

HOLEMAKING



Contents

HOLEMAKING

contents



Tool Selection Guide	D4
Grades	D12
Holemaking Toolholders	
TOPDRILL Holder (TOP)	D14
T-DRILL Holder (TDR)	D26
DRILLRUSH Holder (TCD)	D48
DRILLRUSH for Pre-Thread Hole (TCD...M)	D57
Chamfering Tool (CFR)	D58
H-DRILL (Solid Carbide Drill) (SHO/SHD)	D59
Solid Pre-Thread Drill (SHO...M)	D73
T-CHAMFER Holder (T-CHAMFER)	D74
TOPCAP Holder (TCAP)	D76
T-DEEP Holder (TBTA/BTA/BTS/HFD)	D82
Holemaking Inserts	
TOPDRILL Insert (SOMT)	D125
T-DRILL Insert (SPMG/SPGG)	D125
DRILLRUSH Head (TCD)	D127
DRILLRUSH for Pre-Thread Chamfering Insert (AOMT) / Chamfering Tool Insert (CRNG)	D131
T-CHAMFER Tool Insert (XCGT)	D132

• For more technical information, see TaeguTec technical guide part TD

Guide to Icons



➤ External Coolant



➤ Internal Coolant



➤ Through Hole



➤ Blind Hole



➤ Tube Page



➤ Head Page



➤ Pad Page



➤ Cartridge Page



➤ Insert Page



➤ Drill Body & Deep Drill Head Page



➤ Assembly Page



➤ Technical Guide Page








➤ Cutting Condition Page



TOPCAP Insert (XCGT/XCMT)	D133
T-DEEP Insert (NPHT/ NPMT/ NPMX/ TPMX/ XPMT)	D135
T-DEEP Guide Pad (PAD)	D139
T-DEEP Cartridge (PERC/CENC)	D142
Recommended Cutting Conditions (Holemaking)	D144
Reaming Toolholders & Inserts	
TS-REAMER (Solid Reamer) (TS)	D167
TM-REAMER Holder (TM)	D169
TB-REAMER Holder (TB)	D171
TM-REAMER Head (TM)	D174
TB-REAMER Blade (TB)	D176
Recommended Cutting Conditions (Reaming)	D177







Tool Selection Guide

Drilling

Series		Indexable drill				
		TOPDRILL	T-DRILL		T-DEEP	
		<u>TOP 2/3/4/5</u>	<u>TDR 2/3/4/5</u>	<u>TDR 2.5/3.5</u>	<u>HFD</u>	
Pages		D14 - D25	D26 - D38	D39 - D42	D122 - D123	
Dc(mm)		Ø14.0 - Ø50.0	Ø12.5 - Ø50.0	Ø51.0 - Ø80.0	Ø30.0 - Ø69.0	
Drill depth(L/D)		2, 3, 4, 5 x Dc	2, 3, 4, 5 x Dc	2.5, 3.5 x Dc	6-14 x Dc	
Hole tolerance		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	

Tool Selection Guide

Drilling

Head changeable drill		Solid carbide drill			Multi-function tool
BRILL-RUSH		H-DRILL			TOPCAP
TCD	TCD...-M	SHD 3/5 SHD 3/5	SHD 10/15/20	SHD...-M	TCAP
					
D48 - D56	D57	D59 - D72	D66	D73	D76 - D77
Ø7.0 - Ø25.9	M10 - M24 (ISO)	Ø3.0 - Ø20.0	Ø4.0 - Ø10.0	M4 - M10 (ISO)	Ø8.0 - Ø32.0
1.5, 3, 5, 8, 12 x Dc		3, 5 x Dc	10, 15, 20 x Dc		2.25, 3 x Dc
IT 8-10	IT 8-10	IT 8-10	IT 8-10	IT 8-10	IT 10-12
●	●	●	●	●	●
●		●			
○		○			●
	●			●	
Internal	Internal	Internal / External	Internal	Internal	Internal

● Recommended, ○ Suitable

Tool Selection Guide

Deep drilling

Series	Indexable deep drill head				
	T-DEEP				
	TBTA3	TBTA5	TBTA7	TBTA9	TBTA-FB
Pages	D82 - D87	D88 - D91	D92 - D94	D95 - D97	D98 - D102
De(mm)	Ø38.00 - Ø106.99	Ø107.00 - Ø168.99	Ø169.00 - Ø232.99	Ø233.00 - Ø291.99	Ø25.00 - Ø65.00
Drill 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	Counter boring head	Brazed deep drill head				
		T-DEEP				
		TBTA-R	BTA-SE4	BTA-DE4	BTS-SE1	BTS-SE4
Pages		D103 - D108	D109 - D110	D111	D112	D112
De(mm)		Ø25.00 - Ø110.99	Ø12.60 - Ø65.00	Ø18.41 - Ø65.00	Ø8.00 - Ø14.79	Ø12.60 - Ø20.00
Drill depth(L/D)		100 x Dc	100 x Dc	100 x Dc	100 x Dc	100 x Dc
Hole tolerance		IT 7 - IT 9	IT 9	IT 9	IT 9	IT 9
Surface finish		1-2µm	2µm	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

Tool Selection Guide

Reaming

Series			Reamer			
			<i>TS-REAM</i>	<i>TM-REAM</i>	<i>TB-REAM</i>	
			TS	TM	TB	
						
Pages			D167 - D168	D169 - D170	D171 - D173	
Do(mm)			Ø3.000 - Ø16.000	Ø11.501 - Ø32.000	Ø8.000 - Ø32.000	
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			External	Internal	Internal	

★ Up to IT 6 tolerance










★★ Up to IT 5 tolerance

• Recommended

Contents

Tool Selection Guide

Drill insert

		TOPDRILL	T-DRILL	DRILL-RUSH	
Series		<u>SOMT</u>	<u>SPMG</u>	<u>TCD-P/M/K</u>	<u>TCD-F</u>
					
Pages		D125	D125 - D126	D127 - D129	D130
Size		05/06/07/08/09 11/13/15	05/06/07/09/11/14	Ø7.0 - Ø25.9(0.1)	Ø8.0 - Ø25.5(0.5)
Chip former		DP	DG, DK, DA	P/M/K	F
Grades		TT9080, TT9300, TT8020	TT9030, TT8020 TT7400, TT6030, K10	TT9080	TT9080
Application	General drilling	 •	•	•	•
	Cross hole drilling	 •	•	•	•
	Irregular surface drilling	 ○	○	○	○
	Interrupted drilling	 ○	○		
	Chamfering				

Tool Selection Guide









Drill insert

DRILL-RUSH	CFR	T-CHAMFER	TOPCAP
<u>AOMT</u>	<u>CRNG</u>	<u>XCGT</u>	<u>XCGT</u> <u>XCMT</u>
			
D131	D131	D132	D133 - D134
06-C45	08-45CD	06/09	04/05/06/07/08 10/13/17
-	-	C30/C45/C60	TA/GV/TC
TT9080	TT9080	TT9050	TT9080, TT8020, TT9030, K10
			•
•	•	•	

● Recommended, ○ Suitable











Tool Selection Guide

Drill insert

			T-DEEP		
			<u>NPHT NPMT</u>	<u>NPMX TPMX</u>	<u>TPMX XPMT</u>
Series					
Pages			D135 - D136	D136 - D137	D137 - D138
Size			05/06/07/08/09/11/12/13	08/14/17/24/28	14/16/17/24
Chip former			RG/LG	RB/RG	LG/-45
Grades			TT9030, TT6020, TT8125	TT9030, TT8125, TT7400, TT9300, TT7100, TT3500	TT9030
Application	General drilling		•	•	•
	Cross hole drilling		○	○	○
	Irregular surface drilling				
	Interrupted drilling				
	Chamfering				

Tool Selection Guide




Reamer head & blade

			TM-REAM	TB-REAM	
Series			TM 	TB 	
Pages			D174 - D175	D176	
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

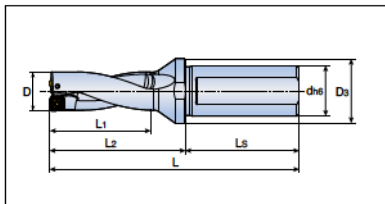
Grades	ISO	Characteristics & applications
 TT9300 CVD carbide	P10 – P25	<ul style="list-style-type: none"> High speed drilling of carbon & alloy steel
 TT6080 PVD carbide	K05 – K25 H05 – H25	<ul style="list-style-type: none"> General machining for gray and ductile cast iron Finish and medium machining of hardened steel
TT8020 PVD carbide	P30 – P50 M30 – M50 S30 – S50	<ul style="list-style-type: none"> Interrupted and rough machining of steel Interrupted and rough machining of stainless steel Low speed and interrupted machining of heat-resistant alloy
TT9030 PVD carbide	P20 – P40 M20 – M40 S20 – S40	<ul style="list-style-type: none"> General machining of steel General machining of stainless steel General machining of heat-resistant alloy
 TT9080 PVD carbide	P20 – P40 M20 – M40 S20 – S40	<ul style="list-style-type: none"> General machining of steel General machining of stainless steel General machining of heat-resistant alloy
K10 Carbide	K05 – K15 N05 – N15 S05 – S15	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> General machining of aluminum alloys and non-ferrous materials General machining of heat-resistant alloy

Holemaking Toolholders



Contents

Indexable drill holder

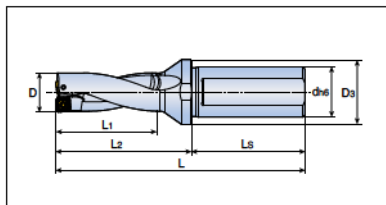


- Drilling depth: 2x diameter

Designation	Dimension (mm)								Insert
	D	d	D ₃	L	L ₁	L ₂	L _s		
TOP 2140-20T2-05	14.0	20	25	96	28	46	50	SOMT 05...DP D125	
2145-20T2-05	14.5	20	25	99	30	49	50		
2150-20T2-05	15.0	20	25	99	30	49	50		
2155-20T2-05	15.5	20	25	102	32	52	50		
2160-20T2-05	16.0	20	25	102	32	52	50	SOMT 06...DP D125	
2165-25T2-06	16.5	25	32	110	34	54	56		
2170-25T2-06	17.0	25	32	110	34	54	56		
2175-25T2-06	17.5	25	32	113	36	57	56		
2180-25T2-06	18.0	25	32	113	36	57	56	SOMT 07...DP D125	
2185-25T2-06	18.5	25	32	115	38	59	56		
2190-25T2-06	19.0	25	32	115	38	59	56		
2195-25T2-07	19.5	25	32	119	40	63	56		
2200-25T2-07	20.0	25	32	119	40	63	56	SOMT 08...DP D125	
2205-25T2-07	20.5	25	32	121	42	65	56		
2210-25T2-07	21.0	25	32	121	42	65	56		
2215-25T2-07	21.5	25	32	123	44	67	56		
2220-25T2-07	22.0	25	32	123	44	67	56	SOMT 09...DP D125	
2225-25T2-08	22.5	25	32	124	46	68	56		
2230-25T2-08	23.0	25	32	124	46	68	56		
2230-32T2-08	23.0	32	40	128	46	68	60		
2235-25T2-08	23.5	25	32	126	48	70	56	SOMT 09...DP D125	
2235-32T2-08	23.5	32	40	130	48	70	60		
2240-25T2-08	24.0	25	32	126	48	70	56		
2240-32T2-08	24.0	32	40	130	48	70	60		
2245-25T2-08	24.5	25	32	128	50	72	56	SOMT 09...DP D125	
2245-32T2-08	24.5	32	40	132	50	72	60		
2250-25T2-08	25.0	25	32	128	50	72	56		
2250-32T2-08	25.0	32	40	132	50	72	60		
2255-25T2-08	25.5	25	32	129	52	73	56	SOMT 09...DP D125	
2255-32T2-08	25.5	32	40	133	52	73	60		
2260-25T2-08	26.0	25	32	129	52	73	56		
2260-32T2-08	26.0	32	40	133	52	73	60		
2265-32T2-09	26.5	32	40	137	54	77	60	SOMT 09...DP D125	
2270-25T2-09	27.0	25	40	133	54	77	56		
2270-32T2-09	27.0	32	40	137	54	77	60		



Indexable drill holder

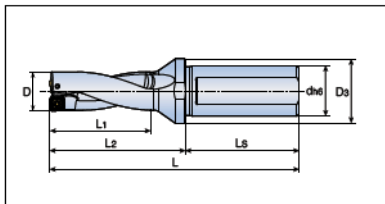


- Drilling depth: 2x diameter

Designation	Dimension (mm)							Insert
	D	d	D ₃	L	L ₁	L ₂	L ₃	
TOP 2275-32T2-09	27.5	32	40	139	56	79	60	SOMT 09...DP D125
2280-25T2-09	28.0	25	40	135	56	79	56	
2280-32T2-09	28.0	32	40	139	56	79	60	
2285-32T2-09	28.5	32	40	141	58	81	60	
2290-25T2-09	29.0	25	40	137	58	81	56	
2290-32T2-09	29.0	32	40	141	58	81	60	
2295-32T2-09	29.5	32	40	143	60	83	60	
2300-32T2-09	30.0	32	40	143	60	83	60	
2305-32T2-09	30.5	32	40	145	62	85	60	
2310-32T2-09	31.0	32	40	145	62	85	60	
2320-32T2-11	32.0	32	40	147	64	87	60	SOMT 11...DP D125
2320-40T2-11	32.0	40	50	157	64	87	70	
2330-32T2-11	33.0	32	40	149	66	89	60	
2330-40T2-11	33.0	40	50	159	66	89	70	
2340-32T2-11	34.0	32	40	151	68	91	60	
2340-40T2-11	34.0	40	50	161	68	91	70	
2350-32T2-11	35.0	32	40	153	70	93	60	
2350-40T2-11	35.0	40	50	163	70	93	70	
2360-32T2-11	36.0	32	40	155	72	95	60	
2360-40T2-11	36.0	40	50	165	72	95	70	
2370-32T2-13	37.0	32	50	162	74	102	60	SOMT 13...DP D125
2370-40T2-13	37.0	40	50	172	74	102	70	
2380-32T2-13	38.0	32	50	164	76	104	60	
2380-40T2-13	38.0	40	50	174	76	104	70	
2390-32T2-13	39.0	32	50	166	78	106	60	
2390-40T2-13	39.0	40	50	176	78	106	70	
2400-32T2-13	40.0	32	50	168	80	108	60	
2400-40T2-13	40.0	40	50	178	80	108	70	
2410-40T2-13	41.0	40	50	180	82	110	70	
2420-40T2-13	42.0	40	50	182	84	112	70	
2430-40T2-13	43.0	40	50	184	86	114	70	



Indexable drill holder



- Drilling depth: 2xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TOP 2440-40T2-15	44.0	40	60	193	88	123	70	SOMT 15...DP D125
2450-40T2-15	45.0	40	60	195	90	125	70	
2460-40T2-15	46.0	40	60	197	92	127	70	
2470-40T2-15	47.0	40	60	199	94	129	70	
2480-40T2-15	48.0	40	60	201	96	131	70	
2490-40T2-15	49.0	40	60	203	98	133	70	
2500-40T2-15	50.0	40	60	205	100	135	70	

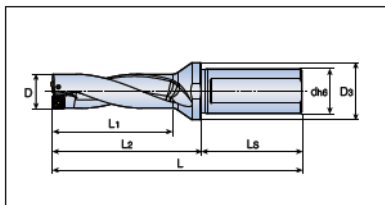
Spare parts

Designation	Screw	Wrench	Plug*	
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	
TOP 2370 - 2430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 2440 - 2550	TS 50115I	TD 20	SL 32M / SL 40M	



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

Indexable drill holder



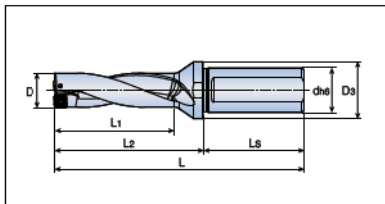
- Drilling depth: 3x diameter

Designation	Dimension (mm)								Insert
	D	d	D ₃	L	L ₁	L ₂	L ₃		
TOP 3140-20T2-05	14.0	20	25	110	42	60	50	SOMT 05...DP D125	
3145-20T2-05	14.5	20	25	114	45	64	50		
3150-20T2-05	15.0	20	25	114	45	64	50		
3155-20T2-05	15.5	20	25	118	48	68	50		
3160-20T2-05	16.0	20	25	118	48	68	50	SOMT 06...DP D125	
3165-25T2-06	16.5	25	32	127	51	71	56		
3167-25T2-06 *	16.7	25	32	127	50.1	71	56		
3170-25T2-06	17.0	25	32	127	51	71	56		
3175-25T2-06	17.5	25	32	131	54	75	56	SOMT 07...DP D125	
3180-25T2-06	18.0	25	32	131	54	75	56		
3185-25T2-06	18.5	25	32	134	57	78	56		
3190-25T2-06	19.0	25	32	134	57	78	56		
3195-25T2-07	19.5	25	32	139	60	83	56	SOMT 08...DP D125	
3200-25T2-07	20.0	25	32	139	60	83	56		
3205-25T2-07	20.5	25	32	142	63	86	56		
3210-25T2-07	21.0	25	32	142	63	86	56		
3215-25T2-07	21.5	25	32	145	66	89	56	SOMT 08...DP D125	
3220-25T2-07	22.0	25	32	145	66	89	56		
3222-25T2-07 *	22.2	25	32	145	66.6	89	56		
3225-25T2-08	22.5	25	32	147	69	91	56		
3230-25T2-08	23.0	25	32	147	69	91	56	SOMT 08...DP D125	
3230-32T2-08	23.0	32	40	151	69	91	60		
3235-25T2-08	23.5	25	32	150	72	94	56		
3235-32T2-08	23.5	32	40	154	72	94	60		
3240-25T2-08	24.0	25	32	150	72	94	56	SOMT 08...DP D125	
3240-32T2-08	24.0	32	40	154	72	94	60		
3245-25T2-08	24.5	25	32	153	75	97	56		
3245-32T2-08	24.5	32	40	157	75	97	60		
3250-25T2-08	25.0	25	32	153	75	97	56	SOMT 08...DP D125	
3250-32T2-08	25.0	32	40	157	75	97	60		
3254-25T2-08 *	25.4	25	32	153	76.2	97	56		
3255-25T2-08	25.5	25	32	155	78	99	56		
3255-32T2-08	25.5	32	40	159	78	99	60	SOMT 08...DP D125	
3260-25T2-08	26.0	25	32	155	78	99	56		
3260-32T2-08	26.0	32	32	159	78	99	60		

* ** Marked items are for inch sized hole



Indexable drill holder

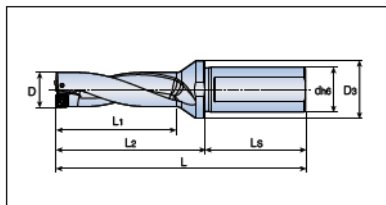


- Drilling depth: 3x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
TOP 3265-25T2-09	26.5	25	40	160	81	104	56	SOMT 09...DP D125
3265-32T2-09	26.5	32	40	164	81	104	60	
3270-25T2-09	27.0	25	40	160	81	104	56	
3270-32T2-09	27.0	32	40	164	81	104	60	
3275-25T2-09	27.5	25	40	163	84	107	56	
3275-32T2-09	27.5	32	40	167	84	107	60	
3280-25T2-09	28.0	25	40	163	84	107	56	
3280-32T2-09	28.0	32	40	167	84	107	60	
3285-25T2-09	28.5	25	40	166	87	110	56	
3285-32T2-09	28.5	32	40	170	87	110	60	
3290-25T2-09	29.0	25	40	166	87	110	56	
3290-32T2-09	29.0	32	40	170	87	110	60	
3295-32T2-09	29.5	32	40	173	90	113	60	
3300-32T2-09	30.0	32	40	173	90	113	60	
3305-32T2-09	30.5	32	40	176	93	116	60	
3310-32T2-09	31.0	32	40	176	93	116	60	SOMT 11...DP D125
3320-32T2-11	32.0	32	40	179	96	119	60	
3320-40T2-11	32.0	40	50	189	96	119	70	
3330-32T2-11	33.0	32	40	182	99	122	60	
3330-40T2-11	33.0	40	50	192	99	122	70	
3340-32T2-11	34.0	32	40	185	102	125	60	
3340-40T2-11	34.0	40	50	195	102	125	70	
3350-32T2-11	35.0	32	40	188	105	128	60	
3350-40T2-11	35.0	40	50	198	105	128	70	
3360-32T2-11	36.0	32	40	191	108	131	60	
3360-40T2-11	36.0	40	50	201	108	131	70	
3370-32T2-13	37.0	32	50	199	111	139	60	
3370-40T2-13	37.0	40	50	209	111	139	70	
3380-32T2-13	38.0	32	50	202	114	142	60	
3380-40T2-13	38.0	40	50	212	114	142	70	
3390-32T2-13	39.0	32	50	205	117	145	60	
3390-40T2-13	39.0	40	50	215	117	145	70	
3400-32T2-13	40.0	32	50	208	120	148	60	SOMT 13...DP D125
3400-40T2-13	40.0	40	40	218	120	148	70	



Indexable drill holder



- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Insert
	D	d	Ds	L	L1	L2	Ls	
TOP 3410-40T2-13	41.0	40	50	221	123	151	70	SOMT 13...DP
3420-40T2-13	42.0	40	50	224	126	154	70	D125
3430-40T2-13	43.0	40	50	227	129	157	70	
3440-40T2-15	44.0	40	60	237	132	167	70	SOMT 15...DP
3450-40T2-15	45.0	40	60	240	135	170	70	D125
3460-40T2-15	46.0	40	60	243	138	173	70	
3470-40T2-15	47.0	40	60	246	141	176	70	
3480-40T2-15	48.0	40	60	249	144	179	70	
3490-40T2-15	49.0	40	60	252	147	182	70	
3500-40T2-15	50.0	40	60	255	150	185	70	

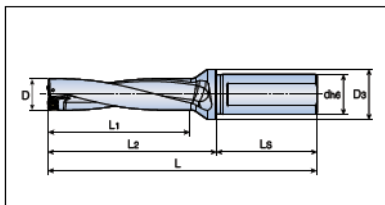
Spare parts

Designation	Screw	Wrench	Plug*	
TOP 3140 - 3160	TS 20043I/HG-P	TD 6P	SL 20M	
TOP 3165 - 3220	TS 22052I/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	
TOP 3370 - 3430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 3440 - 3500	TS 50115I	TD 20	SL 32M / SL 40M	

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



Indexable drill holder

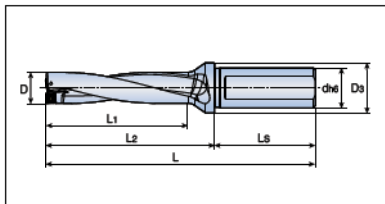


• Drilling depth: 4x diameter

Designation	Dimension (mm)							Insert
	D	d	Ds	L	L1	L2	Ls	
TOP 4140-20T2-05	14.0	20	25	124	56	74	50	SOMT 05...DP D125
4145-20T2-05	14.5	20	25	129	60	79	50	
4150-20T2-05	15.0	20	25	129	60	79	50	
4155-20T2-05	15.5	20	25	134	64	84	50	
4160-20T2-05	16.0	20	25	134	64	84	50	SOMT 06...DP D125
4165-25T2-06	16.5	25	32	144	68	88	56	
4170-25T2-06	17.0	25	32	144	68	88	56	
4175-25T2-06	17.5	25	32	149	72	93	56	
4180-25T2-06	18.0	25	32	149	72	93	56	SOMT 07...DP D125
4185-25T2-06	18.5	25	32	153	76	97	56	
4190-25T2-06	19.0	25	32	153	76	97	56	
4195-25T2-07	19.5	25	32	159	80	103	56	
4200-25T2-07	20.0	25	32	159	80	103	56	SOMT 08...DP D125
4205-25T2-07	20.5	25	32	163	84	107	56	
4210-25T2-07	21.0	25	32	163	84	107	56	
4215-25T2-07	21.5	25	32	167	88	111	56	
4220-25T2-07	22.0	25	32	167	88	111	56	SOMT 08...DP D125
4225-25T2-08	22.5	25	32	170	92	114	56	
4230-25T2-08	23.0	25	32	170	92	114	56	
4230-32T2-08	23.0	32	40	174	92	114	60	
4235-25T2-08	23.5	25	32	174	96	118	56	
4235-25T2-08	23.5	32	40	178	96	118	60	
4240-25T2-08	24.0	25	32	174	96	118	56	
4240-32T2-08	24.0	32	40	178	96	118	60	
4245-25T2-08	24.5	25	32	178	100	122	56	
4245-32T2-08	24.5	32	40	182	100	122	60	
4250-25T2-08	25.0	25	32	178	100	122	56	
4250-32T2-08	25.0	32	40	182	100	122	60	
4254-25T2-08 *	25.4	25	32	178	101.6	122	56	
4255-25T2-08	25.5	25	32	181	104	125	56	
4255-32T2-08	25.5	32	40	185	104	125	60	
4260-25T2-08	26.0	25	32	181	104	125	56	
4260-32T2-08	26.0	32	40	185	104	125	60	



Indexable drill holder



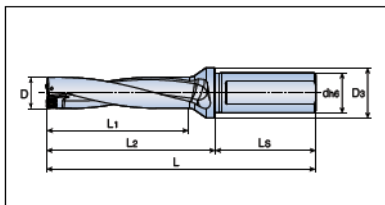
- Drilling depth: 4x diameter

Designation	Dimension (mm)								Insert
	D	d	Ds	L	L1	L2	Ls		
TOP 4265-26T2-09	26.5	25	40	187	108	131	56	SOMT 09...DP D125	
4265-32T2-09	26.5	32	40	191	108	131	60		
4270-26T2-09	27.0	25	40	187	108	131	56		
4270-32T2-09	27.0	32	40	191	108	131	60		
4275-26T2-09	27.5	25	40	191	112	135	56		
4275-32T2-09	27.5	32	40	195	112	135	60		
4280-26T2-09	28.0	25	40	191	112	135	56		
4280-32T2-09	28.0	32	40	195	112	135	60		
4285-26T2-09	28.5	25	40	195	116	139	56		
4285-32T2-09	28.5	32	40	199	116	139	60		
4286-32T2-09 *	28.6	32	40	199	114.4	139	60		
4290-26T2-09	29.0	25	40	195	116	139	56		
4290-32T2-09	29.0	32	40	199	116	139	60		
4395-32T2-09	39.5	32	40	203	120	143	60		
4300-32T2-09	30.0	32	40	203	120	143	60		
4305-32T2-09	30.5	32	40	207	124	147	60		
4310-32T2-09	31.0	32	40	207	124	147	60		
4318-32T2-11 *	31.8	32	40	211	127.2	151	60	SOMT 11...DP D125	
4320-32T2-11	32.0	32	40	211	128	151	60		
4320-40T2-11	32.0	40	50	221	128	151	70		
4330-32T2-11	33.0	32	40	215	132	155	60		
4330-40T2-11	33.0	40	50	225	132	155	70		
4340-32T2-11	34.0	32	40	219	136	159	60		
4340-40T2-11	34.0	40	50	229	136	159	70		
4349-40T2-11 *	34.9	40	50	233	139.6	163	70		
4360-32T2-11	35.0	32	40	223	140	163	60		
4360-40T2-11	35.0	40	50	233	140	163	70		
4360-32T2-11	36.0	32	40	227	144	167	60		
4360-40T2-11	36.0	40	50	237	144	167	70		
4370-32T2-13	37.0	32	50	236	148	176	60	SOMT 13...DP D125	
4370-40T2-13	37.0	40	50	246	148	176	70		
4371-40T2-13 *	37.1	40	50	246	148.4	176	70		
4380-32T2-13	38.0	32	50	240	152	180	60		
4380-40T2-13	38.0	40	50	250	152	180	70		
4381-40T2-13 *	38.1	40	50	250	152.4	180	70		



- '*' Marked items are for inch sized hole

Indexable drill holder



- Drilling depth: 4x diameter

Designation	Dimension (mm)							Insert
	D	d	Ds	L	L1	L2	Ls	
TOP 4390-32T2-13	39.0	32	50	244	156	184	60	SOMT 13...DP D125
4390-40T2-13	39.0	40	50	254	156	184	70	
4400-32T2-13	40.0	32	50	248	160	188	60	
4400-40T2-13	40.0	40	50	258	160	188	70	
4410-40T2-13	41.0	40	50	262	164	192	70	
4413-40T2-13 *	41.3	40	50	262	165.2	192	70	
4420-40T2-13	42.0	40	50	266	168	196	70	
4429-40T2-13 *	42.9	40	50	270	171.6	200	70	
4430-40T2-13	43.0	40	50	270	172	200	70	
4440-40T2-15	44.0	40	60	281	176	211	70	
4445-40T2-15 *	44.5	40	60	285	178	215	70	
4450-40T2-15	45.0	40	60	285	180	215	70	
4460-40T2-15	46.0	40	60	289	184	219	70	
4470-40T2-15	47.0	40	60	293	188	223	70	
4476-40T2-15 *	47.6	40	60	297	190.4	227	70	
4480-40T2-15	48.0	40	60	297	192	227	70	
4490-40T2-15	49.0	40	60	301	196	231	70	
4500-40T2-15	50.0	40	60	305	200	235	70	
4508-40T2-15 *	50.8	40	60	309	203.2	239	70	

