

HOLEMAKING



HOLEMAKING



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Guide to Icons



➤ External Coolant



➤ Internal Coolant



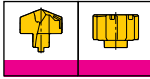
➤ Through Hole



➤ Blind Hole



➤ Tube Page



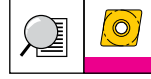
[➤ Head Page](#)



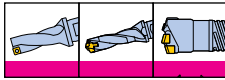
➤ Pad Page



➤ Cartridge Page



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➤ Assembly
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➤ Technical Data Page



➤ Cutting Condition
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Reaming Tools

TS-REAM	D213
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TB-REAM	D217

Reaming Heads & Blades

D220

Recommended Cutting Conditions (Reaming)

D223

Technical Data

D230

Tailor-made Order Form

D238

Tool Selection Guide

Drilling tools

Series			Indexable drill				
			TOPDRILL		TDRILL		TDEEP
			TOP 2/3/4/5	TOP-CA	TDR 2/3/4/5	TDR-CA	TRGD
							
Pages			D16 - D27	D28 - D31	D32 - D44	D45 - D47	D139 - D144
DC(mm)			Ø12.0 - Ø50.0	Ø51.0 - Ø80.0	Ø12.5 - Ø50.0	Ø51.0 - Ø80.0	Ø14.0 - Ø36.0
Drilling depth(L/D)			2, 3, 4, 5 x Dc	2, 3, 4 x Dc	2, 3, 4, 5 x Dc	2.5, 3.5 x Dc	10-25 x Dc
Hole tolerance			IT 11-13	IT 12-13	IT 12-13	IT 12-13	IT 10-11
Application	General drilling		●	●	●	●	●
	Cross hole drilling		●	●	●	●	○
	Irregular surface drilling		○	○	○	○	
	Interrupted drilling		○	○	○	○	
	Chamfering						
Coolant supply			Internal	Internal	Internal	Internal	Internal

Tool Selection Guide

Drilling tools

Head changeable drill					Solid carbide drill
DRILLSPEED	DRILLRUSH		MODURDRILL	SPADERUSH	SOLID3DRILL
3ED	TCD	TCD-M	TNDH-TP/ MDB	LCD	3HD
					
D49 - D50	D51 - D59	D60	D62 - D65	D66 - D68	D69 - D70
Ø16.0 - Ø20.9	Ø6.0 - Ø25.9	M8 - M24 (ISO)	Ø26.0 - Ø50.0	Ø20.0 - Ø41.0	Ø4.0 - Ø12.0
3, 5 x Dc	1.5, 3, 5, 8, 12 x Dc		3, 5 x Dc	3, 5, 8 x Dc	3, 5 x Dc
IT 9-10	IT 9-10	IT 9-10	IT 10-12	IT 9-10	IT 8-10
●	●	●	●	●	●
○	●		●	●	●
		●			
Internal	Internal	Internal	Internal	Internal	Internal

● Recommended, ○ Suitable

Tool Selection Guide

Drilling tools

Series			Solid carbide drill				Multi-function tool
			H ^{DRILL}				TOP ^{CAP}
			NHD-PE/PI	SHO 10/15/20	SHO-M	CDF	TCAP
							
Pages			D71 - D82	D84	D85	D86	D89 - D93
DC(mm)			Ø3.0 - Ø12.0	Ø4.0 - Ø10.0	M4 - M10 (ISO)	Ø3.0 - Ø12.7	Ø8.0 - Ø32.0
Drilling depth(L/D)			3, 5 x Dc	10, 15, 20 x Dc			2.25, 3 x Dc
Hole tolerance			IT 8-10	IT 8-10	IT 8-10	IT 8-10	IT 10-12
Application	General drilling		●	●	●	●	●
	Cross hole drilling		●	○			
	Irregular surface drilling						●
	Interrupted drilling						
	Chamfering				●		
Coolant supply			External / Internal	Internal	Internal	External	Internal

● Recommended, ○ Suitable

Tool Selection Guide

Deep drilling tools

Series		Indexable deep drill head				
		TDEEP				
		TBTA3	TBTA5	TBTA7	TBTA9	TBTA-FB
						
Pages		D95 - D100	D101 - D104	D105 - D107	D108 - D110	D111 - D115
DC(mm)		Ø38.00 - Ø106.99	Ø107.00 - Ø168.99	Ø169.00 - Ø232.99	Ø233.00 - Ø291.99	Ø25.00 - Ø65.00
Drilling depth(L/D)		100 x Dc	100 x Dc	100 x Dc	100 x Dc	100 x Dc
Hole tolerance		IT 10	IT 10	IT 10	IT 10	IT 10
Surface finish		3µm	3µm	3µm	3µm	3µm
Single tube	Outer four thread	●	●	●	●	●
	Inner single thread	●	●	● ★	●	●
Double tube	Outer four thread	●	●			●

★ In case of inner single thread connection TBTA7 series can cover up to dia. 245.99mm

Series		Indexable deep drill & boring head		Brazed deep drill head	
		TDEEP			
		TBTA-TR	TBTA-R	BTA-SE/DE	BTS-SE
					
Pages		D122 - D125	D116 - D121	D126 - D128	D129
DC(mm)		Ø16.00 - Ø28.00	Ø25.00 - Ø110.99	Ø12.60 - Ø65.00	Ø8.00 - Ø20.00
Drilling depth(L/D)		100 x Dc	100 x Dc	100 x Dc	100 x Dc
Hole tolerance		IT 10	IT 7 - IT 9	IT 9	IT 9
Surface finish		3µm	1-2µm	2µm	2µm
Single tube	Outer four thread	●	●	●	●★
	Inner single thread	●	●		
Double tube	Outer four thread	●		●	

★ Two start thread: Diameter 12.60 to 15.59mm

● Recommended

Tool Selection Guide

Reaming tools

Series				Solid reamer	Indexable reamer	
				<i>TSREAM</i>	<i>TMREAM</i>	<i>TBREAM</i>
				TS 	TM 	TB 
Pages				D213 - D214	D215 - D216	D217 - D219
DC(mm)				Ø3.000 - Ø12.000	Ø11.501 - Ø32.000	Ø8.000 - Ø32.000
Reaming depth(L/D)				7.5-10 x Dc	3, 5, 8 x Dc	5-9 x Dc
Hole tolerance				IT 7	IT 7 ★	IT 6 ★★
Application		Through	Blind			
	General reaming			●	●	●
	Cross hole reaming			●		●
	Irregular surface reaming			●		●
	Interrupted reaming			●	●	●
Coolant supply				Internal	Internal	Internal

★ Up to IT 6 tolerance ★★ Up to IT 5 tolerance

● Recommended

Tool Selection Guide

Drill inserts

			TOPDRILL	TDRILL	DRILLSPEED	DRILLRUSH	
Series			SOMT	SPMG	3ED-P+	TCD-P/M/K/N	TCD-P+
							
Pages			D146 - D147	D148 - D149	D149	D150 - D156	D157 - D158
Size			04/05/06/07/08 09/11/13/15	05/06/07/09 11/12/14	Ø16.0 - Ø20.5	Ø6.0 - Ø25.9	Ø6.0 - Ø25.9
Chip former			DP, DK, DL, DA	DG, DK, DA	P+	P/M/K/N	P+
Grades			TT9080, TT9300 TT8020, TT6080 K10	TT9030, TT8020 TT7400, TT6030 K10	TT5130	TT9080 UF10	TT9080
Application	General drilling		●	●	●	●	●
	Cross hole drilling		●	●	●	●	●
	Irregular surface drilling		○	○	○	○	○
	Interrupted drilling		○	○			
	Chamfering						

● Recommended, ○ Suitable

Tool Selection Guide

Drill inserts

Series			DRILLRUSH			MODURDRILL	
			TCD-F	TCD-P2	AOMT	TCD-P-CO+	SPGX...DW
							
Pages			D159 - D160	D161	D162	D163	D163
Size			Ø8.0 - Ø25.5	Ø8.0 - Ø19.5	06 - C45	Ø15.9 - Ø25.9	06/07/09/11/14
Chip former			F	P2	-	P-CO+	DW
Grades			TT9080	TT9080	TT9080	TT9080	TT9080
Application	General drilling		●	●		●	●
	Cross hole drilling		●	●		●	●
	Irregular surface drilling		○	○		○	○
	Interrupted drilling						
	Chamfering				●		

Tool Selection Guide

Drill inserts

SPADERUSH		DRILLRUSH	TCHAMFER	TOPCAP
LCD-P	LCD-F	CRNG	XCGT	XCGT XCMT
				
D164 - D165	D165 - D166	D162	D167	D168 - D169
Ø20.0 - Ø41.0	Ø20.0 - Ø41.0	08 - 45CD	06/09	04/05/06/07/08 10/13/17
P	F	-	C30/C45/C60	TA/GV/TC
TT9080	TT9080	TT9080	TT9050	TT9080, TT8020, TT9030, K10
●				●
●				
○				
	●		●	

● Recommended, ○ Suitable

Tool Selection Guide

Drill inserts

			TDEEP			
Series			NPHT NPMT	NPMX TPMX	TOGT	TPMX XPMT
						
Pages			D170 - D171	D172	D173	D174
Size			05/06/07/08/09 /11/12/13	08/14/17/24/28	07/08/09/10/11/12	14/16/17/24
Chip former			RG/LG	RB/RG	RS/GF	LG/-45
Grades			TT9030, TT6020, TT8125	TT9030, TT8125, TT7400, TT9300, TT7100, TT3500	TT9030	TT9030
Application	General drilling		●	●	●	●
	Cross hole drilling		○	○		○
	Irregular surface drilling					
	Interrupted drilling					
	Chamfering					

Tool Selection Guide

Reamer heads & blades

					
Series				TM 	TB 
Pages				D220 - D221	D222
Size				Ø11.501 - Ø32.000	1/2/3/4
Chip former				BL/AS	A06/B06/B12
Grades				TT9030	TT5030, TT5050
Application		Through	Blind		
	General reaming			●	●
	Cross hole reaming				
	Irregular surface reaming				
	Interrupted reaming				

● Recommended, ○ Suitable

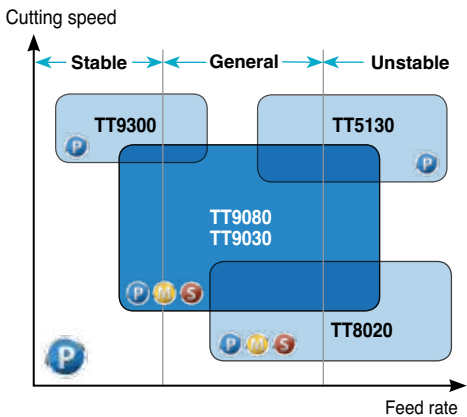
Grades

Holemaking grades

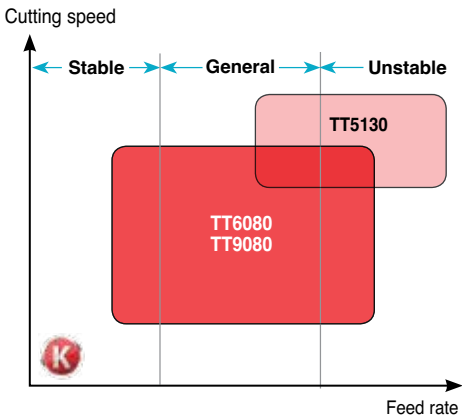
Grades	ISO	Characteristics & applications
TT6080 PVD carbide	K05 – K25 H05 – H25	- General machining for gray and ductile cast iron - Finish and medium machining of hardened steel
TT9300 CVD carbide	P10 – P25	High speed drilling of carbon & alloy steel
TT5130 PVD carbide	P20 – P40 K20 – K40	High speed drilling of carbon & alloy steel
TT9080 PVD carbide	P20 – P40 M20 – M40 S20 – S40	- General machining of steel - General machining of stainless steel - General machining of heat-resistant alloy
TT9030 PVD carbide	P20 – P40 M20 – M40 S20 – S40	- General machining of steel - General machining of stainless steel - General machining of heat-resistant alloy
TT8020 PVD carbide	P30 – P50 M30 – M50 S30 – S50	- Interrupted and rough machining of steel - Interrupted and rough machining of stainless steel - Low speed and interrupted machining of heat-resistant alloy
K10 Uncoated	K05 – K15 N05 – N15 S05 – S15	- General machining of cast iron - General machining of aluminum alloys and non-ferrous materials - General machining of heat-resistant alloy
UF1A/UF10 Uncoated	N10 – N25 S10 – S30	- General machining of aluminum alloys and non-ferrous materials - General machining of heat-resistant alloy

Selection guide for holemaking grades

For steel



For cast iron



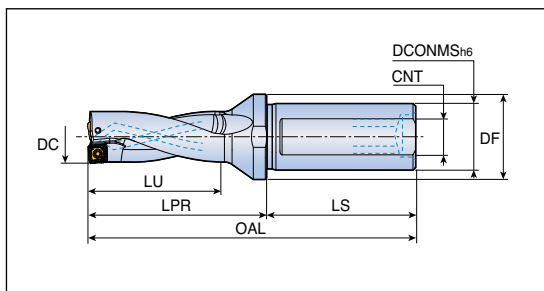
Drilling Tools



Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 2120-20T2-04	12.0	20	25	24	44	50	M13X1.0	SOMT 04...DP
2125-20T2-04	12.5	20	25	26	46	50	M13X1.0	D146
2130-20T2-04	13.0	20	25	26	46	50	M13X1.0	
2135-20T2-04	13.5	20	25	28	46	50	M13X1.0	D146-147
2140-20T2-05	14.0	20	25	28	46	50	M13X1.0	
2145-20T2-05	14.5	20	25	30	49	50	M13X1.0	
2150-20T2-05	15.0	20	25	30	49	50	M13X1.0	
2155-20T2-05	15.5	20	25	32	52	50	M13X1.0	
2160-20T2-05	16.0	20	25	32	52	50	M13X1.0	D146-147
2165-25T2-06	16.5	25	32	34	54	56	M16X1.5	
2170-25T2-06	17.0	25	32	34	54	56	M16X1.5	
2175-25T2-06	17.5	25	32	36	57	56	M16X1.5	
2180-25T2-06	18.0	25	32	36	57	56	M16X1.5	
2185-25T2-06	18.5	25	32	38	59	56	M16X1.5	D146-147
2190-25T2-06	19.0	25	32	38	59	56	M16X1.5	
2195-25T2-07	19.5	25	32	40	63	56	M16X1.5	
2200-25T2-07	20.0	25	32	40	63	56	M16X1.5	
2205-25T2-07	20.5	25	32	42	65	56	M16X1.5	
2210-25T2-07	21.0	25	32	42	65	56	M16X1.5	D146-147
2215-25T2-07	21.5	25	32	44	67	56	M16X1.5	
2220-25T2-07	22.0	25	32	44	67	56	M16X1.5	
2225-25T2-08	22.5	25	32	46	68	56	M16X1.5	
2230-25T2-08	23.0	25	32	46	68	56	M16X1.5	
2230-32T2-08	23.0	32	40	46	68	60	M22X2.0	D146-147
2235-25T2-08	23.5	25	32	48	70	56	M16X1.5	
2235-32T2-08	23.5	32	40	48	70	60	M22X2.0	
2240-25T2-08	24.0	25	32	48	70	56	M16X1.5	
2240-32T2-08	24.0	32	40	48	70	60	M22X2.0	
2245-25T2-08	24.5	25	32	50	72	56	M16X1.5	D146-147
2245-32T2-08	24.5	32	40	50	72	60	M22X2.0	
2250-25T2-08	25.0	25	32	50	72	56	M16X1.5	
2250-32T2-08	25.0	32	40	50	72	60	M22X2.0	
2255-25T2-08	25.5	25	32	52	73	56	M16X1.5	
2255-32T2-08	25.5	32	40	52	73	60	M22X2.0	D146-147
2260-25T2-08	26.0	25	32	52	73	56	M16X1.5	
2260-32T2-08	26.0	32	40	52	73	60	M22X2.0	

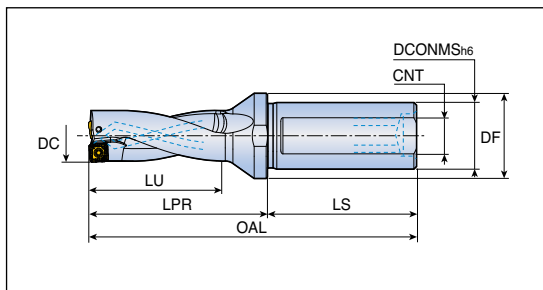
• OAL = LPR + LS



Indexable drill holders



- Drilling depth: 2xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 2265-32T2-09	26.5	32	40	54	77	60	M22X2.0	SOMT 09...DP/DL/DK/DA D146-147
2270-25T2-09	27.0	25	40	54	77	56	M16X1.5	
2270-32T2-09	27.0	32	40	54	77	60	M22X2.0	
2275-32T2-09	27.5	32	40	56	79	60	M22X2.0	
2280-25T2-09	28.0	25	40	56	79	56	M16X1.5	
2280-32T2-09	28.0	32	40	56	79	60	M22X2.0	
2285-32T2-09	28.5	32	40	58	81	60	M22X2.0	
2290-25T2-09	29.0	25	40	58	81	56	M16X1.5	
2290-32T2-09	29.0	32	40	58	81	60	M22X2.0	
2295-32T2-09	29.5	32	40	60	83	60	M22X2.0	
2300-32T2-09	30.0	32	40	60	83	60	M22X2.0	SOMT 11...DP/DL/DK/DA D146-147
2305-32T2-09	30.5	32	40	62	85	60	M22X2.0	
2310-32T2-09	31.0	32	40	62	85	60	M22X2.0	
2320-32T2-11	32.0	32	40	64	87	60	M22X2.0	
2320-40T2-11	32.0	40	50	64	87	70	M30X2.0	
2330-32T2-11	33.0	32	40	66	89	60	M22X2.0	
2330-40T2-11	33.0	40	50	66	89	70	M30X2.0	
2340-32T2-11	34.0	32	40	68	91	60	M22X2.0	
2340-40T2-11	34.0	40	50	68	91	70	M30X2.0	
2350-32T2-11	35.0	32	40	70	93	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
2350-40T2-11	35.0	40	50	70	93	70	M30X2.0	
2360-32T2-11	36.0	32	40	72	95	60	M22X2.0	
2360-40T2-11	36.0	40	50	72	95	70	M30X2.0	
2370-32T2-13	37.0	32	50	74	102	60	M22X2.0	
2370-40T2-13	37.0	40	50	74	102	70	M30X2.0	
2380-32T2-13	38.0	32	50	76	104	60	M22X2.0	
2380-40T2-13	38.0	40	50	76	104	70	M30X2.0	
2390-32T2-13	39.0	32	50	78	106	60	M22X2.0	
2390-40T2-13	39.0	40	50	78	106	70	M30X2.0	
2400-32T2-13	40.0	32	50	80	108	60	M22X2.0	
2400-40T2-13	40.0	40	50	80	108	70	M30X2.0	
2410-40T2-13	41.0	40	50	82	110	70	M30X2.0	
2420-40T2-13	42.0	40	50	84	112	70	M30X2.0	
2430-40T2-13	43.0	40	50	86	114	70	M30X2.0	

- OAL = LPR+LS

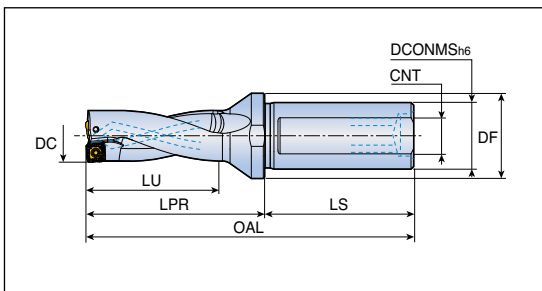


TOP 2...-T2

Indexable drill holders



- Drilling depth: $2 \times \text{diameter}$

[illegible]

- $OAL = LPR + LS$

Spare parts

Designation	Screw	Wrench	Plug*	
				
TOP 2120 - 2135	TS 18041I/HG	TD 6P	SL 20M	
TOP 2140 - 2160	TS 20043I/HG-P	TD 6P	SL 20M	
TOP 2165 - 2220	TS 22052I/HG-P	TD 7P	SL 25M	
TOP 2225 - 2260	SO 25065I	TD 7	SL 25M / SL 32M	
TOP 2265 - 2360	TS 35088I	TD 10	SL 25M / SL 32M / SL 40M	
TOP 2370 - 2430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 2440 - 2550	TS 50115I	TD 20	SL 40M	

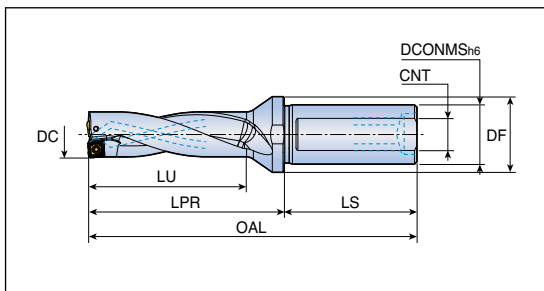


- *Notice: Cooling hole plug for lathe should be ordered separately
Order example) Plug for shank diameter 25.0mm : SL 25M

Indexable drill holders



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 3120-20T2-04	12.0	20	25	36	56	50	M13X1.0	SOMT 04...DP
3125-20T2-04	12.5	20	25	39	59	50	M13X1.0	D146
3130-20T2-04	13.0	20	25	39	59	50	M13X1.0	
3135-20T2-04	13.5	20	25	42	60	50	M13X1.0	
3140-20T2-05	14.0	20	25	42	60	50	M13X1.0	
3145-20T2-05	14.5	20	25	45	64	50	M13X1.0	SOMT 05...DP/DL/DK/DA D146-147
3150-20T2-05	15.0	20	25	45	64	50	M13X1.0	
3155-20T2-05	15.5	20	25	48	68	50	M13X1.0	
3160-20T2-05	16.0	20	25	48	68	50	M13X1.0	
3165-25T2-06	16.5	25	32	51	71	56	M16X1.5	SOMT 06...DP/DL/DK/DA D146-147
3167-25T2-06 *	16.7	25	32	51	71	56	M16X1.5	
3170-25T2-06	17.0	25	32	51	71	56	M16X1.5	
3175-25T2-06	17.5	25	32	54	75	56	M16X1.5	
3180-25T2-06	18.0	25	32	54	75	56	M16X1.5	SOMT 07...DP/DL/DK/DA D146-147
3185-25T2-06	18.5	25	32	57	78	56	M16X1.5	
3190-25T2-06	19.0	25	32	57	78	56	M16X1.5	
3195-25T2-07	19.5	25	32	60	83	56	M16X1.5	
3200-25T2-07	20.0	25	32	60	83	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
3205-25T2-07	20.5	25	32	63	86	56	M16X1.5	
3210-25T2-07	21.0	25	32	63	86	56	M16X1.5	
3215-25T2-07	21.5	25	32	66	89	56	M16X1.5	
3220-25T2-07	22.0	25	32	66	89	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
3222-25T2-07 *	22.2	25	32	66	89	56	M16X1.5	
3225-25T2-08	22.5	25	32	69	91	56	M16X1.5	
3230-25T2-08	23.0	25	32	69	91	56	M16X1.5	
3230-32T2-08	23.0	32	40	69	91	60	M22X2.0	SOMT 08...DP/DL/DK/DA D146-147
3235-25T2-08	23.5	25	32	72	94	56	M16X1.5	
3235-32T2-08	23.5	32	40	72	94	60	M22X2.0	
3240-25T2-08	24.0	25	32	72	94	56	M16X1.5	
3240-32T2-08	24.0	32	40	72	94	60	M22X2.0	SOMT 08...DP/DL/DK/DA D146-147
3245-25T2-08	24.5	25	32	75	97	56	M16X1.5	
3245-32T2-08	24.5	32	40	75	97	60	M22X2.0	
3250-25T2-08	25.0	25	32	75	97	56	M16X1.5	
3250-32T2-08	25.0	32	40	75	97	60	M22X2.0	
3254-25T2-08 *	25.4	25	32	75	97	56	M16X1.5	

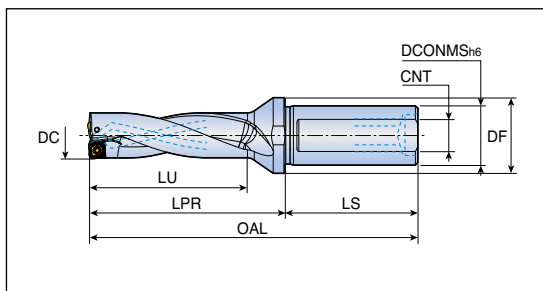


- '*' Marked items are for inch sized hole
- OAL = LPR+LS

Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 3255-25T2-08	25.5	25	32	78	99	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
3255-32T2-08	25.5	32	40	78	99	60	M22X2.0	
3260-25T2-08	26.0	25	32	78	99	56	M16X1.5	
3260-32T2-08	26.0	32	32	78	99	60	M22X2.0	SOMT 09...DP/DL/DK/DA D146-147
3265-25T2-09	26.5	25	40	81	104	56	M16X1.5	
3265-32T2-09	26.5	32	40	81	104	60	M22X2.0	
3270-25T2-09	27.0	25	40	81	104	56	M16X1.5	SOMT 11...DP/DL/DK/DA D146-147
3270-32T2-09	27.0	32	40	81	104	60	M22X2.0	
3275-25T2-09	27.5	25	40	84	107	56	M16X1.5	
3275-32T2-09	27.5	32	40	84	107	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
3280-25T2-09	28.0	25	40	84	107	56	M16X1.5	
3280-32T2-09	28.0	32	40	84	107	60	M22X2.0	
3285-25T2-09	28.5	25	40	87	110	56	M16X1.5	SOMT 13...DP/DL/DK/DA D146-147
3285-32T2-09	28.5	32	40	87	110	60	M22X2.0	
3290-25T2-09	29.0	25	40	87	110	56	M16X1.5	
3290-32T2-09	29.0	32	40	87	110	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
3295-32T2-09	29.5	32	40	90	113	60	M22X2.0	
3300-32T2-09	30.0	32	40	90	113	60	M22X2.0	
3305-32T2-09	30.5	32	40	93	116	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
3310-32T2-09	31.0	32	40	93	116	60	M22X2.0	
3320-32T2-11	32.0	32	40	96	119	60	M22X2.0	
3320-40T2-11	32.0	40	50	96	119	70	M30X2.0	SOMT 13...DP/DL/DK/DA D146-147
3330-32T2-11	33.0	32	40	99	122	60	M22X2.0	
3330-40T2-11	33.0	40	50	99	122	70	M30X2.0	
3340-32T2-11	34.0	32	40	102	125	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
3340-40T2-11	34.0	40	50	102	125	70	M30X2.0	
3350-32T2-11	35.0	32	40	105	128	60	M22X2.0	
3350-40T2-11	35.0	40	50	105	128	70	M30X2.0	SOMT 13...DP/DL/DK/DA D146-147
3360-32T2-11	36.0	32	40	108	131	60	M22X2.0	
3360-40T2-11	36.0	40	50	108	131	70	M30X2.0	
3370-32T2-13	37.0	32	50	111	139	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
3370-40T2-13	37.0	40	50	111	139	70	M30X2.0	
3380-32T2-13	38.0	32	50	114	142	60	M22X2.0	
3380-40T2-13	38.0	40	50	114	142	70	M30X2.0	SOMT 13...DP/DL/DK/DA D146-147
3390-32T2-13	39.0	32	50	117	145	60	M22X2.0	
3390-40T2-13	39.0	40	50	117	145	70	M30X2.0	

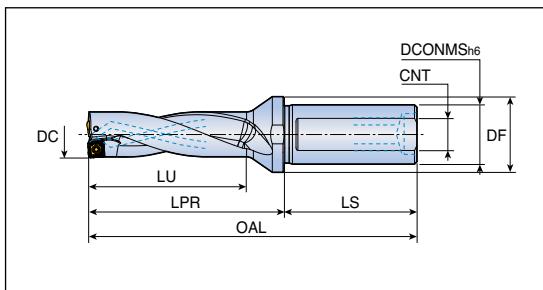
• OAL = LPR + LS



Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 3390-40T2-13	39.0	40	50	117	145	70	M30X2.0	SOMT 13...DP/DL/DK/DA D146-147
3400-32T2-13	40.0	32	50	120	148	60	M22X2.0	
3400-40T2-13	40.0	40	50	120	148	70	M30X2.0	
3410-40T2-13	41.0	40	50	123	151	70	M30X2.0	
3420-40T2-13	42.0	40	50	126	154	70	M30X2.0	
3430-40T2-13	43.0	40	50	129	157	70	M30X2.0	SOMT 15...DP/DL/DK/DA D146-147
3440-40T2-15	44.0	40	60	132	167	70	M30X2.0	
3450-40T2-15	45.0	40	60	135	170	70	M30X2.0	
3460-40T2-15	46.0	40	60	138	173	70	M30X2.0	
3470-40T2-15	47.0	40	60	141	176	70	M30X2.0	
3480-40T2-15	48.0	40	60	144	179	70	M30X2.0	
3490-40T2-15	49.0	40	60	147	182	70	M30X2.0	
3500-40T2-15	50.0	40	60	150	185	70	M30X2.0	

- OAL = LPR + LS

Spare parts

Designation	Screw	Wrench	Plug*	
TOP 3120 - 3135	TS 18041/HG	TD 6P	SL 20M	
TOP 3140 - 3160	TS 200431/HG-P	TD 6P	SL 20M	
TOP 3165 - 3220	TS 220521/HG-P	TD 7P	SL 25M	
TOP 3225 - 3260	SO 25065I	TD 7	SL 25M / SL 32M	
TOP 3265 - 3360	TS 35088I	TD 10	SL 25M / SL 32M / SL 40M	
TOP 3370 - 3430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 3440 - 3500	TS 50115I	TD 20	SL 40M	

- *Notice: Cooling hole plug for lathe should be ordered separately
Order example) Plug for shank diameter 25.0mm : SL 25M

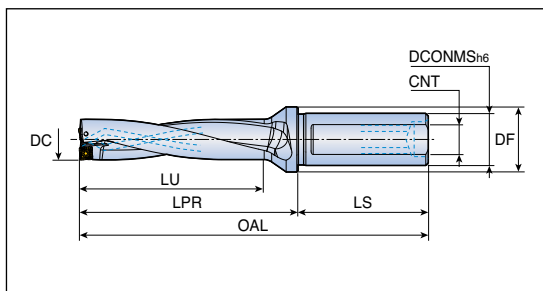


TOP 4...-T2

Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 4120-20T2-04	12.0	20	25	48	68	50	M13X1.0	SOMT 04...DP
4125-20T2-04	12.5	20	25	52	72	50	M13X1.0	D146
4130-20T2-04	13.0	20	25	52	72	50	M13X1.0	
4135-20T2-04	13.5	20	25	56	74	50	M13X1.0	
4140-20T2-05	14.0	20	25	56	74	50	M13X1.0	
4145-20T2-05	14.5	20	25	60	79	50	M13X1.0	SOMT 05...DP/DL/DK/DA D146-147
4150-20T2-05	15.0	20	25	60	79	50	M13X1.0	
4155-20T2-05	15.5	20	25	64	84	50	M13X1.0	
4160-20T2-05	16.0	20	25	64	84	50	M13X1.0	
4165-25T2-06	16.5	25	32	68	88	56	M16X1.5	SOMT 06...DP/DL/DK/DA D146-147
4170-25T2-06	17.0	25	32	68	88	56	M16X1.5	
4175-25T2-06	17.5	25	32	72	93	56	M16X1.5	
4180-25T2-06	18.0	25	32	72	93	56	M16X1.5	
4185-25T2-06	18.5	25	32	76	97	56	M16X1.5	SOMT 07...DP/DL/DK/DA D146-147
4190-25T2-06	19.0	25	32	76	97	56	M16X1.5	
4195-25T2-07	19.5	25	32	80	103	56	M16X1.5	
4200-25T2-07	20.0	25	32	80	103	56	M16X1.5	
4205-25T2-07	20.5	25	32	84	107	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
4210-25T2-07	21.0	25	32	84	107	56	M16X1.5	
4215-25T2-07	21.5	25	32	88	111	56	M16X1.5	
4220-25T2-07	22.0	25	32	88	111	56	M16X1.5	
4225-25T2-08	22.5	25	32	92	114	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
4230-25T2-08	23.0	25	32	92	114	56	M16X1.5	
4230-32T2-08	23.0	32	40	92	114	60	M22X2.0	
4235-25T2-08	23.5	25	32	96	118	56	M16X1.5	
4235-32T2-08	23.5	32	40	96	118	60	M22X2.0	SOMT 08...DP/DL/DK/DA D146-147
4240-25T2-08	24.0	25	32	96	118	56	M16X1.5	
4240-32T2-08	24.0	32	40	96	118	60	M22X2.0	
4245-25T2-08	24.5	25	32	100	122	56	M16X1.5	
4245-32T2-08	24.5	32	40	100	122	60	M22X2.0	SOMT 08...DP/DL/DK/DA D146-147
4250-25T2-08	25.0	25	32	100	122	56	M16X1.5	
4250-32T2-08	25.0	32	40	100	122	60	M22X2.0	
4254-25T2-08 *	25.4	25	32	100	122	56	M16X1.5	
4255-25T2-08	25.5	25	32	104	125	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
4255-32T2-08	25.5	32	40	104	125	60	M22X2.0	

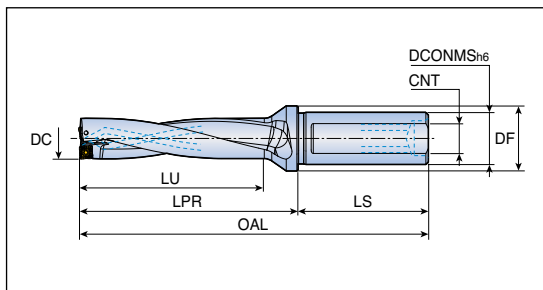


- '*' Marked items are for inch sized hole
- OAL = LPR + LS

Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 4260-25T2-08	26.0	25	32	104	125	56	M16X1.5	SOMT 08...DP/DL/DK/DA D146-147
4260-32T2-08	26.0	32	40	104	125	60	M22X2.0	
4265-25T2-09	26.5	25	40	108	131	56	M16X1.5	
4265-32T2-09	26.5	32	40	108	131	60	M22X2.0	
4270-25T2-09	27.0	25	40	108	131	56	M16X1.5	
4270-32T2-09	27.0	32	40	108	131	60	M22X2.0	
4275-25T2-09	27.5	25	40	112	135	56	M16X1.5	
4275-32T2-09	27.5	32	40	112	135	60	M22X2.0	
4280-25T2-09	28.0	25	40	112	135	56	M16X1.5	
4280-32T2-09	28.0	32	40	112	135	60	M22X2.0	
4285-25T2-09	28.5	25	40	116	139	56	M16X1.5	SOMT 09...DP/DL/DK/DA D146-147
4285-32T2-09	28.5	32	40	116	139	60	M22X2.0	
4286-32T2-09 *	28.6	32	40	116	139	60	M22X2.0	
4290-25T2-09	29.0	25	40	116	139	56	M16X1.5	
4290-32T2-09	29.0	32	40	116	139	60	M22X2.0	
4295-32T2-09	29.5	32	40	120	143	60	M22X2.0	
4300-32T2-09	30.0	32	40	120	143	60	M22X2.0	
4305-32T2-09	30.5	32	40	124	147	60	M22X2.0	
4310-32T2-09	31.0	32	40	124	147	60	M22X2.0	
4318-32T2-11 *	31.8	32	40	128	151	60	M22X2.0	SOMT 11...DP/DL/DK/DA D146-147
4320-32T2-11	32.0	32	40	128	151	60	M22X2.0	
4320-40T2-11	32.0	40	50	128	151	70	M30X2.0	
4330-32T2-11	33.0	32	40	132	155	60	M22X2.0	
4330-40T2-11	33.0	40	50	132	155	70	M30X2.0	
4340-32T2-11	34.0	32	40	136	159	60	M22X2.0	
4340-40T2-11	34.0	40	50	136	159	70	M30X2.0	
4349-40T2-11 *	34.9	40	50	140	163	70	M30X2.0	
4350-32T2-11	35.0	32	40	140	163	60	M22X2.0	
4350-40T2-11	35.0	40	50	140	163	70	M30X2.0	
4360-32T2-11	36.0	32	40	144	167	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
4360-40T2-11	36.0	40	50	144	167	70	M30X2.0	
4370-32T2-13	37.0	32	50	148	176	60	M22X2.0	
4370-40T2-13	37.0	40	50	148	176	70	M30X2.0	
4371-40T2-13 *	37.1	40	50	148	176	70	M30X2.0	



- '*' Marked items are for inch sized hole
- OAL = LPR+LS

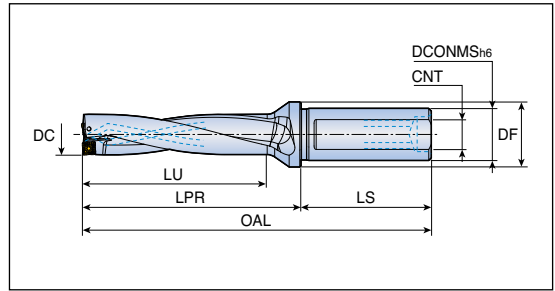
TOP 4...-T2

TOPDRILL

Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 4380-32T2-13	38.0	32	50	152	180	60	M22X2.0	SOMT 13...DP/DL/DK/DA D146-147
4380-40T2-13	38.0	40	50	152	180	70	M30X2.0	
4381-40T2-13 *	38.1	40	50	152	180	70	M30X2.0	
4390-32T2-13	39.0	32	50	156	184	60	M22X2.0	
4390-40T2-13	39.0	40	50	156	184	70	M30X2.0	
4400-32T2-13	40.0	32	50	160	188	60	M22X2.0	
4400-40T2-13	40.0	40	50	160	188	70	M30X2.0	
4410-40T2-13	41.0	40	50	164	192	70	M30X2.0	
4413-40T2-13 *	41.3	40	50	164	192	70	M30X2.0	
4420-40T2-13	42.0	40	50	168	196	70	M30X2.0	
4429-40T2-13 *	42.9	40	50	172	200	70	M30X2.0	SOMT 15...DP/DL/DK/DA D146-147
4430-40T2-13	43.0	40	50	172	200	70	M30X2.0	
4440-40T2-15	44.0	40	60	176	211	70	M30X2.0	
4445-40T2-15 *	44.5	40	60	180	215	70	M30X2.0	
4450-40T2-15	45.0	40	60	180	215	70	M30X2.0	
4460-40T2-15	46.0	40	60	184	219	70	M30X2.0	
4470-40T2-15	47.0	40	60	188	223	70	M30X2.0	
4476-40T2-15 *	47.6	40	60	192	227	70	M30X2.0	
4480-40T2-15	48.0	40	60	192	227	70	M30X2.0	
4490-40T2-15	49.0	40	60	196	231	70	M30X2.0	
4500-40T2-15	50.0	40	60	200	235	70	M30X2.0	
4508-40T2-15 *	50.8	40	60	204	239	70	M30X2.0	

- (*): Marked items are for inch sized hole
- OAL = LPR+LS

Spare parts

Designation	Screw	Wrench	Plug*	
TOP 4120 - 4135	TS 18041/HG	TD 6P	SL 20M	
TOP 4140 - 4160	TS 20043I/HG-P	TD 6P	SL 20M	
TOP 4165 - 4220	TS 22052I/HG-P	TD 7P	SL 25M	
TOP 4225 - 4260	SO 25065I	TD 7	SL 25M / SL 32M	
TOP 4265 - 4360	TS 35088I	TD 10	SL 25M / SL 32M / SL 40M	
TOP 4370 - 4430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 4440 - 4508	TS 50115I	TD 20	SL 40M	

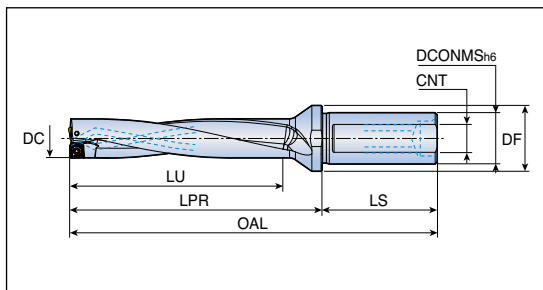


- *Notice: Cooling hole plug for lathe should be ordered separately
Order example) Plug for shank diameter 25.0mm : SL 25M

Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 5120-20T2-04	12.0	20	25	60	80	50	M13X1.0	SOMT 04...DP
5125-20T2-04	12.5	20	25	65	85	50	M13X1.0	D146
5130-20T2-04	13.0	20	25	65	85	50	M13X1.0	
5135-20T2-04	13.5	20	25	70	88	50	M13X1.0	SOMT 05...DP/DL/DK/DA D146-147
5140-20T2-05	14.0	20	25	70	88	50	M13X1.0	
5145-20T2-05	14.5	20	25	75	94	50	M13X1.0	
5150-20T2-05	15.0	20	25	75	94	50	M13X1.0	
5155-20T2-05	15.5	20	25	80	100	50	M13X1.0	
5160-20T2-05	16.0	20	25	80	100	50	M13X1.0	
5165-20T2-06	16.5	25	32	85	105	56	M16X1.5	
5170-25T2-06	17.0	25	32	85	105	56	M16X1.5	SOMT 06...DP/DL/DK/DA D146-147
5175-25T2-06	17.5	25	32	90	111	56	M16X1.5	
5180-25T2-06	18.0	25	32	90	111	56	M16X1.5	
5185-25T2-06	18.5	25	32	95	116	56	M16X1.5	
5190-25T2-06	19.0	25	32	95	116	56	M16X1.5	
5195-25T2-07	19.5	25	32	100	123	56	M16X1.5	
5200-25T2-07	20.0	25	32	100	123	56	M16X1.5	
5205-25T2-07	20.5	25	32	105	128	56	M16X1.5	SOMT 07...DP/DL/DK/DA D146-147
5210-25T2-07	21.0	25	32	105	128	56	M16X1.5	
5215-25T2-07	21.5	25	32	110	133	56	M16X1.5	
5220-25T2-07	22.0	25	32	110	133	56	M16X1.5	
5222-25T2-07 *	22.2	25	32	110	133	56	M16X1.5	
5225-25T2-08	22.5	25	32	115	137	56	M16X1.5	
5230-25T2-08	23.0	25	32	115	137	56	M16X1.5	
5230-32T2-08	23.0	32	40	115	137	60	M22X2.0	SOMT 08...DP/DL/DK/DA D146-147
5235-25T2-08	23.5	25	32	120	142	56	M16X1.5	
5235-32T2-08	23.5	32	40	120	142	60	M22X2.0	
5240-25T2-08	24.0	25	32	120	142	56	M16X1.5	
5240-32T2-08	24.0	32	40	120	142	60	M22X2.0	
5245-25T2-08	24.5	25	32	125	147	56	M16X1.5	
5245-32T2-08	24.5	32	40	125	147	60	M22X2.0	
5250-25T2-08	25.0	25	32	125	147	56	M16X1.5	
5250-32T2-08	25.0	32	40	125	147	60	M22X2.0	
5255-25T2-08	25.5	25	32	130	151	56	M16X1.5	
5255-32T2-08	25.5	32	40	130	151	60	M22X2.0	

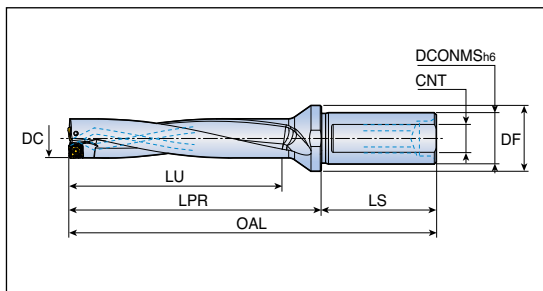


- '*' Marked items are for inch sized hole
- OAL = LPR+LS

Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 5260-25T2-08	26.0	25	32	130	151	56	M16X1.5	SOMT 08...DP/DL/DK/DA
5260-32T2-08	26.0	32	40	130	151	60	M22X2.0	D146-147
5265-32T2-09	26.5	32	40	135	158	60	M22X2.0	SOMT 09...DP/DL/DK/DA
5270-25T2-09	27.0	25	40	135	158	56	M16X1.5	D146-147
5270-32T2-09	27.0	32	40	135	158	60	M22X2.0	
5275-32T2-09	27.5	32	40	140	163	60	M22X2.0	
5280-25T2-09	28.0	25	40	140	163	56	M16X1.5	
5280-32T2-09	28.0	32	40	140	163	60	M22X2.0	
5282-32T2-09 *	28.2	32	40	140	163	60	M22X2.0	
5285-32T2-09	28.5	32	40	145	168	60	M22X2.0	
5290-25T2-09	29.0	25	40	145	168	56	M16X1.5	
5290-32T2-09	29.0	32	40	145	168	60	M22X2.0	
5295-32T2-09	29.5	32	40	150	173	60	M22X2.0	
5300-32T2-09	30.0	32	40	150	173	60	M22X2.0	
5305-32T2-09	30.5	32	40	155	178	60	M22X2.0	
5310-32T2-09	31.0	32	40	155	178	60	M22X2.0	
5320-32T2-11	32.0	32	40	160	183	60	M22X2.0	SOMT 11...DP/DL/DK/DA
5320-40T2-11	32.0	40	50	160	183	70	M30X2.0	D146-147
5330-32T2-11	33.0	32	40	165	188	60	M22X2.0	
5330-40T2-11	33.0	40	50	165	188	70	M30X2.0	
5340-32T2-11	34.0	32	40	170	193	60	M22X2.0	
5340-40T2-11	34.0	40	50	170	193	70	M30X2.0	
5350-32T2-11	35.0	32	40	175	198	60	M22X2.0	
5350-40T2-11	35.0	40	50	175	198	70	M30X2.0	
5360-32T2-11	36.0	32	40	180	203	60	M22X2.0	
5360-40T2-11	36.0	40	50	180	203	70	M30X2.0	
5370-32T2-13	37.0	32	50	185	213	60	M22X2.0	SOMT 13...DP/DL/DK/DA
5370-40T2-13	37.0	40	50	185	213	70	M30X2.0	D146-147
5380-32T2-13	38.0	32	50	190	218	60	M22X2.0	
5380-40T2-13	38.0	40	50	190	218	70	M30X2.0	
5390-32T2-13	39.0	32	50	195	223	60	M22X2.0	
5390-40T2-13	39.0	40	50	195	223	70	M30X2.0	
5400-32T2-13	40.0	32	50	200	228	60	M22X2.0	
5400-40T2-13	40.0	40	50	200	228	70	M30X2.0	

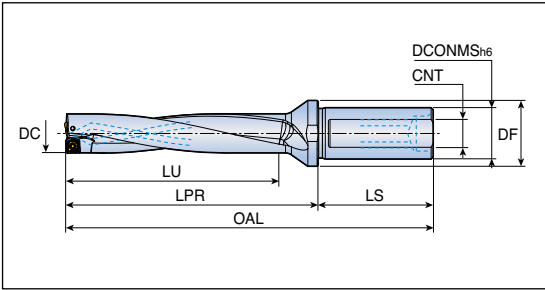


- '*' Marked items are for inch sized hole
- OAL = LPR + LS

Indexable drill holders



- Drilling depth: 5xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TOP 5410-40T2-13	41.0	40	50	205	233	70	M30X2.0	SOMT 13...DP/DL/DK/DA
5420-40T2-13	42.0	40	50	210	238	70	M30X2.0	D146-147
5430-40T2-13	43.0	40	50	215	243	70	M30X2.0	
5440-40T2-15	44.0	40	60	220	255	70	M30X2.0	SOMT 15...DP/DL/DK/DA
5450-40T2-15	45.0	40	60	225	260	70	M30X2.0	D146-147
5460-40T2-15	46.0	40	60	230	265	70	M30X2.0	
5470-40T2-15	47.0	40	60	235	270	70	M30X2.0	
5480-40T2-15	48.0	40	60	240	275	70	M30X2.0	
5490-40T2-15	49.0	40	60	245	280	70	M30X2.0	
5500-40T2-15	50.0	40	60	250	285	70	M30X2.0	

- OAL = LPR+LS

Spare parts

Designation	Screw	Wrench	Plug*	
TOP 5120 - 5135	TS 18041I/HG	TD 6P	SL 20M	
TOP 5140 - 5160	TS 20043I/HG-P	TD 6P	SL 20M	
TOP 5165 - 5220	TS 22052I/HG-P	TD 7P	SL 25M	
TOP 5225 - 5260	SO 25065I	TD 7	SL 25M / SL 32M	
TOP 5265 - 5360	TS 35088I	TD 10	SL 25M / SL 32M / SL 40M	
TOP 5370 - 5430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 5440 - 5500	TS 50115I	TD 20	SL 40M	



- *Notice: Cooling hole plug for lathe should be ordered separately
Order example) Plug for shank diameter 25.0mm : SL 25M

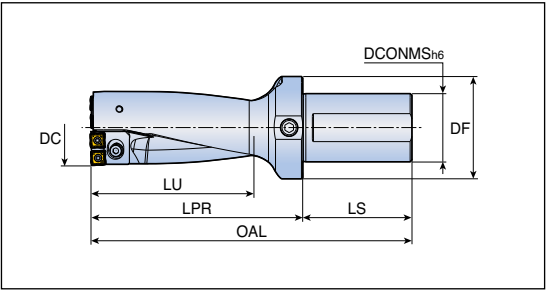
TOP 20...CA



Indexable drill holders for cartridge



- Drilling depth: 2xdiameter



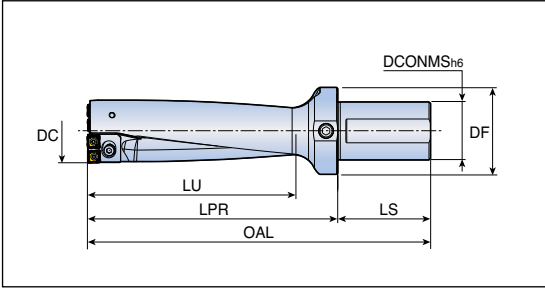
Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
TOP 2051-55-50T2-09CA	51	50	75	223	110	143	80	-	SOMT 09...
	52	50	75	223	110	143	80	TOP-0901	DP/DL/DK/DA
	53	50	75	223	110	143	80	TOP-0902	D146-147
	54	50	75	223	110	143	80	TOP-0903	
	55	50	75	223	110	143	80	TOP-0904	
TOP 2056-60-50T2-11CA	56	50	75	236	120	156	80	-	SOMT 11...
	57	50	75	236	120	156	80	TOP-0901	DP/DL/DK/DA
	58	50	75	236	120	156	80	TOP-0902	D146-147
	59	50	75	236	120	156	80	TOP-0903	
	60	50	75	236	120	156	80	TOP-0904	
TOP 2061-65-50T2-11CA	61	50	75	249	130	169	80	-	SOMT 11...
	62	50	75	249	130	169	80	TOP-0901	DP/DL/DK/DA
	63	50	75	249	130	169	80	TOP-0902	D146-147
	64	50	75	249	130	169	80	TOP-0903	
	65	50	75	249	130	169	80	TOP-0904	
TOP 2066-70-50T2-11CA	66	50	75	262	140	182	80	-	SOMT 11...
	67	50	75	262	140	182	80	TOP-0901	DP/DL/DK/DA
	68	50	75	262	140	182	80	TOP-0902	D146-147
	69	50	75	262	140	182	80	TOP-0903	
	70	50	75	262	140	182	80	TOP-0904	
TOP 2071-75-50T2-13CA	71	50	75	275	150	195	80	-	SOMT 13...
	72	50	75	275	150	195	80	TOP-0901	DP/DL/DK/DA
	73	50	75	275	150	195	80	TOP-0902	D146-147
	74	50	75	275	150	195	80	TOP-0903	
	75	50	75	275	150	195	80	TOP-0904	
TOP 2076-80-50T2-13CA	76	50	75	288	160	208	80	-	SOMT 13...
	77	50	75	288	160	208	80	TOP-0901	DP/DL/DK/DA
	78	50	75	288	160	208	80	TOP-0902	D146-147
	79	50	75	288	160	208	80	TOP-0903	
	80	50	75	288	160	208	80	TOP-0904	



Indexable drill holders for cartridge



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
TOP 3051-55-50T2-09CA	51	50	75	278	165	198	80	-	SOMT 09... DP/DL/DK/DA
	52	50	75	278	165	198	80	TOP-0901	 D146-147
	53	50	75	278	165	198	80	TOP-0902	
	54	50	75	278	165	198	80	TOP-0903	
	55	50	75	278	165	198	80	TOP-0904	
TOP 3056-60-50T2-11CA	56	50	75	296	180	216	80	-	SOMT 11... DP/DL/DK/DA
	57	50	75	296	180	216	80	TOP-0901	 D146-147
	58	50	75	296	180	216	80	TOP-0902	
	59	50	75	296	180	216	80	TOP-0903	
	60	50	75	296	180	216	80	TOP-0904	
TOP 3061-65-50T2-11CA	61	50	75	314	195	234	80	-	SOMT 11... DP/DL/DK/DA
	62	50	75	314	195	234	80	TOP-0901	 D146-147
	63	50	75	314	195	234	80	TOP-0902	
	64	50	75	314	195	234	80	TOP-0903	
	65	50	75	314	195	234	80	TOP-0904	
TOP 3066-70-50T2-11CA	66	50	75	332	210	252	80	-	SOMT 11... DP/DL/DK/DA
	67	50	75	332	210	252	80	TOP-0901	 D146-147
	68	50	75	332	210	252	80	TOP-0902	
	69	50	75	332	210	252	80	TOP-0903	
	70	50	75	332	210	252	80	TOP-0904	
TOP 3071-75-50T2-13CA	71	50	75	350	225	270	80	-	SOMT 13... DP/DL/DK/DA
	72	50	75	350	225	270	80	TOP-0901	 D146-147
	73	50	75	350	225	270	80	TOP-0902	
	74	50	75	350	225	270	80	TOP-0903	
	75	50	75	350	225	270	80	TOP-0904	
TOP 3076-80-50T2-13CA	76	50	75	368	240	288	80	-	SOMT 13... DP/DL/DK/DA
	77	50	75	368	240	288	80	TOP-0901	 D146-147
	78	50	75	368	240	288	80	TOP-0902	
	79	50	75	368	240	288	80	TOP-0903	
	80	50	75	368	240	288	80	TOP-0904	



