

# HOLEMAKING



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# HOLEMAKING

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

## Guide to Icons



➤ External Coolant



➤ Internal Coolant



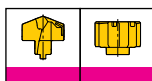
➤ Through Hole



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➤ Tube Page



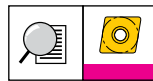
➤ Head Page



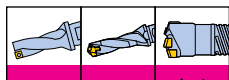
➤ Pad Page



➤ Cartridge Page



➤ Insert Page



➤ Drill Body & Deep Drill Head Page



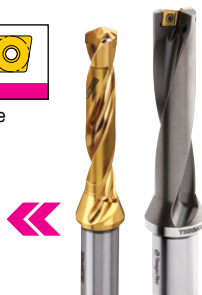
➤ Assembly Page



➤ Technical Guide Page












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TB-REAMER Blade (TB)	D176
<b>Recommended Cutting Conditions (Reaming)</b>	D177







# Tool Selection Guide

## Drilling

Series		Indexable drill				
		<b>TOPDRILL</b>	<b>T-DRILL</b>		<b>T-DEEP</b>	
		<b>TOP 2/3/4/5</b>	<b>TDR 2/3/4/5</b>	<b>TDR 2.5/3.5</b>	<b>HFD</b>	
						
<b>Pages</b>		D14 - D25	D26 - D38	D39 - D42	D122 - D123	
<b>Dc(mm)</b>		Ø14.0 - Ø50.0	Ø12.5 - Ø50.0	Ø51.0 - Ø80.0	Ø30.0 - Ø69.0	
<b>Drill depth(L/D)</b>		2, 3, 4, 5 x Dc	2, 3, 4, 5 x Dc	2.5, 3.5 x Dc	6-14 x Dc	
<b>Hole tolerance</b>		IT 12-13	IT 12-13	IT 12-13	IT 10-11	
<b>Application</b>	General drilling		●	●	●	●
	Cross hole drilling		●	●	●	
	Irregular surface drilling		○	○	○	
	Interrupted drilling		○	○	○	
	Chamfering					
<b>Coolant supply</b>		Internal	Internal	Internal	Internal	

# Tool Selection Guide

## Drilling

Head changeable drill		Solid carbide drill			Multi-function tool
<b>DRILL-RUSH</b>		<b>H-DRILL</b>			<b>TOPCAP</b>
TCD	TCD... -M	SHO 3/5 SHD 3/5	SHO 10/15/20	SHO...-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				
		<b>T-DEEP</b>				
		TBTA3	TBTA5	TBTA7	TBTA9	TBTA-FB
<b>Pages</b>		D82 - D87	D88 - D91	D92 - D94	D95 - D97	D98 - D102
<b>Dc(mm)</b>		Ø38.00 - Ø106.99	Ø107.00 - Ø168.99	Ø169.00 - Ø232.99	Ø233.00 - Ø291.99	Ø25.00 - Ø65.00
<b>Drill depth(L/D)</b>		100 x Dc	100 x Dc	100 x Dc	100 x Dc	100 x Dc
<b>Hole tolerance</b>		IT 10	IT 10	IT 10	IT 10	IT 10
<b>Surface finish</b>		3µm	3µm	3µm	3µm	3µm
<b>Single tube</b>	Outer four thread	●	●	●	●	●
	Inner single thread	●	●	●★	●	●
<b>Double tube</b>	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			
		<b>T-DEEP</b>				
		TBTA-R	BTA-SE4	BTA-DE4	BTS-SE1	BTS-SE4
<b>Pages</b>		D103 - D108	D109 - D110	D111	D112	D112
<b>Dc(mm)</b>		Ø25.00 - Ø110.99	Ø12.60 - Ø65.00	Ø18.41 - Ø65.00	Ø8.00 - Ø14.79	Ø12.60 - Ø20.00
<b>Drill depth(L/D)</b>		100 x Dc	100 x Dc	100 x Dc	100 x Dc	100 x Dc
<b>Hole tolerance</b>		IT 7 - IT 9	IT 9	IT 9	IT 9	IT 9
<b>Surface finish</b>		1-2µm	2µm	2µm	2µm	2µm
<b>Single tube</b>	Outer four thread	●	●		●	●★
	Inner single thread	●				
<b>Double tube</b>	Outer four thread			●		