- '*' Marked items are for inch sized hole

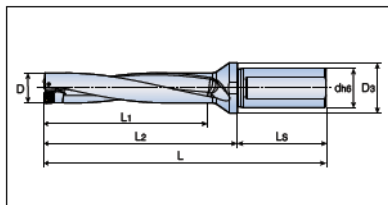
Spare parts

Designation	Screw	Wrench	Plug*	
TOP 4140 - 4160	TS 20043/VHG-P	TD 6P	SL 20M	
TOP 4165 - 4220	TS 22052/VHG-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	
TOP 4370 - 4430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 4440 - 4508	TS 50115I	TD 20	SL 32M / SL 40M	



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

Indexable drill holder



- Drilling depth: 5x diameter

Designation	Dimension (mm)							Insert
	D	d	D ₃	L	L ₁	L ₂	L ₃	
TOP 5140-20T2-06	14.0	20	25	138	70	88	50	SOMT 05...DP D125
5145-20T2-06	14.5	20	25	144	75	94	50	
5150-20T2-06	15.0	20	25	144	75	94	50	
5155-20T2-06	15.5	20	25	150	80	100	50	
5160-20T2-06	16.0	20	25	150	80	100	50	SOMT 06...DP D125
5165-25T2-06	16.5	25	32	161	85	105	56	
5170-25T2-06	17.0	25	32	161	85	105	56	
5175-25T2-06	17.5	25	32	167	90	111	56	
5180-25T2-06	18.0	25	32	167	90	111	56	SOMT 07...DP D125
5185-25T2-06	18.5	25	32	172	95	116	56	
5190-25T2-06	19.0	25	32	172	95	116	56	
5195-25T2-07	19.5	25	32	179	100	123	56	
5200-25T2-07	20.0	25	32	179	100	123	56	SOMT 08...DP D125
5205-25T2-07	20.5	25	32	184	105	128	56	
5210-25T2-07	21.0	25	32	184	105	128	56	
5215-25T2-07	21.5	25	32	189	110	133	56	
5220-25T2-07	22.0	25	32	189	110	133	56	SOMT 07...DP D125
5222-25T2-07 *	22.2	25	32	189	111	133	56	
5225-25T2-08	22.5	25	32	193	115	137	56	
5230-25T2-08	23.0	25	32	193	115	137	56	
5230-32T2-08	23.0	32	40	197	115	137	60	SOMT 08...DP D125
5235-25T2-08	23.5	25	32	198	120	142	56	
5235-32T2-08	23.5	32	40	202	120	142	60	
5240-25T2-08	24.0	25	32	198	120	142	56	
5240-32T2-08	24.0	32	40	202	120	142	60	SOMT 07...DP D125
5245-25T2-08	24.5	25	32	203	125	147	56	
5245-32T2-08	24.5	32	40	207	125	147	60	
5250-25T2-08	25.0	25	32	203	125	147	56	
5250-32T2-08	25.0	32	40	207	125	147	60	SOMT 08...DP D125
5255-25T2-08	25.5	25	32	207	130	151	56	
5255-32T2-08	25.5	32	40	211	130	151	60	
5260-25T2-08	26.0	25	32	207	130	151	56	
5260-32T2-08	26.0	32	40	211	130	151	60	



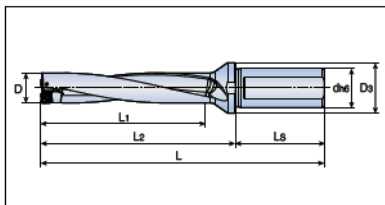
D146



TDS

- ** Marked items are for inch sized hole

Indexable drill holder



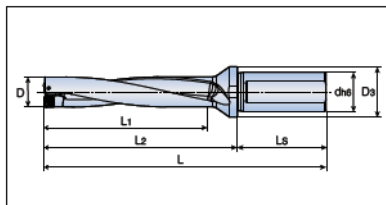
- Drilling depth: 5x diameter

Designation	Dimension (mm)							Insert
	D	d	D ₃	L	L ₁	L ₂	L _s	
TOP 5265-32T2-09	26.5	32	40	218	135	158	60	SOMT 09...DP D125
5270-25T2-09	27.0	25	40	214	135	158	56	
5270-32T2-09	27.0	32	40	218	135	158	60	
5275-32T2-09	27.5	32	40	223	140	163	60	
5280-25T2-09	28.0	25	40	219	140	163	56	
5280-32T2-09	28.0	32	40	223	140	163	60	
5282-32T2-09 *	28.2	32	40	223	141	163	60	
5285-32T2-09	28.5	32	40	228	145	168	60	
5290-25T2-09	29.0	25	40	224	145	168	56	
5290-32T2-09	29.0	32	40	228	145	168	60	
5395-32T2-09	39.5	32	40	233	150	173	60	
5300-32T2-09	30.0	32	40	233	150	173	60	
5305-32T2-09	30.5	32	40	238	155	178	60	
5310-32T2-09	31.0	32	40	238	155	178	60	
5320-32T2-11	32.0	32	40	243	160	183	60	SOMT 11...DP D125
5320-40T2-11	32.0	40	50	253	160	183	70	
5330-32T2-11	33.0	32	40	248	165	188	60	
5330-40T2-11	33.0	40	50	258	165	188	70	
5340-32T2-11	34.0	32	40	253	170	193	60	
5340-40T2-11	34.0	40	50	263	170	193	70	
5350-32T2-11	35.0	32	40	258	175	198	60	SOMT 13...DP D125
5350-40T2-11	35.0	40	50	268	175	198	70	
5360-32T2-11	36.0	32	40	263	180	203	60	
5360-40T2-11	36.0	40	50	273	180	203	70	
5370-32T2-13	37.0	32	50	273	185	213	60	
5370-40T2-13	37.0	40	50	283	185	213	70	
5380-32T2-13	38.0	32	50	278	190	218	60	
5380-40T2-13	38.0	40	50	288	190	218	70	
5390-32T2-13	39.0	32	50	283	195	223	60	
5390-40T2-13	39.0	40	50	293	195	223	70	
5400-32T2-13	40.0	32	50	288	200	228	60	
5400-40T2-13	40.0	40	50	298	200	228	70	
5410-40T2-13	41.0	40	50	303	205	233	70	
5420-40T2-13	42.0	40	50	308	210	238	70	
5430-40T2-13	43.0	40	50	313	215	243	70	



* ** Marked items are for inch sized hole

Indexable drill holder



- Drilling depth: 5x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
TOP 5440-40T2-15	44.0	40	60	325	220	255	70	SOMT 15...DP D125
5450-40T2-15	45.0	40	60	330	225	260	70	
5460-40T2-15	46.0	40	60	335	230	265	70	
5470-40T2-15	47.0	40	60	340	235	270	70	
5480-40T2-15	48.0	40	60	345	240	275	70	
5490-40T2-15	49.0	40	60	350	245	280	70	
5500-40T2-15	50.0	40	60	355	250	285	70	

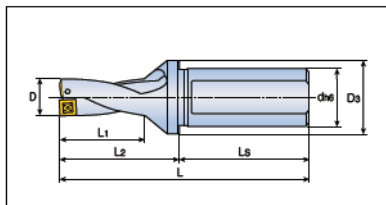
Spare parts

Designation	Screw	Wrench	Plug*	
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	
TOP 5370 - 5430	TS 40093I	TD 15	SL 32M / SL 40M	
TOP 5440 - 5500	TS 50115I	TD 20	SL 32M / SL 40M	



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

Indexable drill holder

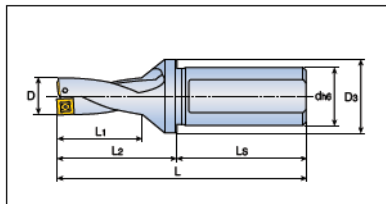


- Drilling depth: 2x diameter

Designation	Dimension (mm)								Insert
	D	d	D3	L	L1	L2	Ls		
TDR 2125-20T2-05	12.5	20	25	94	26	44	50	SPMG 05... DG/DK/DA D125	
2130-20T2-05	13.0	20	25	94	26	44	50		
2135-20T2-05	13.5	20	25	96	28	46	50		
2140-20T2-05	14.0	20	25	96	28	46	50		
2145-20T2-05	14.5	20	25	99	30	49	50		
2150-20T2-05	15.0	20	25	99	30	49	50		
2155-25T2-06	15.5	25	32	108	32	52	56	SPMG 06... DG/DK/DA D125	
2160-25T2-06	16.0	25	32	108	32	52	56		
2165-25T2-06	16.5	25	32	110	34	54	56		
2170-25T2-06	17.0	25	32	110	34	54	56		
2175-25T2-06	17.5	25	32	113	36	57	56		
2180-25T2-06	18.0	25	32	113	36	57	56		
2185-25T2-06	18.5	25	32	115	38	59	56		
2190-25T2-06	19.0	25	32	115	38	59	56		
2195-25T2-06	19.5	25	32	119	40	63	56		
2200-25T2-06	20.0	25	32	119	40	63	56		
2205-25T2-06	20.5	25	32	121	42	65	56		
2210-25T2-06	21.0	25	32	121	42	65	56		
2215-25T2-06	21.5	25	32	123	44	67	56		
2220-25T2-07	22.0	25	32	123	44	67	56	SPMG 07... DG/DK/DA D125	
2225-25T2-07	22.5	25	45	127	46	71	56		
2225-32T2-07	22.5	32	45	131	46	71	60		
2230-25T2-07	23.0	25	45	127	46	71	56		
2230-32T2-07	23.0	32	45	131	46	71	60		
2235-25T2-07	23.5	25	45	130	48	74	56		
2235-32T2-07	23.5	32	45	134	48	74	60		
2240-25T2-07	24.0	25	45	130	48	74	56		
2240-32T2-07	24.0	32	45	134	48	74	60		
2245-25T2-07	24.5	25	45	133	50	77	56		
2245-32T2-07	24.5	32	45	137	50	77	60		
2250-25T2-07	25.0	25	45	133	50	77	56		
2250-32T2-07	25.0	32	45	137	50	77	60		
2255-25T2-07	25.5	25	45	135	52	79	56		
2255-32T2-07	25.5	32	45	139	52	79	60		
2260-25T2-07	26.0	25	45	135	52	79	56		



Indexable drill holder



- Drilling depth: 2x diameter

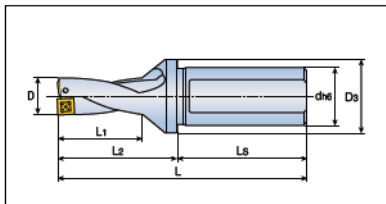
Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 2260-32T2-07	26.0	32	45	139	52	79	60	SPMG 07... DG/DK/DA D125
2265-25T2-07	26.5	25	45	137	54	81	56	
2265-32T2-07	26.5	32	45	141	54	81	60	
2270-25T2-07	27.0	25	45	137	54	81	56	
2270-32T2-07	27.0	32	45	141	54	81	60	
2275-25T2-07	27.5	25	45	140	56	84	56	
2275-32T2-07	27.5	32	45	144	56	84	60	
2280-25T2-09	28.0	25	45	140	56	84	56	SPMG 09... DG/DK/DA D125
2280-32T2-09	28.0	32	45	144	56	84	60	
2285-25T2-09	28.5	25	45	142	58	86	56	
2285-32T2-09	28.5	32	45	146	58	86	60	
2290-25T2-09	29.0	25	45	142	58	86	56	
2290-32T2-09	29.0	32	45	146	58	86	60	
2295-32T2-09	29.5	32	55	151	60	91	60	
2295-40T2-09	29.5	40	55	161	60	91	70	
2300-32T2-09	30.0	32	55	151	60	91	60	
2300-40T2-09	30.0	40	55	161	60	91	70	
2305-32T2-09	30.5	32	55	154	62	94	60	
2305-40T2-09	30.5	40	55	164	62	94	70	
2310-32T2-09	31.0	32	55	154	62	94	60	
2310-40T2-09	31.0	40	55	164	62	94	70	
2315-32T2-09	31.5	32	55	156	64	96	60	
2315-40T2-09	31.5	40	55	166	64	96	70	
2320-32T2-09	32.0	32	55	156	64	96	60	
2320-40T2-09	32.0	40	55	166	64	96	70	
2325-32T2-09	32.5	32	55	159	66	99	60	
2325-40T2-09	32.5	40	55	169	66	99	70	
2330-32T2-09	33.0	32	55	159	66	99	60	
2330-40T2-09	33.0	40	55	169	66	99	70	
2340-32T2-11	34.0	32	55	161	68	101	60	SPMG 11... DG/DA/DK D125
2340-40T2-11	34.0	40	55	171	68	101	70	
2350-32T2-11	35.0	32	55	164	70	104	60	
2350-40T2-11	35.0	40	55	174	70	104	70	
2360-32T2-11	36.0	32	55	167	72	107	60	
2360-40T2-11	36.0	40	55	177	72	107	70	



Indexable drill holder



- Drilling depth: 2x diameter



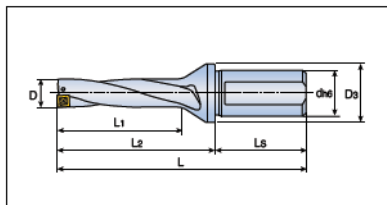
Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
TDR 2370-32T2-11	37.0	32	55	170	74	110	60	SPMG 11... DG/DK/DA D125
2370-40T2-11	37.0	40	55	180	74	110	70	
2380-32T2-11	38.0	32	55	173	76	113	60	
2380-40T2-11	38.0	40	55	183	76	113	70	
2390-32T2-11	39.0	32	55	175	78	115	60	
2390-40T2-11	39.0	40	55	185	78	115	70	
2400-32T2-11	40.0	32	60	178	80	118	60	
2400-40T2-11	40.0	40	60	188	80	118	70	
2410-40T2-11	41.0	40	60	191	82	121	70	
2420-40T2-14	42.0	40	60	193	84	123	70	
2430-40T2-14	43.0	40	60	196	86	126	70	
2440-40T2-14	44.0	40	60	198	88	128	70	
2450-40T2-14	45.0	40	60	202	90	132	70	
2460-40T2-14	46.0	40	60	205	92	135	70	
2470-40T2-14	47.0	40	60	207	94	137	70	
2480-40T2-14	48.0	40	60	210	96	140	70	
2490-40T2-14	49.0	40	60	212	98	142	70	
2500-40T2-14	50.0	40	60	215	100	145	70	

Spare parts

Designation	Screw 	Wrench 	Plug 	Set screw
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	-	SS M6x1x6
TDR 2280 - 2330	TS 35088I	TD 10	-	SS M6x1x6
TDR 2340 - 2390	TS 40093I	TD 15	-	SS M6x1x6
TDR 2400 - 2410	TS 40093I	TD 15	-	SS M8x1.25x8
TDR 2420 - 2500	SO 50090I	TD 20	-	SS M8x1.25x8



Indexable drill holder



- Drilling depth: 3x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 3125-20T2-05	12.5	20	25	107	39	57	50	SPMG 05... DG/DK/DA D125
3130-20T2-05	13.0	20	25	107	39	57	50	
3135-20T2-05	13.5	20	25	110	42	60	50	
3140-20T2-05	14.0	20	25	110	42	60	50	
3145-20T2-05	14.5	20	25	114	45	64	50	
3150-20T2-05	15.0	20	25	114	45	64	50	SPMG 06... DG/DK/DA D125
3155-25T2-06	15.5	25	32	124	48	68	56	
3160-25T2-06	16.0	25	32	124	48	68	56	
3165-25T2-06	16.5	25	32	127	51	71	56	
3170-25T2-06	17.0	25	32	127	51	71	56	
3175-25T2-06	17.5	25	32	131	54	75	56	
3180-25T2-06	18.0	25	32	131	54	75	56	
3185-25T2-06	18.5	25	32	134	57	78	56	
3190-25T2-06	19.0	25	32	134	57	78	56	
3195-25T2-06	19.5	25	32	139	60	83	56	
3200-25T2-06 *	20.0	25	32	139	60	83	56	SPMG 07... DG/DK/DA D125
3205-25T2-06	20.5	25	32	142	63	86	56	
3209-25T2-06 *	20.9	25	32	142	63	86	56	
3210-25T2-06	21.0	25	32	142	63	86	56	
3215-25T2-06	21.5	25	32	145	66	89	56	
3220-25T2-07	22.0	25	32	145	66	89	56	
3225-25T2-07	22.5	25	45	150	69	94	56	
3225-32T2-07	22.5	32	45	154	69	94	60	
3230-25T2-07	23.0	25	45	150	69	94	56	
3230-32T2-07	23.0	32	45	154	69	94	60	
3235-25T2-07	23.5	25	45	154	72	98	56	
3235-32T2-07	23.5	32	45	158	72	98	60	
3239-25T2-07 *	23.9	25	32	154	72	98	56	
3239-32T2-07 *	23.9	32	45	158	72	98	60	
3240-25T2-07	24.0	25	45	154	72	98	56	
3240-32T2-07	24.0	32	45	158	72	98	60	
3245-25T2-07	24.5	25	45	158	75	102	56	
3245-32T2-07	24.5	32	45	162	75	102	60	
3250-25T2-07	25.0	25	45	158	75	102	56	
3250-32T2-07	25.0	32	45	162	75	102	60	

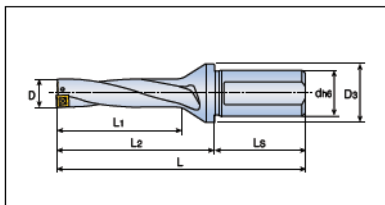
- '*' Marked items are for pre-thread hole making



Indexable drill holder



- Drilling depth: 3x diameter

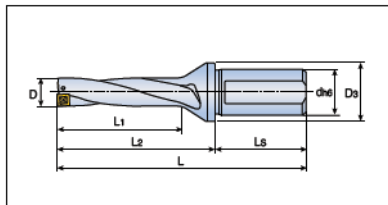


Designation	Dimension (mm)								Insert
	D	d	D3	L	L1	L2	L5		
TDR 3255-26T2-07	25.5	25	45	161	78	105	56	SPMG 07... DG/DK/DA D125	
3255-32T2-07	25.5	32	45	165	78	105	60		
3260-26T2-07	26.0	25	45	161	78	105	56		
3260-32T2-07	26.0	32	45	165	78	105	60		
3264-26T2-07 *	26.4	25	45	164	81	108	56		
3264-32T2-07 *	26.4	32	45	168	81	108	60		
3265-26T2-07	26.5	25	45	164	81	108	56		
3265-32T2-07	26.5	32	45	168	81	108	60		
3270-26T2-07	27.0	25	45	164	81	108	56		
3270-32T2-07	27.0	32	45	168	81	108	60		
3275-26T2-07	27.5	25	45	168	84	112	56		
3275-32T2-07	27.5	32	45	172	84	112	60		
3280-26T2-09	28.0	25	45	168	84	112	56		SPMG 09... DG/DK/DA D125
3280-32T2-09	28.0	32	45	172	84	112	60		
3285-26T2-09	28.5	25	45	171	87	115	56		
3285-32T2-09	28.5	32	45	171	87	115	56		
3290-26T2-09	29.0	25	45	171	87	115	56		
3290-32T2-09	29.0	32	45	175	87	115	60		
3294-32T2-09 *	29.4	32	55	181	90	121	60		
3294-40T2-09 *	29.4	40	55	191	90	121	70		
3295-32T2-09	29.5	32	55	181	90	121	60		
3295-40T2-09	29.5	40	55	191	90	121	70		
3300-32T2-09	30.0	32	55	181	90	121	60		
3300-40T2-09	30.0	40	55	191	90	121	70		
3305-32T2-09	30.5	32	55	185	93	125	60		
3305-40T2-09	30.5	40	55	195	93	125	70		
3310-32T2-09	31.0	32	55	185	93	125	60		
3310-40T2-09	31.0	40	55	195	93	125	70		
3315-32T2-09	31.5	32	55	188	96	128	60		
3315-40T2-09	31.5	40	55	198	96	128	70		
3320-32T2-09	32.0	32	55	188	96	128	60		
3320-40T2-09	32.0	40	55	198	96	128	70		



- "*" Marked items are for pre-thread hole making

Indexable drill holder



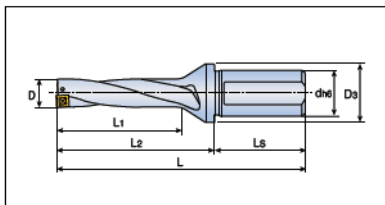
- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 3320-32T2-09	32.0	32	55	188	96	128	60	SPMG 09... DG/DK/DA D125
3320-40T2-09	32.0	40	55	198	96	128	70	
3325-32T2-09	32.5	32	55	192	99	132	60	
3325-40T2-09	32.5	40	55	202	99	132	70	
3330-32T2-09	33.0	32	55	192	99	132	60	
3330-40T2-09	33.0	40	55	202	99	132	70	
3340-32T2-11	34.0	32	55	195	102	135	60	SPMG 11... DG/DK/DA D125
3340-40T2-11	34.0	40	55	205	102	135	70	
3360-32T2-11	35.0	32	55	199	105	139	60	
3360-40T2-11	35.0	40	55	209	105	139	70	
3360-32T2-11	36.0	32	55	203	108	143	60	
3360-40T2-11	36.0	40	55	213	108	143	70	
3370-32T2-11	37.0	32	55	207	111	147	60	
3370-40T2-11	37.0	40	55	217	111	147	70	
3375-32T2-11 *	37.5	32	55	211	114	151	60	
3375-40T2-11 *	37.5	40	55	221	114	151	70	
3380-32T2-11	38.0	32	55	211	114	151	60	
3380-40T2-11	38.0	40	55	221	114	151	70	
3390-32T2-11	39.0	32	55	214	117	154	60	
3390-40T2-11	39.0	40	55	224	117	154	70	
3400-32T2-11	40.0	32	60	218	120	158	60	
3400-40T2-11	40.0	40	60	228	120	158	70	
3405-40T2-11 *	40.5	40	60	232	123	162	70	
3410-40T2-11	41.0	40	60	232	123	162	70	



'' Marked items are for pre-thread hole making

Indexable drill holder



- Drilling depth: 3x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 3420-40T2-14	42.0	40	60	235	126	165	70	SPMG 14... DG/DK/DA D125
3430-40T2-14	43.0	40	60	239	129	169	70	
3440-40T2-14	44.0	40	60	242	132	172	70	
3450-40T2-14	45.0	40	60	247	135	177	70	
3460-40T2-14	46.0	40	60	251	138	181	70	
3470-40T2-14	47.0	40	60	254	141	184	70	
3480-40T2-14	48.0	40	60	258	144	188	70	
3490-40T2-14	49.0	40	60	261	147	191	70	
3500-40T2-14	50.0	40	60	265	150	195	70	

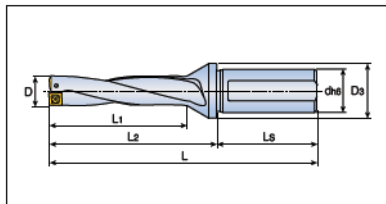
- ** Marked items are for pre-thread hole making

Spare parts

Designation	Screw	Wrench	Plug	Set screw
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	-	SS M6x1x6
TDR 3280 - 3330	TS 35088I	TD 10	-	SS M6x1x6
TDR 3340 - 3390	TS 40093I	TD 15	-	SS M6x1x6
TDR 3400 - 3410	TS 40093I	TD 15	-	SS M8x1.25x8
TDR 3420 - 3500	SO 50090I	TD 20	-	SS M8x1.25x8



Indexable drill holder



- Drilling depth: 4x diameter

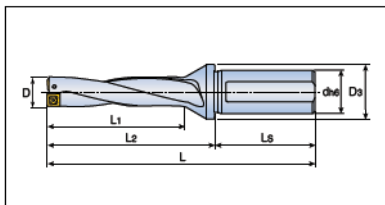
Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 4125-20T2-05	12.5	20	25	120	52	70	50	SPMG 05... DG/DK/DA D125
4130-20T2-05	13.0	20	25	120	52	70	50	
4135-20T2-05	13.5	20	25	124	56	74	50	
4140-20T2-05	14.0	20	25	124	56	74	50	
4145-20T2-05	14.5	20	25	129	60	79	50	
4150-20T2-05	15.0	20	25	129	60	79	50	SPMG 06... DG/DK/DA D125
4155-25T2-06	15.5	25	32	140	64	84	56	
4160-25T2-06	16.0	25	32	140	64	84	56	
4165-25T2-06	16.5	25	32	144	68	88	56	
4170-25T2-06	17.0	25	32	144	68	88	56	
4175-25T2-06	17.5	25	32	149	72	93	56	
4180-25T2-06	18.0	25	32	149	72	93	56	
4185-25T2-06	18.5	25	32	153	76	97	56	
4190-25T2-06	19.0	25	32	153	76	97	56	
4195-25T2-06	19.5	25	32	159	80	103	56	
4200-25T2-06	20.0	25	32	159	80	103	56	SPMG 07... DG/DK/DA D125
4205-25T2-06	20.5	25	32	163	84	107	56	
4210-25T2-06	21.0	25	32	163	84	107	56	
4215-25T2-06	21.5	25	32	167	88	111	56	
4220-25T2-07	22.0	25	32	167	88	111	56	
4225-25T2-07	22.5	25	45	173	92	117	56	
4225-32T2-07	22.5	32	45	177	92	117	60	
4230-25T2-07	23.0	25	45	173	92	117	56	
4230-32T2-07	23.0	32	45	177	92	117	60	
4235-25T2-07	23.5	25	45	178	96	122	56	
4235-32T2-07	23.5	32	45	182	96	122	60	
4240-25T2-07	24.0	25	45	178	96	122	56	
4240-32T2-07	24.0	32	45	182	96	122	60	
4245-25T2-07	24.5	25	45	183	100	127	56	
4245-32T2-07	24.5	32	45	187	100	127	60	
4250-25T2-07	25.0	25	45	183	100	127	56	
4250-32T2-07	25.0	32	45	187	100	127	60	
4255-25T2-07	25.5	25	45	187	104	131	56	
4255-32T2-07	25.5	32	45	191	104	131	60	
4260-25T2-07	26.0	25	45	187	104	131	56	



Indexable drill holder



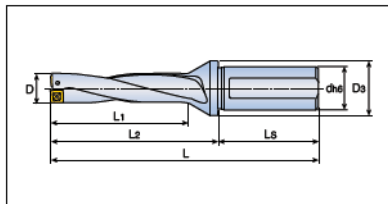
- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert	
	D	d	D ₃	L	L ₁	L ₂	L _s		
TDR 4260-32T2-07	26.0	32	45	191	104	131	60	SPMG 07... DG/DK/DA D125	
4265-25T2-07	26.5	25	45	191	108	135	56		
4265-32T2-07	26.5	32	45	195	108	135	60		
4270-25T2-07	27.0	25	45	191	108	135	56		
4270-32T2-07	27.0	32	45	195	108	135	60		
4275-25T2-07	27.5	25	45	196	112	140	56		
4275-32T2-07	27.5	32	45	200	112	140	60		
4280-25T2-09	28.0	25	45	196	112	140	56		SPMG 09... DG/DK/DA D125
4280-32T2-09	28.0	32	45	200	112	140	60		
4285-25T2-09	28.5	25	45	200	116	144	56		
4285-32T2-09	28.5	32	45	204	116	144	60		
4290-25T2-09	29.0	25	45	200	116	144	56		
4290-32T2-09	29.0	32	45	204	116	144	60		
4295-32T2-09	29.5	32	55	211	120	151	60		
4295-40T2-09	29.5	40	55	221	120	151	70		
4300-32T2-09	30.0	32	55	211	120	151	60		
4300-40T2-09	30.0	40	55	221	120	151	70		
4305-32T2-09	30.5	32	55	216	124	156	60		
4305-40T2-09	30.5	40	55	226	124	156	70		
4310-32T2-09	31.0	32	55	216	124	156	60		
4310-40T2-09	31.0	40	55	226	124	156	70		
4315-32T2-09	31.5	32	55	220	128	160	60		
4315-40T2-09	31.5	40	55	230	128	160	70		
4320-32T2-09	32.0	32	55	220	128	160	60		
4320-40T2-09	32.0	40	55	230	128	160	70		
4325-32T2-09	32.5	32	55	225	132	165	60		
4325-40T2-09	32.5	40	55	235	132	165	70		
4330-32T2-09	33.0	32	55	225	132	165	60		
4330-40T2-09	33.0	40	55	235	132	165	70		
4340-32T2-11	34.0	32	55	229	136	169	60	SPMG 11... DG/DK/DA D125	
4340-40T2-11	34.0	40	55	239	136	169	70		
4350-32T2-11	35.0	32	55	234	140	174	60		
4350-40T2-11	35.0	40	55	244	140	174	70		
4360-32T2-11	36.0	32	55	239	144	179	60		
4360-40T2-11	36.0	40	55	249	144	179	70		