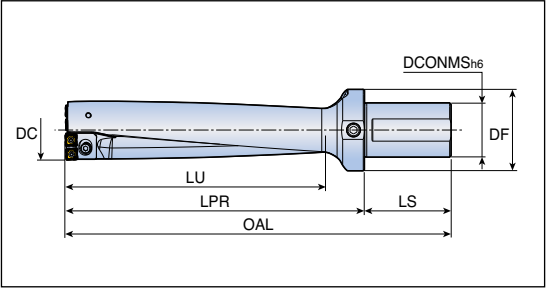
TOP 40...CA



Indexable drill holders for cartridge



- Drilling depth: 4xdiameter



Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
TOP 4051-55-50T2-09CA	51	50	75	333	220	253	80	-	SOMT 09...
	52	50	75	333	220	253	80	TOP-0901	DP/DL/DK/DA
	53	50	75	333	220	253	80	TOP-0902	D146-147
	54	50	75	333	220	253	80	TOP-0903	
	55	50	75	333	220	253	80	TOP-0904	
TOP 4056-60-50T2-11CA	56	50	75	356	240	276	80	-	SOMT 11...
	57	50	75	356	240	276	80	TOP-0901	DP/DL/DK/DA
	58	50	75	356	240	276	80	TOP-0902	D146-147
	59	50	75	356	240	276	80	TOP-0903	
	60	50	75	356	240	276	80	TOP-0904	
TOP 4061-65-50T2-11CA	61	50	75	379	260	299	80	-	SOMT 11...
	62	50	75	379	260	299	80	TOP-0901	DP/DL/DK/DA
	63	50	75	379	260	299	80	TOP-0902	D146-147
	64	50	75	379	260	299	80	TOP-0903	
	65	50	75	379	260	299	80	TOP-0904	
TOP 4066-70-50T2-11CA	66	50	75	402	280	322	80	-	SOMT 11...
	67	50	75	402	280	322	80	TOP-0901	DP/DL/DK/DA
	68	50	75	402	280	322	80	TOP-0902	D146-147
	69	50	75	402	280	322	80	TOP-0903	
	70	50	75	402	280	322	80	TOP-0904	
TOP 4071-75-50T2-13CA	71	50	75	425	300	345	80	-	SOMT 13...
	72	50	75	425	300	345	80	TOP-0901	DP/DL/DK/DA
	73	50	75	425	300	345	80	TOP-0902	D146-147
	74	50	75	425	300	345	80	TOP-0903	
	75	50	75	425	300	345	80	TOP-0904	
TOP 4076-80-50T2-13CA	76	50	75	448	320	368	80	-	SOMT 13...
	77	50	75	448	320	368	80	TOP-0901	DP/DL/DK/DA
	78	50	75	448	320	368	80	TOP-0902	D146-147
	79	50	75	448	320	368	80	TOP-0903	
	80	50	75	448	320	368	80	TOP-0904	



Indexable drill holders for cartridge

Spare parts

Designation	Screw	Cartridge for peripheral	Cartridge for center
TOP ..51-55-50T2-09CA	TS 35088I	TOP 09CA-P1	TOP 09CA-C1
TOP ..56-60-50T2-11CA	TS 35088I	TOP 11CA-P1	TOP 11CA-C1
TOP ..61-65-50T2-11CA	TS 35088I	TOP 11CA-P2	TOP 11CA-C2
TOP ..66-70-50T2-11CA	TS 35088I	TOP 11CA-P3	TOP 11CA-C3
TOP ..71-75-50T2-13CA	TS 40093I	TOP 13CA-P1	TOP 13CA-C1
TOP ..76-80-50T2-13CA	TS 40093I	TOP 13CA-P2	TOP 13CA-C2

Spare parts for cartridge

Designation	Cartridge clamping screw	Washer	Setting plate screw
TOP 09CA-P1	SH M4x0.7x16	MW 4.3x8	TS 20043I/HG-P
TOP 09CA-C1	SH M4x0.7x16	MW 4.3x8	-
TOP 11CA-P1	SH M5x0.8x16	MW 5.5x10	TS 20043I/HG-P
TOP 11CA-C1	SH M5x0.8x16	MW 5.5x10	-
TOP 11CA-P2	SH M5x0.8x16	MW 5.5x10	TS 20043I/HG-P
TOP 11CA-C2	SH M5x0.8x16	MW 5.5x10	-
TOP 11CA-P3	SH M5x0.8x16	MW 5.5x10	TS 20043I/HG-P
TOP 11CA-C3	SH M5x0.8x16	MW 5.5x10	-
TOP 13CA-P1	SH M6x1.0x20	MW 6.4x12	TS 20043I/HG-P
TOP 13CA-C1	SH M6x1.0x20	MW 6.4x12	-
TOP 13CA-P2	SH M6x1.0x20	MW 6.4x12	TS 20043I/HG-P
TOP 13CA-C2	SH M6x1.0x20	MW 6.4x12	-

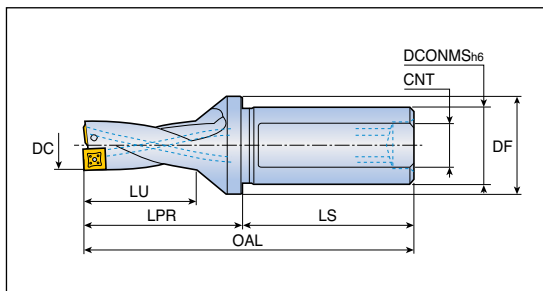
TDR 2...-T2



Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 2125-20T2-05	12.5	20	25	26	44	50	M13X1.0	SPMG 05... DG/DK/DA D148-149
2130-20T2-05	13.0	20	25	26	44	50	M13X1.0	
2135-20T2-05	13.5	20	25	28	46	50	M13X1.0	
2140-20T2-05	14.0	20	25	28	46	50	M13X1.0	
2145-20T2-05	14.5	20	25	30	49	50	M13X1.0	
2150-20T2-05	15.0	20	25	30	49	50	M13X1.0	
2155-25T2-06	15.5	25	32	32	52	56	M16X1.5	SPMG 06... DG/DK/DA D148-149
2160-25T2-06	16.0	25	32	32	52	56	M16X1.5	
2165-25T2-06	16.5	25	32	34	54	56	M16X1.5	
2170-25T2-06	17.0	25	32	34	54	56	M16X1.5	
2175-25T2-06	17.5	25	32	36	57	56	M16X1.5	
2180-25T2-06	18.0	25	32	36	57	56	M16X1.5	
2185-25T2-06	18.5	25	32	38	59	56	M16X1.5	
2190-25T2-06	19.0	25	32	38	59	56	M16X1.5	
2195-25T2-06	19.5	25	32	40	63	56	M16X1.5	
2200-25T2-06	20.0	25	32	40	63	56	M16X1.5	
2205-25T2-06	20.5	25	32	42	65	56	M16X1.5	
2210-25T2-06	21.0	25	32	42	65	56	M16X1.5	
2215-25T2-06	21.5	25	32	44	67	56	M16X1.5	SPMG 07... DG/DK/DA D148-149
2220-25T2-07	22.0	25	32	44	67	56	M16X1.5	
2225-25T2-07	22.5	25	45	46	71	56	M16X1.5	
2225-32T2-07	22.5	32	45	46	71	60	M22X2.0	
2230-25T2-07	23.0	25	45	46	71	56	M16X1.5	
2230-32T2-07	23.0	32	45	46	71	60	M22X2.0	
2235-25T2-07	23.5	25	45	48	74	56	M16X1.5	
2235-32T2-07	23.5	32	45	48	74	60	M22X2.0	
2240-25T2-07	24.0	25	45	48	74	56	M16X1.5	
2240-32T2-07	24.0	32	45	48	74	60	M22X2.0	
2245-25T2-07	24.5	25	45	50	77	56	M16X1.5	
2245-32T2-07	24.5	32	45	50	77	60	M22X2.0	
2250-25T2-07	25.0	25	45	50	77	56	M16X1.5	
2250-32T2-07	25.0	32	45	50	77	60	M22X2.0	
2255-25T2-07	25.5	25	45	52	79	56	M16X1.5	
2255-32T2-07	25.5	32	45	52	79	60	M22X2.0	
2260-25T2-07	26.0	25	45	52	79	56	M16X1.5	
2260-32T2-07	26.0	32	45	52	79	60	M22X2.0	

- OAL = LPR + LS

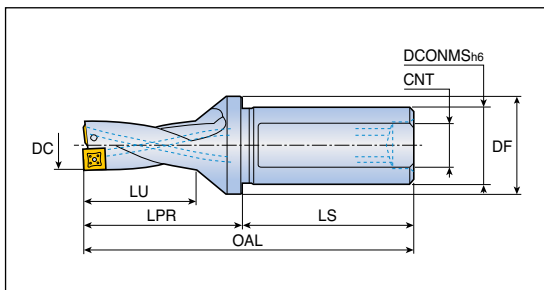


TDR 2...-T2

Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 2260-32T2-07	26.0	32	45	52	79	60	M22X2.0	SPMG 07... DG/DK/DA D148-149
2265-25T2-07	26.5	25	45	54	81	56	M16X1.5	
2265-32T2-07	26.5	32	45	54	81	60	M22X2.0	
2270-25T2-07	27.0	25	45	54	81	56	M16X1.5	
2270-32T2-07	27.0	32	45	54	81	60	M22X2.0	
2275-25T2-07	27.5	25	45	56	84	56	Rc 1/8	
2275-32T2-07	27.5	32	45	56	84	60	Rc 1/4	
2280-25T2-09	28.0	25	45	56	84	56	Rc 1/8	SPMG 09... DG/DK/DA D148-149
2280-32T2-09	28.0	32	45	56	84	60	Rc 1/4	
2285-25T2-09	28.5	25	45	58	86	56	Rc 1/8	
2285-32T2-09	28.5	32	45	58	86	60	Rc 1/4	
2290-25T2-09	29.0	25	45	58	86	56	Rc 1/8	
2290-32T2-09	29.0	32	45	58	86	60	Rc 1/4	
2295-32T2-09	29.5	32	55	60	91	60	Rc 1/4	
2295-40T2-09	29.5	40	55	60	91	70	Rc 1/4	
2300-32T2-09	30.0	32	55	60	91	60	Rc 1/4	
2300-40T2-09	30.0	40	55	60	91	70	Rc 1/4	
2305-32T2-09	30.5	32	55	62	94	60	Rc 1/4	
2305-40T2-09	30.5	40	55	62	94	70	Rc 1/4	
2310-32T2-09	31.0	32	55	62	94	60	Rc 1/4	
2310-40T2-09	31.0	40	55	62	94	70	Rc 1/4	
2315-32T2-09	31.5	32	55	64	96	60	Rc 1/4	
2315-40T2-09	31.5	40	55	64	96	70	Rc 1/4	
2320-32T2-09	32.0	32	55	64	96	60	Rc 1/4	SPMG 11... DG/DA/DK D148-149
2320-40T2-09	32.0	40	55	64	96	70	Rc 1/4	
2325-32T2-09	32.5	32	55	66	99	60	Rc 1/4	
2325-40T2-09	32.5	40	55	66	99	70	Rc 1/4	
2330-32T2-09	33.0	32	55	66	99	60	Rc 1/4	
2330-40T2-09	33.0	40	55	66	99	70	Rc 1/4	
2340-32T2-11	34.0	32	55	68	101	60	Rc 1/4	
2340-40T2-11	34.0	40	55	68	101	70	Rc 1/4	
2350-32T2-11	35.0	32	55	70	104	60	Rc 1/4	
2350-40T2-11	35.0	40	55	70	104	70	Rc 1/4	
2360-32T2-11	36.0	32	55	72	107	60	Rc 1/4	
2360-40T2-11	36.0	40	55	72	107	70	Rc 1/4	

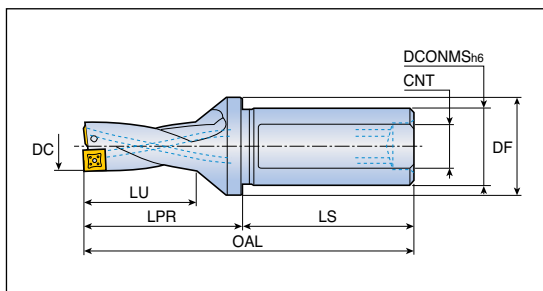
- OAL = LPR+LS



Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 2370-32T2-11	37.0	32	55	74	110	60	Rc 1/4	SPMG 11... DG/DK/DA D148-149
2370-40T2-11	37.0	40	55	74	110	70	Rc 1/4	
2380-32T2-11	38.0	32	55	76	113	60	Rc 1/4	
2380-40T2-11	38.0	40	55	76	113	70	Rc 1/4	
2390-32T2-11	39.0	32	55	78	115	60	Rc 1/4	
2390-40T2-11	39.0	40	55	78	115	70	Rc 1/4	
2400-32T2-11	40.0	32	60	80	118	60	Rc 1/4	
2400-40T2-11	40.0	40	60	80	118	70	Rc 1/4	
2410-40T2-11	41.0	40	60	82	121	70	Rc 1/4	
2420-40T2-14	42.0	40	60	84	123	70	Rc 1/4	SPMG 14... DG/DK/DA D148-149
2430-40T2-14	43.0	40	60	86	126	70	Rc 1/4	
2440-40T2-14	44.0	40	60	88	128	70	Rc 1/4	
2450-40T2-14	45.0	40	60	90	132	70	Rc 1/4	
2460-40T2-14	46.0	40	60	92	135	70	Rc 1/4	
2470-40T2-14	47.0	40	60	94	137	70	Rc 1/4	
2480-40T2-14	48.0	40	60	96	140	70	Rc 1/4	
2490-40T2-14	49.0	40	60	98	142	70	Rc 1/4	
2500-40T2-14	50.0	40	60	100	145	70	Rc 1/4	

- OAL = LPR + LS

Spare parts

Designation	Screw	Wrench	Plug	
TDR 2125 - 2150	TS 20043I/HG-P	TD 6P	SL 20 M	
TDR 2155 - 2215	TS 22052I/HG	TD 7	SL 25 M	
TDR 2220 - 2270	TS 25064I	TD 8	SL 25 M / SL 32 M	
TDR 2275	TS 25064I	TD 8	-	
TDR 2280 - 2330	TS 35088I	TD 10	-	
TDR 2340 - 2390	TS 40093I	TD 15	-	
TDR 2400 - 2410	TS 40093I	TD 15	-	
TDR 2420 - 2500	SO 50090I	TD 20	-	

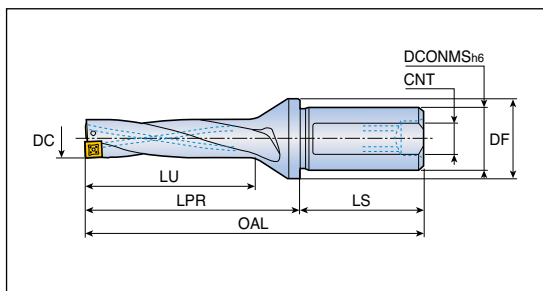


TDR 3...-T2

Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 3125-20T2-05	12.5	20	25	39	57	50	M13X1.0	SPMG 05... DG/DK/DA D148-149
3130-20T2-05	13.0	20	25	39	57	50	M13X1.0	
3135-20T2-05	13.5	20	25	42	60	50	M13X1.0	
3140-20T2-05	14.0	20	25	42	60	50	M13X1.0	
3145-20T2-05	14.5	20	25	45	64	50	M13X1.0	
3150-20T2-05	15.0	20	25	45	64	50	M13X1.0	
3155-25T2-06	15.5	25	32	48	68	56	M16X1.5	SPMG 06... DG/DK/DA D148-149
3160-25T2-06	16.0	25	32	48	68	56	M16X1.5	
3165-25T2-06	16.5	25	32	51	71	56	M16X1.5	
3170-25T2-06	17.0	25	32	51	71	56	M16X1.5	
3175-25T2-06	17.5	25	32	54	75	56	M16X1.5	
3180-25T2-06	18.0	25	32	54	75	56	M16X1.5	
3185-25T2-06	18.5	25	32	57	78	56	M16X1.5	
3190-25T2-06	19.0	25	32	57	78	56	M16X1.5	
3195-25T2-06	19.5	25	32	60	83	56	M16X1.5	
3200-25T2-06 *	20.0	25	32	60	83	56	M16X1.5	
3205-25T2-06	20.5	25	32	63	86	56	M16X1.5	
3209-25T2-06 *	20.9	25	32	63	86	56	M16X1.5	
3210-25T2-06	21.0	25	32	63	86	56	M16X1.5	SPMG 07... DG/DK/DA D148-149
3215-25T2-06	21.5	25	32	66	89	56	M16X1.5	
3220-25T2-07	22.0	25	32	66	89	56	M16X1.5	
3225-25T2-07	22.5	25	45	69	94	56	M16X1.5	
3225-32T2-07	22.5	32	45	69	94	60	M22X2.0	
3230-25T2-07	23.0	25	45	69	94	56	M16X1.5	
3230-32T2-07	23.0	32	45	69	94	60	M22X2.0	
3235-25T2-07	23.5	25	45	72	98	56	M16X1.5	
3235-32T2-07	23.5	32	45	72	98	60	M22X2.0	
3239-25T2-07 *	23.9	25	32	72	98	56	M16X1.5	
3239-32T2-07 *	23.9	32	45	72	98	60	M22X2.0	
3240-25T2-07	24.0	25	45	72	98	56	M16X1.5	
3240-32T2-07	24.0	32	45	72	98	60	M22X2.0	
3245-25T2-07	24.5	25	45	75	102	56	M16X1.5	
3245-32T2-07	24.5	32	45	75	102	60	M22X2.0	
3250-25T2-07	25.0	25	45	75	102	56	M16X1.5	
3250-32T2-07	25.0	32	45	75	102	60	M22X2.0	



- '*' Marked items are for pre-thread hole making
- OAL = LPR+LS

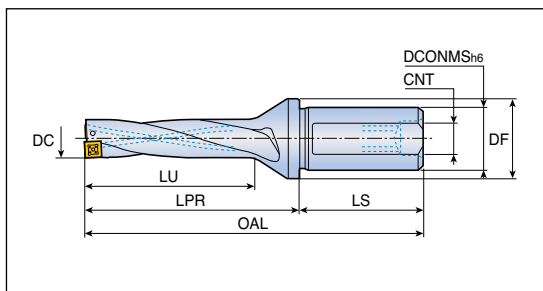
TDR 3...-T2



Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 3255-25T2-07	25.5	25	45	78	105	56	M16X1.5	SPMG 07... DG/DK/DA D148-149
3255-32T2-07	25.5	32	45	78	105	60	M22X2.0	
3260-25T2-07	26.0	25	45	78	105	56	M16X1.5	
3260-32T2-07	26.0	32	45	78	105	60	M22X2.0	
3264-25T2-07 *	26.4	25	45	81	108	56	M16X1.5	
3264-32T2-07 *	26.4	32	45	81	108	60	M22X2.0	
3265-25T2-07	26.5	25	45	81	108	56	M16X1.5	
3265-32T2-07	26.5	32	45	81	108	60	M22X2.0	
3270-25T2-07	27.0	25	45	81	108	56	M16X1.5	
3270-32T2-07	27.0	32	45	81	108	60	M22X2.0	
3275-25T2-07	27.5	25	45	84	112	56	Rc 1/8	
3275-32T2-07	27.5	32	45	84	112	60	Rc 1/4	
3280-25T2-09	28.0	25	45	84	112	56	Rc 1/8	SPMG 09... DG/DK/DA D148-149
3280-32T2-09	28.0	32	45	84	112	60	Rc 1/4	
3285-25T2-09	28.5	25	45	87	115	56	Rc 1/8	
3285-32T2-09	28.5	32	45	87	115	56	Rc 1/4	
3290-25T2-09	29.0	25	45	87	115	56	Rc 1/8	
3290-32T2-09	29.0	32	45	87	115	60	Rc 1/4	
3294-32T2-09 *	29.4	32	55	90	121	60	Rc 1/4	
3294-40T2-09 *	29.4	40	55	90	121	70	Rc 1/4	
3295-32T2-09	29.5	32	55	90	121	60	Rc 1/4	
3295-40T2-09	29.5	40	55	90	121	70	Rc 1/4	
3300-32T2-09	30.0	32	55	90	121	60	Rc 1/4	
3300-40T2-09	30.0	40	55	90	121	70	Rc 1/4	
3305-32T2-09	30.5	32	55	93	125	60	Rc 1/4	
3305-40T2-09	30.5	40	55	93	125	70	Rc 1/4	
3310-32T2-09	31.0	32	55	93	125	60	Rc 1/4	
3310-40T2-09	31.0	40	55	93	125	70	Rc 1/4	
3315-32T2-09	31.5	32	55	96	128	60	Rc 1/4	
3315-40T2-09	31.5	40	55	96	128	70	Rc 1/4	
3320-32T2-09	32.0	32	55	96	128	60	Rc 1/4	
3320-40T2-09	32.0	40	55	96	128	70	Rc 1/4	



- '!' Marked items are for pre-thread hole making
- OAL = LPR + LS

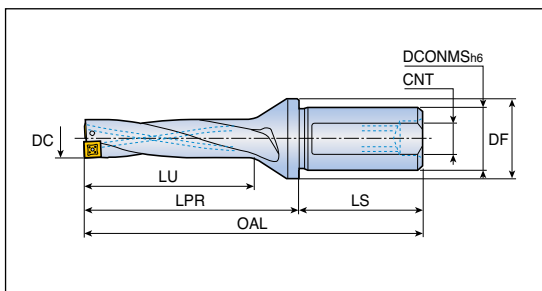
TDR 3...-T2



Indexable drill holders



- Drilling depth: $3 \times \text{diameter}$

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- '*' Marked items are for pre-thread hole making
- OAL = LPR+LS

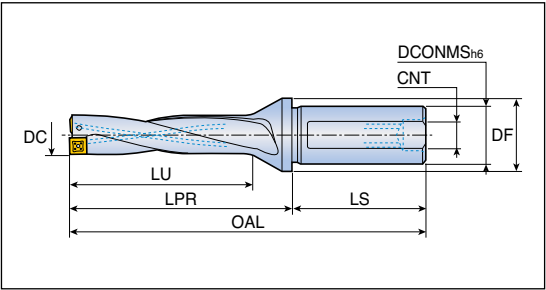
TDR 3...-T2



Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 3420-40T2-14	42.0	40	60	126	165	70	Rc 1/4	SPMG 14... DG/DK/DA P148-149
3430-40T2-14	43.0	40	60	129	169	70	Rc 1/4	
3440-40T2-14	44.0	40	60	132	172	70	Rc 1/4	
3450-40T2-14	45.0	40	60	135	177	70	Rc 1/4	
3460-40T2-14	46.0	40	60	138	181	70	Rc 1/4	
3470-40T2-14	47.0	40	60	141	184	70	Rc 1/4	
3480-40T2-14	48.0	40	60	144	188	70	Rc 1/4	
3490-40T2-14	49.0	40	60	147	191	70	Rc 1/4	
3500-40T2-14	50.0	40	60	150	195	70	Rc 1/4	

- OAL = LPR+LS

Spare parts

Designation	Screw	Wrench	Plug	
TDR 3125 - 3150	TS 20043I/HG-P	TD 6P	SL 20 M	
TDR 3155 - 3215	TS 22052I/HG	TD 7	SL 25 M	
TDR 3220 - 3270	TS 25064I	TD 8	SL 25 M / SL 32 M	
TDR 3275	TS 25064I	TD 8	-	
TDR 3280 - 3330	TS 35088I	TD 10	-	
TDR 3340 - 3390	TS 40093I	TD 15	-	
TDR 3400 - 3410	TS 40093I	TD 15	-	
TDR 3420 - 3500	SO 50090I	TD 20	-	

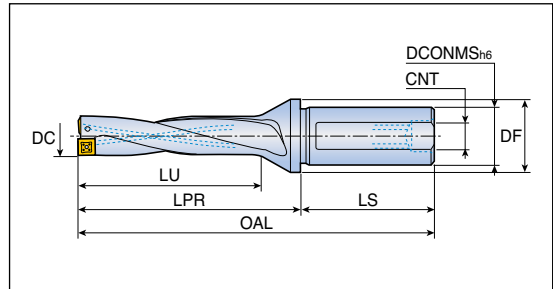


TDR 4...-T2

Indexable drill holders



- Drilling depth: 4xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 4125-20T2-05	12.5	20	25	52	70	50	M13X1.0	SPMG 05... DG/DK/DA D148-149
4130-20T2-05	13.0	20	25	52	70	50	M13X1.0	
4135-20T2-05	13.5	20	25	56	74	50	M13X1.0	
4140-20T2-05	14.0	20	25	56	74	50	M13X1.0	
4145-20T2-05	14.5	20	25	60	79	50	M13X1.0	
4150-20T2-05	15.0	20	25	60	79	50	M13X1.0	SPMG 06... DG/DK/DA D148-149
4155-25T2-06	15.5	25	32	64	84	56	M16X1.5	
4160-25T2-06	16.0	25	32	64	84	56	M16X1.5	
4165-25T2-06	16.5	25	32	68	88	56	M16X1.5	
4170-25T2-06	17.0	25	32	68	88	56	M16X1.5	
4175-25T2-06	17.5	25	32	72	93	56	M16X1.5	
4180-25T2-06	18.0	25	32	72	93	56	M16X1.5	
4185-25T2-06	18.5	25	32	76	97	56	M16X1.5	
4190-25T2-06	19.0	25	32	76	97	56	M16X1.5	
4195-25T2-06	19.5	25	32	80	103	56	M16X1.5	
4200-25T2-06	20.0	25	32	80	103	56	M16X1.5	
4205-25T2-06	20.5	25	32	84	107	56	M16X1.5	
4210-25T2-06	21.0	25	32	84	107	56	M16X1.5	
4215-25T2-06	21.5	25	32	88	111	56	M16X1.5	
4220-25T2-07	22.0	25	32	88	111	56	M16X1.5	SPMG 07... DG/DK/DA D148-149
4225-25T2-07	22.5	25	45	92	117	56	M16X1.5	
4225-32T2-07	22.5	32	45	92	117	60	M22X2.0	
4230-25T2-07	23.0	25	45	92	117	56	M16X1.5	
4230-32T2-07	23.0	32	45	92	117	60	M22X2.0	
4235-25T2-07	23.5	25	45	96	122	56	M16X1.5	
4235-32T2-07	23.5	32	45	96	122	60	M22X2.0	
4240-25T2-07	24.0	25	45	96	122	56	M16X1.5	
4240-32T2-07	24.0	32	45	96	122	60	M22X2.0	
4245-25T2-07	24.5	25	45	100	127	56	M16X1.5	
4245-32T2-07	24.5	32	45	100	127	60	M22X2.0	
4250-25T2-07	25.0	25	45	100	127	56	M16X1.5	
4250-32T2-07	25.0	32	45	100	127	60	M22X2.0	
4255-25T2-07	25.5	25	45	104	131	56	M16X1.5	
4255-32T2-07	25.5	32	45	104	131	60	M22X2.0	
4260-25T2-07	26.0	25	45	104	131	56	M16X1.5	

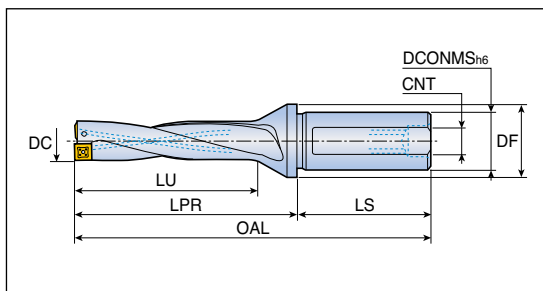
- OAL = LPR+LS



Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 4260-32T2-07	26.0	32	45	104	131	60	M22X2.0	SPMG 07... DG/DK/DA D148-149
4265-25T2-07	26.5	25	45	108	135	56	M16X1.5	
4265-32T2-07	26.5	32	45	108	135	60	M22X2.0	
4270-25T2-07	27.0	25	45	108	135	56	M16X1.5	
4270-32T2-07	27.0	32	45	108	135	60	M22X2.0	
4275-25T2-07	27.5	25	45	112	140	56	Rc 1/8	
4275-32T2-07	27.5	32	45	112	140	60	Rc 1/4	
4280-25T2-09	28.0	25	45	112	140	56	Rc 1/8	SPMG 09... DG/DK/DA D148-149
4280-32T2-09	28.0	32	45	112	140	60	Rc 1/8	
4285-25T2-09	28.5	25	45	116	144	56	Rc 1/8	
4285-32T2-09	28.5	32	45	116	144	60	Rc 1/4	
4290-25T2-09	29.0	25	45	116	144	56	Rc 1/8	
4290-32T2-09	29.0	32	45	116	144	60	Rc 1/4	
4295-32T2-09	29.5	32	55	120	151	60	Rc 1/4	
4295-40T2-09	29.5	40	55	120	151	70	Rc 1/4	
4300-32T2-09	30.0	32	55	120	151	60	Rc 1/4	
4300-40T2-09	30.0	40	55	120	151	70	Rc 1/4	
4305-32T2-09	30.5	32	55	124	156	60	Rc 1/4	
4305-40T2-09	30.5	40	55	124	156	70	Rc 1/4	
4310-32T2-09	31.0	32	55	124	156	60	Rc 1/4	
4310-40T2-09	31.0	40	55	124	156	70	Rc 1/4	
4315-32T2-09	31.5	32	55	128	160	60	Rc 1/4	
4315-40T2-09	31.5	40	55	128	160	70	Rc 1/4	
4320-32T2-09	32.0	32	55	128	160	60	Rc 1/4	SPMG 11... DG/DK/DA D148-149
4320-40T2-09	32.0	40	55	128	160	70	Rc 1/4	
4325-32T2-09	32.5	32	55	132	165	60	Rc 1/4	
4325-40T2-09	32.5	40	55	132	165	70	Rc 1/4	
4330-32T2-09	33.0	32	55	132	165	60	Rc 1/4	
4330-40T2-09	33.0	40	55	132	165	70	Rc 1/4	
4340-32T2-11	34.0	32	55	136	169	60	Rc 1/4	
4340-40T2-11	34.0	40	55	136	169	70	Rc 1/4	
4350-32T2-11	35.0	32	55	140	174	60	Rc 1/4	
4350-40T2-11	35.0	40	55	140	174	70	Rc 1/4	
4360-32T2-11	36.0	32	55	144	179	60	Rc 1/4	
4360-40T2-11	36.0	40	55	144	179	70	Rc 1/4	

• OAL = LPR + LS



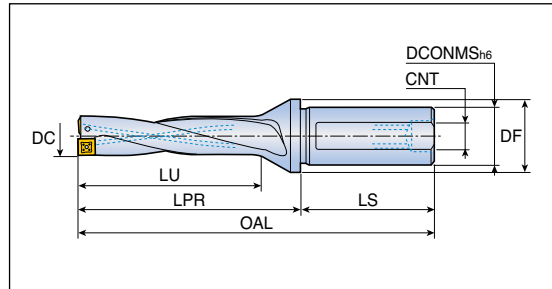
TDR 4...-T2



Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 4370-32T2-11	37.0	32	55	148	184	60	Rc 1/4	SPMG 11... DG/DK/DA D148-149
4370-40T2-11	37.0	40	55	148	184	70	Rc 1/4	
4380-32T2-11	38.0	32	55	152	189	60	Rc 1/4	
4380-40T2-11	38.0	40	55	152	189	70	Rc 1/4	
4390-32T2-11	39.0	32	55	156	193	60	Rc 1/4	
4390-40T2-11	39.0	40	55	156	193	70	Rc 1/4	
4400-32T2-11	40.0	32	60	160	198	60	Rc 1/4	
4400-40T2-11	40.0	40	60	160	198	70	Rc 1/4	
4410-40T2-11	41.0	40	60	164	203	70	Rc 1/4	
4420-40T2-14	42.0	40	60	168	207	70	Rc 1/4	SPMG 14... DG/DK/DA D148-149
4430-40T2-14	43.0	40	60	172	212	70	Rc 1/4	
4440-40T2-14	44.0	40	60	176	216	70	Rc 1/4	
4450-40T2-14	45.0	40	60	180	222	70	Rc 1/4	
4460-40T2-14	46.0	40	60	184	227	70	Rc 1/4	
4470-40T2-14	47.0	40	60	188	231	70	Rc 1/4	
4480-40T2-14	48.0	40	60	192	236	70	Rc 1/4	
4490-40T2-14	49.0	40	60	196	240	70	Rc 1/4	
4500-40T2-14	50.0	40	60	200	245	70	Rc 1/4	

- OAL = LPR+LS

Spare parts

Designation	Screw	Wrench	Plug	
TDR 4125 - 4150	TS 20043I/HG-P	TD 6P	SL 20 M	
TDR 4155 - 4215	TS 22052I/HG	TD 7	SL 25 M	
TDR 4220 - 4270	TS 25064I	TD 8	SL 25 M / SL 32 M	
TDR 4275	TS 25064I	TD 8	-	
TDR 4280 - 4330	TS 35088I	TD 10	-	
TDR 4340 - 4390	TS 40093I	TD 15	-	
TDR 4400 - 4410	TS 40093I	TD 15	-	
TDR 4420 - 4500	SO 50090I	TD 20	-	



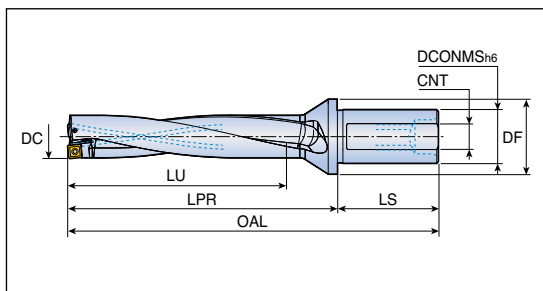
TDR 5...-T2



Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 5125-20T2-05	12.5	20	25	65	83	50	M13X1.0	SPMG 05... DG/DK/DA D148-149
5130-20T2-05	13.0	20	25	65	83	50	M13X1.0	
5135-20T2-05	13.5	20	25	70	88	50	M13X1.0	
5140-20T2-05	14.0	20	25	70	88	50	M13X1.0	
5145-20T2-05	14.5	20	25	75	94	50	M13X1.0	
5150-20T2-05	15.0	20	25	75	94	50	M13X1.0	
5155-25T2-06	15.5	25	32	80	100	56	M16X1.5	SPMG 06... DG/DK/DA D148-149
5160-25T2-06	16.0	25	32	80	100	56	M16X1.5	
5165-25T2-06	16.5	25	32	85	105	56	M16X1.5	
5170-25T2-06	17.0	25	32	85	105	56	M16X1.5	
5175-25T2-06	17.5	25	32	90	111	56	M16X1.5	
5180-25T2-06	18.0	25	32	90	111	56	M16X1.5	
5185-25T2-06	18.5	25	32	95	116	56	M16X1.5	
5190-25T2-06	19.0	25	32	95	116	56	M16X1.5	
5195-25T2-06	19.5	25	32	100	123	56	M16X1.5	
5200-25T2-06	20.0	25	32	100	123	56	M16X1.5	
5205-25T2-06	20.5	25	32	105	128	56	M16X1.5	
5210-25T2-06	21.0	25	32	105	128	56	M16X1.5	
5215-25T2-06	21.5	25	32	110	133	56	M16X1.5	SPMG 07... DG/DK/DA D148-149
5220-25T2-07	22.0	25	32	110	133	56	M22X2.0	
5225-32T2-07	22.5	32	45	115	140	60	M22X2.0	
5230-32T2-07	23.0	32	45	115	140	60	M22X2.0	
5235-32T2-07	23.5	32	45	120	146	60	M22X2.0	
5240-32T2-07	24.0	32	45	120	146	60	M22X2.0	
5245-32T2-07	24.5	32	45	125	152	60	M22X2.0	
5250-32T2-07	25.0	32	45	125	152	60	M22X2.0	
5255-32T2-07	25.5	32	45	130	157	60	M22X2.0	
5260-32T2-07	26.0	32	45	130	157	60	M22X2.0	
5265-32T2-07	26.5	32	45	135	162	60	M22X2.0	
5270-32T2-07	27.0	32	45	135	162	60	M22X2.0	
5275-32T2-07	27.5	32	45	140	168	60	Rc 1/4	

- OAL = LPR+LS

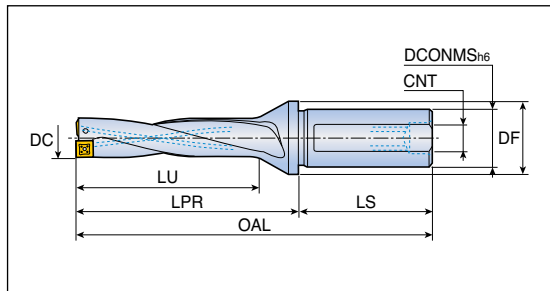


TDR 5...-T2

Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 5280-32T2-09	28.0	32	45	140	168	60	Rc 1/4	SPMG 09... DG/DK/DA  D148-149
5285-32T2-09	28.5	32	45	145	173	60	Rc 1/4	
5290-32T2-09	29.0	32	45	145	173	60	Rc 1/4	
5295-32T2-09	29.5	32	55	150	181	60	Rc 1/4	
5300-32T2-09	30.0	32	55	150	181	60	Rc 1/4	
5300-40T2-09	30.0	40	55	150	181	70	Rc 1/4	
5310-32T2-09	31.0	32	55	155	187	60	Rc 1/4	
5310-40T2-09	31.0	40	55	155	187	70	Rc 1/4	
5320-32T2-09	32.0	32	55	160	192	60	Rc 1/4	
5320-40T2-09	32.0	40	55	160	192	70	Rc 1/4	
5330-32T2-09	33.0	32	55	165	198	60	Rc 1/4	
5330-40T2-09	33.0	40	55	165	198	70	Rc 1/4	
5340-32T2-11	34.0	32	55	170	203	60	Rc 1/4	SPMG 11... DG/DK/DA  D148-149
5340-40T2-11	34.0	40	55	170	203	70	Rc 1/4	
5350-32T2-11	35.0	32	55	175	209	60	Rc 1/4	
5350-40T2-11	35.0	40	55	175	209	70	Rc 1/4	
5360-32T2-11	36.0	32	55	180	215	60	Rc 1/4	
5360-40T2-11	36.0	40	55	180	215	70	Rc 1/4	
5370-32T2-11	37.0	32	55	185	221	60	Rc 1/4	
5370-40T2-11	37.0	40	55	185	221	70	Rc 1/4	
5380-32T2-11	38.0	32	55	190	227	60	Rc 1/4	
5380-40T2-11	38.0	40	55	190	227	70	Rc 1/4	
5390-32T2-11	39.0	32	55	195	232	60	Rc 1/4	
5390-40T2-11	39.0	40	55	195	232	70	Rc 1/4	
5400-32T2-11	40.0	32	60	200	238	60	Rc 1/4	
5400-40T2-11	40.0	40	60	200	238	70	Rc 1/4	
5410-40T2-11	41.0	40	60	205	244	70	Rc 1/4	

- OAL = LPR+LS



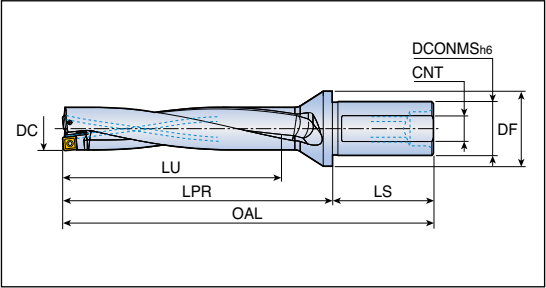
TDR 5...-T2



Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
TDR 5420-40T2-14	42.0	40	60	210	249	70	Rc 1/4	SPMG 14... DG/DK/DA  148-149
5430-40T2-14	43.0	40	60	215	255	70	Rc 1/4	
5440-40T2-14	44.0	40	60	220	260	70	Rc 1/4	
5450-40T2-14	45.0	40	60	225	267	70	Rc 1/4	
5460-40T2-14	46.0	40	60	230	273	70	Rc 1/4	
5470-40T2-14	47.0	40	60	235	278	70	Rc 1/4	
5480-40T2-14	48.0	40	60	240	284	70	Rc 1/4	
5490-40T2-14	49.0	40	60	245	289	70	Rc 1/4	
5500-40T2-14	50.0	40	60	250	295	70	Rc 1/4	

- OAL = LPR+LS

Spare parts

Designation	Screw	Wrench	Plug	
				
TDR 5125 - 5150	TS 20043I/HG-P	TD 6P	SL 20 M	
TDR 5155 - 5215	TS 22052I/HG	TD 7	SL 25 M	
TDR 5220 - 5270	TS 25064I	TD 8	SL 25 M / SL 32 M	
TDR 5275	TS 25064I	TD 8	-	
TDR 5280 - 5330	TS 35088I	TD 10	-	
TDR 5340 - 5390	TS 40093I	TD 15	-	
TDR 5400 - 5410	TS 40093I	TD 15	-	
TDR 5420 - 5500	SO 50090I	TD 20	-	



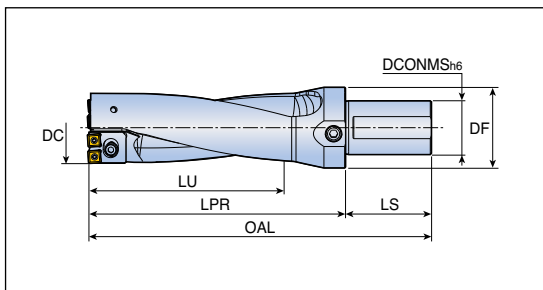
TDR 25...CA-T



Indexable cartridge drill holders



- Drilling depth: 2.5xdiameter



Designation	Dimension (mm)						Setting plate	Insert
	DC	DCONMS	DF	LU	LPR	LS		
TDR 2551-53-50T2-07CA-T	51	50	75	133	170	80	-	SPMG 07... DG/DK/DA
	52	50	75	133	170	80	TDP-0701	D148-149
	53	50	75	133	170	80	TDP-0702	
2554-56-50T2-07CA-T	54	50	75	140	180	80	-	SPMG 07... DG/DK/DA
	55	50	75	140	180	80	TDP-0701	D148-149
	56	50	75	140	180	80	TDP-0702	
2557-62-50T2-09CA-T	57	50	75	155	201	80	-	SPMG 09... DG/DK/DA
	58	50	75	155	201	80	TDP-0901	D148-149
	59	50	75	155	201	80	TDP-0902	
	60	50	75	155	201	80	TDP-0903	
	61	50	75	155	201	80	TDP-0904	
	62	50	75	155	201	80	TDP-0905	
2563-66-50T2-09CA-T	63	50	75	165	215	80	-	SPMG 09... DG/DK/DA
	64	50	75	165	215	80	TDP-0901	D148-149
	65	50	75	165	215	80	TDP-0902	
	66	50	75	165	215	80	TDP-0903	
2567-73-50T2-11CA-T	67	50	75	183	240	80	-	SPMG 11... DG/DK/DA
	68	50	75	183	240	80	TDP-1101	D148-149
	69	50	75	183	240	80	TDP-1102	
	70	50	75	183	240	80	TDP-1103	
	71	50	75	183	240	80	TDP-1104	
	72	50	75	183	240	80	TDP-1105	
	73	50	75	183	240	80	TDP-1106	
2574-80-50T2-12CA-T	74	50	75	200	250	80	-	SPMG 12...DG
	75	50	75	200	250	80	TDP-1101	D148
	76	50	75	200	250	80	TDP-1102	
	77	50	75	200	250	80	TDP-1103	
	78	50	75	200	250	80	TDP-1104	
	79	50	75	200	250	80	TDP-1105	
	80	50	75	200	250	80	TDP-1106	



- OAL = LPR+LS

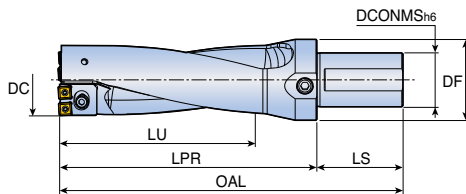
TDR 35...CA-T



Indexable cartridge drill holders



- Drilling depth: $3.5 \times \text{diameter}$

[illegible]

- $OAL = LPR + LS$

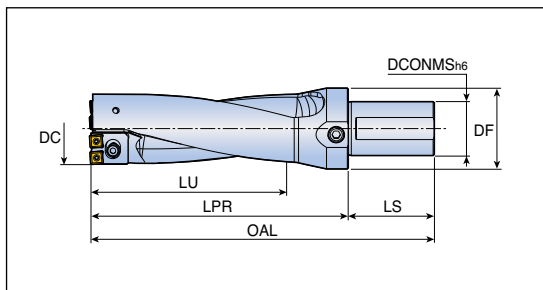
TDR 35...CA-T



Indexable cartridge drill holders



- Drilling depth: 3.5x diameter



Designation	Dimension (mm)						Setting plate	Insert
	DC	DCONMS	DF	LU	LPR	LS		
TDR 3574-80-50T2-12CA-T	74	50	75	280	330	80	-	SPMG 12...DG D148
	75	50	75	280	330	80	TDP-1101	
	76	50	75	280	330	80	TDP-1102	
	77	50	75	280	330	80	TDP-1103	
	78	50	75	280	330	80	TDP-1104	
	79	50	75	280	330	80	TDP-1105	
	80	50	75	280	330	80	TDP-1106	

- OAL = LPR + LS

Spare parts

Designation	Screw	Cartridge for peripheral	Cartridge for center
TDR.. 51-53...	TS 25064I	TDR 07CA-P1-T	TDR 07CA-C1-T
TDR.. 54-56...	TS 25064I	TDR 07CA-P2-T	TDR 07CA-C2-T
TDR.. 57-62...	TS 35088I	TDR 09CA-P1-T	TDR 09CA-C1-T
TDR.. 63-66...	TS 35088I	TDR 09CA-P2-T	TDR 09CA-C2-T
TDR.. 67-73...	TS 40093I	TDR 11CA-P1-T	TDR 11CA-C1-T
TDR.. 74-80...	TS 40093I	TDR 12CA-P2-T	TDR 12CA-C2-T

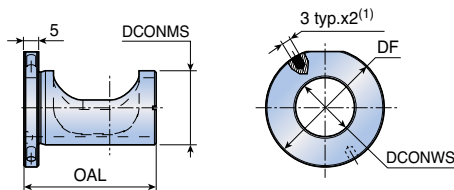
Spare parts for cartridges

Designation	Cartridge clamping screw	Washer	Setting plate screw
TDR 07CA-P1-T	SH M4x0.7x16	MW 4.3x8	TS 20043I/HG-P
TDR 07CA-C1-T	SH M4x0.7x16	MW 4.3x8	-
TDR 07CA-P2-T	SH M4x0.7x16	MW 4.3x8	TS 20043I/HG-P
TDR 07CA-C2-T	SH M4x0.7x16	MW 4.3x8	-
TDR 09CA-P1-T	SH M5x0.8x16	MW 5.5x10	SO 30055I
TDR 09CA-C1-T	SH M5x0.8x16	MW 5.5x10	-
TDR 09CA-P2-T	SH M5x0.8x16	MW 5.5x10	SO 30055I
TDR 09CA-C2-T	SH M5x0.8x16	MW 5.5x10	-
TDR 11CA-P1-T	SH M6x1.0x20	MW 6.4x12	SO 30055I
TDR 11CA-C1-T	SH M6x1.0x20	MW 6.4x12	-
TDR 12CA-P2-T	SH M6x1.0x20	MW 6.4x12	SO 30055I
TDR 12CA-C2-T	SH M6x1.0x20	MW 6.4x12	-



ECCENTER SLEEVE

Drill center adjustment sleeves / eccentric sleeve

[illegible]

- ⁽¹⁾ Holes for inserting a pin are used to facilitate radial adjustment of the sleeve (Pin is not supplied)

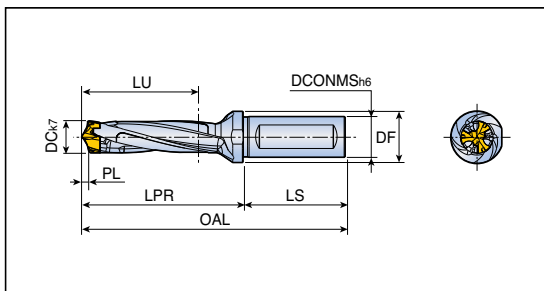
3ED...T...-3D

DRILLSPEED
HIGH PERFORMANCE DRILLING

Head changeable 3 flute drill holders - Weldon type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
3ED 160-169-20T3-3D	16.0-16.9	20	25	52	79.0	50	3.70	16	K 3ED D16-D17
170-179-20T3-3D	17.0-17.9	20	25	55	84.0	50	3.88	17	K 3ED D16-D17
180-189-25T2-3D	18.0-18.9	25	32	58	90.1	56	4.07	18	K 3ED D18-D19
190-199-25T2-3D	19.0-19.9	25	32	61	94.7	56	4.26	19	K 3ED D18-D19
200-209-25T2-3D	20.0-20.9	25	32	64	99.3	56	4.44	20	K 3ED D20-D21



- OAL = LPR+LS
- SSC : Seat size code

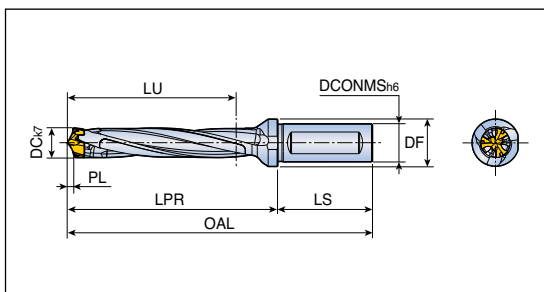
3ED...T...-5D

DRILLSPEED
HIGH PERFORMANCE DRILLING

Head changeable 3 flute drill holders - Weldon type shank



- Drilling depth: 5xdiameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
3ED 160-169-20T3-5D	16.0-16.9	20	25	84	111.0	50	3.70	16	K 3ED D16-D17
170-179-20T3-5D	17.0-17.9	20	25	89	118.0	50	3.88	17	K 3ED D16-D17
180-189-25T2-5D	18.0-18.9	25	32	94	126.1	56	4.07	18	K 3ED D18-D19
190-199-25T2-5D	19.0-19.9	25	32	99	132.7	56	4.26	19	K 3ED D18-D19
200-209-25T2-5D	20.0-20.9	25	32	104	139.3	56	4.44	20	K 3ED D20-D21



- OAL = LPR+LS
- SSC : Seat size code

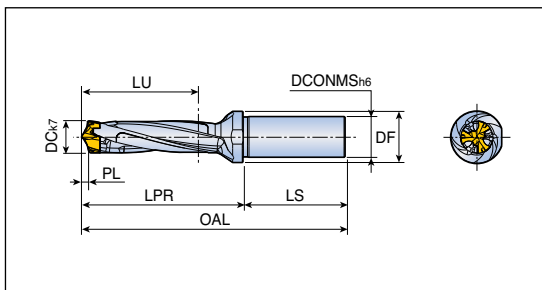
3ED...T0...-3D

DRILL SPEED

Head changeable 3 flute drill holders - Cylindrical type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
3ED 160-169-20T0-3D	16.0-16.9	20	25	52	79.0	50	3.70	16	K 3ED D16-D17
170-179-20T0-3D	17.0-17.9	20	25	55	84.0	50	3.88	17	K 3ED D16-D17
180-189-25T0-3D	18.0-18.9	25	32	58	90.1	56	4.07	18	K 3ED D18-D19
190-199-25T0-3D	19.0-19.9	25	32	61	94.7	56	4.26	19	K 3ED D18-D19
200-209-25T0-3D	20.0-20.9	25	32	64	99.3	56	4.44	20	K 3ED D20-D21



- OAL = LPR+LS
- SSC : Seat size code

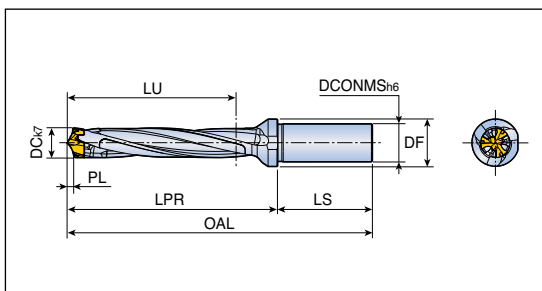
3ED...T0...-5D

DRILL SPEED

Head changeable 3 flute drill holders - Cylindrical type shank



- Drilling depth: 5xdiameter



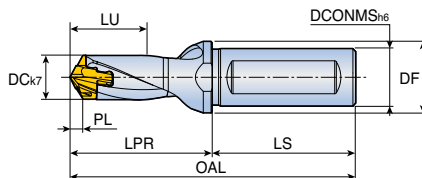
Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
3ED 160-169-20T0-5D	16.0-16.9	20	25	84	111.0	50	3.70	16	K 3ED D16-D17
170-179-20T0-5D	17.0-17.9	20	25	89	118.0	50	3.88	17	K 3ED D16-D17
180-189-25T0-5D	18.0-18.9	25	32	94	126.1	56	4.07	18	K 3ED D18-D19
190-199-25T0-5D	19.0-19.9	25	32	99	132.7	56	4.26	19	K 3ED D18-D19
200-209-25T0-5D	20.0-20.9	25	32	104	139.3	56	4.44	20	K 3ED D20-D21



- OAL = LPR+LS
- SSC : Seat size code

DRILL RUSH

-
- A diagram showing a water pump with a propeller. The propeller is connected to a shaft that goes down into a tank of water. The propeller is shown in a position where it is pushing water upwards, creating a column of water that rises above the surface of the tank.