★ Two start thread: Diameter 12.60 to 15.59mm

# Tool Selection Guide

## Reaming

Series				Reamer		
				<i><b>TS-REAM</b></i>	<i><b>TM-REAM</b></i>	<i><b>TB-REAM</b></i>
				TS 	TM 	TB 
<b>Pages</b>				D167 - D168	D169 - D170	D171 - D173
<b>Dc(mm)</b>				Ø3.000 - Ø16.000	Ø11.501 - Ø32.000	Ø8.000 - Ø32.000
<b>Depth(L/D)</b>				7.5-10 x Dc	3, 5, 8 x Dc	5-9 x Dc
<b>Hole tolerance</b>				IT 7	IT 7★	IT 6★★
Application		Through	Blind			
	General reaming			•	•	•
	Cross hole reaming			•		•
	Irregular surface reaming			•		•
	Interrupted reaming			•	•	•
<b>Coolant supply</b>				External	Internal	Internal










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

• Recommended

Contents

# Tool Selection Guide

## Drill insert

		<i>TOPDRILL</i>	<i>T-DRILL</i>	<i>DRILL-RUSH</i>		
		<u>SOMT</u>	<u>SPMG</u>	<u>TCD-P/M/K</u>	<u>TCD-F</u>	
<b>Series</b>						
<b>Pages</b>		D125	D125 - D126	D127 - D129	D130	
<b>Size</b>		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)	
<b>Chip former</b>		DP	DG, DK, DA	P/M/K	F	
<b>Grades</b>		TT9080, TT9300, TT8020	TT9030, TT8020 TT7400, TT6030, K10	TT9080	TT9080	
<b>Application</b>	General drilling		•	•	•	•
	Cross hole drilling		•	•	•	•
	Irregular surface drilling		○	○	○	○
	Interrupted drilling		○	○		
	Chamfering					



# Tool Selection Guide

## Drill insert









<b>DRILL•RUSH</b>	<b>CFR</b>	<b>T-CHAMFER</b>	<b>TOPCAP</b>
<b>AOMT</b>	<b>CRNG</b>	<b>XCGT</b>	<b>XCGT XCMT</b>
			
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

Contents











# Tool Selection Guide

## Drill insert

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

# Tool Selection Guide




## Reamer head & blade

				<b>TM-REAM</b>	<b>TB-REAM</b>
				TM	TB
<b>Series</b>					
<b>Pages</b>				D174 - D175	D176
<b>Size</b>				Ø11.501 - Ø32.000	1/2/3/4
<b>Chip former</b>				BL/AS	A06/B06/B12
<b>Grades</b>				TT9030	TT5030, TT5050
<b>Application</b>		<b>Through</b>	<b>Blind</b>		
	General reaming			●	●
	Cross hole reaming				
	Irregular surface reaming				
	Interrupted reaming				

● Recommended, ○ Suitable

# Grades

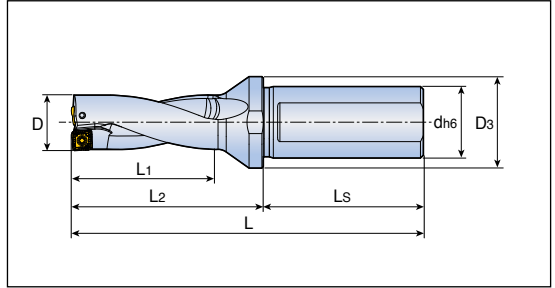
## Holemaking

Grades	ISO	Characteristics & applications
 <b>TT9300</b> CVD carbide	<b>P10</b> – <b>P25</b>	<ul style="list-style-type: none"> <li>• High speed drilling of carbon &amp; alloy steel</li> </ul>
 <b>TT6080</b> PVD carbide	<b>K05</b> – <b>K25</b> <b>H05</b> – <b>H25</b>	<ul style="list-style-type: none"> <li>• General machining for gray and ductile cast iron</li> <li>• Finish and medium machining of hardened steel</li> </ul>
<b>TT8020</b> PVD carbide	<b>P30</b> – <b>P50</b> <b>M30</b> – <b>M50</b> <b>S30</b> – <b>S50</b>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of steel</li> <li>• Interrupted and rough machining of stainless steel</li> <li>• Low speed and interrupted machining of heat-resistant alloy</li> </ul>
<b>TT9030</b> PVD carbide	<b>P20</b> – <b>P40</b> <b>M20</b> – <b>M40</b> <b>S20</b> – <b>S40</b>	<ul style="list-style-type: none"> <li>• General machining of steel</li> <li>• General machining of stainless steel</li> <li>• General machining of heat-resistant alloy</li> </ul>
 <b>TT9080</b> PVD carbide	<b>P20</b> – <b>P40</b> <b>M20</b> – <b>M40</b> <b>S20</b> – <b>S40</b>	<ul style="list-style-type: none"> <li>• General machining of steel</li> <li>• General machining of stainless steel</li> <li>• General machining of heat-resistant alloy</li> </ul>
<b>K10</b> Carbide	<b>K05</b> – <b>K15</b> <b>N05</b> – <b>N15</b> <b>S05</b> – <b>S15</b>	<ul style="list-style-type: none"> <li>• General machining of cast iron</li> <li>• General machining of aluminum alloys and non-ferrous materials</li> <li>• General machining of heat-resistant alloy</li> </ul>
<b>UF1A/UF10</b> Uncoated	<b>N10</b> – <b>N25</b> <b>S10</b> – <b>S30</b>	<ul style="list-style-type: none"> <li>• General machining of aluminum alloys and non-ferrous materials</li> <li>• General machining of heat-resistant alloy</li> </ul>

