2.4983	Udimet 500				

53. Heat resisting nickel alloys - Hardness 270-410 HB 30 - Tensile strength 900-1,400 N/mm²

2.4631	Nimonic 80 A			Nimonic 80	
2.4632	Nimonic 90				
2.4634	Nimonic 105				
2.4662	Nimonic 901		HR 8		
2.4668	Inconel 718		HR 401, 601	Rene 41	
2.4669	Inconel X-750				
2.4670 LN	Nimocast 713				
2.4674 LN	Nimocast PK 24				
2.4856	Inconel 625				
2.6554 LN	Waspaloy				

60. COPPER

61. Copper, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²

2.0060	E - Cu 57				
2.0070	SE - Cu			Commerially Pure	
2.0090	SF - Cu		C 101		
2.1356	Cu Mn 3				
2.1522	Cu Si 2 Mn				

62. Short chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²

62.1 - Brass

2.0360	Cu Zn 40(MS 60)				
2.0380	Cu Zn 39 Pb 2 (MS 58)		CZ120, CZ109		
2.0410	Cu Zn 44 Pb 2		PB104		
2.0561	Cu Zn 40 Al 1			2.1030, 2.1080	
2.0580	Cu Zn 40 Mn 1 Pb				
2.0771	Cu Ni 7 Zn 39 Mn 5 Pb3				

62.2 - Bronzes

2.1086	G-Cu Sn 10 Zn				
2.1093	G-Cu Sn 6 Zn Ni				
2.1096	G-Cu Sn 5 Zn Pb				

63. Long chip copper alloys - Hardness < 200 HB 30 - Tensile strength < 700 N/mm²

63.1 - Brass

2.0250	Cu Zn 20				
2.0265	Cu Zn 30				
2.0321	Cu Zn 37		CZ108, CZ106		
2.0335	Cu Zn 36 (Ms 63)				

63.2 - Bronzes

2.1020	Cu Sn 6				
2.1030	Cu Sn 8				
2.1080	Cu Sn 6 Zn 6				

63.3 - Copper alloys tempered by forging

2.1245	Cu Be 1.7				
2.1247	Cu Be 2				
2.1293	Cu Cr Zr				

64. Cu - Al - Fe alloys Hardness < 440 HB 30 - Tensile strength < 1,500 N/mm²

64.1 - Ampco

	Ampco 18			Ampco 18	
	Ampco 20		AB 1 type		
	Ampco 25			Ampco 26	

MATERIAL GROUP

STANDARDS

GERMANY W.Nr	GERMANY DIN	FRANCE AFNOR	GREAT BRITAIN B.S.	EN & OTHER CLASSIFICATIONS	U.S.A. AISI

70. ALUMINIUM - MAGNESIUM

71. Aluminium - Magnesium, unalloys - Hardness < 100 HB 30 - Tensile strength < 350 N/mm²

3.0250	Al 99.5 H				
3.0280	Al 99.8 H				
3.0305	Al 99.9				
3.3308	Al 99.9 Mg 0.5				

72. Aluminium alloys, Si < 0.5% - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²

72.1 - Forging aluminium alloys

3.0515	Al Mn 1				
3.0516	S-Al Mn				
3.0525	Al Mn 1 Mg 0.5				
3.0615	Al Mg Si Pb				
3.1325	Al Cu Mg 1				
3.1355	Al Cu Mg 2				
3.3315	Al Mg 1				
3.3535	Al Mg 3				
3.4365	Al Zn Mg Cu 1.5				

72.2 - Cast aluminium alloys

3.1841	G - Al Cu 4 Ti				
3.3241	G - Al Mg 3 Si				
3.3292	GD - Al Mg 9				

73. Aluminium alloys, 0.5-10% Si - Hardness < 180 HB 30 - Tensile strength < 600 N/mm²

73.1 - Cast aluminium alloys

3.2134	G - Al Si 5 Cu 1 Mg				
3.2152	GD - Al Si 6 Cu 4				
3.2162	GD - Al Si 8 Cu 3				
3.2373	G - Al Si 9 Mg				

74. Aluminium alloys, Si > 10% - Hardnes < 180 HB 30 - Tensile strength < 600 N/mm²

74.1 - Cast aluminium alloys

3.2381	G - Al Si 10 Mg				
3.2383	G - Al Si 10 Mg (Cu)				
3.2581	G - Al Si 12				
3.2583	G - Al Si 12 (Cu)				
3.2982	GD - Al Si 12 (Cu)				

74.2 - Cast aluminium - magnesium alloys

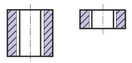
3.5106	G - Mg Ag 3 SE 2 Zr 1				
3.5662	G - Mg Al 6				
3.5812	G - Mg Al 8 Zn 1				
3.5912	G - Mg Al 9 Zn 1				

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

INTERRUPTED THREAD
ALUMINIUM & ALUMINIUM ALLOYS
SPIRAL POINT

Cat.-No. TM0516

Hole type



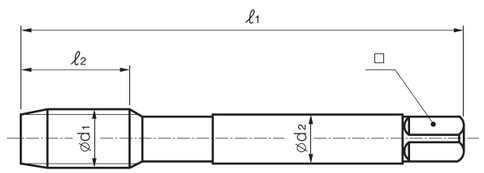
DIN 371

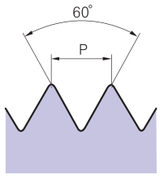
Material groups **AL**

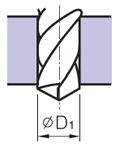
See page : 301~307

61-71-72-73

HSS-E | DIN 371/376 | 6H | 60° | B







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M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM05160250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM05160300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM05160400
M 5	×	0.8	8	70	6	4.9	4.2	TM05160500
M 6	×	1.0	10	80	6	4.9	5	TM05160600
M 8	×	1.25	13	90	8	6.2	6.8	TM05160800
M 10	×	1.5	15	100	10	8	8.5	TM05161000
M 12	×	1.75	18	110	9	7	10.2	TM06161200
M 16	×	2.0	20	110	12	9	14	TM06161600

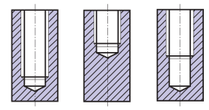
ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M16)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

ALUMINIUM & ALUMINIUM ALLOYS
SPIRAL FLUTE

Cat.-No. TM3716

Hole type



DIN 371

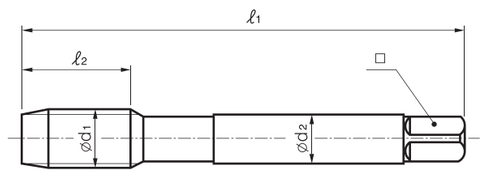
DIN 376

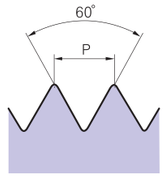
Material groups **AL**

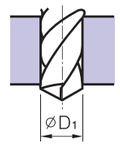
See page : 301~307

71-72-73

HSS-E | DIN 371/376 | 6H | 60° | C







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM37160200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM37160250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM37160300
M 3.5	×	0.6	7	56	4	3	2.9	TM37160350
M 4	×	0.7	7	63	4.5	3.4	3.3	TM37160400
M 5	×	0.8	8	70	6	4.9	4.2	TM37160500
M 6	×	1.0	10	80	6	4.9	5	TM37160600
M 8	×	1.25	13	90	8	6.2	6.8	TM37160800
M 10	×	1.5	15	100	10	8	8.5	TM37161000
M 12	×	1.75	18	110	9	7	10.2	TM37161200
M 14	×	2.0	20	110	11	9	12	TM37161400
M 16	×	2.0	20	110	12	9	14	TM37161600
M 18	×	2.5	25	125	14	11	15.5	TM37161800
M 20	×	2.5	25	140	16	12	17.5	TM37162000

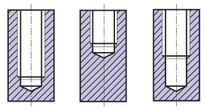
ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

CARBON STEELS WITH LOW CONTENTS OF ALLOY UP TO 600NM SPIRAL FLUTE

Cat.-No. TM1730

Hole type



DIN 371

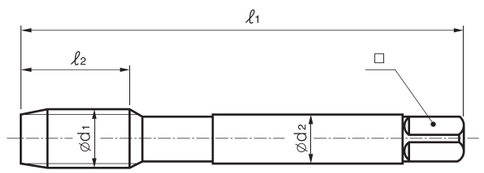
DIN 376

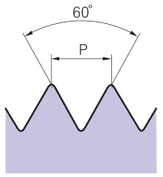
Material groups NW

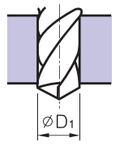
See page : 301~307

11-12-22

HSS-E | DIN 371/376 | 6H | 60° | B | vap







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	6	45	3.5	2.7	2.5	TM17300300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM17300400
M 5	×	0.8	8	70	6	4.9	4.2	TM17300500
M 6	×	1.0	10	80	6	4.9	5	TM17300600
M 8	×	1.25	13	90	8	6.2	6.8	TM17300800
M 10	×	1.5	15	100	10	8	8.5	TM17301000
M 12	×	1.75	18	110	9	7	10.2	TM18301200
M 14	×	2.0	20	110	11	9	12	TM18301400
M 16	×	2.0	20	110	12	9	14	TM18301600
M 18	×	2.5	25	125	14	11	15.5	TM18301800
M 20	×	2.0	25	140	16	12	17.5	TM18302000

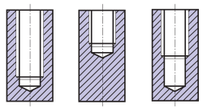
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

WITH RECESSED THREADS FOR STAINLESS STEELS & TOUGH MATERIALS SPIRAL FLUTE

Cat.-No. TM2530

Hole type



DIN 371

DIN 376

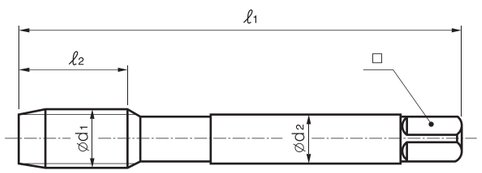
※With recessed threads for maching tapping of deep blind holes.

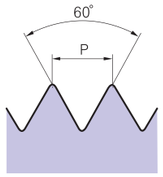
Material groups VA NW

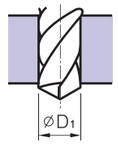
See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 6H | 60° | C | vap







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.7	7	63	4.5	3.4	3.3	TM25300400
M 5	×	0.8	8	70	6	4.9	4.2	TM25300500
M 6	×	1.0	10	80	6	4.9	5	TM25300600
M 8	×	1.25	13	90	8	6.2	6.8	TM25300800
M 10	×	1.5	15	100	10	8	8.5	TM25301000
M 12	×	1.75	18	110	9	7	10.2	TM26301200

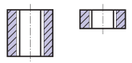
ALL DIMENSIONS ARE IN MM
DIN 371(M4-M10) DIN 376(M12)

M *ISO metric coarse threads DIN 13*
Metrisches ISO-Gewinde DIN 13

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL POINT

Cat.-No. TM3130

Hole type



DIN 371

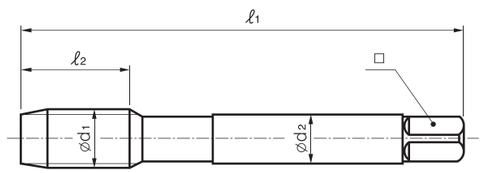
DIN 376

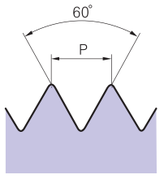
Material groups VA NW

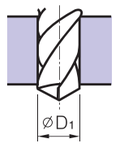
See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 6HX | 60° | B | vap







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM31300200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM31300250
M 3	×	0.5	11	56	3.5	2.7	2.5	TM31300300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM31300400
M 5	×	0.8	15	70	6	4.9	4.2	TM31300500
M 6	×	1.0	17	80	6	4.9	5	TM31300600
M 8	×	1.25	20	90	8	6.2	6.8	TM31300800
M 10	×	1.5	22	100	10	8	8.5	TM31301000
M 12	×	1.75	24	110	9	7	10.2	TM32301200
M 16	×	2.0	27	110	12	9	14	TM32301600
M 20	×	2.5	32	140	16	12	17.5	TM32302000