Indexable drill holder



- Drilling depth: 4x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	L3	
TDR 4370-32T2-11	37.0	32	55	244	148	184	60	SPMG 11... DG/DK/DA D125
4370-40T2-11	37.0	40	55	254	148	184	70	
4380-32T2-11	38.0	32	55	249	152	189	60	
4380-40T2-11	38.0	40	55	259	152	189	70	
4390-32T2-11	39.0	32	55	253	156	193	60	
4390-40T2-11	39.0	40	55	263	156	193	70	
4400-32T2-11	40.0	32	60	258	160	198	60	
4400-40T2-11	40.0	40	60	268	160	198	70	
4410-40T2-11	41.0	40	60	273	164	203	70	
4420-40T2-14	42.0	40	60	277	168	207	70	
4430-40T2-14	43.0	40	60	282	172	212	70	
4440-40T2-14	44.0	40	60	286	176	216	70	
4460-40T2-14	45.0	40	60	292	180	222	70	
4460-40T2-14	46.0	40	60	297	184	227	70	
4470-40T2-14	47.0	40	60	301	188	231	70	
4480-40T2-14	48.0	40	60	306	192	236	70	
4490-40T2-14	49.0	40	60	310	196	240	70	
4500-40T2-14	50.0	40	60	315	200	245	70	

Spare parts

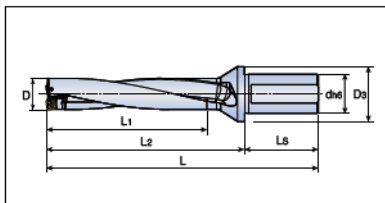
Designation	Screw 	Wrench 	Plug 	Set screw
TDR 4125 - 4150	TS 20043I/HG-P	TD 6P	SL 20 M	-
TDR 4155 - 4215	TS 22052I/HG	TD 7	SL 25 M	-
TDR 4220 - 4270	TS 25064I	TD 8	SL 25 M / SL 32 M	-
TDR 4275	TS 25064I	TD 8	-	SS M6x1x6
TDR 4280 - 4330	TS 35088I	TD 10	-	SS M6x1x6
TDR 4340 - 4390	TS 40093I	TD 15	-	SS M6x1x6
TDR 4400 - 4410	TS 40093I	TD 15	-	SS M8x1.25x8
TDR 4420 - 4500	SO 50090I	TD 20	-	SS M8x1.25x8



Indexable drill holder



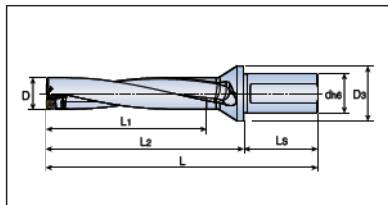
- Drilling depth: 5x diameter



Designation	Dimension (mm)								Insert
	D	d	D3	L	L1	L2	Ls		
TDR 5125-20T2-05	12.5	20	25	133	65	83	50	SPMG 05... DG/DK/DA D125	
5130-20T2-05	13.0	20	25	133	65	83	50		
5135-20T2-05	13.5	20	25	138	70	88	50		
5140-20T2-05	14.0	20	25	138	70	88	50		
5145-20T2-05	14.5	20	25	144	75	94	50		
5150-20T2-05	15.0	20	25	144	75	94	50	SPMG 06... DG/DK/DA D125	
5155-25T2-06	15.5	25	32	156	80	100	56		
5160-25T2-06	16.0	25	32	156	80	100	56		
5165-25T2-06	16.5	25	32	161	85	105	56		
5170-25T2-06	17.0	25	32	161	85	105	56		
5175-25T2-06	17.5	25	32	167	90	111	56		
5180-25T2-06	18.0	25	32	167	90	111	56		
5185-25T2-06	18.5	25	32	172	95	116	56		
5190-25T2-06	19.0	25	32	172	95	116	56		
5195-25T2-06	19.5	25	32	179	100	123	56		
5200-25T2-06	20.0	25	32	179	100	123	56	SPMG 07... DG/DK/DA D125	
5205-25T2-06	20.5	25	32	184	105	128	56		
5210-25T2-06	21.0	25	32	184	105	128	56		
5215-25T2-06	21.5	25	32	189	110	133	56		
5220-25T2-07	22.0	25	32	189	110	133	56		
5225-32T2-07	22.5	32	45	200	115	140	60		
5230-32T2-07	23.0	32	45	200	115	140	60		
5235-32T2-07	23.5	32	45	206	120	146	60		
5240-32T2-07	24.0	32	45	206	120	146	60		
5245-32T2-07	24.5	32	45	212	125	152	60		
5250-32T2-07	25.0	32	45	212	125	152	60		
5255-32T2-07	25.5	32	45	217	130	157	60		
5260-32T2-07	26.0	32	45	217	130	157	60		
5265-32T2-07	26.5	32	45	222	135	162	60		
5270-32T2-07	27.0	32	45	222	135	162	60		
5275-32T2-07	27.5	32	45	228	140	168	60		



Indexable drill holder



• Drilling depth: 5x diameter

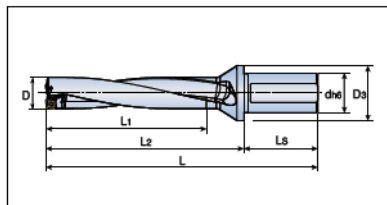
Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
TDR 5280-32T2-09	28.0	32	45	228	140	168	60	SPMG 09... DG/DK/DA D125
5285-32T2-09	28.5	32	45	233	145	173	60	
5290-32T2-09	29.0	32	45	233	145	173	60	
5295-32T2-09	29.5	32	55	241	150	181	60	
5300-32T2-09	30.0	32	55	241	150	181	60	
5300-40T2-09	30.0	40	55	251	150	181	70	
5310-32T2-09	31.0	32	55	247	155	187	60	
5310-40T2-09	31.0	40	55	257	155	187	70	
5320-32T2-09	32.0	32	55	252	160	192	60	
5320-40T2-09	32.0	40	55	262	160	192	70	
5330-32T2-09	33.0	32	55	258	165	198	60	SPMG 11... DG/DK/DA D125
5330-40T2-09	33.0	40	55	268	165	198	70	
5340-32T2-11	34.0	32	55	263	170	203	60	
5340-40T2-11	34.0	40	55	273	170	203	70	
5350-32T2-11	35.0	32	55	269	175	209	60	
5350-40T2-11	35.0	40	55	279	175	209	70	
5360-32T2-11	36.0	32	55	275	180	215	60	
5360-40T2-11	36.0	40	55	285	180	215	70	
5370-32T2-11	37.0	32	55	281	185	221	60	
5370-40T2-11	37.0	40	55	291	185	221	70	
5380-32T2-11	38.0	32	55	287	190	227	60	
5380-40T2-11	38.0	40	55	297	190	227	70	
5390-32T2-11	39.0	32	55	292	195	232	60	
5390-40T2-11	39.0	40	55	302	195	232	70	
5400-32T2-11	40.0	32	60	298	200	238	60	
5400-40T2-11	40.0	40	60	308	200	238	70	
5410-40T2-11	41.0	40	60	314	205	244	70	



Indexable drill holder



- Drilling depth: 5x diameter



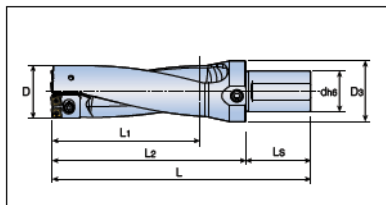
Designation	Dimension (mm)							Insert
	D	d	Ds	L	L1	L2	Ls	
TDR 5420-40T2-14	42.0	40	60	319	210	249	70	SPMG 14... DG/DK/DA D125
5430-40T2-14	43.0	40	60	325	215	255	70	
5440-40T2-14	44.0	40	60	330	220	260	70	
5450-40T2-14	45.0	40	60	337	225	267	70	
5460-40T2-14	46.0	40	60	343	230	273	70	
5470-40T2-14	47.0	40	60	348	235	278	70	
5480-40T2-14	48.0	40	60	354	240	284	70	
5490-40T2-14	49.0	40	60	359	245	289	70	
5500-40T2-14	50.0	40	60	365	250	295	70	

Spare parts

Designation	Screw 	Wrench 	Plug 	Set screw
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	-	SS M6x1x6
TDR 5280 - 5330	TS 35088I	TD 10	-	SS M6x1x6
TDR 5340 - 5390	TS 40093I	TD 15	-	SS M6x1x6
TDR 5400 - 5410	TS 40093I	TD 15	-	SS M8x1.25x8
TDR 5420 - 5500	SO 50090I	TD 20	-	SS M8x1.25x8



Indexable cartridge drill holder



- Drilling depth: 2.5x diameter

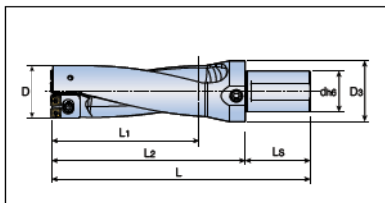
Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	L3		
TDR 2561-53-50T2-07CA-T	51	50	75	250	133	170	80	-	SPMG 07... DG/DK/DA
	52	50	75	250	133	170	80	TDP-0701	SPMG 07... DG/DK/DA
	53	50	75	250	133	170	80	TDP-0702	SPMG 07... DG/DK/DA D125
2564-56-50T2-07CA-T	54	50	75	260	140	180	80	-	SPMG 07... DG/DK/DA
	55	50	75	260	140	180	80	TDP-0701	SPMG 07... DG/DK/DA
	56	50	75	260	140	180	80	TDP-0702	SPMG 07... DG/DK/DA D125
2567-62-50T2-09CA-T	57	50	75	281	155	201	80	-	SPMG 09... DG/DK/DA
	58	50	75	281	155	201	80	TDP-0901	SPMG 09... DG/DK/DA
	59	50	75	281	155	201	80	TDP-0902	SPMG 09... DG/DK/DA D125
	60	50	75	281	155	201	80	TDP-0903	SPMG 09... DG/DK/DA
	61	50	75	281	155	201	80	TDP-0904	SPMG 09... DG/DK/DA
	62	50	75	281	155	201	80	TDP-0905	SPMG 09... DG/DK/DA D125
2563-66-50T2-09CA-T	63	50	75	295	165	215	80	-	SPMG 09... DG/DK/DA
	64	50	75	295	165	215	80	TDP-0901	SPMG 09... DG/DK/DA
	65	50	75	295	165	215	80	TDP-0902	SPMG 09... DG/DK/DA D125
	66	50	75	295	165	215	80	TDP-0903	SPMG 09... DG/DK/DA
2567-73-50T2-11CA-T	67	50	75	320	183	240	80	-	SPMG 11... DG/DK/DA
	68	50	75	320	183	240	80	TDP-1101	SPMG 11... DG/DK/DA
	69	50	75	320	183	240	80	TDP-1102	SPMG 11... DG/DK/DA D125
	70	50	75	320	183	240	80	TDP-1103	SPMG 11... DG/DK/DA
	71	50	75	320	183	240	80	TDP-1104	SPMG 11... DG/DK/DA
	72	50	75	320	183	240	80	TDP-1105	SPMG 11... DG/DK/DA
	73	50	75	320	183	240	80	TDP-1106	SPMG 11... DG/DK/DA D125



Indexable cartridge drill holder



- Drilling depth: 2.5x diameter



Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	L3		
TDR 2674-80-50T2-12CA-T	74	50	75	330	200	250	80	-	
	75	50	75	330	200	250	80	TDP-1101	
	76	50	75	330	200	250	80	TDP-1102	
	77	50	75	330	200	250	80	TDP-1103	
	78	50	75	330	200	250	80	TDP-1104	
	79	50	75	330	200	250	80	TDP-1105	
	80	50	75	330	200	250	80	TDP-1106	

Spare parts

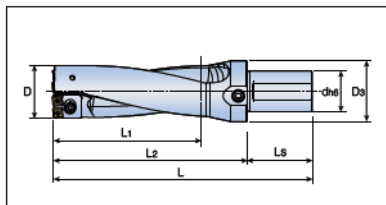
Designation	Screw	Cartridge for peripheral	Cartridge for center
TDR 2561	TS 25084I	TDR 07CA-P1-T	TDR 07CA-C1-T
TDR 2564	TS 25084I	TDR 07CA-P2-T	TDR 07CA-C2-T
TDR 2567	TS 35088I	TDR 09CA-P1-T	TDR 09CA-C1-T
TDR 2563	TS 35088I	TDR 09CA-P2-T	TDR 09CA-C2-T
TDR 2567	TS 40093I	TDR 11CA-P1-T	TDR 11CA-C1-T
TDR 2574	TS 40093I	TDR 12CA-P2-T	TDR 12CA-C2-T

Spare parts for cartridges

Cartridge	Cartridge clamping screw	Washer	Setting plate screw
TDR 07CA-P1-T	SH M4x0.7x16	MW 4.3x8	TS 20043/IG-P
TDR 07CA-C1-T	SH M4x0.7x16	MW 4.3x8	-
TDR 07CA-P2-T	SH M4x0.7x16	MW 4.3x8	TS 20043/IG-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	-



Indexable cartridge drill holder

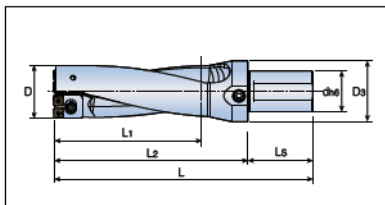


- Drilling depth: 3.5x diameter

Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	L3		
TDR 3561-53-50T2-07CA-T	51	50	75	303	186	223	80	-	SPMG 07... DG/DK/DA
	52	50	75	303	186	223	80	TDP-0701	D125
	53	50	75	303	186	223	80	TDP-0702	
3564-56-50T2-07CA-T	54	50	75	316	196	236	80	-	SPMG 07... DG/DK/DA
	55	50	75	316	196	236	80	TDP-0701	D125
	56	50	75	316	196	236	80	TDP-0702	
3567-62-50T2-09CA-T	57	50	75	343	217	263	80	-	SPMG 09... DG/DK/DA
	58	50	75	343	217	263	80	TDP-0901	D125
	59	50	75	343	217	263	80	TDP-0902	
	60	50	75	343	217	263	80	TDP-0903	
	61	50	75	343	217	263	80	TDP-0904	
	62	50	75	343	217	263	80	TDP-0905	
3566-66-50T2-09CA-T	63	50	75	361	231	281	80	-	
	64	50	75	361	231	281	80	TDP-0901	D125
	65	50	75	361	231	281	80	TDP-0902	
	66	50	75	361	231	281	80	TDP-0903	
3567-73-50T2-11CA-T	67	50	75	393	256	313	80	-	
	68	50	75	393	256	313	80	TDP-1101	D125
	69	50	75	393	256	313	80	TDP-1102	
	70	50	75	393	256	313	80	TDP-1103	
	71	50	75	393	256	313	80	TDP-1104	
	72	50	75	393	256	313	80	TDP-1105	
	73	50	75	393	256	313	80	TDP-1106	



Indexable cartridge drill holder



- Drilling depth: 3.5x diameter

Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	L3		
TDR 3574-80-50T2-12CA-T	74	50	75	410	280	330	80	-	SPMG 12...DG D125
	75	50	75	410	280	330	80	TDP-1101	
	76	50	75	410	280	330	80	TDP-1102	
	77	50	75	410	280	330	80	TDP-1103	
	78	50	75	410	280	330	80	TDP-1104	
	79	50	75	410	280	330	80	TDP-1105	
	80	50	75	410	280	330	80	TDP-1106	

Spare parts

Designation	Screw	Cartridge for peripheral	Cartridge for center
TDR 3561	TS 25064I	TDR 07CA-P1-T	TDR 07CA-C1-T
TDR 3564	TS 25084I	TDR 07CA-P2-T	TDR 07CA-C2-T
TDR 3567	TS 35088I	TDR 09CA-P1-T	TDR 09CA-C1-T
TDR 3563	TS 35088I	TDR 09CA-P2-T	TDR 09CA-C2-T
TDR 3567	TS 40093I	TDR 11CA-P1-T	TDR 11CA-C1-T
TDR 3574	TS 40093I	TDR 12CA-P2-T	TDR 12CA-C2-T

Spare parts for cartridges

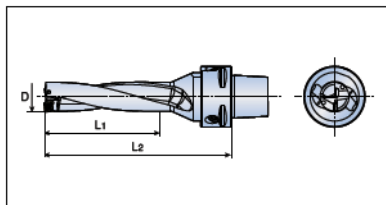
Cartridge	Cartridge clamping screw	Washer	Setting plate screw
TDR 07CA-P1-T	SH M4x0.7x16	MW 4.3x8	TS 20043/HG-P
TDR 07CA-C1-T	SH M4x0.7x16	MW 4.3x8	-
TDR 07CA-P2-T	SH M4x0.7x16	MW 4.3x8	TS 20043/HG-P
TDR 07CA-C2-T	SH M4x0.7x16	MW 4.3x8	-
TDR 09CA-P1-T	SH M5x0.8x16	MW 5.5x10	SO 30055I
TDR 09CA-C1-T	SH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



TDR 3...-C4

T-DRILL

Indexable drill with C-adapter system (Assembly product)



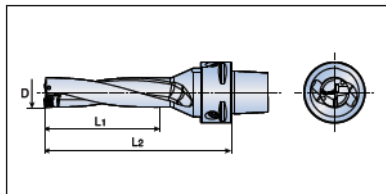
- Drilling depth: 3xdiameter

Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L1	L2		
TDR 3160-C4-06	16	48	88	TDR 3160-20DT-06	C4-TDR-20DT
3170-C4-06	17	51	91	TDR 3170-20DT-06	
3180-C4-06	18	54	95	TDR 3180-20DT-06	
3190-C4-06	19	57	98	TDR 3190-20DT-06	
3200-C4-06	20	60	103	TDR 3200-20DT-06	

TDR 4...-C4

T-DRILL

Indexable drill with C-adapter system (Assembly product)



- Drilling depth: 4xdiameter

Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L1	L2		
TDR 4160-C4-06	16	64	104	TDR 4160-20DT-06	C4-TDR-20DT
4170-C4-06	17	68	108	TDR 4170-20DT-06	
4180-C4-06	18	72	113	TDR 4180-20DT-06	
4190-C4-06	19	76	117	TDR 4190-20DT-06	
4200-C4-06	20	80	123	TDR 4200-20DT-06	

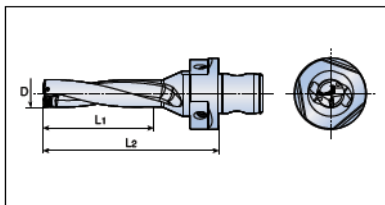
TDR 3...-BBS50

T-DRILL

Indexable drill with BBS system (Assembly product)



- Drilling depth: 3xdiameter



Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L1	L2		
TDR 3160-BBS50-06	16	48	88	TDR 3160-20DT-06	BBS50-TDR-20DT
3170-BBS50-06	17	51	91	TDR 3170-20DT-06	
3180-BBS50-06	18	54	95	TDR 3180-20DT-06	
3190-BBS50-06	19	57	98	TDR 3190-20DT-06	
3200-BBS50-06	20	60	103	TDR 3200-20DT-06	

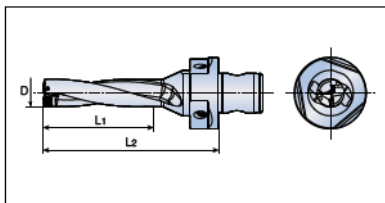
TDR 4...-BBS50

T-DRILL

Indexable drill with BBS system (Assembly product)



- Drilling depth: 4xdiameter

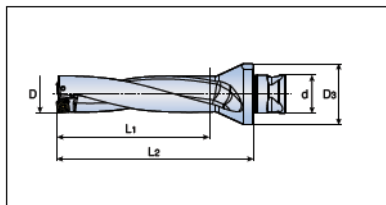


Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L1	L2		
TDR 4160-BBS50-06	16	64	104	TDR 4160-20DT-06	BBS50-TDR-20DT
4170-BBS50-06	17	68	108	TDR 4170-20DT-06	
4180-BBS50-06	18	72	113	TDR 4180-20DT-06	
4190-BBS50-06	19	76	117	TDR 4190-20DT-06	
4200-BBS50-06	20	80	123	TDR 4200-20DT-06	

TDR 3...-20DT

T-DRILL

Indexable drill holder for modular type



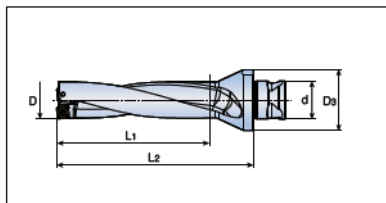
- Drilling depth: 3xdiameter

Designation	Dimension (mm)					Screw	Wrench	Insert
	D	d	D ₃	L ₂	L ₁			
TDR 3160-20DT-06	16	20	32	68	48	TS 22052/1HG (M2.2 X 5.2mm)	TD 7	SPMG 06... DG/DK/DA D125
3170-20DT-06	17	20	32	71	51			
3180-20DT-06	18	20	32	75	54			
3190-20DT-06	19	20	32	78	57			
3200-20DT-06	20	20	32	83	60			

TDR 4...-20DT

T-DRILL

Indexable drill holder for modular type



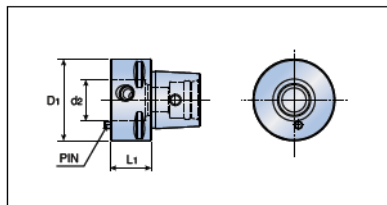
- Drilling depth: 4xdiameter

Designation	Dimension (mm)					Screw	Wrench	Insert
	D	d	D ₃	L ₂	L ₁			
TDR 4160-20DT-06	16	20	32	84	64	TS 22052/1HG (M2.2 X 5.2mm)	TD 7	SPMG 06... DG/DK/DA D125
4170-20DT-06	17	20	32	88	68			
4180-20DT-06	18	20	32	93	72			
4190-20DT-06	19	20	32	97	76			
4200-20DT-06	20	20	32	103	80			

C...TDR-20DT

T-DRILL

C-adapter system

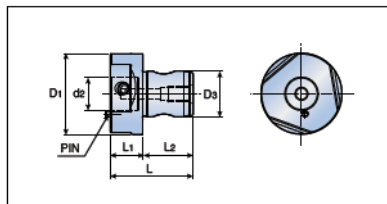


Designation	Dimension (mm)			Screw
	D1	d2	L1	
C4-TDR-20DT	40	20	20	SS M6x1x10-NL
C5-TDR-20DT	50	20	30	
C6-TDR-20DT	63	20	30	

BBS...TDR-20DT

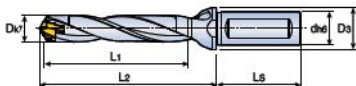
T-DRILL

BBS adapter system



Designation	Dimension (mm)						Screw
	D1	d2	D3	L1	L2	L	
BBS50-TDR-20DT	50	20	28	20	31	51	SS M6x1x10-NL
BBS63-TDR-20DT	63	20	34	39	38	77	

Head changeable drill holder - Weldon type shank

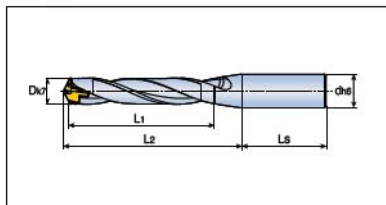


• Drilling depth: 3xdiameter

Designation	Dimension (mm)							Clamping key
	D range	d	Ds	L1	L2	Ls	Pocket size	
TCD 070-074-12T3-3D	7.0-7.4	12	16	21	35.6	45	7	K TCD D060-D099
076-079-12T3-3D	7.5-7.9	12	16	23	37.1	45	7	
080-084-12T3-3D	8.0-8.4	12	16	24	39.4	45	8	
086-089-12T3-3D	8.5-8.9	12	16	26	40.9	45	8	
090-094-12T3-3D	9.0-9.4	12	16	27	42.8	45	9	
096-099-12T3-3D	9.5-9.9	12	16	29	44.3	45	9	
100-104-16T3-3D	10.0-10.4	16	20	30	46.2	48	10	K TCD D100-D199
106-109-16T3-3D	10.5-10.9	16	20	32	47.7	48	10	
110-114-16T3-3D	11.0-11.4	16	20	33	49.6	48	11	
116-119-16T3-3D	11.5-11.9	16	20	35	51.1	48	11	
120-124-16T3-3D	12.0-12.4	16	20	36	53.0	48	12	
126-129-16T3-3D	12.5-12.9	16	20	37	54.5	48	12	
130-134-16T3-3D	13.0-13.4	16	20	39	56.6	48	13	
136-139-16T3-3D	13.5-13.9	16	20	41	58.1	48	13	
140-144-16T3-3D	14.0-14.4	16	20	42	62.1	48	14	
146-149-16T3-3D	14.5-14.9	16	20	44	63.6	48	14	
160-169-20T3-3D	15.0-15.9	20	25	45	68.7	50	15	
160-169-20T3-3D	16.0-16.9	20	25	48	73.3	50	16	
170-179-20T3-3D	17.0-17.9	20	25	51	77.9	50	17	
180-189-26T2-3D	18.0-18.9	25	32	54	82.5	56	18	
190-199-26T2-3D	19.0-19.9	25	32	57	87.0	56	19	
200-209-26T2-3D	20.0-20.9	25	32	60	91.6	56	20	K TCD D200-D269
210-219-26T2-3D	21.0-21.9	25	32	63	96.2	56	21	
220-229-26T2-3D	22.0-22.9	25	32	66	100.8	56	22	
230-239-32T2-3D	23.0-23.9	32	42	69	105.4	60	23	
240-249-32T2-3D	24.0-24.9	32	42	72	109.9	60	24	
250-259-32T2-3D	25.0-25.9	32	42	75	114.5	60	25	



Head changeable drill holder - Cylindrical type shank

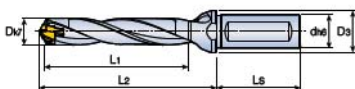


- Drilling depth: 3xdiameter

Designation	Dimension (mm)						Clamping key	
	D range	d	L1	L2	Ls	Pocket size		
TCD 070-074-12S0-3D	7.0-7.4	12	21	35.6	45	7	K TCD D060-D099	
075-079-12S0-3D	7.5-7.9	12	23	37.1	45	7		
080-084-12S0-3D	8.0-8.4	12	24	39.4	45	8		
085-089-12S0-3D	8.5-8.9	12	26	40.9	45	8		
090-094-12S0-3D	9.0-9.4	12	27	42.8	45	9		
095-099-12S0-3D	9.5-9.9	12	29	44.3	45	9		
100-104-16S0-3D	10.0-10.4	16	30	46.2	48	10		K TCD D100-D199
105-109-16S0-3D	10.5-10.9	16	32	47.7	48	10		
110-114-16S0-3D	11.0-11.4	16	33	49.6	48	11		
115-119-16S0-3D	11.5-11.9	16	35	51.1	48	11		
120-124-16S0-3D	12.0-12.4	16	36	53.0	48	12		
125-129-16S0-3D	12.5-12.9	16	37	54.5	48	12		
130-134-16S0-3D	13.0-13.4	16	39	56.6	48	13		
135-139-16S0-3D	13.5-13.9	16	41	58.1	48	13		
140-144-16S0-3D	14.0-14.4	16	42	62.1	48	14		
145-149-16S0-3D	14.5-14.9	16	44	63.6	48	14		
150-159-20S0-3D	15.0-15.9	20	45	68.7	50	15	K TCD D200-D269	
160-169-20S0-3D	16.0-16.9	20	48	73.3	50	16		
170-179-20S0-3D	17.0-17.9	20	51	77.9	50	17		
180-189-25S0-3D	18.0-18.9	25	54	82.5	56	18		
190-199-25S0-3D	19.0-19.9	25	57	87.0	56	19		
200-209-25S0-3D	20.0-20.9	25	60	91.6	56	20		
210-219-25S0-3D	21.0-21.9	25	63	96.2	56	21		
220-229-25S0-3D	22.0-22.9	25	66	100.8	56	22		
230-239-32S0-3D	23.0-23.9	32	69	105.4	60	23		
240-249-32S0-3D	24.0-24.9	32	72	109.9	60	24		
250-259-32S0-3D	25.0-25.9	32	75	114.5	60	25		