# Holemaking Toolholders



## Indexable drill holder

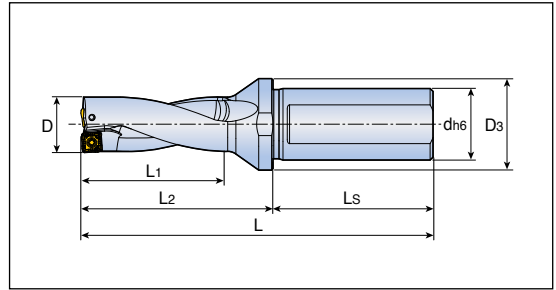


- Drilling depth: 2xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 2140-20T2-05</b>	14.0	20	25	96	28	46	50	SOMT 05...DP D125
<b>2145-20T2-05</b>	14.5	20	25	99	30	49	50	
<b>2150-20T2-05</b>	15.0	20	25	99	30	49	50	
<b>2155-20T2-05</b>	15.5	20	25	102	32	52	50	
<b>2160-20T2-05</b>	16.0	20	25	102	32	52	50	
<b>2165-25T2-06</b>	16.5	25	32	110	34	54	56	SOMT 06...DP D125
<b>2170-25T2-06</b>	17.0	25	32	110	34	54	56	
<b>2175-25T2-06</b>	17.5	25	32	113	36	57	56	
<b>2180-25T2-06</b>	18.0	25	32	113	36	57	56	
<b>2185-25T2-06</b>	18.5	25	32	115	38	59	56	
<b>2190-25T2-06</b>	19.0	25	32	115	38	59	56	SOMT 07...DP D125
<b>2195-25T2-07</b>	19.5	25	32	119	40	63	56	
<b>2200-25T2-07</b>	20.0	25	32	119	40	63	56	
<b>2205-25T2-07</b>	20.5	25	32	121	42	65	56	
<b>2210-25T2-07</b>	21.0	25	32	121	42	65	56	
<b>2215-25T2-07</b>	21.5	25	32	123	44	67	56	SOMT 08...DP D125
<b>2220-25T2-07</b>	22.0	25	32	123	44	67	56	
<b>2225-25T2-08</b>	22.5	25	32	124	46	68	56	
<b>2230-25T2-08</b>	23.0	25	32	124	46	68	56	
<b>2230-32T2-08</b>	23.0	32	40	128	46	68	60	
<b>2235-25T2-08</b>	23.5	25	32	126	48	70	56	SOMT 09...DP D125
<b>2235-32T2-08</b>	23.5	32	40	130	48	70	60	
<b>2240-25T2-08</b>	24.0	25	32	126	48	70	56	
<b>2240-32T2-08</b>	24.0	32	40	130	48	70	60	
<b>2245-25T2-08</b>	24.5	25	32	128	50	72	56	
<b>2245-32T2-08</b>	24.5	32	40	132	50	72	60	SOMT 09...DP D125
<b>2250-25T2-08</b>	25.0	25	32	128	50	72	56	
<b>2250-32T2-08</b>	25.0	32	40	132	50	72	60	
<b>2255-25T2-08</b>	25.5	25	32	129	52	73	56	
<b>2255-32T2-08</b>	25.5	32	40	133	52	73	60	
<b>2260-25T2-08</b>	26.0	25	32	129	52	73	56	SOMT 09...DP D125
<b>2260-32T2-08</b>	26.0	32	40	133	52	73	60	
<b>2265-32T2-09</b>	26.5	32	40	137	54	77	60	
<b>2270-25T2-09</b>	27.0	25	40	133	54	77	56	
<b>2270-32T2-09</b>	27.0	32	40	137	54	77	60	