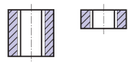
ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

MF *ISO metric fine threads DIN 13*
Metrisches ISO-Feingewinde DIN 13

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL POINT

Cat.-No. TM3630

Hole type



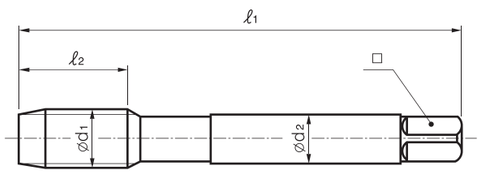
DIN 374

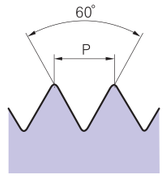
Material groups VA NW

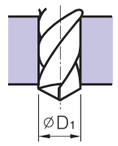
See page : 301~307

11-12-21-22-23

HSS-E | DIN 374 | 6HX | 60° | B | vap







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.5	10	63	2.8	2.1	3.5	TM36300400
M 5	×	0.5	11	70	3.5	2.7	4.5	TM36300500
M 6	×	0.5	13	80	4.5	3.4	5.5	TM36300600
M 6	×	0.75	13	80	4.5	3.4	5.2	TM36300601
M 8	×	0.75	14	80	6	4.9	7.2	TM36300800
M 8	×	1.0	17	90	6	4.9	7	TM36300801
M 10	×	0.75	18	90	7	5.5	9.2	TM36301000
M 10	×	1.0	18	90	7	5.5	9	TM36301001
M 10	×	1.25	22	100	7	5.5	8.8	TM36301002
M 12	×	1.0	18	100	9	7	11	TM36301200
M 12	×	1.25	22	100	9	7	10.8	TM36301201
M 12	×	1.5	22	100	9	7	10.5	TM36301202
M 14	×	1.25	22	100	11	9	12.8	TM36301400
M 14	×	1.5	22	100	11	9	12.5	TM36301401
M 16	×	1.5	22	100	12	9	14.5	TM36301600
M 18	×	1.5	25	110	14	11	16.5	TM36301800
M 20	×	1.5	25	125	16	12	18.5	TM36302000
M 22	×	1.5	25	125	18	14.5	20.5	TM36302200
M 24	×	1.5	27	140	18	14.5	22.5	TM36302400

ALL DIMENSIONS ARE IN MM
DIN 374(M4-M24)

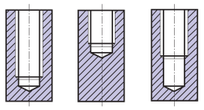
MF *ISO metric fine threads DIN 13*
Metrisches ISO-Feingewinde DIN 13

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL FLUTE

Cat.-No. TM3830

DIN 374

Hole type

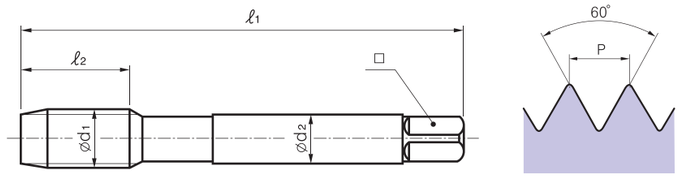


Material groups: VA NW

See page : 301~307

11-12-21-22-23

HSS-E | DIN 374 | 6H | 60° | C | vap



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.5	5	63	2.8	2.1	3.5	TM38300400
M 5	×	0.5	5	70	3.5	2.7	4.5	TM38300500
M 6	×	0.5	5	80	4.5	3.4	5.5	TM38300600
M 6	×	0.75	8	80	4.5	3.4	5.2	TM38300601
M 8	×	0.75	8	80	6	4.9	7.2	TM38300800
M 8	×	1.0	10	90	6	4.9	7	TM38300801
M 10	×	0.75	10	90	7	5.5	9.2	TM38301000
M 10	×	1.0	10	90	7	5.5	9	TM38301001
M 10	×	1.25	16	100	7	5.5	8.8	TM38301002
M 12	×	1.0	11	100	9	7	11	TM38301200
M 12	×	1.25	15	100	9	7	10.8	TM38301201
M 12	×	1.5	15	100	9	7	10.5	TM38301202
M 14	×	1.25	15	100	11	9	12.8	TM38301400
M 14	×	1.5	15	100	11	9	12.5	TM38301401
M 16	×	1.5	15	100	12	9	14.5	TM38301600
M 18	×	1.5	17	110	14	11	16.5	TM38301800
M 20	×	1.5	17	125	16	12	18.5	TM38302000
M 22	×	1.5	17	125	18	14.5	20.5	TM38302200
M 24	×	1.5	20	140	18	14.5	22.5	TM38302400

UNC *Unified coarse threads*
Unified Grobgewinde

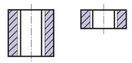
SPIRAL POINT

Cat.-No. TM6430

DIN 371

DIN 376

Hole type

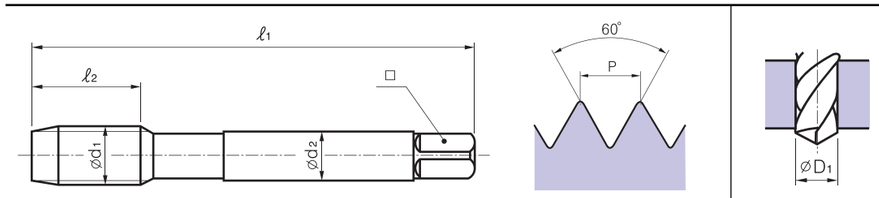


Material groups: VA NW

See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 2B | 60° | B | vap



Φd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	40	11	56	3.5	2.7	2.3	TM64300400
5	×	40	11	56	3.5	2.7	2.6	TM64300500
6	×	32	12	56	4	3	2.85	TM64300600
8	×	32	13	63	4.5	3.4	3.5	TM64300800
10	×	24	15	70	6	4.9	3.9	TM64301000
12	×	24	16	80	6	4.9	4.5	TM64301200
1/4	×	20	17	80	7	5.5	5.2	TM64309160
5/16	×	18	20	90	8	6.2	6.6	TM64309200
3/8	×	16	22	100	9	7	8	TM64309240
7/16	×	14	22	100	8	6.2	9.4	TM64309280
1/2	×	13	25	110	9	7	10.75	TM64309320
9/16	×	12	26	110	11	9	12.25	TM64309360
5/8	×	11	27	110	12	9	13.5	TM64309400
3/4	×	10	30	125	14	11	16.5	TM64309480
7/8	×	9	32	140	18	14.5	19.5	TM64309560
1”	×	8	36	160	20	16	22.25	TM64309640

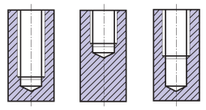
DIN 371(NO.4-3/8) DIN 376(7/10-1”)

UNC *Unified coarse threads* *Unified Grobgewinde*

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL FLUTE

Cat.-No. TM6530

Hole type



DIN 371

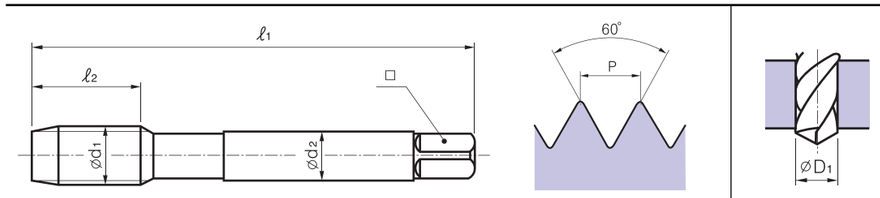
DIN 376

Material groups VA NW

See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 2B | 60° | C | vap



ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	40	6	56	3.5	2.7	2.3	TM65300400
5	×	40	7	56	3.5	2.7	2.6	TM65300500
6	×	32	7	56	4	3	2.85	TM65300600
8	×	32	8	63	4.5	3.4	3.5	TM65300800
10	×	24	10	70	6	4.9	3.9	TM65301000
12	×	24	10	80	6	4.9	4.5	TM65301200
1/4	×	20	13	80	7	5.5	5.2	TM65309160
5/16	×	18	14	90	8	6.2	6.6	TM65309200
3/8	×	16	16	100	9	7	8	TM65309240
7/16	×	14	17	100	8	6.2	9.4	TM65309280
1/2	×	13	20	110	9	7	10.75	TM65309320
9/16	×	12	20	110	11	9	12.25	TM65309360
5/8	×	11	22	110	12	9	13.5	TM65309400
3/4	×	10	25	125	14	11	16.5	TM65309480
7/8	×	9	27	140	18	14.5	19.5	TM65309560
1”	×	8	30	160	20	16	22.25	TM65309640

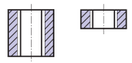
DIN 371(NO.4-3/8) DIN 376(7/16-1”)

UNF *Unified fine threads* *Unified Feingewinde*

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL POINT

Cat.-No. TM6730

Hole type



DIN 371

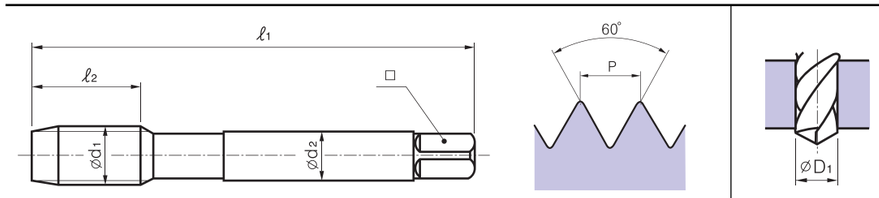
DIN 376

Material groups VA NW

See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 2B | 60° | B | vap



ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	48	11	56	3.5	2.7	2.4	TM67300400
5	×	44	11	56	3.5	2.7	2.7	TM67300500
6	×	40	12	56	4	3	3	TM67300600
8	×	36	13	63	4.5	3.4	3.5	TM67300800
10	×	32	13	70	6	4.9	4.1	TM67301000
12	×	28	16	80	6	4.9	4.7	TM67301200
1/4	×	28	17	80	7	5.5	5.5	TM67309160
5/16	×	24	17	90	8	6.2	6.9	TM67309200
3/8	×	24	18	100	9	7	5.8	TM67309240
7/16	×	20	22	100	8	6.2	9.9	TM67309280
1/2	×	20	22	100	9	7	11.5	TM67309320
9/16	×	18	22	100	11	9	12.9	TM67309360
5/8	×	18	22	100	12	9	14.5	TM67309400
3/4	×	16	25	110	14	11	17.5	TM67309480
7/8	×	14	26	125	18	14.5	20.5	TM67309560
1”	×	12	28	140	20	16	23.25	TM67309640

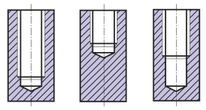
DIN 371(NO.4-3/8) DIN 376(7/16-1”)

UNF *Unified fine threads* *Unified Feingewinde*

FOR STAINLESS STEELS & TOUGH MATERIALS
SPIRAL FLUTE

Cat.-No. TM6830

Hole type



DIN 371

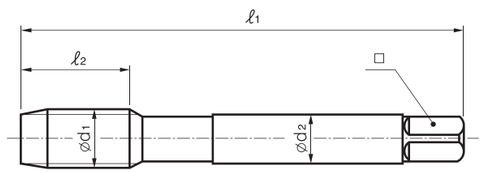
DIN 374

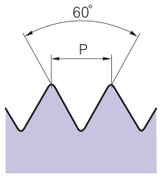
Material groups VA NW

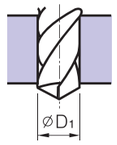
See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/374 | 2B | 60° | C | vap







ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	48	9	56	3.5	2.7	2.4	TM68300400
5	×	44	7	56	3.5	2.7	2.7	TM68300500
6	×	40	7	56	4	3	3	TM68300600
8	×	36	8	63	4.5	3.4	3.5	TM68300800
10	×	32	10	70	6	4.9	4.1	TM68301000
12	×	28	10	80	6	4.9	4.7	TM68301200
1/4	×	28	10	80	7	5.5	5.5	TM68309160
5/16	×	24	10	90	8	6.2	6.9	TM68309200
3/8	×	24	10	100	9	7	8.5	TM68309240
7.16	×	20	13	100	8	6.2	9.9	TM68309280
1/2	×	20	13	100	9	7	11.5	TM68309320
9/16	×	18	15	100	11	9	12.9	TM68309360
5/8	×	18	15	100	12	9	14.5	TM68309400
3/4	×	16	17	110	14	11	17.5	TM68309480
7/8	×	14	17	125	18	14.5	20.5	TM68309560
1”	×	12	20	140	20	16	23.25	TM68309640