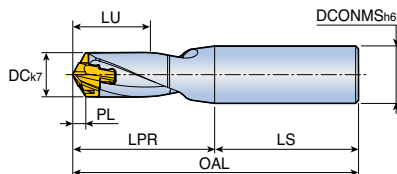
- OAL = LPR+LS
- SSC : Seat size code

TCD...S0-1.5D

Head changeable drill holders - Cylindrical type shank



- Drilling depth: 1.5xdiameter



Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
TCD 060-064-12S0-1.5D	6.0-6.4	12	10	23.0	45	0.96	6	K TCD D060-D099
065-069-12S0-1.5D	6.5-6.9	12	11	24.1	45	1.18	6.5	
070-074-12S0-1.5D	7.0-7.4	12	12	25.1	45	1.01	7	
075-079-12S0-1.5D	7.5-7.9	12	12	25.9	45	1.10	7	
080-089-12S0-1.5D	8.0-8.9	12	13	27.4	45	1.20	8	
090-099-12S0-1.5D	9.0-9.9	12	15	29.3	45	1.35	9	K TCD D100-D199
100-109-16S0-1.5D	10.0-10.9	16	17	31.2	48	1.50	10	
110-119-16S0-1.5D	11.0-11.9	16	19	33.1	48	1.67	11	
120-129-16S0-1.5D	12.0-12.9	16	20	35.0	48	1.82	12	
130-139-16S0-1.5D	13.0-13.9	16	22	37.1	48	1.96	13	
140-149-16S0-1.5D	14.0-14.9	16	23	41.1	48	2.12	14	K TCD D200-D269
150-159-20S0-1.5D	15.0-15.9	20	25	46.2	50	2.27	15	
160-169-20S0-1.5D	16.0-16.9	20	26	49.3	50	2.42	16	
170-179-20S0-1.5D	17.0-17.9	20	29	52.4	50	2.59	17	
180-189-25S0-1.5D	18.0-18.9	25	30	55.5	56	2.73	18	
190-199-25S0-1.5D	19.0-19.9	25	32	58.5	56	2.88	19	
200-209-25S0-1.5D	20.0-20.9	25	33	61.6	56	3.02	20	
210-219-25S0-1.5D	21.0-21.9	25	35	64.7	56	3.18	21	
220-229-25S0-1.5D	22.0-22.9	25	36	67.8	56	3.24	22	
230-239-32S0-1.5D	23.0-23.9	32	38	70.8	60	3.46	23	
240-249-32S0-1.5D	24.0-24.9	32	40	73.9	60	3.62	24	
250-259-32S0-1.5D	25.0-25.9	32	42	77.0	60	3.80	25	



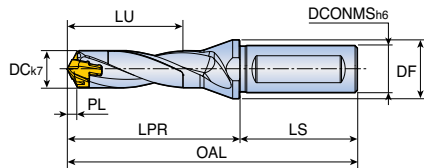
- OAL = LPR+LS
- SSC : Seat size code

TCD...T...-3D

Head changeable drill holders - Weldon type shank



- Drilling depth: 3x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
TCD 060-064-12T3-3D	6.0-6.4	12	16	19	32.0	45	0.96	6	K TCD D060-D099
065-069-12T3-3D	6.5-6.9	12	16	21	33.8	45	1.18	6.5	
070-074-12T3-3D	7.0-7.4	12	16	22	35.6	45	1.01	7	
075-079-12T3-3D	7.5-7.9	12	16	24	37.1	45	1.10	7	
080-084-12T3-3D	8.0-8.4	12	16	25	39.4	45	1.20	8	
085-089-12T3-3D	8.5-8.9	12	16	27	40.9	45	1.29	8	
090-094-12T3-3D	9.0-9.4	12	16	28	42.8	45	1.35	9	
095-099-12T3-3D	9.5-9.9	12	16	30	44.3	45	1.44	9	
100-104-16T3-3D	10.0-10.4	16	20	32	46.2	48	1.50	10	K TCD D100-D199
105-109-16T3-3D	10.5-10.9	16	20	34	47.7	48	1.59	10	
110-114-16T3-3D	11.0-11.4	16	20	35	49.6	48	1.67	11	
115-119-16T3-3D	11.5-11.9	16	20	37	51.1	48	1.76	11	
120-124-16T3-3D	12.0-12.4	16	20	38	53.0	48	1.82	12	
125-129-16T3-3D	12.5-12.9	16	20	39	54.5	48	1.91	12	
130-134-16T3-3D	13.0-13.4	16	20	41	56.6	48	1.96	13	
135-139-16T3-3D	13.5-13.9	16	20	43	58.1	48	2.05	13	
140-144-16T3-3D	14.0-14.4	16	20	44	62.2	48	2.12	14	
145-149-16T3-3D	14.5-14.9	16	20	46	63.7	48	2.21	14	
150-159-20T3-3D	15.0-15.9	20	25	47	68.7	50	2.27	15	K TCD D200-D269
160-169-20T3-3D	16.0-16.9	20	25	50	73.3	50	2.42	16	
170-179-20T3-3D	17.0-17.9	20	25	54	77.9	50	2.59	17	
180-189-25T2-3D	18.0-18.9	25	32	57	82.5	56	2.73	18	
190-199-25T2-3D	19.0-19.9	25	32	60	87.0	56	2.88	19	
200-209-25T2-3D	20.0-20.9	25	32	63	91.6	56	3.02	20	
210-219-25T2-3D	21.0-21.9	25	32	66	96.2	56	3.18	21	
220-229-25T2-3D	22.0-22.9	25	32	69	100.8	56	3.24	22	
230-239-32T2-3D	23.0-23.9	32	42	72	105.3	60	3.46	23	
240-249-32T2-3D	24.0-24.9	32	42	76	109.9	60	3.62	24	
250-259-32T2-3D	25.0-25.9	32	42	79	114.5	60	3.80	25	



- OAL = LPR+LS
- SSC : Seat size code

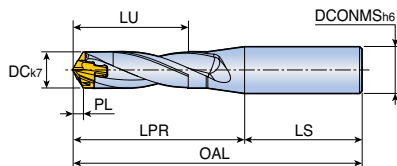
TCD...S0-3D



Head changeable drill holders - Cylindrical type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
TCD 060-064-12S0-3D	6.0-6.4	12	19	32.0	45	0.96	6	K TCD D060-D099
065-069-12S0-3D	6.5-6.9	12	21	33.8	45	1.18	6.5	
070-074-12S0-3D	7.0-7.4	12	22	35.6	45	1.01	7	
075-079-12S0-3D	7.5-7.9	12	24	37.1	45	1.10	7	
080-084-12S0-3D	8.0-8.4	12	25	39.4	45	1.20	8	
085-089-12S0-3D	8.5-8.9	12	27	40.9	45	1.29	8	
090-094-12S0-3D	9.0-9.4	12	28	42.8	45	1.35	9	
095-099-12S0-3D	9.5-9.9	12	30	44.3	45	1.44	9	
100-104-16S0-3D	10.0-10.4	16	32	46.2	48	1.50	10	K TCD D100-D199
105-109-16S0-3D	10.5-10.9	16	34	47.7	48	1.59	10	
110-114-16S0-3D	11.0-11.4	16	35	49.6	48	1.67	11	
115-119-16S0-3D	11.5-11.9	16	37	51.1	48	1.76	11	
120-124-16S0-3D	12.0-12.4	16	38	53.0	48	1.82	12	
125-129-16S0-3D	12.5-12.9	16	39	54.5	48	1.91	12	
130-134-16S0-3D	13.0-13.4	16	41	56.6	48	1.96	13	
135-139-16S0-3D	13.5-13.9	16	43	58.1	48	2.05	13	
140-144-16S0-3D	14.0-14.4	16	44	62.1	48	2.12	14	
145-149-16S0-3D	14.5-14.9	16	46	63.7	48	2.21	14	
150-159-20S0-3D	15.0-15.9	20	47	68.7	50	2.27	15	K TCD D200-D269
160-169-20S0-3D	16.0-16.9	20	50	73.3	50	2.42	16	
170-179-20S0-3D	17.0-17.9	20	54	77.9	50	2.59	17	
180-189-25S0-3D	18.0-18.9	25	57	82.5	56	2.73	18	
190-199-25S0-3D	19.0-19.9	25	60	87.0	56	2.88	19	
200-209-25S0-3D	20.0-20.9	25	63	91.6	56	3.02	20	
210-219-25S0-3D	21.0-21.9	25	66	96.2	56	3.18	21	
220-229-25S0-3D	22.0-22.9	25	69	100.8	56	3.24	22	
230-239-32S0-3D	23.0-23.9	32	72	105.3	60	3.46	23	
240-249-32S0-3D	24.0-24.9	32	76	109.9	60	3.62	24	
250-259-32S0-3D	25.0-25.9	32	79	114.5	60	3.80	25	



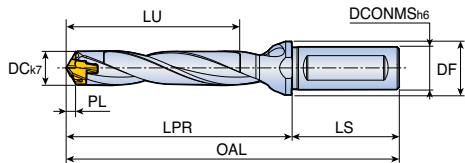
- OAL = LPR+LS
- SSC : Seat size code

TCD...T...-5D

Head changeable drill holders - Weldon type shank



- Drilling depth: 5x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
TCD 060-064-12T3-5D	6.0-6.4	12	16	31	44.0	45	0.96	6	K TCD D060-D099
065-069-12T3-5D	6.5-6.9	12	16	34	46.8	45	1.18	6.5	
070-074-12T3-5D	7.0-7.4	12	16	36	49.6	45	1.01	7	
075-079-12T3-5D	7.5-7.9	12	16	39	52.1	45	1.10	7	
080-084-12T3-5D	8.0-8.4	12	16	41	55.4	45	1.20	8	
085-089-12T3-5D	8.5-8.9	12	16	44	57.9	45	1.29	8	
090-094-12T3-5D	9.0-9.4	12	16	46	60.8	45	1.35	9	
095-099-12T3-5D	9.5-9.9	12	16	49	63.3	45	1.44	9	
100-104-16T3-5D	10.0-10.4	16	20	52	66.2	48	1.50	10	K TCD D100-D199
105-109-16T3-5D	10.5-10.9	16	20	55	68.7	48	1.59	10	
110-114-16T3-5D	11.0-11.4	16	20	57	71.6	48	1.67	11	
115-119-16T3-5D	11.5-11.9	16	20	60	74.1	48	1.76	11	
120-124-16T3-5D	12.0-12.4	16	20	62	77.0	48	1.82	12	
125-129-16T3-5D	12.5-12.9	16	20	64	79.5	48	1.91	12	
130-134-16T3-5D	13.0-13.4	16	20	67	82.6	48	1.96	13	
135-139-16T3-5D	13.5-13.9	16	20	70	85.1	48	2.05	13	
140-144-16T3-5D	14.0-14.4	16	20	72	90.2	48	2.12	14	
145-149-16T3-5D	14.5-14.9	16	20	75	92.7	48	2.21	14	
150-159-20T3-5D	15.0-15.9	20	25	77	98.7	50	2.27	15	K TCD D200-D269
160-169-20T3-5D	16.0-16.9	20	25	82	105.3	50	2.42	16	
170-179-20T3-5D	17.0-17.9	20	25	88	111.9	50	2.59	17	
180-189-25T2-5D	18.0-18.9	25	32	93	118.5	56	2.73	18	
190-199-25T2-5D	19.0-19.9	25	32	98	125.0	56	2.88	19	
200-209-25T2-5D	20.0-20.9	25	32	103	131.6	56	3.02	20	
210-219-25T2-5D	21.0-21.9	25	32	108	138.2	56	3.18	21	
220-229-25T2-5D	22.0-22.9	25	32	113	144.8	56	3.24	22	
230-239-32T2-5D	23.0-23.9	32	42	118	151.3	60	3.46	23	
240-249-32T2-5D	24.0-24.9	32	42	124	157.9	60	3.62	24	
250-259-32T2-5D	25.0-25.9	32	42	129	164.5	60	3.80	25	

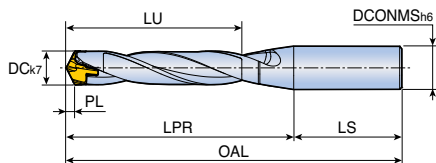


- OAL = LPR+LS
- SSC : Seat size code

Head changeable drill holders - Cylindrical type shank



- Drilling depth: 5x diameter



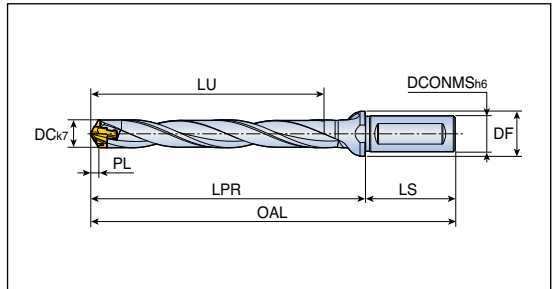
Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
TCD 060-064-12S0-5D	6.0-6.4	12	31	44.0	45	0.96	6	K TCD D060-D099
065-069-12S0-5D	6.5-6.9	12	34	46.8	45	1.18	6.5	
070-074-12S0-5D	7.0-7.4	12	36	49.6	45	1.01	7	
075-079-12S0-5D	7.5-7.9	12	39	52.1	45	1.10	7	
080-084-12S0-5D	8.0-8.4	12	41	55.4	45	1.20	8	
085-089-12S0-5D	8.5-8.9	12	44	57.9	45	1.29	8	
090-094-12S0-5D	9.0-9.4	12	46	60.8	45	1.35	9	
095-099-12S0-5D	9.5-9.9	12	49	63.3	45	1.44	9	
100-104-16S0-5D	10.0-10.4	16	52	66.2	48	1.50	10	K TCD D100-D199
105-109-16S0-5D	10.5-10.9	16	55	68.7	48	1.59	10	
110-114-16S0-5D	11.0-11.4	16	57	71.6	48	1.67	11	
115-119-16S0-5D	11.5-11.9	16	60	74.1	48	1.76	11	
120-124-16S0-5D	12.0-12.4	16	62	77.0	48	1.82	12	
125-129-16S0-5D	12.5-12.9	16	64	79.5	48	1.91	12	
130-134-16S0-5D	13.0-13.4	16	67	82.6	48	1.96	13	
135-139-16S0-5D	13.5-13.9	16	70	85.1	48	2.05	13	
140-144-16S0-5D	14.0-14.4	16	72	90.2	48	2.12	14	
145-149-16S0-5D	14.5-14.9	16	75	92.7	48	2.21	14	
150-159-20S0-5D	15.0-15.9	20	77	98.7	50	2.27	15	K TCD D200-D269
160-169-20S0-5D	16.0-16.9	20	82	105.3	50	2.42	16	
170-179-20S0-5D	17.0-17.9	20	88	111.9	50	2.59	17	
180-189-25S0-5D	18.0-18.9	25	93	118.5	56	2.73	18	
190-199-25S0-5D	19.0-19.9	25	98	125.0	56	2.88	19	
200-209-25S0-5D	20.0-20.9	25	103	131.6	56	3.02	20	
210-219-25S0-5D	21.0-21.9	25	108	138.2	56	3.18	21	
220-229-25S0-5D	22.0-22.9	25	113	144.8	56	3.24	22	
230-239-32S0-5D	23.0-23.9	32	118	151.3	60	3.46	23	
240-249-32S0-5D	24.0-24.9	32	124	157.9	60	3.62	24	
250-259-32S0-5D	25.0-25.9	32	129	164.5	60	3.80	25	



- OAL = LPR+LS
- SSC : Seat size code

DRILL RUSH

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D150	D190

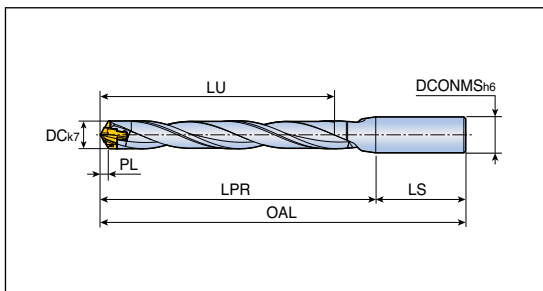
- It is recommended to make the pilot hole with a 1.5D holder
- OAL = LPR+LS
- SSC : Seat size code

TCD...S0-8D

Head changeable drill holders - Cylindrical type shank



- Drilling depth: 8xdiameter



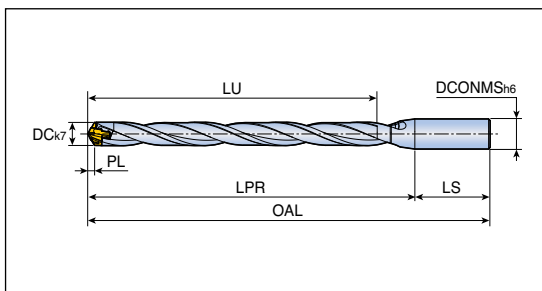
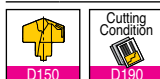
Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
TCD 070-074-12S0-8D	7.0-7.4	12	57	70.6	45	1.01	7	K TCD D060-D099
075-079-12S0-8D	7.5-7.9	12	61	74.6	45	1.10	7	
080-084-12S0-8D	8.0-8.4	12	65	79.4	45	1.20	8	
085-089-12S0-8D	8.5-8.9	12	69	83.4	45	1.29	8	
090-094-12S0-8D	9.0-9.4	12	73	91.8	45	1.35	9	
095-099-12S0-8D	9.5-9.9	12	77	92.7	45	1.44	9	
100-104-16S0-8D	10.0-10.4	16	82	96.2	48	1.50	10	K TCD D100-D199
105-109-16S0-8D	10.5-10.9	16	86	100.2	48	1.59	10	
110-114-16S0-8D	11.0-11.4	16	90	104.6	48	1.67	11	
115-119-16S0-8D	11.5-11.9	16	94	108.6	48	1.76	11	
120-124-16S0-8D	12.0-12.4	16	98	113.0	48	1.82	12	
125-129-16S0-8D	12.5-12.9	16	102	117.0	48	1.91	12	
130-134-16S0-8D	13.0-13.4	16	106	121.6	48	1.96	13	K TCD D200-D269
135-139-16S0-8D	13.5-13.9	16	110	125.6	48	2.05	13	
140-144-16S0-8D	14.0-14.4	16	114	132.2	48	2.12	14	
145-149-16S0-8D	14.5-14.9	16	118	136.2	48	2.21	14	
150-159-20S0-8D	15.0-15.9	20	122	143.7	50	2.27	15	
160-169-20S0-8D	16.0-16.9	20	130	153.3	50	2.42	16	
170-179-20S0-8D	17.0-17.9	20	139	162.9	50	2.59	17	
180-189-25S0-8D	18.0-18.9	25	147	172.5	56	2.73	18	
190-199-25S0-8D	19.0-19.9	25	155	182.0	56	2.88	19	
200-209-25S0-8D	20.0-20.9	25	163	191.6	56	3.02	20	
210-219-25S0-8D	21.0-21.9	25	171	201.2	56	3.18	21	
220-229-25S0-8D	22.0-22.9	25	179	210.8	56	3.24	22	
230-239-32S0-8D	23.0-23.9	32	187	220.3	60	3.46	23	
240-249-32S0-8D	24.0-24.9	32	196	229.9	60	3.62	24	
250-259-32S0-8D	25.0-25.9	32	204	239.5	60	3.80	25	



- It is recommended to make the pilot hole with a 1.5D holder
- OAL = LPR+LS
- SSC : Seat size code

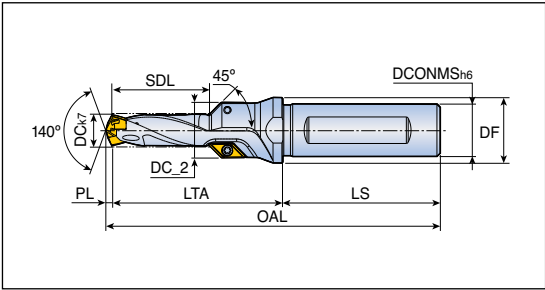
DRILL RUSH

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[illegible]

- It is recommended to make the pilot hole with a 1.5D holder
- OAL = LPR+LS
- SSC : Seat size code

Head changeable drill holders for pre-thread hole



Designation	ISO thread	DC	Dimension (mm)							Drill dia. range	Insert
			SDL	LTA	LS	DC_2	DCONMS	DF	PL		
TCD 068x21x12T3-M8	M8	6.8	21	43.77	45	13.5	12	16	1.23	6.5-6.9	AOMT 06...-C45 D162
085x26x12T3-M10	M10	8.5	26	48.71	45	15.5	12	16	1.29	8.5-8.9	
102x30x16T3-M12	M12	10.2	30	52.46	48	17.0	16	20	1.54	10.0-10.4	
120x35x16T3-M14	M14	12.0	35	59.18	48	19.0	16	20	1.82	12.0-12.4	
140x39x20T3-M16	M16	14.0	39	66.88	50	21.0	20	25	2.12	14.0-14.4	
175x42x20T3-M20	M20	17.5	42	69.32	50	24.5	20	27	2.68	17.0-17.9	
210x48x25T2-M24	M24	21.0	48	76.82	56	28.0	25	32	3.18	21.0-21.9	

• OAL = LTA+LS+PL

Spare parts

Designation	Screw	Wrench	Clamping key	
TCD 068	TS 22046I	TD 7	K TCD D060-D099	
TCD 085	TS 22046I	TD 7	K TCD D060-D099	
TCD 102 - 175	TS 22046I	TD 7	K TCD D100-D199	
TCD 210	TS 22046I	TD 7	K TCD D200-D269	

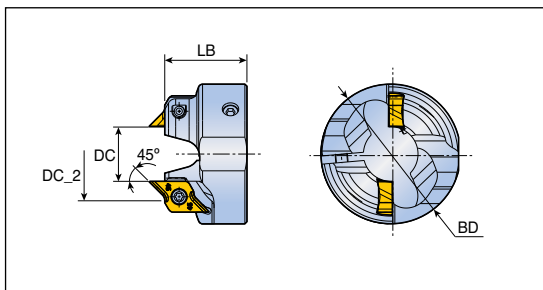


Plug for coolant supply in a stationary machines

TaeguTec supplies special plugs with an internal thread for coolant connections used on lathes that can be pressed into the cavity on the back end of the shank.

Description	Shank diameter	Internal thread	
PL-TCD-12	12	G 1/16	
PL-TCD-16	16	G 1/16	
PL-TCD-20	20	G 1/8	
PL-TCD-25	25	G 1/8	
PL-TCD-32	32	G 1/8	

Chamfering ring tools



Designation	Dimension (mm)				Chamfer size	Chamfer insert
	DC	DC_2	BD	LB		
CFR D100-A45	9.8	16.56	34	20	2.5	CRNG 08...-45CD D162
D105-A45	10.3	17.06	34	20	2.5	
D110-A45	10.8	17.56	34	20	2.5	
D115-A45	11.3	18.06	34	20	2.5	
D120-A45	11.8	18.56	34	20	2.5	
D125-A45	12.3	19.06	34	20	2.5	
D130-A45	12.8	19.56	34	20	2.5	
D135-A45	13.3	20.06	34	20	2.5	
D140-A45	13.8	20.56	38	22	2.5	
D145-A45	14.3	21.06	38	22	2.5	
D150-A45	14.6	21.36	38	22	2.5	
D160-A45	15.6	22.36	42	23	2.5	
D170-A45	16.6	23.36	42	23	2.5	
D180-A45	17.6	24.36	42	23	2.5	
D190-A45	18.6	25.36	42	24	2.5	
D200-A45	19.6	26.36	42	24	2.5	
D210-A45	20.6	27.36	47	24	2.5	
D220-A45	21.6	28.36	47	24	2.5	
D230-A45	22.6	29.36	47	24	2.5	
D240-A45	23.6	30.36	47	24	2.5	
D250-A45	24.6	31.36	47	24	2.5	

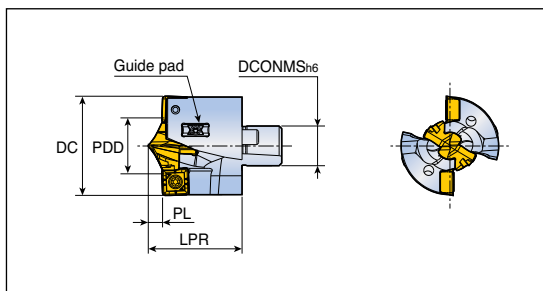
Spare parts

Designation	Insert screw	Wrench	Clamping screw	L-wrench
CFR D100 - D135	SO 25065I	TD 7	SH M3x0.5x10 ⁽¹⁾	L-W2.5
CFR D140 - D150	SO 25065I	TD 7	SH M4x0.7x12 ⁽²⁾	L-W3
CFR D160 - D250	SO 25065I	TD 7	SH M5x0.8x16 ⁽³⁾	L-W4



- ⁽¹⁾ Clamping torque: 2-3 [N·m] ⁽²⁾ Clamping torque: 3.5-4.5 [N·m] ⁽³⁾ Clamping torque: 5-6 [N·m]

Modular drill heads



Designation	Dimension (mm)					Clamping Key	Insert	
	DC	DCONMS	LPR	PL	PDD		Center	Outer
TNDH 2600-C26-TP	26	10.4	24.9	3.98	15.9	K TCD D15-CO	TCD-159-P-CO+	SPGX 06...DW
2700-C26-TP	27	10.4	25.4	4.14	16.9	K TCD D16-CO	TCD-169-P-CO+	SPGX 06...DW
2800-C28-TP	28	11.2	26.9	4.29	17.9	K TCD D17-CO	TCD-179-P-CO+	SPGX 06...DW
2900-C28-TP	29	11.2	26.6	3.97	15.9	K TCD D15-CO	TCD-159-P-CO+	SPGX 07...DW
3000-C30-TP	30	12.0	28.3	4.14	16.9	K TCD D16-CO	TCD-169-P-CO+	SPGX 07...DW
3100-C30-TP	31	12.0	28.5	4.30	17.9	K TCD D17-CO	TCD-179-P-CO+	SPGX 07...DW
3200-C32-TP	32	12.8	30.3	4.46	18.9	K TCD D18-CO	TCD-189-P-CO+	SPGX 07...DW
3300-C32-TP	33	12.8	29.8	3.97	15.9	K TCD D15-CO	TCD-159-P-CO+	SPGX 09...DW
3400-C34-TP	34	13.6	31.6	4.14	16.9	K TCD D16-CO	TCD-169-P-CO+	SPGX 09...DW
3500-C34-TP	35	13.6	31.8	4.30	17.9	K TCD D17-CO	TCD-179-P-CO+	SPGX 09...DW
3600-C36-TP	36	14.4	33.5	4.46	18.9	K TCD D18-CO	TCD-189-P-CO+	SPGX 09...DW
3700-C36-TP	37	14.4	33.3	4.14	16.9	K TCD D16-CO	TCD-169-P-CO+	SPGX 11...DW
3800-C38-TP	38	15.2	35.0	4.30	17.9	K TCD D17-CO	TCD-179-P-CO+	SPGX 11...DW
3900-C38-TP	39	15.2	35.2	4.46	18.9	K TCD D18-CO	TCD-189-P-CO+	SPGX 11...DW
4000-C40-TP	40	16.0	36.9	4.62	19.9	K TCD D19-CO	TCD-199-P-CO+	SPGX 11...DW
4100-C40-TP	41	16.0	37.1	4.78	20.9	K TCD D20-CO	TCD-209-P-CO+	SPGX 11...DW
4200-C42-TP	42	16.8	38.9	4.95	21.9	K TCD D21-CO	TCD-219-P-CO+	SPGX 11...DW
4300-C42-TP	43	16.8	38.9	5.11	22.9	K TCD D22-CO	TCD-229-P-CO+	SPGX 11...DW
								 D163

- DCONMS : Holder connection size
- Guide pad is sold separately from drill head

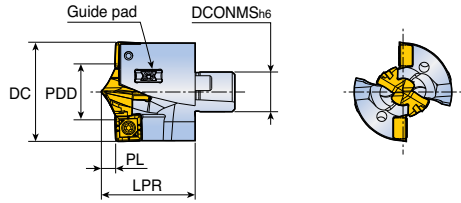
Spare parts

Designation	For double pitch screw		For SPGX		For Guide pad	
	Screw1	Wrench1	Screw2	Wrench2	Screw3	Wrench3
						
TNDH 2600-2800	TDPS 0512-W2.0	F-W2.0	TS 22052I/HG	TD 7	TS 20043I/HG-P	TD 6P
TNDH 2900-3200	TDPS 0512-W2.0	F-W2.0	TS 25064I	TD 8	TS 20043I/HG-P	TD 6P
TNDH 3300-3500	TDPS 0512-W2.0	F-W2.0	TS 35088I	TD 10	TS 20043I/HG-P	TD 6P
TNDH 3600	TDPS 0618-W2.5	F-W2.5	TS 35088I	TD 10	TS 20043I/HG-P	TD 6P
TNDH 3700-4300	TDPS 0618-W2.5	F-W2.5	TS 40093I	TD 15	TS 20043I/HG-P	TD 6P



TNDH-TP

Modular drill heads

[illegible]

- DCONMS : Holder connection size
- Guide pad is sold separately from drill head

Spare parts

Designation	For double pitch screw		For SPGX		For Guide pad	
	Screw1	Wrench1	Screw2	Wrench2	Screw3	Wrench3
						
TNDH 4400-4500	TDPS 0722-W3.0	F-W3.0	TS 40093I	TD 15	TS 20043I/HG-P	TD 6P
TNDH 4600-5000	TDPS 0722-W3.0	F-W3.0	SO 50090I	TD 20	TS 20043I/HG-P	TD 6P

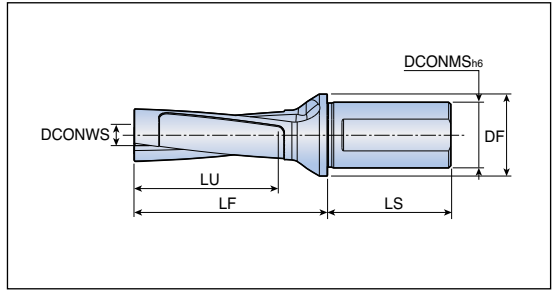


MDB...T2-3

Modular drill holders - Weldon type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)						
	DC	DCONWS	DCONMS	DF	LU	LF	LS
MDB D26/27-081-32T2-C26-3	26-27	10.4	32	40	60	94.3	60
D28/29-087-32T2-C28-3	28-29	11.2	32	40	64	100.5	60
D30/31-093-32T2-C30-3	30-31	12.0	32	40	69	105.5	60
D32/33-099-32T2-C32-3	32-33	12.8	32	40	73	111.7	60
D34/35-105-40T2-C34-3	34-35	13.6	40	50	78	120.2	68
D36/37-111-40T2-C36-3	36-37	14.4	40	50	82	126.5	68
D38/39-117-40T2-C38-3	38-39	15.2	40	50	86	131.4	68
D40/41-123-40T2-C40-3	40-41	16.0	40	50	91	137.6	68
D42/43-129-40T2-C42-3	42-43	16.8	40	50	95	143.8	68
D44/45-135-40T2-C44-3	44-45	17.6	40	50	99	150.0	68
D46/47-141-50T2-C46-3	46-47	18.4	50	60	104	154.5	80
D48/50-150-50T2-C48-3	48-50	19.2	50	60	111	160.9	80

- DC : Cutting diameter range
- DCONWS : Modular head connection size

Spare parts

Designation	Wrench	Wrench handle		
MDB D26/27-D34/35-3	BLD H-W2.5x210	SW6-T-SH		
MDB D36/37-D42/43-3	BLD H-W3.0x225	SW6-T-SH		
MDB D44/45-D48/50-3	BLD H-W4.0x255	SW6-T-SH		

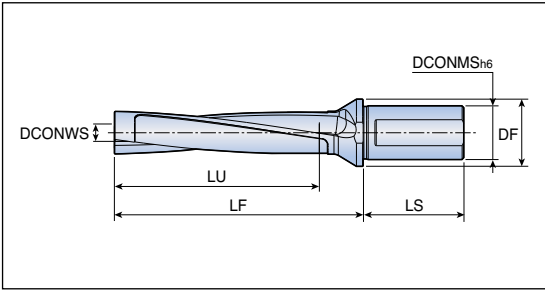
- Wrench: Disassemble the modular head from the modular body (Insert from the rear shank)



Modular drill holders - Weldon type shank



- Drilling depth: 5xdiameter



Designation	Dimension (mm)						
	DC	DCONWS	DCONMS	DF	LU	LF	LS
MDB D26/27-135-32T2-C26-5	26-27	10.4	32	40	114	148.3	60
D28/29-145-32T2-C28-5	28-29	11.2	32	40	122	158.5	60
D30/31-155-32T2-C30-5	30-31	12.0	32	40	131	167.5	60
D32/33-165-32T2-C32-5	32-33	12.8	32	40	139	177.7	60
D34/35-175-40T2-C34-5	34-35	13.6	40	50	148	190.2	68
D36/37-185-40T2-C36-5	36-37	14.4	40	50	156	200.5	68
D38/39-195-40T2-C38-5	38-39	15.2	40	50	164	209.4	68
D40/41-205-40T2-C40-5	40-41	16.0	40	50	173	219.6	68
D42/43-215-40T2-C42-5	42-43	16.8	40	50	181	229.8	68
D44/45-225-40T2-C44-5	44-45	17.6	40	50	189	240.0	68
D46/47-235-50T2-C46-5	46-47	18.4	50	60	198	248.5	80
D48/50-250-50T2-C48-5	48-50	19.2	50	60	211	258.9	80

- DC : Cutting diameter range
- DCONWS : Modular head connection size

Spare parts

Designation	Wrench	Wrench handle		
MDB D26/27-D34/35-5	BLD H-W2.5x280	SW6-T-SH		
MDB D36/37-D42/43-5	BLD H-W3.0x310	SW6-T-SH		
MDB D44/45-D48/50-5	BLD H-W4.0x350	SW6-T-SH		

- Wrench: Disassemble the modular head from the modular body (Insert from the rear shank)

D62

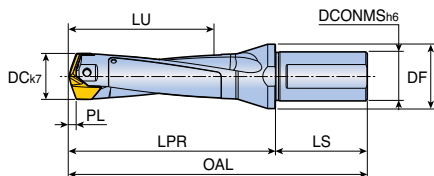
D192

D234

Head changeable drill holders - Weldon type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC
LCD 200-209-25T2-3D	20.0-20.9	25	32	63	92.1	56	3.11	20
210-219-25T2-3D	21.0-21.9	25	32	66	95.3	56	3.29	21
220-229-25T2-3D	22.0-22.9	25	32	69	98.4	56	3.42	22
230-239-25T2-3D	23.0-23.9	25	32	73	101.6	56	3.60	23
240-249-32T2-3D	24.0-24.9	32	40	76	110.7	60	3.73	24
250-259-32T2-3D	25.0-25.9	32	40	79	113.9	60	3.91	25
260-269-32T2-3D	26.0-26.9	32	40	82	117.0	60	4.04	26
270-279-32T2-3D	27.0-27.9	32	40	85	120.2	60	4.22	27
280-289-32T2-3D	28.0-28.9	32	40	88	128.4	60	4.35	28
290-299-32T2-3D	29.0-29.9	32	40	92	131.5	60	4.53	29
300-309-32T2-3D	30.0-30.9	32	42	95	134.7	60	4.67	30
310-319-32T2-3D	31.0-31.9	32	42	98	137.9	60	4.85	31
320-329-40T2-3D	32.0-32.9	40	48	101	143.0	68	4.98	32
330-339-40T2-3D	33.0-33.9	40	48	104	146.2	68	5.16	33
340-349-40T2-3D	34.0-34.9	40	48	107	149.3	68	5.34	34
350-359-40T2-3D	35.0-35.9	40	48	110	152.4	68	5.44	35
360-369-40T2-3D	36.0-36.9	40	48	114	155.6	68	5.62	36
370-379-40T2-3D	37.0-37.9	40	48	117	158.8	68	5.80	37
380-389-40T2-3D	38.0-38.9	40	50	120	166.9	68	5.91	38
390-399-40T2-3D	39.0-39.9	40	50	123	170.1	68	6.09	39
400-410-40T2-3D	40.0-41.0	40	50	126	173.3	68	6.27	40

- OAL = LPR + LS
- SSC: Seat size code

Spare parts

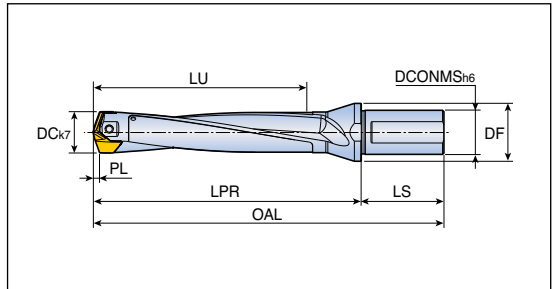
Designation	Screw	Wrench	Wrench handle	
LCD 200-219-3D	TS 40178D25	BLD T20/S7	SW6-T-SH	
LCD 220-239-3D	TS 40198D28	BLD T20/S7	SW6-T-SH	
LCD 240-259-3D	TS 40210D3	BLD T20/S7	SW6-T-SH	
LCD 260-279-3D	TS 50230D3	BLD T20/S7	SW6-T-SH	
LCD 280-299-3D	TS 50250D35	BLD T25/S7	SW6-T-SH	
LCD 300-319-3D	TS 60265D4	BLD T25/S7	SW6-T-SH	
LCD 320-349-3D	TS 60285D42	BLD T25/S7	SW6-T-SH	
LCD 350-379-3D	TS 60320D5	BLD T25/S7	SW6-T-SH	
LCD 380-410-3D	TS 80340D6	BLD T25/S7	SW6-T-SH	



Head changeable drill holders - Weldon type shank



- Drilling depth: 5x diameter

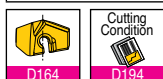


Designation	Dimension (mm)							
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC
LCD 200-209-25T2-5D	20.0-20.9	25	32	103	132.1	56	3.11	20
210-219-25T2-5D	21.0-21.9	25	32	108	137.3	56	3.29	21
220-229-25T2-5D	22.0-22.9	25	32	113	142.4	56	3.42	22
230-239-25T2-5D	23.0-23.9	25	32	119	147.6	56	3.60	23
240-249-32T2-5D	24.0-24.9	32	40	124	158.7	60	3.73	24
250-259-32T2-5D	25.0-25.9	32	40	129	163.9	60	3.91	25
260-269-32T2-5D	26.0-26.9	32	40	134	169.0	60	4.04	26
270-279-32T2-5D	27.0-27.9	32	40	139	174.2	60	4.22	27
280-289-32T2-5D	28.0-28.9	32	40	144	184.4	60	4.35	28
290-299-32T2-5D	29.0-29.9	32	40	150	189.5	60	4.53	29
300-309-32T2-5D	30.0-30.9	32	42	155	194.7	60	4.67	30
310-319-32T2-5D	31.0-31.9	32	42	160	199.9	60	4.85	31
320-329-40T2-5D	32.0-32.9	40	48	165	207.0	68	4.98	32
330-339-40T2-5D	33.0-33.9	40	48	170	212.2	68	5.16	33
340-349-40T2-5D	34.0-34.9	40	48	175	217.3	68	5.34	34
350-359-40T2-5D	35.0-35.9	40	48	180	222.4	68	5.44	35
360-369-40T2-5D	36.0-36.9	40	48	186	227.6	68	5.62	36
370-379-40T2-5D	37.0-37.9	40	48	191	232.8	68	5.80	37
380-389-40T2-5D	38.0-38.9	40	50	196	242.9	68	5.91	38
390-399-40T2-5D	39.0-39.9	40	50	201	248.1	68	6.09	39
400-410-40T2-5D	40.0-41.0	40	50	206	253.3	68	6.27	40

- OAL = LPR + LS
- SSC: Seat size code

Spare parts

Designation	Screw	Wrench	Wrench handle	
				
LCD 200-219-5D	TS 40178D25	BLD T20/S7	SW6-T-SH	
LCD 220-239-5D	TS 40198D28	BLD T20/S7	SW6-T-SH	
LCD 240-259-5D	TS 40210D3	BLD T20/S7	SW6-T-SH	
LCD 260-279-5D	TS 50230D3	BLD T20/S7	SW6-T-SH	
LCD 280-299-5D	TS 50250D35	BLD T25/S7	SW6-T-SH	
LCD 300-319-5D	TS 60265D4	BLD T25/S7	SW6-T-SH	
LCD 320-349-5D	TS 60285D42	BLD T25/S7	SW6-T-SH	
LCD 350-379-5D	TS 60320D5	BLD T25/S7	SW6-T-SH	
LCD 380-410-5D	TS 80340D6	BLD T25/S7	SW6-T-SH	



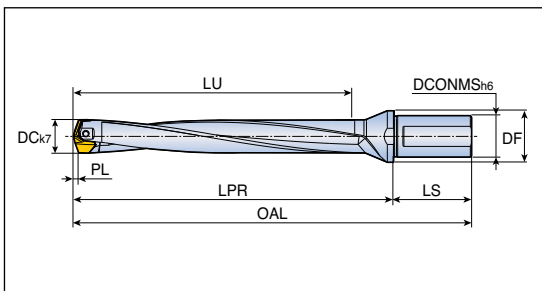
LCD...T2-8D

SPADERUSH

Head changeable drill holders - Weldon type shank



- Drilling depth: 8xdiameter



Designation	Dimension (mm)							
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC
LCD 200-209-25T2-8D	20.0-20.9	25	32	163.1	192.1	56	3.11	20
210-219-25T2-8D	21.0-21.9	25	32	171.3	200.1	56	3.29	21
220-229-25T2-8D	22.0-22.9	25	32	179.4	208.4	56	3.42	22
230-239-25T2-8D	23.0-23.9	25	32	187.6	216.4	56	3.60	23
240-249-32T2-8D	24.0-24.9	32	40	195.7	230.7	60	3.73	24
250-259-32T2-8D	25.0-25.9	32	40	203.9	238.7	60	3.91	25
260-269-32T2-8D	26.0-26.9	32	40	212.0	247.0	60	4.04	26
270-279-32T2-8D	27.0-27.9	32	40	220.2	255.0	60	4.22	27
280-289-32T2-8D	28.0-28.9	32	40	228.4	268.4	60	4.35	28
290-299-32T2-8D	29.0-29.9	32	40	236.5	276.4	60	4.53	29
300-309-32T2-8D	30.0-30.9	32	42	244.7	284.7	60	4.67	30
310-319-32T2-8D	31.0-31.9	32	42	252.9	292.7	60	4.85	31
320-329-40T2-8D	32.0-32.9	40	48	261.0	303.0	68	4.98	32
330-339-40T2-8D	33.0-33.9	40	48	269.2	311.0	68	5.16	33
340-349-40T2-8D	34.0-34.9	40	48	277.3	319.0	68	5.34	34
350-359-40T2-8D	35.0-35.9	40	48	285.4	327.4	68	5.44	35
360-369-40T2-8D	36.0-36.9	40	48	293.6	335.4	68	5.62	36
370-379-40T2-8D	37.0-37.9	40	48	301.8	343.4	68	5.80	37
380-389-40T2-8D	38.0-38.9	40	50	309.9	356.9	68	5.91	38
390-399-40T2-8D	39.0-39.9	40	50	318.1	364.9	68	6.09	39
400-410-40T2-8D	40.0-41.0	40	50	326.3	372.9	68	6.27	40

- OAL = LPR + LS
- SSC: Seat size code
- It is recommended to make the pilot hole with a 3D holder

Spare parts

Designation	Screw	Wrench	Wrench handle	
LCD 200-219-8D	TS 40178D25	BLD T20/S7	SW6-T-SH	
LCD 220-239-8D	TS 40198D28	BLD T20/S7	SW6-T-SH	
LCD 240-259-8D	TS 40210D3	BLD T20/S7	SW6-T-SH	
LCD 260-279-8D	TS 50230D3	BLD T20/S7	SW6-T-SH	
LCD 280-299-8D	TS 50250D35	BLD T25/S7	SW6-T-SH	
LCD 300-319-8D	TS 60265D4	BLD T25/S7	SW6-T-SH	
LCD 320-349-8D	TS 60285D42	BLD T25/S7	SW6-T-SH	
LCD 350-379-8D	TS 60320D5	BLD T25/S7	SW6-T-SH	
LCD 380-410-8D	TS 80340D6	BLD T25/S7	SW6-T-SH	



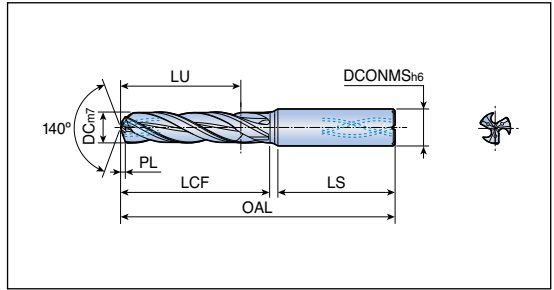
3HD...PI3



3 flute solid carbide drills with oil holes



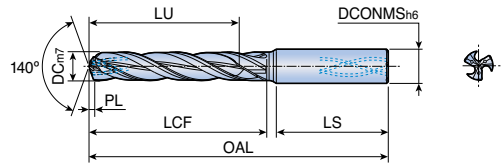
- Drilling depth: $3 \times \text{diameter}$

[illegible]

- : Standard items

SOLID3DRILL

-
- A schematic diagram of a water pump. It features a vertical shaft with a propeller at the bottom, enclosed within a pump housing. A discharge pipe extends upwards from the top of the housing. The pump is shown lifting water from a lower level into the pipe.



Cutting Condition



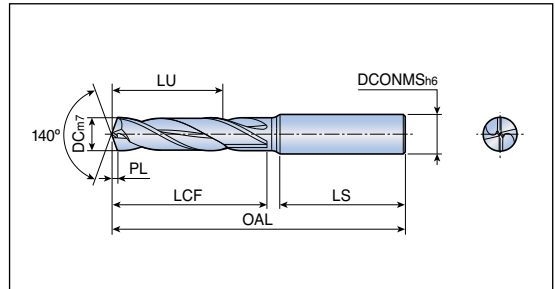
D196

ADVANCE**MACHINING**
TaequTec Industry 4.0

Solid carbide drills without oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 030-014-06 PE3	3.0	6.0	62	14	20	34	0.5	●
031-014-06 PE3	3.1	6.0	62	14	20	34	0.5	●
032-014-06 PE3	3.2	6.0	62	14	20	34	0.5	●
033-014-06 PE3	3.3	6.0	62	14	20	34	0.5	●
034-014-06 PE3	3.4	6.0	62	14	20	34	0.5	●
035-014-06 PE3	3.5	6.0	62	14	20	34	0.6	●
036-014-06 PE3	3.6	6.0	62	14	20	34	0.6	●
037-014-06 PE3	3.7	6.0	62	14	20	34	0.6	●
038-017-06 PE3	3.8	6.0	66	17	24	35	0.6	●
039-017-06 PE3	3.9	6.0	66	17	24	35	0.6	●
040-017-06 PE3	4.0	6.0	66	17	24	35	0.6	●
041-017-06 PE3	4.1	6.0	66	17	24	35	0.7	●
042-017-06 PE3	4.2	6.0	66	17	24	35	0.7	●
043-017-06 PE3	4.3	6.0	66	17	24	35	0.7	●
044-017-06 PE3	4.4	6.0	66	17	24	35	0.7	●
045-017-06 PE3	4.5	6.0	66	17	24	35	0.7	●
046-017-06 PE3	4.6	6.0	66	17	24	35	0.7	●
047-017-06 PE3	4.7	6.0	66	17	24	35	0.8	●
048-020-06 PE3	4.8	6.0	66	20	28	36	0.8	●
049-020-06 PE3	4.9	6.0	66	20	28	36	0.8	●
050-020-06 PE3	5.0	6.0	66	20	28	36	0.8	●
051-020-06 PE3	5.1	6.0	66	20	28	36	0.8	●
052-020-06 PE3	5.2	6.0	66	20	28	36	0.8	●
053-020-06 PE3	5.3	6.0	66	20	28	36	0.8	●
054-020-06 PE3	5.4	6.0	66	20	28	36	0.8	●
055-020-06 PE3	5.5	6.0	66	20	28	36	0.9	●
056-020-06 PE3	5.6	6.0	66	20	28	36	0.9	●
057-020-06 PE3	5.7	6.0	66	20	28	36	0.9	●
058-020-06 PE3	5.8	6.0	66	20	28	36	0.9	●
059-020-06 PE3	5.9	6.0	66	20	28	36	0.9	●
060-020-06 PE3	6.0	6.0	66	20	28	36	0.9	●
061-024-08 PE3	6.1	8.0	79	24	34	36	1.0	●
062-024-08 PE3	6.2	8.0	79	24	34	36	1.0	●
063-024-08 PE3	6.3	8.0	79	24	34	36	1.0	●
064-024-08 PE3	6.4	8.0	79	24	34	36	1.0	●

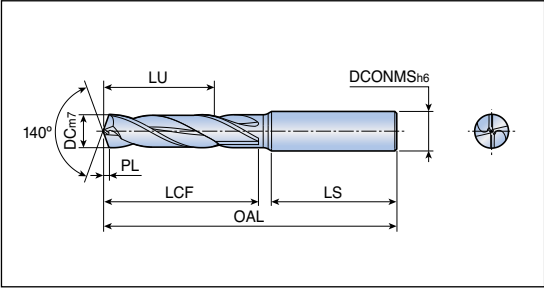
●: Standard items



Solid carbide drills without oil holes



• Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 065-024-08 PE3	6.5	8.0	79	24	34	36	1.0	●
066-024-08 PE3	6.6	8.0	79	24	34	36	1.0	●
067-024-08 PE3	6.7	8.0	79	24	34	36	1.1	●
068-024-08 PE3	6.8	8.0	79	24	34	36	1.1	●
069-024-08 PE3	6.9	8.0	79	24	34	36	1.1	●
070-024-08 PE3	7.0	8.0	79	24	34	36	1.1	●
071-029-08 PE3	7.1	8.0	79	29	41	36	1.1	●
072-029-08 PE3	7.2	8.0	79	29	41	36	1.1	●
073-029-08 PE3	7.3	8.0	79	29	41	36	1.1	●
074-029-08 PE3	7.4	8.0	79	29	41	36	1.2	●
075-029-08 PE3	7.5	8.0	79	29	41	36	1.2	●
076-029-08 PE3	7.6	8.0	79	29	41	36	1.2	●
077-029-08 PE3	7.7	8.0	79	29	41	36	1.2	●
078-029-08 PE3	7.8	8.0	79	29	41	36	1.2	●
079-029-08 PE3	7.9	8.0	79	29	41	36	1.3	●
080-029-08 PE3	8.0	8.0	79	29	41	36	1.3	●
081-035-10 PE3	8.1	10.0	89	35	47	40	1.3	●
082-035-10 PE3	8.2	10.0	89	35	47	40	1.3	●
083-035-10 PE3	8.3	10.0	89	35	47	40	1.3	●
084-035-10 PE3	8.4	10.0	89	35	47	40	1.3	●
085-035-10 PE3	8.5	10.0	89	35	47	40	1.3	●
086-035-10 PE3	8.6	10.0	89	35	47	40	1.4	●
087-035-10 PE3	8.7	10.0	89	35	47	40	1.4	●
088-035-10 PE3	8.8	10.0	89	35	47	40	1.4	●
089-035-10 PE3	8.9	10.0	89	35	47	40	1.4	●
090-035-10 PE3	9.0	10.0	89	35	47	40	1.4	●
091-035-10 PE3	9.1	10.0	89	35	47	40	1.4	●
092-035-10 PE3	9.2	10.0	89	35	47	40	1.4	●
093-035-10 PE3	9.3	10.0	89	35	47	40	1.5	●
094-035-10 PE3	9.4	10.0	89	35	47	40	1.5	●
095-035-10 PE3	9.5	10.0	89	35	47	40	1.5	●
096-035-10 PE3	9.6	10.0	89	35	47	40	1.5	●
097-035-10 PE3	9.7	10.0	89	35	47	40	1.5	●
098-035-10 PE3	9.8	10.0	89	35	47	40	1.6	●
099-035-10 PE3	9.9	10.0	89	35	47	40	1.6	●

●: Standard items



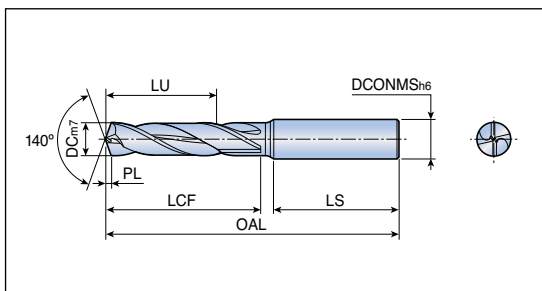
NHD...PE3



Solid carbide drills without oil holes



- Drilling depth: $3 \times \text{diameter}$

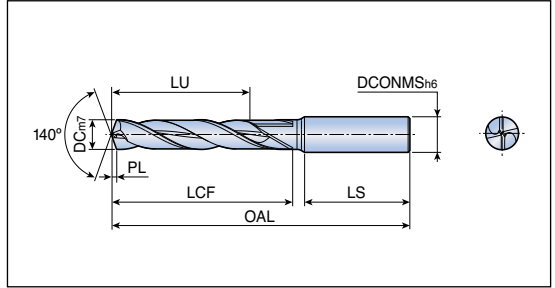
[illegible]

●: Standard items

Solid carbide drills without oil holes



- Drilling depth: 4-5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 030-023-06 PE5	3.0	6.0	66	23	28	34	0.5	●
031-023-06 PE5	3.1	6.0	66	23	28	34	0.5	●
032-023-06 PE5	3.2	6.0	66	23	28	34	0.5	●
033-023-06 PE5	3.3	6.0	66	23	28	34	0.5	●
034-023-06 PE5	3.4	6.0	66	23	28	34	0.5	●
035-023-06 PE5	3.5	6.0	66	23	28	34	0.6	●
036-023-06 PE5	3.6	6.0	66	23	28	34	0.6	●
037-023-06 PE5	3.7	6.0	66	23	28	34	0.6	●
038-029-06 PE5	3.8	6.0	74	29	36	35	0.6	●
039-029-06 PE5	3.9	6.0	74	29	36	35	0.6	●
040-029-06 PE5	4.0	6.0	74	29	36	35	0.6	●
041-029-06 PE5	4.1	6.0	74	29	36	35	0.7	●
042-029-06 PE5	4.2	6.0	74	29	36	35	0.7	●
043-029-06 PE5	4.3	6.0	74	29	36	35	0.7	●
044-029-06 PE5	4.4	6.0	74	29	36	35	0.7	●
045-029-06 PE5	4.5	6.0	74	29	36	35	0.7	●
046-029-06 PE5	4.6	6.0	74	29	36	35	0.7	●
047-029-06 PE5	4.7	6.0	74	29	36	35	0.8	●
048-035-06 PE5	4.8	6.0	82	35	44	36	0.8	●
049-035-06 PE5	4.9	6.0	82	35	44	36	0.8	●
050-035-06 PE5	5.0	6.0	82	35	44	36	0.8	●
051-035-06 PE5	5.1	6.0	82	35	44	36	0.8	●
052-035-06 PE5	5.2	6.0	82	35	44	36	0.8	●
053-035-06 PE5	5.3	6.0	82	35	44	36	0.8	●
054-035-06 PE5	5.4	6.0	82	35	44	36	0.8	●
055-035-06 PE5	5.5	6.0	82	35	44	36	0.9	●
056-035-06 PE5	5.6	6.0	82	35	44	36	0.9	●
057-035-06 PE5	5.7	6.0	82	35	44	36	0.9	●
058-035-06 PE5	5.8	6.0	82	35	44	36	0.9	●
059-035-06 PE5	5.9	6.0	82	35	44	36	0.9	●
060-035-06 PE5	6.0	6.0	82	35	44	36	0.9	●
061-043-08 PE5	6.1	8.0	91	43	53	36	1.0	●
062-043-08 PE5	6.2	8.0	91	43	53	36	1.0	●
063-043-08 PE5	6.3	8.0	91	43	53	36	1.0	●
064-043-08 PE5	6.4	8.0	91	43	53	36	1.0	●