## Indexable drill holder

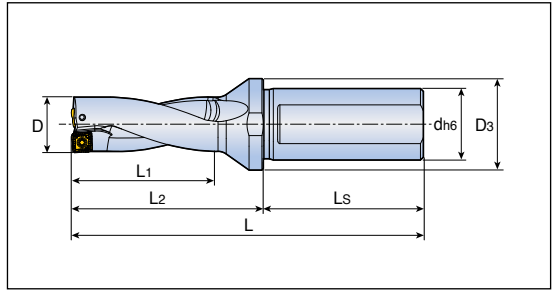


- Drilling depth: 2xdiameter

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



## Indexable drill holder



- Drilling depth: 2xdiameter

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

## Spare parts

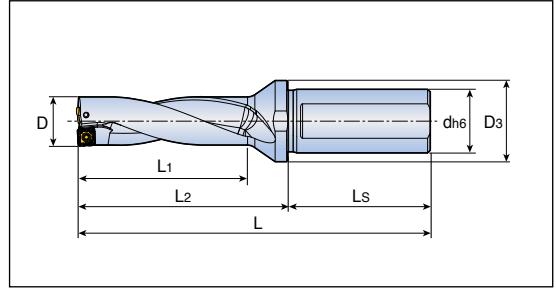
Designation	Screw 	Wrench 	Plug* 	
<b>TOP 2140 - 2160</b>	TS 20043I/HG-P	TD 6P	SL 20M	
<b>TOP 2165 - 2220</b>	TS 22052I/HG-P	TD 7P	SL 25M	
<b>TOP 2225 - 2260</b>	SO 25065I	TD 7	SL 25M / SL 32M	
<b>TOP 2265 - 2360</b>	TS 35088I	TD 10	SL 25M / SL 32M	
<b>TOP 2370 - 2430</b>	TS 40093I	TD 15	SL 32M / SL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



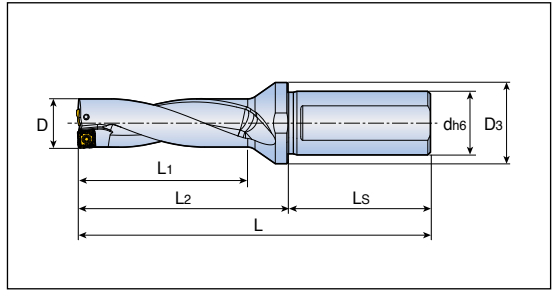
- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 3140-20T2-05</b>	14.0	20	25	110	42	60	50	SOMT 05...DP D125
<b>3145-20T2-05</b>	14.5	20	25	114	45	64	50	
<b>3150-20T2-05</b>	15.0	20	25	114	45	64	50	
<b>3155-20T2-05</b>	15.5	20	25	118	48	68	50	
<b>3160-20T2-05</b>	16.0	20	25	118	48	68	50	SOMT 06...DP D125
<b>3165-25T2-06</b>	16.5	25	32	127	51	71	56	
<b>3167-25T2-06 *</b>	16.7	25	32	127	50.1	71	56	
<b>3170-25T2-06</b>	17.0	25	32	127	51	71	56	
<b>3175-25T2-06</b>	17.5	25	32	131	54	75	56	
<b>3180-25T2-06</b>	18.0	25	32	131	54	75	56	
<b>3185-25T2-06</b>	18.5	25	32	134	57	78	56	
<b>3190-25T2-06</b>	19.0	25	32	134	57	78	56	SOMT 07...DP D125
<b>3195-25T2-07</b>	19.5	25	32	139	60	83	56	
<b>3200-25T2-07</b>	20.0	25	32	139	60	83	56	
<b>3205-25T2-07</b>	20.5	25	32	142	63	86	56	
<b>3210-25T2-07</b>	21.0	25	32	142	63	86	56	
<b>3215-25T2-07</b>	21.5	25	32	145	66	89	56	
<b>3220-25T2-07</b>	22.0	25	32	145	66	89	56	
<b>3222-25T2-07 *</b>	22.2	25	32	145	66.6	89	56	SOMT 08...DP D125
<b>3225-25T2-08</b>	22.5	25	32	147	69	91	56	
<b>3230-25T2-08</b>	23.0	25	32	147	69	91	56	
<b>3230-32T2-08</b>	23.0	32	40	151	69	91	60	
<b>3235-25T2-08</b>	23.5	25	32	150	72	94	56	
<b>3235-32T2-08</b>	23.5	32	40	154	72	94	60	
<b>3240-25T2-08</b>	24.0	25	32	150	72	94	56	
<b>3240-32T2-08</b>	24.0	32	40	154	72	94	60	
<b>3245-25T2-08</b>	24.5	25	32	153	75	97	56	
<b>3245-32T2-08</b>	24.5	32	40	157	75	97	60	
<b>3250-25T2-08</b>	25.0	25	32	153	75	97	56	SOMT 08...DP D125
<b>3250-32T2-08</b>	25.0	32	40	157	75	97	60	
<b>3254-25T2-08 *</b>	25.4	25	32	153	76.2	97	56	
<b>3255-25T2-08</b>	25.5	25	32	155	78	99	56	
<b>3255-32T2-08</b>	25.5	32	40	159	78	99	60	
<b>3260-25T2-08</b>	26.0	25	32	155	78	99	56	
<b>3260-32T2-08</b>	26.0	32	32	159	78	99	60	