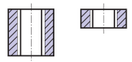
DIN 371(NO.4-3/8) DIN 376(7/16-1”)

M *ISO metric coarse threads DIN 13* *Metrisches ISO-Gewinde DIN 13*

HARDSLICK TAPS
SUITABLE FOR STAINLESS STEEL
AUSTENITIC STAINLESS
MAGNETIC SOFT STEELS
STRUCTURAL STEELS
SPIRAL POINT

Cat.-No. TM8053

Hole type



DIN 371

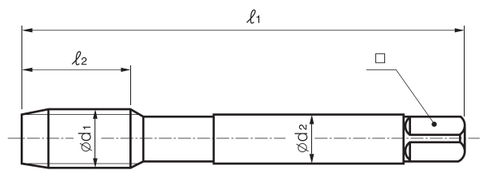
DIN 376

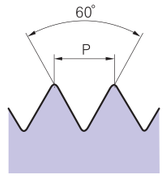
Material groups VA NW

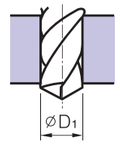
See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 6HX | 60° | B | Hardslick







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	3.5	2.7	2.5	TM80530300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM80530400
M 5	×	0.8	15	70	6	4.9	4.2	TM80530500
M 6	×	1.0	17	80	6	4.9	5	TM80530600
M 8	×	1.25	20	90	8	6.2	6.8	TM80530800
M 10	×	1.5	22	100	10	8	8.5	TM80531000
M 12	×	1.75	24	110	9	7	10.2	TM80531200
M 16	×	2.0	27	110	12	9	14	TM80531600
M 18	×	2.5	30	125	14	11	15.5	TM80531800

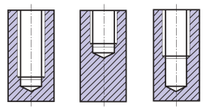
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M18)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

Cat.-No. TM8153

HARDSLICK TAPS
WITH RECESSED THREADS
SUITABLE FOR STAINLESS STEEL
AUSTENITIC STAINLESS
MAGNETIC SOFT STEELS
STRUCTURAL STEELS
SPIRAL FLUTE

Hole type



DIN 371

DIN 376

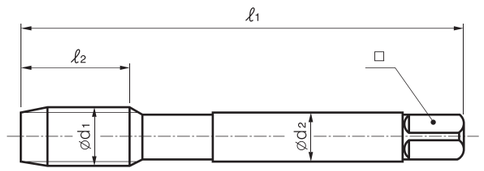
※With recessed threads for maching tapping of deep blind holes.

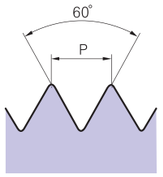
Material groups VA NW

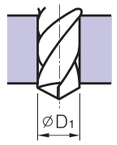
See page : 301~307

11-12-21-22-23

HSS-E | DIN 371/376 | 6H | 60° | B | Hardslick







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	3.5	2.7	2.5	TM81530300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM81530400
M 5	×	0.8	15	70	6	4.9	4.2	TM81530500
M 6	×	1.0	17	80	6	4.9	5	TM81530600
M 8	×	1.25	20	90	8	6.2	6.8	TM81530800
M 10	×	1.5	22	100	10	8	8.5	TM81531000
M 12	×	1.75	24	110	9	7	10.2	TM81531200
M 16	×	2.0	27	110	12	9	14	TM81531600
M 18	×	2.5	30	125	14	11	15.5	TM81531800

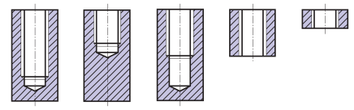
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M18)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

Cat.-No. TM3817

COLD FORMING TAPS
WITH OIL GROOVES
FOR BLIND & THROUGH HOLES IN STEELS UP TO 850NM
STAINLESS STEELS
NICKEL & COPPER UNALLOYS
ALUMINIUM MAGNESIUM
TITAMIUM
COLD FORMING

Hole type



DIN 371

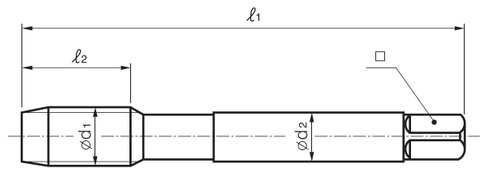
DIN 376

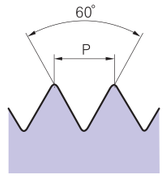
Material groups GV

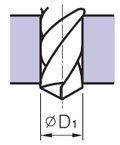
See page : 301~307

11-12-13-14-21-22-41-51-61-71

HSS-E | DIN 371/376 | 6HX | 60° | C | TiN







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.83	TM38170200
M 3	×	0.5	11	56	3.5	2.7	2.8	TM38170300
M 4	×	0.7	13	63	4.5	.4	3.7	TM38170400
M 5	×	0.8	15	70	6	4.9	4.65	TM38170500
M 6	×	1.0	17	80	6	4.9	5.55	TM38170600
M 8	×	1.25	20	90	8	6.2	7.4	TM38170800
M 10	×	1.5	22	100	10	8	9.3	TM38171000
M 12	×	1.75	24	110	9	7	11.2	TM38171200
M 14	×	2.0	26	110	11	9	13	TM38171400
M 16	×	2.0	27	110	12	9	15	TM38171600
M 20	×	2.5	32	140	16	12	18.8	TM38172000

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

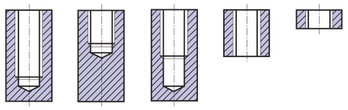
COLD FORMING TAPS
WITH OIL GROOVES
FOR BLIND & THROUGH HOLES IN STEELS UP TO 850NM
STAINLESS STEELS
NICKEL & COPPER
ALUMINIUM MAGNESIUM
TITAMIUM
COLD FORMING

Cat.-No. TM3827

DIN 371

DIN 376

Hole type

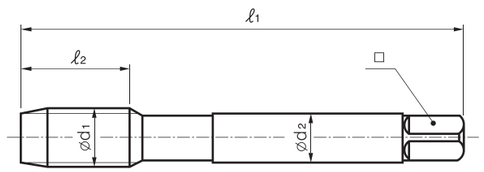


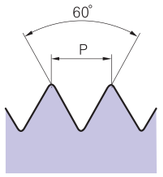
Material groups **GV**

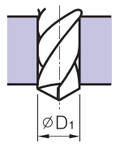
See page : 301~307

11-12-13-14-41-51-61-71

HSS-E | DIN 371/376 | 6HX | 60° | C | TiAlN







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.83	TM38270200
M 2.5	×	0.45	9	50	2.8	2.1	2.3	TM38270250
M 3	×	0.5	11	56	3.5	2.7	2.8	TM38270300
M 4	×	0.7	13	63	4.5	3.4	3.7	TM38270400
M 5	×	0.8	15	70	6	4.9	4.65	TM38270500
M 6	×	1.0	17	80	6	4.9	5.55	TM38270600
M 8	×	1.25	20	90	8	6.2	7.4	TM38270800
M 10	×	1.5	22	100	10	8	9.3	TM38271000
M 12	×	1.75	24	110	9	7	11.2	TM38271200

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

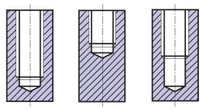
FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL FLUTE

Cat.-No. TM1530

DIN 371

DIN 376

Hole type

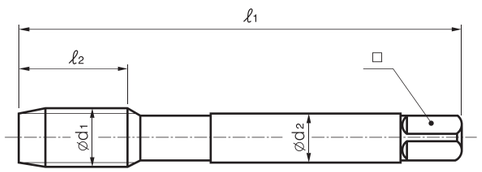


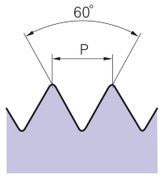
Material groups **VG**

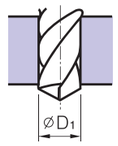
See page : 301~307

15

HSS-E | DIN 371/376 | 6H | 60° | C | vap







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM15300200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM15300250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM15300300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM15300400
M 5	×	0.8	8	70	6	4.9	4.2	TM15300500
M 6	×	1.0	10	80	6	4.9	5	TM15300600
M 8	×	1.25	13	90	8	6.2	6.8	TM15300800
M 10	×	1.5	15	100	10	8	8.5	TM15301000
M 12	×	1.75	18	110	9	7	10.2	TM16301200
M 14	×	2.0	20	110	11	9	12	TM16301400
M 16	×	2.0	20	110	12	9	14	TM16301600
M 18	×	2.5	25	125	14	11	15.5	TM16301800
M 20	×	2.5	25	140	16	12	17.5	TM16302000
M 24	×	3.0	30	160	18	14.5	21	TM16302400

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M24)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

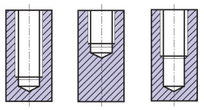
WITH RECESSED THREADS
FOR DEEP BLIND HOLES IN STEELS
UP TO 1200NM & MALLEABLE CAST IRON
SPIRAL FLUTE

Cat.-No. TM2130

DIN 371

DIN 376

Hole type

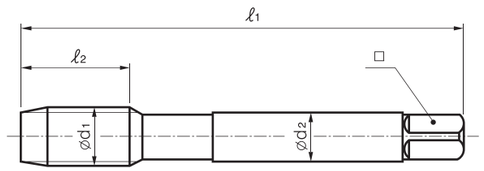


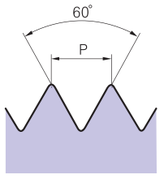
※With recessed threads for maching tapping of deep blind holes.

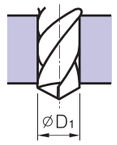
Material groups **VG**

See page : 301~307
15

HSS-E | DIN 371/376 | 6H | 60° | C | vap







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	6	56	3.5	2.7	2.5	TM21300300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM21300400
M 5	×	0.8	8	70	6	4.9	4.2	TM21300500
M 6	×	1.0	10	80	6	4.9	5	TM21300600
M 8	×	1.25	13	90	8	6.2	6.8	TM21300800
M 10	×	1.5	15	100	10	8	8.5	TM21301000
M 12	×	1.75	18	110	9	7	10.2	TM22301200
M 14	×	2.0	20	110	11	9	12	TM22301400
M 16	×	2.0	20	110	12	9	14	TM22301600
M 20	×	2.5	25	140	16	12	17.5	TM22302000

ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

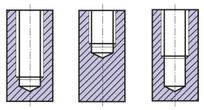
FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL FLUTE

Cat.-No. TM2330

DIN 371

DIN 376

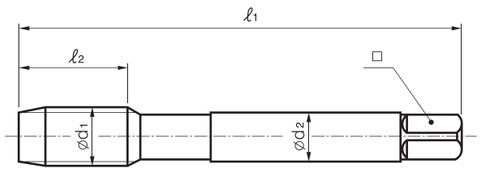
Hole type

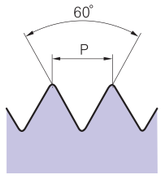


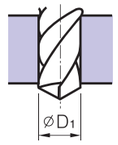
Material groups **HR**

See page : 301~307
16-64

HSS-E | DIN 371/376 | 6H | 60° | C | vap







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM23300200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM23300250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM23300300
M 4	×	0.7	7	663	4.5	3.4	3.3	TM23300400
M 5	×	0.8	8	70	6	4.9	4.2	TM23300500
M 6	×	1.0	10	80	6	4.9	5	TM23300600
M 8	×	1.25	13	90	8	6.2	6.8	TM23300800
M 10	×	1.5	15	100	10	8	8.5	TM23301000
M 12	×	1.75	18	110	9	7	10.2	TM24301200
M 16	×	2.0	20	110	12	9	14	TM24301600

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M16)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

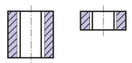
FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL POINT