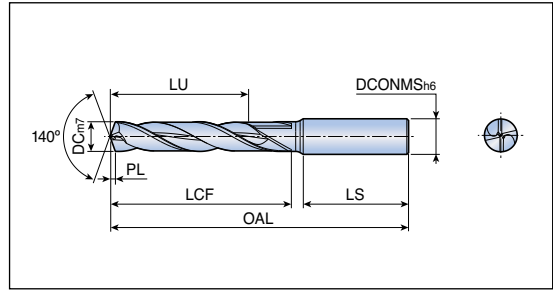
●: Standard items



Solid carbide drills without oil holes



- Drilling depth: 4-5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 065-043-08 PE5	6.5	8.0	91	43	53	36	1.0	●
066-043-08 PE5	6.6	8.0	91	43	53	36	1.0	●
067-043-08 PE5	6.7	8.0	91	43	53	36	1.1	●
068-043-08 PE5	6.8	8.0	91	43	53	36	1.1	●
069-043-08 PE5	6.9	8.0	91	43	53	36	1.1	●
070-043-08 PE5	7.0	8.0	91	43	53	36	1.1	●
071-043-08 PE5	7.1	8.0	91	43	53	36	1.1	●
072-043-08 PE5	7.2	8.0	91	43	53	36	1.1	●
073-043-08 PE5	7.3	8.0	91	43	53	36	1.1	●
074-043-08 PE5	7.4	8.0	91	43	53	36	1.2	●
075-043-08 PE5	7.5	8.0	91	43	53	36	1.2	●
076-043-08 PE5	7.6	8.0	91	43	53	36	1.2	●
077-043-08 PE5	7.7	8.0	91	43	53	36	1.2	●
078-043-08 PE5	7.8	8.0	91	43	53	36	1.2	●
079-043-08 PE5	7.9	8.0	91	43	53	36	1.3	●
080-043-08 PE5	8.0	8.0	91	43	53	36	1.3	●
081-049-10 PE5	8.1	10.0	103	49	61	40	1.3	●
082-049-10 PE5	8.2	10.0	103	49	61	40	1.3	●
083-049-10 PE5	8.3	10.0	103	49	61	40	1.3	●
084-049-10 PE5	8.4	10.0	103	49	61	40	1.3	●
085-049-10 PE5	8.5	10.0	103	49	61	40	1.3	●
086-049-10 PE5	8.6	10.0	103	49	61	40	1.4	●
087-049-10 PE5	8.7	10.0	103	49	61	40	1.4	●
088-049-10 PE5	8.8	10.0	103	49	61	40	1.4	●
089-049-10 PE5	8.9	10.0	103	49	61	40	1.4	●
090-049-10 PE5	9.0	10.0	103	49	61	40	1.4	●
091-049-10 PE5	9.1	10.0	103	49	61	40	1.4	●
092-049-10 PE5	9.2	10.0	103	49	61	40	1.4	●
093-049-10 PE5	9.3	10.0	103	49	61	40	1.5	●
094-049-10 PE5	9.4	10.0	103	49	61	40	1.5	●
095-049-10 PE5	9.5	10.0	103	49	61	40	1.5	●
096-049-10 PE5	9.6	10.0	103	49	61	40	1.5	●
097-049-10 PE5	9.7	10.0	103	49	61	40	1.5	●
098-049-10 PE5	9.8	10.0	103	49	61	40	1.6	●
099-049-10 PE5	9.9	10.0	103	49	61	40	1.6	●



●: Standard items

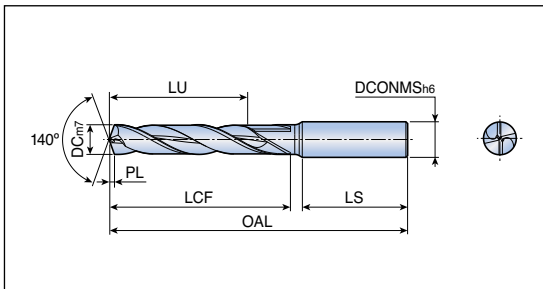
NHD...PE5



Solid carbide drills without oil holes



- Drilling depth: 4-5xdiameter

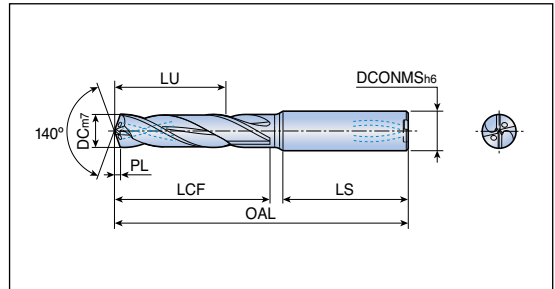
[illegible]

●: Standard items

Solid carbide drills with oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 030-014-06 PI3	3.0	6.0	62	14	20	34	0.5	●
031-014-06 PI3	3.1	6.0	62	14	20	34	0.5	●
032-014-06 PI3	3.2	6.0	62	14	20	34	0.5	●
033-014-06 PI3	3.3	6.0	62	14	20	34	0.5	●
034-014-06 PI3	3.4	6.0	62	14	20	34	0.5	●
035-014-06 PI3	3.5	6.0	62	14	20	34	0.6	●
036-014-06 PI3	3.6	6.0	62	14	20	34	0.6	●
037-014-06 PI3	3.7	6.0	62	14	20	34	0.6	●
038-017-06 PI3	3.8	6.0	66	17	24	35	0.6	●
039-017-06 PI3	3.9	6.0	66	17	24	35	0.6	●
040-017-06 PI3	4.0	6.0	66	17	24	35	0.6	●
041-017-06 PI3	4.1	6.0	66	17	24	35	0.7	●
042-017-06 PI3	4.2	6.0	66	17	24	35	0.7	●
043-017-06 PI3	4.3	6.0	66	17	24	35	0.7	●
044-017-06 PI3	4.4	6.0	66	17	24	35	0.7	●
045-017-06 PI3	4.5	6.0	66	17	24	35	0.7	●
046-017-06 PI3	4.6	6.0	66	17	24	35	0.7	●
047-017-06 PI3	4.7	6.0	66	17	24	35	0.8	●
048-020-06 PI3	4.8	6.0	66	20	28	36	0.8	●
049-020-06 PI3	4.9	6.0	66	20	28	36	0.8	●
050-020-06 PI3	5.0	6.0	66	20	28	36	0.8	●
051-020-06 PI3	5.1	6.0	66	20	28	36	0.8	●
052-020-06 PI3	5.2	6.0	66	20	28	36	0.8	●
053-020-06 PI3	5.3	6.0	66	20	28	36	0.8	●
054-020-06 PI3	5.4	6.0	66	20	28	36	0.8	●
055-020-06 PI3	5.5	6.0	66	20	28	36	0.9	●
056-020-06 PI3	5.6	6.0	66	20	28	36	0.9	●
057-020-06 PI3	5.7	6.0	66	20	28	36	0.9	●
058-020-06 PI3	5.8	6.0	66	20	28	36	0.9	●
059-020-06 PI3	5.9	6.0	66	20	28	36	0.9	●
060-020-06 PI3	6.0	6.0	66	20	28	36	0.9	●
061-024-08 PI3	6.1	8.0	79	24	34	36	1.0	●
062-024-08 PI3	6.2	8.0	79	24	34	36	1.0	●
063-024-08 PI3	6.3	8.0	79	24	34	36	1.0	●
064-024-08 PI3	6.4	8.0	79	24	34	36	1.0	●

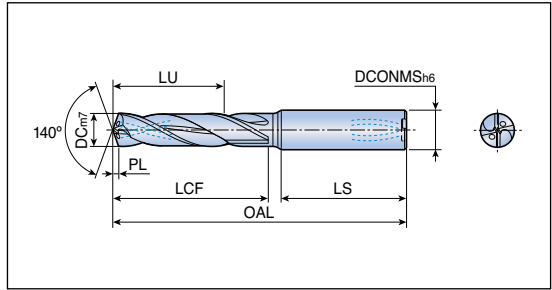
●: Standard items



Solid carbide drills with oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 065-024-08 PI3	6.5	8.0	79	24	34	36	1.0	•
066-024-08 PI3	6.6	8.0	79	24	34	36	1.0	•
067-024-08 PI3	6.7	8.0	79	24	34	36	1.1	•
068-024-08 PI3	6.8	8.0	79	24	34	36	1.1	•
069-024-08 PI3	6.9	8.0	79	24	34	36	1.1	•
070-024-08 PI3	7.0	8.0	79	24	34	36	1.1	•
071-029-08 PI3	7.1	8.0	79	29	41	36	1.1	•
072-029-08 PI3	7.2	8.0	79	29	41	36	1.1	•
073-029-08 PI3	7.3	8.0	79	29	41	36	1.1	•
074-029-08 PI3	7.4	8.0	79	29	41	36	1.2	•
075-029-08 PI3	7.5	8.0	79	29	41	36	1.2	•
076-029-08 PI3	7.6	8.0	79	29	41	36	1.2	•
077-029-08 PI3	7.7	8.0	79	29	41	36	1.2	•
078-029-08 PI3	7.8	8.0	79	29	41	36	1.2	•
079-029-08 PI3	7.9	8.0	79	29	41	36	1.3	•
080-029-08 PI3	8.0	8.0	79	29	41	36	1.3	•
081-035-10 PI3	8.1	10.0	89	35	47	40	1.3	•
082-035-10 PI3	8.2	10.0	89	35	47	40	1.3	•
083-035-10 PI3	8.3	10.0	89	35	47	40	1.3	•
084-035-10 PI3	8.4	10.0	89	35	47	40	1.3	•
085-035-10 PI3	8.5	10.0	89	35	47	40	1.3	•
086-035-10 PI3	8.6	10.0	89	35	47	40	1.4	•
087-035-10 PI3	8.7	10.0	89	35	47	40	1.4	•
088-035-10 PI3	8.8	10.0	89	35	47	40	1.4	•
089-035-10 PI3	8.9	10.0	89	35	47	40	1.4	•
090-035-10 PI3	9.0	10.0	89	35	47	40	1.4	•
091-035-10 PI3	9.1	10.0	89	35	47	40	1.4	•
092-035-10 PI3	9.2	10.0	89	35	47	40	1.4	•
093-035-10 PI3	9.3	10.0	89	35	47	40	1.5	•
094-035-10 PI3	9.4	10.0	89	35	47	40	1.5	•
095-035-10 PI3	9.5	10.0	89	35	47	40	1.5	•
096-035-10 PI3	9.6	10.0	89	35	47	40	1.5	•
097-035-10 PI3	9.7	10.0	89	35	47	40	1.5	•
098-035-10 PI3	9.8	10.0	89	35	47	40	1.6	•
099-035-10 PI3	9.9	10.0	89	35	47	40	1.6	•

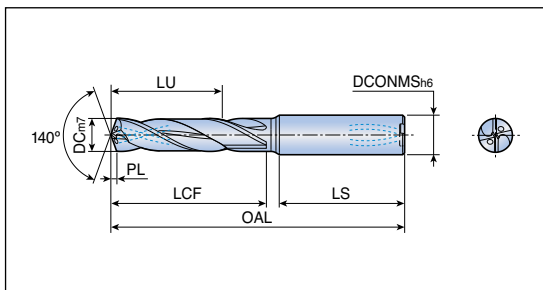
•: Standard items



Solid carbide drills with oil holes



-
- A schematic diagram of a water pump. It features a vertical shaft passing through a horizontal impeller. The impeller has two curved blades. The entire assembly is housed within a rectangular frame. Below the impeller, there are three blue, flame-like shapes representing water being pumped out.



Cutting Condition

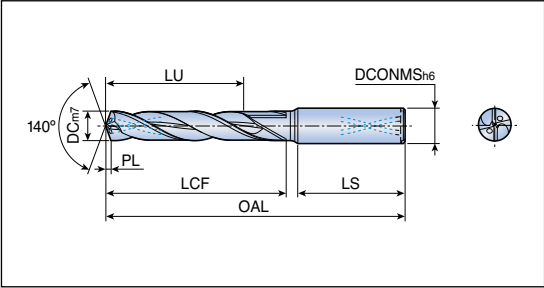
D198

●: Standard items

Solid carbide drills with oil holes



• Drilling depth: 4-5xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 030-023-06 PI5	3.0	6.0	66	23	28	34	0.5	●
031-023-06 PI5	3.1	6.0	66	23	28	34	0.5	●
032-023-06 PI5	3.2	6.0	66	23	28	34	0.5	●
033-023-06 PI5	3.3	6.0	66	23	28	34	0.5	●
034-023-06 PI5	3.4	6.0	66	23	28	34	0.5	●
035-023-06 PI5	3.5	6.0	66	23	28	34	0.6	●
036-023-06 PI5	3.6	6.0	66	23	28	34	0.6	●
037-023-06 PI5	3.7	6.0	66	23	28	34	0.6	●
038-029-06 PI5	3.8	6.0	74	29	36	35	0.6	●
039-029-06 PI5	3.9	6.0	74	29	36	35	0.6	●
040-029-06 PI5	4.0	6.0	74	29	36	35	0.6	●
041-029-06 PI5	4.1	6.0	74	29	36	35	0.7	●
042-029-06 PI5	4.2	6.0	74	29	36	35	0.7	●
043-029-06 PI5	4.3	6.0	74	29	36	35	0.7	●
044-029-06 PI5	4.4	6.0	74	29	36	35	0.7	●
045-029-06 PI5	4.5	6.0	74	29	36	35	0.7	●
046-029-06 PI5	4.6	6.0	74	29	36	35	0.7	●
047-029-06 PI5	4.7	6.0	74	29	36	35	0.8	●
048-035-06 PI5	4.8	6.0	82	35	44	36	0.8	●
049-035-06 PI5	4.9	6.0	82	35	44	36	0.8	●
050-035-06 PI5	5.0	6.0	82	35	44	36	0.8	●
051-035-06 PI5	5.1	6.0	82	35	44	36	0.8	●
052-035-06 PI5	5.2	6.0	82	35	44	36	0.8	●
053-035-06 PI5	5.3	6.0	82	35	44	36	0.8	●
054-035-06 PI5	5.4	6.0	82	35	44	36	0.8	●
055-035-06 PI5	5.5	6.0	82	35	44	36	0.9	●
056-035-06 PI5	5.6	6.0	82	35	44	36	0.9	●
057-035-06 PI5	5.7	6.0	82	35	44	36	0.9	●
058-035-06 PI5	5.8	6.0	82	35	44	36	0.9	●
059-035-06 PI5	5.9	6.0	82	35	44	36	0.9	●
060-035-06 PI5	6.0	6.0	82	35	44	36	0.9	●
061-043-08 PI5	6.1	8.0	91	43	53	36	1.0	●
062-043-08 PI5	6.2	8.0	91	43	53	36	1.0	●
063-043-08 PI5	6.3	8.0	91	43	53	36	1.0	●
064-043-08 PI5	6.4	8.0	91	43	53	36	1.0	●

●: Standard items



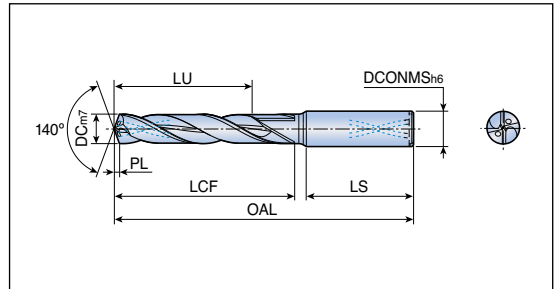
NHD...PI5



Solid carbide drills with oil holes



- Drilling depth: 4-5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
NHD 065-043-08 PI5	6.5	8.0	91	43	53	36	1.0	●
066-043-08 PI5	6.6	8.0	91	43	53	36	1.0	●
067-043-08 PI5	6.7	8.0	91	43	53	36	1.1	●
068-043-08 PI5	6.8	8.0	91	43	53	36	1.1	●
069-043-08 PI5	6.9	8.0	91	43	53	36	1.1	●
070-043-08 PI5	7.0	8.0	91	43	53	36	1.1	●
071-043-08 PI5	7.1	8.0	91	43	53	36	1.1	●
072-043-08 PI5	7.2	8.0	91	43	53	36	1.1	●
073-043-08 PI5	7.3	8.0	91	43	53	36	1.1	●
074-043-08 PI5	7.4	8.0	91	43	53	36	1.2	●
075-043-08 PI5	7.5	8.0	91	43	53	36	1.2	●
076-043-08 PI5	7.6	8.0	91	43	53	36	1.2	●
077-043-08 PI5	7.7	8.0	91	43	53	36	1.2	●
078-043-08 PI5	7.8	8.0	91	43	53	36	1.2	●
079-043-08 PI5	7.9	8.0	91	43	53	36	1.3	●
080-043-08 PI5	8.0	8.0	91	43	53	36	1.3	●
081-049-10 PI5	8.1	10.0	103	49	61	40	1.3	●
082-049-10 PI5	8.2	10.0	103	49	61	40	1.3	●
083-049-10 PI5	8.3	10.0	103	49	61	40	1.3	●
084-049-10 PI5	8.4	10.0	103	49	61	40	1.3	●
085-049-10 PI5	8.5	10.0	103	49	61	40	1.3	●
086-049-10 PI5	8.6	10.0	103	49	61	40	1.4	●
087-049-10 PI5	8.7	10.0	103	49	61	40	1.4	●
088-049-10 PI5	8.8	10.0	103	49	61	40	1.4	●
089-049-10 PI5	8.9	10.0	103	49	61	40	1.4	●
090-049-10 PI5	9.0	10.0	103	49	61	40	1.4	●
091-049-10 PI5	9.1	10.0	103	49	61	40	1.4	●
092-049-10 PI5	9.2	10.0	103	49	61	40	1.4	●
093-049-10 PI5	9.3	10.0	103	49	61	40	1.5	●
094-049-10 PI5	9.4	10.0	103	49	61	40	1.5	●
095-049-10 PI5	9.5	10.0	103	49	61	40	1.5	●
096-049-10 PI5	9.6	10.0	103	49	61	40	1.5	●
097-049-10 PI5	9.7	10.0	103	49	61	40	1.5	●
098-049-10 PI5	9.8	10.0	103	49	61	40	1.6	●
099-049-10 PI5	9.9	10.0	103	49	61	40	1.6	●

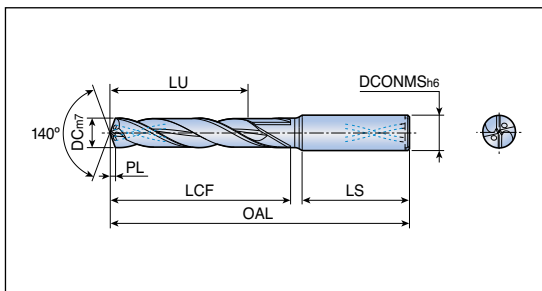


●: Standard items

Solid carbide drills with oil holes



- Drilling depth: 4-5xdiameter



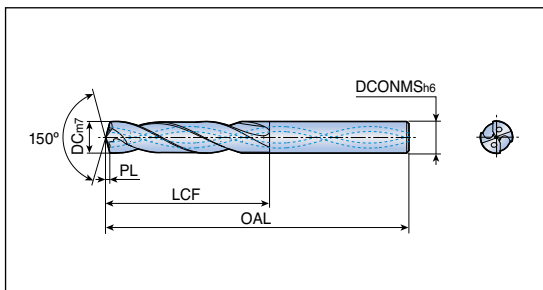
●: Standard items



Solid pilot drills for solid long drill

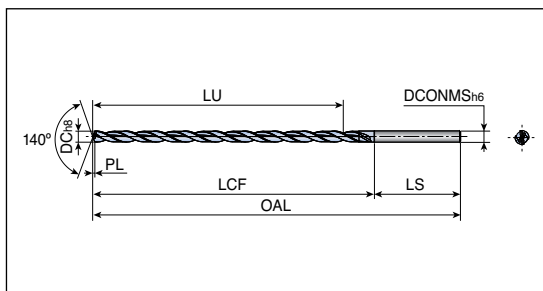


-
- A schematic diagram of a water pump. It features a vertical shaft with a propeller-like impeller at the bottom. A horizontal pipe extends from the side of the pump housing, representing the discharge line. The pump is shown installed within a structure, with a water level indicated by blue wavy lines below the impeller.

[illegible]

●: Standard items

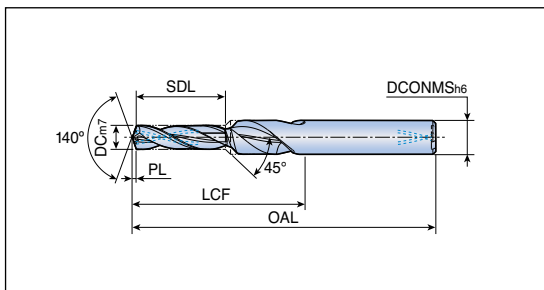
-
- A schematic diagram of a water pump. It features a vertical shaft passing through a horizontal impeller. The impeller has four curved blades. The entire assembly is housed within a rectangular frame that represents the pump casing.



Cutting Condition

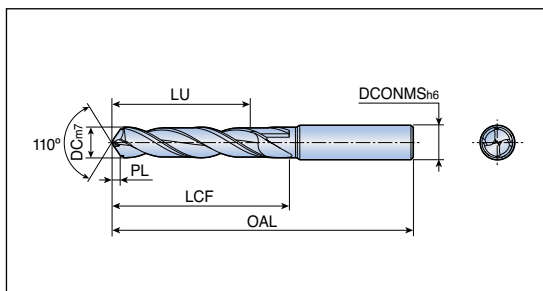
 **D198**

Solid carbide drills for pre-thread holes

[illegible]

●: Standard items

Solid carbide drills for composite material

[illegible]

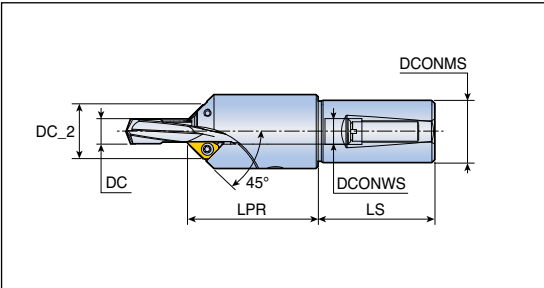
●: Standard items



T-CHAMFER...T1



Chamfering tools with solid carbide drill



Designation	DC	Dimension (mm)					Insert
		DCONWS	DC_2	DCONMS	LPR	LS	
T-CHAMFER 080-20T1-06	7.1-8.0	8	18.8	20	47.4	50	XCGT 06...C..
090-20T1-06	8.1-9.0	9	19.8	20	47.4	50	D167
100-32T1-09	9.1-10.0	10	24.9	32	67.3	60	XCGT 09...C..
110-32T1-09	10.1-11.0	11	25.9	32	67.3	60	D167
120-32T1-09	11.1-12.0	12	26.9	32	67.3	60	
130-32T1-09	12.1-13.0	13	27.9	32	67.3	60	
140-32T1-09	13.1-14.0	14	28.4	32	67.3	60	
150-32T1-09	14.1-15.0	15	29.4	32	67.3	60	
160-32T1-09	15.1-16.0	16	30.4	32	67.3	60	
170-32T1-09	16.1-17.0	17	31.4	32	67.3	60	
180-32T1-09	17.1-18.0	18	32.4	32	67.3	60	
190-32T1-09	18.1-19.0	19	33.4	32	75.0	60	
200-32T1-09	19.1-20.0	20	34.4	32	75.0	60	

Spare parts

Designation	Side screw	Back screw	L-wrench	Insert screw	Wrench
T-CHAMFER 080 - 090	SS M6x1x6	M6x1-SP	L-W 3	TS 25064I	TD 8
T-CHAMFER 100 - 200	SS M10x1.5x10	M10x1.5-SP	L-W 5	TS 40093I	TD 15

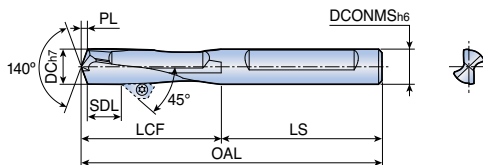
Assembly

D88

SHD 3...-CF

TCHAMFER

Solid carbide drills for T-CHAMFER

[illegible]

- 'SDL' is factored with a 45° insert positioned in insert pocket
- Solid carbide drill with internal coolant holes is available on request

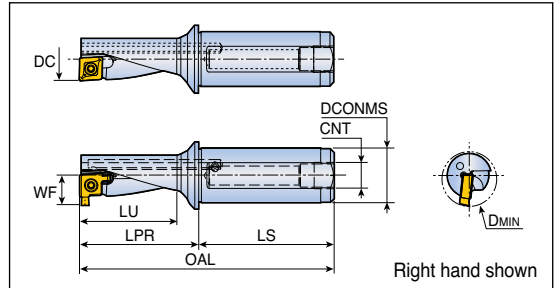
●: Standard items

Insert	Chamfer angle (°)	Chamfer size
XCGT 0603-C30	30°	1.5
0603-C45	45°	4.5
0603-C60	60°	2.5
XCGT 0903-C30	30°	1.5
0903-C45	45°	6.0
0903-C60	60°	3.5

- The maximum chamfer size is obtained when using the smallest drill diameter in the drilling range

TOPCAP

-



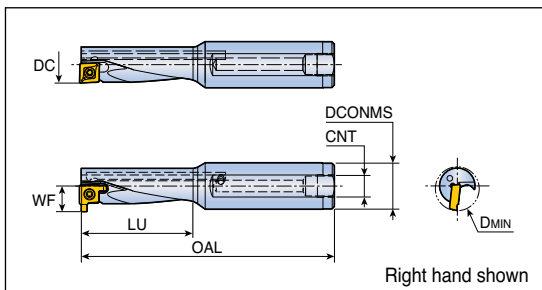
- OAL = LPR+LS
- Grooving insert is available for right handed type

Designation	Screw	Wrench		
TCAP 08	TS 18034I/HG-P	T 6P		
TCAP 10	TS 20038I/HG-P	T 6P		
TCAP 12	TS 22052I/HG-P	T 7P		
TCAP 14	TS 25064I/HG-P	T 8P		
TCAP 16	TS 30100I/HG-P		TD 9P	
TCAP 20	TS 35088I/HG-P		TD10P	
TCAP 25	TS 45A100I/HG		TD 20	
TCAP 32	TS 45A100I/HG		TD 20	



TOPCAP

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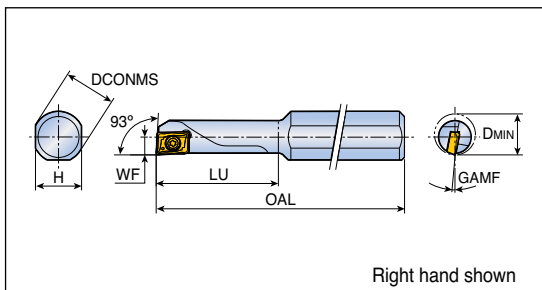
- $OAL = LPR + LS$
- Grooving insert is available for right handed type

Designation	Screw	Wrench		
TCAP 08	TS 18034/HG-P	T 6P		
TCAP 10	TS 20038/HG-P	T 6P		
TCAP 12	TS 22052/HG-P	T 7P		
TCAP 14	TS 25064/HG-P	T 8P		
TCAP 16	TS 30100/HG-P		TD 9P	
TCAP 20	TS 35088/HG-P		TD10P	
TCAP 25	TS 45A100/HG		TD 20	
TCAP 32	TS 45A100/HG		TD 20	



TOPCAP

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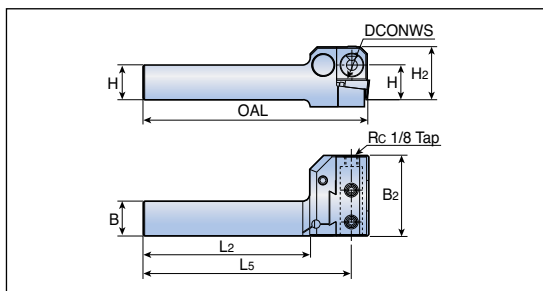
[illegible]

- ## Spare parts

Designation	Screw	Wrench		
				
S10H SXUCR/L 04-06	TS 18034I/HG-P	T 6P		
S10J SXUCR/L 04-07	TS 18034I/HG-P	T 6P		
S10J SXUCR/L 04-08	TS 18034I/HG-P	T 6P		
S10K SXUCR/L 05-10	TS 20038I/HG-P	T 6P		



Clamping units (Centre alignment system)

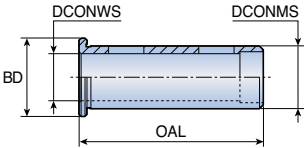


Designation	Dimension (mm)								Toolholders
	H	B	DCONWS	H2	B2	L2	L5	OAL	
TGHR 2020-D16	20	20	16	38	58	120	150	161	TCAP 08R/L...
2525-D16	25	25	16	38	58	120	150	161	TCAP 10R/L...
									TCAP 12R/L...
									TCAP 14R/L...
2525-D25	25	25	25	56	75	120	157	174	TCAP 16R/L...
									TCAP 20R/L...

Spare parts

Designation	Block	Wedge	Snap ring	Wedge screw	Mounting pin	Mounting pin screw	Mounting screw		Lock screw	Wrench
TGHR 2020-D16	TGHR-D16-BL	TGHR-WD	WSR 4	TGH-WS	TGH-MPI	TGH-MPS	SSxM8 1.25X10-C	SSxM8 x1.25x8	-	L-W 4
TGHR 2525-D16										
TGHR 2525-D25	TGHR-D25-BL	TGHR-WD-25	WSR 4	TGH-WS-25	TGH-MPI-25	TGH-MPS-25	SS M10 x1.5x12-C	SS M101.5x10	SH M6x1x20	L-W 4 L-W 5

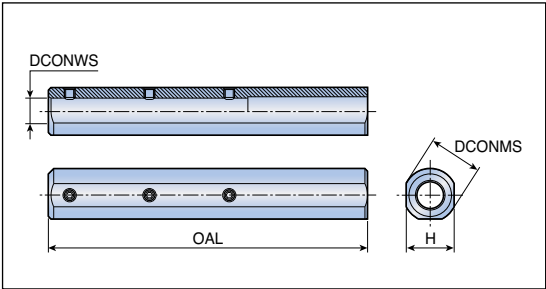
Sleeves for clamping unit



Designation	Dimension (mm)				Toolholders
	DCONMS	DCONWS	BD	OAL	
TSL 16-12	16	12	20	47	TCAP 10R/L...
25-20	25	20	32	55	TCAP 16R/L...

TBSL

Sleeves for boring bar



Designation	Dimension (mm)			
	DCONMS	DCONWS	OAL	H
TBSL 20-10-120	20	10	120	18

Spare parts

Designation	Screw	Wrench		
TBSL 20-10-120	 SS M4x0.7x4	 L-W 2		

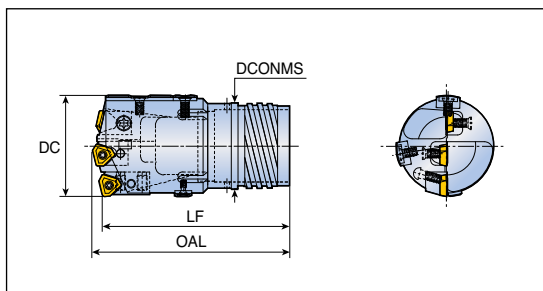
Deep Drilling Tools



Single tube system



- Outer four start thread

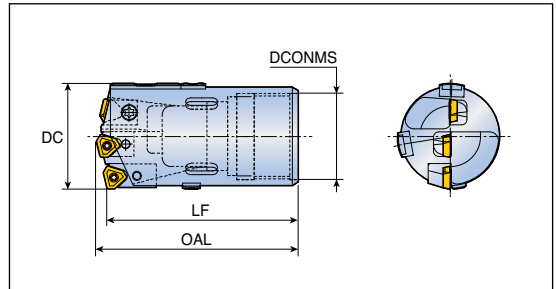
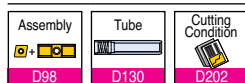
[illegible]

Assembly  D98	Tube  D130	Cutting Condition  D202
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Single tube system



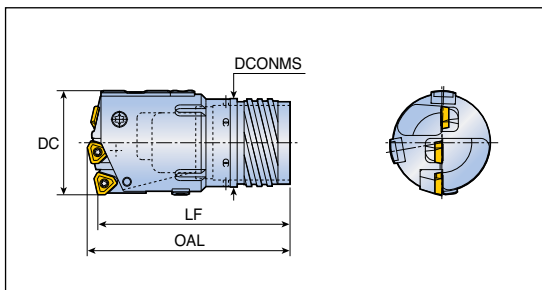
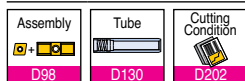
- Inner single start thread

[illegible]

Double tube system



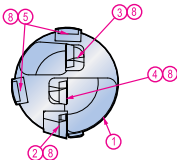
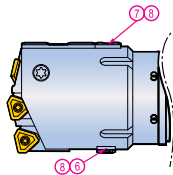
- Outer four start thread

[illegible]

TBTA3 Series



Assembly of TBTA3 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

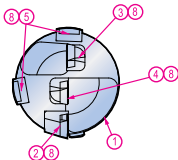
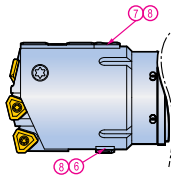
7. Guide pad protector

8. Lock screw

Parts		Diameter (mm)				
		38.00-39.99	40.00-44.99	45.00-47.99	48.00-51.99	52.00-54.99
Cartridge	Outer	PERC 05R	PERC 402-04	PERC 402-04	PERC 402-04	PERC 402-32
	Adjust screw	AS0003-5	AS0004-8	AS0004-8	AS0004-8	AS0005-10
	Wrench	H1.5	H2	H2	H2	H2.5
	Screw	LS1803RH	LS1803.5RH	LS1803.5RH	LS1803.5RH	LS1805RH
	Wrench	H2	H2.5	H2.5	H2.5	H3
	Inner	CENC 05R	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3	CSTB3.5	CSTB3.5
	Wrench	T-9D	T-9D	T-9D	T-15D	T-15D
	Center	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3.5	CSTB3.5	CSTB3.5
Insert	Wrench	T-9D	T-9D	T-15D	T-15D	T-15D
	Outer	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG	TPMX 1704RG
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5	CSTB3.5D
	Wrench	T-7D	T-8D	T-8D	T-8D	T-9D
	Inner	NPMX 0803RG	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5
	Wrench	T-7D	T-7D	T-7D	T-8D	T-8D
	Center	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG
	Screw	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-7D	T-7D	T-8D	T-8D	T-8D
Pad	Guide pad	PAD-GO08CD-SA-FB	PAD-GO08CD-SA-FB	PAD-GC10-SA	PAD-GC10-SA	PAD-GC10-SA
		PAD-GO08CD-SB-FB	PAD-GO08CD-SB-FB	PAD-GC10-SB	PAD-GC10-SB	PAD-GC10-SB
	Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
	Wrench	T-9D	T-9D	T-15D	T-15D	T-15D
	Guide pad protector	PAD-P08	PAD-P08	PAD-P10	PAD-P10	PAD-P10
	Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
	Wrench	T-9D	T-9D	T-15D	T-15D	T-15D
	Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S08	PAD-S08
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T-9D	T-9D	T-9D	T-9D	T-9D



Assembly of TBTA3 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

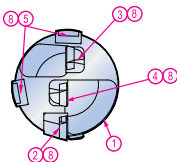
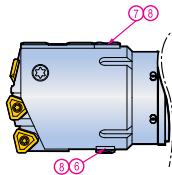
7. Guide pad protector

8. Lock screw

Parts		Diameter (mm)				
		55.00-57.99	58.00-59.99	60.00-63.99	64.00-67.99	68.00-77.99
Cartridge	Outer	PERC 402-32	PERC 402-32	PERC 402-32	PERC 402-43	PERC 402-32
	Adjust screw	AS0005-10	AS0005-10	AS0005-10	AS0005-15	AS0005-10
	Wrench	H2.5	H2.5	H2.5	H2.5	H2.5
	Screw	LS1805RH	LS1805RH	LS1805RH	LS1806RH	LS1805RH
	Wrench	H3	H3	H3	H4	H3
	Inner	CENC 402-04	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTB3.5	CSTA5	CSTA5	CSTA5	LS1206
	Wrench	T-15D	T-15D	T-15D	T-15D	H3
	Center	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTA5	CSTA5	CSTA5	CSTA5	LS1206
Insert	Wrench	T-15D	T-15D	T-15D	T-15D	H3
	Outer	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG	TPMX 1704RG
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB3.5D
	Wrench	T-9D	T-9D	T-9D	T-15D	T-9D
	Inner	TPMX 1403RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
	Screw	CSTB2.5	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
	Wrench	T-8D	T-9D	T-9D	T-9D	T-15D
	Center	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
	Wrench	T-9D	T-9D	T-9D	T-9D	T-15D
Pad	Guide pad	PAD-GC10-SA	PAD-GC10-SA	PAD-GC14-SB	PAD-GC14-SB	PAD-GC14-SB
		PAD-GC10-SB	PAD-GC10-SB	-	-	-
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Guide pad protector	PAD-P10	PAD-P10	PAD-P14	PAD-P14	PAD-P14
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S10	PAD-S10
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T-9D	T-9D	T-9D	T-9D	T-9D



Assembly of TBTA3 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

Parts		Diameter (mm)			
		78.00-84.99	85.00-91.99	92.00-98.99	99.00-106.99
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-43	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0005-15	AS0006-15
	Wrench	H2.5	H3	H2.5	H3
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3	H3
	Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
Insert	Wrench	H3	H3	H3	H3
	Outer	TPMX 2405RG	TPMX 2807RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB4M	CSTB5
	Wrench	T-15D	T-20D	T-15D	T-20D
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-20D	T-20D
	Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-20D	T-20D
Pad	Guide pad	PAD-GC14-SB	PAD-GC14-SB	PAD-GC14-SB	PAD-GC18-SB
	Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S
	Wrench	T-15D	T-15D	T-15D	H3
	Guide pad protector	PAD-P14	PAD-P14	PAD-P14	PAD-P18
	Screw	CSTB5S	CSTB5S	CSTA5S	LS1206S
	Wrench	T-15D	T-15D	T-15D	H3
	Sub guide pad	PAD-S10	PAD-S10	PAD-S10	PAD-S14
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S
	Wrench	T-9D	T-9D	T-9D	T-15D



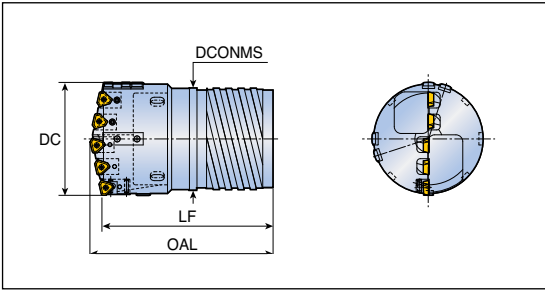
TBTA5...SE4



Single tube system



- Outer four start thread



Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA5- xxx.xxSE4-094	107.00-111.99	180	197	89	BTSI 094	94
xxx.xxSE4-106	112.00-123.99	205	221	101	BTSI 106	106
xxx.xxSE4-118	124.00-135.99	205	222	113	BTSI 118	118
xxx.xxSE4-130	136.00-147.99	205	223	125	BTSI 130	130
xxx.xxSE4-142	148.00-159.99	225	245	137	BTSI 142	142
xxx.xxSE4-154	160.00-168.99	225	246	149	BTSI 154	154

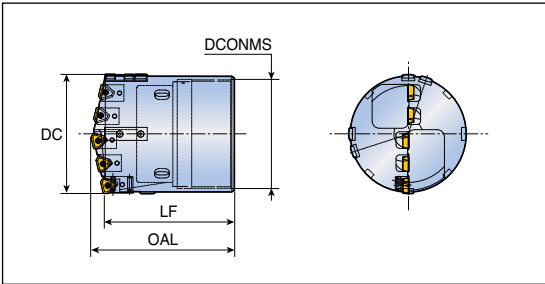
TBTA5...SI1



Single tube system



- Inner single start thread



Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA5- xxx.xxSI1-094	107.00-110.99	150	164	90	BTSE 094	94
xxx.xxSI1-106	111.00-122.99	150	165	102	BTSE 106	106
xxx.xxSI1-118	123.00-134.99	150	167	114	BTSE 118	118
xxx.xxSI1-130	135.00-148.99	150	168	126	BTSE 130	130
xxx.xxSI1-142	149.00-161.99	150	170	139	BTSE 142	142
xxx.xxSI1-154	162.00-168.99	190	211	151	BTSE 154	154

Assembly



D103

Tube



D130

Cutting Condition



D202

Double tube system



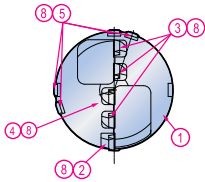
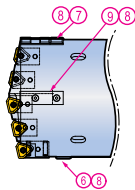
-
- Technical drawing of the DCONMS connector. The left view is a side profile showing the connector's dimensions: DC (height), LF (length of the main body), and OAL (overall length). The right view is an end view showing the circular connector face with four pins and a central feature.

Assembly  D103	Tube  D130	Cutting Condition  D202
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TBTA5 Series



Assembly of TBTA5 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

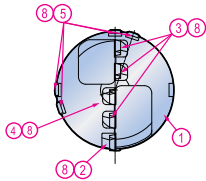
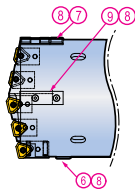
8. Lock screw

9. Filler

Parts		Diameter (mm)			
		107.00-117.99	118.00-135.99	136.00-144.99	145.00-150.99
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-32	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	CSTA5	LS1206	LS1206	LS1206
	Wrench	T-15D	H3	H3	H3
	Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
Insert	Wrench	H3	H3	H3	H3
	Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
	Inner	TPMX 1704RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-9D	T-15D	T-15D	T-15D
	Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-20D	T-20D
Pad	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



Assembly of TBTA5 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

9. Filler

Parts		Diameter (mm)		
		151.00-156.99	157.00-162.99	163.00-168.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3
	Screw	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S
Insert	Wrench	H3L	H3L	H3L
	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5
	Wrench	T-15D	T-15D	T-20D
	Center	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D
Pad	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3L
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D



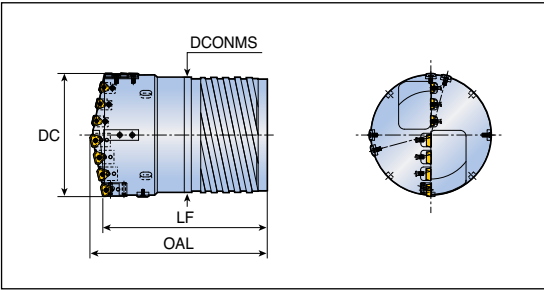
TBTA7...SE4



Single tube system



- Outer four start thread
- Double tube system also available on request



Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA7- xxx.xxSE4-154	169.00-171.99	225	246	149	BTSI 154	154
xxx.xxSE4-166	172.00-183.99	225	247	161	BTSI 166	166
xxx.xxSE4-178	184.00-195.99	245	267	173	BTSI 178	178
xxx.xxSE4-190	196.00-207.99	245	270	185	BTSI 190	190
xxx.xxSE4-202	208.00-219.99	245	271	197	BTSI 202	202
xxx.xxSE4-214	220.00-231.99	265	293	208	BTSI 214	214
xxx.xxSE4-226	232.00-232.99	265	293	220	BTSI 226	226

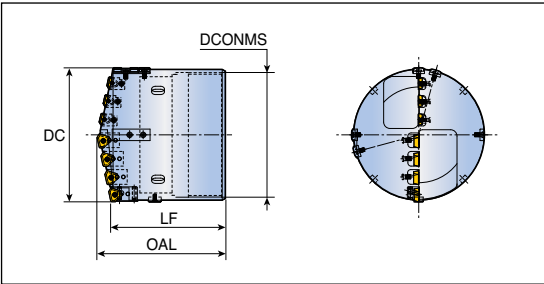
TBTA7...SI1



Single tube system



- Inner single start thread



Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA7- xxx.xxSI1-154	169.00-173.99	190	211	151	BTSE 154	154
xxx.xxSI1-166	174.00-185.99	190	213	163	BTSE 166	166
xxx.xxSI1-178	186.00-197.99	190	212	175	BTSE 178	178
xxx.xxSI1-190	198.00-209.99	190	215	187	BTSE 190	190
xxx.xxSI1-202	210.00-221.99	190	217	199	BTSE 202	202
xxx.xxSI1-214	222.00-232.99	190	218	211	BTSE 214	214

Assembly

D106

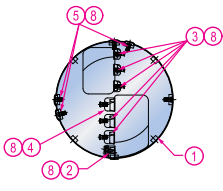
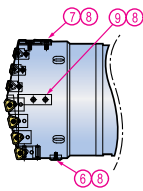
Tube

D130

Cutting Condition

D202

Assembly of TBTA7 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

9. Filler

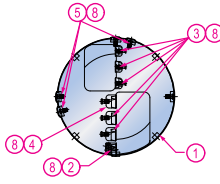
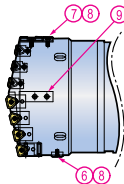
Parts		Diameter (mm)			
		169.00-188.99	189.00-196.99	197.00-202.99	203.00-208.99
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-43	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206S	LS1206S	LS1206S
Insert	Wrench	H3L	H3L	H3L	H3L
	Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
Pad	Center	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-15D	T-15D
	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



TBTA7 Series



Assembly of TBTA7 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge

5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

9. Filler

Parts		Diameter (mm)			
		209.00-214.99	215.00-220.99	221.00-226.99	227.00-232.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0005-15
	Wrench	H3	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206	LS1206	LS1206S
Insert	Wrench	H3L	H3L	H3L	H3L
	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB5
	Wrench	T-15D	T-15D	T-15D	T-15D
	Center	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



D172



D175



D178

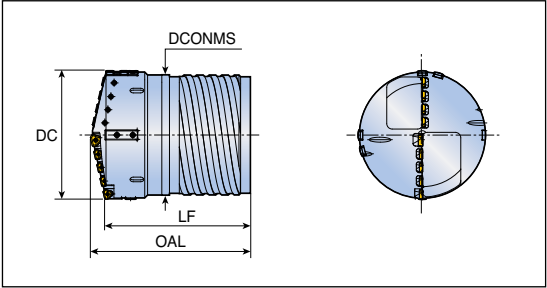
TBTA9...SE4



Single tube system



- Outer four start thread



Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA9 - xxx.xxSE4-226	233.00-243.99	265	294	220	BTSI 226	226
xxx.xxSE4-238	244.00-255.99	265	294	232	BTSI 238	238
xxx.xxSE4-250	256.00-267.99	290	322	244	BTSI 250	250
xxx.xxSE4-262	268.00-279.99	290	323	256	BTSI 262	262
xxx.xxSE4-274	280.00-291.99	290	325	268	BTSI 274	274

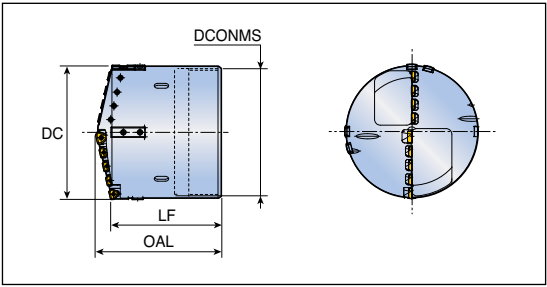
TBTA9...SI1



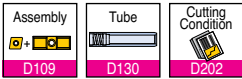
Single tube system



- Inner single start thread



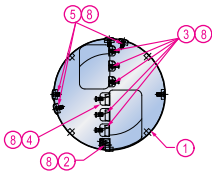
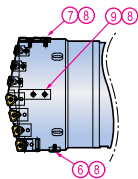
Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
TBTA9 - xxx.xxSI1-214	233.00-233.99	190	217	211	BTSE 214	214
xxx.xxSI1-226	234.00-245.99	190	219	223	BTSE 226	226
xxx.xxSI1-238	246.00-257.99	190	221	235	BTSE 238	238
xxx.xxSI1-250	258.00-269.99	210	242	245	BTSE 250	250
xxx.xxSI1-262	270.00-281.99	210	244	259	BTSE 262	262
xxx.xxSI1-274	282.00-293.99	210	245	271	BTSE 274	274



TBTA9 Series



Assembly of TBTA9 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

9. Filler

Parts		Diameter (mm)				
		233.00-247.99	248.00-253.99	254.00-258.99	259.00-264.99	265.00-271.99
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0006-15	AS0006-15	AS0006-15
	Wrench	H2.5	H3	H3	H3	H3
	Screw	LS1806RH	L1806RH	L1806RH	L1806RH	L1806RH
	Wrench	H4	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
Insert	Wrench	H3L	H3L	H3L	H3L	H3L
	Outer	TPMX 2405 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
	Screw	CSTB4M	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-15D	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Center	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D	T-20D
	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D



D172

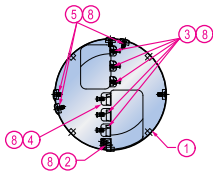
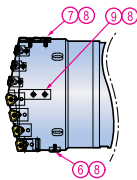


D175



D178

Assembly of TBTA9 series



1. Head shank

2. Outer cartridge

3. Inner cartridge

4. Center cartridge
5. Guide pad

6. Sub guide pad

7. Guide pad protector

8. Lock screw

9. Filler

Parts		Diameter (mm)			
		272.00-275.99	276.00-284.99	285.00-289.99	290.00-293.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH	L1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
Insert	Outer	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Center	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Guide pad	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB	PAD-GC18-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



D172



D175



D178

TDEEP

-
- Technical drawing of the DCONMS connector. The side view shows the connector with dimensions: DC (height), PL (length of the first section), LF (length of the second section), and OAL (overall length). The end view shows the circular connector face with two yellow contacts.

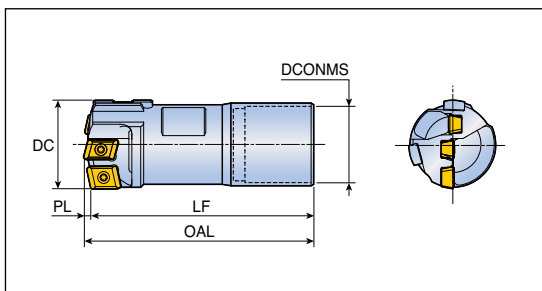
Assembly  D114	Tube  D130	Cutting Condition  D204
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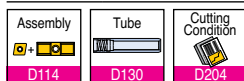
Single tube system



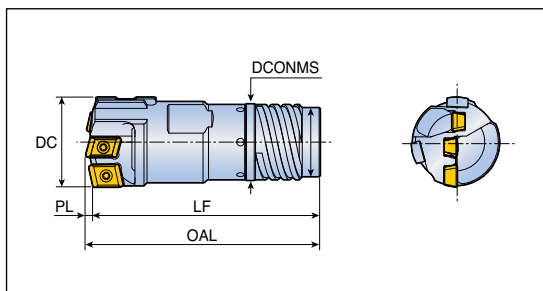
- Inner single start thread

[illegible]

- Insert and guide pad are sold separately from drill body.



TDEEP

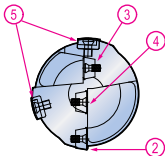
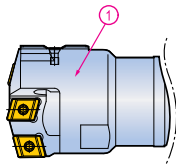


Assembly  D114	Tube  D130	Cutting Condition  D204
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TBTA-FB Series



Assembly of TBTA-FB series



- 1. Head shank
- 2. Outer insert
- 3. Inner insert
- 4. Center insert
- 5. Guide pad

Parts		Diameter (mm)			
		25.00-28.00	28.01-29.99	30.00-35.00	35.01-38.00
Insert	PER	NPHT 06003 RG	NPHT 06003 RG	NPHT 07504 RG	NPHT 07504 RG
	Screw	CSTB2.2	CSTB2.2	SR14-560-HG	SR14-560-HG
	Wrench	T-7F	T-7F	T-8F	T-8F
	INT	NPMT 05503 RG	NPMT 05503 RG	NPMT 06504 RG	NPMT 06504 RG
	Screw	CSTB2.2	CSTB2.2	SR14-560-HG	SR14-560-HG
	Wrench	T-7F	T-7F	T-8F	T-8F
	CEN	NPMT 05503 LG	NPMT 06504 LG	NPMT 06504 LG	NPMT 08004 LG
	Screw	CSTB2.2	SR14-560-HG	SR14-560-HG	SR14-560-HG
Pad	Wrench	T-7F	T-8F	T-8F	T-8F
	PAD	PAD-GO06CD-SA	PAD-GO06CD-SA	PAD-GO07CD-SA	PAD-GO07CD-SA
		PAD-GO06CD-SB	PAD-GO06CD-SB	PAD-GO07CD-SB	PAD-GO07CD-SB
	Screw	SR34-508	SR34-508	CSTB-3L065	CSTB-3L065
	Wrench	T-7F	T-7F	T-9F	T-9F

Parts		Diameter (mm)			
		38.01-39.00	39.01-41.00	41.01-44.00	44.01-45.00
Insert	PER	NPHT 09004 RG	NPHT 09004 RG	NPHT 09004 RG	NPHT 09004 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	INT	NPMT 06504 RG	NPMT 06504 RG	NPMT 08004 RG	NPMT 08004 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	CEN	NPMT 08004 LG	NPMT 08004 LG	NPMT 08004 LG	NPMT 09504 LG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
Pad	Wrench	T-8F	T-8F	T-8F	T-8F
	PAD	PAD-GO07CD-SA	PAD-GO08CD-SA-FB	PAD-GO08CD-SA-FB	PAD-GO08CD-SA-FB
		PAD-GO07CD-SB	PAD-GO08CD-SB-FB	PAD-GO08CD-SB-FB	PAD-GO08CD-SB-FB
	Screw	CSTB-3L065	SR34-506-C	SR34-506-C	SR34-506-C
	Wrench	T-9F	T-9F	T-9F	T-9F

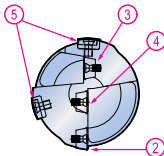
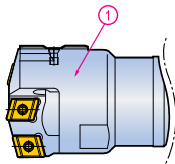


• Insert and guide pad are sold separately from drill body.