- '1\*' Marked items are for inch sized hole



## Indexable drill holder

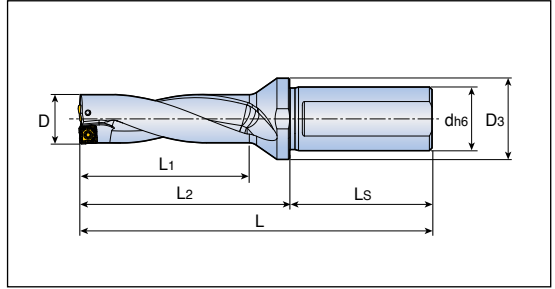


- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Insert
	D	d	D <sub>3</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>s</sub>	
<b>TOP 3265-25T2-09</b>	26.5	25	40	160	81	104	56	SOMT 09...DP D125
<b>3265-32T2-09</b>	26.5	32	40	164	81	104	60	
<b>3270-25T2-09</b>	27.0	25	40	160	81	104	56	
<b>3270-32T2-09</b>	27.0	32	40	164	81	104	60	
<b>3275-25T2-09</b>	27.5	25	40	163	84	107	56	
<b>3275-32T2-09</b>	27.5	32	40	167	84	107	60	
<b>3280-25T2-09</b>	28.0	25	40	163	84	107	56	
<b>3280-32T2-09</b>	28.0	32	40	167	84	107	60	
<b>3285-25T2-09</b>	28.5	25	40	166	87	110	56	
<b>3285-32T2-09</b>	28.5	32	40	170	87	110	60	
<b>3290-25T2-09</b>	29.0	25	40	166	87	110	56	
<b>3290-32T2-09</b>	29.0	32	40	170	87	110	60	
<b>3295-32T2-09</b>	29.5	32	40	173	90	113	60	
<b>3300-32T2-09</b>	30.0	32	40	173	90	113	60	
<b>3305-32T2-09</b>	30.5	32	40	176	93	116	60	
<b>3310-32T2-09</b>	31.0	32	40	176	93	116	60	
<b>3320-32T2-11</b>	32.0	32	40	179	96	119	60	SOMT 11...DP D125
<b>3320-40T2-11</b>	32.0	40	50	189	96	119	70	
<b>3330-32T2-11</b>	33.0	32	40	182	99	122	60	
<b>3330-40T2-11</b>	33.0	40	50	192	99	122	70	
<b>3340-32T2-11</b>	34.0	32	40	185	102	125	60	
<b>3340-40T2-11</b>	34.0	40	50	195	102	125	70	
<b>3350-32T2-11</b>	35.0	32	40	188	105	128	60	
<b>3350-40T2-11</b>	35.0	40	50	198	105	128	70	
<b>3360-32T2-11</b>	36.0	32	40	191	108	131	60	
<b>3360-40T2-11</b>	36.0	40	50	201	108	131	70	
<b>3370-32T2-13</b>	37.0	32	50	199	111	139	60	SOMT 13...DP D125
<b>3370-40T2-13</b>	37.0	40	50	209	111	139	70	
<b>3380-32T2-13</b>	38.0	32	50	202	114	142	60	
<b>3380-40T2-13</b>	38.0	40	50	212	114	142	70	
<b>3390-32T2-13</b>	39.0	32	50	205	117	145	60	
<b>3390-40T2-13</b>	39.0	40	50	215	117	145	70	
<b>3400-32T2-13</b>	40.0	32	50	208	120	148	60	
<b>3400-40T2-13</b>	40.0	40	40	218	120	148	70	