Cat.-No. TM2716

DIN 371

DIN 376

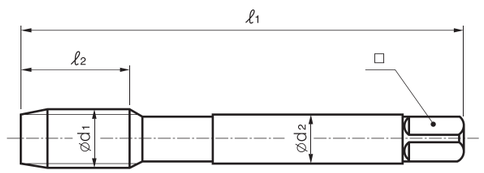
Hole type

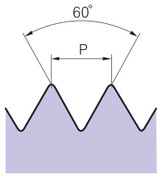


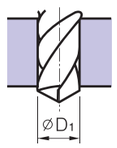
Material groups **VG**

See page : 301~307
15

HSS-E | DIN 371/376 | 6H | 60° | B







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM27160200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM27160250
M 3	×	0.5	11	56	3.5	2.7	2.5	TM27160300
M 3.5	×	0.6	12	56	4	3	2.9	TM27160350
M 4	×	0.7	13	63	4.5	3.4	3.3	TM27160400
M 5	×	0.8	15	70	6	4.9	4.2	TM27160500
M 6	×	1.0	17	80	6	4.9	5	TM27160600
M 8	×	1.25	20	90	8	6.2	6.8	TM27160800
M 10	×	1.5	22	100	10	8	8.5	TM27161000
M 12	×	1.75	24	110	9	7	10.2	TM28161200
M 16	×	2.0	27	110	12	9	14	TM28161600
M 20	×	2.5	32	140	16	12	17.5	TM28162000

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

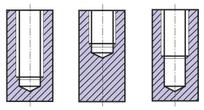
FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL FLUTE

Cat.-No. TM2817

DIN 371

DIN376

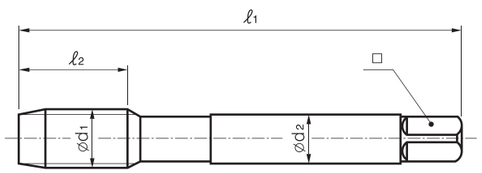
Hole type

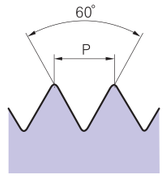


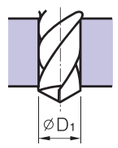
Material groups **VG**

See page : 301~307
15

HSS-E | DIN 371/376 | 6H | 60° | C | TiN







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	6	56	3.5	2.7	2.5	TM28170300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM28170400
M 5	×	0.8	8	70	6	4.9	4.2	TM28170500
M 6	×	1.0	10	80	6	4.9	5	TM28170600
M 8	×	1.25	13	90	8	6.2	6.8	TM28170800
M 10	×	1.5	15	100	10	8	8.5	TM28171000
M 12	×	1.75	18	110	9	7	10.2	TM28171200
M 14	×	2.0	20	110	11	9	12	TM28171400
M 16	×	2.0	20	110	12	9	14	TM28171600
M 20	×	2.5	25	140	16	12	17.5	TM28172000

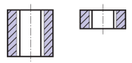
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL POINT

Cat.-No. TM2917

Hole type



DIN 371

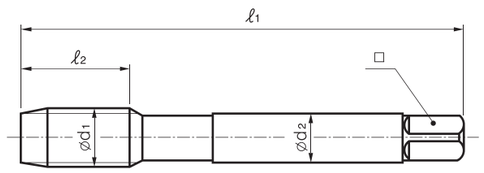
DIN 376

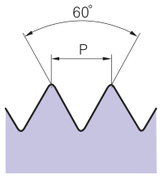
Material groups VG

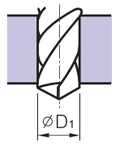
See page : 301~307

15

HSS-E | DIN 371/376 | 6H | 60° | B | TiN







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	6	56	3.5	2.7	2.5	TM29170300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM29170400
M 5	×	0.8	8	70	6	4.9	4.2	TM29170500
M 6	×	1.0	10	80	6	4.9	5	TM29170600
M 8	×	1.25	13	90	8	6.2	6.8	TM29170800
M 10	×	1.5	15	100	10	8	8.5	TM29171000
M 12	×	1.75	18	110	9	7	10.2	TM30171200
M 14	×	2.0	20	110	11	9	12	TM30171400
M 16	×	2.0	20	110	12	9	14	TM30171600
M 20	×	2.5	25	140	16	12	17.5	TM30172000

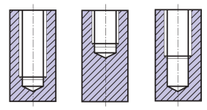
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

FOR HIGH TENSILE STEELS
HEAT TREATED & HEAT RESISTANT
UP TO 1200NM
SPIRAL FLUTE

Cat.-No. TM6316

Hole type



DIN 371

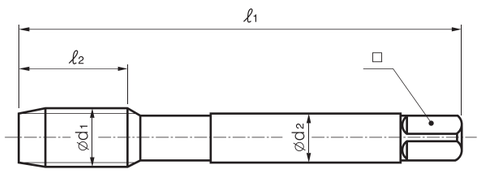
DIN 376

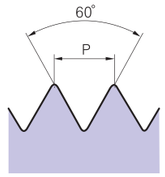
Material groups VG

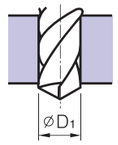
See page : 301~307

15

HSS-E | DIN 371/376 | 6H | 60° | C







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM63160200
M 2.2	×	0.45	8	45	2.8	2.1	1.75	TM63160220
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM63160250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM63160300
M 3.5	×	0.6	7	56	4	3	2.9	TM63160350
M 4	×	0.7	7	63	4.5	3.4	3.3	TM63160400
M 5	×	0.8	8	70	6	4.9	4.2	TM63160500
M 6	×	1.0	10	80	6	4.9	5	TM63160600
M 8	×	1.25	13	90	8	6.2	6.8	TM63160800
M 10	×	1.5	15	100	10	8	8.5	TM63161000
M 12	×	1.75	18	110	9	7	10.2	TM63161200
M 16	×	2.0	20	110	12	9	14	TM63161600
M 20	×	2.5	25	140	16	12	17.5	TM63162000

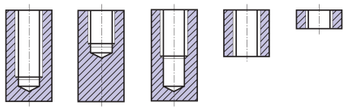
ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

NITRIDED FOR GREY CAST IRON
STRAIGHT FLUTE

Cat.-No. TM0731

Hole type



DIN 371

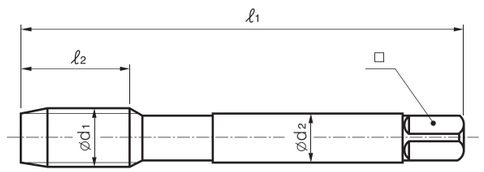
DIN 376

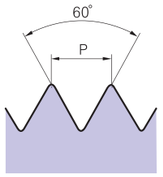
Material groups GG

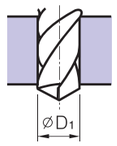
See page : 301~307

31-32-83

HSS-E | DIN 371/376 | 6H | 60° | C | NI







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	3.5	2.7	2.5	TM07310300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM07310400
M 5	×	0.8	15	70	6	4.9	4.2	TM07310500
M 6	×	1.0	17	80	6	4.9	5	TM07310600
M 8	×	1.25	20	90	8	6.2	6.8	TM07310800
M 10	×	1.5	22	100	10	8	8.5	TM07311000
M 12	×	1.75	24	110	9	7	10.2	TM08311200
M 14	×	2.0	26	110	11	9	12	TM08311400
M 16	×	2.0	27	110	12	9	14	TM08311600

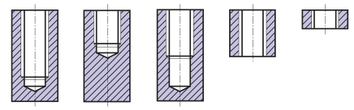
ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M16)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

TIN COATED FOR GREY CAST IRON
STRAIGHT FLUTE

Cat.-No. TM0917

Hole type



DIN 371

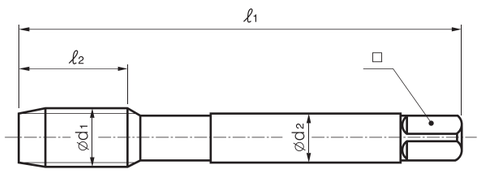
DIN 376

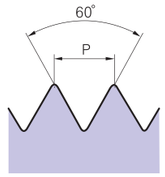
Material groups GG

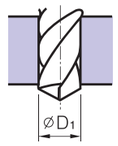
See page : 301~307

31-32-83

HSS-E | DIN 371/376 | 6HX | 60° | C | TiN







Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	3.5	2.7	2.5	TM09170300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM09170400
M 5	×	0.8	15	70	6	4.9	4.2	TM09170500
M 6	×	1.0	17	80	6	4.9	5	TM09170600
M 8	×	1.25	20	90	8	6.2	6.8	TM09170800
M 10	×	1.5	22	100	10	8	8.5	TM09171000
M 12	×	1.75	24	110	9	7	10.2	TM10171200
M 16	×	2.0	27	110	12	9	14	TM10171600

ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M16)

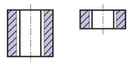
BSP *Whitworth Pipe Threads DIN ISO 228/1*
Whitworth Rohrgewinde DIN ISO 228/1

FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TB0116

DIN 5156

Hole type

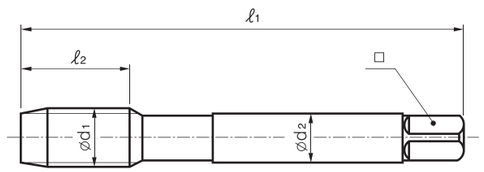


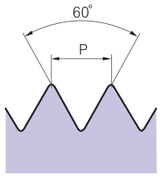
Material groups **GS**

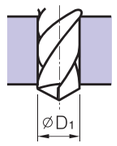
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 5156 | 55° | B







ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
1/8	×	28	18	90	7	5.5	8.8	TB01160080
1/4	×	19	22	100	11	9	11.8	TB01160160
3/8	×	19	22	100	12	9	15.25	TB01160240
1/2	×	14	25	125	16	12	19	TB01160320
3/4	×	14	28	140	20	16	24.5	TB01160480
1”	×	11	32	160	25	20	30.75	TB01160640

DIN 5156

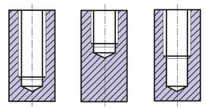
BSP *Whitworth pipe threads DIN ISO 228/1*
Whitworth Rohrgewinde DIN ISO 228/1

FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TB0216

DIN 5156

Hole type

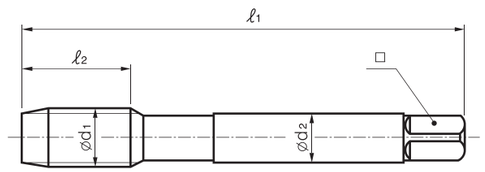


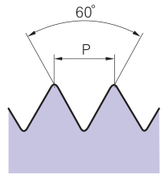
Material groups **GS**

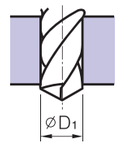
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 5156 | 55° | C







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
1/8	×	28	10	90	7	5.5	8.8	TB02160080
1/4	×	19	14	100	11	9	11.8	TB02160160
3/8	×	19	15	100	12	9	15.25	TB02160240
1/2	×	14	17	125	16	12	19	TB02160320
3/4	×	14	20	140	20	16	24.5	TB02160480
1”	×	11	24	160	25	20	30.75	TB02160640

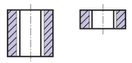
DIN 5156

SHORT MACHINE TAPS
FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM0116

DIN 352

Hole type

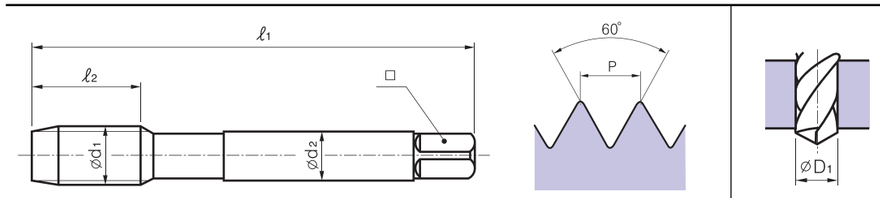


Material groups GS

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 352 | 6H | 60° | B



ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	36	2.8	2.1	1.6	TM01160200
M 2.5	×	0.45	9	40	2.8	2.1	2.05	TM01160250
M 3	×	0.5	11	40	3.5	2.7	2.5	TM01160300
M 4	×	0.7	13	45	4.5	3.4	3.3	TM01160400
M 5	×	0.8	16	52	6	4.9	4.2	TM01160500
M 6	×	1.0	18	56	6	4.9	5	TM01160600
M 8	×	1.25	20	63	6	4.9	6.8	TM01160800
M 10	×	1.5	22	70	7	5.5	8.5	TM01161000
M 12	×	1.75	24	80	9	7	10.2	TM01161200
M 16	×	2.0	27	80	12	9	14	TM01161600