Head changeable drill holder - Weldon type shank

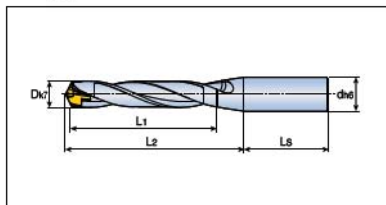


• Drilling depth: 5xdiameter

Designation	Dimension (mm)							Clamping key	
	D range	d	D3	L1	L2	Ls	Pocket size		
TCD 070-074-12T3-5D	7.0-7.4	12	16	35	49.6	45	7	K TCD D060-D099	
076-079-12T3-5D	7.5-7.9	12	16	38	52.1	45	7		
080-084-12T3-5D	8.0-8.4	12	16	40	55.4	45	8		
086-089-12T3-5D	8.5-8.9	12	16	43	57.9	45	8		
090-094-12T3-5D	9.0-9.4	12	16	45	60.8	45	9		
096-099-12T3-5D	9.5-9.9	12	16	48	63.3	45	9		
100-104-16T3-5D	10.0-10.4	16	20	50	66.2	48	10		K TCD D100-D199
106-109-16T3-5D	10.5-10.9	16	20	53	68.7	48	10		
110-114-16T3-5D	11.0-11.4	16	20	55	71.6	48	11		
116-119-16T3-5D	11.5-11.9	16	20	58	74.1	48	11		
120-124-16T3-5D	12.0-12.4	16	20	60	77.0	48	12		
126-129-16T3-5D	12.5-12.9	16	20	62	79.5	48	12		
130-134-16T3-5D	13.0-13.4	16	20	65	82.6	48	13		
136-139-16T3-5D	13.5-13.9	16	20	68	85.1	48	13		
140-144-16T3-5D	14.0-14.4	16	20	70	90.2	48	14		
146-149-16T3-5D	14.5-14.9	16	20	73	92.7	48	14		
160-169-20T3-5D	15.0-15.9	20	25	75	98.7	50	15	K TCD D200-D269	
160-169-20T3-5D	16.0-16.9	20	25	80	105.3	50	16		
170-179-20T3-5D	17.0-17.9	20	25	85	111.9	50	17		
180-189-26T2-5D	18.0-18.9	25	32	90	118.5	56	18		
190-199-26T2-5D	19.0-19.9	25	32	95	125.0	56	19		
200-209-26T2-5D	20.0-20.9	25	32	100	131.6	56	20		
210-219-26T2-5D	21.0-21.9	25	32	105	138.2	56	21		
220-229-26T2-5D	22.0-22.9	25	32	110	144.8	56	22		
230-239-32T2-5D	23.0-23.9	32	42	115	151.4	60	23		
240-249-32T2-5D	24.0-24.9	32	42	120	158.0	60	24		
260-269-32T2-5D	25.0-25.9	32	42	125	164.5	60	25		



Head changeable drill holder - Cylindrical type shank

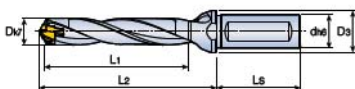


• Drilling depth: 5xdiameter

Designation	Dimension (mm)						Clamping key
	D range	d	L1	L2	Ls	Pocket size	
TCD 070-074-12S0-5D	7.0-7.4	12	35	49.6	45	7	K TCD D060-D099
075-079-12S0-5D	7.5-7.9	12	38	52.1	45	7	
080-084-12S0-5D	8.0-8.4	12	40	55.4	45	8	
085-089-12S0-5D	8.5-8.9	12	43	57.9	45	8	
090-094-12S0-5D	9.0-9.4	12	45	60.8	45	9	
095-099-12S0-5D	9.5-9.9	12	48	63.3	45	9	
100-104-16S0-5D	10.0-10.4	16	50	66.2	48	10	K TCD D100-D199
105-109-16S0-5D	10.5-10.9	16	53	68.7	48	10	
110-114-16S0-5D	11.0-11.4	16	55	71.6	48	11	
115-119-16S0-5D	11.5-11.9	16	58	74.1	48	11	
120-124-16S0-5D	12.0-12.4	16	60	77.0	48	12	
125-129-16S0-5D	12.5-12.9	16	62	79.5	48	12	
130-134-16S0-5D	13.0-13.4	16	65	82.6	48	13	
135-139-16S0-5D	13.5-13.9	16	68	85.1	48	13	
140-144-16S0-5D	14.0-14.4	16	70	90.2	48	14	
145-149-16S0-5D	14.5-14.9	16	73	92.7	48	14	
150-159-20S0-5D	15.0-15.9	20	75	98.7	50	15	K TCD D200-D269
160-169-20S0-5D	16.0-16.9	20	80	105.3	50	16	
170-179-20S0-5D	17.0-17.9	20	85	111.9	50	17	
180-189-25S0-5D	18.0-18.9	25	90	118.5	56	18	
190-199-25S0-5D	19.0-19.9	25	95	125.0	56	19	
200-209-25S0-5D	20.0-20.9	25	100	131.6	56	20	
210-219-25S0-5D	21.0-21.9	25	105	138.2	56	21	
220-229-25S0-5D	22.0-22.9	25	110	144.8	56	22	
230-239-32S0-5D	23.0-23.9	32	115	151.4	60	23	
240-249-32S0-5D	24.0-24.9	32	120	158.0	60	24	
250-259-32S0-5D	25.0-25.9	32	125	164.5	60	25	



Head changeable drill holder - Weldon type shank



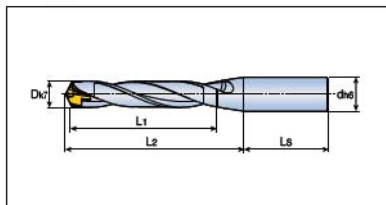
- Drilling depth: 8xdiameter

Designation	Dimension (mm)							Clamping key	
	D range	d	D3	L1	L2	Ls	Pocket size		
TCD 070-074-12T3-8D	7.0-7.4	12	16	56	70.6	45	7	K TCD D060-D099	
076-079-12T3-8D	7.5-7.9	12	16	60	74.6	45	7		
080-084-12T3-8D	8.0-8.4	12	16	64	79.4	45	8		
086-089-12T3-8D	8.5-8.9	12	16	68	84.4	45	8		
090-094-12T3-8D	9.0-9.4	12	16	72	87.8	45	9		
096-099-12T3-8D	9.5-9.9	12	16	76	92.7	45	9		
100-104-16T3-8D	10.0-10.4	16	20	80	96.2	48	10		K TCD D100-D199
106-109-16T3-8D	10.5-10.9	16	20	84	100.2	48	10		
110-114-16T3-8D	11.0-11.4	16	20	88	104.6	48	11		
116-119-16T3-8D	11.5-11.9	16	20	92	108.6	48	11		
120-124-16T3-8D	12.0-12.4	16	20	96	113.0	48	12		
126-129-16T3-8D	12.5-12.9	16	20	100	117.0	48	12		
130-134-16T3-8D	13.0-13.4	16	20	104	121.6	48	13		
136-139-16T3-8D	13.5-13.9	16	20	108	125.6	48	13		
140-144-16T3-8D	14.0-14.4	16	20	112	132.1	48	14		
146-149-16T3-8D	14.5-14.9	16	20	116	136.2	48	14		
160-169-20T3-8D	15.0-15.9	20	25	120	143.7	50	15	K TCD D200-D269	
160-169-20T3-8D	16.0-16.9	20	25	128	153.3	50	16		
170-179-20T3-8D	17.0-17.9	20	25	136	162.9	50	17		
180-189-26T2-8D	18.0-18.9	25	32	144	172.5	56	18		
190-199-26T2-8D	19.0-19.9	25	32	152	182.0	56	19		
200-209-26T2-8D	20.0-20.9	25	32	160	191.6	56	20		
210-219-26T2-8D	21.0-21.9	25	32	168	201.2	56	21		
220-229-26T2-8D	22.0-22.9	25	32	176	210.8	56	22		
230-239-32T2-8D	23.0-23.9	32	42	184	220.4	60	23		
240-249-32T2-8D	24.0-24.9	32	42	192	230.0	60	24		
260-269-32T2-8D	25.0-25.9	32	42	200	239.5	60	25		



• It is recommended to make the pilot hole with a 1.5D holder

Head changeable drill holder - Cylindrical type shank



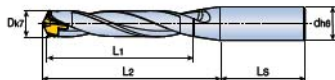
- Drilling depth: 8xdiameter

Designation	Dimension (mm)						Clamping key	
	D range	d	L1	L2	Ls	Pocket size		
TCD 070-074-12S0-8D	7.0-7.4	12	56	70.6	45	7	K TCD D060-D099	
075-079-12S0-8D	7.5-7.9	12	60	74.6	45	7		
080-084-12S0-8D	8.0-8.4	12	64	79.4	45	8		
085-089-12S0-8D	8.5-8.9	12	68	84.4	45	8		
090-094-12S0-8D	9.0-9.4	12	72	87.8	45	9		
095-099-12S0-8D	9.5-9.9	12	76	92.7	45	9		
100-104-16S0-8D	10.0-10.4	16	80	96.2	48	10		K TCD D100-D199
105-109-16S0-8D	10.5-10.9	16	84	100.2	48	10		
110-114-16S0-8D	11.0-11.4	16	88	104.6	48	11		
115-119-16S0-8D	11.5-11.9	16	92	108.6	48	11		
120-124-16S0-8D	12.0-12.4	16	96	113.0	48	12		
125-129-16S0-8D	12.5-12.9	16	100	117.0	48	12		
130-134-16S0-8D	13.0-13.4	16	104	121.6	48	13		
135-139-16S0-8D	13.5-13.9	16	108	125.6	48	13		
140-144-16S0-8D	14.0-14.4	16	112	132.1	48	14		
145-149-16S0-8D	14.5-14.9	16	116	136.2	48	14		
150-159-20S0-8D	15.0-15.9	20	120	143.7	50	15	K TCD D200-D299	
160-169-20S0-8D	16.0-16.9	20	128	153.3	50	16		
170-179-20S0-8D	17.0-17.9	20	136	162.9	50	17		
180-189-25S0-8D	18.0-18.9	25	144	172.5	56	18		
190-199-25S0-8D	19.0-19.9	25	152	182.0	56	19		
200-209-25S0-8D	20.0-20.9	25	160	191.6	56	20		
210-219-25S0-8D	21.0-21.9	25	168	201.2	56	21		
220-229-25S0-8D	22.0-22.9	25	176	210.8	56	22		
230-239-32S0-8D	23.0-23.9	32	184	220.4	60	23		
240-249-32S0-8D	24.0-24.9	32	192	230.0	60	24		
250-259-32S0-8D	25.0-25.9	32	200	239.5	60	25		



• It is recommended to make the pilot hole with a 1.5D holder

Head changeable drill holder - Cylindrical type shank



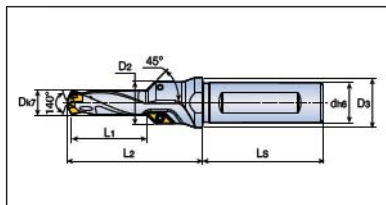
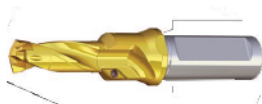
• Drilling depth: 12x diameter

Designation	Dimension (mm)						Clamping key	
	D range	d	L1	L2	Ls	Pocket size		
TCD 120-124-16S0-12D	12.0-12.4	16	144	161	48	12	K TCD D100-D199	
125-129-16S0-12D	12.5-12.9	16	150	167	48	12		
130-134-16S0-12D	13.0-13.4	16	156	173	48	13		
135-139-16S0-12D	13.5-13.9	16	162	179	48	13		
140-144-16S0-12D	14.0-14.4	16	168	188	48	14		
145-149-16S0-12D	14.5-14.9	16	174	194	48	14		
150-159-20S0-12D	15.0-15.9	20	180	210	50	15		
160-169-20S0-12D	16.0-16.9	20	192	224	50	16		
170-179-20S0-12D	17.0-17.9	20	204	238	50	17		
180-189-25S0-12D	18.0-18.9	25	216	252	56	18		
190-199-25S0-12D	19.0-19.9	25	228	266	56	19		
200-209-25S0-12D	20.0-20.9	25	240	280	56	20		K TCD D200-D269
210-219-25S0-12D	21.0-21.9	25	252	294	56	21		
220-229-25S0-12D	22.0-22.9	25	264	308	56	22		



• It is recommended to make the pilot hole with a 1.5D holder

Head changeable drill holder for pre-thread hole



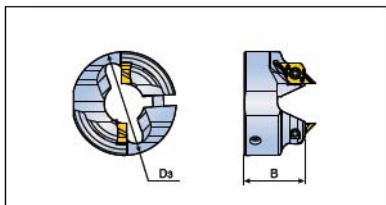
Designation	ISO thread	Drill dia.(D)	Dimension (mm)						Drill dia. range	Insert
			L ₁	L ₂	L _s	D ₂	d	D ₃		
TCD 085X26X12T3-M10	M10	8.5	26	50	45	15.5	12	16	8.5-8.9	AOMT 06...-C45 D131
102X30X16T3-M12	M12	10.2	30	54	48	17.0	16	20	10.0-10.4	
120X35X16T3-M14	M14	12.0	35	61	48	19.0	16	20	12.0-12.4	
140X39X20T3-M16	M16	14.0	39	69	50	21.0	20	25	14.0-14.4	
175X42X20T3-M20	M20	17.5	42	72	50	24.5	20	27	17.0-17.9	
210X48X25T2-M24	M24	21.0	48	80	56	28.0	25	32	21.0-21.9	

Spare parts

Designation	Screw 	Wrench 	Clamping key 	
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-D289	






Chamfering ring tool



Designation	Dimension (mm)		Chamfer size	Chamfer insert
	D ₃	B		
CFR D100-A45	34	20	3	CRNG 08...-45CD D131
D106-A45	34	20	3	
D110-A45	34	20	3	
D115-A45	34	20	3	
D120-A45	34	20	3	
D125-A45	34	20	3	
D130-A45	34	20	3	
D135-A45	34	20	3	
D140-A45	38	22	3	
D145-A45	38	22	3	
D150-A45	38	22	3	
D160-A45	42	23	3	
D170-A45	42	23	3	
D180-A45	42	23	3	
D190-A45	42	24	3	
D200-A45	42	24	3	
D210-A45	47	24	3	
D220-A45	47	24	3	
D230-A45	47	24	3	
D240-A45	47	24	3	
D250-A45	47	24	3	

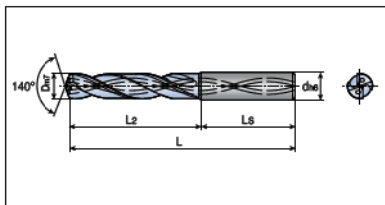
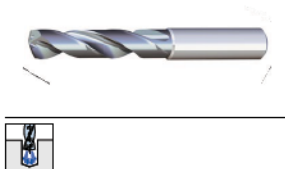
Spare parts

Designation	Insert screw	Wrench	Clamping screw	L-wrench
	CFR D100 - D135	 SO 25065I	 TD 7	 SH M3x0.5x10 ⁽¹⁾
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]



Solid carbide drill with oil holes



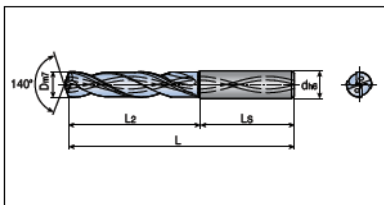
Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	
SHO 3030	3.0	6	62	20	42	•
3031	3.1	6	62	20	42	•
3032	3.2	6	62	20	42	•
3033	3.3	6	62	20	42	•
3034	3.4	6	62	20	42	•
3035	3.5	6	62	20	42	•
3036	3.6	6	62	20	42	•
3037	3.7	6	62	20	42	•
3038	3.8	6	66	24	42	•
3039	3.9	6	66	24	42	•
3040	4.0	6	66	24	42	•
3041	4.1	6	66	24	42	•
3042	4.2	6	66	24	42	•
3043	4.3	6	66	24	42	•
3044	4.4	6	66	24	42	•
3045	4.5	6	66	24	42	•
3046	4.6	6	66	24	42	•
3047	4.7	6	66	24	42	•
3048	4.8	6	66	28	38	•
3049	4.9	6	66	28	38	•
3050	5.0	6	68	30	38	•
3051	5.1	6	68	30	38	•
3052	5.2	6	68	30	38	•
3053	5.3	6	68	30	38	•
3054	5.4	6	68	30	38	•
3055	5.5	6	68	30	38	•
3056	5.6	6	68	30	38	•
3057	5.7	6	68	30	38	•
3058	5.8	6	68	30	38	•
3059	5.9	6	68	30	38	•
3060	6.0	6	68	30	38	•
3061	6.1	8	73	35	38	•
3062	6.2	8	73	35	38	•
3063	6.3	8	73	35	38	•
3064	6.4	8	73	35	38	•

Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	
SHO 3065	6.5	8	73	35	38	•
3066	6.6	8	73	35	38	•
3067	6.7	8	73	35	38	•
3068	6.8	8	73	35	38	•
3069	6.9	8	73	35	38	•
3070	7.0	8	73	35	38	•
3071	7.1	8	79	41	38	•
3072	7.2	8	79	41	38	•
3073	7.3	8	79	41	38	•
3074	7.4	8	79	41	38	•
3075	7.5	8	79	41	38	•
3076	7.6	8	79	41	38	•
3077	7.7	8	79	41	38	•
3078	7.8	8	79	41	38	•
3079	7.9	8	79	41	38	•
3080	8.0	8	79	41	38	•
3081	8.1	10	90	48	42	•
3082	8.2	10	90	48	42	•
3083	8.3	10	90	48	42	•
3084	8.4	10	90	48	42	•
3085	8.5	10	90	48	42	•
3086	8.6	10	90	48	42	•
3087	8.7	10	90	48	42	•
3088	8.8	10	90	48	42	•
3089	8.9	10	90	48	42	•
3090	9.0	10	90	48	42	•
3091	9.1	10	90	48	42	•
3092	9.2	10	90	48	42	•
3093	9.3	10	90	48	42	•
3094	9.4	10	90	48	42	•
3095	9.5	10	90	48	42	•
3096	9.6	10	90	48	42	•
3097	9.7	10	90	48	42	•
3098	9.8	10	90	48	42	•
3099	9.9	10	90	48	42	•



•: Standard item

Solid carbide drill with oil holes

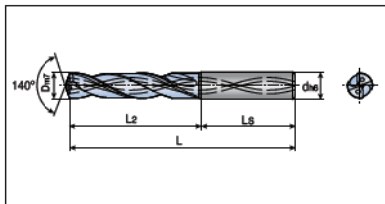


Designation	Dimension (mm)					Grade	TT9030	Designation	Dimension (mm)					Grade	TT9030
	D	d	L	L ₂	L _s				D	d	L	L ₂	L _s		
SHO 3100	10.0	10	90	48	42	●	SHO 3135	13.5	14	109	62	47	●		
3101	10.1	12	102	55	47	●	3136	13.6	14	109	62	47	●		
3102	10.2	12	102	55	47	●	3137	13.7	14	109	62	47	●		
3103	10.3	12	102	55	47	●	3138	13.8	14	109	62	47	●		
3104	10.4	12	102	55	47	●	3139	13.9	14	109	62	47	●		
3106	10.5	12	102	55	47	●	3140	14.0	14	109	62	47	●		
3106	10.6	12	102	55	47	●	3141	14.1	16	118	68	50	●		
3107	10.7	12	102	55	47	●	3142	14.2	16	118	68	50	●		
3108	10.8	12	102	55	47	●	3143	14.3	16	118	68	50	●		
3109	10.9	12	102	55	47	●	3144	14.4	16	118	68	50	●		
3110	11.0	12	102	55	47	●	3146	14.5	16	118	68	50	●		
3111	11.1	12	102	55	47	●	3146	14.6	16	118	68	50	●		
3112	11.2	12	102	55	47	●	3147	14.7	16	118	68	50	●		
3113	11.3	12	102	55	47	●	3148	14.8	16	118	68	50	●		
3114	11.4	12	102	55	47	●	3149	14.9	16	118	68	50	●		
3115	11.5	12	102	55	47	●	3150	15.0	16	118	68	50	●		
3116	11.6	12	102	55	47	●	3151	15.1	16	118	68	50	●		
3117	11.7	12	102	55	47	●	3152	15.2	16	118	68	50	●		
3118	11.8	12	102	55	47	●	3153	15.3	16	118	68	50	●		
3119	11.9	12	102	55	47	●	3154	15.4	16	118	68	50	●		
3120	12.0	12	102	55	47	●	3156	15.5	16	118	68	50	●		
3121	12.1	14	109	62	47	●	3156	15.6	16	118	68	50	●		
3122	12.2	14	109	62	47	●	3157	15.7	16	118	68	50	●		
3123	12.3	14	109	62	47	●	3158	15.8	16	118	68	50	●		
3124	12.4	14	109	62	47	●	3159	15.9	16	118	68	50	●		
3126	12.5	14	109	62	47	●	3160	16.0	16	118	68	50	●		
3126	12.6	14	109	62	47	●	3161	16.1	18	125	75	50	●		
3127	12.7	14	109	62	47	●	3162	16.2	18	125	75	50	●		
3128	12.8	14	109	62	47	●	3163	16.3	18	125	75	50	●		
3129	12.9	14	109	62	47	●	3164	16.4	18	125	75	50	●		
3130	13.0	14	109	62	47	●	3166	16.5	18	125	75	50	●		
3131	13.1	14	109	62	47	●	3166	16.6	18	125	75	50	●		
3132	13.2	14	109	62	47	●	3167	16.7	18	125	75	50	●		
3133	13.3	14	109	62	47	●	3168	16.8	18	125	75	50	●		
3134	13.4	14	109	62	47	●	3169	16.9	18	125	75	50	●		

●: Standard item



Solid carbide drill with oil holes

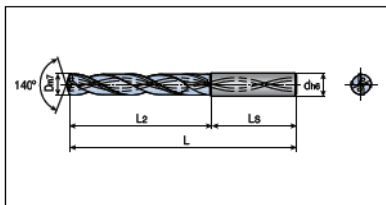


Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	TT9030
SHO 3170	17.0	18	125	75	50	●
3171	17.1	18	125	75	50	●
3172	17.2	18	125	75	50	●
3173	17.3	18	125	75	50	●
3174	17.4	18	125	75	50	●
3175	17.5	18	125	75	50	●
3176	17.6	18	125	75	50	●
3177	17.7	18	125	75	50	●
3178	17.8	18	125	75	50	●
3179	17.9	18	125	75	50	●
3180	18.0	18	125	75	50	●
3181	18.1	20	134	82	52	●
3182	18.2	20	134	82	52	●
3183	18.3	20	134	82	52	●
3184	18.4	20	134	82	52	●
3185	18.5	20	134	82	52	●
3186	18.6	20	134	82	52	●
3187	18.7	20	134	82	52	●
3188	18.8	20	134	82	52	●
3189	18.9	20	134	82	52	●
3190	19.0	20	134	82	52	●
3191	19.1	20	134	82	52	●
3192	19.2	20	134	82	52	●
3193	19.3	20	134	82	52	●
3194	19.4	20	134	82	52	●
3195	19.5	20	134	82	52	●
3196	19.6	20	134	82	52	●
3197	19.7	20	134	82	52	●
3198	19.8	20	134	82	52	●
3199	19.9	20	134	82	52	●
3200	20.0	20	134	82	52	●



●: Standard item

Solid carbide drill with oil holes

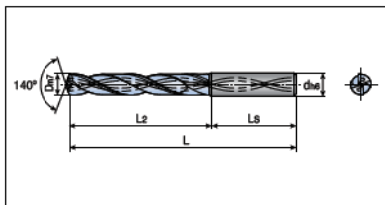


Designation	Dimension (mm)					Grade	TT9030	Designation	Dimension (mm)					Grade	TT9030
	D	d	L	L ₂	L _s				D	d	L	L ₂	L _s		
SHO 5030	3.0	6	66	28	38	•	SHO 5065	6.5	8	94	56	38	•		
5031	3.1	6	66	28	38	•	5066	6.6	8	94	56	38	•		
5032	3.2	6	66	28	38	•	5067	6.7	8	94	56	38	•		
5033	3.3	6	66	28	38	•	5068	6.8	8	94	56	38	•		
5034	3.4	6	66	28	38	•	5069	6.9	8	94	56	38	•		
5035	3.5	6	66	28	38	•	5070	7.0	8	94	56	38	•		
5036	3.6	6	66	28	38	•	5071	7.1	8	94	56	38	•		
5037	3.7	6	66	28	38	•	5072	7.2	8	94	56	38	•		
5038	3.8	6	74	36	38	•	5073	7.3	8	94	56	38	•		
5039	3.9	6	74	36	38	•	5074	7.4	8	94	56	38	•		
5040	4.0	6	74	36	38	•	5075	7.5	8	94	56	38	•		
5041	4.1	6	74	36	38	•	5076	7.6	8	94	56	38	•		
5042	4.2	6	74	36	38	•	5077	7.7	8	94	56	38	•		
5043	4.3	6	74	36	38	•	5078	7.8	8	94	56	38	•		
5044	4.4	6	74	36	38	•	5079	7.9	8	94	56	38	•		
5045	4.5	6	74	36	38	•	5080	8.0	8	94	56	38	•		
5046	4.6	6	74	36	38	•	5081	8.1	10	107	65	42	•		
5047	4.7	6	74	36	38	•	5082	8.2	10	107	65	42	•		
5048	4.8	6	82	44	38	•	5083	8.3	10	107	65	42	•		
5049	4.9	6	82	44	38	•	5084	8.4	10	107	65	42	•		
5050	5.0	6	84	46	38	•	5085	8.5	10	107	65	42	•		
5051	5.1	6	84	46	38	•	5086	8.6	10	107	65	42	•		
5052	5.2	6	84	46	38	•	5087	8.7	10	107	65	42	•		
5053	5.3	6	84	46	38	•	5088	8.8	10	107	65	42	•		
5054	5.4	6	84	46	38	•	5089	8.9	10	107	65	42	•		
5055	5.5	6	84	46	38	•	5090	9.0	10	107	65	42	•		
5056	5.6	6	84	46	38	•	5091	9.1	10	107	65	42	•		
5057	5.7	6	84	46	38	•	5092	9.2	10	107	65	42	•		
5058	5.8	6	84	46	38	•	5093	9.3	10	107	65	42	•		
5059	5.9	6	84	46	38	•	5094	9.4	10	107	65	42	•		
5060	6.0	6	84	46	38	•	5095	9.5	10	107	65	42	•		
5061	6.1	8	94	56	38	•	5096	9.6	10	107	65	42	•		
5062	6.2	8	94	56	38	•	5097	9.7	10	107	65	42	•		
5063	6.3	8	94	56	38	•	5098	9.8	10	107	65	42	•		
5064	6.4	8	94	56	38	•	5099	9.9	10	107	65	42	•		

•: Standard item



Solid carbide drill with oil holes



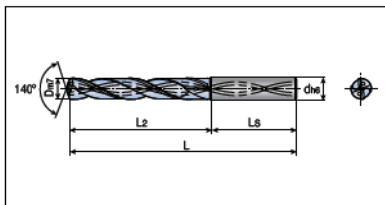
Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	
SHO 5100	10.0	10	107	65	42	•
5101	10.1	12	125	78	47	•
5102	10.2	12	125	78	47	•
5103	10.3	12	125	78	47	•
5104	10.4	12	125	78	47	•
5105	10.5	12	125	78	47	•
5106	10.6	12	125	78	47	•
5107	10.7	12	125	78	47	•
5108	10.8	12	125	78	47	•
5109	10.9	12	125	78	47	•
5110	11.0	12	125	78	47	•
5111	11.1	12	125	78	47	•
5112	11.2	12	125	78	47	•
5113	11.3	12	125	78	47	•
5114	11.4	12	125	78	47	•
5115	11.5	12	125	78	47	•
5116	11.6	12	125	78	47	•
5117	11.7	12	125	78	47	•
5118	11.8	12	125	78	47	•
5119	11.9	12	125	78	47	•
5120	12.0	12	125	78	47	•
5121	12.1	14	138	91	47	•
5122	12.2	14	138	91	47	•
5123	12.3	14	138	91	47	•
5124	12.4	14	138	91	47	•
5125	12.5	14	138	91	47	•
5126	12.6	14	138	91	47	•
5127	12.7	14	138	91	47	•
5128	12.8	14	138	91	47	•
5129	12.9	14	138	91	47	•
5130	13.0	14	138	91	47	•
5131	13.1	14	138	91	47	•
5132	13.2	14	138	91	47	•
5133	13.3	14	138	91	47	•
5134	13.4	14	138	91	47	•

Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	
SHO 5135	13.5	14	138	91	47	•
5136	13.6	14	138	91	47	•
5137	13.7	14	138	91	47	•
5138	13.8	14	138	91	47	•
5139	13.9	14	138	91	47	•
5140	14.0	14	138	91	47	•
5141	14.1	16	154	104	50	•
5142	14.2	16	154	104	50	•
5143	14.3	16	154	104	50	•
5144	14.4	16	154	104	50	•
5145	14.5	16	154	104	50	•
5146	14.6	16	154	104	50	•
5147	14.7	16	154	104	50	•
5148	14.8	16	154	104	50	•
5149	14.9	16	154	104	50	•
5150	15.0	16	154	104	50	•
5151	15.1	16	154	104	50	•
5152	15.2	16	154	104	50	•
5153	15.3	16	154	104	50	•
5154	15.4	16	154	104	50	•
5155	15.5	16	154	104	50	•
5156	15.6	16	154	104	50	•
5157	15.7	16	154	104	50	•
5158	15.8	16	154	104	50	•
5159	15.9	16	154	104	50	•
5160	16.0	16	154	104	50	•
5161	16.1	18	167	117	50	•
5162	16.2	18	167	117	50	•
5163	16.3	18	167	117	50	•
5164	16.4	18	167	117	50	•
5165	16.5	18	167	117	50	•
5166	16.6	18	167	117	50	•
5167	16.7	18	167	117	50	•
5168	16.8	18	167	117	50	•
5169	16.9	18	167	117	50	•



•: Standard item

Solid carbide drill with oil holes

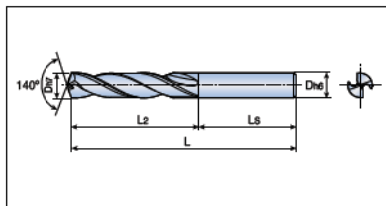
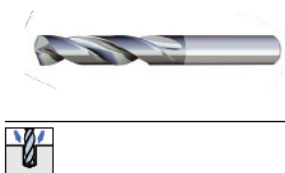


Designation	Dimension (mm)					Grade
	D	d	L	L ₂	L _s	TT9030
SHO 5170	17.0	18	167	117	50	●
5171	17.1	18	167	117	50	●
5172	17.2	18	167	117	50	●
5173	17.3	18	167	117	50	●
5174	17.4	18	167	117	50	●
5175	17.5	18	167	117	50	●
5176	17.6	18	167	117	50	●
5177	17.7	18	167	117	50	●
5178	17.8	18	167	117	50	●
5179	17.9	18	167	117	50	●
5180	18.0	18	167	117	50	●
5181	18.1	20	182	130	52	●
5182	18.2	20	182	130	52	●
5183	18.3	20	182	130	52	●
5184	18.4	20	182	130	52	●
5185	18.5	20	182	130	52	●
5186	18.6	20	182	130	52	●
5187	18.7	20	182	130	52	●
5188	18.8	20	182	130	52	●
5189	18.9	20	182	130	52	●
5190	19.0	20	182	130	52	●
5191	19.1	20	182	130	52	●
5192	19.2	20	182	130	52	●
5193	19.3	20	182	130	52	●
5194	19.4	20	182	130	52	●
5196	19.5	20	182	130	52	●
5196	19.6	20	182	130	52	●
5197	19.7	20	182	130	52	●
5198	19.8	20	182	130	52	●
5199	19.9	20	182	130	52	●
5200	20.0	20	182	130	52	●



●: Standard item

Solid carbide drill without oil holes



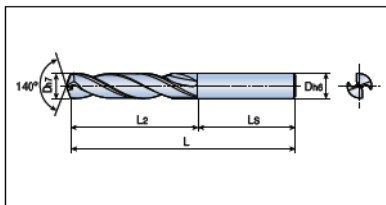
Designation	Dimension (mm)				Grade
	D	L	L2	Ls	
SHD 3030	3.0	49	19	30	•
3031	3.1	49	19	30	•
3032	3.2	49	19	30	•
3033	3.3	49	19	30	•
3034	3.4	52	20	32	•
3035	3.5	52	20	32	•
3036	3.6	52	20	32	•
3037	3.7	52	20	32	•
3038	3.8	55	30	25	•
3039	3.9	55	30	25	•
3040	4.0	55	30	25	•
3041	4.1	55	30	25	•
3042	4.2	55	30	25	•
3043	4.3	58	30	28	•
3044	4.4	58	30	28	•
3045	4.5	58	30	28	•
3046	4.6	58	30	28	•
3047	4.7	58	30	28	•
3048	4.8	62	34	28	•
3049	4.9	62	34	28	•
3050	5.0	62	34	28	•
3051	5.1	62	34	28	•
3052	5.2	62	34	28	•
3053	5.3	62	34	28	•
3054	5.4	66	36	30	•
3055	5.5	66	36	30	•
3056	5.6	66	36	30	•
3057	5.7	66	36	30	•
3058	5.8	66	36	30	•
3059	5.9	66	36	30	•
3060	6.0	66	36	30	•
3061	6.1	70	39	31	•
3062	6.2	70	39	31	•
3063	6.3	70	39	31	•
3064	6.4	70	39	31	•

Designation	Dimension (mm)				Grade
	D	L	L2	Ls	
SHD 3065	6.5	70	39	31	•
3066	6.6	70	39	31	•
3067	6.7	70	39	31	•
3068	6.8	74	41	33	•
3069	6.9	74	41	33	•
3070	7.0	74	41	33	•
3071	7.1	74	41	33	•
3072	7.2	74	41	33	•
3073	7.3	74	41	33	•
3074	7.4	74	41	33	•
3075	7.5	74	41	33	•
3076	7.6	79	44	35	•
3077	7.7	79	44	35	•
3078	7.8	79	44	35	•
3079	7.9	79	44	35	•
3080	8.0	79	44	35	•
3081	8.1	79	44	35	•
3082	8.2	79	44	35	•
3083	8.3	79	44	35	•
3084	8.4	79	44	35	•
3085	8.5	79	44	35	•
3086	8.6	84	47	37	•
3087	8.7	84	47	37	•
3088	8.8	84	47	37	•
3089	8.9	84	47	37	•
3090	9.0	84	47	37	•
3091	9.1	84	47	37	•
3092	9.2	84	47	37	•
3093	9.3	84	47	37	•
3094	9.4	84	47	37	•
3095	9.5	84	47	37	•
3096	9.6	89	50	39	•
3097	9.7	89	50	39	•
3098	9.8	89	50	39	•
3099	9.9	89	50	39	•

•: Standard item



Solid carbide drill without oil holes

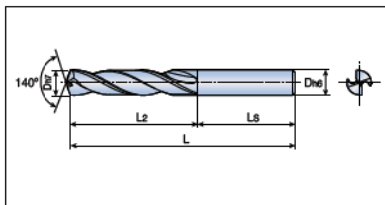


Designation	Dimension (mm)				Grade TT9030	Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls			D	L	L2	Ls	
SHD 3100	10.0	89	50	39	●	SHD 3135	13.5	107	61	46	●
3101	10.1	89	50	39	●	3136	13.6	107	61	46	●
3102	10.2	89	50	39	●	3137	13.7	107	61	46	●
3103	10.3	89	50	39	●	3138	13.8	107	61	46	●
3104	10.4	89	50	39	●	3139	13.9	107	61	46	●
3106	10.5	89	50	39	●	3140	14.0	107	61	46	●
3106	10.6	89	50	39	●	3141	14.1	111	64	47	●
3107	10.7	95	54	41	●	3142	14.2	111	64	47	●
3108	10.8	95	54	41	●	3143	14.3	111	64	47	●
3109	10.9	95	54	41	●	3144	14.4	111	64	47	●
3110	11.0	95	54	41	●	3145	14.5	111	64	47	●
3111	11.1	95	54	41	●	3146	14.6	111	64	47	●
3112	11.2	95	54	41	●	3147	14.7	111	64	47	●
3113	11.3	95	54	41	●	3148	14.8	111	64	47	●
3114	11.4	95	54	41	●	3149	14.9	111	64	47	●
3115	11.5	95	54	41	●	3150	15.0	111	64	47	●
3116	11.6	95	54	41	●	3151	15.1	115	66	49	●
3117	11.7	95	54	41	●	3152	15.2	115	66	49	●
3118	11.8	95	54	41	●	3153	15.3	115	66	49	●
3119	11.9	102	58	44	●	3154	15.4	115	66	49	●
3120	12.0	102	58	44	●	3155	15.5	115	66	49	●
3121	12.1	102	58	44	●	3156	15.6	115	66	49	●
3122	12.2	102	58	44	●	3157	15.7	115	66	49	●
3123	12.3	102	58	44	●	3158	15.8	115	66	49	●
3124	12.4	102	58	44	●	3159	15.9	115	66	49	●
3125	12.5	102	58	44	●	3160	16.0	115	66	49	●
3126	12.6	102	58	44	●	3161	16.1	119	68	51	●
3127	12.7	102	58	44	●	3162	16.2	119	68	51	●
3128	12.8	102	58	44	●	3163	16.3	119	68	51	●
3129	12.9	102	58	44	●	3164	16.4	119	68	51	●
3130	13.0	102	58	44	●	3165	16.5	119	68	51	●
3131	13.1	102	58	44	●	3166	16.6	119	68	51	●
3132	13.2	102	58	44	●	3167	16.7	119	68	51	●
3133	13.3	107	61	46	●	3168	16.8	119	68	51	●
3134	13.4	107	61	46	●	3169	16.9	119	68	51	●

●: Standard item



Solid carbide drill without oil holes

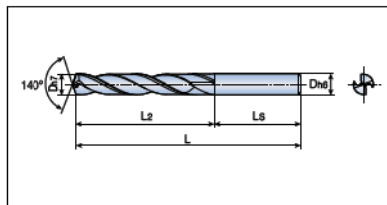


Designation	Dimension (mm)				Grade
	D	L	L ₂	L _s	TT9030
SHD 3170	17.0	119	68	51	●
3171	17.1	123	70	53	●
3172	17.2	123	70	53	●
3173	17.3	123	70	53	●
3174	17.4	123	70	53	●
3175	17.5	123	70	53	●
3176	17.6	123	70	53	●
3177	17.7	123	70	53	●
3178	17.8	123	70	53	●
3179	17.9	123	70	53	●
3180	18.0	123	70	53	●
3181	18.1	127	72	55	●
3182	18.2	127	72	55	●
3183	18.3	127	72	55	●
3184	18.4	127	72	55	●
3185	18.5	127	72	55	●
3186	18.6	127	72	55	●
3187	18.7	127	72	55	●
3188	18.8	127	72	55	●
3189	18.9	127	72	55	●
3190	19.0	127	72	55	●
3191	19.1	131	76	55	●
3192	19.2	131	76	55	●
3193	19.3	131	76	55	●
3194	19.4	131	76	55	●
3195	19.5	131	76	55	●
3196	19.6	131	76	55	●
3197	19.7	131	76	55	●
3198	19.8	131	76	55	●
3199	19.9	131	76	55	●
3200	20.0	131	76	55	●



●: Standard item

Solid carbide drill without oil holes

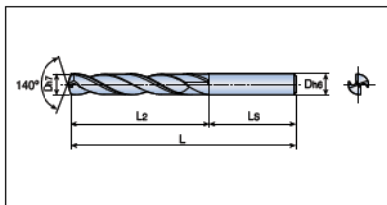
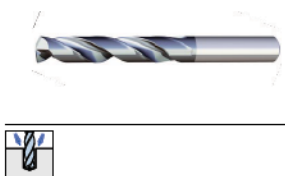


Designation	Dimension (mm)				Grade	Designation	Dimension (mm)				Grade
	D	L	L2	Ls			TT9030	D	L	L2	
SHD 5030	3.0	76	40	36	●	SHD 5065	6.5	91	53	38	●
5031	3.1	76	40	36	●	5066	6.6	91	53	38	●
5032	3.2	76	40	36	●	5067	6.7	91	53	38	●
5033	3.3	76	40	36	●	5068	6.8	91	53	38	●
5034	3.4	76	40	36	●	5069	6.9	91	53	38	●
5035	3.5	76	40	36	●	5070	7.0	91	53	38	●
5036	3.6	76	40	36	●	5071	7.1	94	56	38	●
5037	3.7	76	40	36	●	5072	7.2	94	56	38	●
5038	3.8	76	40	36	●	5073	7.3	94	56	38	●
5039	3.9	76	40	36	●	5074	7.4	94	56	38	●
5040	4.0	76	40	36	●	5075	7.5	94	56	38	●
5041	4.1	80	43	37	●	5076	7.6	94	56	38	●
5042	4.2	80	43	37	●	5077	7.7	94	56	38	●
5043	4.3	80	43	37	●	5078	7.8	94	56	38	●
5044	4.4	80	43	37	●	5079	7.9	94	56	38	●
5045	4.5	80	43	37	●	5080	8.0	94	56	38	●
5046	4.6	80	43	37	●	5081	8.1	103	61	42	●
5047	4.7	80	43	37	●	5082	8.2	103	61	42	●
5048	4.8	80	43	37	●	5083	8.3	103	61	42	●
5049	4.9	80	43	37	●	5084	8.4	103	61	42	●
5050	5.0	80	43	37	●	5085	8.5	103	61	42	●
5051	5.1	84	46	38	●	5086	8.6	103	61	42	●
5052	5.2	84	46	38	●	5087	8.7	103	61	42	●
5053	5.3	84	46	38	●	5088	8.8	103	61	42	●
5054	5.4	84	46	38	●	5089	8.9	103	61	42	●
5055	5.5	84	46	38	●	5090	9.0	103	61	42	●
5056	5.6	84	46	38	●	5091	9.1	107	65	42	●
5057	5.7	84	46	38	●	5092	9.2	107	65	42	●
5058	5.8	84	46	38	●	5093	9.3	107	65	42	●
5059	5.9	84	46	38	●	5094	9.4	107	65	42	●
5060	6.0	84	46	38	●	5095	9.5	107	65	42	●
5061	6.1	91	53	38	●	5096	9.6	107	65	42	●
5062	6.2	91	53	38	●	5097	9.7	107	65	42	●
5063	6.3	91	53	38	●	5098	9.8	107	65	42	●
5064	6.4	91	53	38	●	5099	9.9	107	65	42	●

●: Standard item



Solid carbide drill without oil holes

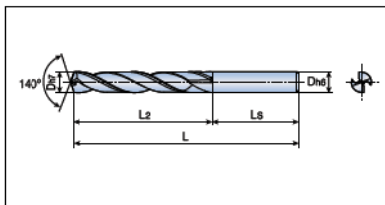
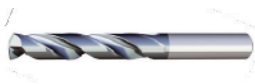


Designation	Dimension (mm)				Grade	Designation	Dimension (mm)				Grade
	D	L	L2	Ls			TT9030	D	L	L2	
SHD 5100	10.0	107	65	42	●	SHD 5135	13.5	147	96	51	●
5101	10.1	118	73	45	●	5136	13.6	147	96	51	●
5102	10.2	118	73	45	●	5137	13.7	147	96	51	●
5103	10.3	118	73	45	●	5138	13.8	147	96	51	●
5104	10.4	118	73	45	●	5139	13.9	147	96	51	●
5105	10.5	118	73	45	●	5140	14.0	147	96	51	●
5106	10.6	118	73	45	●	5141	14.1	153	100	53	●
5107	10.7	118	73	45	●	5142	14.2	153	100	53	●
5108	10.8	118	73	45	●	5143	14.3	153	100	53	●
5109	10.9	118	73	45	●	5144	14.4	153	100	53	●
5110	11.0	118	73	45	●	5146	14.5	153	100	53	●
5111	11.1	125	78	47	●	5146	14.6	153	100	53	●
5112	11.2	125	78	47	●	5147	14.7	153	100	53	●
5113	11.3	125	78	47	●	5148	14.8	153	100	53	●
5114	11.4	125	78	47	●	5149	14.9	153	100	53	●
5115	11.5	125	78	47	●	5150	15.0	153	100	53	●
5116	11.6	125	78	47	●	5151	15.1	160	107	53	●
5117	11.7	125	78	47	●	5152	15.2	160	107	53	●
5118	11.8	125	78	47	●	5153	15.3	160	107	53	●
5119	11.9	125	78	47	●	5154	15.4	160	107	53	●
5120	12.0	125	78	47	●	5155	15.5	160	107	53	●
5121	12.1	138	91	47	●	5156	15.6	160	107	53	●
5122	12.2	138	91	47	●	5157	15.7	160	107	53	●
5123	12.3	138	91	47	●	5158	15.8	160	107	53	●
5124	12.4	138	91	47	●	5159	15.9	160	107	53	●
5125	12.5	138	91	47	●	5160	16.0	160	107	53	●
5126	12.6	138	91	47	●	5161	16.1	167	117	50	●
5127	12.7	138	91	47	●	5162	16.2	167	117	50	●
5128	12.8	138	91	47	●	5163	16.3	167	117	50	●
5129	12.9	138	91	47	●	5164	16.4	167	117	50	●
5130	13.0	138	91	47	●	5165	16.5	167	117	50	●
5131	13.1	147	96	51	●	5166	16.6	167	117	50	●
5132	13.2	147	96	51	●	5167	16.7	167	117	50	●
5133	13.3	147	96	51	●	5168	16.8	167	117	50	●
5134	13.4	147	96	51	●	5169	16.9	167	117	50	●



●: Standard item

Solid carbide drill without oil holes

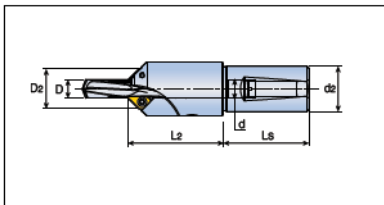
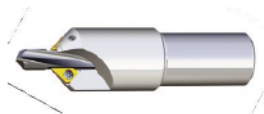


Designation	Dimension (mm)				Grade
	D	L	L ₂	L _s	TT9030
SHD 5170	17.0	167	117	50	•
5171	17.1	167	117	50	•
5172	17.2	167	117	50	•
5173	17.3	167	117	50	•
5174	17.4	167	117	50	•
5175	17.5	167	117	50	•
5176	17.6	167	117	50	•
5177	17.7	167	117	50	•
5178	17.8	167	117	50	•
5179	17.9	167	117	50	•
5180	18.0	167	117	50	•
5181	18.1	182	130	52	•
5182	18.2	182	130	52	•
5183	18.3	182	130	52	•
5184	18.4	182	130	52	•
5185	18.5	182	130	52	•
5186	18.6	182	130	52	•
5187	18.7	182	130	52	•
5188	18.8	182	130	52	•
5189	18.9	182	130	52	•
5190	19.0	182	130	52	•
5191	19.1	182	130	52	•
5192	19.2	182	130	52	•
5193	19.3	182	130	52	•
5194	19.4	182	130	52	•
5196	19.5	182	130	52	•
5196	19.6	182	130	52	•
5197	19.7	182	130	52	•
5198	19.8	182	130	52	•
5199	19.9	182	130	52	•
5200	20.0	182	130	52	•



•: Standard item

Chamfering tool with solid carbide drill



Designation	D range	Dimension (mm)					Insert
		d	D2	L2	Ls	d2	
T-CHAMFER 080-20T1-06	7.1-8.0	8	18.8	47.4	50	20	XCGT 06...-C.. D132
090-20T1-06	8.1-9.0	9	19.8	47.4	50	20	
100-32T1-09	9.1-10.0	10	24.9	67.3	60	32	XCGT 09...-C.. D132
110-32T1-09	10.1-11.0	11	25.9	67.3	60	32	
120-32T1-09	11.1-12.0	12	26.9	67.3	60	32	
130-32T1-09	12.1-13.0	13	27.9	67.3	60	32	
140-32T1-09	13.1-14.0	14	28.4	67.3	60	32	
150-32T1-09	14.1-15.0	15	29.4	67.3	60	32	
160-32T1-09	15.1-16.0	16	30.4	67.3	60	32	
170-32T1-09	16.1-17.0	17	31.4	67.3	60	32	
180-32T1-09	17.1-18.0	18	32.4	67.3	60	32	
190-32T1-09	18.1-19.0	19	33.4	75.0	60	32	
200-32T1-09	19.1-20.0	20	34.4	75.0	60	32	

Spare parts

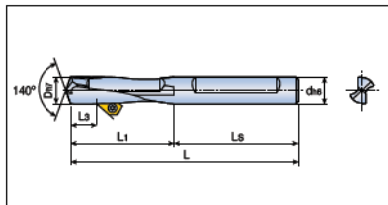
Designation	Side screw	Back screw	L-wrench	Insert screw	Wrench
T-CHAMFER 080 - 090	SS M6x1x6	M6x1-SP	L-W 3	TS 25064I	TD 8
T-CHAMFER 100 - 200	SS M10x1.5x10	M10x1.5-SP	L-W 5	TS 40093I	TD 15



SHD 3...-CF

T-CHAMFER

Solid carbide drill for T-CHAMFER



Designation	Dimension (mm)							Grade
	D	d	L	L ₁	L _s	L ₃ min	L ₃ max	
SHD 3080-CF	8.0	8.0	79	36	43	9.5	17.5	●
3090-CF	9.0	9.0	84	41	43	13.0	23.5	●
3100-CF	10.0	10.0	89	46	43	15.5	25.0	●
3110-CF	11.0	11.0	95	52	43	21.5	30.0	●
3120-CF	12.0	12.0	102	59	43	25.5	37.0	●
3130-CF	13.0	13.0	102	59	43	25.5	35.0	●
3140-CF	14.0	14.0	107	61	46	22.5	38.0	●
3150-CF	15.0	15.0	111	63	48	26.5	40.5	●
3160-CF	16.0	16.0	115	67	48	25.0	43.5	●
3170-CF	17.0	17.0	119	69	50	24.5	44.0	●
3180-CF	18.0	18.0	123	73	50	26.5	48.0	●
3190-CF	19.0	19.0	127	73	54	26.5	49.0	●
3200-CF	20.0	20.0	131	77	54	30.5	53.5	●

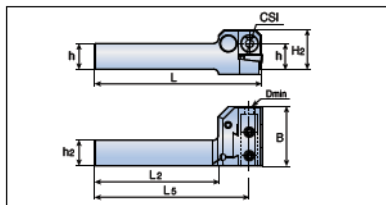
- 'L₃' is factored with a 45° insert positioned in insert pocket
- Solid carbide drill with internal coolant holes is available on request

●: Standard item

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

Clamping units (Centre alignment system)



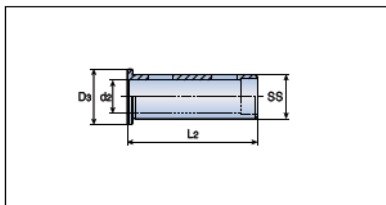
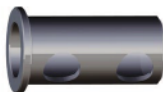
Designation	Dimension (mm)									Toolholders
	h	h2	CSI	H2	B	L2	L5	L		
TGHR 2020-D16	20	20	16	38	58	120	150	161		TCAP 08R/L...
2525-D16	25	25	16	38	58	120	150	161		TCAP 10R/L...
										TCAP 12R/L...
										TCAP 14R/L...
2525-D25	25	25	25	56	75	120	157	174		TCAP 16R/L...
										TCAP 20R/L...

Spare parts

Designation	Block	Wedge	Snap ring	Wedge screw	Mounting pin	Mounting pin screw	Mounting screw		Lock screw	Wrench
TGHR 2020-D16										
TGHR 2525-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-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



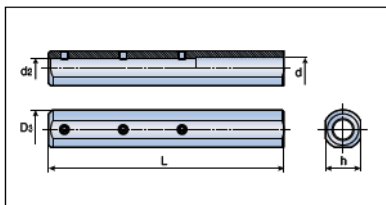
Sleeves for clamping units



Designation	Dimension (mm)				Toolholders
	SS	d2	D3	L2	
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)				
	D3	d2	d	L	h
TBSL 20-10-120	20	10	11	120	18

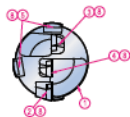
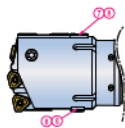
Spare parts

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

Deep Drilling Holders



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	T9	T9	T9	T15	T15
Center	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04	CENC 402-04
Screw	CSTB3	CSTB3	CSTB3.5	CSTB3.5	CSTB3.5
Wrench	T9	T9	T15	T15	T15
Insert					
Outer	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG	TPMX 1704RG
Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5	CSTB3.5D
Wrench	T7	T8	T8	T8	T9
Inner	NPMX 0803RG	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG
Screw	CSTB2.2	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5
Wrench	T7	T7	T7	T8	T8
Center	NPMX 0803RG	NPMX 0803RG	TPMX 1403RG	TPMX 1403RG	TPMX 1403RG
Screw	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T7	T7	T8	T8	T8
Pad					
Guide pad	PAD-GC08	PAD-GC08	PAD-GC10	PAD-GC10	PAD-GC10
Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
Wrench	T9	T9	T15	T15	T15
Guide pad protector	PAD-P08	PAD-P08	PAD-P10	PAD-P10	PAD-P10
Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
Wrench	T9	T9	T15	T15	T15
Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S08	PAD-S08
Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
Wrench	T9	T9	T9	T9	T9



D138

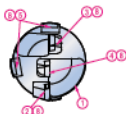
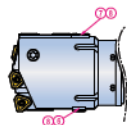


D139



D142

Assembly of TBTA3 series

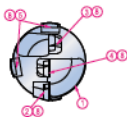
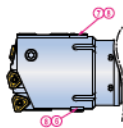


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw

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	T15	T15	T15	T15	H3
Center	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
Screw	CSTA5	CSTA5	CSTA5	CSTA5	LS1206
Wrench	T15	T15	T15	T15	H3
Insert					
Outer	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG	TPMX 1704RG
Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB3.5D
Wrench	T9	T9	T9	T15	T9
Inner	TPMX 1403RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
Screw	CSTB2.5	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
Wrench	T8	T9	T9	T9	T15
Center	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 1704RG	TPMX 2405RG
Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
Wrench	T9	T9	T9	T9	T15
Pad					
Guide pad	PAD-GC10	PAD-GC10	PAD-GC14	PAD-GC14	PAD-GC14
Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
Wrench	T15	T15	T15	T15	T15
Guide pad protector	PAD-P10	PAD-P10	PAD-P14	PAD-P14	PAD-P14
Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
Wrench	T15	T15	T15	T15	T15
Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S10	PAD-S10
Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
Wrench	T9	T9	T9	T9	T9



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

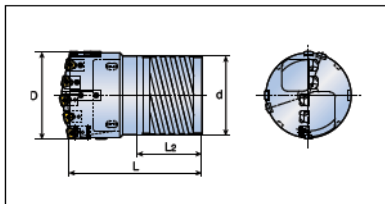
Parts	Diameter (mm)				
	78.00-84.99	85.00-91.99	92.00-98.99	99.00-106.99	
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-43	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0005-15	AS0006-15
	Wrench	H2.5	H3	H2.5	H3
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 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
Wrench	H3	H3	H3	H3	
Insert	Outer	TPMX 2405RG	TPMX 2807RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB4M	CSTB5
	Wrench	T15	T20	T15	T20
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T15	T15	T20	T20
	Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T15	T15	T20	T20
	Guide pad	PAD-GC14	PAD-GC14	PAD-GC14	PAD-GC18
Screw	CSTA5S	CSTA5S	CSTA5S	LS1206S	
Wrench	T15	T15	T15	H3	
Guide pad protector	PAD-P14	PAD-P14	PAD-P14	PAD-P18	
Screw	CSTB5S	CSTB5S	CSTA5S	LS1206S	
Wrench	T15	T15	T15	H3	
Sub guide pad	PAD-S10	PAD-S10	PAD-S10	PAD-S14	
Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S	
Wrench	T9	T9	T9	T15	



TBTA5...SE4

T-DEEP

Single tube system



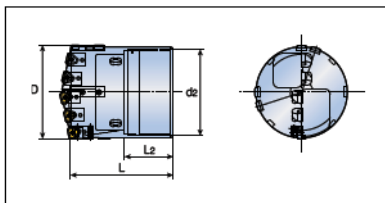
- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d	Part	Diameter (mm)
TBTA5-xxx_xxSE4-094	107.00-111.99	180	82	89	BTSI 094	94
xxx_xxSE4-106	112.00-123.99	205	102	101	BTSI 106	106
xxx_xxSE4-118	124.00-135.99	205	102	113	BTSI 118	118
xxx_xxSE4-130	136.00-147.99	205	102	125	BTSI 130	130
xxx_xxSE4-142	148.00-159.99	225	122	137	BTSI 142	142
xxx_xxSE4-154	160.00-168.99	225	122	149	BTSI 154	154

TBTA5...SI1

T-DEEP

Single tube system

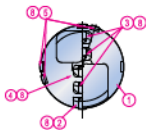
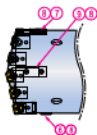


- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
TBTA5-xxx_xxSI1-094	107.00-110.99	150	70	90	BTSE 094	94
xxx_xxSI1-106	111.00-122.99	150	70	102	BTSE 106	106
xxx_xxSI1-118	123.00-134.99	150	70	114	BTSE 118	118
xxx_xxSI1-130	135.00-148.99	150	70	126	BTSE 130	130
xxx_xxSI1-142	149.00-161.99	150	70	139	BTSE 142	142
xxx_xxSI1-154	162.00-168.99	190	85	151	BTSE 154	154