## Indexable drill holder



- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 3410-40T2-13</b>	41.0	40	50	221	123	151	70	SOMT 13...DP
<b>3420-40T2-13</b>	42.0	40	50	224	126	154	70	D125
<b>3430-40T2-13</b>	43.0	40	50	227	129	157	70	
<b>3440-40T2-15</b>	44.0	40	60	237	132	167	70	SOMT 15...DP
<b>3450-40T2-15</b>	45.0	40	60	240	135	170	70	D125
<b>3460-40T2-15</b>	46.0	40	60	243	138	173	70	
<b>3470-40T2-15</b>	47.0	40	60	246	141	176	70	
<b>3480-40T2-15</b>	48.0	40	60	249	144	179	70	
<b>3490-40T2-15</b>	49.0	40	60	252	147	182	70	
<b>3500-40T2-15</b>	50.0	40	60	255	150	185	70	

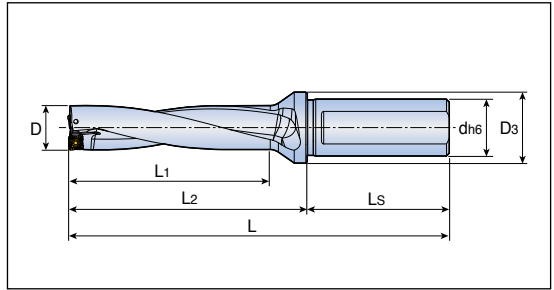
## Spare parts

Designation	Screw	Wrench	Plug*	
<b>TOP 3140 - 3160</b>	TS 20043I/HG-P	TD 6P	SL 20M	
<b>TOP 3165 - 3220</b>	TS 22052I/HG-P	TD 7P	SL 25M	
<b>TOP 3225 - 3260</b>	SO 25065I	TD 7	SL 25M / SL 32M	
<b>TOP 3265 - 3360</b>	TS 35088I	TD 10	SL 25M / SL 32M	
<b>TOP 3370 - 3430</b>	TS 40093I	TD 15	SL 32M / SL 40M	
<b>TOP 3440 - 3500</b>	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

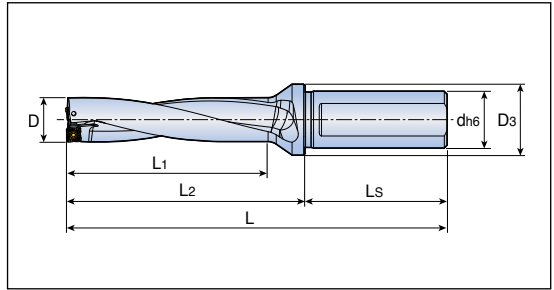


- Drilling depth: 4x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 4140-20T2-05</b>	14.0	20	25	124	56	74	50	SOMT 05...DP D125
<b>4145-20T2-05</b>	14.5	20	25	129	60	79	50	
<b>4150-20T2-05</b>	15.0	20	25	129	60	79	50	
<b>4155-20T2-05</b>	15.5	20	25	134	64	84	50	
<b>4160-20T2-05</b>	16.0	20	25	134	64	84	50	
<b>4165-25T2-06</b>	16.5	25	32	144	68	88	56	SOMT 06...DP D125
<b>4170-25T2-06</b>	17.0	25	32	144	68	88	56	
<b>4175-25T2-06</b>	17.5	25	32	149	72	93	56	
<b>4180-25T2-06</b>	18.0	25	32	149	72	93	56	
<b>4185-25T2-06</b>	18.5	25	32	153	76	97	56	
<b>4190-25T2-06</b>	19.0	25	32	153	76	97	56	SOMT 07...DP D125
<b>4195-25T2-07</b>	19.5	25	32	159	80	103	56	
<b>4200-25T2-07</b>	20.0	25	32	159	80	103	56	
<b>4205-25T2-07</b>	20.5	25	32	163	84	107	56	
<b>4210-25T2-07</b>	21.0	25	32	163	84	107	56	
<b>4215-25T2-07</b>	21.5	25	32	167	88	111	56	SOMT 08...DP D125
<b>4220-25T2-07</b>	22.0	25	32	167	88	111	56	
<b>4225-25T2-08</b>	22.5	25	32	170	92	114	56	
<b>4230-25T2-08</b>	23.0	25	32	170	92	114	56	
<b>4230-32T2-08</b>	23.0	32	40	174	92	114	60	
<b>4235-25T2-08</b>	23.5	25	32	174	96	118	56	
<b>4235-25T2-08</b>	23.5	32	40	178	96	118	60	
<b>4240-25T2-08</b>	24.0	25	32	174	96	118	56	
<b>4240-32T2-08</b>	24.0	32	40	178	96	118	60	
<b>4245-25T2-08</b>	24.5	25	32	178	100	122	56	
<b>4245-32T2-08</b>	24.5	32	40	182	100	122	60	
<b>4250-25T2-08</b>	25.0	25	32	178	100	122	56	
<b>4250-32T2-08</b>	25.0	32	40	182	100	122	60	
<b>4254-25T2-08 *</b>	25.4	25	32	178	101.6	122	56	
<b>4255-25T2-08</b>	25.5	25	32	181	104	125	56	
<b>4255-32T2-08</b>	25.5	32	40	185	104	125	60	
<b>4260-25T2-08</b>	26.0	25	32	181	104	125	56	
<b>4260-32T2-08</b>	26.0	32	40	185	104	125	60	