TBTA-FB Series



Assembly of TBTA-FB series



- 1. Head shank
- 2. Outer insert
- 3. Inner insert
- 4. Center insert
- 5. Guide pad

Parts		Diameter (mm)			
		45.01-47.00	47.01-51.00	51.01-54.00	54.01-57.00
Insert	PER	NPHT 09004 RG	NPHT 11004 RG	NPHT 11004 RG	NPHT 11004 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	INT	NPMT 08004 RG	NPMT 08004 RG	NPMT 09504 RG	NPMT 09504 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	CEN	NPMT 09504 LG	NPMT 09504 LG	NPMT 09504 LG	NPMT 12504 LG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG	SR14-560-HG
Pad	Wrench	T-8F	T-8F	T-8F	T-8F
	PAD	PAD-GO10CD-SA	PAD-GO10CD-SA	PAD-GO10CD-SA	PAD-GO10CD-SA
		PAD-GO10CD-SB	PAD-GO10CD-SB	PAD-GO10CD-SB	PAD-GO10CD-SB
	Screw	SR14-571/S	SR14-571/S	SR14-571/S	SR14-571/S
	Wrench	T-10/5	T-10/5	T-10/5	T-10/5

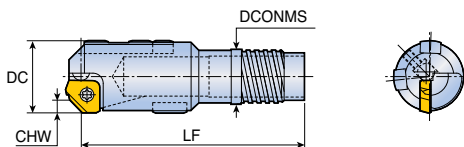
Parts		Diameter (mm)		
		57.01-60.00	60.01-64.00	64.01-65.00
Insert	PER	NPHT 11004 RG	NPHT 13004 RG	NPHT 13004 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F
	INT	NPMT 09504 RG	NPMT 09504 RG	NPMT 12504 RG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG
	Wrench	T-8F	T-8F	T-8F
	CEN	NPMT 12504 LG	NPMT 12504 LG	NPMT 12504 LG
	Screw	SR14-560-HG	SR14-560-HG	SR14-560-HG
Pad	Wrench	T-8F	T-8F	T-8F
	PAD	PAD-GO12CD-SA	PAD-GO12CD-SA	PAD-GO12CD-SA
		PAD-GO12CD-SB	PAD-GO12CD-SB	PAD-GO12CD-SB
	Screw	SR14-571/S	SR14-571/S	SR14-571/S
	Wrench	T-10/5	T-10/5	T-10/5



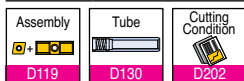
• Insert and guide pad are sold separately from drill body.

TBTA-R...SE4

Single tube system



- Outer four start thread

[illegible]

Single tube system



-
- Technical drawing of a DCONMS connector. The side view on the left shows a cylindrical component with a threaded section of length **LF** and a total length of **DC**. A dimension **WF** indicates the width of the flange. The end view on the right shows a circular cross-section with a central hole and two side ports. The dimension **WF_2** indicates the width of the side ports. The drawing is labeled **DCONMS** and includes a **Standard** and **Precision** specification.

Assembly  D119	Tube  D130	Cutting Condition  D202
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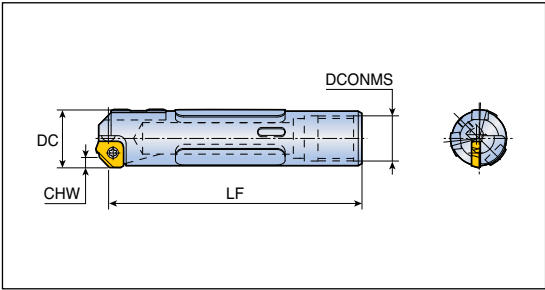
TBTA-R...SI1



Single tube system



- Inner single start thread



Designation	DC	CHW (mm)	Dimension (mm)		Tube	
			LF	DCONMS	Part	Diameter (mm)
TBTA-R- xxx.xxSI1-22	25.00-26.99	2.8	110.5	20	BTSE 022	22
xxx.xxSI1-24	27.00-29.99	2.8	110.5	22	BTSE 024	24
xxx.xxSI1-26	30.00-31.99	2.8	110.5	24	BTSE 026	26
xxx.xxSI1-28	32.00-33.99	2.8	110.5	26	BTSE 028	28
xxx.xxSI1-30	34.00-36.99	2.8	135.5	27	BTSE 030	30
xxx.xxSI1-33	37.00-39.99	2.8	135.5	30	BTSE 033	33

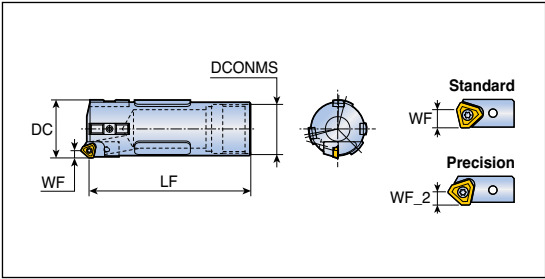
TBTA-R...SI1



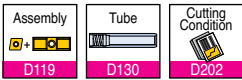
Single tube system



- Inner single start thread



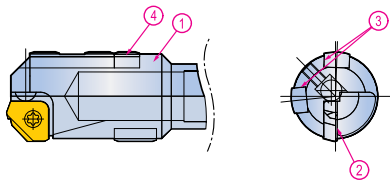
Designation	DC	WF (mm)		Dimension (mm)		Tube	
		Standard	Precision	LF	DCONMS	Part	Diameter (mm)
TBTA-R- xxx.xxSI1-36	40.00-43.99	6.4	4	135	33	BTSE 036	36
xxx.xxSI1-39	44.00-46.99	6.4	4	135	37	BTSE 039	39
xxx.xxSI1-43	47.00-51.99	6.4	4	145	41	BTSE 043	43
xxx.xxSI1-47	52.00-56.99	7.2	4.8	145	44	BTSE 047	47
xxx.xxSI1-51	57.00-60.99	7.2	4.8	170	49	BTSE 051	51
xxx.xxSI1-56	61.00-67.99	7.2/10.4	4.8/6.4	170	53	BTSE 056	56
xxx.xxSI1-62	68.00-74.99	10.4	6.4	170	59	BTSE 062	62
xxx.xxSI1-68	75.00-80.99	10.4	6.4	205	65	BTSE 068	68
xxx.xxSI1-75	81.00-90.99	10.4	6.4	215	71	BTSE 075	75
xxx.xxSI1-82	91.00-98.99	10.4	6.4	225	79	BTSE 082	82
xxx.xxSI1-94	99.00-110.99	10.4	6.4	235	90	BTSE 094	94



TBTA-R Series



Assembly of TBTA-R series



- 1. Head shank
- 2. Insert
- 3. Guide pad
- 4. Guide pad protector

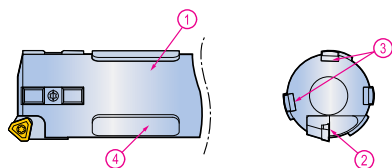
Parts			Diameter (mm)			
			25.00-27.99	28.00-29.99	30.00-37.99	38.00-39.99
Close tolerance	Cartridge	Adjust ball	BALL5	BALL5	BALL5	BALL5
		Adjust screw	AS0005-5	AS0005-5	AS0005-5	AS0005-5
		Wrench	H2.5	H2.5	H2.5	H2.5
		Screw	-	-	-	-
	Wrench	-	-	-	-	
	Insert	Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
Wrench		T-9D	T-9D	T-9D	T-9D	
Normal tolerance	Cartridge	Outer	-	-	-	-
		Adjust screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
		Wrench	-	-	-	-
	Insert	Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
		Wrench	T9	T9	T9	T9
Pad	Guide pad (A)	PAD-GO06CD	PAD-GO06CD	PAD-GO07CD	PAD-GO08CD-SA-FB	
		-	-	-	PAD-GO08CD-SB-FB	
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	
	Wrench	T-9D	T-9D	T-9D	T-9D	
	Guide pad protector (B)	PAD-P08-120	PAD-P08-120	PAD-P08-140	PAD-P08	
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	
	Wrench	T-9D	T-9D	T-9D	T-9D	
	Resin guide pad (C)	PAD-R10	PAD-R10	PAD-R12	PAD-R15	
	Screw	LS0902, 5-6	LS0902, 5-6	LS0903-8	LS0904-10	
	Wrench	-	-	H2	H2.5	



- A + B is for outer four start thread connection type
- A + C is for inner single start thread connection type

TBTA-R Series

Assembly of TBTA-R series

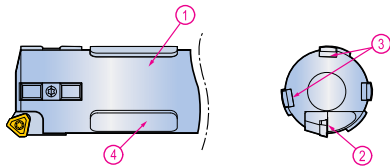


1. Head shank
2. Cartridge & lock screw
3. Guide pad
4. Resin guide pad & lock screw

[illegible]

- A + B is for outer four start thread connection type
- A + C is for inner single start thread connection type
- ^{1*11} Inner thread type = PAD-GC10-SA/SB
- ^{1*21} CSTB4S

Assembly of TBTA-R series



- 1. Head shank
- 2. Cartridge & lock screw
- 3. Guide pad
- 4. Resin guide pad & lock screw

Parts			Diameter (mm)			
			60.00-80.99	81.00-90.99	91.00-99.99	100.00-122.99
Close tolerance	Cartridge	Outer	PERC-P 43R	PERC-P 43R	PERC-P 43R	PERC-P 43R
		Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
		Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Insert	Wrench	H4	H4	H4	H4
		Insert	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG
		Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
Normal tolerance	Cartridge	Wrench	T-15D	T-15D	T-15D	T-15D
		Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
		Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
	Insert	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
		Wrench	H4	H4	H4	H4
		Insert	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
Pad	Cartridge	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T-15D	T-15D	T-15D	T-15D
		Wrench	T-15D	T-15D	T-15D	T-15D
	Insert	Guide pad (A)	PAD-GC14-SB	PAD-GC14-SB	PAD-GC14-SB	PAD-GC18-SB
		Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S
		Wrench	T-15D	T-15D	T-15D	H3
	Cartridge	Guide pad protector (B)	PAD-P14	PAD-P14	PAD-P14	PAD-P18
		Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S
		Wrench	T-15D	T-15D	T-15D	H3
	Insert	Resin guide pad (C)	PAD-R20	PAD-R30	PAD-R35	PAD-R35
		Screw	LS0905-12	LS0906-15	LS0906-15	LS0906-15
		Wrench	H3	H4	H4	H4
	Cartridge					
	Insert					
	Cartridge					

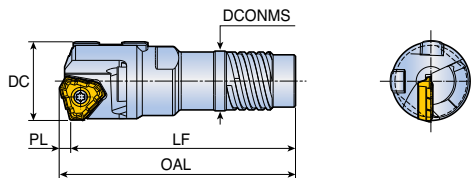


- A + B is for outer four start thread connection type
- A + C is for inner single start thread connection type

TBTA-TR...SE4



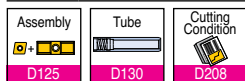
Single tube system



- Outer four start thread

[illegible]

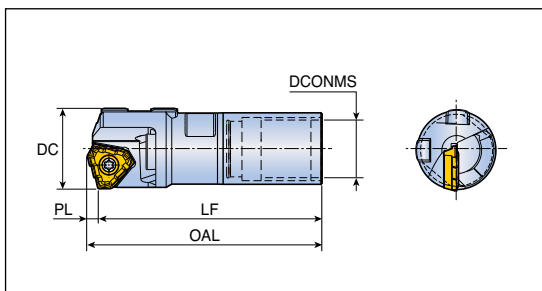
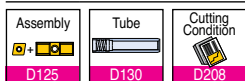
- Insert and guide pad are sold separately from drill body.



Single tube system



- Inner single start thread

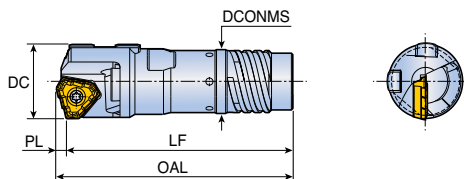
[illegible]

- Insert and guide pad are sold separately from drill body.

TBTA-TR...DE4



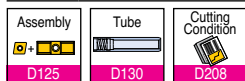
Double tube system



- Outer four start thread

[illegible]

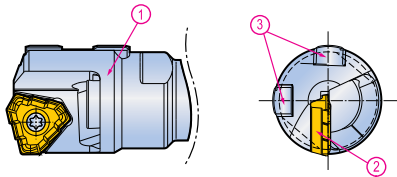
- Insert and guide pad are sold separately from drill body.



TBTA-TR Series



Assembly of TBTA-TR series



- 1. Head shank
- 2. Insert
- 3. Guide pad

Parts		Diameter (mm)		
		16.00-18.00	18.01-20.00	20.01-21.00
Insert	Insert	TOGT 080305 RS TT9030	TOGT 090305 RS TT9030	TOGT 100305 RS TT9030
	Screw	SR14-560/S	CSTB2.5S*	CSTB3S*
	Wrench	T-8F	T-8F	T-9F
Guide Pad	Guide Pad	PAD-GO05-075CD-SA	PAD-GO06-085CD-SA	PAD-GO06-085CD-SA
		PAD-GO05-075CD-SB	PAD-GO06-085CD-SB	PAD-GO06-085CD-SB
	Screw	SR34-508	CSTB2.5S*	CSTB2.5S*
	Wrench	T-7F	T-7F	T-7F

Parts		Diameter (mm)		
		21.01-21.99	22.00-25.00	25.01-28.00
Insert	Insert	TOGT 100305 RS TT9030	TOGT 110405 RS TT9030	TOGT 120405 RS TT9030
	Screw	CSTB3S*	CSTB3.5H*	CSTB4S*
	Wrench	T-9F	T-15F	T-15F
Guide Pad	Guide Pad	PAD-GO06-100CD-SA	PAD-GO06-100CD-SA	PAD-GO06CD-SA
		PAD-GO06-100CD-SB	PAD-GO06-100CD-SB	PAD-GO06CD-SB
	Screw	CSTB2.2S*	CSTB2.2S*	CSTB2.2S*
	Wrench	T-7F	T-7F	T-7F



D173



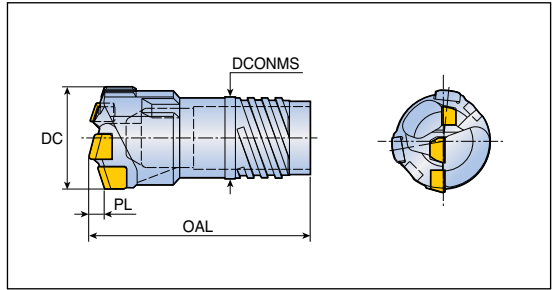
D176

• Insert and guide pad are sold separately from drill body.

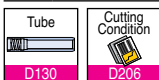
Single tube system



- Outer four start thread

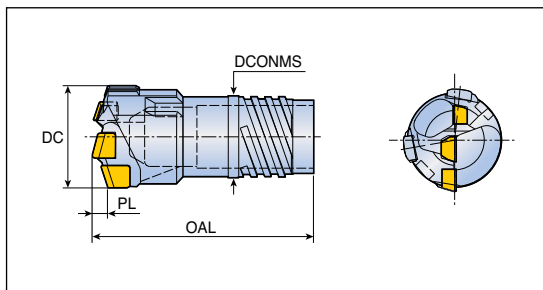


Designation	DC	Dimension (mm)			Tube	
		OAL	PL	DCONMS	Part	Diameter (mm)
BTA xxx.xx SE2-11*	12.60-13.10	43.0	1.1	9.6	BTSI011	11
xxx.xx SE2-11*	13.11-13.60	43.0	1.1	9.6	BTSI011	11
xxx.xx SE2-12*	13.61-14.10	43.0	1.2	10.6	BTSI012	12
xxx.xx SE2-12*	14.11-14.60	43.0	1.2	10.6	BTSI012	12
xxx.xx SE2-13*	14.61-15.10	43.0	1.3	11.6	BTSI013	13
xxx.xx SE2-13*	15.11-15.59	43.0	1.3	11.6	BTSI013	13
xxx.xx SE4-14	15.60-16.20	43.0	2.7	12.6	BTSI014	14
xxx.xx SE4-14	16.21-16.70	43.0	2.7	12.6	BTSI014	14
xxx.xx SE4-15	16.71-17.20	43.0	2.7	13.6	BTSI015	15
xxx.xx SE4-15	17.21-17.70	43.0	2.7	13.6	BTSI015	15
xxx.xx SE4-16	17.71-18.40	47.0	2.8	14.5	BTSI016	16
xxx.xx SE4-16	18.41-18.90	47.0	2.9	14.5	BTSI016	16
xxx.xx SE4-17	18.91-19.20	47.0	2.9	15.5	BTSI017	17
xxx.xx SE4-17	19.21-20.00	47.0	2.9	15.5	BTSI017	17
xxx.xx SE4-18	20.01-20.90	52.5	3.2	16.0	BTSI018	18
xxx.xx SE4-18	20.91-21.80	52.5	3.2	16.0	BTSI018	18
xxx.xx SE4-20	21.81-22.90	56.0	3.2	18.0	BTSI020	20
xxx.xx SE4-20	22.91-24.10	56.0	3.2	18.0	BTSI020	20
xxx.xx SE4-22	24.11-25.20	57.5	3.5	19.5	BTSI022	22
xxx.xx SE4-22	25.21-26.40	57.5	3.5	19.5	BTSI022	22
xxx.xx SE4-24	26.41-27.50	57.5	3.7	21.0	BTSI024	24
xxx.xx SE4-24	27.51-28.70	57.5	3.7	21.0	BTSI024	24
xxx.xx SE4-26	28.71-29.80	63.5	4.0	23.5	BTSI026	26
xxx.xx SE4-26	29.81-31.00	63.5	4.0	23.5	BTSI026	26
xxx.xx SE4-28	31.01-32.10	63.5	4.3	25.5	BTSI028	28
xxx.xx SE4-28	32.11-33.30	63.5	4.3	25.5	BTSI028	28
xxx.xx SE4-30	33.31-34.80	63.5	4.5	28.0	BTSI030	30
xxx.xx SE4-30	34.81-36.20	63.5	4.5	28.0	BTSI030	30
xxx.xx SE4-33	36.21-37.30	73.5	4.8	30.0	BTSI033	33
xxx.xx SE4-33	37.31-38.40	73.5	4.8	30.0	BTSI033	33
xxx.xx SE4-33	38.41-39.60	73.5	4.8	30.0	BTSI033	33
xxx.xx SE4-36	39.61-40.60	73.5	5.6	33.0	BTSI036	36
xxx.xx SE4-36	40.61-41.80	73.5	5.6	33.0	BTSI036	36
xxx.xx SE4-36	41.81-43.00	73.5	5.6	33.0	BTSI036	36
xxx.xx SE4-39	43.01-44.30	75.0	5.4	36.0	BTSI039	39

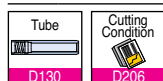


- '* 2 cutting edge head, 2 start thread

Single tube system



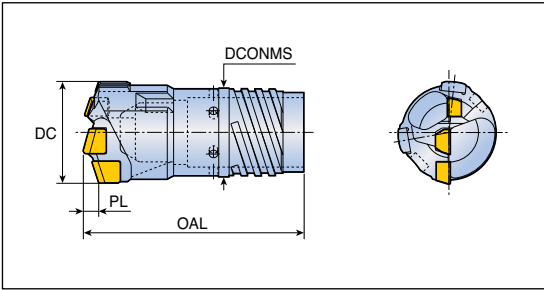
- [illegible]



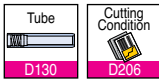
Double tube system



- Outer four start thread



Designation	DC	Dimension (mm)			Tube		
		OAL	PL	DCONMS	Outer tube	Inner tube	Diameter (mm)
BTA xxx.xx DE4-18	18.41-19.20	50.0	2.9	16.0	BTDO018	BTDI012	18.0
xxx.xx DE4-18	19.21-20.00	50.0	2.9	16.0	BTDO018	BTDI012	18.0
xxx.xx DE4-19.5	20.01-20.90	56.0	3.2	18.0	BTDO019.5	BTDI014	19.5
xxx.xx DE4-19.5	20.91-21.80	56.0	3.2	18.0	BTDO019.5	BTDI014	19.5
xxx.xx DE4-21.5	21.81-22.90	56.0	3.2	19.5	BTDO021.5	BTDI015	21.5
xxx.xx DE4-21.5	22.91-24.10	56.0	3.2	19.5	BTDO021.5	BTDI015	21.5
xxx.xx DE4-23.5	24.11-25.20	57.5	3.5	21.0	BTDO023.5	BTDI016	23.5
xxx.xx DE4-23.5	25.21-26.40	57.5	3.5	21.0	BTDO023.5	BTDI016	23.5
xxx.xx DE4-26	26.41-27.50	60.5	3.7	23.5	BTDO026	BTDI018	26.0
xxx.xx DE4-26	27.51-28.70	60.5	3.7	23.5	BTDO026	BTDI018	26.0
xxx.xx DE4-28	28.71-29.80	63.5	4.0	25.5	BTDO028	BTDI020	28.0
xxx.xx DE4-28	29.81-31.00	63.5	4.0	25.5	BTDO028	BTDI020	28.0
xxx.xx DE4-30.5	31.01-32.10	63.5	4.1	28.0	BTDO030.5	BTDI022	30.5
xxx.xx DE4-30.5	32.11-33.30	63.5	4.1	28.0	BTDO030.5	BTDI022	30.5
xxx.xx DE4-33	33.31-34.80	70.5	4.5	30.0	BTDO033.0	BTDI024	33.0
xxx.xx DE4-33	34.81-36.20	70.5	4.5	30.0	BTDO033.0	BTDI024	33.0
xxx.xx DE4-35.5	36.21-37.30	73.5	4.8	33.0	BTDO035.5	BTDI026	35.5
xxx.xx DE4-35.5	37.31-38.40	73.5	4.8	33.0	BTDO035.5	BTDI026	35.5
xxx.xx DE4-35.5	38.41-39.60	73.5	4.8	33.0	BTDO035.5	BTDI026	35.5
xxx.xx DE4-39	39.61-40.60	73.5	5.3	36.0	BTDO039	BTDI029	39.0
xxx.xx DE4-39	40.61-41.80	73.5	5.3	36.0	BTDO039	BTDI029	39.0
xxx.xx DE4-39	41.81-43.00	73.5	5.3	36.0	BTDO039	BTDI029	39.0
xxx.xx DE4-42.5	43.01-44.30	75.0	5.5	39.0	BTDO042.5	BTDI032	42.5
xxx.xx DE4-42.5	44.31-45.60	75.0	5.5	39.0	BTDO042.5	BTDI032	42.5
xxx.xx DE4-42.5	45.61-47.00	75.0	5.5	39.0	BTDO042.5	BTDI032	42.5
xxx.xx DE4-46.5	47.01-48.50	79.0	6.1	43.0	BTDO046.5	BTDI035	46.5
xxx.xx DE4-46.5	48.51-50.10	79.0	6.1	43.0	BTDO046.5	BTDI035	46.5
xxx.xx DE4-46.5	50.11-51.70	79.0	6.1	43.0	BTDO046.5	BTDI035	46.5
xxx.xx DE4-51	51.71-53.20	82.0	6.5	47.0	BTDO051	BTDI039	51.0
xxx.xx DE4-51	53.21-54.70	82.0	6.5	47.0	BTDO051	BTDI039	51.0
xxx.xx DE4-51	54.71-56.20	82.0	6.5	47.0	BTDO051	BTDI039	51.0
xxx.xx DE4-55.5	56.21-58.40	84.0	6.6	51.0	BTDO055.5	BTDI043A	55.5
xxx.xx DE4-55.5	58.41-60.60	84.0	6.6	51.0	BTDO055.5	BTDI043A	55.5
xxx.xx DE4-55.5	60.61-62.80	84.0	6.6	51.0	BTDO055.5	BTDI043A	55.5
xxx.xx DE4-55.5	62.81-65.00	84.0	6.6	51.0	BTDO055.5	BTDI043A	55.5



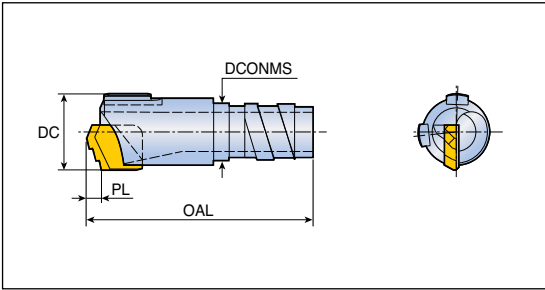
BTS...SE1



Single tube system



- Outer single start thread



Designation	DC	Dimension (mm)			Tube	
		OAL	PL	DCONMS	Part	Diameter (mm)
BTS xxx.xx SE1-7.1	8.00-8.99	34	2.0	6.0	BTSO071	7.1
xxx.xx SE1-8.3	9.00-9.99	34	2.0	7.2	BTSO083	8.3
xxx.xx SE1-9	10.00-10.99	34	2.2	7.6	BTSO090	9.0
xxx.xx SE1-10	11.00-11.99	34	2.2	8.6	BTSO100	10.0
xxx.xx SE1-11	12.00-13.49	34	2.3	9.1	BTSO110	11.0
xxx.xx SE1-12	13.50-14.79	34	2.4	10.8	BTSO120	12.0

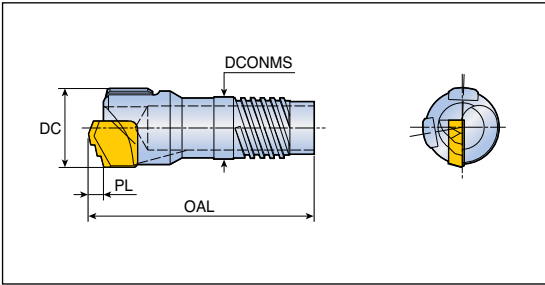
BTS...SE2/SE4



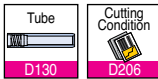
Single tube system



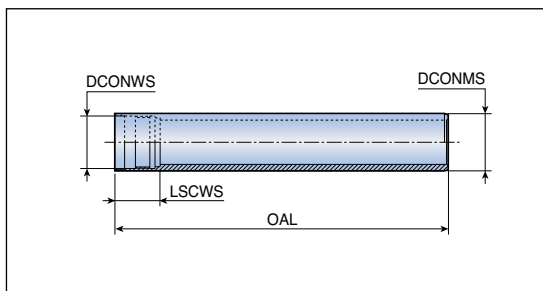
- Outer four start thread



Designation	DC	Dimension (mm)			Tube	
		OAL	PL	DCONMS	Part	Diameter (mm)
BTS xxx.xx SE2-11*	12.60-13.60	40	2.3	9.6	BTSI011	11
xxx.xx SE2-12*	13.61-14.60	40	2.4	10.6	BTSI012	12
xxx.xx SE2-13*	14.61-15.59	40	3.0	11.6	BTSI013	13
xxx.xx SE4-14	15.60-16.70	40	2.4	12.6	BTSI014	14
xxx.xx SE4-15	16.71-17.70	40	3.0	13.6	BTSI015	15
xxx.xx SE4-16	17.71-18.90	40	3.3	14.5	BTSI016	16
xxx.xx SE4-17	18.91-20.00	40	3.3	15.5	BTSI017	17



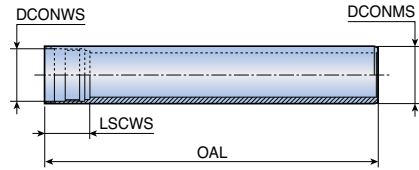
• '*' Designates outer two start thread



Single tube

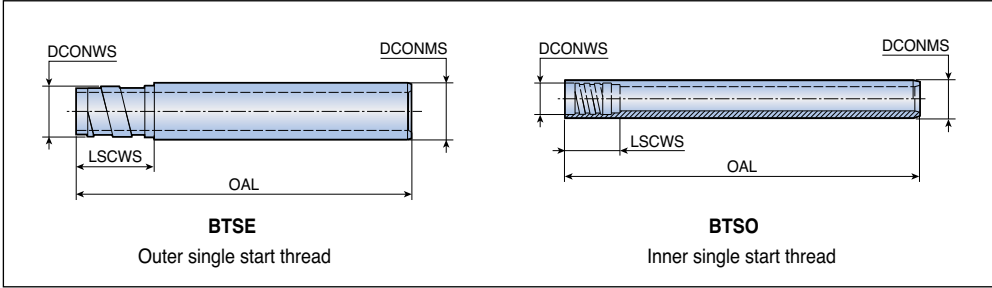


- Inner four start thread

[illegible]

- Please indicate overall length (OAL) when ordering

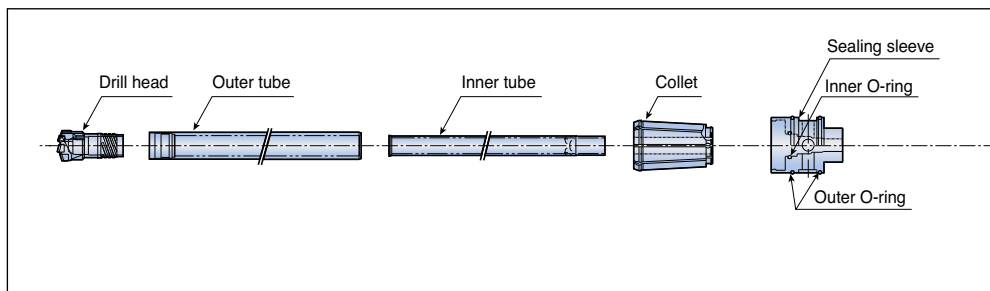
Single tube



Designation	DC	Dimension (mm)			
		DCONMS	DCONWS	LSCWS	
BTSE 047	52.00-56.99	47.0	44	-	41
051	57.00-60.99	51.0	49	-	41
056	61.00-67.99	56.0	53	-	41
062	68.00-74.99	62.0	59	-	41
068	75.00-80.99	68.0	65	-	71
075	81.00-90.99	75.0	71	-	71
082	91.00-98.99	82.0	79	-	71
094	99.00-110.99	94.0	90	-	71
106	111.00-122.99	106.0	102	-	71
118	123.00-134.99	118.0	114	-	71
130	135.00-148.99	130.0	126	-	71
142	149.00-161.99	142.0	139	-	71
154	162.00-173.99	154.0	151	-	86
166	174.00-185.99	166.0	163	-	86
178	186.00-197.99	178.0	175	-	86
190	198.00-209.99	190.0	187	-	86
202	210.00-221.99	202.0	199	-	86
214	222.00-233.99	214.0	211	-	86
226	234.00-245.99	226.0	223	-	86
238	246.00-257.99	238.0	235	-	86
250	258.00-269.99	250.0	247	-	121
262	270.00-281.99	262.0	259	-	121
274	282.00-293.99	274.0	271	-	121
BTSO 071	8.00-8.99	7.1	-	6.0	13.5
083	9.00-9.99	8.3	-	7.2	13.5
090	10.00-10.99	9.0	-	7.6	13.5
100	11.00-11.99	10.0	-	8.6	13.5
110	12.00-13.49	11.0	-	9.1	13.5
120	13.50-14.79	12.0	-	10.8	13.5

• Please indicate overall length (OAL) when ordering

Assembly of Double Tube System



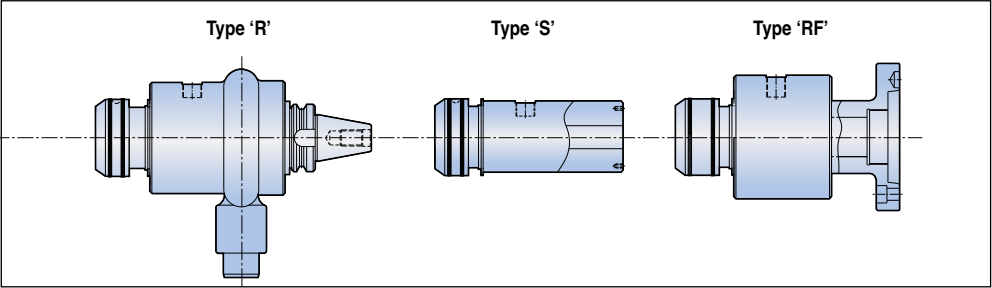
Designation		DC	Collet
BTDO 018	BTDI 012	18.40-19.20	COLLET 4-18
018	012	19.21-20.00	COLLET 4-18
019.5	014	20.01-20.90	COLLET 4-19.5
019.5	014	20.91-21.80	COLLET 4-19.5
021.5	015	21.81-22.90	COLLET 4-21.5
021.5	015	22.91-24.10	COLLET 4-21.5
023.5	016	24.11-25.20	COLLET 4-23.5
023.5	016	25.21-26.40	COLLET 4-23.5
026	018	26.41-27.50	COLLET 4-26
026	018	27.51-28.70	COLLET 4-26
028	020	28.71-29.80	COLLET 4-28
028	020	29.81-31.00	COLLET 4-28
030.5	022	31.01-32.10	COLLET 4-30.5
030.5	022	32.11-33.30	COLLET 4-30.5
033	024	33.31-34.80	COLLET 4-33
033	024	34.81-36.20	COLLET 4-33
035.5	026	36.21-37.30	COLLET 4-35.5
035.5	026	37.31-38.40	COLLET 4-35.5
035.5	026	38.41-39.60	COLLET 4-35.5
039	029	39.61-40.60	COLLET 4-39
039	029	40.61-41.80	COLLET 4-39
039	029	41.81-43.00	COLLET 4-39
042.5	032	43.01-44.30	COLLET 4-42.5
042.5	032	44.31-45.60	COLLET 4-42.5
042.5	032	45.61-47.00	COLLET 4-42.5
046.5	035	47.01-48.50	COLLET 4-46.5
046.5	035	48.51-50.10	COLLET 4-46.5
046.5	035	50.11-51.70	COLLET 4-46.5
051	039	51.71-53.20	COLLET 4-51
051	039	53.21-54.70	COLLET 4-51
051	039	54.71-56.20	COLLET 4-51
055.5	043A	56.21-58.40	COLLET 4-55.5
055.5	043A	58.41-60.60	COLLET 4-55.5
055.5	043A	60.61-62.80	COLLET 4-55.5
055.5	043A	62.81-65.00	COLLET 4-55.5

• Inner tube should be longer than outer tube. Please refer to page D130-D131 for details

Assembly of Double Tube System



Connector



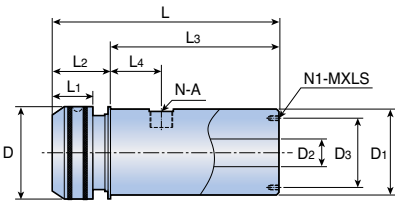
Sealing sleeve	Outer O-ring		Inner O-ring	Connector
SEALING SLEEVE 4R-18	OOR 25.24		IOR18	DTC-4S/4R/4RF
SEALING SLEEVE 4R-18			IOR18	
SEALING SLEEVE 4R-19.5			IOR19.5	
SEALING SLEEVE 4R-19.5			IOR19.5	
SEALING SLEEVE 4R-21.5			IOR21.5	
SEALING SLEEVE 4R-21.5			IOR21.5	
SEALING SLEEVE 4R-23.5			IOR23.5	
SEALING SLEEVE 4R-23.5			IOR23.5	
SEALING SLEEVE 4R-26			IOR26	
SEALING SLEEVE 4R-26			IOR26	
SEALING SLEEVE 4R-28			IOR28	
SEALING SLEEVE 4R-28			IOR28	
SEALING SLEEVE 4R-30.5			IOR30.5	
SEALING SLEEVE 4R-30.5			IOR30.5	
SEALING SLEEVE 4R-33			IOR33	
SEALING SLEEVE 4R-33			IOR33	
SEALING SLEEVE 4R-35.5	OOR65		IOR35.5	
SEALING SLEEVE 4R-35.5			IOR35.5	
SEALING SLEEVE 4R-35.5			IOR35.5	
SEALING SLEEVE 4R-39			IOR39	
SEALING SLEEVE 4R-39			IOR39	
SEALING SLEEVE 4R-39			IOR39	
SEALING SLEEVE 4R-42.5			IOR42.5	
SEALING SLEEVE 4R-42.5			IOR42.5	
SEALING SLEEVE 4R-42.5			IOR42.5	
SEALING SLEEVE 4R-46.5			IOR46.5	
SEALING SLEEVE 4R-46.5			IOR46.5	
SEALING SLEEVE 4R-46.5			IOR46.5	
SEALING SLEEVE 4R-51			IOR51	
SEALING SLEEVE 4R-51			IOR51	
SEALING SLEEVE 4R-51			IOR51	
SEALING SLEEVE 4R-55.5			IOR55.5	
SEALING SLEEVE 4R-55.5			IOR55.5	
SEALING SLEEVE 4R-55.5			IOR55.5	
SEALING SLEEVE 4R-55.5			IOR55.5	

• Inner tube should be longer than outer tube. Please refer to page D130-D131 for details

DTC-S



'S' type connector

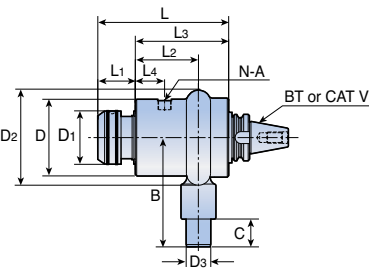


Designation	DC	D	D1	D2	D3	L	L1	L2	L3	L4	N-A	N1-MXLS
DTC 4S	18.4-65.0	115	100	45	80	310	50	60	250	68	2-PT3/4"	4-M8x15
5S	65.0-123.9	164	140	81	120	415	47	115	300		2-PT1"	6-M8x20

DTC-R

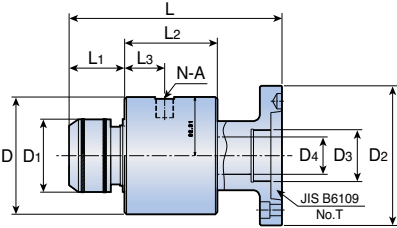


'R' type connector



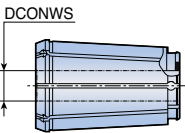
Designation	DC	D	D1	D2	D3	B	C	L	L1	L2	L3	L4	N-A
DTC 4R	18.4-65.0	165	115	206	53	186.5	60	319.7	59.2	152	228	75	2-PT1"
5R	65.0-123.9	225	164	312	100	310	100	382	62	201	320	95	2-PT1 1/4"
6R	124.0-183.9	350	244	445	152.4	412	120	487	75	250	412	118	4-PT1-1/4"

'RF' type connector

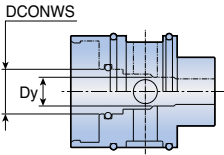


Designation	DC	D	D1	D2	D3	D4	L	L1	L2	L3	N-A
DTC 4RF	18.4-65.0	160	115	210	M62x2	46	291.5	64.5	150	75	2-PT1"

Collet / Sealing Sleeve



Collet



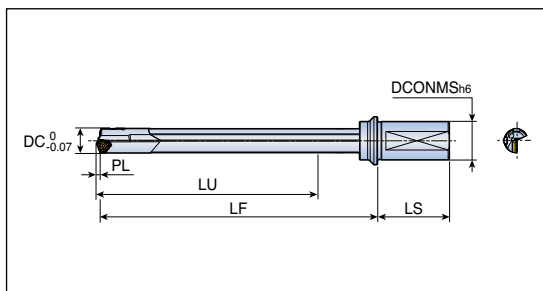
Sealing sleeve

Designation	DC	DCONWS	Designation	DC	DCONWS	Dy	Outer O-ring	Inner O-ring
COLLET 4-18	18.40-20.00	18.0	SEALING SLEEVE 4-18	18.40-20.00	18.0	10	OOR 65	IOR 18
4-19.5	20.01-21.80	19.5	4-19.5	20.01-21.80	19.5	12		IOR 19.5
4-21.5	21.81-24.10	21.5	4-21.5	21.81-24.10	21.5	13		IOR 21.5
4-23.5	24.11-26.40	23.5	4-23.5	24.11-26.40	23.5	14		IOR 23.5
4-26	26.41-28.70	26.0	4-26	26.41-28.70	26.0	16		IOR 26
4-28	28.71-31.00	28.0	4-28	28.71-31.00	28.0	18		IOR 28
4-30.5	31.01-33.30	30.5	4-30.5	31.01-33.30	30.5	20		IOR 30.5
4-33	33.31-36.20	33.0	4-33	33.31-36.20	33.0	22		IOR 33
4-35.5	36.21-39.60	35.5	4-35.5	36.21-39.60	35.5	24		IOR 35.5
4-39	39.61-43.00	39.0	4-39	39.61-43.00	39.0	27		IOR 39
4-42.5	43.01-47.00	42.5	4-42.5	43.01-47.00	42.5	30		IOR 42.5
4-46.5	47.01-51.70	46.5	4-46.5	47.01-51.70	46.5	32		IOR 46.5
4-51	51.71-56.20	51.0	4-51	51.71-56.20	51.0	36		IOR 51
4-55.5	56.21-65.00	55.5	4-55.5	56.21-65.00	55.5	40		IOR 55.5

Standard gundrill holders



- Drilling depth: 10xDC - 25xDC



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
TRGD 16.00xM25-10	16.0	172	209	56	25	2.2	10
16.50xM25-10	16.5	172	209	56	25	2.2	10
17.00xM25-10	17.0	182	220	56	25	2.2	10
18.00xM25-10	18.0	193	232	56	25	3.0	10
19.00xM25-10	19.0	203	243	56	25	3.0	10
20.00xM32-10	20.0	213	255	60	32	3.2	10
14.00xM25-15	14.0	227	261	56	25	2.0	15
14.50xM25-15	14.5	227	262	56	25	2.0	15
15.00xM25-15	15.0	242	278	56	25	2.0	15
16.00xM25-15	16.0	257	294	56	25	2.2	15
16.50xM25-15	16.5	257	294	56	25	2.2	15
17.00xM25-15	17.0	272	310	56	25	2.2	15
17.50xM25-15	17.5	272	310	56	25	2.2	15
18.00xM25-15	18.0	288	327	56	25	3.0	15
18.50xM25-15	18.5	288	327	56	25	3.0	15
19.00xM25-15	19.0	303	343	56	25	3.0	15
19.50xM25-15	19.5	303	343	56	25	3.0	15
20.00xM32-15	20.0	318	360	60	32	3.2	15
21.00xM32-15	21.0	333	376	60	32	3.2	15
22.00xM32-15	22.0	348	393	60	32	3.4	15
23.00xM32-15	23.0	363	409	60	32	3.4	15
24.00xM32-15	24.0	378	426	60	32	3.4	15
25.00xM32-15	25.0	394	442	60	32	3.6	15
26.00xM40-15	26.0	409	449	70	40	3.6	15
27.00xM40-15	27.0	424	465	70	40	3.6	15
28.00xM40-15	28.0	424	467	70	40	3.6	15
14.00xM25-20	14.0	302	336	56	25	2.0	20
14.50xM25-20	14.5	302	337	56	25	2.0	20
15.00xM25-20	15.0	322	358	56	25	2.0	20
14.00xM25-25	14.0	377	411	56	25	2.0	25
14.50xM25-25	14.5	377	412	56	25	2.0	25
15.00xM25-25	15.0	402	438	56	25	2.0	25
16.00xM25-25	16.0	427	464	56	25	2.2	25
16.50xM25-25	16.5	427	464	56	25	2.2	25
17.00xM25-25	17.0	452	490	56	25	2.2	25



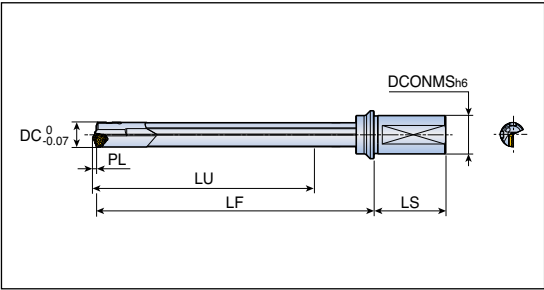
- Guide pad is sold separately from drill body.

- Available upon request

Standard gundrill holders



- Drilling depth: 10xDC - 25xDC



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
TRGD 17.50xM25-25	17.5	452	490	56	25	2.2	25
18.00xM25-25	18.0	478	517	56	25	3.0	25
18.50xM25-25	18.5	478	517	56	25	3.0	25
19.00xM25-25	19.0	503	543	56	25	3.0	25
19.50xM25-25	19.5	503	543	56	25	3.0	25
20.00xM32-25	20.0	528	570	60	32	3.2	25
21.00xM32-25	21.0	553	596	60	32	3.2	25
22.00xM32-25	22.0	578	623	60	32	3.4	25
23.00xM32-25	23.0	603	649	60	32	3.4	25
24.00xM32-25	24.0	628	676	60	32	3.4	25
25.00xM32-25	25.0	654	702	60	32	3.6	25
26.00xM40-25	26.0	679	719	70	40	3.6	25
27.00xM40-25	27.0	704	745	70	40	3.6	25
28.00xM40-25	28.0	704	747	70	40	3.6	25

- Guide pad is sold separately from drill body.
- Available upon request

Insert & guide pad

Tool dia. (mm)	Insert			Guide pad		
	Insert	Screw	Wrench	Guide pad	Screw	Wrench
14.00-15.99	TOGT 070304 RS TT9030	SR14-560/S	T-8F	PAD-GO05-060CD-SA PAD-GO05-060CD-SB	SR34-508	T-7F
16.00-18.00	TOGT 080305 RS TT9030	SR14-560/S	T-8F	PAD-GO05-075CD-SA PAD-GO05-075CD-SB	SR34-508	T-7F
18.01-20.00	TOGT 090305 RS TT9030	CSTB2.5S*	T-8F	PAD-GO06-085CD-SA PAD-GO06-085CD-SB	CSTB2.2S*	T-7F
20.01-21.00	TOGT 100305 RS TT9030	CSTB3S*	T-9F	PAD-GO06-100CD-SA PAD-GO06-100CD-SB	CSTB2.2S*	T-7F
21.01-21.99	TOGT 100305 RS TT9030	CSTB3S*	T-9F		CSTB2.2S*	T-7F
22.00-25.00	TOGT 110405 RS TT9030	CSTB3.5H*	T-15F	PAD-GO06CD-SA PAD-GO06CD-SB	CSTB2.2S*	T-7F
25.01-28.00	TOGT 120405 RS TT9030	CSTB4S*	T-15F		CSTB2.2S*	T-7F

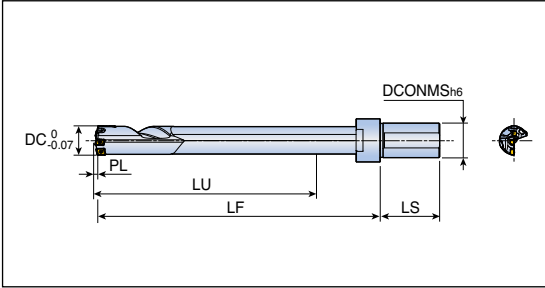


- Guide pad with "SB" is the first choice in general purpose machining.
- "SA" is a supplementary grade used only with oil based coolant.
- Inserts and guide pads must be ordered separately

Standard gundrill holders



- Drilling depth: 10xDC - 15xDC



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
TRGD 29.00XFM40-10	29.0	293	360	69	40	2.6	10
30.00XFM40-10	30.0	313	383	69	40	2.9	10
31.00XFM40-10	31.0	313	383	69	40	2.9	10
32.00XFM40-10	32.0	323	395	69	40	3.0	10
33.00XFM40-10	33.0	333	406	69	40	3.1	10
34.00XFM40-10	34.0	343	418	69	40	3.0	10
35.00XFM40-10	35.0	353	428	69	40	3.1	10
36.00XFM40-10	36.0	363	441	69	40	3.1	10
29.00XFM40-15	29.0	438	505	69	40	2.6	15
30.00XFM40-15	30.0	468	538	69	40	2.9	15
31.00XFM40-15	31.0	468	538	69	40	2.9	15
32.00XFM40-15	32.0	483	555	69	40	3.0	15
33.00XFM40-15	33.0	498	571	69	40	3.1	15
34.00XFM40-15	34.0	513	588	69	40	3.0	15
35.00XFM40-15	35.0	528	603	69	40	3.1	15
36.00XFM40-15	36.0	543	621	69	40	3.1	15

- Guide pad is sold separately from drill body.
- Supply up to 40.0mm drill daimeter
- Available upon request

Insert & guide pad

Parts		Diameter (mm)			
		29.0	30.0-33.0	34.0-35.0	36.0
Insert	Peripheral insert	NPHT 06003RG	NPHT 07504RG	NPHT 07504RG	NPHT 07504RG
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-7F	T-8F	T-8F	T-8F
	Inner insert	NPMT 05503RG	NPMT 06504RG	NPMT 06504RG	NPMT 06504RG
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-7F	T-8F	T-8F	T-8F
	Center insert	NPMT 06504LG	NPMT 06504LG	NPMT 06504LG	NPMT 08004LG
	Screw	CSTB2.5	CSTB2.6	CSTB2.7	CSTB2.8
Pad	Wrench	T-8F	T-8F	T-8F	T-8F
	Guide pad	PAD-GO06CD	PAD-GO06CD	PAD-GO07CD	PAD-GO07CD
	Screw	CSTB2.2S*	CSTB2.2S*	CSTB3S	CSTB3S
	Wrench	T-7F	T-7F	T-9F	T-9F

Assembly

D141

Guide Pad

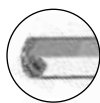
D176

Cutting Condition

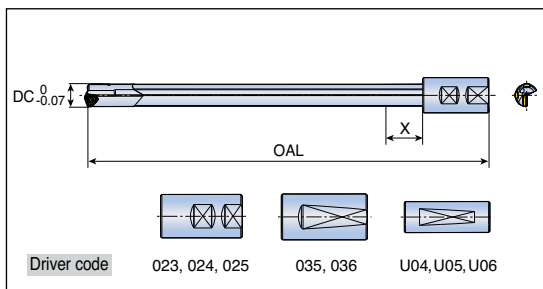
D208

- Inserts and guide pads must be ordered separately

Standard gundrill holders



- Drilling depth: 10xDC - 25xDC



Designation	Driver code	Dimension (mm)		
		DC	OAL	X
TRGDL 14.00X800-XXX	U04 023	14	800	21
14.00X1000-XXX		14	1000	21
14.00X1650-XXX		14	1650	21
14.50X800-XXX		14.5	800	22
14.50X1000-XXX		14.5	1000	22
14.50X1650-XXX		14.5	1650	22
15.00X800-XXX		15	800	23
15.00X1000-XXX		15	1000	23
15.00X1650-XXX		15	1650	23
16.00x800-XXX	U04 023 035	16	800	24
16.00x1000-XXX		16	1000	24
16.00x1500-XXX		16	1500	24
17.00x1000-XXX		17	1000	25
17.00x1500-XXX		17	1500	25
18.00x800-XXX		18	800	27
18.00x1000-XXX		18	1000	27
18.00x1500-XXX		18	1500	27
19.00x800-XXX		19	800	28
19.00x1000-XXX	U05 024 036	19	1000	28
19.00x1500-XXX		19	1500	28
20.00x800-XXX		20	800	30
20.00x1000-XXX		20	1000	30
20.00x1500-XXX		20	1500	30
21.00x1000-XXX		21	1000	31
21.00x1500-XXX		21	1500	31
22.00x1000-XXX		22	1000	33
22.00x1500-XXX		22	1500	33
23.00x1000-XXX		23	1000	34
23.00x1500-XXX		23	1500	34
24.00x1000-XXX		24	1000	36
24.00x1500-XXX		24	1500	36
25.00x1000-XXX		25	1000	37
25.00x1500-XXX		25	1500	37



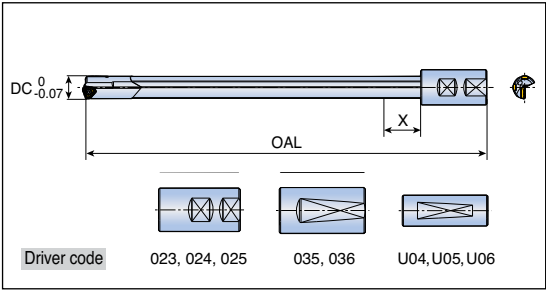
- Guide pad is sold separately from drill body.