Assembly of TBTA5 series

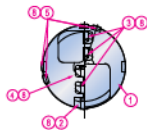
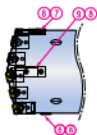


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw
9. Filler

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	T15	H3	H3	H3
Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
Screw	LS1206	LS1206	LS1206	LS1206
Wrench	H3	H3	H3	H3
Insert				
Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
Wrench	T15	T15	T15	T15
Inner	TPMX 1704RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
Screw	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M
Wrench	T9	T15	T15	T15
Center	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG
Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
Wrench	T15	T15	T20	T20
Pad				
Guide pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
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	T15	T15	T15	T15



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

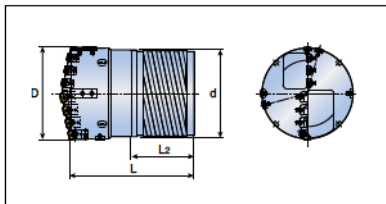
Parts	Diameter (mm)			
	151.00-156.99	157.00-162.99	163.00-168.99	
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3
	Screw	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3	H3	H3
	Center	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206
Insert	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG
	Screw	CSTB4M	CSTB4M	CSTB5
	Wrench	T15	T15	T20
	Center	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20
	Pad	Guide pad	PAD-GC18	PAD-GC18
Screw		LS1206S	LS1206S	LS1206S
Wrench		H3	H3	H3
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		T15	T15	T15



TBTA7...SE4

T-DEEP

Single tube system



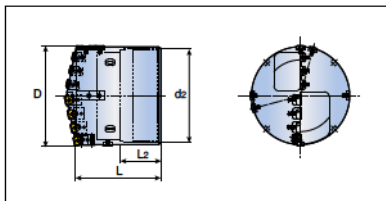
- Outer four start thread
- Double tube system also available on request

Designation	D range	Dimension (mm)			Tube	
		L	L ₂	d	Part	Diameter (mm)
TBTA7- xxx_xxxSE4-154	169.00-171.99	230	122	149	BTSI 154	154
xxx_xxxSE4-166	172.00-183.99	230	122	161	BTSI 166	166
xxx_xxxSE4-178	184.00-195.99	250	142	173	BTSI 178	178
xxx_xxxSE4-190	196.00-207.99	250	142	185	BTSI 190	190
xxx_xxxSE4-202	208.00-219.99	250	142	197	BTSI 202	202
xxx_xxxSE4-214	220.00-231.99	270	162	208	BTSI 214	214
xxx_xxxSE4-226	232.00-232.99	270	162	220	BTSI 226	226

TBTA7...SI1

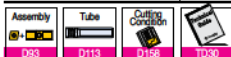
T-DEEP

Single tube system

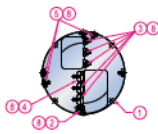
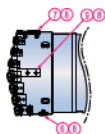


- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L ₂	d ₂	Part	Diameter (mm)
TBTA7- xxx_xxxSI1-154	169.00-173.99	190	85	145	BTSE 154	154
xxx_xxxSI1-166	174.00-185.99	190	85	157	BTSE 166	166
xxx_xxxSI1-178	186.00-197.99	190	85	169	BTSE 178	178
xxx_xxxSI1-190	198.00-209.99	190	85	181	BTSE 190	190
xxx_xxxSI1-202	210.00-221.99	190	85	193	BTSE 202	202
xxx_xxxSI1-214	222.00-233.99	190	85	205	BTSE 214	214



Assembly of TBTA7 series

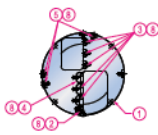
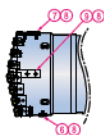


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw
9. Filler

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	H3	H3	H3	H3
	Center	CENC 402-43	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
Insert	Outer	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15
	Inner	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T15	T15	T15	T15
	Center	TPMX 2405RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
	Screw	CSTB4M	CSTB5	CSTB5	CSTB5
	Wrench	T15	T20	T20	T20
	Pad	Guide pad	PAD-GC18	PAD-GC18	PAD-GC18
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		T15	T15	T15	T15



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

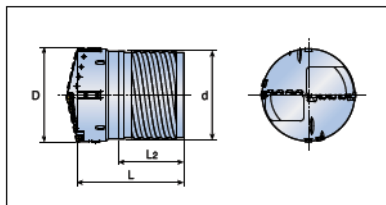
Parts	Diameter (mm)					
	209.00-214.99	215.00-220.99	221.00-226.99	227.00-232.99		
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63	
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0005-15	
	Wrench	H3	H3	H3	H3	
	Screw	L1806RH	L1806RH	L1806RH	LS1806RH	
	Wrench	H4	H4	H4	H4	
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-63	
	Screw	LS1206	LS1206	LS1206	LS1206	
	Wrench	H3	H3	H3	H3	
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	
	Screw	LS1206	LS1206	LS1206	LS1206	
	Wrench	H3	H3	H3	H3	
	Insert	Outer	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG
Screw		CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	
Inner		TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2807RG	
Screw		CSTB4M	CSTB4M	CSTB4M	CSTB4M	
Wrench		T15	T15	T15	T15	
Center		TPMX 2807RG	TPMX 2807RG	TPMX 2807RG	TPMX 2807RG	
Screw		CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	
Pad		Guide pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
		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	T15	T15	T15	T15	



TBTA9...SE4

T-DEEP

Single tube system



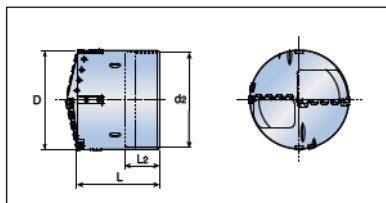
- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L ₂	d	Part	Diameter (mm)
TBTA9- xxx.xxSE4-226	233.00-243.99	294	164	220	BTSI 226	226
xxx.xxSE4-238	244.00-255.99	294	164	232	BTSI 238	238
xxx.xxSE4-250	256.00-267.99	322	184	244	BTSI 250	250
xxx.xxSE4-262	268.00-279.99	323	184	256	BTSI 262	262
xxx.xxSE4-274	280.00-291.99	325	184	268	BTSI 274	274

TBTA9...SI1

T-DEEP

Single tube system

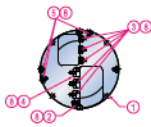
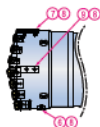


- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L ₂	d ₂	Part	Diameter (mm)
TBTA9- xxx.xxSI1-214	233.00-233.99	217	86	211	BTSE 214	214
xxx.xxSI1-226	234.00-245.99	219	86	223	BTSE 226	226
xxx.xxSI1-238	246.00-257.99	221	86	235	BTSE 238	238
xxx.xxSI1-250	258.00-269.99	242	121	247	BTSE 250	250
xxx.xxSI1-262	270.00-281.99	244	121	259	BTSE 262	262
xxx.xxSI1-274	282.00-293.99	245	121	271	BTSE 274	274



Assembly of TBTA9 series

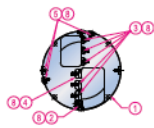
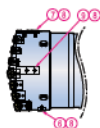


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw
9. Filler

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	H3	H3	H3	H3	H3	
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206	
	Wrench	H3	H3	H3	H3	H3	
	Insert	Outer	TPMX 2405 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
Screw		CSTB4M	CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T15	T20	T20	T20	T20	
Inner		TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG	TPMX 2405 RG	
Screw		CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB4M	
Wrench		T15	T15	T15	T15	T15	
Center		TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	
Screw		CSTB5	CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	T20	
Pad		Guide pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
		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	T15	T15	T15	T15	T15	



Assembly of TBTA9 series

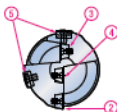
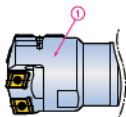


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw
9. Filler

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	LS1206	LS1206	LS1206	LS1206	
	Wrench	H3	H3	H3	H3	
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	
	Screw	LS1206	LS1206	LS1206	LS1206	
	Wrench	H3	H3	H3	H3	
	Insert	Outer	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG
Screw		CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	
Inner		TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	
Screw		CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	
Center		TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	TPMX 2807 RG	
Screw		CSTB5	CSTB5	CSTB5	CSTB5	
Wrench		T20	T20	T20	T20	
Pad		Guide pad	PAD-GC18	PAD-GC18	PAD-GC18	PAD-GC18
		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	T15	T15	T15	T15	



Assembly of TBTA-FB series



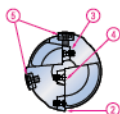
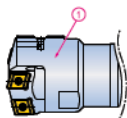
1. Head shank
2. Outer insert
3. Inner insert
4. Center insert
5. Guide pad

Parts	Diameter (mm)			
	25.00-28.00	28.01-29.99	30.00-35.00	35.01-38.00
PER	NPHT 06003 RG	NPHT 06003 RG	NPHT 07504 RG	NPHT 07504 RG
Screw	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5
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	CSTB2.5	CSTB2.5
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	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-7F	T-8F	T-8F	T-8F
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

Parts	Diameter (mm)			
	38.01-39.00	39.01-41.00	41.01-44.00	44.01-45.00
PER	NPHT 09004 RG	NPHT 09004 RG	NPHT 09004 RG	NPHT 09004 RG
Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
INT	NPMT 06504 RG	NPMT 06504 RG	NPMT 08004 RG	NPMT 08004 RG
Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
CEN	NPMT 08004 LG	NPMT 08004 LG	NPMT 08004 LG	NPMT 09504 LG
Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
PAD	PAD-GO07CD	PAD-GO08CD-FB	PAD-GO08CD-FB	PAD-GO08CD-FB
Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S
Wrench	T-9F	T-9F	T-9F	T-9F



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	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
INT	NPMT 08004 RG	NPMT 08004 RG	NPMT 09504 RG	NPMT 09504 RG
Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
CEN	NPMT 09504 LG	NPMT 09504 LG	NPMT 09504 LG	NPMT 12504 LG
Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F	T-8F
Pad				
PAD	PAD-GO10CD	PAD-GO10CD	PAD-GO10CD	PAD-GO10CD
Screw	CSTB3.5	CSTB3.5	CSTB3.5	CSTB3.5
Wrench	T-15F	T-15F	T-15F	T-15F

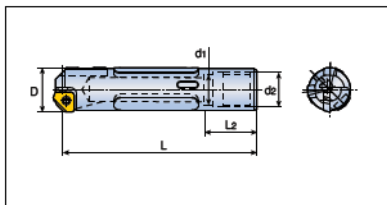
Parts	Diameter (mm)		
	57.01-60.00	60.01-64.00	64.01-65.00
Insert			
PER	NPHT 11004 RG	NPHT 13004 RG	NPHT 13004 RG
Screw	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F
INT	NPMT 09504 RG	NPMT 09504 RG	NPMT 12504 RG
Screw	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F
CEN	NPMT 12504 LG	NPMT 12504 LG	NPMT 12504 LG
Screw	CSTB2.5	CSTB2.5	CSTB2.5
Wrench	T-8F	T-8F	T-8F
Pad			
PAD	PAD-GO12CD	PAD-GO12CD	PAD-GO12CD
Screw	CSTB3.5	CSTB3.5	CSTB3.5
Wrench	T-15F	T-15F	T-15F



TBTA-R...S11

T-DEEP

Single tube system



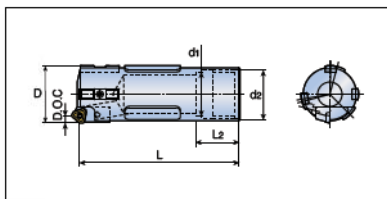
- Inner single start thread

Designation	D range	D.O.C (mm)	Dimension (mm)				Tube	
			L	L2	d2	d1	Part	Diameter (mm)
TBTA-R- xxx.xxS11-22	25.00-26.99	2.8	110	25	20	17	BTSE 022	22
xxx.xxS11-24	27.00-29.99	2.8	110	25	22	19	BTSE 024	24
xxx.xxS11-26	30.00-31.99	2.8	110	25	24	21	BTSE 026	26
xxx.xxS11-28	32.00-33.99	2.8	110	25	26	23	BTSE 028	28
xxx.xxS11-30	34.00-36.99	2.8	135	40	27	24	BTSE 030	30
xxx.xxS11-33	37.00-39.99	2.8	135	40	30	27	BTSE 033	33

TBTA-R...S11

T-DEEP

Single tube system

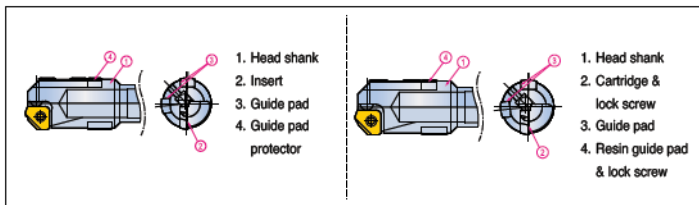


- Inner single start thread

Designation	D range	D.O.C (mm)		Dimension (mm)				Tube	
		Standard	Precision	L	L2	d2	d1	Part	Diameter (mm)
TBTA-R- xxx.xxS11-36	40.00-43.99	6.4	4	135	40	33	30	BTSE 036	36
xxx.xxS11-39	44.00-46.99	6.4	4	135	40	37	34	BTSE 039	39
xxx.xxS11-43	47.00-51.99	6.4	4	145	40	41	37	BTSE 043	43
xxx.xxS11-47	52.00-56.99	7.2	4.8	145	40	44	40	BTSE 047	47
xxx.xxS11-51	57.00-60.99	7.2	4.8	170	40	49	45	BTSE 051	51
xxx.xxS11-56	61.00-67.99	7.2/10.4	4.8/6.4	170	40	53	49	BTSE 056	56
xxx.xxS11-62	68.00-74.99	10.4	6.4	170	40	59	54	BTSE 062	62
xxx.xxS11-68	75.00-80.99	10.4	6.4	205	70	65	60	BTSE 068	68
xxx.xxS11-75	81.00-90.99	10.4	6.4	205	70	71	66	BTSE 075	75
xxx.xxS11-82	91.00-98.99	10.4	6.4	215	70	79	74	BTSE 082	82
xxx.xxS11-94	99.00-110.99	10.4	6.4	215	70	90	85	BTSE 094	94



Assembly of TBTA-R series

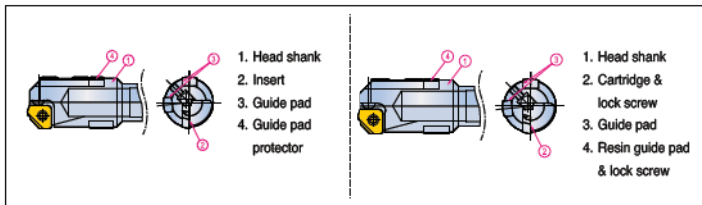


Parts		Diameter (mm)				
		25.00-27.99	28.00-29.99	30.00-36.99	37.00-39.99	
Close tolerance	Cartridge	Outer	-	-	-	-
		Adjust screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
	Insert	Wrench	-	-	-	-
		Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
Wrench	T9	T9	T9	T9		
Normal tolerance	Cartridge	Outer	-	-	-	-
		Adjust screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
	Insert	Wrench	-	-	-	-
		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-GC08-120	PAD-GC08-120	PAD-GC08-140	PAD-GC08	
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	
	Wrench	T9	T9	T9	T9	
	Guide pad protector (B)	PAD-P08-120	PAD-P08-120	PAD-P08-140	PAD-P08	
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	
	Wrench	T9	T9	T9	T9	
	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

Assembly of TBTA-R series

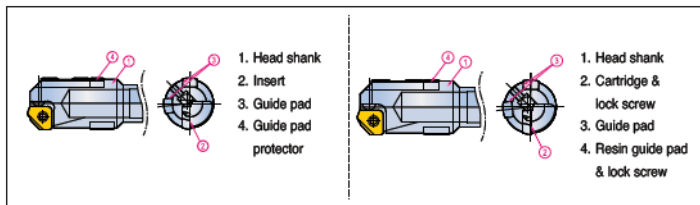


Parts		Diameter (mm)				
		40.00-45.99	46.00-51.99	52.00-56.99	57.00-66.99	
Close tolerance	Cartridge	Outer	PERC-P 04R	PERC-P 04R	PERC-P 32R	PERC-P 32R
		Adjust screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
	Insert	Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
		Insert	TPMX 1403LG	TPMX 1403LG	TPMX 1704LG	TPMX 1704LG
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
		Wrench	T8	T8	T9	T9
		Wrench	T8	T8	T9	T9
Normal tolerance	Cartridge	Outer	PERC 402-04	PERC 402-04	PERC 402-32	PERC 402-32
		Adjust screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
	Insert	Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
		Insert	TPMX 1403RG	TPMX 1403RG	TPMX 1704RG	TPMX 1704RG
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
		Wrench	T8	T8	T9	T9
		Wrench	T8	T8	T9	T9
Pad	Guide pad (A)	PAD-GC08	PAD-GC10	PAD-GC10	PAD-GC14	
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S	
	Wrench	T9	T9	T9	T15	
	Guide pad protector (B)	PAD-P08	PAD-P10	PAD-P10	PAD-P14	
	Screw	CSTB3S	CSTB4S	CSTB4S	CSTA5S	
	Wrench	T9	T15	T15	T15	
	Resin guide pad (C)	PAD-R15	PAD-R15	PAD-R15	PAD-R20	
	Screw	LS0904-10	LS0904-10	LS0904-10	LS0905-12	
	Wrench	+H2.5	+H2.5	+H25	+H3	



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

Assembly of TBTA-R series

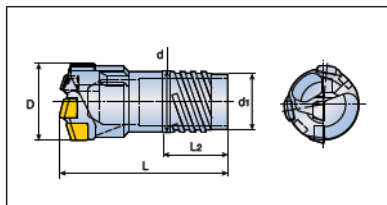


Parts		Diameter (mm)				
		67.00-80.99	81.00-90.99	91.00-99.99	100.00-122.99	
Close tolerance	Cartridge	Outer	PERC-P 43R	PERC-P 43R	PERC-P 43R	PERC-P 43R
		Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
	Insert	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
		Wrench	H4	H4	H4	H4
		Insert	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG
Normal tolerance	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
	Insert	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
		Wrench	H4	H4	H4	H4
		Insert	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG	TPMX 2405RG
Pad	Guide pad (A)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
		Wrench	T15	T15	T15	T15
	Guide pad protector (B)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
		Wrench	T15	T15	T15	T15
	Resin guide pad (C)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
	Guide pad (A)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
	Guide pad protector (B)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
	Resin guide pad (C)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
		Wrench	T15	T15	T15	T15
Guide pad (A)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	
	Wrench	T15	T15	T15	T15	
Guide pad protector (B)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	
	Wrench	T15	T15	T15	T15	
Resin guide pad (C)	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	
	Wrench	T15	T15	T15	T15	



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

Single tube system



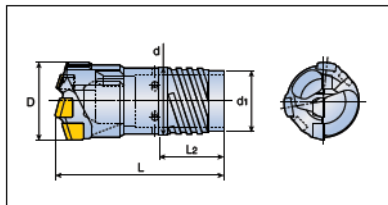
- Outer four start thread

Designation	D range	Dimension (mm)				Tube	
		L	L2	d1	d	Part	Diameter (mm)
BTA XXX.XX SE2-11*	12.60-13.10	43.0	23.5	8.2	9.6	BTSI011	11
XXX.XX SE2-11*	13.11-13.60	43.0	23.5	8.2	9.6	BTSI011	11
XXX.XX SE2-12*	13.61-14.10	43.0	23.5	9.2	10.6	BTSI012	12
XXX.XX SE2-12*	14.11-14.60	43.0	23.5	9.2	10.6	BTSI012	12
XXX.XX SE2-13*	14.61-15.10	43.0	23.5	10.2	11.6	BTSI013	13
XXX.XX SE2-13*	15.11-15.59	43.0	23.5	10.2	11.6	BTSI013	13
XXX.XX SE4-14	15.60-16.20	43.0	20.0	10.8	12.6	BTSI014	14
XXX.XX SE4-14	16.21-16.70	43.0	20.0	10.8	12.6	BTSI014	14
XXX.XX SE4-15	16.71-17.20	43.0	20.0	11.8	13.6	BTSI015	15
XXX.XX SE4-15	17.21-17.70	43.0	20.0	11.8	13.6	BTSI015	15
XXX.XX SE4-16	17.71-18.40	47.0	21.5	12.5	14.5	BTSI016	16
XXX.XX SE4-16	18.41-18.90	47.0	21.5	12.5	14.5	BTSI016	16
XXX.XX SE4-17	18.91-19.20	47.0	21.5	13.5	15.5	BTSI017	17
XXX.XX SE4-17	19.21-20.00	47.0	21.5	13.5	15.5	BTSI017	17
XXX.XX SE4-18	20.01-20.90	52.5	21.5	14.0	16.0	BTSI018	18
XXX.XX SE4-18	20.91-21.80	52.5	21.5	14.0	16.0	BTSI018	18
XXX.XX SE4-20	21.81-22.90	56.0	21.5	16.0	18.0	BTSI020	20
XXX.XX SE4-20	22.91-24.10	56.0	21.5	16.0	18.0	BTSI020	20
XXX.XX SE4-22	24.11-25.20	57.5	21.5	17.5	19.5	BTSI022	22
XXX.XX SE4-22	25.21-26.40	57.5	21.5	17.5	19.5	BTSI022	22
XXX.XX SE4-24	26.41-27.50	57.5	21.5	19.0	21.0	BTSI024	24
XXX.XX SE4-24	27.51-28.70	57.5	21.5	19.0	21.0	BTSI024	24
XXX.XX SE4-26	28.71-29.80	63.5	24.5	21.0	23.5	BTSI026	26
XXX.XX SE4-26	29.81-31.00	63.5	24.5	21.0	23.5	BTSI026	26
XXX.XX SE4-28	31.01-32.10	63.5	24.5	23.0	25.5	BTSI028	28
XXX.XX SE4-28	32.11-33.30	63.5	24.5	23.0	25.5	BTSI028	28
XXX.XX SE4-30	33.31-34.80	63.5	24.5	25.5	28.0	BTSI030	30
XXX.XX SE4-30	34.81-36.20	63.5	24.5	25.5	28.0	BTSI030	30
XXX.XX SE4-33	36.21-37.30	73.5	30.5	27.0	30.0	BTSI033	33
XXX.XX SE4-33	37.31-38.40	73.5	30.5	27.0	30.0	BTSI033	33
XXX.XX SE4-33	38.41-39.60	73.5	30.5	27.0	30.0	BTSI033	33
XXX.XX SE4-36	39.61-40.60	73.5	30.5	30.0	33.0	BTSI036	36
XXX.XX SE4-36	40.61-41.80	73.5	30.5	30.0	33.0	BTSI036	36
XXX.XX SE4-36	41.81-43.00	73.5	30.5	30.0	33.0	BTSI036	36
XXX.XX SE4-39	43.01-44.30	75.0	30.5	33.0	36.0	BTSI039	39



- *'2 cutting edge head

Double tube system

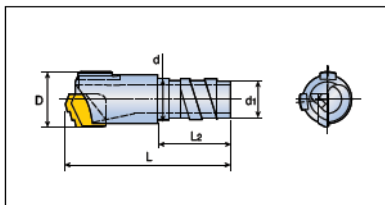


- Outer four start thread

Designation	D range	Dimension (mm)				Tube		
		L	L2	d1	d	Outer tube	Inner tube	Diameter (mm)
BTA XXX.XX DE4-18	18.41-19.20	50.0	21.5	14.0	16.0	BTDO018	BTDO12	18.0
XXX.XX DE4-18	19.21-20.00	50.0	21.5	14.0	16.0	BTDO018	BTDO12	18.0
XXX.XX DE4-19.5	20.01-20.90	56.0	21.5	16.0	18.0	BTDO019.5	BTDO14	19.5
XXX.XX DE4-19.5	20.91-21.80	56.0	21.5	16.0	18.0	BTDO019.5	BTDO14	19.5
XXX.XX DE4-21.5	21.81-22.90	56.0	21.5	17.5	19.5	BTDO021.5	BTDO15	21.5
XXX.XX DE4-21.5	22.91-24.10	56.0	21.5	17.5	19.5	BTDO021.5	BTDO15	21.5
XXX.XX DE4-23.5	24.11-25.20	57.5	21.5	19.0	21.0	BTDO023.5	BTDO16	23.5
XXX.XX DE4-23.5	25.21-26.40	57.5	21.5	19.0	21.0	BTDO023.5	BTDO16	23.5
XXX.XX DE4-26	26.41-27.50	60.5	24.5	21.0	23.5	BTDO026	BTDO18	26.0
XXX.XX DE4-26	27.51-28.70	60.5	24.5	21.0	23.5	BTDO026	BTDO18	26.0
XXX.XX DE4-28	28.71-29.80	63.5	24.5	23.0	25.5	BTDO028	BTDO20	28.0
XXX.XX DE4-28	29.81-31.00	63.5	24.5	23.0	25.5	BTDO028	BTDO20	28.0
XXX.XX DE4-30.5	31.01-32.10	63.5	24.5	25.5	28.0	BTDO030.5	BTDO22	30.5
XXX.XX DE4-30.5	32.11-33.30	63.5	24.5	25.5	28.0	BTDO030.5	BTDO22	30.5
XXX.XX DE4-33	33.31-34.80	70.5	30.5	27.0	30.0	BTDO033.0	BTDO24	33.0
XXX.XX DE4-33	34.81-36.20	70.5	30.5	27.0	30.0	BTDO033.0	BTDO24	33.0
XXX.XX DE4-35.5	36.21-37.30	73.5	30.5	30.0	33.0	BTDO035.5	BTDO26	35.5
XXX.XX DE4-35.5	37.31-38.40	73.5	30.5	30.0	33.0	BTDO035.5	BTDO26	35.5
XXX.XX DE4-35.5	38.41-39.60	73.5	30.5	30.0	33.0	BTDO035.5	BTDO26	35.5
XXX.XX DE4-39	39.61-40.60	73.5	30.5	33.0	36.0	BTDO039	BTDO29	39.0
XXX.XX DE4-39	40.61-41.80	73.5	30.5	33.0	36.0	BTDO039	BTDO29	39.0
XXX.XX DE4-39	41.81-43.00	73.5	30.5	33.0	36.0	BTDO039	BTDO29	39.0
XXX.XX DE4-42.5	43.01-44.30	75.0	30.5	36.0	39.0	BTDO042.5	BTDO32	42.5
XXX.XX DE4-42.5	44.31-45.60	75.0	30.5	36.0	39.0	BTDO042.5	BTDO32	42.5
XXX.XX DE4-42.5	45.61-47.00	75.0	30.5	36.0	39.0	BTDO042.5	BTDO32	42.5
XXX.XX DE4-46.5	47.01-48.50	79.0	34.5	39.5	43.0	BTDO046.5	BTDO35	46.5
XXX.XX DE4-46.5	48.51-50.10	79.0	34.5	39.5	43.0	BTDO046.5	BTDO35	46.5
XXX.XX DE4-46.5	50.11-51.70	79.0	34.5	39.5	43.0	BTDO046.5	BTDO35	46.5
XXX.XX DE4-51	51.71-53.20	82.0	34.5	43.5	47.0	BTDO051	BTDO39	51.0
XXX.XX DE4-51	53.21-54.70	82.0	34.5	43.5	47.0	BTDO051	BTDO39	51.0
XXX.XX DE4-51	54.71-56.20	82.0	34.5	43.5	47.0	BTDO051	BTDO39	51.0
XXX.XX DE4-55.5	56.21-58.40	84.0	34.5	47.5	51.0	BTDO055.5	BTDO43A	55.5
XXX.XX DE4-55.5	58.41-60.60	84.0	34.5	47.5	51.0	BTDO055.5	BTDO43A	55.5
XXX.XX DE4-55.5	60.61-62.80	84.0	34.5	47.5	51.0	BTDO055.5	BTDO43A	55.5
XXX.XX DE4-55.5	62.81-65.00	84.0	34.5	47.5	51.0	BTDO055.5	BTDO43A	55.5



Single tube system

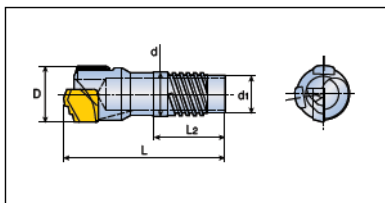


- Outer single start thread

Designation	D range	Dimension (mm)				Tube	
		L	L2	d1	d	Part	Diameter (mm)
BTS XXXLXX SE1-7.1	8.00-8.99	35.6	16	5.4	6.0	BTSO071	7.1
XXXLXX SE1-8.3	9.00-9.99	35.6	16	6.3	7.2	BTSO083	8.3
XXXLXX SE1-9	10.00-10.99	35.7	16	6.7	7.6	BTSO090	9.0
XXXLXX SE1-10	11.00-11.99	35.7	16	7.7	8.6	BTSO100	10.0
XXXLXX SE1-11	12.00-13.49	35.7	16	8.2	9.1	BTSO110	11.0
XXXLXX SE1-12	13.50-14.79	36.0	16	9.4	10.8	BTSO120	12.0