## Indexable drill holder



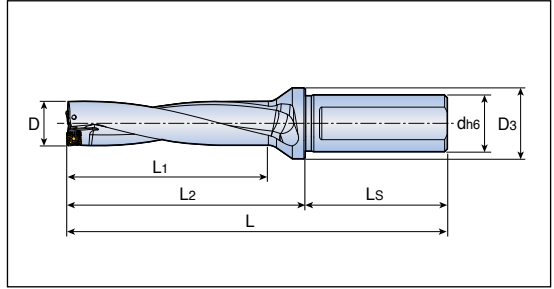
- Drilling depth: 4xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 4265-25T2-09</b>	26.5	25	40	187	108	131	56	SOMT 09...DP D125
<b>4265-32T2-09</b>	26.5	32	40	191	108	131	60	
<b>4270-25T2-09</b>	27.0	25	40	187	108	131	56	
<b>4270-32T2-09</b>	27.0	32	40	191	108	131	60	
<b>4275-25T2-09</b>	27.5	25	40	191	112	135	56	
<b>4275-32T2-09</b>	27.5	32	40	195	112	135	60	
<b>4280-25T2-09</b>	28.0	25	40	191	112	135	56	
<b>4280-32T2-09</b>	28.0	32	40	195	112	135	60	
<b>4285-25T2-09</b>	28.5	25	40	195	116	139	56	
<b>4285-32T2-09</b>	28.5	32	40	199	116	139	60	
<b>4286-32T2-09 *</b>	28.6	32	40	199	114.4	139	60	
<b>4290-25T2-09</b>	29.0	25	40	195	116	139	56	
<b>4290-32T2-09</b>	29.0	32	40	199	116	139	60	
<b>4395-32T2-09</b>	39.5	32	40	203	120	143	60	
<b>4300-32T2-09</b>	30.0	32	40	203	120	143	60	
<b>4305-32T2-09</b>	30.5	32	40	207	124	147	60	
<b>4310-32T2-09</b>	31.0	32	40	207	124	147	60	
<b>4318-32T2-11 *</b>	31.8	32	40	211	127.2	151	60	SOMT 11...DP D125
<b>4320-32T2-11</b>	32.0	32	40	211	128	151	60	
<b>4320-40T2-11</b>	32.0	40	50	221	128	151	70	
<b>4330-32T2-11</b>	33.0	32	40	215	132	155	60	
<b>4330-40T2-11</b>	33.0	40	50	225	132	155	70	
<b>4340-32T2-11</b>	34.0	32	40	219	136	159	60	
<b>4340-40T2-11</b>	34.0	40	50	229	136	159	70	
<b>4349-40T2-11 *</b>	34.9	40	50	233	139.6	163	70	
<b>4350-32T2-11</b>	35.0	32	40	223	140	163	60	
<b>4350-40T2-11</b>	35.0	40	50	233	140	163	70	
<b>4360-32T2-11</b>	36.0	32	40	227	144	167	60	
<b>4360-40T2-11</b>	36.0	40	50	237	144	167	70	
<b>4370-32T2-13</b>	37.0	32	50	236	148	176	60	SOMT 13...DP D125
<b>4370-40T2-13</b>	37.0	40	50	246	148	176	70	
<b>4371-40T2-13 *</b>	37.1	40	50	246	148.4	176	70	
<b>4380-32T2-13</b>	38.0	32	50	240	152	180	60	
<b>4380-40T2-13</b>	38.0	40	50	250	152	180	70	
<b>4381-40T2-13 *</b>	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	D3	L	L1	L2	Ls	
<b>TOP 4390-32T2-13</b>	39.0	32	50	244	156	184	60	SOMT 13...DP D125
<b>4390-40T2-13</b>	39.0	40	50	254	156	184	70	
<b>4400-32T2-13</b>	40.0	32	50	248	160	188	60	
<b>4400-40T2-13</b>	40.0	40	50	258	160	188	70	
<b>4410-40T2-13</b>	41.0	40	50	262	164	192	70	
<b>4413-40T2-13 *</b>	41.3	40	50	262	165.2	192	70	
<b>4420-40T2-13</b>	42.0	40	50	266	168	196	70	
<b>4429-40T2-13 *</b>	42.9	40	50	270	171.6	200	70	
<b>4430-40T2-13</b>	43.0	40	50	270	172	200	70	
<b>4440-40T2-15</b>	44.0	40	60	281	176	211	70	
<b>4445-40T2-15 *</b>	44.5	40	60	285	178	215	70	
<b>4450-40T2-15</b>	45.0	40	60	285	180	215	70	
<b>4460-40T2-15</b>	46.0	40	60	289	184	219	70	
<b>4470-40T2-15</b>	47.0	40	60	293	188	223	70	
<b>4476-40T2-15 *</b>	47.6	40	60	297	190.4	227	70	
<b>4480-40T2-15</b>	48.0	40	60	297	192	227	70	
<b>4490-40T2-15</b>	49.0	40	60	301	196	231	70	
<b>4500-40T2-15</b>	50.0	40	60	305	200	235	70	
<b>4508-40T2-15 *</b>	50.8	40	60	309	203.2	239	70	