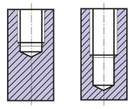
ALL DIMENSIONS ARE IN MM
DIN 352 (M2-M16)

SHORT MACHINE TAPS
FOR AUTOMATIC LATHES
FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM0216

DIN 352

Hole type

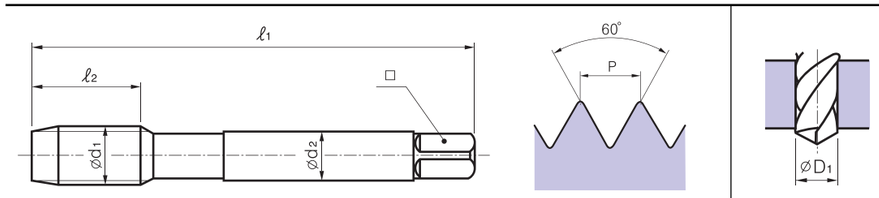


Material groups GS

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 352 | 6H | 60° | C



ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	40	3.5	2.7	2.5	TM02160300
M 4	×	0.7	13	45	4.5	3.4	3.3	TM02160400
M 5	×	0.8	16	52	6	4.9	4.2	TM02160500
M 6	×	1.0	18	56	6	4.9	5	TM02160600
M 8	×	1.25	20	63	6	4.9	6.8	TM02160800
M 10	×	1.5	22	70	7	5.5	8.5	TM02161000
M 12	×	1.75	24	80	9	7	10.2	TM02161200

ALL DIMENSIONS ARE IN MM
DIN 352(M3-M12)

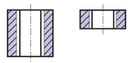
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM0316

DIN 371

Hole type

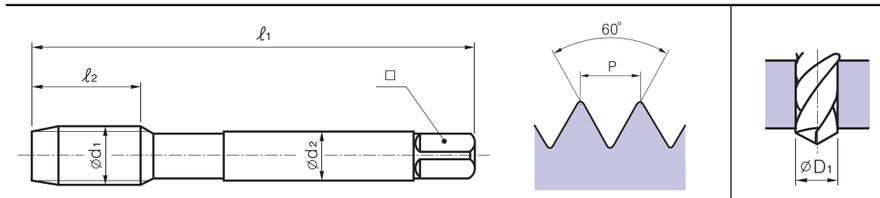


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371 | 6H | 60° | B



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM03160200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM03160250
M 3	×	0.5	11	56	3.5	2.7	2.5	TM03160300
M 3.5	×	0.6	12	56	4	3	2.9	TM03160350
M 4	×	0.7	13	63	4.5	3.4	3.3	TM03160400
M 4.5	×	0.75	14	70	6	4.9	3.7	TM03160450
M 5	×	0.8	15	70	6	4.9	4.2	TM03160500
M 6	×	1.0	17	80	6	4.9	5	TM03160600
M 7	×	1.0	17	80	7	5.5	6	TM03160700
M 8	×	1.25	20	90	8	6.2	6.8	TM03160800
M 10	×	1.5	22	100	10	8	8.5	TM03161000

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10)

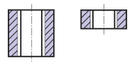
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM0416

DIN 376

Hole type

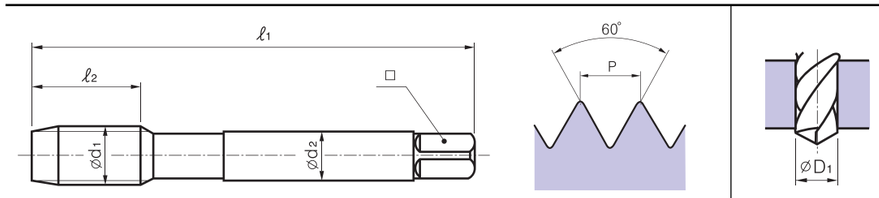


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 376 | 6H | 60° | B



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	2.2	1.8	2.5	TM04160300
M 4	×	0.7	13	63	2.8	2.1	3.3	TM04160400
M 5	×	0.8	15	70	3.5	2.7	4.2	TM04160500
M 6	×	1.0	17	80	4.5	3.4	5	TM04160600
M 8	×	1.25	20	90	6	4.9	6.8	TM04160800
M 10	×	1.5	22	100	7	5.5	8.5	TM04161000
M 12	×	1.75	24	110	9	7	10.2	TM04161200
M 14	×	2.0	26	110	11	9	12	TM04161400
M 16	×	2.0	27	110	12	9	14	TM04161600
M 18	×	2.5	30	125	14	11	15.5	TM04161800
M 20	×	2.5	32	140	16	12	17.5	TM04162000

ALL DIMENSIONS ARE IN MM
DIN 376(M3-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

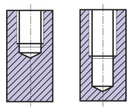
20 DEG SPIRAL FLUTE
FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM1316

DIN 371

DIN 376

Hole type

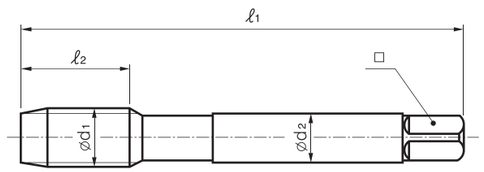


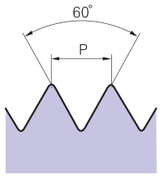
Material groups **GS**

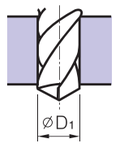
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/376 | 6H | 60° | C







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM13160200
M 3	×	0.5	6	56	3.5	2.7	2.5	TM13160300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM13160400
M 5	×	0.8	8	70	6	4.9	4.2	TM13160500
M 6	×	1.0	10	80	6	4.9	5	TM13160600
M 8	×	1.25	13	90	8	6.2	6.8	TM13160800
M 10	×	1.5	15	100	10	8	8.5	TM13161000
M 12	×	1.75	18	110	9	7	10.2	TM14161200
M 16	×	2.0	20	110	12	9	14	TM14161600
M 20	×	2.5	25	140	16	12	17.5	TM14162000

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

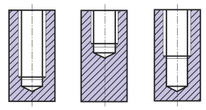
FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM1716

DIN 371

DIN 376

Hole type

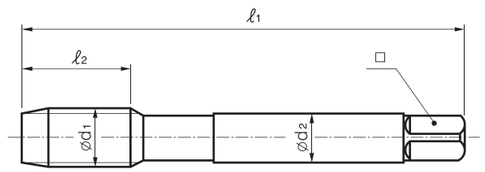


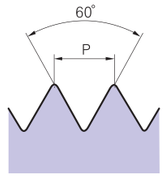
Material groups **GS**

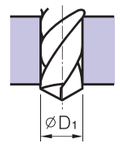
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/376 | 6H | 60° | C







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	5	45	2.8	2.1	1.6	TM17160200
M 3	×	0.5	6	56	3.5	2.7	2.5	TM17160300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM17160400
M 5	×	0.8	8	70	6	4.9	4.2	TM17160500
M 6	×	1.0	10	80	6	4.9	5	TM17160600
M 8	×	1.25	13	90	8	6.2	6.8	TM17160800
M 10	×	1.5	15	100	10	8	8.5	TM17161000
M 12	×	1.75	18	110	9	7	10.2	TM17161200
M 14	×	2.0	20	110	11	9	12	TM17161400
M 16	×	2.0	20	110	12	9	14	TM17161600
M 20	×	2.5	25	140	16	12	17.5	TM17162000

ALL DIMENSIONS ARE IN MM
DIN 371(M2-M10) DIN 376(M12-M20)

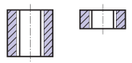
M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

FOR GENERAL STEELS UP TO 900~1000NM
SPIRAL POINT

Cat.-No. TM1817

DIN 371

Hole type

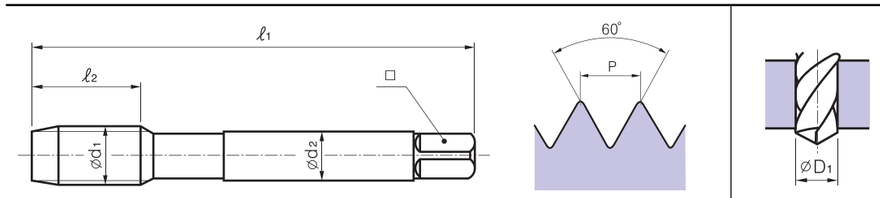


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371 | 6H | 60° | B | TiN



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 3	×	0.5	11	56	3.5	2.7	2.5	TM18170300
M 4	×	0.7	13	63	4.5	3.4	3.3	TM18170400
M 5	×	0.8	15	70	6	4.9	4.2	TM18170500
M 6	×	1.0	17	80	6	4.9	5	TM18170600
M 8	×	1.25	20	90	8	6.2	6.8	TM18170800
M 10	×	1.5	22	100	10	8	8.5	TM18171000
M 12	×	1.75	24	110	9	7	10.2	TM18171200

ALL DIMENSIONS ARE IN MM
DIN 371(M3-M12)

M ISO metric coarse threads DIN 13
Metrisches ISO-Gewinde DIN 13

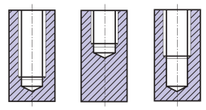
FOR GENERAL STEELS 900-1000NM
SPIRAL FLUTE

Cat.-No. TM1917

DIN 371

DIN 376

Hole type

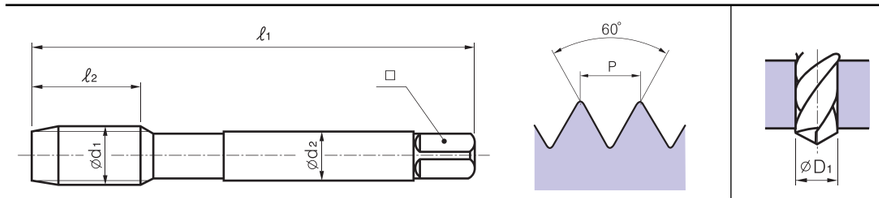


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/376 | 6H | 60° | C | TiN



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 2	×	0.4	8	45	2.8	2.1	1.6	TM19170200
M 2.5	×	0.45	9	50	2.8	2.1	2.05	TM19170250
M 3	×	0.5	6	56	3.5	2.7	2.5	TM19170300
M 4	×	0.7	7	63	4.5	3.4	3.3	TM19170400
M 5	×	0.8	8	70	6	4.9	4.2	TM19170500
M 6	×	1.0	10	80	6	4.9	5	TM19170600
M 8	×	1.25	13	90	8	6.2	6.8	TM19170800
M 10	×	1.5	15	100	10	8	8.5	TM19171000
M 12	×	1.75	18	110	9	7	10.2	TM19171200
M 14	×	2.0	20	110	11	9	12	TM19171400
M 16	×	2.0	20	110	12	9	14	TM19171600
M 20	×	2.5	25	140	16	12	17.5	TM19172000

ALL DIMENSIONS ARE IN MM
DIN 371(M3-M10) DIN 376(M12-M20)

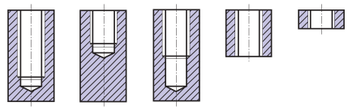
MF *ISO metric fine threads DIN 13*
Metrisches ISO-feingewinde DIN 13

FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM3316

DIN 371

Hole type

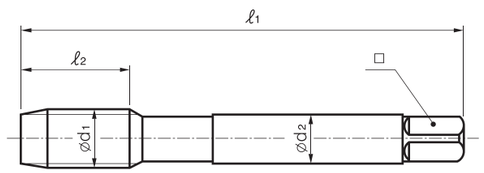


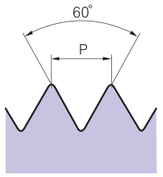
Material groups GS

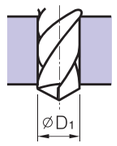
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 374 | 6H | 60° | B