BTS...SE2/SE4

Single tube system



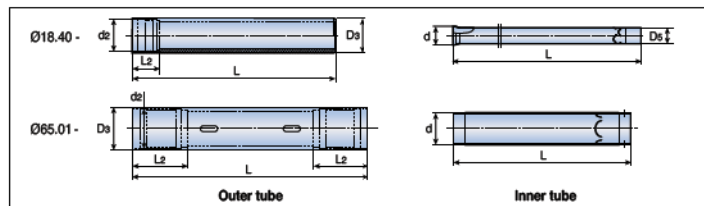
- Outer four start thread

Designation	D range	Dimension (mm)				Tube	
		L	L2	d1	d	Part	Diameter (mm)
BTS XXXLXX SE2-11*	12.60-13.60	42.6	20.5	8.2	9.6	BTSI011	11
XXXLXX SE2-12*	13.61-14.60	42.7	22.5	9.2	10.6	BTSI012	12
XXXLXX SE2-13*	14.61-15.59	42.7	22.5	10.2	11.6	BTSI013	13
XXXLXX SE4-14	15.60-16.70	43.3	22.5	10.8	12.6	BTSI014	14
XXXLXX SE4-15	16.71-17.70	43.3	22.5	11.8	13.6	BTSI015	15
XXXLXX SE4-16	17.71-18.90	43.6	22.5	12.5	14.5	BTSI016	16
XXXLXX SE4-17	18.91-20.00	43.6	22.5	13.5	15.5	BTSI017	17



- '*' Designates outer two start thread

Double tube



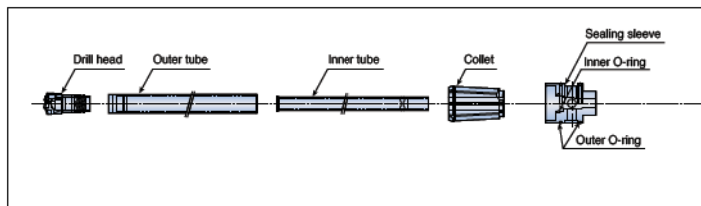
D Range	Outer tube	Dimension (mm)			Inner tube	Dimension (mm)	
		Ds	d2	L2		d	Ds
18.40-20.00	BTDO 018	18.0	16	27.5	BTDI 012	10	12
20.01-21.80	019.5	19.5	18	30	014	12	14
21.81-24.10	021.5	21.5	19.5	30	015	13	15
24.11-26.40	023.5	23.5	21	30	016	14	16
26.41-28.70	026	26.0	23.5	33	018	16	18
28.71-31.00	028	28.0	25.5	33	020	18	20
31.01-33.30	030.5	30.5	28	33	022	20	22
33.31-36.20	033	33.0	30	40	024	22	24
36.21-39.60	035.5	35.5	33	40	026	24	26
39.61-43.00	039	39.0	36	40	029	27	29
43.01-47.00	042.5	42.5	39	40	032	30	32
47.01-51.70	046.5	46.5	43	44	035	32	35
51.71-56.20	051	51.0	47	44	039	36	39
56.21-65.00	055.5	55.5	51	44	043A	40	43
65.01-69.99	056	56.0	52	75	043B	40	-
70.00-72.99	062	62.0	58	75	048	44	-
73.00-79.99	068	68.0	63	75	053	48	-
80.00-86.99	075	75.0	70	97	059	54	-
87.00-99.99	082	82.0	77	97	066	60	-
100.00-111.99	094	94.0	89	97	078	70	-
112.00-123.99	106	106.0	101	118	090	80	-
124.00-135.99	118	118.0	113	118	092	80	-
136.00-147.99	130	130.0	125	118	104	95	-
148.00-159.99	142	142.0	137	139	116	100	-
160.00-171.99	154	154.0	149	139	128	120	-
172.00-183.99	166	166.0	161	139	138	130	-

• Please indicate overall length (L) when ordering

- For diameter range 18.40 - 65.00 (**BTDO 055.5**) the inner tube should be ordered 30mm longer than the outer tube

- For diameter range 65.01 - 123.99 (**BTDO 056 - BTDO 106**) the inner tube should be ordered 190mm longer than outer tube

- For diameter range 124.00 - 183.99 (**BTDO 118 - BTDO 156**) the inner tube should be ordered 220mm longer than the outer tube

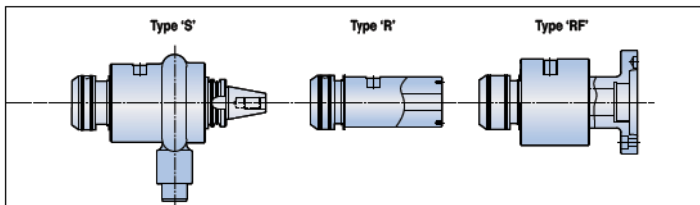


Designation		D range	Collet
BTDO 018	BTDI 012	18.40-19.20	COLLET 4-18 *
018	012	19.21-20.00	COLLET 4-18 *
019.5	014	20.01-20.90	COLLET 4-19.5 *
019.5	014	20.91-21.80	COLLET 4-19.5 *
021.5	015	21.81-22.90	COLLET 4-21.5 *
021.5	015	22.91-24.10	COLLET 4-21.5 *
023.5	016	24.11-25.20	COLLET 4-23.5 *
023.5	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
061	039	51.71-53.20	COLLET 4-51
061	039	53.21-54.70	COLLET 4-51
061	039	54.71-56.20	COLLET 4-51
065.5	043A	56.21-58.40	COLLET 4-55.5
065.5	043A	58.41-60.60	COLLET 4-55.5
065.5	043A	60.61-62.80	COLLET 4-55.5
065.5	043A	62.81-65.00	COLLET 4-55.5

- * ** For DTC-3S/R/RF, the description of collet & sealing sleeve should be 'COLLET 3-...' and 'SEALING SLEEVE 3-...'.
- * Inner tube should be longer than outer tube. Please refer to page D113-D114 for details

Assembly of Double Tube System

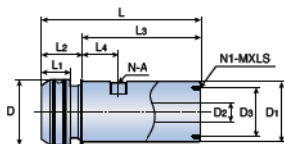
Connector



Sealing sleeve	Outer O-ring	Inner O-ring	Connector
SEALING SLEEVE 4R-18 *	OOR 25.24	IOR18	DTC- 3S/3R/3RF
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	DTC-4S/4R/4RF	
SEALING SLEEVE 4R-33 *	IOR33		
SEALING SLEEVE 4R-35.5	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-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		

- ******* For DTC-3S/R/RF, the description of collet & sealing sleeve should be 'COLLET 3-..' and 'SEALING SLEEVE 3-..'.
- Inner tube should be longer than outer tube. Please refer to page **D113-D114** for details

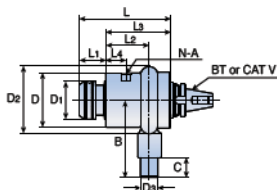
'S' type connector



Designation	D range	D	D1	D2	D3	L	L1	L2	L3	L4	N-A	N1-MXLS
DTC 3S	18.4-26.4	62	63	18	50	240	28.5	40	200	65	2-PT1/2"	4-M6x11
4S	18.4-65.0	112	100	40	80	315	50	65	250	80	2-PT3/4"	4-M8x15
5S	65.0-123.9	164	140	81	120	415	47	115	300	130	2-PT1"	6-M8x20

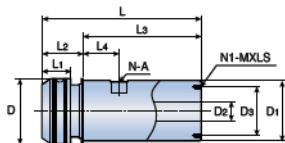
DTC-R

'R' type connector



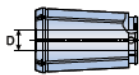
Designation	D range	D	D1	D2	D3	B	C	L	L1	L2	L3	L4	N-A
DTC 3R	18.4-26.4	110	74	150	40	150	50	228	39	130	189	65	2-PT3/4"
4R	18.4-65.0	165	115	206	53	186.5	60	300	72	152	228	75	2-PT1"
5R	65.0-123.9	225	164	312	100	310	100	382	62	201	320	95	2-PT1 1/4"
6R	124.0-183.9	310	214	410	140	300	100	427	62	228	365	103	3-PT1-1/4"

'RF' type connector

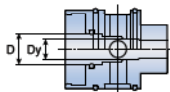


Designation	D range	D	D1	D2	D3	L	L1	L2	L3	L4	N-A	N1-MXLS
DTC 3RF	18.4-26.4	110	74	135	M30x1.5	18	234	39	130	65	2-PT3/4"	A1-5
4RF	18.4-65.0	165	115	210	M62x2	40	293	72	146	63	2-PT1"	A1-8
5RF	65.0-123.9	226	164	280	85	81	335	62	190	95	2-PT1 1/4"	A1-11

Collet / Sealing Sleeve



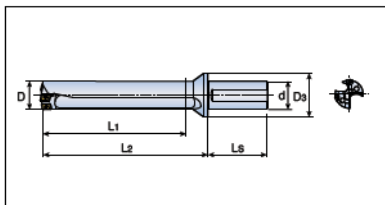
Collet



Sealing sleeve

Designation	D range	D	Designation	D range	D	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	38		IOR 51
4-55.5	56.21-65.00	55.5	4-55.5	56.21-65.00	55.5	40		IOR 55.5

Indexable deep drill holder



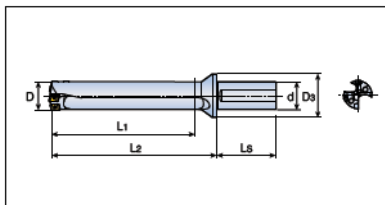
- Deep hole drilling application
- Drilling depth: 6xD - 14xD
- Pilot hole required

Designation	Dimension (mm)						
	D	d	D ₃	L ₁	L ₂	L ₃	L/D
HFD 300-32T2-14D	30	32	40	420	449	60	14
310-32T2-13D	31	32	40	420	449	60	13
320-40T2-13D	32	40	50	420	449	70	13
330-40T2-12D	33	40	50	420	449	70	12
340-40T2-12D	34	40	50	420	450	70	12
350-40T2-12D	35	40	50	420	450	70	12
360-40T2-11D	36	40	50	420	450	70	11
370-40T2-11D	37	40	50	420	453	70	11
380-40T2-11D	38	40	50	420	453	70	11
390-40T2-10D	39	40	50	420	453	70	10
400-40T2-10D	40	40	50	420	454	70	10
410-40T2-10D	41	40	50	420	454	70	10
420-40T2-10D	42	40	50	420	454	70	10
430-40T2-9D	43	40	50	420	456	70	9
440-40T2-9D	44	40	50	420	456	70	9
450-40T2-9D	45	40	50	420	456	70	9
460-40T2-9D	46	40	50	420	459	70	9
470-40T2-8D	47	40	50	420	459	70	8
480-40T2-8D	48	40	50	420	459	70	8
490-40T2-8D	49	40	50	420	461	70	8
500-40T2-8D	50	40	50	420	461	70	8
510-40T2-8D	51	40	50	420	461	70	8
520-40T2-8D	52	40	-	420	464	70	8
530-40T2-7D	53	40	-	420	464	70	7
540-40T2-7D	54	40	-	420	464	70	7
550-40T2-7D	55	40	-	420	464	70	7
560-40T2-7D	56	40	-	420	464	70	7
570-40T2-7D	57	40	-	420	464	70	7
580-40T2-7D	58	40	-	420	470	70	7
590-40T2-7D	59	40	-	420	470	70	7
600-40T2-7D	60	40	-	420	470	70	7
610-40T2-6D	61	40	-	420	470	70	6
620-40T2-6D	62	40	-	420	470	70	6
630-40T2-6D	63	40	-	420	470	70	6
640-40T2-6D	64	40	-	420	473	70	6



• Available on request

Indexable deep drill holder



- Deep hole drilling application
- Drilling depth: 6xD - 14xD
- Pilot hole required

Designation	Dimension (mm)						
	D	d	Ds	L1	L2	Ls	L/D
HFD 660-40T2-6D	65	40	-	420	473	70	6
660-40T2-6D	66	40	-	420	473	70	6
670-40T2-6D	67	40	-	420	473	70	6
680-40T2-6D	68	40	-	420	473	70	6
690-40T2-6D	69	40	-	420	473	70	6

- Available on request

Insert & guide pad

Tool dia. (mm)	Insert			Guide PAD
	Outer	Inner	Center	
30.00-33.00	NPMT 06504 RG	NPMT 06504 RG	NPMT 06504 LG	PAD-GO07CD
33.01-36.00	NPMT 06504 RG	NPMT 06504 RG	NPMT 0804 LG	PAD-GO07CD
36.01-39.00	NPMT 0804 RG	NPMT 06504 RG	NPMT 0804 LG	PAD-GO07CD
39.01-42.00	NPMT 0804 RG	NPMT 0804 RG	NPMT 0804 LG	PAD-GO08CD
42.01-45.00	NPMT 0804 RG	NPMT 0804 RG	NPMT 09504 LG	PAD-GO08CD
45.01-48.00	NPMT 09504 RG	NPMT 0804 RG	NPMT 09504 LG	PAD-GO10CD
48.01-51.00	NPMT 09504 RG	NPMT 09504 RG	NPMT 09504 LG	PAD-GO10CD
51.01-57.00	NPMT 09504 RG	NPMT 09504 RG	NPMT 12504 LG	PAD-GO10CD
57.01-63.00	NPMT 12504 RG	NPMT 09504 RG	NPMT 12504 LG	PAD-GO12CD
63.01-69.00	NPMT 12504 RG	NPMT 12504 RG	NPMT 12504 LG	PAD-GO12CD

Pilot hole size

Tool dia. (mm)	Pilot hole tolerance	Pilot hole depth (mm)
30.00-39.00	H6	Min. 10.0
39.01-45.00	H6	Min. 12.5
45.01-57.00	H6	Min. 15.0
57.01-69.00	H6	Min. 17.5

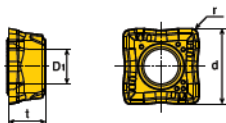


Holemaking Inserts



[Contents](#)

Insert



Size	Dimension (mm)			
	d	t	r	D1
05	4.9	2.38	0.4	2.25
06	5.7	2.38	0.4	2.60
07	6.8	2.80	0.6	2.60
08	7.9	3.97	0.6	2.85
09	9.2	3.97	0.8	3.80
11	11.0	3.97	0.8	3.80
13	12.8	4.40	0.8	4.40
15	15.0	4.80	1.0	5.40

Insert	Designation	Coated						Uncoated	
		TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
	SOMT 050204 DP	●	●	●					
	060204 DP	●	●	●					
	070306 DP	●	●	●					
	08T306 DP	●	●	●					
	09T308 DP	●	●	●					
	11T308 DP	●	●	●					
	130408 DP	●	●	●					
	150610 DP	●	●	●					

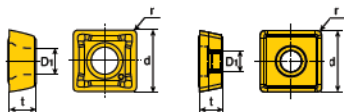


- TT9080: First choice for general purpose
- TT8020: For unstable condition
- TT9300: For high speed machining on a steel application (Peripheral **ONLY**)

●: Standard item

SPMG...DG

Insert



SPMG 120408 DG

Size	Dimension (mm)			
	d	t	r	D1
05	5.00	2.38	0.4	2.25
06	6.00	2.38	0.4	2.61
07	7.94	3.97	0.8	2.85
09	9.80	4.30	0.8	4.05
11	11.50	4.80	0.8	4.45
12	12.70	4.76	0.8	4.37
14	14.30	5.20	1.2	5.75

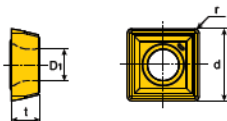
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	SPMG 050204 DG	●	●			●			
	060204 DG	●	●			●			
	07T308 DG	●	●			●			
	090408 DG	●	●			●			
	110408 DG	●	●			●			
	120408 DG	●				●			
	140612 DG	●	●			●			



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

●: Standard item

Insert



Size	Dimension (mm)			
	d	t	r	D1
05	5.00	2.38	0.4	2.25
06	6.00	2.38	0.4	2.61
07	7.94	3.97	0.8	2.85
09	9.80	4.30	0.8	4.05
11	11.50	4.80	0.8	4.45
14	14.30	5.20	1.2	5.75

• For cast iron

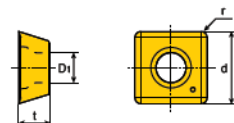
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	K10	
	SPMG 060204 DK				•				
	060204 DK				•				
	07T308 DK				•				
	090408 DK				•				
	110408 DK				•				
	140512 DK				•				



• Standard item

SPGG...DA

Insert



Size	Dimension (mm)			
	d	t	r	D1
05	5.00	2.38	0.4	2.25
06	6.00	2.38	0.4	2.61
07	7.94	3.97	0.8	2.85
09	9.80	4.30	0.8	4.05
11	11.50	4.80	0.8	4.45
14	14.30	5.20	1.2	5.75

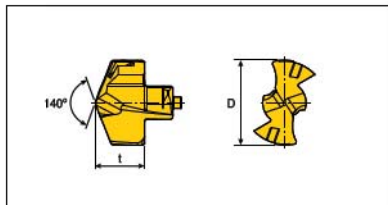
• For aluminum alloy

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



• Standard item

Drill head



Designation	Dimension (mm)			Grade
	D	t	Pocket size	
TCD - 070-P/M/K	7.0	4.6	7	●
071-P/M/K	7.1	4.6	7	●
072-P/M/K	7.2	4.6	7	●
073-P/M/K	7.3	4.6	7	●
074-P/M/K	7.4	4.6	7	●
075-P/M/K	7.5	4.6	7	●
076-P/M/K	7.6	4.6	7	●
077-P/M/K	7.7	4.6	7	●
078-P/M/K	7.8	4.6	7	●
079-P/M/K	7.9	4.6	7	●
080-P/M/K	8.0	5.4	8	●
081-P/M/K	8.1	5.4	8	●
082-P/M/K	8.2	5.4	8	●
083-P/M/K	8.3	5.4	8	●
084-P/M/K	8.4	5.4	8	●
085-P/M/K	8.5	5.4	8	●
086-P/M/K	8.6	5.4	8	●
087-P/M/K	8.7	5.4	8	●
088-P/M/K	8.8	5.4	8	●
089-P/M/K	8.9	5.4	8	●
090-P/M/K	9.0	5.8	9	●
091-P/M/K	9.1	5.8	9	●
092-P/M/K	9.2	5.8	9	●
093-P/M/K	9.3	5.8	9	●
094-P/M/K	9.4	5.8	9	●
095-P/M/K	9.5	5.8	9	●
096-P/M/K	9.6	5.8	9	●
097-P/M/K	9.7	5.8	9	●
098-P/M/K	9.8	5.8	9	●
099-P/M/K	9.9	5.8	9	●
100-P/M/K	10.0	6.2	10	●
101-P/M/K	10.1	6.2	10	●
102-P/M/K	10.2	6.2	10	●
103-P/M/K	10.3	6.2	10	●
104-P/M/K	10.4	6.2	10	●

Designation	Dimension (mm)			Grade
	D	t	Pocket size	
TCD - 105-P/M/K	10.5	6.2	10	●
106-P/M/K	10.6	6.2	10	●
107-P/M/K	10.7	6.2	10	●
108-P/M/K	10.8	6.2	10	●
109-P/M/K	10.9	6.2	10	●
110-P/M/K	11.0	6.6	11	●
111-P/M/K	11.1	6.6	11	●
112-P/M/K	11.2	6.6	11	●
113-P/M/K	11.3	6.6	11	●
114-P/M/K	11.4	6.6	11	●
115-P/M/K	11.5	6.6	11	●
116-P/M/K	11.6	6.6	11	●
117-P/M/K	11.7	6.6	11	●
118-P/M/K	11.8	6.6	11	●
119-P/M/K	11.9	6.6	11	●
120-P/M/K	12.0	7.0	12	●
121-P/M/K	12.1	7.0	12	●
122-P/M/K	12.2	7.0	12	●
123-P/M/K	12.3	7.0	12	●
124-P/M/K	12.4	7.0	12	●
125-P/M/K	12.5	7.0	12	●
126-P/M/K	12.6	7.0	12	●
127-P/M/K	12.7	7.0	12	●
128-P/M/K	12.8	7.0	12	●
129-P/M/K	12.9	7.0	12	●
130-P/M/K	13.0	7.6	13	●
131-P/M/K	13.1	7.6	13	●
132-P/M/K	13.2	7.6	13	●
133-P/M/K	13.3	7.6	13	●
134-P/M/K	13.4	7.6	13	●
135-P/M/K	13.5	7.6	13	●
136-P/M/K	13.6	7.6	13	●
137-P/M/K	13.7	7.6	13	●
138-P/M/K	13.8	7.6	13	●
139-P/M/K	13.9	7.6	13	●



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

●: Standard item



Steel

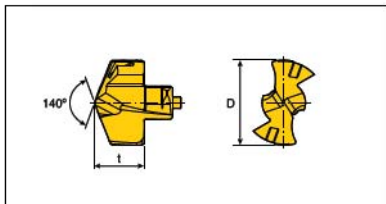


Stainless steel



Cast iron

Drill head



Designation	Dimension (mm)			Grade	Designation	Dimension (mm)			Grade
	D	t	Pocket size			TT9080	D	t	
TCD - 140-P/M/K	14.0	8.1	14	●	TCD - 175-P/M/K	17.5	9.9	17	●
141-P/M/K	14.1	8.1	14	●	176-P/M/K	17.6	9.9	17	●
142-P/M/K	14.2	8.1	14	●	177-P/M/K	17.7	9.9	17	●
143-P/M/K	14.3	8.1	14	●	178-P/M/K	17.8	9.9	17	●
144-P/M/K	14.4	8.1	14	●	179-P/M/K	17.9	9.9	17	●
145-P/M/K	14.5	8.1	14	●	180-P/M/K	18.0	10.5	18	●
146-P/M/K	14.6	8.1	14	●	181-P/M/K	18.1	10.5	18	●
147-P/M/K	14.7	8.1	14	●	182-P/M/K	18.2	10.5	18	●
148-P/M/K	14.8	8.1	14	●	183-P/M/K	18.3	10.5	18	●
149-P/M/K	14.9	8.1	14	●	184-P/M/K	18.4	10.5	18	●
150-P/M/K	15.0	8.7	15	●	185-P/M/K	18.5	10.5	18	●
151-P/M/K	15.1	8.7	15	●	186-P/M/K	18.6	10.5	18	●
152-P/M/K	15.2	8.7	15	●	187-P/M/K	18.7	10.5	18	●
153-P/M/K	15.3	8.7	15	●	188-P/M/K	18.8	10.5	18	●
154-P/M/K	15.4	8.7	15	●	189-P/M/K	18.9	10.5	18	●
155-P/M/K	15.5	8.7	15	●	190-P/M/K	19.0	11.0	19	●
156-P/M/K	15.6	8.7	15	●	191-P/M/K	19.1	11.0	19	●
157-P/M/K	15.7	8.7	15	●	192-P/M/K	19.2	11.0	19	●
158-P/M/K	15.8	8.7	15	●	193-P/M/K	19.3	11.0	19	●
159-P/M/K	15.9	8.7	15	●	194-P/M/K	19.4	11.0	19	●
160-P/M/K	16.0	9.3	16	●	195-P/M/K	19.5	11.0	19	●
161-P/M/K	16.1	9.3	16	●	196-P/M/K	19.6	11.0	19	●
162-P/M/K	16.2	9.3	16	●	197-P/M/K	19.7	11.0	19	●
163-P/M/K	16.3	9.3	16	●	198-P/M/K	19.8	11.0	19	●
164-P/M/K	16.4	9.3	16	●	199-P/M/K	19.9	11.0	19	●
165-P/M/K	16.5	9.3	16	●	200-P/M/K	20.0	11.6	20	●
166-P/M/K	16.6	9.3	16	●	201-P/M/K	20.1	11.6	20	●
167-P/M/K	16.7	9.3	16	●	202-P/M/K	20.2	11.6	20	●
168-P/M/K	16.8	9.3	16	●	203-P/M/K	20.3	11.6	20	●
169-P/M/K	16.9	9.3	16	●	204-P/M/K	20.4	11.6	20	●
170-P/M/K	17.0	9.9	17	●	205-P/M/K	20.5	11.6	20	●
171-P/M/K	17.1	9.9	17	●	206-P/M/K	20.6	11.6	20	●
172-P/M/K	17.2	9.9	17	●	207-P/M/K	20.7	11.6	20	●
173-P/M/K	17.3	9.9	17	●	208-P/M/K	20.8	11.6	20	●
174-P/M/K	17.4	9.9	17	●	209-P/M/K	20.9	11.6	20	●



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

●: Standard item



Steel

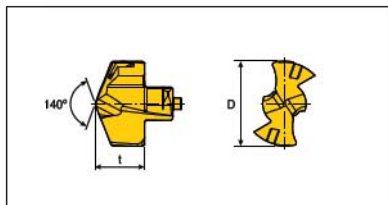


Stainless steel



Cast iron

Drill head



Designation	Dimension (mm)			Grade	TT9080	Designation	Dimension (mm)			Grade	TT9080
	D	t	Pocket size				D	t	Pocket size		
TCD - 210-P/M/K	21.0	12.1	21	•		TCD - 246-P/M/K	24.5	13.9	24	•	
211-P/M/K	21.1	12.1	21	•		246-P/M/K	24.6	13.9	24	•	
212-P/M/K	21.2	12.1	21	•		247-P/M/K	24.7	13.9	24	•	
213-P/M/K	21.3	12.1	21	•		248-P/M/K	24.8	13.9	24	•	
214-P/M/K	21.4	12.1	21	•		249-P/M/K	24.9	13.9	24	•	
215-P/M/K	21.5	12.1	21	•		250-P/M/K	25.0	14.5	25	•	
216-P/M/K	21.6	12.1	21	•		251-P/M/K	25.1	14.5	25	•	
217-P/M/K	21.7	12.1	21	•		252-P/M/K	25.2	14.5	25	•	
218-P/M/K	21.8	12.1	21	•		253-P/M/K	25.3	14.5	25	•	
219-P/M/K	21.9	12.1	21	•		254-P/M/K	25.4	14.5	25	•	
220-P/M/K	22.0	12.7	22	•		256-P/M/K	25.5	14.5	25	•	
221-P/M/K	22.1	12.7	22	•		256-P/M/K	25.6	14.5	25	•	
222-P/M/K	22.2	12.7	22	•		257-P/M/K	25.7	14.5	25	•	
223-P/M/K	22.3	12.7	22	•		258-P/M/K	25.8	14.5	25	•	
224-P/M/K	22.4	12.7	22	•		259-P/M/K	25.9	14.5	25	•	
225-P/M/K	22.5	12.7	22	•							
226-P/M/K	22.6	12.7	22	•							
227-P/M/K	22.7	12.7	22	•							
228-P/M/K	22.8	12.7	22	•							
229-P/M/K	22.9	12.7	22	•							
230-P/M/K	23.0	13.3	23	•							
231-P/M/K	23.1	13.3	23	•							
232-P/M/K	23.2	13.3	23	•							
233-P/M/K	23.3	13.3	23	•							
234-P/M/K	23.4	13.3	23	•							
235-P/M/K	23.5	13.3	23	•							
236-P/M/K	23.6	13.3	23	•							
237-P/M/K	23.7	13.3	23	•							
238-P/M/K	23.8	13.3	23	•							
239-P/M/K	23.9	13.3	23	•							
240-P/M/K	24.0	13.9	24	•							
241-P/M/K	24.1	13.9	24	•							
242-P/M/K	24.2	13.9	24	•							
243-P/M/K	24.3	13.9	24	•							
244-P/M/K	24.4	13.9	24	•							

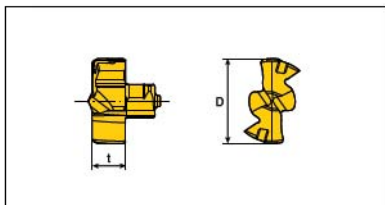


• Drill head can be ordered by an application
Order example Diameter 10.0mm drill head for
 ISO P application: TCD-100-P TT9080