- Available upon request
- Select "XXX" driver code

Standard gundrill holders



- Drilling depth: 10xDC - 25xDC



Designation	Driver code	Dimension (mm)		
		DC	OAL	X
TRGDL 26.00x1000-XXX	U06 025 026 036	26	1000	39
26.00x1500-XXX		26	1500	39
27.00x1000-XXX		27	1000	40
27.00x1500-XXX		27	1500	40
28.00x1000-XXX		28	1000	42
28.00x1500-XXX		28	1500	42

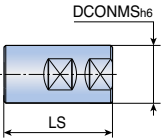
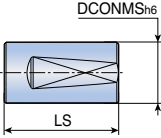
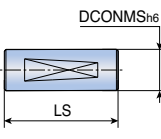
- Guide pad is sold separately from drill body.
- Available upon request
- Select "XXX" driver code

Insert & guide pad

Tool dia. (mm)	Insert			Guide pad		
	Insert	Screw	Wrench	Guide pad	Screw	Wrench
14.00-15.99	TOGT 070304 RS TT9030	SR14-560/S	T-8F	PAD-GO05-060CD-SA PAD-GO05-060CD-SB	SR34-508	T-7F
16.00-18.00	TOGT 080305 RS TT9030	SR14-560/S	T-8F	PAD-GO05-075CD-SA PAD-GO05-075CD-SB	SR34-508	T-7F
18.01-20.00	TOGT 090305 RS TT9030	CSTB2.5S*	T-8F	PAD-GO06-085CD-SA PAD-GO06-085CD-SB	CSTB2.2S*	T-7F
20.01-21.00	TOGT 100305 RS TT9030	CSTB3S*	T-9F	PAD-GO06-100CD-SA PAD-GO06-100CD-SB	CSTB2.2S*	T-7F
21.01-21.99	TOGT 100305 RS TT9030	CSTB3S*	T-9F	PAD-GO06-100CD-SA PAD-GO06-100CD-SB	CSTB2.2S*	T-7F
22.00-25.00	TOGT 110405 RS TT9030	CSTB3.5H*	T-15F	PAD-GO06-100CD-SA PAD-GO06-100CD-SB	CSTB2.2S*	T-7F
25.01-28.00	TOGT 120405 RS TT9030	CSTB4S*	T-15F	PAD-GO06CD-SA PAD-GO06CD-SB	CSTB2.2S*	T-7F



- Guide pad with "SB" is the first choice in general purpose machining.
- "SA" is a supplementary grade used only with oil based coolant.
- Inserts and guide pads must be ordered separately

Driver	Tool diameter	Driver code	Dimension (mm)	
			LS	DCONMS
	14.00-19.69	023	56	25.00
	16.00-25.69	024	60	32.00
	16.00-28.00	025	70	40.00
	16.00-28.00	026	80	50.00
	16.00-19.69	035	56	25.00
	16.00-25.69	036	60	32.00
	16.00-19.69	U04	70	25.40
	16.00-25.69	U05	70	31.75
	16.00-28.00	U06	70	38.10

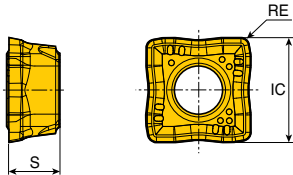
Drilling Heads & Inserts



SOMT...DP



Inserts for general purpose



Size	Dimension (mm)		
	IC	S	RE
04	4.4	2.38	0.4
05	4.9	2.38	0.4
06	5.7	2.38	0.4
07	6.8	2.80	0.6
08	7.9	3.97	0.6
09	9.2	3.97	0.8
11	11.0	3.97	0.8
13	12.8	4.40	0.8
15	15.0	4.80	1.0

Insert	Designation	Coated						Uncoated	
		TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
	SOMT 040204 DP	●	●	●					
	050204 DP	●	●	●					
	060204 DP	●	●	●					
	070306 DP	●	●	●					
	08T306 DP	●	●	●					
	09T308 DP	●	●	●					
	11T308 DP	●	●	●					
	130408 DP	●	●	●					
	150510 DP	●	●	●					



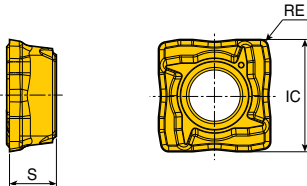
- TT9080: First choice for general purpose
- TT8020: For unstable condition
- TT9300: For high speed machining on a steel application (Peripheral **ONLY**)

●: Standard items

SOMT...DL



Inserts for low carbon steel



Size	Dimension (mm)		
	IC	S	RE
05	4.9	2.38	0.4
06	5.7	2.38	0.4
07	6.8	2.80	0.6
08	7.9	3.97	0.6
09	9.2	3.97	0.8
11	11.0	3.97	0.8
13	12.8	4.40	0.8
15	15.0	4.80	1.0

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	SOMT 050204 DL	●							
	060204 DL	●							
	070306 DL	●							
	08T306 DL	●							
	09T308 DL	●							
	11T308 DL	●							
	130408 DL	●							
	150510 DL	●							



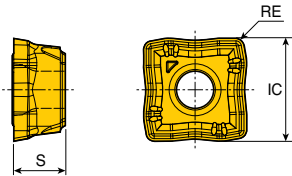
- TT9080: First choice for general purpose

●: Standard items

SOMT...DK



Inserts for cast iron



Size	Dimension (mm)		
	IC	S	RE
05	4.9	2.38	0.4
06	5.7	2.38	0.4
07	6.8	2.80	0.6
08	7.9	3.97	0.6
09	9.2	3.97	0.8
11	11.0	3.97	0.8
13	12.8	4.40	0.8
15	15.0	4.80	1.0

Insert	Designation	Coated							Uncoated		
		TT9080	TT8020	TT9300	TT9030	TT6030	TT6080	TT7400		K10	
	SOMT 050204 DK					●					
	060204 DK					●					
	070306 DK					●					
	08T306 DK					●					
	09T308 DK					●					
	11T308 DK					●					
	130408 DK					●					
	150510 DK					●					

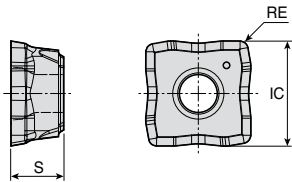


●: Standard items

SOMT...DA



Inserts for aluminum alloy



Size	Dimension (mm)		
	IC	S	RE
05	4.9	2.38	0.4
06	5.7	2.38	0.4
07	6.8	2.80	0.6
08	7.9	3.97	0.6
09	9.2	3.97	0.8
11	11.0	3.97	0.8
13	12.8	4.40	0.8
15	15.0	4.80	1.0

Insert	Designation	Coated							Uncoated		
		TT9080	TT8020	TT9300	TT9030	TT6030	TT6080	TT7400		K10	
	SOMT 050204 DA									●	
	060204 DA									●	
	070306 DA									●	
	08T306 DA									●	
	09T308 DA									●	
	11T308 DA									●	
	130408 DA									●	
	150510 DA									●	

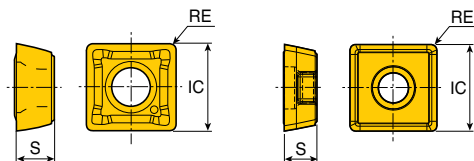


●: Standard items

SPMG...DG



Inserts for general purpose



SPMG 120408 DG

Size	Dimension (mm)		
	IC	S	RE
05	5.00	2.38	0.4
06	6.00	2.38	0.4
07	7.94	3.97	0.8
09	9.80	4.30	0.8
11	11.50	4.80	0.8
12	12.70	4.76	0.8
14	14.30	5.20	1.2

Insert	Designation	Coated						Uncoated		
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		K10	
	SPMG 050204 DG		●	●		●				
	060204 DG		●	●		●				
	07T308 DG		●	●		●				
	090408 DG		●	●		●				
	110408 DG		●	●		●				
	120408 DG		●							
	140512 DG		●	●		●				



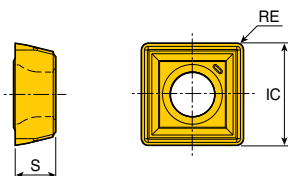
- TT9030: First choice for general purpose
- TT8020: For unstable condition
- TT7400: For high speed machining on a steel application (Peripheral **ONLY**)

●: Standard items

SPMG...DK



Inserts for cast iron



Size	Dimension (mm)		
	IC	S	RE
05	5.00	2.38	0.4
06	6.00	2.38	0.4
07	7.94	3.97	0.8
09	9.80	4.30	0.8
11	11.50	4.80	0.8
14	14.30	5.20	1.2

Insert	Designation	Coated						Uncoated		
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		K10	
	SPMG 050204 DK				●					
	060204 DK				●					
	07T308 DK				●					
	090408 DK				●					
	110408 DK				●					
	140512 DK				●					

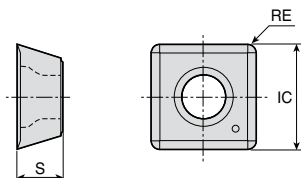


●: Standard items

SPGG...DA



Inserts for aluminum alloy



Size	Dimension (mm)		
	IC	S	RE
05	5.00	2.38	0.4
06	6.00	2.38	0.4
07	7.94	3.97	0.8
09	9.80	4.30	0.8
11	11.50	4.80	0.8
14	14.30	5.20	1.2

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	SPGG 050204 DA							●	
	060204 DA							●	
	07T308 DA							●	
	090408 DA							●	
	110408 DA							●	
	140512 DA							●	

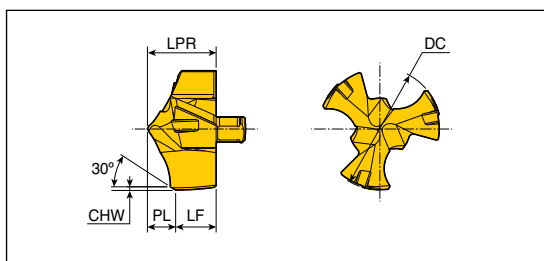


●: Standard items

3ED...-P+



3 flute drill heads



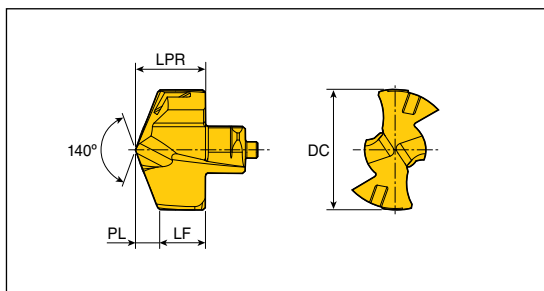
Designation	Dimension (mm)						Grade
	DC	LPR	PL	LF	CHW	SSC	TT5130
3ED- 160-P+	16.0	9.00	3.70	5.30	0.40	16	●
165-P+	16.5	9.00	3.71	5.29	0.40	16	●
170-P+	17.0	9.50	3.88	5.62	0.40	17	●
175-P+	17.5	9.50	3.89	5.61	0.40	17	●
180-P+	18.0	10.10	4.07	6.03	0.40	18	●
185-P+	18.5	10.10	4.08	6.02	0.40	18	●
190-P+	19.0	10.70	4.26	6.44	0.40	19	●
195-P+	19.5	10.70	4.27	6.43	0.40	19	●
200-P+	20.0	11.30	4.44	6.86	0.40	20	●
205-P+	20.5	11.30	4.45	6.85	0.40	20	●



● SSC: Seat size code

●: Standard items

Drill heads



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	TT9080
TCD - 060-P/M/K	6.0	4.0	0.96	3.04	6	●
061-P/M/K	6.1	4.0	0.98	3.02	6	●
062-P/M/K	6.2	4.0	1.00	3.00	6	●
063-P/M/K	6.3	4.0	1.01	2.99	6	●
064-P/M/K	6.4	4.0	1.03	2.97	6	●
065-P/M/K	6.5	4.3	1.18	3.12	6.5	●
066-P/M/K	6.6	4.3	1.20	3.10	6.5	●
067-P/M/K	6.7	4.3	1.22	3.08	6.5	●
068-P/M/K	6.8	4.3	1.23	3.07	6.5	●
069-P/M/K	6.9	4.3	1.25	3.05	6.5	●
070-P/M/K	7.0	4.6	1.01	3.59	7	●
071-P/M/K	7.1	4.6	1.03	3.57	7	●
072-P/M/K	7.2	4.6	1.05	3.55	7	●
073-P/M/K	7.3	4.6	1.06	3.54	7	●
074-P/M/K	7.4	4.6	1.08	3.52	7	●
075-P/M/K	7.5	4.6	1.10	3.50	7	●
076-P/M/K	7.6	4.6	1.12	3.48	7	●
077-P/M/K	7.7	4.6	1.14	3.46	7	●
078-P/M/K	7.8	4.6	1.16	3.44	7	●
079-P/M/K	7.9	4.6	1.17	3.43	7	●
080-P/M/K	8.0	5.4	1.20	4.20	8	●
081-P/M/K	8.1	5.4	1.22	4.18	8	●
082-P/M/K	8.2	5.4	1.24	4.16	8	●
083-P/M/K	8.3	5.4	1.25	4.15	8	●
084-P/M/K	8.4	5.4	1.27	4.13	8	●
085-P/M/K	8.5	5.4	1.29	4.11	8	●
086-P/M/K	8.6	5.4	1.31	4.09	8	●
087-P/M/K	8.7	5.4	1.33	4.07	8	●
088-P/M/K	8.8	5.4	1.35	4.05	8	●
089-P/M/K	8.9	5.4	1.36	4.04	8	●
090-P/M/K	9.0	5.8	1.35	4.45	9	●
091-P/M/K	9.1	5.8	1.37	4.43	9	●
092-P/M/K	9.2	5.8	1.39	4.41	9	●
093-P/M/K	9.3	5.8	1.40	4.40	9	●
094-P/M/K	9.4	5.8	1.42	4.38	9	●



• Drill head can be ordered by an application
Order example) Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

●: Standard items



Steel

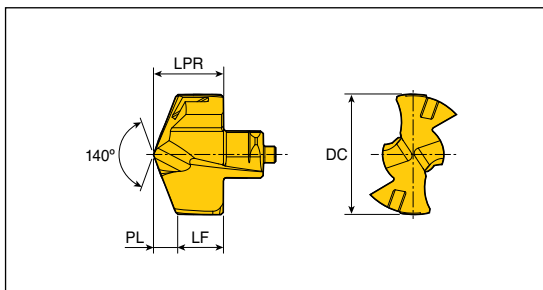


Stainless steel



Cast iron

Drill heads



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	TT9080
TCD - 095-P/M/K	9.5	5.8	1.44	4.36	9	●
096-P/M/K	9.6	5.8	1.46	4.34	9	●
097-P/M/K	9.7	5.8	1.48	4.32	9	●
098-P/M/K	9.8	5.8	1.50	4.30	9	●
099-P/M/K	9.9	5.8	1.51	4.29	9	●
100-P/M/K	10.0	6.2	1.50	4.70	10	●
101-P/M/K	10.1	6.2	1.52	4.68	10	●
102-P/M/K	10.2	6.2	1.54	4.66	10	●
103-P/M/K	10.3	6.2	1.55	4.65	10	●
104-P/M/K	10.4	6.2	1.57	4.63	10	●
105-P/M/K	10.5	6.2	1.59	4.61	10	●
106-P/M/K	10.6	6.2	1.61	4.59	10	●
107-P/M/K	10.7	6.2	1.63	4.57	10	●
108-P/M/K	10.8	6.2	1.65	4.55	10	●
109-P/M/K	10.9	6.2	1.66	4.54	10	●
110-P/M/K	11.0	6.6	1.67	4.93	11	●
111-P/M/K	11.1	6.6	1.69	4.91	11	●
112-P/M/K	11.2	6.6	1.71	4.89	11	●
113-P/M/K	11.3	6.6	1.72	4.88	11	●
114-P/M/K	11.4	6.6	1.74	4.86	11	●
115-P/M/K	11.5	6.6	1.76	4.84	11	●
116-P/M/K	11.6	6.6	1.78	4.82	11	●
117-P/M/K	11.7	6.6	1.80	4.80	11	●
118-P/M/K	11.8	6.6	1.82	4.78	11	●
119-P/M/K	11.9	6.6	1.83	4.77	11	●
120-P/M/K	12.0	7.0	1.82	5.18	12	●
121-P/M/K	12.1	7.0	1.84	5.16	12	●
122-P/M/K	12.2	7.0	1.86	5.14	12	●
123-P/M/K	12.3	7.0	1.87	5.13	12	●
124-P/M/K	12.4	7.0	1.89	5.11	12	●
125-P/M/K	12.5	7.0	1.91	5.09	12	●
126-P/M/K	12.6	7.0	1.93	5.07	12	●
127-P/M/K	12.7	7.0	1.95	5.05	12	●
128-P/M/K	12.8	7.0	1.97	5.03	12	●
129-P/M/K	12.9	7.0	1.98	5.02	12	●

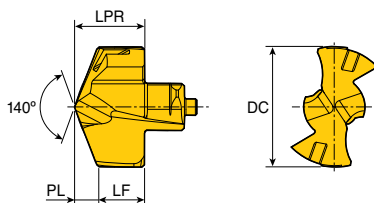


• Drill head can be ordered by an application
Order example) Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

• Standard items

P Steel **M** Stainless steel **K** Cast iron

Drill heads



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	TT9080
TCD - 130-P/M/K	13.0	7.6	1.96	5.64	13	●
131-P/M/K	13.1	7.6	1.98	5.62	13	●
132-P/M/K	13.2	7.6	2.00	5.60	13	●
133-P/M/K	13.3	7.6	2.01	5.59	13	●
134-P/M/K	13.4	7.6	2.03	5.57	13	●
135-P/M/K	13.5	7.6	2.05	5.55	13	●
136-P/M/K	13.6	7.6	2.07	5.53	13	●
137-P/M/K	13.7	7.6	2.09	5.51	13	●
138-P/M/K	13.8	7.6	2.11	5.49	13	●
139-P/M/K	13.9	7.6	2.12	5.48	13	●
140-P/M/K	14.0	8.1	2.12	5.98	14	●
141-P/M/K	14.1	8.1	2.14	5.96	14	●
142-P/M/K	14.2	8.1	2.16	5.94	14	●
143-P/M/K	14.3	8.1	2.17	5.93	14	●
144-P/M/K	14.4	8.1	2.19	5.91	14	●
145-P/M/K	14.5	8.1	2.21	5.89	14	●
146-P/M/K	14.6	8.1	2.23	5.87	14	●
147-P/M/K	14.7	8.1	2.25	5.85	14	●
148-P/M/K	14.8	8.1	2.27	5.83	14	●
149-P/M/K	14.9	8.1	2.28	5.82	14	●
150-P/M/K	15.0	8.7	2.27	6.43	15	●
151-P/M/K	15.1	8.7	2.29	6.41	15	●
152-P/M/K	15.2	8.7	2.31	6.39	15	●
153-P/M/K	15.3	8.7	2.32	6.38	15	●
154-P/M/K	15.4	8.7	2.34	6.36	15	●
155-P/M/K	15.5	8.7	2.36	6.34	15	●
156-P/M/K	15.6	8.7	2.38	6.32	15	●
157-P/M/K	15.7	8.7	2.40	6.30	15	●
158-P/M/K	15.8	8.7	2.42	6.28	15	●
159-P/M/K	15.9	8.7	2.43	6.27	15	●
160-P/M/K	16.0	9.3	2.42	6.88	16	●
161-P/M/K	16.1	9.3	2.44	6.86	16	●
162-P/M/K	16.2	9.3	2.46	6.84	16	●
163-P/M/K	16.3	9.3	2.47	6.83	16	●
164-P/M/K	16.4	9.3	2.49	6.81	16	●



- Drill head can be ordered by an application
Order example) Diameter 10.0mm drill head for
ISO P application: TCD-100-P TT9080

●: Standard items



Steel

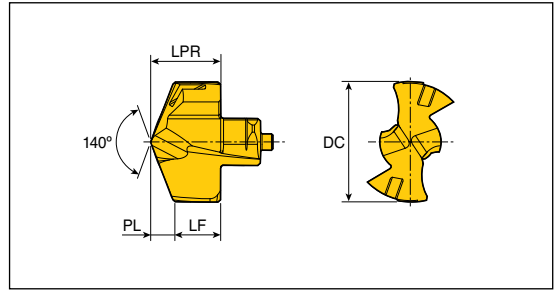


Stainless steel



Cast iron

Drill heads



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	TT9080
TCD - 165-P/M/K	16.5	9.3	2.51	6.79	16	●
166-P/M/K	16.6	9.3	2.53	6.77	16	●
167-P/M/K	16.7	9.3	2.55	6.75	16	●
168-P/M/K	16.8	9.3	2.57	6.73	16	●
169-P/M/K	16.9	9.3	2.58	6.72	16	●
170-P/M/K	17.0	9.9	2.59	7.31	17	●
171-P/M/K	17.1	9.9	2.61	7.29	17	●
172-P/M/K	17.2	9.9	2.63	7.27	17	●
173-P/M/K	17.3	9.9	2.64	7.26	17	●
174-P/M/K	17.4	9.9	2.66	7.24	17	●
175-P/M/K	17.5	9.9	2.68	7.22	17	●
176-P/M/K	17.6	9.9	2.70	7.20	17	●
177-P/M/K	17.7	9.9	2.72	7.18	17	●
178-P/M/K	17.8	9.9	2.74	7.16	17	●
179-P/M/K	17.9	9.9	2.75	7.15	17	●
180-P/M/K	18.0	10.5	2.73	7.77	18	●
181-P/M/K	18.1	10.5	2.75	7.75	18	●
182-P/M/K	18.2	10.5	2.77	7.73	18	●
183-P/M/K	18.3	10.5	2.78	7.72	18	●
184-P/M/K	18.4	10.5	2.80	7.70	18	●
185-P/M/K	18.5	10.5	2.82	7.68	18	●
186-P/M/K	18.6	10.5	2.84	7.66	18	●
187-P/M/K	18.7	10.5	2.86	7.64	18	●
188-P/M/K	18.8	10.5	2.88	7.62	18	●
189-P/M/K	18.9	10.5	2.89	7.61	18	●
190-P/M/K	19.0	11.0	2.88	8.12	19	●
191-P/M/K	19.1	11.0	2.90	8.10	19	●
192-P/M/K	19.2	11.0	2.92	8.08	19	●
193-P/M/K	19.3	11.0	2.93	8.07	19	●
194-P/M/K	19.4	11.0	2.95	8.05	19	●
195-P/M/K	19.5	11.0	2.97	8.03	19	●
196-P/M/K	19.6	11.0	2.99	8.01	19	●
197-P/M/K	19.7	11.0	3.01	7.99	19	●
198-P/M/K	19.8	11.0	3.03	7.97	19	●
199-P/M/K	19.9	11.0	3.04	7.96	19	●

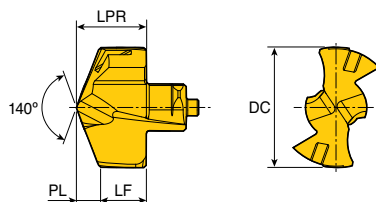


• Drill head can be ordered by an application
Order example) Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

• Standard items

P Steel **M** Stainless steel **K** Cast iron

Drill heads



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	TT9080
TCD - 200-P/M/K	20.0	11.6	3.02	8.58	20	●
201-P/M/K	20.1	11.6	3.04	8.56	20	●
202-P/M/K	20.2	11.6	3.06	8.54	20	●
203-P/M/K	20.3	11.6	3.07	8.53	20	●
204-P/M/K	20.4	11.6	3.09	8.51	20	●
205-P/M/K	20.5	11.6	3.11	8.49	20	●
206-P/M/K	20.6	11.6	3.13	8.47	20	●
207-P/M/K	20.7	11.6	3.15	8.45	20	●
208-P/M/K	20.8	11.6	3.17	8.43	20	●
209-P/M/K	20.9	11.6	3.18	8.42	20	●
210-P/M/K	21.0	12.1	3.18	8.92	21	●
211-P/M/K	21.1	12.1	3.20	8.90	21	●
212-P/M/K	21.2	12.1	3.22	8.88	21	●
213-P/M/K	21.3	12.1	3.23	8.87	21	●
214-P/M/K	21.4	12.1	3.25	8.85	21	●
215-P/M/K	21.5	12.1	3.27	8.83	21	●
216-P/M/K	21.6	12.1	3.29	8.81	21	●
217-P/M/K	21.7	12.1	3.31	8.79	21	●
218-P/M/K	21.8	12.1	3.33	8.77	21	●
219-P/M/K	21.9	12.1	3.34	8.76	21	●
220-P/M/K	22.0	12.7	3.24	9.46	22	●
221-P/M/K	22.1	12.7	3.26	9.44	22	●
222-P/M/K	22.2	12.7	3.28	9.42	22	●
223-P/M/K	22.3	12.7	3.29	9.41	22	●
224-P/M/K	22.4	12.7	3.31	9.39	22	●
225-P/M/K	22.5	12.7	3.33	9.37	22	●
226-P/M/K	22.6	12.7	3.35	9.35	22	●
227-P/M/K	22.7	12.7	3.37	9.33	22	●
228-P/M/K	22.8	12.7	3.39	9.31	22	●
229-P/M/K	22.9	12.7	3.40	9.30	22	●
230-P/M/K	23.0	13.3	3.46	9.84	23	●
231-P/M/K	23.1	13.3	3.48	9.82	23	●
232-P/M/K	23.2	13.3	3.50	9.80	23	●
233-P/M/K	23.3	13.3	3.51	9.79	23	●
234-P/M/K	23.4	13.3	3.53	9.77	23	●



• Drill head can be ordered by an application
Order example) Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

●: Standard items



Steel

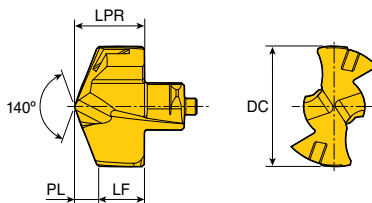


Stainless steel



Cast iron

DRILL RUSH



D51

- Drill head can be ordered by an application
 Order example) Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

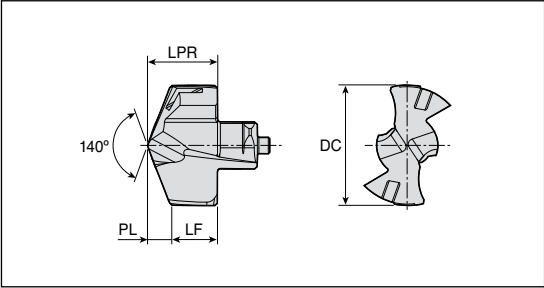
- : Standard items

P Steel **M** Stainless steel **K** Cast iron

TCD...N



Drill heads for aluminum alloy



Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	UF10
TCD - 060-N	6.0	4.00	0.96	3.04	6	●
065-N	6.5	4.30	1.18	3.12	6.5	●
070-N	7.0	4.60	1.01	3.59	7	●
075-N	7.5	4.60	1.10	3.50	7	●
080-N	8.0	5.40	1.20	4.20	8	●
085-N	8.5	5.40	1.29	4.11	8	●
090-N	9.0	5.80	1.35	4.45	9	●
095-N	9.5	5.80	1.44	4.36	9	●
100-N	10.0	6.20	1.50	4.70	10	●
105-N	10.5	6.20	1.59	4.61	10	●
110-N	11.0	6.60	1.67	4.93	11	●
115-N	11.5	6.60	1.76	4.84	11	●
120-N	12.0	7.00	1.82	5.18	12	●
125-N	12.5	7.00	1.91	5.09	12	●
130-N	13.0	7.60	1.96	5.64	13	●
135-N	13.5	7.60	2.05	5.55	13	●
140-N	14.0	8.15	2.12	6.03	14	●
145-N	14.5	8.15	2.21	5.94	14	●
150-N	15.0	8.73	2.27	6.46	15	●
155-N	15.5	8.73	2.36	6.37	15	●
160-N	16.0	9.30	2.42	6.88	16	●
165-N	16.5	9.30	2.51	6.79	16	●
170-N	17.0	9.90	2.59	7.31	17	●
175-N	17.5	9.90	2.68	7.22	17	●
180-N	18.0	10.50	2.73	7.77	18	●
185-N	18.5	10.50	2.82	7.68	18	●
190-N	19.0	11.00	2.88	8.12	19	●
195-N	19.5	11.00	2.97	8.03	19	●



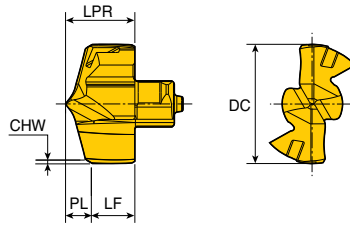
● SSC: Seat size code

●: Standard items

N Nonferrous

TCD-P+

Self-centering drill heads



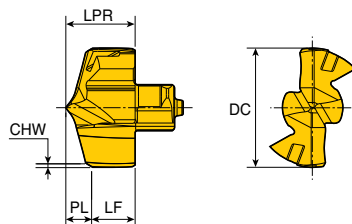
Designation	Dimension (mm)						Grade
	DC	LPR	PL	LF	CHW	SSC	TT9080
TCD-060-P+	6.0	4.00	1.46	2.54	0.27	6	●
065-P+	6.5	4.30	1.55	2.75	0.27	6.5	●
068-P+	6.8	4.30	1.59	2.71	0.27	6.5	●
070-P+	7.0	4.60	1.64	2.96	0.27	7	●
075-P+	7.5	4.60	1.71	2.89	0.27	7	●
080-P+	8.0	5.40	1.81	3.59	0.27	8	●
085-P+	8.5	5.40	1.88	3.52	0.27	8	●
086-P+	8.6	5.40	1.89	3.51	0.27	8	●
090-P+	9.0	5.80	1.98	3.82	0.27	9	●
095-P+	9.5	5.80	2.05	3.75	0.27	9	●
099-P+	9.9	5.80	2.10	3.70	0.27	9	●
100-P+	10.0	6.20	2.33	3.87	0.38	10	●
102-P+	10.2	6.20	2.36	3.84	0.38	10	●
103-P+	10.3	6.20	2.37	3.83	0.38	10	●
105-P+	10.5	6.20	2.40	3.80	0.38	10	●
107-P+	10.7	6.20	2.42	3.78	0.38	10	●
108-P+	10.8	6.20	2.44	3.76	0.38	10	●
110-P+	11.0	6.60	2.50	4.10	0.38	11	●
111-P+	11.1	6.60	2.51	4.09	0.38	11	●
115-P+	11.5	6.60	2.57	4.03	0.38	11	●
120-P+	12.0	7.00	2.67	4.33	0.38	12	●
123-P+	12.3	7.00	2.71	4.29	0.38	12	●
125-P+	12.5	7.00	2.74	4.26	0.38	12	●
126-P+	12.6	7.00	2.75	4.25	0.38	12	●
127-P+	12.7	7.00	2.76	4.24	0.38	12	●
130-P+	13.0	7.60	2.85	4.75	0.38	13	●
135-P+	13.5	7.60	2.92	4.68	0.38	13	●
140-P+	14.0	8.15	3.02	5.13	0.38	14	●
141-P+	14.1	8.15	3.03	5.12	0.38	14	●
142-P+	14.2	8.15	3.05	5.10	0.38	14	●
143-P+	14.3	8.15	3.06	5.09	0.38	14	●
145-P+	14.5	8.15	3.09	5.06	0.38	14	●
146-P+	14.6	8.15	3.10	5.05	0.38	14	●
150-P+	15.0	8.73	3.19	5.54	0.38	15	●



● SSC: Seat size code

●: Standard items

Self-centering drill heads



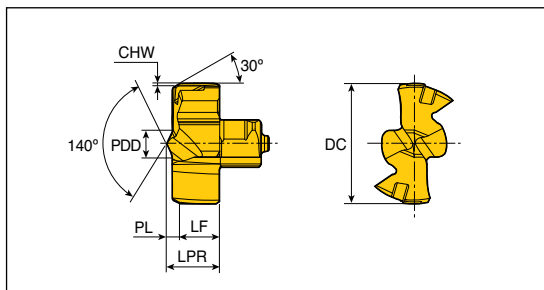
Designation	Dimension (mm)						Grade
	DC	LPR	PL	LF	CHW	SSC	
TCD- 151-P+	15.1	8.73	3.20	5.53	0.38	15	●
152-P+	15.2	8.73	3.22	5.51	0.38	15	●
155-P+	15.5	8.73	3.26	5.47	0.38	15	●
159-P+	15.9	8.73	3.31	5.42	0.38	15	●
160-P+	16.0	9.30	3.46	5.84	0.44	16	●
161-P+	16.1	9.30	3.47	5.83	0.44	16	●
163-P+	16.3	9.30	3.50	5.80	0.44	16	●
164-P+	16.4	9.30	3.51	5.79	0.44	16	●
165-P+	16.5	9.30	3.53	5.77	0.44	16	●
167-P+	16.7	9.30	3.55	5.75	0.44	16	●
170-P+	17.0	9.90	3.63	6.27	0.44	17	●
173-P+	17.3	9.90	3.67	6.23	0.44	17	●
175-P+	17.5	9.90	3.70	6.20	0.44	17	●
180-P+	18.0	10.50	3.81	6.69	0.44	18	●
185-P+	18.5	10.50	3.88	6.62	0.44	18	●
190-P+	19.0	11.00	3.98	7.02	0.44	19	●
192-P+	19.2	11.00	4.01	6.99	0.44	19	●
193-P+	19.3	11.00	4.02	6.98	0.44	19	●
194-P+	19.4	11.00	4.03	6.97	0.44	19	●
195-P+	19.5	11.00	4.05	6.95	0.44	19	●
200-P+	20.0	11.60	4.15	7.45	0.44	20	●
205-P+	20.5	11.60	4.22	7.38	0.44	20	●
206-P+	20.6	11.60	4.23	7.37	0.44	20	●
210-P+	21.0	12.18	4.32	7.86	0.44	21	●
215-P+	21.5	12.18	4.39	7.79	0.44	21	●
220-P+	22.0	12.76	4.50	8.26	0.44	22	●
222-P+	22.2	12.76	4.53	8.23	0.44	22	●
225-P+	22.5	12.76	4.57	8.19	0.44	22	●
230-P+	23.0	13.33	4.67	8.66	0.44	23	●
235-P+	23.5	13.33	4.74	8.59	0.44	23	●
240-P+	24.0	13.90	4.84	9.06	0.44	24	●
245-P+	24.5	13.90	4.91	8.99	0.44	24	●
250-P+	25.0	14.50	5.01	9.49	0.44	25	●
255-P+	25.5	14.50	5.08	9.42	0.44	25	●
259-P+	25.9	14.50	5.13	9.37	0.44	25	●

● SSC: Seat size code

●: Standard items



Drill heads for flat bottom hole



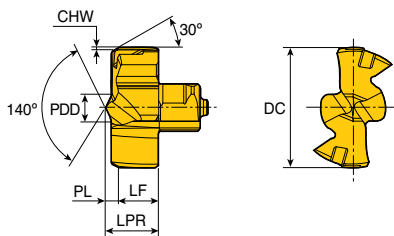
Designation	Dimension (mm)							Grade
	DC	PDD	LPR	PL	LF	CHW	SSC	TT9080
TCD - 080-F	8.0	1.2	4.4	1.09	3.3	0.7	8	●
085-F	8.5	1.2	4.4	1.09	3.3	0.7	8	●
090-F	9.0	1.21	4.6	1.11	3.5	0.7	9	●
095-F	9.5	1.21	4.6	1.11	3.5	0.7	9	●
100-F	10.0	1.27	4.9	1.17	3.7	0.7	10	●
105-F	10.5	1.27	4.9	1.17	3.7	0.7	10	●
110-F	11.0	1.49	5.1	1.25	3.8	0.7	11	●
115-F	11.5	1.49	5.1	1.25	3.8	0.7	11	●
120-F	12.0	1.5	5.4	1.26	4.1	0.7	12	●
125-F	12.5	1.5	5.4	1.26	4.1	0.7	12	●
130-F	13.0	1.64	5.7	1.30	4.4	0.7	13	●
135-F	13.5	1.64	5.7	1.30	4.4	0.7	13	●
140-F	14.0	1.68	6.1	1.31	4.8	0.7	14	●
145-F	14.5	1.68	6.1	1.31	4.8	0.7	14	●
150-F	15.0	1.78	6.6	1.35	5.23	0.7	15	●
155-F	15.5	1.78	6.6	1.35	5.23	0.7	15	●
160-F	16.0	1.89	7.0	1.39	5.6	0.7	16	●
165-F	16.5	1.89	7.0	1.39	5.6	0.7	16	●
170-F	17.0	1.91	7.3	1.40	5.9	0.7	17	●
175-F	17.5	1.91	7.3	1.40	5.9	0.7	17	●
180-F	18.0	1.97	7.6	1.42	6.18	0.7	18	●
185-F	18.5	1.97	7.6	1.42	6.18	0.7	18	●
190-F	19.0	1.96	7.9	1.44	6.5	0.7	19	●
195-F	19.5	1.96	7.9	1.44	6.5	0.7	19	●
200-F	20.0	3.42	9.3	1.77	7.5	0.7	20	●
205-F	20.5	3.42	9.3	1.77	7.5	0.7	20	●
210-F	21.0	3.6	9.7	1.79	7.9	0.7	21	●
215-F	21.5	3.6	9.7	1.79	7.9	0.7	21	●
220-F	22.0	3.8	10.0	1.81	8.2	0.7	22	●
225-F	22.5	3.8	10.0	1.81	8.2	0.7	22	●
230-F	23.0	3.9	10.4	1.83	8.6	0.7	23	●
235-F	23.5	3.9	10.4	1.83	8.6	0.7	23	●
240-F	24.0	4.1	10.9	1.86	9.0	0.7	24	●
245-F	24.5	4.1	10.9	1.86	9.0	0.7	24	●
250-F	25.0	4.3	11.3	1.89	9.4	0.7	25	●



● SSC: Seat size code

●: Standard items

Drill heads for flat bottom hole



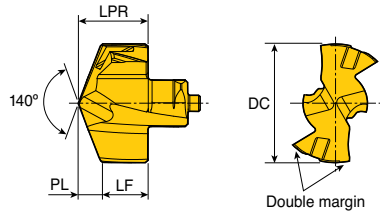
D51

●: Standard items

TCD...P2



Double margin drill heads

[illegible]

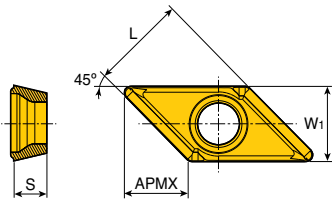
- Other diameter is available on request
- SSC: Seat size code

- : Standard items

AOMT 060204-C45



Chamfering inserts for pre-thread hole



Size	Dimension (mm)			
	W1	L	S	APMX
06	4.5	5.66	1.96	4.0

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	AOMT 060204-C45	●							

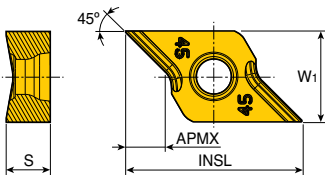


●: Standard items

CRNG 0802-45CD



Chamfering inserts for chamfering ring



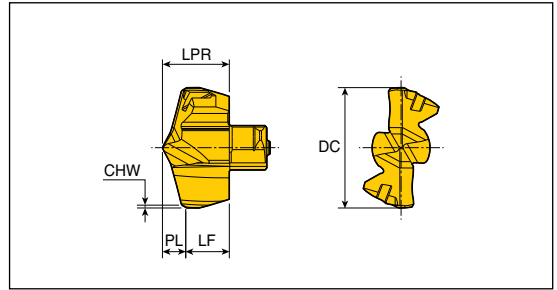
Size	Dimension (mm)			
	W1	INSL	S	APMX
08	7.5	14.80	3.65	3.3

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	CRNG 0802-45CD	●							



●: Standard items

Self-centering drill heads



D62

●: Standard items

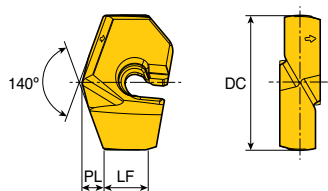
Size	Dimension (mm)			
	IC	S	RE	
06	6.07	2.38	0.4	
07	8.02	3.97	0.8	
09	9.91	4.30	0.8	
11	11.62	4.80	0.8	
14	14.41	5.20	1.2	



D62

●: Standard items

Drill heads



Designation	Dimension (mm)				Grade TT9080
	DC	PL	LF	SSC	
LCD- 200-P	20.0	3.11	6.54	20	●
205-P	20.5	3.20	6.45	20	●
210-P	21.0	3.29	6.36	21	●
215-P	21.5	3.38	6.27	21	●
220-P	22.0	3.42	7.12	22	●
225-P	22.5	3.51	7.03	22	●
230-P	23.0	3.60	6.94	23	●
235-P	23.5	3.69	6.85	23	●
240-P	24.0	3.73	7.03	24	●
245-P	24.5	3.82	6.94	24	●
250-P	25.0	3.91	6.85	25	●
255-P	25.5	4.00	6.76	25	●
260-P	26.0	4.04	7.51	26	●
265-P	26.5	4.13	7.42	26	●
270-P	27.0	4.22	7.33	27	●
275-P	27.5	4.31	7.24	27	●
280-P	28.0	4.35	7.39	28	●
285-P	28.5	4.44	7.30	28	●
290-P	29.0	4.53	7.21	29	●
295-P	29.5	4.62	7.12	29	●
300-P	30.0	4.67	9.47	30	●
305-P	30.5	4.76	9.38	30	●
310-P	31.0	4.85	9.29	31	●
315-P	31.5	4.94	9.20	31	●
320-P	32.0	4.98	9.55	32	●
325-P	32.5	5.07	9.46	32	●
330-P	33.0	5.16	9.37	33	●
335-P	33.5	5.25	9.28	33	●
340-P	34.0	5.34	9.19	34	●
345-P	34.5	5.44	9.10	34	●
350-P	35.0	5.44	11.12	35	●
355-P	35.5	5.53	11.03	35	●
360-P	36.0	5.62	10.94	36	●
365-P	36.5	5.71	10.85	36	●
370-P	37.0	5.80	10.76	37	●



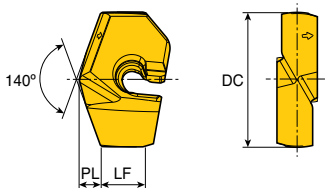
● SSC: Seat size code

●: Standard items

LCD...-P

SPADERUSH

Drill heads



Designation	Dimension (mm)				Grade
	DC	PL	LF	SSC	
LCD- 375-P	37.5	5.90	10.67	37	●
380-P	38.0	5.91	11.09	38	●
385-P	38.5	6.00	11.00	38	●
390-P	39.0	6.09	10.91	39	●
395-P	39.5	6.18	10.82	39	●
400-P	40.0	6.27	10.73	40	●
405-P	40.5	6.37	10.64	40	●
410-P	41.0	6.46	10.54	40	●



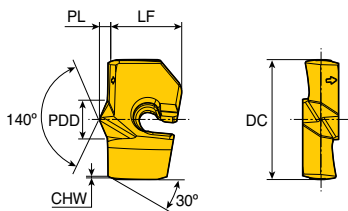
● SSC: Seat size code

●: Standard items

LCD...-F

SPADERUSH

Drill heads for flat bottom hole



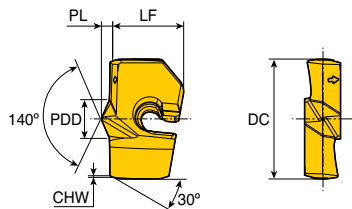
Designation	Dimension (mm)						Grade
	DC	PL	LF	CHW	SSC	PDD	
LCD - 200-F	20.0	2.11	11.76	0.30	20	6.0	●
205-F	20.5	2.11	11.76	0.30	20	6.0	●
210-F	21.0	2.11	11.76	0.30	20	6.0	●
215-F	21.5	2.11	11.76	0.30	20	6.0	●
220-F	22.0	2.27	12.76	0.30	22	6.6	●
225-F	22.5	2.27	12.76	0.30	22	6.6	●
230-F	23.0	2.27	12.76	0.30	22	6.6	●



● SSC: Seat size code

●: Standard items

Drill heads for flat bottom hole



Designation	Dimension (mm)						Grade
	DC	PL	LF	CHW	SSC	PDD	TT9080
LCD - 235-F	23.5	2.27	12.76	0.30	22	6.6	●
240-F	24.0	2.43	13.26	0.30	24	7.2	●
245-F	24.5	2.43	13.26	0.30	24	7.2	●
250-F	25.0	2.43	13.26	0.30	24	7.2	●
255-F	25.5	2.43	13.26	0.30	24	7.2	●
260-F	26.0	2.50	14.90	0.30	26	7.8	●
265-F	26.5	2.50	14.90	0.30	26	7.8	●
270-F	27.0	2.50	14.90	0.30	26	7.8	●
275-F	27.5	2.50	14.90	0.30	26	7.8	●
280-F	28.0	2.66	15.31	0.30	28	8.4	●
285-F	28.5	2.66	15.31	0.30	28	8.4	●
290-F	29.0	2.66	15.31	0.30	28	8.4	●
295-F	29.5	2.66	15.31	0.30	28	8.4	●
300-F	30.0	2.82	17.76	0.30	30	9.0	●
305-F	30.5	2.82	17.76	0.30	30	9.0	●
310-F	31.0	2.82	17.76	0.30	30	9.0	●
315-F	31.5	2.82	17.76	0.30	30	9.0	●
320-F	32.0	2.98	18.31	0.30	32	9.6	●
325-F	32.5	2.98	18.31	0.30	32	9.6	●
330-F	33.0	2.98	18.31	0.30	32	9.6	●
335-F	33.5	2.98	18.31	0.30	32	9.6	●
340-F	34.0	2.98	18.31	0.30	32	9.6	●
345-F	34.5	2.98	18.31	0.30	32	9.6	●
350-F	35.0	3.21	20.30	0.30	35	10.5	●
355-F	35.5	3.21	20.30	0.30	35	10.5	●
360-F	36.0	3.21	20.30	0.30	35	10.5	●
365-F	36.5	3.21	20.30	0.30	35	10.5	●
370-F	37.0	3.21	20.30	0.30	35	10.5	●
375-F	37.5	3.21	20.30	0.30	35	10.5	●
380-F	38.0	3.44	20.90	0.30	38	11.4	●
385-F	38.5	3.44	20.90	0.30	38	11.4	●
390-F	39.0	3.44	20.90	0.30	38	11.4	●
395-F	39.5	3.44	20.90	0.30	38	11.4	●
400-F	40.0	3.44	20.90	0.30	38	11.4	●
405-F	40.5	3.44	20.90	0.30	38	11.4	●
410-F	41.0	3.44	20.90	0.30	38	11.4	●



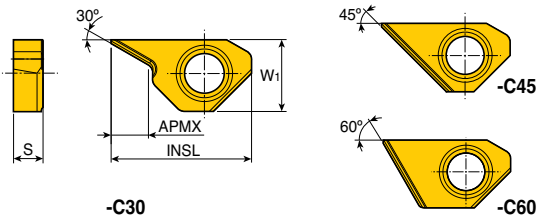
● SSC: Seat size code

●: Standard items

XCGT ...-C



Chamfering inserts for T-CHAMFER holder



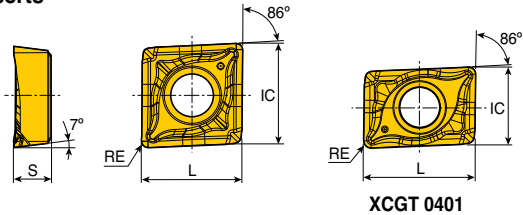
Size	Dimension (mm)			
	W1	INSL	S	APMX
06-C30	6.18	12.3	2.8	3.49
09-C30	8.50	16.0	3.3	4.43
06-C45	6.18	12.3	2.8	5.89
09-C45	8.50	16.0	3.3	8.07
06-C60	6.18	12.3	2.8	3.43
09-C60	8.50	16.0	3.3	4.78

Insert	Designation	Coated							Uncoated		
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	TT9050		K10	
	XCGT 0603-C30							•			
	0903-C30							•			
	XCGT 0603-C45							•			
	0903-C45							•			
	XCGT 0603-C60							•			
	0903-C60							•			



•: Standard items

Inserts



XCGT 0401

• For aluminum alloy

Size	Dimension (mm)			
	IC	L	S	RE
04	4.4	6.4	1.70	0.4
05	5.6	5.6	2.10	0.4
06	6.4	6.4	2.38	0.4
07	7.5	7.5	3.18	0.4
08	8.4	8.4	3.18	0.4
10	10.5	10.5	3.97	0.4
13	13.4	13.4	4.76	0.4
17	17.5	17.5	5.56	0.8

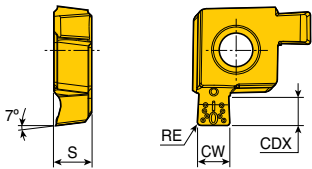
Insert	Designation	Turning		Drilling	Coated						Uncoated	
		ap (mm)	Feed (mm/rev)	Feed (mm/rev)	TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
 Right hand shown (XCGT 0401)	XCGT 040104R TA	0.2-1.8	0.02-0.15	0.02-0.09							•	
	040104L TA	0.2-1.8	0.02-0.15	0.02-0.09							•	
	050204 TA	0.2-2.2	0.03-0.18	0.02-0.11							•	
	060204 TA	0.3-2.5	0.03-0.20	0.03-0.12							•	
	070304 TA	0.4-2.8	0.05-0.22	0.03-0.13							•	
	080304 TA	0.4-3.2	0.06-0.25	0.03-0.13							•	
	10T304 TA	0.5-3.5	0.06-0.30	0.03-0.13							•	
	130404 TA	0.6-4.3	0.08-0.33	0.03-0.13							•	
	170508 TA	0.7-5.3	0.10-0.38	0.03-0.13							•	

•: Standard items



XCMT..R-GV

Inserts



• For grooving

Size	Dimension (mm)			
	CW	CDX	S	RE
05	2.0	1.8	2.28	0.2
06	2.0	2.0	2.65	0.2
07	2.5	2.0	3.41	0.2
08	2.5	2.5	3.50	0.2
10	3.0	3.0	4.34	0.3
13	3.5	3.5	5.18	0.3
17	4.0	4.0	6.00	0.4

Insert	Designation	Coated						Uncoated	
		TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
	XCMT 05R-200020GV	•	•						
	06R-200020GV	•	•						
	07R-250020GV	•	•						
	08R-250020GV	•	•						
	10R-300030GV	•	•						
	13R-350030GV	•	•						
	17R-400040GV	•	•						

• Grooving insert is available only for right handed type

•: Standard items



Technical drawing of the XCMT 0401 insert. The drawing includes three views: a side view on the left showing a thickness of 7 mm and a width of S; a top view in the middle showing a square shape with a central circular hole, a corner chamfer of 83.5°, and dimensions L (length) and IC (inner corner radius); and a front view on the right showing a square shape with a central circular hole, a corner chamfer of 83.5°, and dimensions L (length) and IC (inner corner radius). The front view also includes a reference point 'RE'.

XCMT 0401

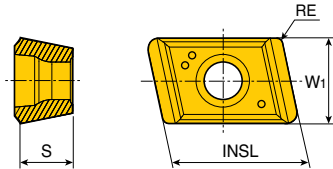
Size	Dimension (mm)			
	IC	L	S	RE
04	4.4	6.4	1.70	0.4
05	5.6	5.6	2.10	0.4
06	6.4	6.4	2.38	0.4
07	7.5	7.5	3.18	0.4
08	8.4	8.4	3.18	0.4
10	10.5	10.5	3.97	0.4/0.8
13	13.4	13.4	4.76	0.4/0.8
17	17.4	17.4	5.56	0.8

[illegible]

NPHT...RG

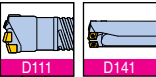


Inserts for TBTA-FB & TRGD



Size	Dimension (mm)			
	W ₁	INSL	S	RE
06	6.0	8.0	3.0	0.8
07	7.5	10.0	4.0	0.8
09	9.0	10.0	4.0	0.8
11	11.0	10.0	4.0	0.8
13	13.0	10.0	4.0	0.8

Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	NPHT 06003RG			●	●				●				
	07504RG			●	●				●				
	09004RG			●	●				●				
	11004RG			●	●				●				
	13004RG			●	●				●				

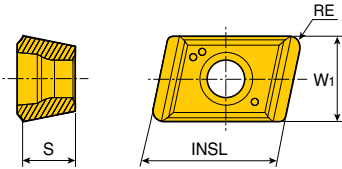


●: Standard items

NPMT...LG

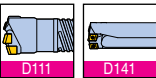


Inserts for TBTA-FB & TRGD



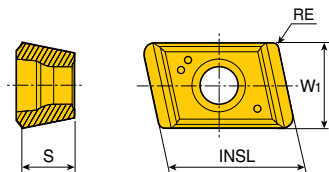
Size	Dimension (mm)			
	W ₁	INSL	S	RE
05	5.5	8	3.0	0.8
06	6.5	10	4.0	0.8
08	8.0	10	4.0	0.8
09	9.5	10	4.0	0.8
12	12.5	10	4.0	0.8

Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	NPMT 05503LG	●			●	●			●				
	06504LG	●			●	●			●				
	08004LG	●			●	●			●				
	09504LG	●			●	●			●				
	12504LG	●			●	●			●				



●: Standard items

Inserts for TBTA-FB & TRGD



Size	Dimension (mm)			
	W ₁	INSL	S	RE
05	5.5	8	3.0	0.8
06	6.5	10	4.0	0.8
08	8.0	10	4.0	0.8
09	9.5	10	4.0	0.8
12	12.5	10	4.0	0.8

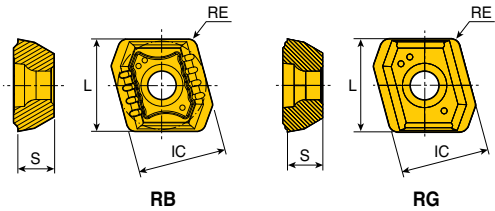
[illegible]

●: Standard items

NPMX...RB/RG



Inserts for TBTA...3/5/7/9



Size	Dimension (mm)			
	IC	L	S	RE
08	8.0	8.36	3.18	0.8

Insert	Designation	Pocket			Coated							Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	NPMX 0803RB	•	•	•	•	•	•	•	•	•	•	•	•
	0803RG	•	•	•	•	•	•	•	•	•	•	•	•

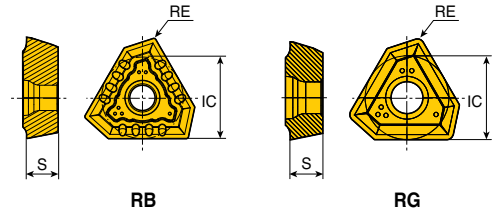


•: Standard items

TPMX...RB/RG



Inserts for TBTA...3/5/7/9 & TBTA-R



Size	Dimension (mm)			
	IC	S	RE	
1403RB	8.45	3.5	0.4	
1403RG	8.45	3.5	0.8	
1704RB	10.30	4.0	0.4	
1704RG	10.30	4.0	0.8	
2405RB	14.20	5.5	0.4	
2405RG	14.20	5.5	1.2	
2807RB	17.00	7.5	0.8	
2807RG	17.00	7.5	1.6	

Insert	Designation	Pocket			Coated							Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	TPMX 1403RB	•	•	•	•	•	•	•	•	•	•	•	•
	1403RG	•	•	•	•	•	•	•	•	•	•	•	•
	1704RB	•	•	•	•	•	•	•	•	•	•	•	•
	1704RG	•	•	•	•	•	•	•	•	•	•	•	•
	2405RB	•	•	•	•	•	•	•	•	•	•	•	•
	2405RG	•	•	•	•	•	•	•	•	•	•	•	•
	2807RB	•	•	•	•	•	•	•	•	•	•	•	•
	2807RG	•	•	•	•	•	•	•	•	•	•	•	•



•: Standard items

Inserts for TBTA-TR & TRGD

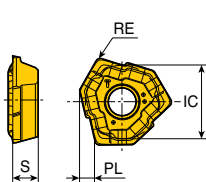


Fig.1

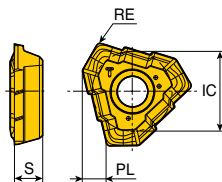


Fig.2

Size	Dimension (mm)			
	IC	PL	S	RE
07	7.69	2.0	2.3	0.4
08	8.32	2.2	2.8	0.5
09	8.55	3.0	3.0	0.5
10	9.23	3.2	3.3	0.5
11	10.40	3.4	3.8	0.5
12	11.59	3.7	4.3	0.5

[illegible]

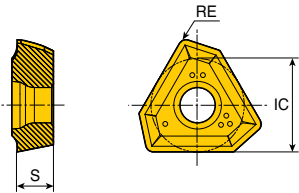
- RS: First choice for general purpose
- GF: Exotic materials

- : Standard items

TPMX...LG



Inserts for TBTA-R



Size	Dimension (mm)			
	IC	S	RE	
14	8.45	3.5	0.8	
17	10.30	4.0	0.8	
24	14.20	5.5	1.2	

Insert	Designation	Pocket			Coated							Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	TPMX 1403LG			●	●								
	1704LG			●	●								
	2405LG			●	●								

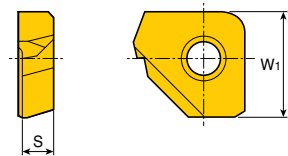


●: Standard items

XPMT...-45



Inserts for TBTA-R



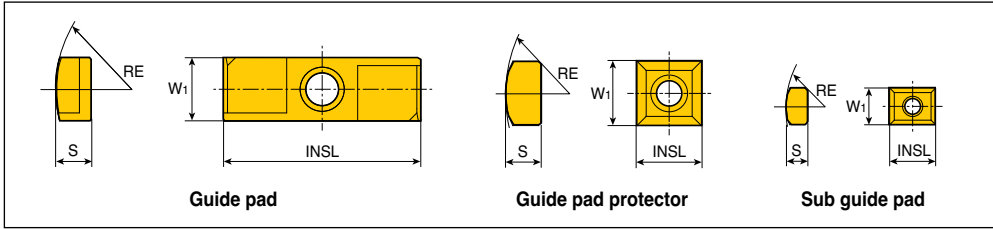
Size	Dimension (mm)			
	W1	S		
16	9.5	2.70		

Insert	Designation	Pocket			Coated							Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	XPMT 16002-45			●	●								



●: Standard items

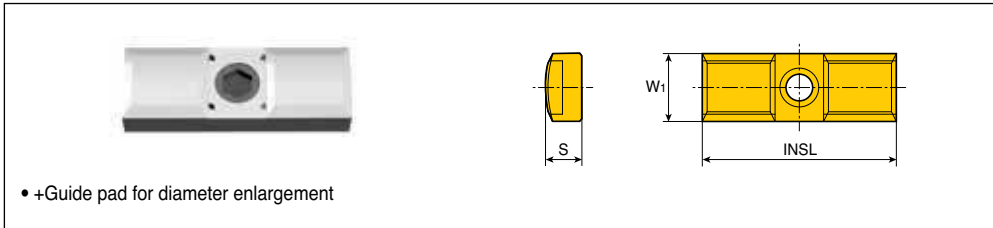
Pad for TBTA 3.../5.../7.../9...



Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	PAD - G008CD-SA-FB	8	4.5	25	15.5	CSTB3S
	G008CD-SB-FB	8	4.5	25	15.5	CSTB3S
	GC10-SA	10	6.0	35	20.0	CSTB4S
	GC10-SB	10	6.0	35	20.0	CSTB4S
	GC14-SB	14	7.5	40	25.0	CSTA5S
	GC18-SB	18	9.0	40	30.0	LS1206S
Guide pad protector	PAD - P08	8	4.5	8	17.5	CSTB3S
	P10	10	6.0	10	20.0	CSTB4S
	P14	14	7.5	14	25.0	CSTA5S
	P18	18	9.0	18	30.0	LS1206S
	PAD - S08	8	4.5	10	17.5	CSTB3S
Sub guide pad	S10	10	5.0	10	29.0	CSTB3S
	S14	14	7.0	20	45.0	CCSTA5S



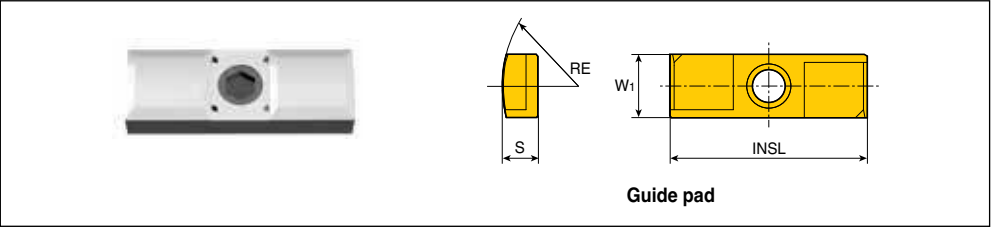
+ Guide Pad for TBTA 3.../5.../7.../9...



- +Guide pad for diameter enlargement

Designation									
DC	DC+1mm	S	DC+2mm	S	DC+3mm	S	DC+4mm	S	DC+5mm
PAD-GC08	PAD-GC08+1	5.0	PAD-GC08+2	5.5	PAD-GC08+3	6.0	-	-	-
PAD-GC10	PAD-GC10+1	6.5	PAD-GC10+2	7.0	PAD-GC10+3	7.5	PAD-GC10+4	8.0	-
PAD-GC14	PAD-GC14+1	8.0	PAD-GC14+2	8.5	PAD-GC14+3	9.0	PAD-GC14+4	9.5	PAD-GC14+5
PAD-GC18	PAD-GC18+1	9.5	PAD-GC18+2	10	PAD-GC18+3	10.5	PAD-GC18+4	11.0	PAD-GC18+5



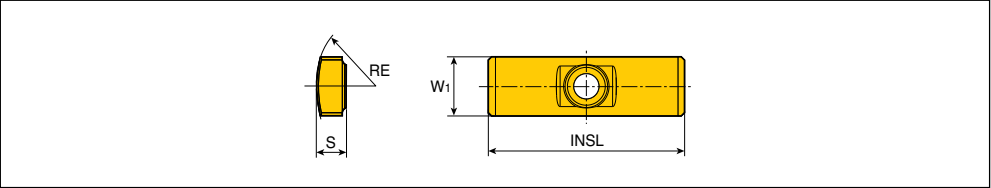


Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	PAD - G006CD-SA	6	3.0	20	12.0	CSTB2.2S
	G006CD-SB	6	3.0	20	12.0	CSTB2.2S
	G007CD-SA	7	3.5	20	12.0	CSTB3.0S
	G007CD-SB	7	3.5	20	12.0	CSTB3.0S
	G008CD-SA-FB	8	4.5	25	15.5	CSTB3.5S
	G008CD-SB-FB	8	4.5	25	15.5	CSTB3.5S
	G010CD-SA	10	4.5	30	20.0	CSTB3.5S
	G010CD-SB	10	4.5	30	20.0	CSTB3.5S
	G012CD-SA	12	5.5	35	25.0	CSTB3.5S
	G012CD-SB	12	5.5	35	25.0	CSTB3.5S



Pad for TBTA-TR & TRGD

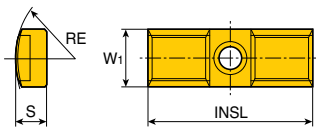
Solid carbide guide pads



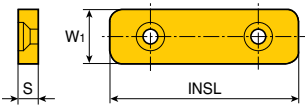
Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	PAD - G005-060-SB	5	2.5	18	6.0	SR34-508
	G005-075-CD-SA	5	2.5	18	7.5	SR34-508
	G005-075-CD-SB	5	2.5	18	7.5	SR34-508
	G006CD-SA	6	3	20	12.0	CSTB2.2S*
	G006CD-SB	6	3	20	12.0	CSTB2.2S*
	G006-075CD-SA	6	3	20	7.5	CSTB2.2S*
	G006-075CD-SB	6	3	20	7.5	CSTB2.2S*
	G006-085CD-SA	6	3	20	8.5	CSTB2.2S*
	G006-085CD-SB	6	3	20	8.5	CSTB2.2S*
	G006-100CD-SA	6	3	20	10.0	CSTB2.2S*
	G006-100CD-SB	6	3	20	10.0	CSTB2.2S*



• Guide pad with "SB" is the first choice in general purpose machining.
"SA" is a supplementary grade used only with oil based coolant.



Guide pad

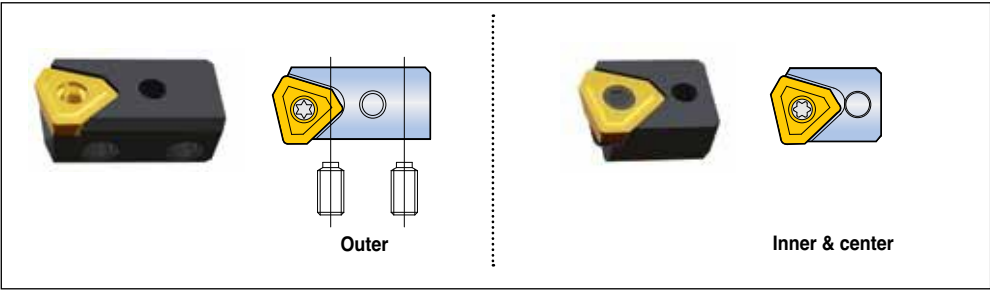


Resin guide pad

Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	PAD - GC08-120	8	4.4	25	17.5	CSTB3S
	GC08-140	8	3.5	25	17.5	CSTB3S
	G008CD-SA-FB	8	4.5	25	15.5	CSTB3S
	G008CD-SB-FB	8	4.5	25	15.5	CSTB3S
	GC10-SA	10	6.0	35	20.0	CSTB4S
	GC10-SB	10	6.0	35	20.0	CSTB4S
	GC14-SB	14	7.5	40	25.0	CSTA5S
	GC18-SB	18	9.0	40	30.0	LS1206S
Resin guide pad	PAD - R10	10	4.0	40	-	LS0902.5-6
	R12	12	5.0	45	-	LS0903-8
	R15	15	5.8	50	-	LS0904-10
	R20	20	7.5	70	-	LS0905-12
	R30	30	12.5	80	-	LS0906-15
	R35	35	15.5	100	-	LS0906-15



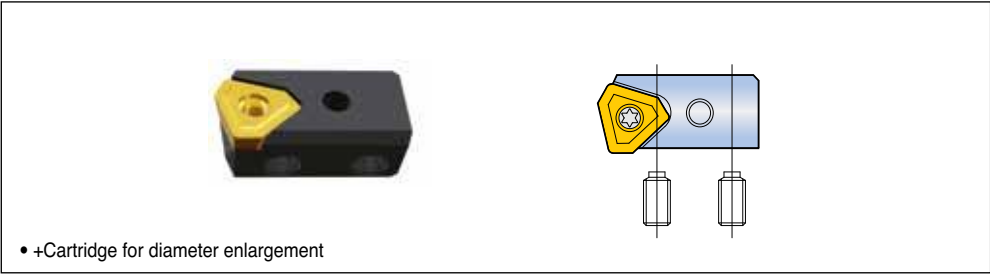
Cartridge for TBTA 3.../5.../7.../9



Designation		Adjust screw	Wrench	Lock screw	Wrench	Insert
Outer	PERC 05R	AS0003-5	H1.5	LS1803RH	H2	NPMX0803..
	402-04	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403..
	402-32	AS0005-10	H2.5	LS1805RH	H3	TPMX1704..
	402-43	AS0005-15	H2.5	L1806RH	H4	TPMX2405..
	402-63	AS0006-15	H3	L1806RH	H4	TPMX2807..
Inner & center	CENC 05R	-	-	CSTB3	T9	NPMX0803..
	402-04	-	-	CSTB3.5	T15	TPMX1403..
	402-32	-	-	CSTA5	T15	TPMX1704..
	402-43	-	-	LS1206	H3	TPMX2405..
	402-63	-	-	LS1206	H3	TPMX2807..



+ Cartridge for TBTA 3.../5.../7.../9

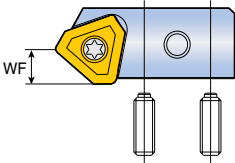


• +Cartridge for diameter enlargement

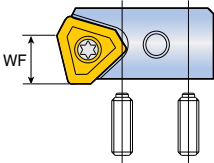
Designation					
DC	DC+1mm	DC+2mm	DC+3mm	DC+4mm	DC+5mm
PERC 05R	PERC 05R+1	PERC 05R+2	-	-	-
PERC 402-04	PERC 402-04+1	PERC 402-04+2	PERC 402-04+3	-	-
PERC 402-32	PERC 402-32+1	PERC 402-32+2	PERC 402-32+3	PERC 402-32+4	-
PERC 402-43	PERC 402-43+1	PERC 402-43+2	PERC 402-43+3	PERC 402-43+4	PERC 402-43+5
PERC 402-63	PERC 402-63+1	PERC 402-63+2	PERC 402-63+3	PERC 402-63+4	PERC 402-63+5



Cartridge for TBTA-R



Accurate tolerance applications



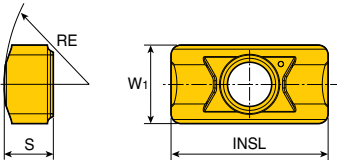
Open tolerance applications

Designation		WF (mm)	Adjust screw	Wrench	Lock screw	Wrench	Insert
Accurate tolerance applications	PERC P04R	5	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403 LG
	P32R	6	AS0005-10	H2.5	LS1805RH	H3	TPMX1704 LG
	P43R	8	AS0005-15	H2.5	LS1806RH	H4	TPMX2405 LG
Open tolerance applications	PERC 402-04	8	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403 RG
	402-32	9	AS0005-10	H2.5	LS1805RH	H3	TPMX1704 RG
	402-43	13	AS0005-15	H2.5	LS1806RH	H4	TPMX2405 RG



• PERC-P and PERC 402-□□ cartridges are interchangeable in the same pocket

Guide pad for TNDH-TP



Designation	Dimension (mm)				Screw	Grade TT9030
	W1	S	INSL	RE		
PAD-G04-08	4	2.5	8	9	TS 20043I/HG-P	●



• Guide pad is sold separately from drill body.

●: Standard items



Recommended Cutting Conditions



Machining data for TOP-DRILL 2,3,4xD

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	220-350
		>=0.25%C	Annealed	650	190	2	180-280
		<0.55%C	Quenched and tempered	850	250	3	140-240
		>=0.55%C	Annealed	750	220	4	140-240
			Quenched and tempered	1000	300	5	140-240
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	140-240
			Quenched and tempered	930	275	7	100-180
				1000	300	8	100-180
				1200	350	9	100-180
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	140-200
			Quenched and tempered	1100	325	11	100-160
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	150-250	
		Martensitic	820	240	13	150-250	
Austenitic		600	180	14	150-250		
K	Gray cast iron (GG)	Ferritic		160	15	160-260	
		Pearlitic		250	16	160-260	
	Cast iron nodular (GGG)	Ferritic		180	17	160-260	
		Pearlitic		260	18	160-260	
	Malleable cast iron	Ferritic		130	19	120-220	
		Pearlitic		230	20	120-220	
N	Aluminum - Wrought alloy	Not cureable		60	21	200-350	
		Cured		100	22	200-350	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	200-350
			Cured		90	24	200-350
		>12% Si	High temp.		130	25	200-350
	Copper alloys	>1% Pb	Free cutting		110	26	150-250
			Brass		90	27	150-250
			Electrolitic copper		100	28	150-250
	Non-metallic		Duroplastics, fiber plastics			29	150-250
			Hard rubber			30	150-250
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	30-60
		Ni or Co based	Annealed		250	33	30-60
			Cured		350	34	30-60
			Cast		320	35	30-60
	Titanium, Ti alloys		Rm 400		36	50-80	
	Alpha+beta alloys cured	Rm 1050		37	50-80		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Recommended Cutting Conditions



Machining data for TOP-DRILL 2,3,4xD

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD								
SOMT 04 Ø12 - Ø13.5	SOMT 05 Ø14 - Ø16	SOMT 06 Ø17 - Ø19	SOMT 07 Ø20 - Ø22	SOMT 08 Ø23 - Ø26	SOMT 09 Ø27 - Ø31	SOMT 11 Ø32 - Ø36	SOMT 13 Ø37 - Ø43	SOMT 15 Ø44 - Ø50
0.04-0.06	0.04-0.06	0.04-0.06	0.04-0.08	0.04-0.08	0.06-0.10	0.06-0.10	0.08-0.12	0.08-0.12
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.08-0.14	0.08-0.14	0.08-0.16	0.10-0.16
0.08-0.12	0.08-0.12	0.08-0.12	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.18	0.10-0.18
0.08-0.12	0.08-0.12	0.08-0.12	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.18	0.10-0.18
0.08-0.12	0.08-0.12	0.08-0.12	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.18	0.10-0.18
0.06-0.16	0.06-0.16	0.06-0.16	0.08-0.20	0.08-0.20	0.08-0.20	0.10-0.22	0.10-0.22	0.10-0.24
0.06-0.16	0.06-0.16	0.06-0.16	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.22	0.10-0.22	0.10-0.22
0.06-0.16	0.06-0.16	0.06-0.16	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.22	0.10-0.22	0.10-0.22
0.06-0.16	0.06-0.16	0.06-0.16	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.22	0.10-0.22	0.10-0.22
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.20	0.10-0.20	0.10-0.20
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.20	0.10-0.20	0.10-0.20
0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.16	0.06-0.16	0.08-0.18	0.08-0.20	0.10-0.20	0.10-0.20
0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.16	0.06-0.16	0.08-0.18	0.08-0.20	0.10-0.20	0.10-0.20
0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.16	0.06-0.16	0.08-0.18	0.08-0.20	0.10-0.20	0.10-0.20
0.08-0.18	0.08-0.18	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.22	0.10-0.22
0.08-0.18	0.08-0.18	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.22	0.10-0.22
0.08-0.18	0.08-0.18	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.22	0.10-0.22
0.08-0.18	0.08-0.18	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.22	0.10-0.22
0.08-0.14	0.08-0.14	0.08-0.14	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.18	0.10-0.18	0.10-0.18
0.08-0.14	0.08-0.14	0.08-0.14	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.18	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.17	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.17	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.17	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17	0.10-0.18	0.10-0.18
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17	0.10-0.18	0.10-0.18
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12
0.06-0.09	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.09	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10

Recommended Cutting Conditions

Machining data for TOP-DRILL 5xD

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	220-350	
		>=0.25%C	Annealed	650	190	2	180-280	
		<0.55%C	Quenched and tempered	850	250	3	140-240	
		>=0.55%C	Annealed	750	220	4	140-240	
			Quenched and tempered	1000	300	5	140-240	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	140-240	
			Quenched and tempered		930	275	7	100-180
					1000	300	8	100-180
					1200	350	9	100-180
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	140-200	
			Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	150-250		
		Martensitic	820	240	13	150-250		
		Austenitic	600	180	14	150-250		
K	Gray cast iron (GG)	Ferritic		160	15	160-260		
		Pearlitic		250	16	160-260		
	Cast iron nodular (GGG)	Ferritic		180	17	160-260		
		Pearlitic		260	18	160-260		
	Malleable cast iron	Ferritic		130	19	120-220		
		Pearlitic		230	20	120-220		
N	Aluminum - Wrought alloy	Not cureable		60	21	200-350		
		Cured		100	22	200-350		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	200-350	
			Cured		90	24	200-350	
		>12% Si	High temp.		130	25	200-350	
	Copper alloys	>1% Pb	Free cutting		110	26	150-250	
			Brass		90	27	150-250	
			Electrolitic copper		100	28	150-250	
Non-metallic		Duroplastics, fiber plastics			29	150-250		
		Hard rubber			30	150-250		
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-60	
		Ni or Co based	Annealed		250	33	30-60	
			Cured		350	34	30-60	
			Cast		320	35	30-60	
	Titanium, Ti alloys		Rm 400		36	50-80		
		Alpha+beta alloys cured	Rm 1050		37	50-80		
H	Hardened steel	Hardened		55HRC	38	30-60		
		Hardened		60HRC	39	30-60		
	Chilled cast iron	Cast		400	40	30-60		
	Cast iron nodular	Hardened		55HRC	41	30-60		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for TOP-DRILL 5xD

Feed (mm/rev) vs. drill diameter Drill length 5xD								
SOMT 04 Ø12 - Ø13.5	SOMT 05 Ø14 - Ø16	SOMT 06 Ø17 - Ø19	SOMT 07 Ø20 - Ø22	SOMT 08 Ø23 - Ø26	SOMT 09 Ø27 - Ø31	SOMT 11 Ø32 - Ø36	SOMT 13 Ø37 - Ø43	SOMT 15 Ø44 - Ø50
0.04-0.05	0.04-0.05	0.04-0.05	0.04-0.05	0.04-0.06	0.06-0.08	0.06-0.08	0.08-0.10	0.08-0.10
0.06-0.08	0.06-0.08	0.06-0.08	0.06-0.10	0.06-0.10	0.08-0.12	0.08-0.12	0.08-0.14	0.10-0.14
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.10-0.15	0.10-0.15	0.10-0.17	0.10-0.17
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.10-0.15	0.10-0.15	0.10-0.17	0.10-0.17
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.10-0.15	0.10-0.15	0.10-0.17	0.10-0.17
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.22
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.22
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.22
0.06-0.12	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.16	0.08-0.18	0.10-0.20	0.10-0.20	0.10-0.22
0.06-0.10	0.06-0.10	0.06-0.10	0.08-0.12	0.08-0.12	0.08-0.16	0.08-0.18	0.10-0.18	0.10-0.20
0.06-0.10	0.06-0.10	0.06-0.10	0.08-0.12	0.08-0.12	0.08-0.16	0.08-0.18	0.10-0.18	0.10-0.20
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.18	0.10-0.18	0.10-0.20
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.18	0.10-0.18	0.10-0.20
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.12	0.06-0.12	0.08-0.16	0.08-0.18	0.10-0.18	0.10-0.20
0.08-0.14	0.08-0.14	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.18	0.10-0.18	0.10-0.20	0.10-0.20
0.08-0.14	0.08-0.14	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.18	0.10-0.18	0.10-0.20	0.10-0.20
0.08-0.14	0.08-0.14	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.18	0.10-0.18	0.10-0.20	0.10-0.20
0.08-0.14	0.08-0.14	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.18	0.10-0.18	0.10-0.20	0.10-0.20
0.08-0.12	0.08-0.12	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.16
0.08-0.12	0.08-0.12	0.08-0.14	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.16	0.10-0.16
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.15	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.08-0.15	0.08-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	0.10-0.17	0.10-0.17
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10
0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.05-0.08	0.05-0.08	0.05-0.08	0.06-0.09	0.06-0.09	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10

Recommended Cutting Conditions



Machining data for T-DRILL 2,3,4xD

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	250-350
		>=0.25%C	Annealed	650	190	2	180-250
		<0.55%C	Quenched and tempered	850	250	3	160-220
		>=0.55%C	Annealed	750	220	4	160-220
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Quenched and tempered	1000	300	5	160-220
		Annealed	600	200	6	150-220	
			930	275	7	120-160	
		Quenched and tempered	1000	300	8	120-160	
			1200	350	9	120-160	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-180	
		Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240	
		Martensitic	820	240	13	170-240	
		Austenitic	600	180	14	170-240	
K	Gray cast iron (GG)	Ferritic		160	15	180-250	
		Pearlitic		250	16	180-250	
	Cast iron nodular (GGG)	Ferritic		180	17	180-250	
		Pearlitic		260	18	180-250	
	Malleable cast iron	Ferritic		130	19	130-200	
		Pearlitic		230	20	130-200	
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380	
		Cured		100	22	330-380	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380
			Cured		90	24	330-380
		>12% Si	High temp.		130	25	330-380
	Copper alloys	>1% Pb	Free cutting		110	26	150-230
			Brass		90	27	150-230
			Electrolitic copper		100	28	150-230
	Non-metallic	Duroplastics, fiber plastics			29	150-230	
		Hard rubber			30	150-230	
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	30-60
		Ni or Co based	Annealed		250	33	30-60
			Cured		350	34	30-60
			Cast		320	35	30-60
	Titanium, Ti alloys		Rm 400		36	30-60	
		Alpha+beta alloys cured	Rm 1050		37	30-60	
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for T-DRILL 2,3,4xD

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD					
SPMG 05 Ø12.5 - Ø15	SPMG 06 Ø16 - Ø21	SPMG 07 Ø22 - Ø27	SPMG 09 Ø28 - Ø33	SPMG 11 Ø34 - Ø41	SPMG 14 Ø42 - Ø50
0.04-0.06	0.04-0.06	0.04-0.08	0.04-0.08	0.06-0.10	0.06-0.12
0.05-0.08	0.06-0.10	0.06-0.12	0.07-0.13	0.08-0.15	0.08-0.16
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
0.06-0.12	0.08-0.14	0.10-0.18	0.12-0.20	0.12-0.20	0.13-0.20
0.06-0.15	0.06-0.15	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.06-0.15	0.06-0.15	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.06-0.15	0.06-0.15	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.06-0.10	0.06-0.10	0.08-0.12	0.08-0.14	0.08-0.14	0.08-0.14
0.06-0.10	0.08-0.12	0.10-0.15	0.12-0.15	0.12-0.18	0.13-0.18
0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.18
0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.18
0.05-0.10	0.06-0.12	0.08-0.15	0.09-0.16	0.10-0.17	0.11-0.18
0.06-0.12	0.08-0.16	0.12-0.20	0.15-0.25	0.16-0.28	0.18-0.30
0.06-0.12	0.08-0.16	0.12-0.20	0.15-0.25	0.16-0.28	0.18-0.30
0.06-0.12	0.08-0.16	0.12-0.20	0.15-0.25	0.16-0.28	0.18-0.30
0.06-0.12	0.08-0.16	0.12-0.20	0.15-0.25	0.16-0.28	0.18-0.30
0.06-0.10	0.08-0.15	0.10-0.18	0.12-0.20	0.15-0.23	0.16-0.25
0.06-0.10	0.08-0.15	0.10-0.18	0.12-0.20	0.15-0.23	0.16-0.25
0.06-0.14	0.08-0.15	0.10-0.20	0.12-0.22	0.14-0.23	0.15-0.26
0.06-0.14	0.08-0.15	0.10-0.20	0.12-0.22	0.14-0.23	0.15-0.26
0.06-0.14	0.08-0.15	0.10-0.20	0.12-0.22	0.14-0.23	0.15-0.26
0.06-0.14	0.08-0.15	0.10-0.20	0.12-0.22	0.14-0.23	0.15-0.26
0.06-0.13	0.06-0.13	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.13	0.06-0.13	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.13	0.06-0.13	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.13	0.06-0.13	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.13	0.06-0.13	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.10	0.06-0.14	0.08-0.18	0.10-0.22	0.14-0.23	0.15-0.24
0.05-0.10	0.06-0.14	0.08-0.18	0.10-0.22	0.14-0.23	0.15-0.24
0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10

Recommended Cutting Conditions



Machining data for T-DRILL 5xD

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	250-350
		>=0.25%C	Annealed	650	190	2	180-250
		<0.55%C	Quenched and tempered	850	250	3	160-220
		>=0.55%C	Annealed	750	220	4	160-220
			Quenched and tempered	1000	300	5	160-220
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	150-220
		Quenched and tempered		930	275	7	120-160
				1000	300	8	120-160
				1200	350	9	120-160
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	140-180
			Quenched and tempered	1100	325	11	130-180
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240	
		Martensitic	820	240	13	170-240	
		Austenitic	600	180	14	170-240	
K	Gray cast iron (GG)	Ferritic		160	15	180-250	
		Pearlitic		250	16	180-250	
	Cast iron nodular (GGG)	Ferritic		180	17	180-250	
		Pearlitic		260	18	180-250	
	Malleable cast iron	Ferritic		130	19	130-200	
		Pearlitic		230	20	130-200	
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380	
		Cured		100	22	330-380	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380
			Cured		90	24	330-380
	>12% Si	High temp.		130	25	330-380	
		>1% Pb	Free cutting		110	26	150-230
	Copper alloys		Brass		90	27	150-230
			Electrolitic copper		100	28	150-230
	Non-metallic		Duroplastics, fiber plastics			29	150-230
			Hard rubber			30	150-230
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	30-60
		Ni or Co based	Annealed		250	33	30-60
			Cured		350	34	30-60
			Cast		320	35	30-60
	Titanium, Ti alloys		Rm 400		36	30-60	
		Alpha+beta alloys cured	Rm 1050		37	30-60	
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for T-DRILL 5xD

Feed (mm/rev) vs. drill diameter Drill length 5xD					
SPMG 05 Ø12.5 - Ø15	SPMG 06 Ø16 - Ø21	SPMG 07 Ø22 - Ø27	SPMG 09 Ø28 - Ø33	SPMG 11 Ø34 - Ø41	SPMG 14 Ø42 - Ø50
0.04-0.05	0.04-0.05	0.04-0.06	0.04-0.07	0.06-0.08	0.06-0.10
0.06-0.08	0.06-0.08	0.06-0.10	0.07-0.12	0.08-0.13	0.08-0.14
0.06-0.10	0.08-0.13	0.10-0.16	0.12-0.20	0.12-0.22	0.13-0.23
0.06-0.10	0.08-0.13	0.10-0.16	0.12-0.20	0.12-0.22	0.13-0.23
0.06-0.10	0.08-0.13	0.10-0.16	0.12-0.20	0.12-0.22	0.13-0.23
0.06-0.10	0.08-0.12	0.10-0.16	0.12-0.18	0.12-0.18	0.13-0.18
0.06-0.12	0.06-0.13	0.08-0.16	0.08-0.16	0.08-0.17	0.08-0.17
0.06-0.12	0.06-0.13	0.08-0.16	0.08-0.16	0.08-0.17	0.08-0.17
0.06-0.12	0.06-0.13	0.08-0.16	0.08-0.16	0.08-0.17	0.08-0.17
0.06-0.08	0.06-0.08	0.08-0.10	0.08-0.12	0.08-0.12	0.08-0.12
0.06-0.09	0.08-0.10	0.10-0.13	0.12-0.13	0.12-0.15	0.12-0.16
0.05-0.09	0.06-0.10	0.08-0.13	0.09-0.15	0.10-0.15	0.10-0.17
0.05-0.09	0.06-0.10	0.08-0.13	0.09-0.15	0.10-0.15	0.10-0.17
0.05-0.09	0.06-0.10	0.08-0.13	0.09-0.15	0.10-0.15	0.10-0.17
0.06-0.10	0.08-0.15	0.12-0.18	0.15-0.22	0.16-0.25	0.18-0.28
0.06-0.10	0.08-0.15	0.12-0.18	0.15-0.22	0.16-0.25	0.18-0.28
0.06-0.10	0.08-0.15	0.12-0.18	0.15-0.22	0.16-0.25	0.18-0.28
0.06-0.10	0.08-0.15	0.12-0.18	0.15-0.22	0.16-0.25	0.18-0.28
0.06-0.08	0.08-0.12	0.10-0.16	0.12-0.18	0.15-0.22	0.16-0.23
0.06-0.08	0.08-0.12	0.10-0.16	0.12-0.18	0.15-0.22	0.16-0.23
0.06-0.12	0.08-0.15	0.10-0.13	0.12-0.18	0.14-0.20	0.14-0.24
0.06-0.12	0.08-0.15	0.10-0.13	0.12-0.18	0.14-0.20	0.14-0.24
0.06-0.12	0.08-0.15	0.10-0.13	0.12-0.18	0.14-0.20	0.14-0.24
0.06-0.12	0.08-0.15	0.10-0.13	0.12-0.18	0.14-0.20	0.14-0.24
0.06-0.12	0.06-0.12	0.08-0.13	0.08-0.13	0.08-0.14	0.08-0.14
0.06-0.12	0.06-0.12	0.08-0.13	0.08-0.13	0.08-0.14	0.08-0.14
0.06-0.12	0.06-0.12	0.08-0.13	0.08-0.13	0.08-0.14	0.08-0.14
0.06-0.12	0.06-0.12	0.08-0.13	0.08-0.13	0.08-0.14	0.08-0.14
0.06-0.12	0.06-0.12	0.08-0.13	0.08-0.13	0.08-0.14	0.08-0.14
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.08
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.08
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.08
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.08
0.05-0.07	0.05-0.07	0.05-0.08	0.05-0.08	0.05-0.08	0.05-0.08
0.05-0.09	0.08-0.13	0.08-0.17	0.10-0.20	0.14-0.22	0.14-0.24
0.05-0.09	0.08-0.13	0.08-0.17	0.10-0.20	0.14-0.22	0.14-0.24
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09
0.05-0.08	0.05-0.08	0.05-0.09	0.05-0.09	0.05-0.09	0.05-0.09

Recommended Cutting Conditions

Machining data for DRILL-SPEED

ISO	Material		Condition	Material Example (JIS)	Tensile strength (N/mm ²)	Hardness HB	Material No.
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	SS41/S10C	420	125	1
		>=0.25%C	Annealed	S25C	650	190	2
		<0.55%C	Quenched and tempered	S45C	850	250	3
		>=0.55%C	Annealed	S55C	750	220	4
			Quenched and tempered	SK3	1000	300	5
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed		SCM4	600	200	6
				SKS3	930	275	7
		Quenched and tempered			1000	300	8
					1200	350	9
	High alloy steel, cast steel and tool steel	Annealed	SKD61	680	200	10	
		Quenched and tempered	SKH/HSS	1100	325	11	
M	Stainless steel and cast steel	Ferritic / martensitic		680	200	12	
		Martensitic		820	240	13	
		Austenitic		600	180	14	
K	Gray cast iron (GG)	Ferritic	FC		160	15	
		Pearlitic			250	16	
K	Cast iron nodular (GGG)	Ferritic	FCD		180	17	
		Pearlitic			260	18	
	Malleable cast iron	Ferritic	FCMP/AC4A		130	19	
		Pearlitic			230	20	
N	Aluminum - Wrought alloy	Not cureable			60	21	
		Cured			100	22	
	Aluminum-cast, alloyed	<=12% Si	Not cureable			75	23
			Cured			90	24
		>12% Si	High temp.			130	25
	Copper alloys	>1% Pb	Free cutting			110	26
			Brass			90	27
			Electrolitic copper			100	28
	Non-metallic	Duroplastics, fiber plastics					29
Hard rubber						30	
S	High temp. alloys	Fe based	Annealed			200	31
			Cured			280	32
		Ni or Co based	Annealed			250	33
			Cured			350	34
			Cast			320	35
	Titanium, Ti alloys			Rm 400		36	
	Alpha+beta alloys cured		Rm 1050		37		
H	Hardened steel	Hardened			55HRC	38	
		Hardened			60HRC	39	
	Chilled cast iron	Cast			400	40	
	Cast iron nodular	Hardened			55HRC	41	

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

DRILLSPEED

[illegible]

Recommended Cutting Conditions

Machining data for DRILL-RUSH

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	80-140
		>=0.25%C	Annealed	650	190	2	80-130
		<0.55%C	Quenched and tempered	850	250	3	80-120
		>=0.55%C	Annealed	750	220	4	70-110
			Quenched and tempered	1000	300	5	50-90
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	70-120
			Quenched and tempered	930	275	7	70-110
		1000		300	8	50-90	
		1200		350	9	40-70	
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-90
			Quenched and tempered	1100	325	11	40-80
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-70	
		Martensitic	820	240	13	40-70	
		Austenitic	600	180	14	30-70	
K	Gray cast iron (GG)	Ferritic		160	15	90-160	
		Pearlitic		250	16	80-140	
	Cast iron nodular (GGG)	Ferritic		180	17	90-180	
		Pearlitic		260	18	80-140	
	Malleable cast iron	Ferritic		130	19	90-160	
Pearlitic			230	20	80-140		
N	Aluminum - Wrought alloy	Not cureable		60	21	90-220	
		Cured		100	22	90-220	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	90-220
			Cured		90	24	90-220
		>12% Si	High temp.		130	25	80-160
	Copper alloys	>1% Pb	Free cutting		110	26	90-220
			Brass		90	27	90-220
			Electrolitic copper		100	28	90-220
Non-metallic		Duroplastics, fiber plastics			29		
		Hard rubber			30		
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	20-50
		Ni or Co based	Annealed		250	33	20-50
			Cured		350	34	20-50
			Cast		320	35	20-50
	Titanium, Ti alloys			Rm 400		36	20-50
		Alpha+beta alloys cured	Rm 1050		37	20-50	
H	Hardened steel	Hardened		55HRC	38	20-50	
		Hardened		60HRC	39	20-50	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for DRILL-RUSH

Feed (mm/rev) vs. drill diameter						
Ø6 - Ø7.9	Ø8 - Ø9.9	Ø10 - Ø11.9	Ø12 - Ø13.9	Ø14 - Ø15.9	Ø16 - Ø19.9	Ø20 - Ø25.9
0.09-0.13	0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.09-0.13	0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.09-0.13	0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.09-0.13	0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.09-0.13	0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.09-0.15	0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.09-0.15	0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.09-0.15	0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.09-0.12	0.12-0.20	0.12-0.22	0.15-0.25	0.18-0.28	0.20-0.30	0.22-0.33
0.09-0.12	0.12-0.20	0.12-0.22	0.15-0.25	0.18-0.28	0.20-0.30	0.22-0.33
0.08-0.10	0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.08-0.10	0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.08-0.10	0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.12-0.18	0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.50	0.40-0.60	0.45-0.70
0.05-0.07	0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.05-0.07	0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.05-0.07	0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.05-0.07	0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.05-0.07	0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.05-0.07	0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.05-0.07	0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.05-0.07	0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.05-0.07	0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25

Recommended Cutting Conditions

Machining data for MODU-R-DRILL

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc (m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	120-200	
		>=0.25%C	Annealed	650	190	2	120-200	
		<0.55%C	Quenched and tempered	850	250	3	130-190	
		>=0.55%C	Annealed	750	220	4	130-190	
			Quenched and tempered	1000	300	5	130-190	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	100-200	
			Quenched and tempered		930	275	7	100-200
					1000	300	8	100-200
					1200	350	9	100-200
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	100-160	
			Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	80-140		
		Martensitic	820	240	13	80-140		
		Austenitic	600	180	14	80-140		
K	Gray cast iron (GG)	Ferritic		160	15	100-250		
		Pearlitic		250	16	100-250		
	Cast iron nodular (GGG)	Ferritic		180	17	100-250		
		Pearlitic		260	18	100-250		
	Malleable cast iron	Ferritic		130	19	100-250		
		Pearlitic		230	20	100-250		
N	Aluminum - Wrought alloy	Not cureable		60	21	160-260		
		Cured		100	22	160-260		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	160-260	
			Cured		90	24	160-260	
		>12% Si	High temp.		130	25	160-260	
	Copper alloys	>1% Pb	Free cutting		110	26	160-260	
			Brass		90	27	160-260	
			Electrolitic copper		100	28	160-260	
	Non-metallic		Duroplastics, fiber plastics			29		
		Hard rubber			30			
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-80	
		Ni or Co based	Annealed		250	33	30-80	
			Cured		350	34	30-80	
			Cast		320	35	30-80	
	Titanium, Ti alloys		Rm 400		36	30-80		
		Alpha+beta alloys cured	Rm 1050		37	30-80		
H	Hardened steel	Hardened		55HRC	38	20-50		
		Hardened		60HRC	39	20-50		
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for MODU-R-DRILL

Feed (mm/rev) vs. drill diameter					
SPGX 06 Ø26 - Ø28	SPGX 07 Ø29 - Ø32	SPGX 09 Ø33 - Ø36	SPGX 11 Ø37 - Ø43	SPGX 11 Ø44 - Ø45	SPGX 14 Ø46 - Ø50
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.05-0.55	0.4-0.6	0.4-0.6
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.12-0.18	0.14-0.20	0.14-0.20	0.16-0.22	0.16-0.22
0.1-0.16	0.12-0.18	0.14-0.20	0.14-0.20	0.16-0.22	0.16-0.22

Recommended Cutting Conditions

Machining data for SPADE-RUSH

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	80-140
		>=0.25%C	Annealed	650	190	2	80-130
		<0.55%C	Quenched and tempered	850	250	3	80-120
		>=0.55%C	Annealed	750	220	4	70-110
			Quenched and tempered	1000	300	5	50-90
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	80-120
			Quenched and tempered	930	275	7	70-110
				1000	300	8	50-90
				1200	350	9	40-70
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-90
			Quenched and tempered	1100	325	11	40-80
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-70	
		Martensitic	820	240	13	40-70	
		Austenitic	600	180	14	30-70	
K	Gray cast iron (GG)	Ferritic		160	15	90-180	
		Pearlitic		250	16	80-140	
	Cast iron nodular (GGG)	Ferritic		180	17	90-165	
		Pearlitic		260	18	80-140	
	Malleable cast iron	Ferritic		130	19	90-160	
Pearlitic			230	20	80-140		
N	Aluminum - Wrought alloy	Not cureable		60	21	90-220	
		Cured		100	22	90-220	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	90-220
			Cured		90	24	90-220
		>12% Si	High temp.		130	25	80-160
	Copper alloys	>1% Pb	Free cutting		110	26	90-220
			Brass		90	27	90-220
			Electrolitic copper		100	28	90-220
	Non-metallic		Duroplastics, fiber plastics			29	
		Hard rubber			30		
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	20-50
		Ni or Co based	Annealed		250	33	20-50
			Cured		350	34	20-50
			Cast		320	35	20-50
	Titanium, Ti alloys		Rm 400		36	20-50	
	Alpha+beta alloys cured	Rm 1050		37	20-50		
H	Hardened steel	Hardened		55HRC	38	20-50	
		Hardened		60HRC	39	20-50	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for SPADE-RUSH

Feed (mm/rev) vs. drill diameter			
Ø20 - Ø25.9	Ø26 - Ø29.9	Ø30 - Ø34.9	Ø35 - Ø41
0.30-0.50	0.30-0.50	0.30-0.50	0.35-0.55
0.30-0.50	0.30-0.50	0.30-0.50	0.35-0.55
0.30-0.50	0.30-0.50	0.30-0.50	0.35-0.55
0.30-0.50	0.30-0.50	0.30-0.50	0.35-0.55
0.30-0.50	0.30-0.50	0.30-0.50	0.35-0.55
0.25-0.45	0.25-0.45	0.25-0.45	0.30-0.50
0.25-0.45	0.25-0.45	0.25-0.45	0.30-0.50
0.25-0.45	0.25-0.45	0.25-0.45	0.30-0.50
0.25-0.45	0.25-0.45	0.25-0.45	0.30-0.50
0.25-0.35	0.25-0.35	0.25-0.35	0.30-0.40
0.25-0.35	0.25-0.35	0.25-0.35	0.30-0.40
0.15-0.30	0.15-0.30	0.15-0.30	0.20-0.35
0.15-0.30	0.15-0.30	0.15-0.30	0.20-0.35
0.15-0.30	0.15-0.30	0.15-0.30	0.20-0.35
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.35-0.55	0.35-0.55	0.35-0.55	0.40-0.60
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.40-0.60	0.40-0.60	0.40-0.60	0.50-0.70
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25
0.10-0.20	0.10-0.20	0.15-0.25	0.15-0.25

Recommended Cutting Conditions



Machining data for SOLID-3-DRILL

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	80-140
		≥0.25%C	Annealed	650	190	2	80-130
		<0.55%C	Quenched and tempered	850	250	3	80-120
		≥0.55%C	Annealed	750	220	4	70-110
			Quenched and tempered	1000	300	5	50-90
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	80-120
			Quenched and tempered	930	275	7	70-110
				1000	300	8	50-90
				1200	350	9	40-70
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-90
			Quenched and tempered	1100	325	11	40-80
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12		
		Martensitic	820	240	13		
		Austenitic	600	180	14		
K	Gray cast iron (GG)	Ferritic		160	15	80-140	
		Pearlitic		250	16	70-120	
	Cast iron nodular (GGG)	Ferritic		180	17	80-120	
		Pearlitic		260	18	70-110	
	Malleable cast iron	Ferritic		130	19	80-120	
		Pearlitic		230	20	70-110	
N	Aluminum - Wrought alloy	Not cureable		60	21		
		Cured		100	22		
	Aluminum- cast, alloyed	<=12% Si	Not cureable		75	23	
			Cured		90	24	
		>12% Si	High temp.		130	25	
	Copper alloys	>1% Pb	Free cutting		110	26	
			Brass		90	27	
			Electrolitic copper		100	28	
	Non-metallic		Duroplastics, fiber plastics			29	
			Hard rubber			30	
S	High temp. alloys	Fe based	Annealed		200	31	
			Cured		280	32	
		Ni or Co based	Annealed		250	33	
			Cured		350	34	
			Cast		320	35	
	Titanium, Ti alloys		Rm 400		36		
H	Hardened steel	Alpha+beta alloys cured	Rm 1050		37		
		Hardened		55HRC	38		
		Hardened		60HRC	39		
Chilled cast iron	Cast		400	40			
Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Feed (mm/rev) vs. drill diameter



Recommended Cutting Conditions



Machining data for H-DRILL

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	80-120
		>=0.25%C	Annealed	650	190	2	80-110
		<0.55%C	Quenched and tempered	850	250	3	70-100
		>=0.55%C	Annealed	750	220	4	70-100
			Quenched and tempered	1000	300	5	70-100
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	70-90
			Quenched and tempered	930	275	7	70-90
				1000	300	8	50-80
				1200	350	9	40-70
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-80
			Quenched and tempered	1100	325	11	40-70
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	30-60	
		Martensitic	820	240	13	30-60	
		Austenitic	600	180	14	30-60	
K	Gray cast iron (GG)	Ferritic		160	15	65-80	
		Pearlitic		250	16	65-80	
	Cast iron nodular (GGG)	Ferritic		180	17	85-105	
		Pearlitic		260	18	75-90	
	Malleable cast iron	Ferritic		130	19	65-80	
		Pearlitic		230	20	65-80	
N	Aluminum - Wrought alloy	Not cureable		60	21	70-200	
		Cured		100	22	70-200	
	Aluminum- cast, alloyed	<=12% Si	Not cureable		75	23	70-200
			Cured		90	24	70-200
		>12% Si	High temp.		130	25	70-150
	Copper alloys	>1% Pb	Free cutting		110	26	70-200
			Brass		90	27	70-200
			Electrolitic copper		100	28	70-200
	Non-metallic		Duroplastics, fiber plastics			29	
		Hard rubber			30		
S	High temp. alloys	Fe based	Annealed		200	31	15-40
			Cured		280	32	15-40
		Ni or Co based	Annealed		250	33	15-40
			Cured		350	34	15-40
			Cast		320	35	15-40
	Titanium, Ti alloys			Rm 400		36	
		Alpha+beta alloys cured	Rm 1050		37		
H	Hardened steel	Hardened		55HRC	38	10-40	
		Hardened		60HRC	39	10-40	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Recommended Cutting Conditions



Machining data for H-DRILL

Feed (mm/rev) vs. drill diameter		
Ø3 - Ø5	Ø5.1 - Ø8	Ø8.1 - Ø12
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.08-0.18	0.10-0.20	0.15-0.25
0.08-0.18	0.10-0.20	0.15-0.25
0.06-0.12	0.10-0.15	0.12-0.18
0.06-0.12	0.10-0.15	0.12-0.18
0.06-0.12	0.10-0.15	0.12-0.18
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.20	0.15-0.25	0.20-0.30
0.10-0.25	0.15-0.35	0.25-0.45
0.10-0.25	0.15-0.35	0.25-0.45
0.10-0.25	0.15-0.35	0.25-0.45
0.10-0.25	0.15-0.35	0.25-0.45
0.10-0.25	0.15-0.35	0.25-0.45
0.08-0.18	0.15-0.25	0.20-0.35
0.08-0.18	0.15-0.25	0.20-0.35
0.08-0.18	0.15-0.25	0.20-0.35
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12
0.02-0.08	0.04-0.10	0.06-0.12

Recommended Cutting Conditions



Machining data for TOP-CAP

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1
		>=0.25%C	Annealed	650	190	2
		<0.55%C	Quenched and tempered	850	250	3
		>=0.55%C	Annealed	750	220	4
			Quenched and tempered	1000	300	5
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6
			Quenched and tempered	930	275	7
				1000	300	8
				1200	350	9
	High alloy steel, cast steel and tool steel		Annealed	680	200	10
			Quenched and tempered	1100	325	11
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	
		Martensitic	820	240	13	
		Austenitic	600	180	14	
K	Gray cast iron (GG)	Ferritic		160	15	
		Pearlitic		250	16	
	Cast iron nodular (GGG)	Ferritic		180	17	
		Pearlitic		260	18	
	Malleable cast iron	Ferritic		130	19	
		Pearlitic		230	20	
N	Aluminum - Wrought alloy		Not cureable	60	21	
			Cured	100	22	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	75	23	
			Cured	90	24	
		>12% Si	High temp.	130	25	
	Copper alloys	>1% Pb	Free cutting	110	26	
			Brass	90	27	
			Electrolitic copper	100	28	
	Non-metallic		Duroplastics, fiber plastics		29	
		Hard rubber		30		
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium, Ti alloys		Rm 400		36	
	Alpha+beta alloys cured	Rm 1050		37		
H	Hardened steel	Hardened		55HRC	38	
		Hardened		60HRC	39	
	Chilled cast iron	Cast		400	40	
	Cast iron nodular	Hardened		55HRC	41	

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Recommended Cutting Conditions



Machining data for TOP-CAP

Drilling		Turning & boring		Grooving	
Vc (m/min)	Feed (mm/rev)	Vc (m/min)	Feed (mm/rev)	Vc (m/min)	Feed (mm/rev)
120-260	0.05-0.06	140-280	0.04-0.14	120-250	0.04-0.25
80-190	0.05-0.15	90-200	0.04-0.12	80-180	0.04-0.25
100-280	0.06-0.18	100-200	0.04-0.15	80-180	0.04-0.25
100-280	0.06-0.18	100-200	0.04-0.15	80-180	0.04-0.25
100-280	0.06-0.18	100-200	0.04-0.15	80-180	0.04-0.25
100-280	0.06-0.18	100-200	0.04-0.15	80-180	0.04-0.25
60-180	0.04-0.15	80-180	0.07-0.12	60-160	0.04-0.25
60-180	0.04-0.15	80-180	0.07-0.12	60-160	0.04-0.25
60-180	0.04-0.15	80-180	0.07-0.12	60-160	0.04-0.25
80-190	0.05-0.15	80-200	0.04-0.12	80-160	0.04-0.25
50-150	0.04-0.14	60-150	0.04-0.12	50-120	0.04-0.25
50-210	0.04-0.15	60-230	0.07-0.12	50-200	0.04-0.25
50-210	0.04-0.15	60-230	0.07-0.12	50-200	0.04-0.25
50-210	0.04-0.15	60-230	0.07-0.12	50-200	0.04-0.25
100-300	0.06-0.23	120-230	0.07-0.2	100-200	0.04-0.25
100-300	0.06-0.23	120-230	0.07-0.2	100-200	0.04-0.25
100-300	0.06-0.23	120-230	0.07-0.2	100-200	0.04-0.25
100-300	0.06-0.23	120-230	0.07-0.2	100-200	0.04-0.25
100-200	0.06-0.15	120-230	0.04-0.13	100-200	0.04-0.25
100-200	0.06-0.15	120-230	0.04-0.13	100-200	0.04-0.25
120-500	0.05-0.3	120-700	0.04-0.25	100-700	0.04-0.25
120-500	0.05-0.3	120-700	0.04-0.25	100-700	0.04-0.25
120-500	0.05-0.3	120-700	0.04-0.25	100-700	0.04-0.25
120-500	0.05-0.3	120-700	0.04-0.25	100-700	0.04-0.25
80-380	0.05-0.23	80-500	0.04-0.2	80-350	0.04-0.25
80-380	0.05-0.23	80-500	0.04-0.2	80-350	0.04-0.25
80-380	0.05-0.23	80-500	0.04-0.2	80-350	0.04-0.25
50-140	0.04-0.14	50-160	0.04-0.12	50-140	0.04-0.25
50-140	0.04-0.14	50-160	0.04-0.12	50-140	0.04-0.25
20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.05
20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.05
20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.05
20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.05
20-50	0.04-0.05	20-80	0.04-0.05	20-50	0.04-0.05
30-60	0.04-0.05	30-100	0.04-0.05	30-80	0.04-0.05
30-60	0.04-0.05	30-100	0.04-0.05	30-80	0.04-0.05
20-40	0.04-0.05	20-70	0.04-0.05	20-50	0.04-0.05
20-40	0.04-0.05	20-70	0.04-0.05	20-50	0.04-0.05
20-40	0.04-0.05	20-70	0.04-0.05	20-50	0.04-0.05
20-40	0.04-0.05	20-70	0.04-0.05	20-50	0.04-0.05

Recommended Cutting Conditions



Machining data for TBTA 3/5/7/9 & TBTA-R

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc (m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	60-120	
		>=0.25%C	Annealed	650	190	2	60-120	
		<0.55%C	Quenched and tempered	850	250	3	60-120	
		>=0.55%C	Annealed	750	220	4	60-120	
			Quenched and tempered	1000	300	5	50-100	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	50-100	
			Quenched and tempered		930	275	7	50-100
					1000	300	8	50-100
					1200	350	9	50-100
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	60-120	
			Quenched and tempered	1100	325	11	60-120	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	60-110		
		Martensitic	820	240	13	60-110		
		Austenitic	600	180	14	60-110		
K	Gray cast iron (GG)	Ferritic		160	15	60-100		
		Pearlitic		250	16	60-100		
	Cast iron nodular (GGG)	Ferritic		180	17	60-100		
		Pearlitic		260	18	60-100		
	Malleable cast iron	Ferritic		130	19	60-100		
Pearlitic			230	20	60-100			
N	Aluminum - Wrought alloy	Not cureable		60	21	60-130		
		Cured		100	22	60-130		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	60-130	
			Cured		90	24	60-130	
		>12% Si	High temp.		130	25	60-130	
		>1% Pb	Free cutting		110	26	60-130	
	Copper alloys		Brass		90	27	60-130	
			Electrolitic copper		100	28	60-130	
Non-metallic		Duroplastics, fiber plastics			29			
		Hard rubber			30			
S	High temp. alloys	Fe based	Annealed		200	31	20-65	
			Cured		280	32	20-65	
		Ni or Co based	Annealed		250	33	20-65	
			Cured		350	34	20-65	
			Cast		320	35	20-65	
	Titanium, Ti alloys		Rm 400		36	30-100		
		Alpha+beta alloys cured	Rm 1050		37	30-100		
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for TBTA 3/5/7/9 & TBTA-R

Feed (mm/rev) vs. drill diameter				
Ø38.00 - Ø39.99	Ø40.00 - Ø51.99	Ø52.00 - Ø63.99	Ø64.00 - Ø84.99	Ø85.00 -
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30

Recommended Cutting Conditions



Machining data for TBTA-FB

ISO	Material		Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc (m/min)
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	70-130
		>=0.25%C	Annealed	650	190	2	70-130
		<0.55%C	Quenched and tempered	850	250	3	70-130
		>=0.55%C	Annealed	750	220	4	70-130
			Quenched and tempered	1000	300	5	70-130
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	70-120
				930	275	7	60-120
			Quenched and tempered	1000	300	8	60-120
				1200	350	9	60-120
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	70-130
			Quenched and tempered	1100	325	11	70-130
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	70-130	
		Martensitic	820	240	13	70-130	
		Austenitic	600	180	14	70-130	
K	Gray cast iron (GG)	Ferritic		160	15	60-110	
		Pearlitic		250	16	60-110	
	Cast iron nodular (GGG)	Ferritic		180	17	50-110	
		Pearlitic		260	18	50-110	
	Malleable cast iron	Ferritic		130	19	70-110	
		Pearlitic		230	20	70-110	
N	Aluminum - Wrought alloy	Not cureable		60	21	65-130	
		Cured		100	22	65-130	
	Aluminum- cast, alloyed	<=12% Si	Not cureable		75	23	65-130
			Cured		90	24	65-130
		>12% Si	High temp.		130	25	65-130
		>1% Pb	Free cutting		110	26	65-130
	Copper alloys	Brass		90	27	65-130	
		Electrolitic copper		100	28	65-130	
	Non-metallic	Duroplastics, fiber plastics			29		
Hard rubber				30			
S	High temp. alloys	Fe based	Annealed		200	31	20-50
			Cured		280	32	20-50
		Ni or Co based	Annealed		250	33	20-50
			Cured		350	34	20-50
			Cast		320	35	20-50
	Titanium, Ti alloys		Rm 400		36	30-60	
		Alpha+beta alloys cured	Rm 1050		37	30-60	
H	Hardened steel	Hardened		55HRC	38		
		Hardened		60HRC	39		
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for TBTA-FB