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.5	10	63	2.8	2.1	3.5	TM33160400
M 5	×	0.5	11	70	3.5	2.7	4.5	TM33160500
M 6	×	0.5	13	80	4.5	3.4	5.5	TM33160600
M 6	×	0.75	13	80	4.5	3.4	5.2	TM33160601
M 8	×	0.5	14	80	6	4.9	7.5	TM33160800
M 8	×	0.75	14	80	6	4.9	7.2	TM33160801
M 8	×	1.0	17	90	6	4.9	7	TM33160802
M 10	×	1.75	18	90	7	5.5	9.2	TM33161000
M 10	×	1.0	18	90	7	5.5	9	TM33161001
M 10	×	1.25	22	100	7	5.5	8.8	TM33161002
M 12	×	1.0	18	100	9	7	11	TM33161200
M 12	×	1.25	22	100	9	7	10.8	TM33161201
M 12	×	1.5	22	100	9	7	10.5	TM33161202
M 14	×	1.0	18	100	11	9	13	TM33161400
M 14	×	1.25	22	100	11	9	12.8	TM33161401
M 14	×	1.5	22	100	11	9	12.5	TM33161402
M 16	×	1.0	18	100	12	9	15	TM33161600
M 16	×	1.5	22	100	12	9	14.5	TM33161601
M 18	×	1.0	20	110	14	11	17	TM33161800
M 18	×	1.5	25	110	14	11	16.5	TM33161801
M 20	×	1.0	20	125	16	12	19	TM33162000
M 20	×	1.5	25	125	16	12	18.5	TM33162001
M 22	×	1.0	20	125	18	14.5	21	TM33162200
M 22	×	1.5	25	125	18	14.5	20.5	TM33162201
M 24	×	1.5	27	140	18	14.5	22.5	TM33162400
M 24	×	2.0	27	140	18	14.5	22	TM33162401
M 26	×	1.5	28	140	18	14.5	24.5	TM33162600
M 27	×	1.5	28	140	20	16	25.5	TM33162700
M 27	×	2.0	28	140	20	16	25	TM33162701
M 28	×	1.5	28	140	20	16	26.5	TM33162800
M 30	×	1.5	30	150	22	18	28.5	TM33163000
M 30	×	2.0	30	150	22	18	28	TM33163001

ALL DIMENSIONS ARE IN MM
DIN 374(M4-M30)

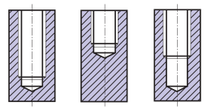
MF *ISO metric fine threads DIN 13*
Metrisches ISO-feingewinde DIN 13

FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM3416

DIN 374

Hole type

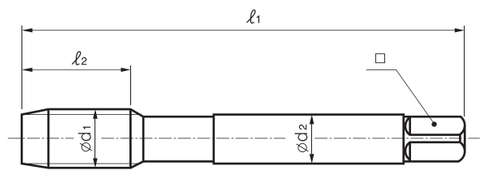


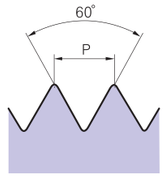
Material groups GS

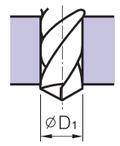
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 374 | 6H | 60° | C







ϕd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.5	5	63	2.8	2.1	3.5	TM34160400
M 5	×	0.5	5	70	3.5	2.7	4.5	TM34160500
M 6	×	0.5	5	80	4.5	3.4	5.5	TM34160600
M 6	×	0.75	8	80	4.5	3.4	5.2	TM34160601
M 8	×	0.5	5	80	6	4.9	7.5	TM34160800
M 8	×	0.75	8	80	6	4.9	7.2	TM34160801
M 8	×	1.0	10	90	6	4.9	7	TM34160802
M 10	×	0.75	10	90	7	5.5	9.2	TM34161000
M 10	×	1.0	10	90	7	5.5	9	TM34161001
M 10	×	1.25	16	100	7	5.5	8.8	TM34161002
M 12	×	1.0	11	100	9	7	11	TM34161200
M 12	×	1.25	15	100	9	7	10.8	TM34161201
M 12	×	1.5	15	100	9	7	10.5	TM34161202
M 14	×	1.0	11	100	11	9	13	TM34161400
M 14	×	1.25	15	100	11	9	12.8	TM34161401
M 14	×	1.5	15	100	11	9	12.5	TM34161402
M 16	×	1.0	12	100	12	9	15	TM34161600
M 16	×	1.5	15	100	12	9	14.5	TM34161601
M 18	×	1.0	13	110	14	11	17	TM34161800
M 18	×	1.5	17	110	14	11	16.5	TM34161801
M 20	×	1.0	14	125	16	12	19	TM34162000
M 20	×	1.5	17	125	16	12	18.5	TM34162001
M 22	×	1.0	14	125	18	14.5	21	TM34162200
M 22	×	1.5	17	125	18	14.5	20.5	TM34162201
M 24	×	1.5	20	140	18	14.5	22.5	TM34162400
M 24	×	2.0	20	140	18	14.5	22	TM34162401
M 26	×	1.5	20	140	18	14.5	24.5	TM34162600
M 27	×	1.5	20	140	20	16	25.5	TM34162700
M 27	×	2.0	20	140	20	16	25	TM34162701
M 28	×	1.5	20	140	20	16	26.5	TM34162800
M 30	×	1.5	22	150	22	18	28.5	TM34163000
M 30	×	2.0	22	150	22	18	28	TM34163001

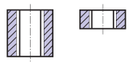
M *ISO metric coarse threads DIN 13*
Metrisches ISO-Gewinde DIN 13

NUT TAPS
FOR GENERAL STEELS UP TO 750NM
STRAIGHT FLUTE

Cat.-No. TM5016

DIN 357

Hole type

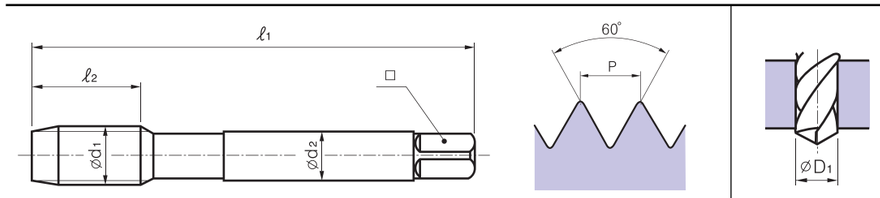


Material groups **GS**

See page : 301~307

12-13-14-33-34-74

HSS-E | DIN 357 | 6H | 60° | LONG



Φd1 mm	×	P mm	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
M 4	×	0.7	25	90	2.8	2.1	3.3	TM50160400
M 5	×	0.8	28	100	3.5	2.7	4.2	TM50160500
M 6	×	1.0	32	110	4.5	3.4	5	TM50160600
M 7	×	1.0	36	110	5.5	4.3	6	TM50160700
M 8	×	1.25	40	125	6	4.9	6.8	TM50160800
M 10	×	1.5	45	140	7	5.5	8.5	TM50161000
M 12	×	1.75	50	180	9	7	10.2	TM50161200

ALL DIMENSIONS ARE IN MM
DIN 357(M4-M20)

UNC *Unified coarse threads*
Unified Grobgewinde

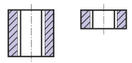
FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM6416

DIN 371

DIN 376

Hole type

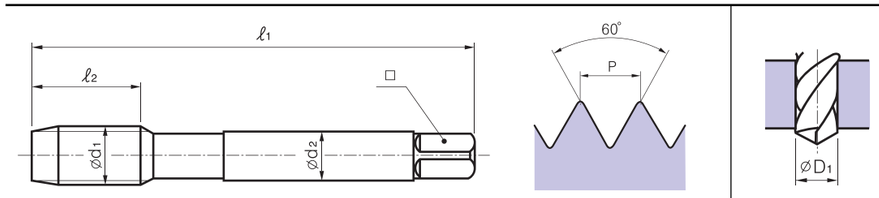


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/376 | 2B | 60° | B



Φd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	40	11	56	3.5	2.7	2.3	TM64160400
5	×	40	11	56	3.5	2.7	2.6	TM64160500
6	×	32	12	56	4	3	2.85	TM64160600
8	×	32	13	63	4.5	3.4	3.5	TM64160800
10	×	24	15	70	6	4.9	3.9	TM64161000
12	×	24	16	80	6	4.9	4.5	TM64161200
1/4	×	20	17	80	7	5.5	5.2	TM64169160
5/16	×	18	20	90	8	6.2	6.6	TM64169200
3/8	×	16	22	100	9	7	8	TM64169240
7/16	×	14	22	100	8	6.2	9.4	TM64169280
1/2	×	13	25	110	9	7	10.75	TM64169320
9/16	×	12	26	110	11	9	12.25	TM64169360
5/8	×	11	27	110	12	9	13.5	TM64169400
3/4	×	10	30	125	14	11	16.5	TM64169480
7/8	×	9	32	140	18	14.5	19.5	TM64169560
1”	×	8	36	160	20	16	22.25	TM64169640

DIN 371(NO.4-3/8) DIN 376(7/16-1”)

UNC *Unified coarse threads* *Unified Grobgewinde*

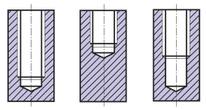
FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM6516

DIN 371

DIN 376

Hole type

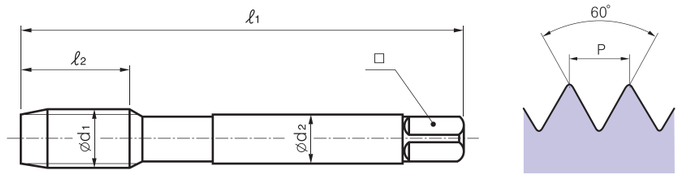


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/376 | 2B | 60° | C



ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	40	6	56	3.5	2.7	2.3	TM65160400
5	×	40	7	56	3.5	2.7	2.6	TM65160500
6	×	32	7	56	4	3	2.85	TM65160600
8	×	32	8	63	4.5	3.4	3.5	TM65160800
10	×	24	10	70	6	4.9	3.9	TM65161000
12	×	24	10	80	6	4.9	4.5	TM65161200
1/4	×	20	13	80	7	5.5	5.2	TM65169160
5/16	×	18	14	90	8	6.2	6.6	TM65169200
3/8	×	16	16	100	9	7	8	TM65169240
7/16	×	14	17	100	8	6.2	9.4	TM65169280
1/2	×	13	20	110	9	7	10.75	TM65169320
9/16	×	12	20	110	11	9	12.25	TM65169360
5/8	×	11	22	110	12	9	13.5	TM65169400
3/4	×	10	25	125	14	11	16.5	TM65169480
7/8	×	9	27	140	18	14.5	19.5	TM65169560
1”	×	8	30	160	20	16	22.25	TM65169640

DIN 371(NO.4-3/8) DIN 376(7/16-1”)

UNF *Unified fine threads* *Unified Feingewinde*

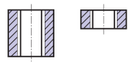
FOR GENERAL STEELS UP TO 750NM
SPIRAL POINT

Cat.-No. TM6716

DIN 371

DIN 374

Hole type

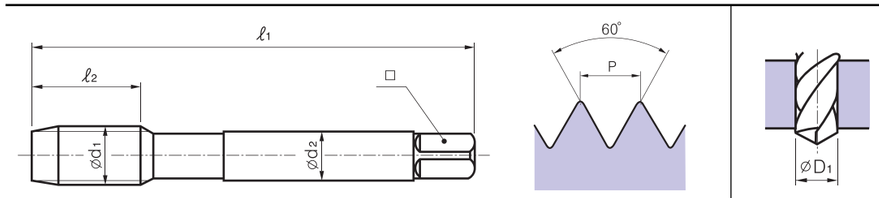


Material groups **GS**

See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/374 | 2B | 60° | B



ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	45	11	56	3.5	2.7	2.4	TM67160400
5	×	44	11	56	3.5	2.7	2.7	TM67160500
6	×	40	12	56	4	3	3	TM67160600
8	×	36	13	63	4.5	3.4	3.5	TM67160800
10	×	32	13	70	6	4.9	4.1	TM67161000
12	×	28	16	80	6	4.9	4.7	TM67161200
1/4	×	28	17	80	7	5.5	5.5	TM67169160
5/16	×	24	17	90	8	6.2	6.9	TM67169200
3/8	×	24	18	100	9	7	8.5	TM67169240
7/16	×	20	22	100	8	6.2	9.9	TM67169280
1/2	×	20	22	100	9	7	11.5	TM67169320
9/16	×	18	22	100	11	9	12.9	TM67169360
5/8	×	18	22	100	12	9	14.5	TM67169400
3/4	×	16	25	110	14	11	17.5	TM67169480
7/8	×	14	26	125	18	14.5	20.5	TM67169560
1”	×	12	28	140	20	16	23.25	TM67169640