• Standard item

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

Drill head for flat bottom hole



Designation	Dimension (mm)			Grade	Designation	Dimension (mm)			Grade
	D	t	Pocket size			TT9080	D	t	
TCD - 080-F	8.0	4.0	8	•	TCD - 254-F	25.4	10.1	25	•
085-F	8.5	4.0	8	•	255-F	25.5	10.1	25	•
090-F	9.0	4.2	9	•					
095-F	9.5	4.2	9	•					
100-F	10.0	4.4	10	•					
105-F	10.5	4.4	10	•					
110-F	11.0	4.5	11	•					
115-F	11.5	4.5	11	•					
120-F	12.0	4.8	12	•					
125-F	12.5	4.8	12	•					
130-F	13.0	5.1	13	•					
135-F	13.5	5.1	13	•					
140-F	14.0	5.5	14	•					
145-F	14.5	5.5	14	•					
150-F	15.0	5.9	15	•					
155-F	15.5	5.9	15	•					
160-F	16.0	6.3	16	•					
165-F	16.5	6.3	16	•					
170-F	17.0	6.6	17	•					
175-F	17.5	6.6	17	•					
180-F	18.0	6.9	18	•					
185-F	18.5	6.9	18	•					
190-F	19.0	7.2	19	•					
195-F	19.5	7.2	19	•					
200-F	20.0	8.2	20	•					
205-F	20.5	8.2	20	•					
210-F	21.0	8.6	21	•					
215-F	21.5	8.6	21	•					
220-F	22.0	8.9	22	•					
225-F	22.5	8.9	22	•					
230-F	23.0	9.3	23	•					
235-F	23.5	9.3	23	•					
240-F	24.0	9.7	24	•					
245-F	24.5	9.7	24	•					
250-F	25.0	10.1	25	•					

• Standard item

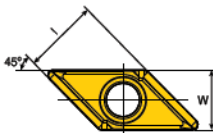


046

AOMT 060204-C45

DRILL-RUSH

Chamfering insert for pre-thread hole



Size	Dimension (mm)			
	W	L	S	t
06	4.4	5.66	2.16	1.96

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT8030	TT9300	TT7400		K10
	AOMT 060204-C45	•							



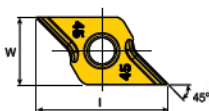
D57

• Standard item

CRNG 0802-45CD

DRILL-RUSH

Chamfering insert for chamfering ring



Size	Dimension (mm)		
	W	L	t
08	7.5	14.80	3.65

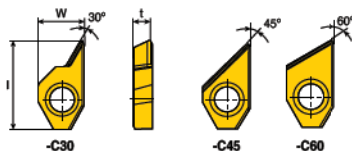
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT8030	TT9300	TT7400		K10
	CRNG 0802-45CD	•							



D58

• Standard item

Chamfering insert for T-CHAMFER holder



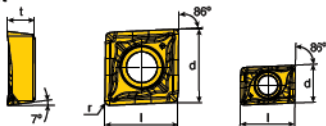
Size	Dimension (mm)		
	W	l	t
06	6.4	12.3	2.8
09	8.8	16.0	3.3

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT8030	TT9000	TT7400	TT9050	K10
	XCGT 0603-C30							•	
	0903-C30							•	
	XCGT 0603-C45							•	
	0903-C45							•	
	XCGT 0603-C60							•	
	0903-C60							•	

•: Standard item



Insert



XCGT 0401

Size	Dimension (mm)			
	d	l	t	r
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

• For aluminum alloy

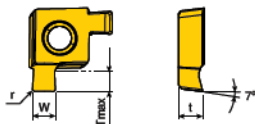
Insert	Designation	Turning		Drilling Feed (mm/rev)	Coated					Uncoated K10	
		Feed (mm/rev)	ap (mm)		TT9080	TT8020	TT9300	TT9030	TT6030		TT7400
<p>Right hand shown (XCGT 0401)</p>	XCGT 040104R TA	0.02-0.15	0.2-1.8	0.02-0.09							•
	040104L TA	0.02-0.15	0.2-1.8	0.02-0.09							•
	050204 TA	0.03-0.18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



• Standard item

XCMT..R-GV

Insert



Size	Dimension (mm)			
	W	Tmax	t	r
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

• For grooving

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

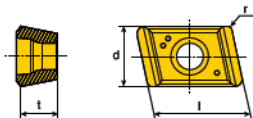


• Standard item

NPHT...RG

T-DEEP

Insert for TBTA-FB



Size	Dimension (mm)			
	d	t	r	l
06003RG	6.0	3.0	0.8	8.0
07504RG	7.5	4.0	0.8	10.0
09004RG	9.0	4.0	0.8	10.0
11004RG	11.0	4.0	0.8	10.0
13004RG	13.0	4.0	0.8	10.0

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

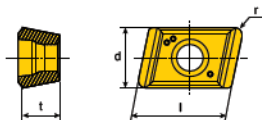


• Standard item

NPMT...LG

T-DEEP

Insert for TBTA-FB



Size	Dimension (mm)			
	d	t	r	l
05503LG	5.5	3.0	0.8	8
06504LG	6.5	4.0	0.8	10
08004LG	8.0	4.0	0.8	10
09504LG	9.5	4.0	0.8	10
12504LG	12.5	4.0	0.8	10

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

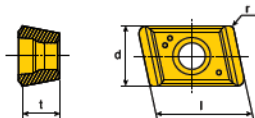


• Standard item


NPMT...RG

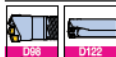
T-DEEP

Insert for TBTA-FB



Size	Dimension (mm)			
	d	t	r	l
05503RG	5.5	3.0	0.8	8
06504RG	6.5	4.0	0.8	10
08004RG	8.0	4.0	0.8	10
09504RG	9.5	4.0	0.8	10
12504RG	12.5	4.0	0.8	10

Insert	Designation	Pocket			Coated						Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10
	NPMT 06503RG		•		•	•		•				
	06504RG		•		•	•		•				
	08004RG		•		•	•		•				
	09504RG		•		•	•		•				
	12504RG		•		•	•		•				

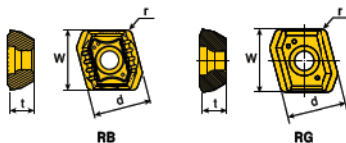


• Standard item


NPMX...RB/RG

T-DEEP

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



Size	Dimension (mm)			
	d	t	r	W
08	8.0	3.18	0.8	8.36

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

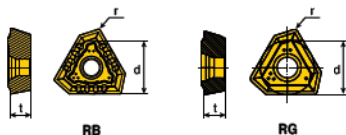


• Standard item

TPMX...RB/RG

T-DEEP

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



Size	Dimension (mm)		
	d	t	r
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	TT3600	TT6020	TT9300	TT7400	K10
	TPMX 1403RB	•	•	•	•	•						
	1403RG	•	•	•	•	•						
	1704RB	•	•	•	•							
	1704RG	•	•	•	•		•	•		•		
	2405RB	•	•	•	•							
	2405RG	•	•	•	•					•		
	2807RB	•	•	•	•							
	2807RG	•	•	•	•					•		

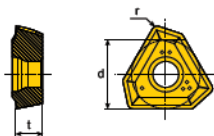


•: Standard item

TPMX...LG

T-DEEP

Insert for TBTA-R

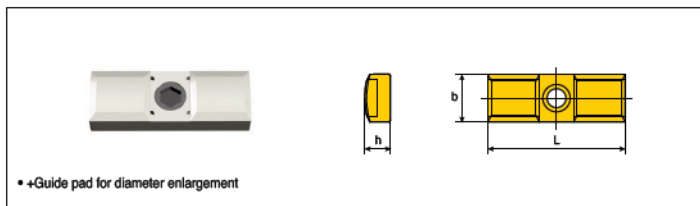


Size	Dimension (mm)		
	d	t	r
14	8.45	3.5	0.8
17	10.30	4.0	0.8
24	14.20	5.5	1.2

Insert	Designation	Pocket			Coated						Uncoated	
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3600	TT6020	TT9300	TT7400	K10
	TPMX 1403LG			•	•							
	1704LG			•	•							
	2405LG			•	•							



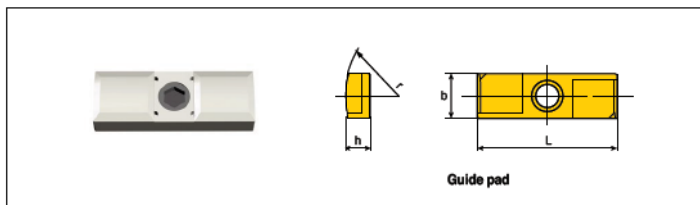
•: Standard item



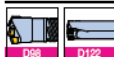
Designation											
D	D+1mm	h	D+2mm	h	D+3mm	h	D+4mm	h	D+5mm	h	
PAD-GC08	PAD-GC08+1	5.0	PAD-GC08+2	5.5	PAD-GC08+3	6.0	-	-	-	-	
PAD-GC10	PAD-GC10+1	6.5	PAD-GC10+2	7.0	PAD-GC10+3	7.5	PAD-GC10+4	8.0	-	-	
PAD-GC14	PAD-GC14+1	8.0	PAD-GC14+2	8.5	PAD-GC14+3	9.0	PAD-GC14+4	9.5	PAD-GC14+5	10.0	
PAD-GC18	PAD-GC18+1	9.5	PAD-GC18+2	10	PAD-GC18+3	10.5	PAD-GC18+4	11.0	PAD-GC18+5	11.5	

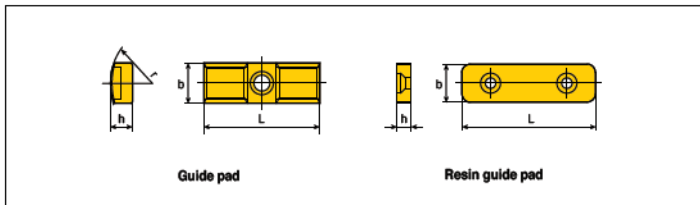


Pad for TBTA-FB



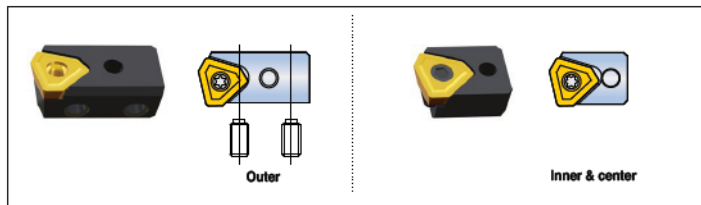
Designation	Dimension (mm)				Screw	
	b	h	L	R		
Guide pad	PAD-G006CD	6	3.0	20	12.0	CSTB2.2S
	G007CD	7	3.5	20	12.0	CSTB3.0S
	G008CD-FB	8	4.5	25	15.5	CSTB3.5S
	G010CD	10	4.5	30	20.0	CSTB3.5S
	G012CD	12	5.5	35	25.0	CSTB3.5S





Designation		Dimension (mm)				Screw
		b	h	L	R	
Guide pad	PAD - GC08-120	8	4.4	25	17.5	CSTB3S
	GC08	8	4.5	25	17.5	CSTB3S
	GC10	10	6.0	35	20.0	CSTB4S
	GC14	14	7.5	40	25.0	CSTA5S
	GC18	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





	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



Designation					
D	D+1mm	D+2mm	D+3mm	D+4mm	D+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



Recommended Cutting Conditions

TOPDRILL

Machining data for TOPDRILL 2,3,4xD

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	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
					930	275	7	100-180
			Quenched and tempered		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	
			Electrolytic 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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

Machining data for TOPDRILL 2,3,4xD

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD							
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	0.04-0.08	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	0.06-0.12	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.20	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	0.08-0.20	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	0.08-0.20	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	0.08-0.20	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	0.08-0.16	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	0.08-0.16	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	0.06-0.16	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	0.06-0.16	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	0.06-0.16	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	0.10-0.20	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	0.10-0.20	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	0.10-0.20	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	0.10-0.20	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	0.10-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.08-0.16	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	0.05-0.09	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	0.05-0.09	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	0.05-0.09	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	0.05-0.09	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	0.06-0.10	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	0.06-0.10	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	0.05-0.10	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	0.05-0.10	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	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10

Recommended Cutting Conditions

TOPDRILL

Machining data for TOPDRILL 5xD

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	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	
			Electrolytic 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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

Machining data for TOPDRILL 5xD

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

Recommended Cutting Conditions

T-DRILL

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

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	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	
	Copper alloys		>1% Pb	Free cutting		110	26	150-230
			Brass			90	27	150-230
			Electrolytic 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		
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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DRILL

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

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD					
SPMG 05 Ø13 - 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	0.04-0.06	0.04-0.06	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
0.05-0.08	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

T-DRILL

Machining data for T-DRILL 5xD

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	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
				930	275	7	120-180
			Quenched and tempered	1000	300	8	120-180
			1200	350	9	120-180	
	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
			Electrolytic 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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DRILL

Machining data for T-DRILL 5xD

Feed (mm/rev) vs. drill diameter Drill length 5xD					
SPMG 05 Ø13 - 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	0.08-0.15	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

DRILL-RUSH

Machining data for DRILLRUSH

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
				930	275	7	70-110
			Quenched and tempered	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
			Electrolytic copper			100	28
	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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

DRILL-RUSH

Machining data for DRILLRUSH

Feed (mm/rev) vs. drill diameter

- Ø10	Ø10 - Ø11.9	Ø12 - Ø13.9	Ø14 - Ø15.9	Ø16 - Ø19.9	Ø20 - Ø25.9
0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.12-0.22	0.15-0.28	0.18-0.30	0.20-0.35	0.25-0.45	0.25-0.45
0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.12-0.25	0.14-0.28	0.16-0.32	0.18-0.35	0.23-0.40	0.25-0.45
0.12-0.20	0.12-0.22	0.15-0.25	0.18-0.28	0.20-0.30	0.22-0.33
0.12-0.20	0.12-0.22	0.15-0.25	0.18-0.28	0.20-0.30	0.22-0.33
0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.10-0.15	0.12-0.18	0.14-0.20	0.16-0.24	0.16-0.26	0.18-0.30
0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.15-0.30	0.20-0.35	0.25-0.40	0.30-0.45	0.35-0.55	0.35-0.60
0.15-0.30	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
0.20-0.35	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
0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.06-0.11	0.08-0.13	0.10-0.15	0.12-0.18	0.12-0.20	0.14-0.22
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.20	0.14-0.22	0.16-0.25
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

H-DRILL

Machining data for H-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	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 Technical Guide "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	Ø12.1 - Ø16	Ø16.1 - Ø20
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.10-0.20	0.15-0.25	0.20-0.30	0.20-0.35	0.25-0.40
0.08-0.18	0.10-0.20	0.15-0.25	0.15-0.30	0.20-0.35
0.08-0.18	0.10-0.20	0.15-0.25	0.15-0.30	0.20-0.35
0.06-0.12	0.10-0.15	0.12-0.18	0.14-0.20	0.15-0.20
0.06-0.12	0.10-0.15	0.12-0.18	0.14-0.20	0.15-0.20
0.06-0.12	0.10-0.15	0.12-0.18	0.14-0.20	0.15-0.20
0.10-0.20	0.15-0.25	0.20-0.30	0.25-0.35	0.30-0.45
0.10-0.20	0.15-0.25	0.20-0.30	0.25-0.35	0.30-0.45
0.10-0.20	0.15-0.25	0.20-0.30	0.25-0.35	0.30-0.45
0.10-0.20	0.15-0.25	0.20-0.30	0.25-0.35	0.30-0.45
0.10-0.20	0.15-0.25	0.20-0.30	0.25-0.35	0.30-0.45
0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
0.10-0.25	0.15-0.35	0.25-0.45	0.30-0.50	0.35-0.55
0.08-0.18	0.15-0.25	0.20-0.35	0.25-0.45	0.03-0.50
0.08-0.18	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50
0.08-0.18	0.15-0.25	0.20-0.35	0.25-0.45	0.30-0.50
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18
0.02-0.08	0.04-0.10	0.06-0.12	0.08-0.15	0.08-0.18

Recommended Cutting Conditions

TOPCAP

Machining data for TOPCAP

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
		>12% Si	Cured		90	24
			High temp.		130	25
	Copper alloys	>1% Pb	Free cutting		110	26
			Brass		90	27
			Electrolytic 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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

Machining data for TOPCAP

Drilling cutting speed Vc(m/min)	Turning & boring cutting speed Vc(m/min)	Grooving cutting speed Vc(m/min)	
120-260	140-280	120-250	
80-190	90-200	80-180	
80-190	100-200	80-180	
80-190	100-200	80-180	
80-190	100-200	80-180	
80-190	100-200	80-180	
60-160	80-180	60-160	
60-160	80-180	60-160	
60-160	80-180	60-160	
80-170	80-200	80-160	
50-130	60-150	50-120	
50-210	60-230	50-200	
50-210	60-230	50-200	
50-210	60-230	50-200	
100-200	120-230		
100-200	120-230		
100-200	120-230		
100-200	120-230		
100-200	120-230		
100-200	120-230		
120-500	120-700	100-700	
120-500	120-700	100-700	
120-500	120-700	100-700	
120-500	120-700	100-700	
120-500	120-700	100-700	
80-380	80-500	80-350	
80-380	80-500	80-350	
80-380	80-500	80-350	
50-140	50-160	50-140	
50-140	50-160	50-140	
20-50	20-80	20-50	
20-50	20-80	20-50	
20-50	20-80	20-50	
20-50	20-80	20-50	
20-50	20-80	20-50	
30-60	30-100	30-80	
30-60	30-100	30-80	
20-40	20-70		
20-40	20-70		
20-40	20-70		
20-40	20-70		

Recommended Cutting Conditions

T-DEEP

Machining data for TBTA 3/5/7/9

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	0.1-0.25 %C Annealed	420	125	1	60-120
		0.25-0.25 %C Annealed	650	190	2	60-120
		0.25-0.25 %C Quenched and tempered	850	250	3	60-120
		0.55-0.80 %C Annealed	750	220	4	60-120
		0.55-0.80 %C 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
			930	275	7	50-100
		Quenched and tempered	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	15	60-100
		Pearlitic	250	16	16	60-100
	Cast iron nodular (GGG)	Ferritic	180	17	17	60-100
		Pearlitic	280	18	18	60-100
	Malleable cast iron	Ferritic	130	19	19	60-100
Pearlitic		230	20	20	60-100	
N	Aluminum - Wrought alloy	Not cureable	60	21	21	60-130
		Cured	100	22	22	60-130
	Aluminum-cast, alloyed	≤12% Si Not cureable	75	23	23	60-130
		Cured	90	24	24	60-130
		>12% Si High temp.	130	25	25	60-130
	Copper alloys	>1% Pb Free cutting	110	26	26	60-130
		Brass	90	27	27	60-130
	Non-metallic		Electrolytic copper	100	28	28
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	Alpha+beta alloys cured	Rm 400	36	30-100	
		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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DEEP

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	0.1-0.25 %C	Annealed	420	125	1	70-130
		0.25-0.25 %C	Annealed	650	190	2	70-130
		0.25-0.25 %C	Quenched and tempered	850	250	3	70-130
		0.55-0.80 %C	Annealed	750	220	4	70-130
		0.55-0.80 %C	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
			Quenched and tempered	930	275	7	60-120
				1000	300	8	60-120
	High alloy steel, cast steel and tool steel		Annealed	1200	350	9	60-120
			Quenched and tempered	680	200	10	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	15	60-110	
		Pearlitic	250	16	16	60-110	
	Cast iron nodular (GGG)	Ferritic	180	17	17	50-110	
		Pearlitic	280	18	18	50-110	
	Malleable cast iron	Ferritic	130	19	19	70-110	
Pearlitic		230	20	20	70-110		
N	Aluminum - Wrought alloy	Not cureable	60	21	21	65-130	
		Cured	100	22	22	65-130	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	75	23	23	65-130
		Cured	90	24	24	65-130	
			>12% Si	High temp.	130	25	25
		>1% Pb	Free cutting	110	26	26	65-130
	Copper alloys	Brass	90	27	27	65-130	
		Electrolytic copper	100	28	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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DEEP

Machining data for BTA & BTS

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	0.1-0.25 %C	Annealed	420	125	1	70-120	
		0.25-0.25 %C	Annealed	650	190	2	70-120	
		0.25-0.25 %C	Quenched and tempered	850	250	3	40-70	
		0.55-0.80 %C	Annealed	750	220	4	70-120	
		0.55-0.80 %C	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
					930	275	7	55-100
			Quenched and tempered		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		
		Ferritic		130	19	50-100		
Malleable cast iron	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	
			Electrolytic 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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DEEP

Machining data for HFD

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	0.1-0.25 %C Annealed	420	125	1	60-120	
		0.25-0.25 %C Annealed	650	190	2	60-120	
		0.25-0.25 %C Quenched and tempered	850	250	3	60-120	
		0.55-0.80 %C Annealed	750	220	4	60-120	
		0.55-0.80 %C 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
				930	275	7	50-100
			Quenched and tempered	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	50-100		
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-80	
		Martensitic	820	240	13	40-80	
		Austenitic	600	180	14	30-60	
K	Gray cast iron (GG)	Ferritic		160	15	50-90	
		Pearlitic		250	16	50-80	
	Cast iron nodular (GGG)	Ferritic		180	17	70-100	
		Pearlitic		260	18	70-100	
	Malleable cast iron	Ferritic		130	19	50-90	
Pearlitic			230	20	50-90		
N	Aluminum - Wrought alloy	Not cureable		60	21	60-120	
		Cured		100	22	60-90	
	Aluminum-cast, alloyed	≤12% Si Not cureable		75	23	60-120	
		Cured		90	24	60-120	
		>12% Si High temp.		130	25	60-120	
	Copper alloys	>1% Pb Free cutting		110	26	60-120	
		Brass		90	27	60-120	
			Electrolytic copper		100	28	60-120
	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	20-50	
Alpha+beta alloys cured		Rm 1050		37	20-50		
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 Technical Guide "material conversion table".

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

Recommended Cutting Conditions

T-DEEP

Machining data for HFD

Feed (mm/rev) vs. drill diameter

Ø30.00 - Ø43.00	Ø43.01 - Ø69.00		
0.08-0.13	0.10-0.15		
0.08-0.13	0.10-0.15		
0.08-0.13	0.10-0.15		
0.08-0.13	0.10-0.15		
0.08-0.11	0.10-0.13		
0.08-0.11	0.10-0.15		
0.08-0.11	0.10-0.13		
0.08-0.11	0.10-0.13		
0.08-0.13	0.10-0.15		
0.08-0.11	0.10-0.13		
0.08-0.13	0.10-0.15		
0.08-0.13	0.10-0.15		
0.05-0.11	0.08-0.14		
0.06-0.12	0.08-0.16		
0.06-0.12	0.08-0.16		
0.08-0.13	0.10-0.15		
0.08-0.13	0.10-0.15		
0.06-0.12	0.08-0.16		
0.06-0.12	0.08-0.16		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.08-0.13	0.10-0.18		
0.06-0.11	0.08-0.14		
0.06-0.11	0.08-0.14		
0.06-0.11	0.08-0.14		
0.06-0.11	0.08-0.14		
0.06-0.11	0.08-0.14		
0.05-0.09	0.08-0.11		
0.05-0.09	0.08-0.11		

Reaming Tools



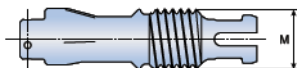
Clamping key



Designation	Clamping key	
	Head diameter range (mm)	Head size
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

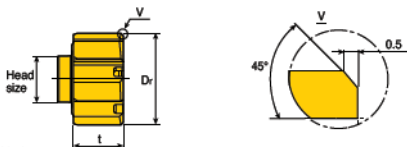
TM...SCR

Clamping screw



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

Head changeable reamer head



- Straight flute for blind hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		Flute	Head size	Flute type	Edge type	Grade	
		Dr	t						
	TM- 11.501-AS-B5	11.501	9.3	6	B5	S	A	•	
	12.000-AS-B5	12.000	9.3	6	B5	S	A	•	
	13.000-AS-B5	13.000	9.3	6	B5	S	A	•	
	13.500-AS-B5	13.500	9.3	6	B5	S	A	•	
	13.501-AS-B6	13.501	9.4	6	B6	S	A	•	
	14.000-AS-B6	14.000	9.4	6	B6	S	A	•	
	15.000-AS-B6	15.000	9.4	6	B6	S	A	•	
	16.000-AS-B6	16.000	9.4	6	B6	S	A	•	
	16.001-AS-B7	16.001	10.6	6	B7	S	A	•	
	17.000-AS-B7	17.000	10.6	6	B7	S	A	•	
	18.000-AS-B7	18.000	10.6	6	B7	S	A	•	
	19.000-AS-B7	19.000	10.6	6	B7	S	A	•	
	20.000-AS-B7	20.000	10.6	6	B7	S	A	•	
	20.001-AS-B8	20.001	12.8	8	B8	S	A	•	
	21.000-AS-B8	21.000	12.8	8	B8	S	A	•	
	22.000-AS-B8	22.000	12.8	8	B8	S	A	•	
	23.000-AS-B8	23.000	12.8	8	B8	S	A	•	
	24.000-AS-B8	24.000	12.8	8	B8	S	A	•	
	25.000-AS-B8	25.000	12.8	8	B8	S	A	•	
	26.000-AS-B9	26.000	12.8	8	B9	S	A	•	
	27.000-AS-B9	27.000	12.8	8	B9	S	A	•	
	28.000-AS-B9	28.000	12.8	8	B9	S	A	•	
	29.000-AS-B9	29.000	12.8	8	B9	S	A	•	
	30.000-AS-B9	30.000	12.8	8	B9	S	A	•	
	31.000-AS-B9	31.000	12.8	8	B9	S	A	•	
	32.000-AS-B9	32.000	12.8	8	B9	S	A	•	

• Standard item



Recommended Cutting Conditions

Machining data for TS-REAM

ISO	Material	Condition	Tensile strength (N/mm ²)	Hardness HB	Material No.	Cutting speed Vc(m/min)	Feed (mm/rev)		
							3-10	10.1-16	
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)	Quenched and tempered	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	
			1000	300	8	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
		Non-metallic	Brass		90	27	20-60	0.30-0.60	0.40-0.80
	Electrolytic copper			100	28	20-60	0.30-0.60	0.40-0.80	
	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		Alpha+beta alloys cured	Rm 400		36	6-15	0.12-0.20	0.15-0.30	
		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 Technical Guide "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			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
		Martensitic			Vc = 20 - 40		Vc = 20 - 40	
				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
		Pearlitic			Vc = 120 - 220		Vc = 80 - 200	
	16			B4 - B6	fz = 0.08 - 0.18	B4 - B6	fz = 0.05 - 0.13	
			B7 - B9	fz = 0.10 - 0.24	B7 - B9	fz = 0.07 - 0.17		
	Cast iron nodular (GGG)	Ferritic		17	TT9030	AS or BL	TT9030	BL
		Pearlitic			Vc = 160 - 280		Vc = 150 - 250	
	18			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 - 0.19		
Malleable cast iron	Ferritic		19	TT9030	AS or BL	TT9030	BL	
	Pearlitic			Vc = 100 - 220		Vc = 100 - 220		
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 Technical Guide "material conversion table".

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

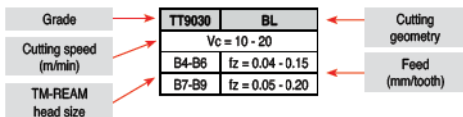
Recommended Cutting Conditions

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	
		Electrolytic 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		
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				
	Titanium, Ti alloys		36	B7 - B9	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11	
	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:


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		B7 - B9		fz = 0.08 - 0.20
			Quenched and tempered	5	TT9030		AS	TT9030
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed		6	Vc = 60-160		Vc = 60 - 120	
		Quenched and tempered		7	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15
				8	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		11	Vc = 20 - 60		Vc = 20 - 60	
					B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08
				B7 - B9	fz = 0.05 - 0.13	B7 - B9	fz = 0.04 - 0.10	
M	Stainless steel and cast steel	Ferritic / martensitic		12	TT9030	AS	TT9030	AS
		Martensitic		13	Vc = 20 - 40		Vc = 20 - 40	
		Austenitic		14	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08
				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
		Pearlitic		16	Vc = 80 - 200		Vc = 60 - 120	
					B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.13
					B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18
	Cast iron nodular (GGG)	Ferritic		17	TT9030	AS	TT9030	AS
		Pearlitic		18	Vc = 160 - 280		Vc = 160 - 240	
					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
Malleable cast iron	Ferritic		19	TT9030	AS	TT9030	AS	
	Pearlitic		20	Vc = 100 - 220		Vc = 100 - 220		
				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 Technical Guide "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
			Vc = 50 - 200		Vc = 50 - 200			
	Brass		27	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.08 - 0.16	
	Non-metallic			28	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20
		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	B4 - B6	fz = 0.03 - 0.08	B4 - B6	fz = 0.03 - 0.08
			Cured	34				
	Titanium, Ti alloys		Cast	35	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20
				36				
		Alpha+beta alloys cured	37	B7 - B9	fz = 0.04 - 0.11	B7 - B9	fz = 0.04 - 0.11	
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:

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 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							
K	Grey cast iron (GG)	15 - 16							Please ask
	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 Technical Guide "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 Technical Guide "material conversion table".

■ Steel
 ■ Stainless steel
 ■ Cast iron
 ■ Nonferrous