Feed (mm/rev) vs. drill diameter			
Ø25.00 - Ø43.00	Ø43.01 - Ø65.00		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.30	0.12-0.35		
0.10-0.25	0.12-0.35		
0.10-0.25	0.12-0.35		
0.10-0.25	0.12-0.35		
0.10-0.25	0.12-0.35		
0.10-0.25	0.12-0.35		
0.10-0.25	0.12-0.35		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		
0.08-0.23	0.12-0.27		

Recommended Cutting Conditions



Machining data for BTA & BTS

ISO	Material		Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc (m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	70-120	
		>=0.25%C	Annealed	650	190	2	70-120	
		<0.55%C	Quenched and tempered	850	250	3	40-70	
		>=0.55%C	Annealed	750	220	4	70-120	
			Quenched and tempered	1000	300	5	55-100	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	70-100	
			Quenched and tempered		930	275	7	55-100
					1000	300	8	55-100
					1200	350	9	55-100
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-85	
			Quenched and tempered	1100	325	11	55-100	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	60-100		
		Martensitic	820	240	13	60-100		
		Austenitic	600	180	14	60-100		
K	Gray cast iron (GG)	Ferritic		160	15	60-100		
		Pearlitic		250	16	60-100		
	Cast iron nodular (GGG)	Ferritic		180	17	80-100		
		Pearlitic		260	18	80-100		
	Malleable cast iron	Ferritic		130	19	50-100		
		Pearlitic		230	20	50-100		
N	Aluminum - Wrought alloy	Not cureable		60	21	65-130		
		Cured		100	22	65-100		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	65-130	
			Cured		90	24	65-130	
		>12% Si	High temp.		130	25	65-130	
	Copper alloys	>1% Pb	Free cutting		110	26	65-130	
			Brass		90	27	65-130	
			Electrolitic copper		100	28	65-130	
Non-metallic		Duroplastics, fiber plastics			29			
		Hard rubber			30			
S	High temp. alloys	Fe based	Annealed		200	31	10-50	
			Cured		280	32	10-50	
		Ni or Co based	Annealed		250	33	10-50	
			Cured		350	34	10-50	
			Cast		320	35	10-50	
	Titanium, Ti alloys		Rm 400		36	30-50		
		Alpha+beta alloys cured	Rm 1050		37	30-50		
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for BTA & BTS

Feed (mm/rev) vs. drill diameter				
Ø8.00 - Ø20.00	Ø15.60 - Ø20.00	Ø20.01 - Ø31.00	Ø31.01 - Ø43.00	Ø43.01 - Ø65.00
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.10	0.08-0.12	0.10-0.15	0.13-0.17	0.15-0.28
0.05-0.13	0.08-0.15	0.10-0.28	0.13-0.30	0.16-0.35
0.05-0.13	0.08-0.15	0.10-0.28	0.13-0.30	0.16-0.35
0.05-0.12	0.05-0.12	0.08-0.25	0.10-0.28	0.15-0.33
0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.17	0.13-0.20	0.16-0.30
0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
0.05-0.13	0.06-0.13	0.08-0.18	0.10-0.20	0.15-0.25
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.13	0.08-0.15	0.10-0.20	0.15-0.25	0.16-0.30
0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
0.05-0.12	0.06-0.12	0.08-0.15	0.12-0.18	0.15-0.25
0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20
0.05-0.10	0.05-0.10	0.08-0.12	0.10-0.15	0.12-0.20

Recommended Cutting Conditions



Machining data for TRGD / TRGDL / TBTA-TR

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C Annealed	420	125	1	
		>=0.25%C Annealed	650	190	2	
		<0.55%C Quenched and tempered	850	250	3	
		>=0.55%C Annealed	750	220	4	
		Quenched and tempered	1000	300	5	
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	600	200	6	
		Quenched and tempered	930	275	7	
			1000	300	8	
			1200	350	9	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	
		Quenched and tempered	1100	325	11	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	
		Martensitic	820	240	13	
		Austenitic	600	180	14	
K	Gray cast iron (GG)	Ferritic		160	15	
		Pearlitic		250	16	
	Cast iron nodular (GGG)	Ferritic		180	17	
		Pearlitic		260	18	
	Malleable cast iron	Ferritic		130	19	
Pearlitic			230	20		
N	Aluminum - Wrought alloy	Not cureable		60	21	
		Cured		100	22	
	Aluminum-cast, alloyed	<=12% Si Not cureable		75	23	
		Cured		90	24	
	>12% Si High temp.		130	25		
	Copper alloys	>1% Pb Free cutting		110	26	
		Brass		90	27	
		Electrolitic copper		100	28	
	Non-metallic	Duroplastics, fiber plastics			29	
Hard rubber				30		
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
			Cast		320	35
	Titanium, Ti alloys		Rm 400		36	
	Alpha+beta alloys cured	Rm 1050		37		
H	Hardened steel	Hardened		55 HRC	38	
		Hardened		60 HRC	39	
	Chilled cast iron	Cast		400	40	
	Cast iron nodular	Hardened		55 HRC	41	

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Recommended Cutting Conditions



Machining data for TRGD / TRGDL / TBTA-TR

Feed (mm/rev) vs. drill diameter					
TRGD / TRGDL				TBTA-TR	
Cutting speed Vc (m/min)	Ø14.00-Ø15.99	Ø16.00-Ø28.00	Ø28.01-Ø40.00	Cutting speed Vc (m/min)	Ø16.00-Ø28.00
80-140	0.05-0.10	0.05-0.10	0.05-0.15	90-130	0.15-0.20
80-140	0.05-0.10	0.05-0.10	0.05-0.15	90-130	0.15-0.20
80-140	0.05-0.16	0.05-0.20	0.05-0.20	90-130	0.15-0.20
80-140	0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
80-140	0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
80-140	0.05-0.10	0.05-0.10	0.05-0.15	70-120	0.10-0.25
80-120	0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-120	0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-120	0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-140	0.05-0.10	0.05-0.10	0.05-0.15	70-130	0.10-0.25
80-120	0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
60-100	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
60-100	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
60-100	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
80-140	0.05-0.25	0.05-0.30	0.05-0.30	50-110	0.10-0.20
80-140	0.05-0.25	0.05-0.30	0.05-0.30	50-110	0.10-0.20
80-140	0.05-0.25	0.05-0.30	0.05-0.30	60-110	0.10-0.20
80-140	0.05-0.25	0.05-0.30	0.05-0.30	60-110	0.10-0.20
80-140	0.05-0.25	0.05-0.30	0.05-0.30	70-110	0.10-0.20
80-140	0.05-0.25	0.05-0.30	0.05-0.30	70-110	0.10-0.20
100-200	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
100-200	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
100-200	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
				65-130	0.08-0.18
				65-130	0.08-0.18
				65-130	0.08-0.18
				65-130	0.08-0.18
				65-130	0.08-0.18
				65-130	0.08-0.18
20-50	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
30-60	0.05-0.13	0.05-0.15	0.05-0.18	30-60	0.08-0.18
30-60	0.05-0.13	0.05-0.15	0.05-0.18	30-60	0.08-0.18
50-100	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.08	0.04-0.10	0.04-0.13		

[illegible]



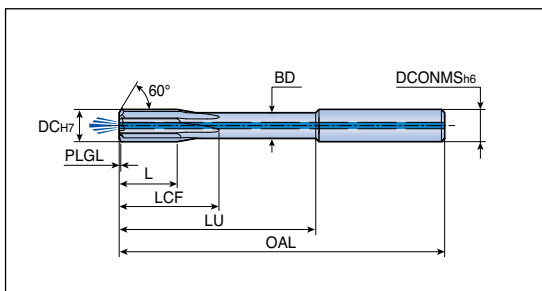
Reaming Tools



Solid reamers for blind hole



- Straight flute - DIN1420

[illegible]

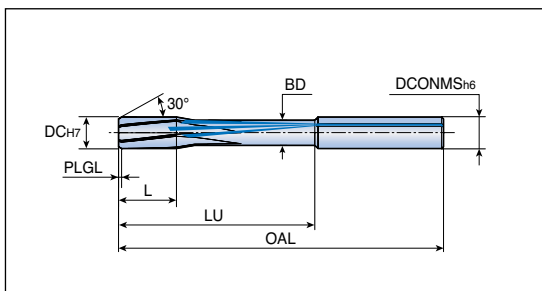
- Special diameters are available on request
- NOF: Number of flutes

●: Standard items

Solid reamers for through hole



- Left flute - DIN1420

[illegible]

- Special diameters are available on request
- NOF: Number of flutes
- * : Ø3 reamer does not include a coolant hole

●: Standard items

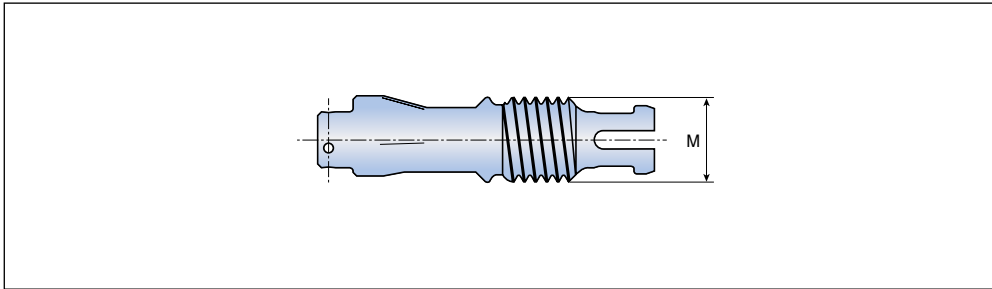
Clamping keys



Designation	Clamping key	
	Head diameter range (mm)	SSC
TM - B5-KEY	11.501-13.500	B5
B6-KEY	13.501-16.000	B6
B7-KEY	16.001-20.000	B7
B8-KEY	20.001-25.400	B8
B9-KEY	25.401-32.000	B9

• SSC: Seat size code

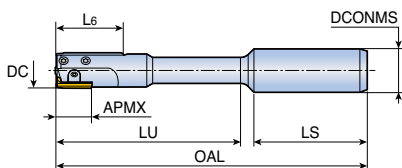
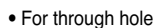
Clamping screws



Designation	Clamping screw	
	Head diameter range (mm)	M
TM - B5-SCR	11.501-13.500	M5
B6-SCR	13.501-16.000	M6
B7-SCR	16.001-20.000	M7
B8-SCR	20.001-25.400	M8
B9-SCR	25.401-32.000	M9

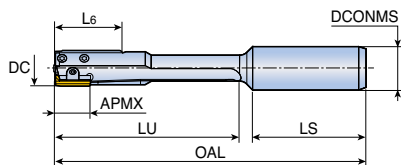
TB-T...-T0

Indexable reamer holders



• SSC: Seat size code • Available upon request



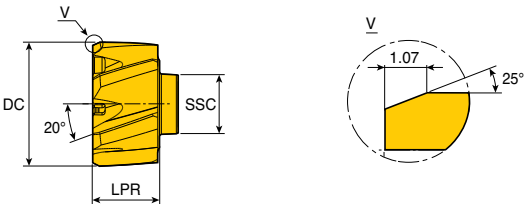
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TBREAM

Spare parts

- SSC: Seat size code

Head changeable reamer heads



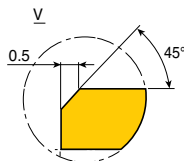
- Left-handed flute for through hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		NOF	SSC	Flute type	Edge type	Grade TT9030
		DC	LPR					
	TM - 11.501-BL-B5	11.501	9.5	6	B5	L	B	●
	12.000-BL-B5	12.000	9.5	6	B5	L	B	●
	13.000-BL-B5	13.000	9.5	6	B5	L	B	●
	13.500-BL-B5	13.500	9.5	6	B5	L	B	●
	13.501-BL-B6	13.501	9.5	6	B6	L	B	●
	14.000-BL-B6	14.000	9.5	6	B6	L	B	●
	15.000-BL-B6	15.000	9.5	6	B6	L	B	●
	16.000-BL-B6	16.000	9.5	6	B6	L	B	●
	16.001-BL-B7	16.001	10.7	6	B7	L	B	●
	17.000-BL-B7	17.000	10.7	6	B7	L	B	●
	18.000-BL-B7	18.000	10.7	6	B7	L	B	●
	19.000-BL-B7	19.000	10.7	6	B7	L	B	●
	20.000-BL-B7	20.000	10.7	6	B7	L	B	●
	20.001-BL-B8	20.001	12.9	8	B8	L	B	●
	21.000-BL-B8	21.000	12.9	8	B8	L	B	●
	22.000-BL-B8	22.000	12.9	8	B8	L	B	●
	23.000-BL-B8	23.000	12.9	8	B8	L	B	●
	24.000-BL-B8	24.000	12.9	8	B8	L	B	●
	25.000-BL-B8	25.000	12.9	8	B8	L	B	●
	26.000-BL-B9	26.000	12.9	8	B9	L	B	●
	27.000-BL-B9	27.000	12.9	8	B9	L	B	●
	28.000-BL-B9	28.000	12.9	8	B9	L	B	●
	29.000-BL-B9	29.000	12.9	8	B9	L	B	●
	30.000-BL-B9	30.000	12.9	8	B9	L	B	●
	31.000-BL-B9	31.000	12.9	8	B9	L	B	●
	32.000-BL-B9	32.000	12.9	8	B9	L	B	●



- NOF: Number of flutes
- SSC: Seat size code
- : Standard items

A diagram of a yellow cylindrical component. It has a main body with a diameter labeled 'DC' and a smaller section on the right with a diameter labeled 'SSC'. The length of the main body is labeled 'LPR'. A feature 'V' is indicated on the top surface of the main body.



- Straight flute for blind hole
- For H7 hole tolerance

[illegible]

- NOF: Number of flutes
- SSC: Seat size code

- : Standard items

Technical drawing of a yellow rectangular bush. The drawing includes two views: a side view and a front view. The side view shows a rectangular profile with a chamfered top edge at a 45-degree angle. The width of the bush is labeled 'S'. The front view shows the bush from the front, with a length labeled 'L' and a width labeled 'W1'. A 90-degree angle is indicated for the top edge of the front view.

- For H6 hole tolerance



Recommended Cutting Conditions

Machining data for TS-REAM

ISO	Material	Condition	Tensile strength (N/mm²)	Hardness HB	Material No.	Cutting speed Vc(m/min)	Feed (mm/rev)	
							Ø3-Ø10	Ø10.1-Ø12
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C Annealed	420	125	1	10-20	0.15-0.25	0.20-0.40
		>=0.25%C Annealed	650	190	2	6-15	0.12-0.15	0.15-0.30
		<0.55%C Quenched and tempered	850	250	3	6-20	0.15-0.25	0.20-0.35
		>=0.55%C Annealed	750	220	4	6-15	0.15-0.25	0.20-0.35
		Quenched and tempered	1000	300	5	6-15	0.15-0.25	0.20-0.35
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	600	200	6	6-15	0.12-0.20	0.15-0.30
			930	275	7	6-20	0.15-0.25	0.20-0.35
		Quenched and tempered	1000	300	8	6-15	0.15-0.25	0.20-0.35
			1200	350	9	6-15	0.15-0.25	0.20-0.35
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	6-15	0.12-0.20	0.15-0.30
		Quenched and tempered	1100	325	11	6-15	0.12-0.20	0.15-0.30
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12			
		Martensitic	820	240	13			
		Austenitic	600	180	14			
K	Gray cast iron (GG)	Ferritic		160	15	10-25	0.20-0.30	0.30-0.45
		Pearlitic		250	16	10-25	0.20-0.30	0.30-0.45
	Cast iron nodular (GGG)	Ferritic		180	17	10-20	0.15-0.25	0.20-0.35
		Pearlitic		260	18	10-20	0.15-0.25	0.20-0.35
	Malleable cast iron	Ferritic		130	19	8-15	0.15-0.25	0.20-0.40
		Pearlitic		230	20	8-15	0.15-0.25	0.20-0.40
N	Aluminum - Wrought alloy	Not cureable		60	21	10-30	0.20-0.30	0.30-0.50
		Cured		100	22	10-30	0.20-0.30	0.30-0.50
	Aluminum-cast, alloyed	<=12% Si Not cureable		75	23	10-30	0.20-0.30	0.30-0.50
		Cured		90	24	10-30	0.20-0.30	0.30-0.50
		>12% Si High temp.		130	25	30-60	0.20-0.30	0.30-0.50
	Copper alloys	>1% Pb Free cutting		110	26	20-60	0.30-0.60	0.40-0.80
		Brass		90	27	20-60	0.30-0.60	0.40-0.80
		Electrolitic copper		100	28	20-60	0.30-0.60	0.40-0.80
	Non-metallic	Duroplastics, fiber plastics			29	15-30	0.30-0.60	0.40-0.80
		Hard rubber			30	15-30	0.30-0.60	0.40-0.80
S	High temp. alloys	Fe based Annealed		200	31			
				280	32			
		Ni or Co based Annealed		250	33			
				350	34			
				320	35			
	Titanium, Ti alloys		Rm 400		36	6-15	0.12-0.20	0.15-0.30
		Alpha+beta alloys cured	Rm 1050		37	6-15	0.12-0.20	0.15-0.30
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the materials & grades "material conversion table"

Steel Stainless steel Cast iron Nonferrous High temp. alloys Hardened steel

Recommended Cutting Conditions



Machining data for TM-REAM - Through hole

ISO	Material	Condition	Material No.	Through hole		Interrupted through Hole		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	1	TT9030	BL	TT9030	BL
		>=0.25%C	Annealed	2	Vc = 80 - 200		Vc = 60 - 120	
		<0.55%C	Quenched and tempered	3	B4 - B6	fz = 0.08 - 0.21	B4 - B6	fz = 0.08 - 0.21
		>=0.55%C	Annealed	4				
			Quenched and tempered	5	B7 - B9	fz = 0.12 - 0.27	B7 - B9	fz = 0.09 - 0.21
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	6	TT9030	BL	TT9030	BL	
		Quenched and tempered	7	Vc = 80 - 200		Vc = 60 - 120		
			8	B4 - B6	fz = 0.08 - 0.21	B4 - B6	fz = 0.08 - 0.21	
			9	B7 - B9	fz = 0.12 - 0.27	B7 - B9	fz = 0.09 - 0.21	
	High alloy steel, cast steel and tool steel	Annealed	10	TT9030	BL	TT9030	BL	
		Quenched and tempered	11	Vc = 20 - 60		Vc = 20 - 60		
			B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11		
			B7 - B9	fz = 0.07 - 0.17	B7 - B9	fz = 0.05 - 0.14		
M	Stainless steel and cast steel	Ferritic / martensitic	12	TT9030	BL	TT9030	BL	
			Vc = 20 - 40		Vc = 20 - 40			
		Martensitic	13	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11	
		Austenitic	14	B7 - B9	fz = 0.07 - 0.17	B7 - B9	fz = 0.05 - 0.14	
K	Gray cast iron (GG)	Ferritic	15	TT9030	BL	TT9030	BL	
			Vc = 120 - 220		Vc = 80 - 200			
		Pearlitic	16	B4 - B6	fz = 0.08 - 0.18	B4 - B6	fz = 0.05 - 0.13	
	Cast iron nodular (GGG)			B7 - B9	fz = 0.10 - 0.24	B7 - B9	fz = 0.07 - 0.17	
		Ferritic	17	TT9030	AS or BL	TT9030	BL	
			Vc = 160 - 280		Vc = 150 - 250			
		Pearlitic	18	B4 - B6	fz = 0.11 - 0.20	B4 - B6	fz = 0.06 - 0.15	
	Malleable cast iron			B7 - B9	fz = 0.11 - 0.24	B7 - B9	fz = 0.08 - 0.19	
		Ferritic	19	TT9030	AS or BL	TT9030	BL	
		Vc = 100 - 220		Vc = 100 - 220				
Pearlitic		20	B4 - B6	fz = 0.11 - 0.20	B4 - B6	fz = 0.06 - 0.15		
			B7 - B9	fz = 0.11 - 0.24	B7 - B9	fz = 0.08 - 0.20		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for TM-REAM - Through hole

ISO	Material		Condition	Material No.	Through hole		Interrupted through Hole			
N	Aluminum - Wrought alloy		Not cureable	21	B7 - B9	BL or GS	TTAL10	BL		
			Cured	22	Vc = 150 - 400		Vc = 150 - 400			
	Aluminum-cast, alloyed	<=12% Si	Not cureable	23	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.08 - 0.16		
			Cured	24						
		>12% Si	High temp.	25	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		
	Copper alloys	>1% Pb	Free cutting	26	TT9030	BL	TT9030	BL		
				Vc = 50 - 200		Vc = 50 - 200				
			Brass	27	B4 - B6	fz = 0.08 - 0.18	B4 - B6	fz = 0.05 - 0.13		
		Electrolitic copper	28	B7 - B9	fz = 0.10 - 0.23	B7 - B9	fz = 0.07 - 0.16			
	Non-metallic		Duroplastics, fiber plastics	29	TT9030	AS	TT9030	AS		
				Vc = 25 - 80		Vc = 25 - 80				
			Hard rubber	30	B4 - B6	fz = 0.05 - 0.10	B4 - B6	fz = 0.05 - 0.10		
					B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *		
			Cured	32	Vc = 15 - 50		Vc = 15 - 50			
		Ni or Co based	Annealed	33						
			Cured	34	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08		
			Cast	35	B7 - B9		fz = 0.05 - 0.13		B4 - B6	
	Titanium, Ti alloys		36							
		Alpha+beta alloys cured	37							
H	Hardened steel	Hardened	38	TT9030	BL	TT9030	BL			
		Hardened	39	Vc = 25 - 50		Vc = 25 - 50				
	Chilled cast iron	Cast	40	B4 - B6	fz = 0.06 - 0.15	B4 - B6	fz = 0.06 - 0.15			
	Cast iron nodular	Hardened	41	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20			

* Standard edge geometries are not suitable for reaming titanium and high temperature alloys.

In order to choose a proper geometry, please ask for our recommendations.

- The given cutting data recommendations refer to the short holders (3xD effective reaming overhang). For longer holders, the cutting speed to be reduced proportionally.
- For relatively large leading angles (spot-facing geometries), the feed to be reduced up to 30%.
- All the given cutting data recommendations refer to the machines with spindle through coolant supply.

Legend:

Grade	→	TT9030	BL	←	Cutting geometry
Cutting speed (m/min)	→	Vc = 10 - 20		←	Feed (mm/tooth)
TM-REAM head size	→	B4-B6	fz = 0.04 - 0.15	←	
	→	B7-B9	fz = 0.05 - 0.20	←	

Recommended Cutting Conditions



Machining data for TM-REAM - Blind hole

ISO	Material	Condition	Material No.	Blind hole		Interrupted blind hole		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	1	TT9030	AS	TT9030	AS
		>=0.25%C	Annealed	2	Vc = 60-160		Vc = 60 - 120	
		<0.55%C	Quenched and tempered	3	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15
		>=0.55%C	Annealed	4				
			Quenched and tempered	5	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	6	TT9030	AS	TT9030	AS	
		Quenched and tempered	7	Vc = 60-160		Vc = 60 - 120		
			8	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15	
		9	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16		
	High alloy steel, cast steel and tool steel	Annealed	10	TT9030	AS	TT9030	AS	
		Quenched and tempered		Vc = 20 - 60		Vc = 20 - 60		
			B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08		
M	Stainless steel and cast steel	Ferritic / martensitic	12	TT9030	AS	TT9030	AS	
				Vc = 20 - 40		Vc = 20 - 40		
		Martensitic	13	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08	
		Austenitic	14	B7 - B9	fz = 0.05 - 0.13	B7 - B9	fz = 0.05 - 0.10	
K	Gray cast iron (GG)	Ferritic	15	TT9030	AS	TT9030	AS	
				Vc = 80 - 200		Vc = 60 - 120		
		Pearlitic	16	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.13	
	Cast iron nodular (GGG)			B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18	
		Ferritic	17	TT9030	AS	TT9030	AS	
				Vc = 160 - 280		Vc = 160 - 240		
	Malleable cast iron	Pearlitic	18	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.06 - 0.16	
				B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18	
		Ferritic	19	TT9030	AS	TT9030	AS	
			Vc = 100 - 220		Vc = 100 - 220			
	Pearlitic	20	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15		
			B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.20		

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous
 ■ High temp. alloys
 ■ Hardened steel

Recommended Cutting Conditions



Machining data for TM-REAM - Blind hole

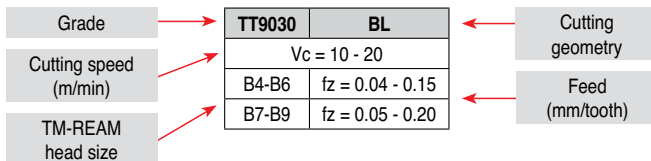
ISO	Material		Condition	Material No.	Blind hole		Interrupted blind hole	
N	Aluminum - Wrought alloy		Not cureable	21	TTAL10	GS or AS	TTAL10	GS or AS
			Cured	22	Vc = 150 - 400		Vc = 150 - 300	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	23	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.07 - 0.15
			Cured	24				
		>12% Si	High temp.	25	B7 - B9	fz = 0.11 - 0.20	B7 - B9	fz = 0.11 - 0.20
	Copper alloys	>1% Pb	Free cutting	26	TT9030	AS	TT9030	AS
			Vc = 50 - 200		Vc = 50 - 200			
		Brass	27	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.08 - 0.16	
	Electrolitic copper	28	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		
	Non-metallic		Duroplastics, fiber plastics	29	TT9030	AS	TT9030	AS
			Vc = 25 - 80		Vc = 25 - 80			
			Hard rubber	30	B4 - B6	fz = 0.05 - 0.10	B4 - B6	fz = 0.05 - 0.10
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *
			Cured	32	Vc = 15 - 50		Vc = 15 - 50	
		Ni or Co based	Annealed	33				
			Cured	34				
			Cast	35	B7 - B9		fz = 0.04 - 0.11	
	Titanium, Ti alloys		36					
		Alpha+beta alloys cured	37					
H	Hardened steel		Hardened	38	TT9030	AS	TT9030	AS
			Hardened	39	Vc = 25 - 50		Vc = 25 - 50	
	Chilled cast iron		Cast	40	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.05 - 0.13
	Cast iron nodular		Hardened	41	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20

* Standard edge geometries are not suitable for reaming titanium and high temperature alloys.

In order to choose a proper geometry, please ask for our recommendations.

- The given cutting data recommendations refer to the short holders (3xD effective reaming overhang). For longer holders, the cutting speed to be reduced proportionally.
- For relatively large leading angles (spot-facing geometries), the feed to be reduced up to 30%.
- All the given cutting data recommendations refer to the machines with spindle through coolant supply.

Legend:



Recommended Cutting Conditions



Machining data for TB-REAM

			Lead A (15°/3°) (Reaming allowance: 0.1 ~ 0.3)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				
ISO	Material	Material No.			Carbide	Coated carbide	Cermet	PCD	CBN
P	Non-alloy steel and cast steel, free cutting steel	1 - 5	0.1-0.4	6	40-60	60-80	110-160		
	Low alloy steel and cast steel (Less than 5% of alloying elements)	6 - 9	0.1-0.4	6	20-40	40-60	110-160		
	High alloyed steel, cast steel and tool steel	10 - 11	0.1-0.4	6	20-40	20-60	20-60		
M	Stainless steel, cast steel	12 - 14	0.1-0.3	12	20-40	40-60	20-60		
K	Grey cast iron (GG)	15 - 16	0.1-0.3	0 / 6	40-60	60-100			Please ask
	Cast iron nodular (GGG)	17 - 18	0.1-0.3	0 / 6	40-60	60-100			
	Malleable cast iron	19 - 20	0.1-0.3	0 / 6	40-60	60-100			
N	Aluminum wrought alloy	21 - 22						Please ask	
	Aluminum-cast, alloyed	23 - 25							
	Copper alloys	26 - 28							
	Non-metallic	29 - 30							

			Lead C (75°) (Reaming allowance: 0.2~ 0.4)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				
ISO	Material	Material No.			Carbide	Coated carbide	Cermet	PCD	CBN
P	Non-alloy steel and cast steel, free cutting steel	1 - 5							
	Low alloy steel and cast steel (Less than 5% of alloying elements)	6 - 9							
	High alloyed steel, cast steel and tool steel	10 - 11							
M	Stainless steel, cast steel	12 - 14							Please ask
K	Grey cast iron (GG)	15 - 16							
	Cast iron nodular (GGG)	17 - 18							
	Malleable cast iron	19 - 20							
N	Aluminum wrought alloy	21 - 22	0.15-0.3	12	150-250			Please ask	
	Aluminum-cast, alloyed	23 - 25	0.15-0.3	12	150-250				
	Copper alloys	26 - 28							
	Non-metallic	29 - 30							

• The cutting conditions in the table below should be used to start a new application.
Optimal conditions for a specific application should be evaluated by examining the results and changing the machining conditions accordingly.

• For more information of material groups, see the materials & grades "material conversion table"

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous

Recommended Cutting Conditions



Machining data for TB-REAM

			Lead B (30°/3°) (Reaming allowance: 0.1 ~ 0.3)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				
ISO	Material	Material No.			Carbide	Coated carbide	Cermet	PCD	CBN
P	Non-alloy steel and cast steel, free cutting steel	1 - 5	0.1-0.4	6	60-80	80-120	110-160		
	Low alloy steel and cast steel (Less than 5% of alloying elements)	6 - 9	0.1-0.4	6	60-80	80-120	110-160		
	High alloyed steel, cast steel and tool steel	10 - 11	0.1-0.4	6	40-60	40-80	40-80		
M	Stainless steel, cast steel	12 - 14	0.1-0.3	12	40-60	60-80	60-80		
K	Grey cast iron (GG)	15 - 16	0.1-0.3	0 / 6	60-80	80-120			Please ask
	Cast iron nodular (GGG)	17 - 18	0.1-0.3	0 / 6	60-80	80-120			
	Malleable cast iron	19 - 20	0.1-0.3	0 / 6	60-80	80-120			
N	Aluminum wrought alloy	21 - 22		12	160-200			Please ask	
	Aluminum-cast, alloyed	23 - 25		12	160-200				
	Copper alloys	26 - 28		0	80-100				
	Non-metallic	29 - 30		0	10-70				

			Lead D (30°/3°) (Reaming allowance: 0.1 ~ 0.2)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				
ISO	Material	Material No.			Carbide	Coated carbide	Cermet	PCD	CBN
P	Non-alloy steel and cast steel, free cutting steel	1 - 5	0.1-0.4	6	60-80	80-120	110-160		
	Low alloy steel and cast steel (Less than 5% of alloying elements)	6 - 9	0.1-0.4	6	60-80	80-120	110-160		
	High alloyed steel, cast steel and tool steel	10 - 11	0.1-0.4	6	40-60	40-80	40-80		
M	Stainless steel, cast steel	12 - 14	0.1-0.3	12	40-60	60-80	60-80		
K	Grey cast iron (GG)	15 - 16	0.1-0.3	0 / 6	60-80	80-120			Please ask
	Cast iron nodular (GGG)	17 - 18	0.1-0.3	0 / 6	60-80	80-120			
	Malleable cast iron	19 - 20	0.1-0.3	0 / 6	60-80	80-120			
N	Aluminum wrought alloy	21 - 22		12	110-200			Please ask	
	Aluminum-cast, alloyed	23 - 25		12	160-200				
	Copper alloys	26 - 28		0	80-100				
	Non-metallic	29 - 30							

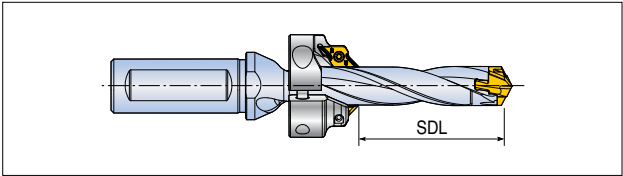
- The cutting conditions in the table below should be used to start a new application.
Optimal conditions for a specific application should be evaluated by examining the results and changing the machining conditions accordingly.
 - For more information of material groups, see the materials & grades "material conversion table"
- Steel

Stainless steel

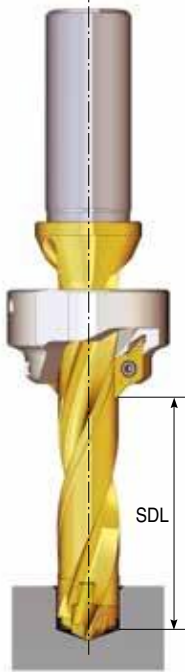
Cast iron

Nonferrous

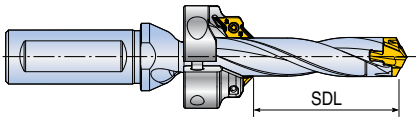
► Chamfering ring designation - DRILL-RUSH



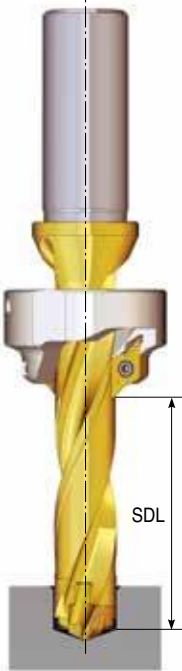
	Designation	CFR designation	SDL	
			min	max
3D	TCD 130-134-16T3/S0-3D	CFR D130-A45	19	19
	135-139-16T3/S0-3D	CFR D135-A45	19	20
	140-144-16T3/S0-3D	CFR D140-A45	21	22
	145-149-16T3/S0-3D	CFR D145-A45	22	23
	150-159-20T3/S0-3D	CFR D150-A45	23	23
	160-169-20T3/S0-3D	CFR D160-A45	24	25
	170-179-20T3/S0-3D	CFR D170-A45	26	28
	180-189-25T2/S0-3D	CFR D180-A45	27	30
	190-199-25T2/S0-3D	CFR D190-A45	29	33
	200-209-25T2/S0-3D	CFR D200-A45	30	36
	210-219-25T2/S0-3D	CFR D210-A45	32	39
	220-229-25T2/S0-3D	CFR D220-A45	33	42
	230-239-32T2/S0-3D	CFR D230-A45	35	45
	240-249-32T2/S0-3D	CFR D240-A45	36	48
	250-259-32T2/S0-3D	CFR D250-A45	38	51
5D	TCD 100-104-16T3/S0-5D	CFR D100-A45	28	28
	105-109-16T3/S0-5D	CFR D105-A45	29	30
	110-114-16T3/S0-5D	CFR D110-A45	31	33
	115-119-16T3/S0-5D	CFR D115-A45	32	35
	120-124-16T3/S0-5D	CFR D120-A45	33	45
	125-129-16T3/S0-5D	CFR D125-A45	34	40
	130-134-16T3/S0-5D	CFR D130-A45	36	43
	135-139-16T3/S0-5D	CFR D135-A45	37	43
	140-144-16T3/S0-5D	CFR D140-A45	38	48
	145-149-16T3/S0-5D	CFR D145-A45	39	48
	150-159-20T3/S0-5D	CFR D150-A45	41	53
	160-169-20T3/S0-5D	CFR D160-A45	43	58
	170-179-20T3/S0-5D	CFR D170-A45	46	63
	180-189-25T2/S0-5D	CFR D180-A45	48	68
	190-199-25T2/S0-5D	CFR D190-A45	51	73
	200-209-25T2/S0-5D	CFR D200-A45	53	78
	210-219-25T2/S0-5D	CFR D210-A45	56	79
	220-229-25T2/S0-5D	CFR D220-A45	58	84
	230-239-32T2/S0-5D	CFR D230-A45	61	89
	240-249-32T2/S0-5D	CFR D240-A45	63	94
	250-259-32T2/S0-5D	CFR D250-A45	66	99



► Chamfering ring designatation - DRILL-RUSH



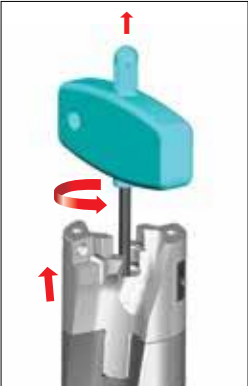
	Designation	CFR designation	SDL	
			min	max
8D	TCD 100-104-16T3/S0-8D	CFR D100-A45	45	58
	105-109-16T3/S0-8D	CFR D105-A45	49	62
	110-114-16T3/S0-8D	CFR D110-A45	49	66
	115-119-16T3/S0-8D	CFR D115-A45	53	70
	120-124-16T3/S0-8D	CFR D120-A45	53	74
	125-129-16T3/S0-8D	CFR D125-A45	57	78
	130-134-16T3/S0-8D	CFR D130-A45	57	82
	135-139-16T3/S0-8D	CFR D135-A45	61	84
	140-144-16T3/S0-8D	CFR D140-A45	61	88
	145-149-16T3/S0-8D	CFR D145-A45	65	92
	150-159-20T3/S0-8D	CFR D150-A45	65	96
	160-169-20T3/S0-8D	CFR D160-A45	69	103
	170-179-20T3/S0-8D	CFR D170-A45	73	111
	180-189-25T2/S0-8D	CFR D180-A45	77	118
	190-199-25T2/S0-8D	CFR D190-A45	81	126
	200-209-25T2/S0-8D	CFR D200-A45	85	134
	210-219-25T2/S0-8D	CFR D210-A45	89	142
	220-229-25T2/S0-8D	CFR D220-A45	93	150
	230-239-32T2/S0-8D	CFR D230-A45	97	158
	240-249-32T2/S0-8D	CFR D240-A45	101	166
	250-259-32T2/S0-8D	CFR D250-A45	105	174
12D	TCD 120-124-16S0-12D	CFR D120-A45	87	121
	125-129-16S0-12D	CFR D125-A45	90	127
	130-134-16S0-12D	CFR D130-A45	93	133
	135-139-16S0-12D	CFR D135-A45	96	137
	140-144-16S0-12D	CFR D140-A45	99	143
	145-149-16S0-12D	CFR D145-A45	102	149
	150-159-20S0-12D	CFR D150-A45	105	155
	160-169-20S0-12D	CFR D160-A45	111	166
	170-179-20S0-12D	CFR D170-A45	117	178
	180-189-25S0-12D	CFR D180-A45	123	189
	190-199-25S0-12D	CFR D190-A45	129	201
	200-209-25S0-12D	CFR D200-A45	135	213
	210-219-25S0-12D	CFR D210-A45	141	225
	220-229-25S0-12D	CFR D220-A45	147	237



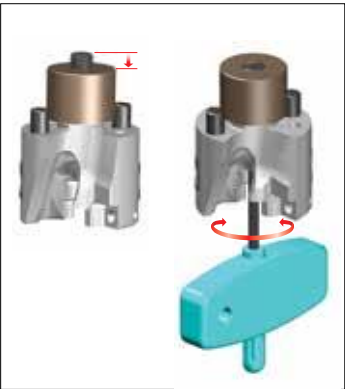
Technical drawing of a crane hook assembly. The drawing shows a hook with a rope passing through it. A dimension line labeled 'SDL' indicates the distance from the hook's center to the rope's center.

► Modular head replacement instructions

1. Remove both outer inserts, then remove the center drill head.
(When clamping, go in the reverse order)
2. Use a wrench to turn the screw counter-clock-wise to remove the modular head.
3. Insert the setting gauge into the bottom of the disconnected modular head.

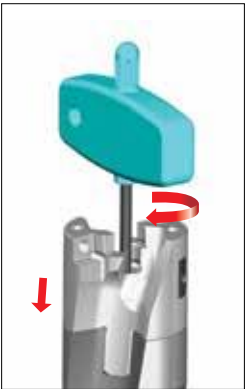


4. Rotate the screw to adjust to the same height with the setting gauge.
5. Remove the height adjusted modular head from the setting gauge and attach it to the holder.



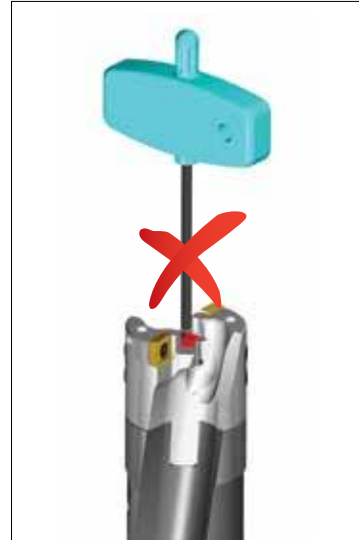
Setting gauge

Drill dia.	Designation
D26-D29	SG TNDH D26-29-TP
D30-D35	SG TNDH D30-35-TP
D36-D39	SG TNDH D36-39-TP
D40-D43	SG TNDH D40-43-TP
D44-D50	SG TNDH D44-50-TP



► Modular head disassembly in the event of center drill damage

If the modular head cannot be unclamped due to center drill damage, insert the wrench into the rear section of the shank. Then, turn it clock-wise to disassemble the modular head.



Damaged center drill



- Disassembling wrench and handle are included with the modular drill holder. (MDB Dxx/xx...)

Technical Data

► Hole tolerance

Diameter D(mm)		Tolerance (μm)															
>D	≤D	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7
—	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0
3	6	+180 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0
14	18																
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0
24	30																
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0
40	50																
50	65	+310 +190	+214 +140	+260 +140	+146 +100	+174 +100	+220 +146	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0
65	80																

Technical Data

► Hole tolerance

Tolerance (μm)																	
H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7
+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	—	-18 -28	-20 -30
+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	—	-19 -31	-24 -36
+22 0	+36 0	+58 0	±4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	—	-22 -37	-28 -43
+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	—	-26 -44	-33 -51 -38 -56
+33 0	+52 0	+84 0	±6.5	±10.5	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	—	-33 -54	-46 -67
+39 0	+62 0	+100 0	±8	±12.5	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	—	-39 -64	-51 -76
+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60	-42 -72	-55 -85	-76 -106	—

► Specific dimensions

Through ☐Blind ☐
ØD1 _____ L1 _____
α1 _____ S _____
•Hole tolerance _____

Through ☐Blind ☐
ØD1 _____ ØD2 _____
L1 _____ L2 _____
α1 _____
•Hole tolerance _____

Through ☐Blind ☐
ØD1 _____ ØD2 _____
L1 _____ L2 _____
α1 _____ α2 _____
S _____
•Hole tolerance _____

Comment

Drill type

•TOPDRILL ☐

•T-DRILL ☐

Technical data

•Machine type

MCT ☐ Lathe ☐

Vertical ☐ Horizontal ☐

Machine name _____

Power _____ kW

•Coolant supply

Internal ☐ External ☐

Coolant pressure _____ bar

Coolant type _____

Workpiece

•Part _____

•Material _____

•Hardness _____

Shank type

Cylindrical shank (ISO 9766)

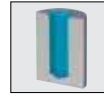
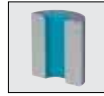
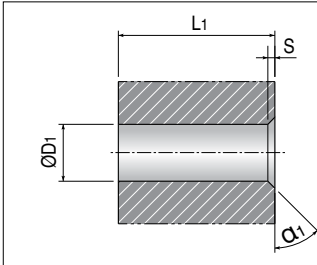
Whistle notch shank

Cylindrical with flat type

Weldon shank

Tailor-made Order Form

► Specific dimensions



Through ☐

Blind ☐

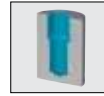
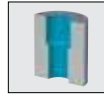
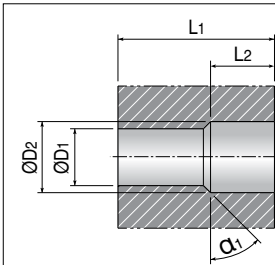
ØD1 _____

L1 _____

α1 _____

S _____

•Hole tolerance _____



Through ☐

Blind ☐

ØD1 _____

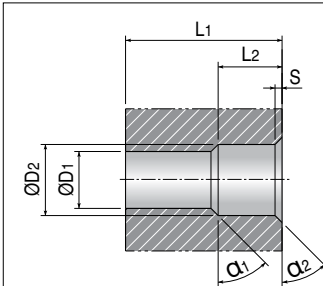
ØD2 _____

L1 _____

L2 _____

α1 _____

•Hole tolerance _____



Through ☐

Blind ☐

ØD1 _____

ØD2 _____

L1 _____

L2 _____

α1 _____

α2 _____

S _____

•Hole tolerance _____

Comment

Technical data

•Machine type

MCT ☐ Lathe ☐

Vertical ☐ Horizontal ☐

Machine name _____

Power _____ kW

•Coolant supply

Internal ☐ External ☐

Coolant pressure _____ bar

Coolant type _____

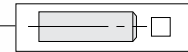
Workpiece

•Part

•Material

•Hardness

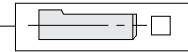
Shank type



Cylindrical shank (ISO 9766)



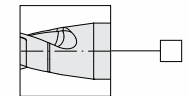
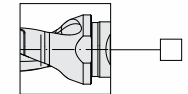
Whistle notch shank



Cylindrical with flat type



Weldon shank



•Shank dia: _____

•Shank length: _____

► Specific dimensions

• DC, DC_2 would be hole dimensions and please note hole tolerance if possible.

Technical data

- Machine type
 - MCT ☐ Lathe ☐
 - Vertical ☐ Horizontal ☐
 - Machine name _____
 - Power _____ kW
- Coolant supply
 - Internal ☐ External ☐
 - Coolant pressure _____ bar
 - Coolant type _____

Workpiece

- Part _____
- Material _____
- Hardness _____

Hole type

- Blind hole ☐
- Through hole ☐

Coating

- TiAlN ☐
- Non-coated ☐

Shank type

- Cylindrical shank
- Whistle notch shank
- Cylindrical with flat type
- Weldon shank

Comment

Tailor-made Order Form



► Deep hole drilling order form

★ : Mandatory data field

Company name :	Inquiry number :
Address :	Inquiry date :
Contact person :	Customer No :

Workpiece (If possible, please attach a drawing)	
Product name	
Hole diameter (ø)	(mm)
Hole depth (drilling length)	(mm)
No. of holes	
Tolerance (of hole)	
Surface finish (Rz, Ra...)	
Deviation (mm/100)	
Straightness (mm/100)	
Material	
Material (DIN, AISI, JIS...)	
Hardness (HB, HS, HRC...)	
Condition ★	☐ Annealed ☐ Quenched ☐ Tempered
	☐ Cast ☐
	☐ Other ☐

Machine	
Machine supplier name	
Machine type/model	
Rigidity	☐ Good ☐ Normal ☐ Bad
Date of manufacture	
Retrofitted	☐ NC lathe ☐ M/C ☐ Other
Double rotation (TR/WR)	☐ Tool and workpiece
Rotating workpiece (WR)	☐
Rotating tool (TR)	☐
Safety devices	
Motor power	(kW)

Type of coolant	
Coolant supplier name	
Water based	☐ Soluble ☐ Emulsion %
Oil based	☐
Coolant pressure	(bar)
Coolant volume	(L/min)

► Deep hole drilling order form

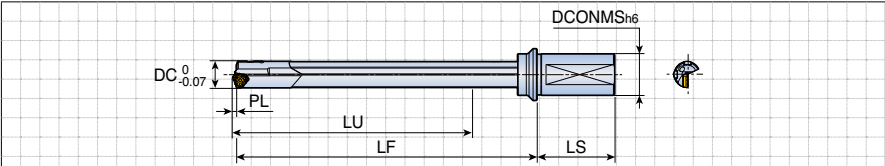
★: Mandatory data field

Tool (Drill head)			
Drill diameter(ϕ)	(mm)		
Thread	☐ Inner	☐ Outer	
Brazed	☐		
Indexable	☐ Adjustable	☐ Direct mount	☐
Coating	☐ Coated	☐ Uncoated	
Coating type	☐ TiN	☐ TiAlN	☐ Other
• Solid drilling	☐		
• Counterboring	☐		
Cutting angle★	☐ 20°	☐ 45°	
Brazed indexable	☐ Nomal angle	☐ Close angle	
Pre-bored size(per side)	(mm)		
Bottom finishing★	☐ Fullball R	☐ Flatbottom R	☐ Corner R
	☐ Compound R		
• Trepanning	☐		
Core size(ϕ)	(mm)		☐
Tube inner dia(ϕ)	(mm)		
Tube outer dia(ϕ)	(mm)		
Tube			
Outside dia(ϕ)	(mm)		
Total length(L)	(mm)		
Internal thread	☐		
External thread	☐ 4 Starts	☐ 2 Starts	☐ 1 Starts
Tube thread	☐ 1 end	☐ Both ends	
Inner tube length	(mm)		
Inner tube slit	☐ 1 end	☐ Both ends	
Drilling system			
Single tube system	☐	STS	
Double tube system	☐	DTS	
Boring conditions			
Through hole drilling	☐		
Blind hole drilling	☐		
Cross hole drilling★	☐		

★ Please sketch your drilling application

General information		Production	
Quantity per year:			
Present performance status:			
grade, tool life, etc:			
Cutting data:	Vc=	m/min,	N=
	f=	mm/rev,	F=
			rpm
			mm/min

► Deep hole drilling order form



Sketch of drilling application

• Note: It may be necessary to change several of the parameters that you indicated based on our experience with your application.

Tool	
Quantity	
Nominal diameter and tolerance	
- Please fill in dimensions on the sketch above.	
Driver	
Code No	

- For standard drivers, please use codes from next pages and for special drivers, please attach sketch and specifications.

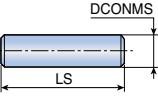
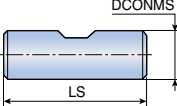
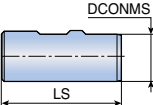
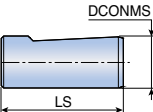
Workpiece (If possible, please attach a drawing)					
Material description (DIN material number or any other standard)					
Hardness and properties					
Hole type	☐ Blind hole ☐ Through hole ☐ Drilling into pre-hole ☐ Angled entry ☐ Drilling into solid ☐ Boring ☐ Angled exit				
Drilling depth	mm				
Hole tolerance					
Application	<table><tr><td>Workpiece</td><td>☐ Stationary ☐ Rotating</td></tr><tr><td>Tool</td><td>☐ Stationary ☐ Rotating</td></tr></table>	Workpiece	☐ Stationary ☐ Rotating	Tool	☐ Stationary ☐ Rotating
Workpiece	☐ Stationary ☐ Rotating				
Tool	☐ Stationary ☐ Rotating				

Machine			
Machine type			
Power		kW	
Cutting data	Cutting speed (Vc)	m/min	
	Revolutions	Nmin : RPM	Nmax : RPM
	Feed	Fmin : mm/rev	Fmin : mm/rev
	Feed rate (VF)	mm/min	
Coolant	Coolant type	☐ Oil ☐ Soluble oil ☐ Other	
	Coolant pressure	Bar	
	Coolant volume	liter/min	

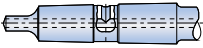
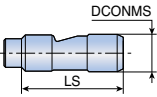
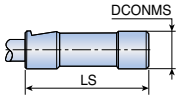
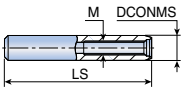
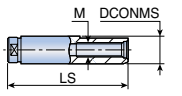
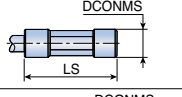
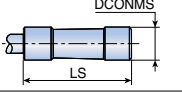
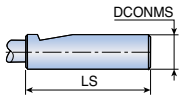
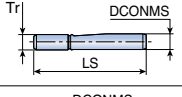
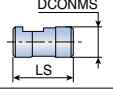
► Standard gundrill drivers for machining centers and lathes

Drivers

Drivers are available for dedicated and CNC machines as well as any specified diameter or length. Please note that the driver codes and technical data can be found in the chart below.

Driver type	Drawing	DCONMS x LS	Driver code
Cylindrical DIN1835A DIN6535HA		20x50	10
		25x56	11
		32x60	12
		40x70	13
		.75x2.03"	95
		1.00x2.28"	96
		1.25x2.28"	97
Weldon DIN1835B DIN6535HB	 	20x50	22
		25x56	23
		32x60	24
		40x70	25
		.75x2.03"	99
		1.00x2.28"	100
		1.25x2.28"	101
Whistle notch DIN1835E		20x50	34
		25x56	35
		32x60	36
		40x70	37

► Standard drivers for gundrill machines

Driver type	Drawing	DCONMS x LS	Driver code
DIN228AK		CM2	46
		CM3	47
		CM4	48
DIN228BK		CM2	50
		CM3	51
		CM4	52
Central clamping surface 15°		.750x2.75"	56
		25x70	57
		1.00x2.75"	58
		1.25x2.75"	59
		1.50x2.75"	60
Frontal clamping surface 15°		16x50	61
Cylindrical with thread		25x100 M16x1.5	66
		36x120 M24x1.5	67
VDI design		25x112 M16x1.5	70
		36x135 M24x1.5	71
Central clamping hexagonal		25x70	72
		32x70	73
Central clamping tapered		.75x2.75"	76
		20x70	77
Frontal clamping surface 2°		1.00x2.75"	80
		1.00x3.94"	81
		1.25x2.75"	82
		1.25x3.94"	83
		1.50x2.75"	84
		1.50x3.94"	85
Trapezoidal thread		28x126 Tr 28x2	88
		36x162 Tr 36x2	89
Spraymist driver		25x50	91
		35x60	92

► Reamer order form

★ : Mandatory data field

Date: _____ Subsidiary: _____

Company ★ : _____ Enquiry dead line: _____

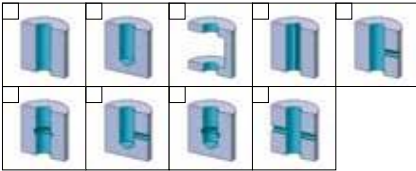
Contact person: _____

Address: _____

Request reason	
New tool ☐	Problem ☐
Quality	
Cycle time	
Alternative supplier	
Other	

Existing tool	
Maker	
Tool type	
Speed & Feed	
Tool life	
No of teeth	
Coolant type	

Machine	
Model	
Type ★	vertical ☐ horizontal ☐ multi-spindle ☐
Adaption ★	
Max RPM	
Power	
Spindle accuracy	
Coolant	

Workpiece	
Description ★	
Hardness ★	
Pre-hole size ★	(Tolerance : _____)
Depth ★	
Bore type	
	
Clamping information	

Lubricant	
Oil	☐
MQL	☐
Emulsion	☐
Ratio of mixture	
Coolant pressure	

Quality requirement	
Tolerance ★	
Surface finish(Ra) ★	
Roundness	
Straightness	
Cylindricity	
Concentricity	

Tool	
Type ★	TM(Index multi-edge) ☐ TB(Single blade) ☐ TS(Solid) ☐ Other ☐ (_____)
Diameter ★	
Depth of cut ★	
Coolant ★	Internal ☐ External ☐
Shank type ★	
Holder type	Collet ☐ Hydraulic ☐ Other ☐
Adjustable adaptor	Yes ☐ No ☐