DIN 371(NO.4-3/8) DIN 374(7/16-1”)

UNF *Unified fine threads* *Unified Feingewinde*

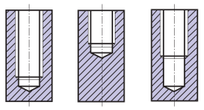
FOR GENERAL STEELS UP TO 750NM
SPIRAL FLUTE

Cat.-No. TM6816

DIN 371

DIN 374

Hole type

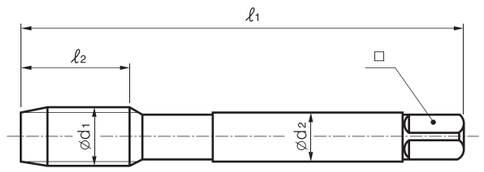


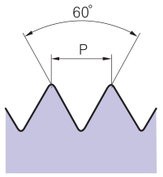
Material groups **GS**

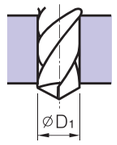
See page : 301~307

12-13-14-33-34-63-74

HSS-E | DIN 371/374 | 2B | 60° | C





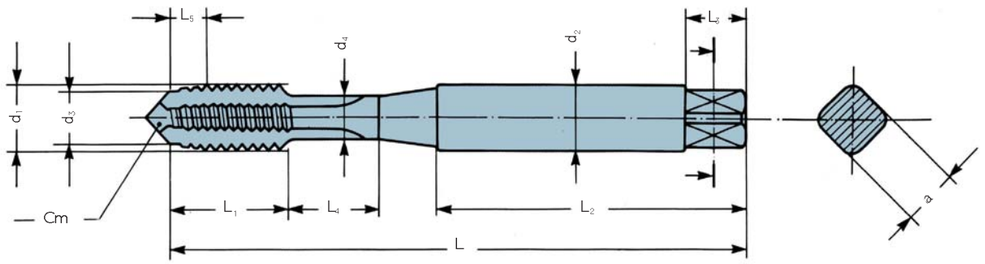


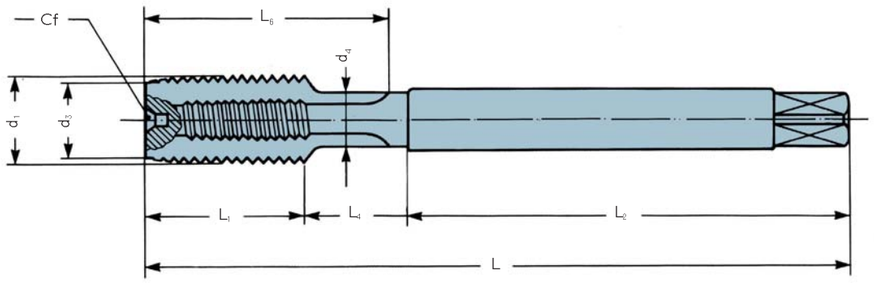
ϕd1 inch	×	P inch	l2	l1	d2	sq	Tapping drill diameter	EUROPA CODE
4	×	45	6	56	3.5	2.7	2.4	TM68160400
5	×	44	7	56	3.5	2.7	2.7	TM68160500
6	×	40	7	56	4	3	3	TM68160600
8	×	36	8	63	4.5	3.4	3.5	TM68160800
10	×	32	10	70	6	4.9	4.1	TM68161000
12	×	28	10	80	6	4.9	4.7	TM68161200
1/4	×	28	10	80	7	5.5	5.5	TM68169160
5/16	×	24	10	90	8	6.2	6.9	TM68169200
3/8	×	24	10	100	9	7	8.5	TM68169240
7/16	×	20	13	100	8	6.2	9.9	TM68169280
1/2	×	20	13	100	9	7	11.5	TM68169320
9/16	×	18	15	100	11	9	12.9	TM68169360
5/8	×	18	15	100	12	9	14.5	TM68169400
3/4	×	16	17	110	14	11	17.5	TM68169480
7/8	×	14	17	125	18	14.5	20.5	TM68169560
1”	×	12	20	140	20	16	23.25	TM68169640

DIN 371(NO.4-3/8) DIN 374(7/16-1”)

SUPER CUTTING TAPS

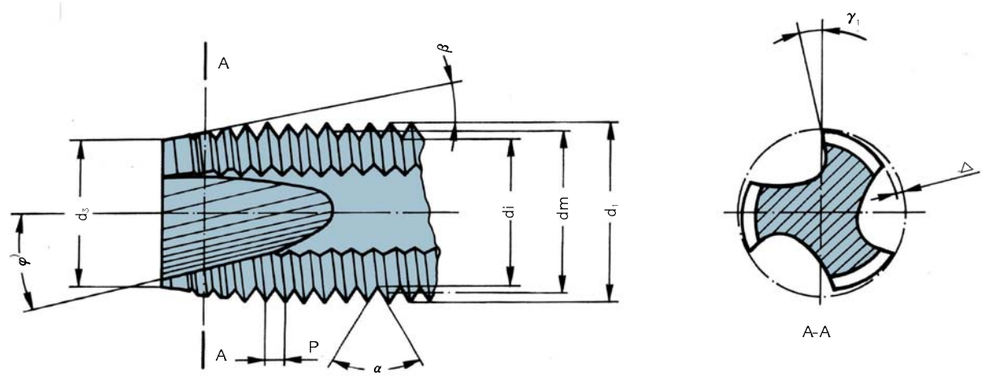
TECHNICAL INFORMATION

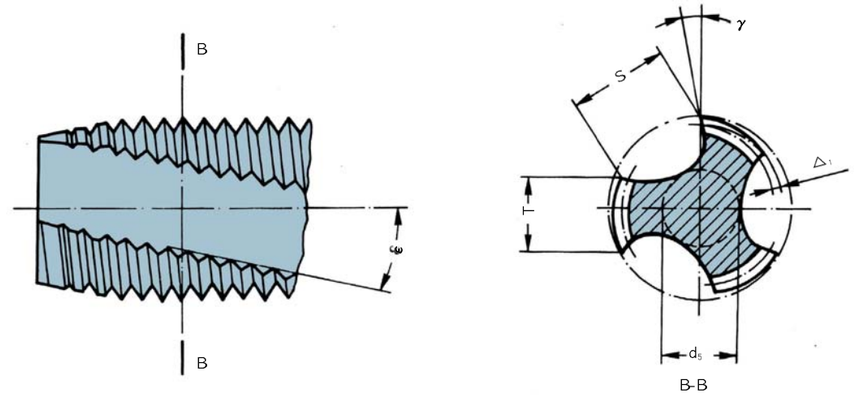




d_1	Major diameter	d_1	Diamètre externe nominal	d_1	Nenn Aussendurchmesser
d_2	Shank diameter	d_2	Diamètre de la queue	d_2	Schaftdurchmesser
d_3	Chamfer diameter	d_3	Diamètre de l'entrée	d_3	Anschnittdurchmesser
d_4	Neck diameter	d_4	Diamètre de la collerette de dégagement	d_4	Bunddurchmesser
L	Total length	L	Longueur totale	L	Gesamtlänge
L_1	Thread length	L_1	Longueur de la patie filetée	L_1	Gewindelänge
L_2	Shank length	L_2	Longueur de la queue	L_2	Schaftlänge
L_3	Square length	L_3	Longueur du carré	L_3	Vierkantlänge
L_4	Neck length	L_4	Longueur de la collerette de dégagement	L_4	Bundlänge
L_5	Chamfer length	L_5	Longueur de l'entrée	L_5	Anschnittlänge
L_6	Flutes length	L_6	Longueur des goujures	L_6	Nutenlänge
a	Square	a	Carré	a	Vierkantmaß
Cm	Center male	Cm	Centre mâle	Cm	Mittelpunkt des Aussengewindes
Cf	Center female	Cf	Centre femelle	Cf	Mittelpunkt des Innengewindes

TAPS TERMINOLOGY
TERMINOLOGIE DES TARAUDS
TECHNISCHE BEGRIFFE BEI GEWINDEBOHRERN





d_1	Major diameter	d_1	Diamètre externe nominal	d_1	Nenn Aussendurchmesser
dm	Flank diameter	dm	Diamètre moyen	dm	Flankendurchmesser
di	Minor diameter	di	Diamètre interne	di	Kerndurchmesser
d_3	Chamfer diameter	d_3	Diamètre de l'entrée	d_3	Anschnittdurchmesser
P	Pitch	P	Pas	P	Steigung
a	Flank angle	α	Angle du filet	a	Flankenwinkel
β	Chamfer angle	β	Demi-angle du cône d'entrée	β	Anschnittwinkel
φ	Gun nose angle	φ	Angle de l'entrée GUN	φ	Schälschnittwinkel
γ	Gun nose rake angle in front	γ_1	Angle de coupe sur l'entrée GUN	γ_1	Schälschnitt-Spanwinkel
$\triangle$	Chamfer relief	$\triangle$	Détalonnage sur l'entrée	$\triangle$	Hinterschliff am Anschnitt
$\triangle_1$	Pitch diameter relief on the land	$\triangle_1$	Détalonnage sur le filet	$\triangle_1$	Flankenhinterschliff auf Zahnbreite
γ	Rake angle	γ	Angle de coupe frontale	γ	Spanwinkel
T	Width of land	T	Largeur des dents	T	Zahnstollenbreite
S	Flute width	S	Largeur des goujoures	S	Nutenbreite
d_5	Web tickness	d_5	Diamètre de l'âme	d_5	Seelendicke
ε	Angle of spiral flute	ε	Angle d'hélice des goujures	ε	Spiralwinkel

DRILL SIZES BEFORE TAPPING

Metric-ISO threads coarse pitch				Metric-ISO threads fine pitch				Metric-ISO threads fine pitch			
M	Pitch mm.	Maximun core dia. mm.	Drill size mm.	MF	Pitch mm.	Maximun core dia. mm.	Drill size mm.	MF	Pitch mm.	Maximun core dia. mm.	Drill size mm.
1	0,25	0,785	0,75	2,5	0,35	2,221	2,15	25	2,00	23,210	23,00
1,1	0,25	0,885	0,85	3	0,35	2,271	2,65	26	1,50	24,676	24,50
1,2	0,25	0,985	0,95	3,5	0,35	3,221	3,15	27	1,00	26,153	26,00
1,4	0,30	1,160	1,10	4	0,50	3,599	3,50	27	1,50	25,676	25,50
1,6	0,35	1,321	1,25	4,5	0,50	4,099	4,00	27	2,00	25,210	25,00
1,7	0,35	1,346	1,30	5	0,50	4,599	4,50	28	1,00	27,153	27,00
1,8	0,35	1,521	1,45	5,5	0,50	5,099	5,00	28	1,50	26,676	26,50
2	0,40	1,679	1,60	6	0,75	5,378	5,20	28	2,00	26,210	26,00
2,2	0,45	1,838	1,75	7	0,75	6,378	6,20	30	1,00	29,153	29,00
2,3	0,40	1,920	1,90	8	0,75	7,378	7,20	30	1,50	28,676	28,50
2,5	0,45	2,138	2,05	8	1,00	7,153	7,00	30	2,00	28,210	28,00
2,6	0,45	2,176	2,10	9	0,75	8,378	8,20	30	3,00	27,252	27,00
3	0,50	2,599	2,50	9	1,00	8,153	8,00	32	1,50	30,675	30,50
3,5	0,60	3,010	2,90	10	0,75	9,378	9,20	32	2,00	30,210	30,00
4	0,70	3,422	3,30	10	1,00	9,153	9,00	33	1,50	31,676	31,50
4,5	0,75	3,878	3,70	10	1,25	8,912	8,80	33	2,00	31,210	31,00
5	0,80	4,334	4,20	11	0,75	10,378	10,20	33	3,00	30,252	30,00
6	1,00	5,153	5,00	11	1,00	10,153	10,00	35	1,50	33,676	33,50
7	1,00	6,153	6,00	12	1,00	11,153	11,00	36	1,50	34,676	34,50
8	1,25	6,912	6,80	12	1,25	10,912	10,80	36	2,00	34,210	34,00
9	1,25	7,912	7,80	12	1,50	10,676	10,50	36	3,00	33,252	33,00
10	1,50	8,676	8,50	14	1,00	13,153	13,00	38	1,50	36,676	36,50
11	1,50	9,676	9,50	14	1,25	12,912	12,80	39	1,50	37,676	37,50
12	1,75	10,441	10,20	14	1,50	12,676	12,50	39	2,00	37,210	37,00
14	2,00	12,210	12,00	15	1,00	14,153	14,00	39	3,00	36,252	36,00
16	2,00	14,210	14,00	15	1,50	13,676	13,50	40	1,50	38,676	38,50
18	2,50	15,744	15,50	16	1,00	15,153	15,00	40	2,00	38,210	38,00
20	2,50	17,744	17,50	16	1,50	14,676	14,50	40	3,00	37,252	37,00
22	2,50	19,744	19,50	17	1,00	16,153	16,00	42	1,50	40,676	40,50
24	3,00	21,252	21,00	17	1,50	15,676	15,50	42	2,00	40,210	40,00
27	3,00	24,252	24,00	18	1,00	17,153	17,00	42	3,00	39,252	39,00
30	3,50	26,771	26,50	18	1,50	16,676	16,50	45	1,50	43,676	43,50
33	3,50	29,771	29,50	18	2,00	16,210	16,00	45	2,00	43,210	43,00
36	4,00	32,270	32,00	20	1,00	19,153	19,00	45	3,00	42,252	42,00
39	4,00	35,270	35,00	20	1,50	18,676	18,50	48	1,50	46,676	46,50
42	4,50	37,799	37,50	20	2,00	18,210	18,00	48	2,00	46,210	46,00
45	4,50	40,799	40,50	22	1,00	21,153	21,00	48	3,00	45,252	45,00
48	5,00	43,297	43,00	22	1,50	20,676	20,50	50	1,50	48,676	48,50
52	5,00	47,297	47,00	22	2,00	20,210	20,00	50	2,00	48,210	48,00
56	5,50	50,796	50,50	24	1,00	23,153	23,00	50	3,00	47,252	47,00
60	5,50	54,796	54,50	24	1,50	22,676	22,50	52	1,50	50,676	50,50
64	6,00	58,305	58,00	24	2,00	22,210	22,00	52	2,00	50,210	50,00
68	6,00	62,305	62,00	25	1,00	24,153	24,00	52	3,00	49,252	49,00
				25	1,50	23,676	23,50				

METRIC ISO THREADS

Nominal dimensions UNI 4535-64
Production tolerances on tap flank diameter for ISO 6H Nut threads
Limit dimensions-Nut threads ISO 6H

Coarse pitch threads

Dimensions in mm

$H = 0{,}86603P$

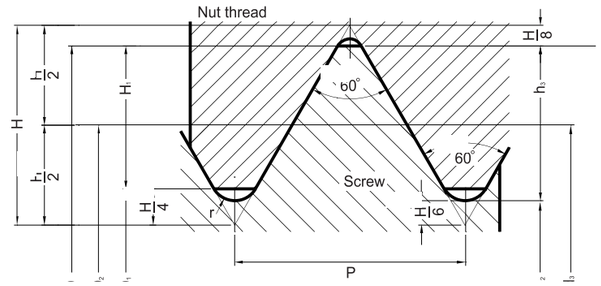
$H_1 = \frac{5}{8}H = 0{,}54127P$

$h_3 = \frac{17}{24}H = 0{,}61343P$

$d_2 = D_2 = d - \frac{3}{4}H = d - 0{,}64952P$

$d_3 = d - 2h_3 = d - 1{,}22687P$

$r = \frac{H}{6} = 0{,}14434P$



Nominal diameter	Pitch	Flank diameter	Minor diameter		Thread depth		Radius	Flank diameter Tap tolerance 6H d_2		Flank diameter Nut tolerance 6H	
			Screw	Nut	Screw	Nut					
d = D	P	$d_2 = D_2$	d_3	D_1	h_3	H_1	r	min.	max.	min.	max.
M 1,6	0,35	1,373	1,171	1,221	0,215	0,189	0,051	1,393	1,407	1,373	1,458
M 1,8	0,35	1,573	1,371	1,421	0,215	0,189	0,051	1,593	1,607	1,573	1,658
M 2	0,4	1,740	1,509	1,567	0,245	0,217	0,058	1,761	1,776	1,740	1,830
M 2,2	0,45	1,908	1,648	1,713	0,276	0,244	0,065	1,931	1,946	1,908	2,003
M 2,5	0,45	2,208	1,948	2,013	0,276	0,244	0,065	2,231	2,246	2,208	2,303
M 3	0,5	2,675	2,387	2,459	0,307	0,271	0,072	2,699	2,715	2,675	2,775
M 3,5	0,6	3,110	2,764	2,850	0,368	0,325	0,087	3,137	3,155	3,110	3,222
M 4	0,7	3,545	3,141	3,242	0,429	0,379	0,101	3,574	3,593	3,545	3,663
M 4,5	0,75	4,013	3,580	3,688	0,460	0,406	0,108	4,042	4,061	4,013	4,131
M 5	0,8	4,480	4,019	4,134	0,491	0,433	0,115	4,510	4,530	4,480	4,605
M 6	1	5,350	4,773	4,917	0,613	0,541	0,144	5,385	5,409	5,350	5,500
M 7	1	6,350	5,773	5,917	0,613	0,541	0,144	6,385	6,409	6,350	6,500
M 8	1,25	7,188	6,466	6,647	0,767	0,677	0,180	7,226	7,251	7,188	7,348
M 9	1,25	8,188	7,466	7,647	0,767	0,677	0,180	8,226	8,251	8,188	8,348
M 10	1,5	9,026	8,160	8,376	0,920	0,812	0,217	9,068	9,096	9,026	9,206
M 11	1,5	10,026	9,160	9,376	0,920	0,812	0,217	10,068	10,096	10,026	10,206
M 12	1,75	10,863	9,853	10,106	1,074	0,947	0,253	10,911	10,943	10,863	11,063
M 14	2	12,701	11,546	11,835	1,227	1,083	0,289	12,752	12,786	12,701	12,913
M 16	2	14,701	13,546	13,835	1,227	1,083	0,289	14,752	14,786	14,701	14,913
M 18	2,5	16,376	14,933	15,294	1,534	1,353	0,361	16,430	16,466	16,376	16,600
M 20	2,5	18,376	16,933	17,294	1,534	1,353	0,361	18,430	18,466	18,376	18,600
M 22	2,5	20,376	18,933	19,294	1,534	1,353	0,361	20,430	20,466	20,376	20,600
M 24	3	22,051	20,319	20,752	1,840	1,624	0,433	22,115	22,157	22,051	22,316
M 27	3	25,051	23,319	23,752	1,840	1,624	0,433	25,115	25,157	25,051	25,316
M 30	3,5	27,727	25,706	26,211	2,147	1,894	0,505	27,794	27,839	27,727	28,007
M 33	3,5	30,727	28,706	29,211	2,147	1,894	0,505	30,794	30,839	30,727	31,007
M 36	4	33,402	31,093	31,670	2,454	2,165	0,577	33,473	33,520	33,402	33,702
M 39	4	36,402	34,093	34,670	2,454	2,165	0,577	36,473	36,520	36,402	36,702
M 42	4,5	39,077	36,479	37,129	2,760	2,436	0,650	39,152	39,202	39,077	39,392
M 45	4,5	42,077	39,479	40,129	2,760	2,436	0,650	42,152	42,202	42,077	42,392
M 48	5	44,752	41,866	42,587	3,067	2,706	0,722	44,832	44,885	44,752	45,087
M 52	5	48,752	45,866	46,587	3,067	2,706	0,722	48,832	48,885	48,752	49,087
M 56	5,5	52,428	49,252	50,046	3,374	2,977	0,794	52,512	52,568	52,428	52,783
M 60	5,5	56,428	53,252	54,046	3,374	2,977	0,794	56,512	56,568	56,428	56,783
M 64	6	60,103	56,639	57,505	3,681	3,248	0,866	60,193	60,253	60,103	60,478
M 68	6	64,103	60,639	61,505	3,681	3,248	0,866	64,193	64,253	64,103	64,478
Metric thread MA(old UNI 159 Profile)										**Nut tolerance SH8**	
M 1,7	0,35	1,473	1,246	1,246	0,227	0,227	0,040	1,493	1,507	1,473	1,529
M 2,3	0,4	2,040	1,780	1,780	0,260	0,260	0,040	2,061	2,076	2,040	2,120
M 2,6	0,45	2,308	2,016	2,016	0,292	0,292	0,050	2,331	2,346	2,308	2,388

Trouble	Causes	Solutions
Tapped hole oversize	Incorrect tap in use (cutting geometry unsuitable for application)	Use tap selected from the relevant material group
	Faulty alignment	Ensure that the tap is correctly aligned with the core hole axis
	Cold welding	Improve lubrication and direction of coolant Adjust cutting speed
	Re-ground tap (lead-in is not concentric)	Regrind tap lead correctly on a suitable tap grinding machine

Trouble	Causes	Solutions
Stripped threads	Incorrect tap in use (cutting geometry incorrect for application	Use a tap from the relevant material group.
	Spindle speed and feed rate not synchronized	Check feed rate programming and / or pitch of leading spindle Use a tapping spindle with axial float
	Insufficient start pressure exerted on tap with peel-cut	Increase start pressure

Trouble	Causes	Solutions
Bell mouthed tapped hole	Incorrect start pressure applied to tap	Use a tapping spindle with axial float

Trouble	Causes	Solutions
Unsatisfactory thread surface finish	Incorrect tap in use (Cutting geometry unsuitable for application)	Select tap from the relevant material group
	The tap is blunt	Replace or re-grind tap
	Tap badly re-ground	Re-grind tap again. Check that cutting geometry is suitable for material
	Coolant lacking in lubricating qualities and / or quantity	Ensure the use of asuitable coolant and an ample supply

APPLICATION AND USE OF THREADING TAPS

Trouble	Causes	Solutions
Partial chipping of tap	Swarf jamming	Check cutting speed Use alternative tap type
	Tap has jammed against bottom of core hole	Check hole and thread depths Drill core hole deeper
	Tap incorrectly re-ground (lead-in diameter too small therefore too few cutting teeth)	Ensure that original values ore maintained when regrinding
	Irregular workpiece material structure	Adjust cutting speed Improve lubricating quality of coolant

Trouble	Causes	Solutions
Excessive tap wear	Incorrect cutting speed	Adjust cutting speed to suit workpiece material
	Coolant lacking in lubricating qualities and / or quantity	Ensure the use of a suitable coolant and an ample supply Check that coolant is reaching the cutting zone
	Surface of the core hole is compacted	Check core hole drilling conditions (drill carefully to reduce risk of surface compacting) Check drill cutting edges

Trouble	Causes	Solutions
Tap breakage	Incorrect tap in use (cutting geometry unsuitable for application)	Use tap from the relevant material group
	Centering error	Ensure that axes of tap and core hole are aligned
	Blunt tap	Re-grind tap Ensure that taps are stored carefully
	Tap has reached bottom of core hole	Use tapping spindle with axial float and slipping clutch
	Core hole too small	Select core hole as per chart, pages 142～143 of this catalogue