- \*' \* Marked items are for inch sized hole

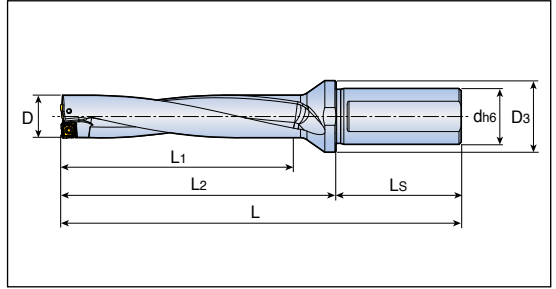
## Spare parts

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



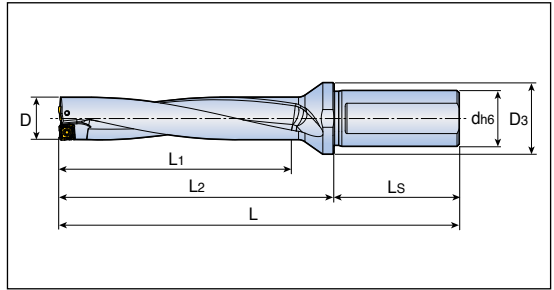
- Drilling depth: 5xdiameter

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

- \*\*! Marked items are for inch sized hole



## Indexable drill holder



- Drilling depth: 5x diameter

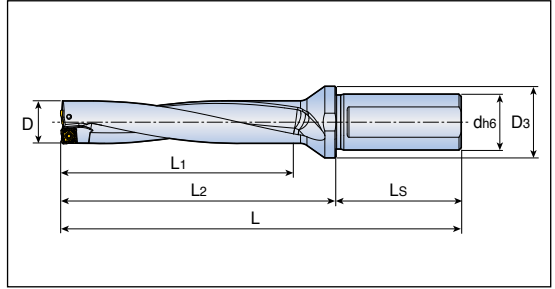
Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TOP 5265-32T2-09</b>	26.5	32	40	218	135	158	60	SOMT 09...DP D125
<b>5270-25T2-09</b>	27.0	25	40	214	135	158	56	
<b>5270-32T2-09</b>	27.0	32	40	218	135	158	60	
<b>5275-32T2-09</b>	27.5	32	40	223	140	163	60	
<b>5280-25T2-09</b>	28.0	25	40	219	140	163	56	
<b>5280-32T2-09</b>	28.0	32	40	223	140	163	60	
<b>5282-32T2-09 *</b>	28.2	32	40	223	141	163	60	
<b>5285-32T2-09</b>	28.5	32	40	228	145	168	60	
<b>5290-25T2-09</b>	29.0	25	40	224	145	168	56	
<b>5290-32T2-09</b>	29.0	32	40	228	145	168	60	
<b>5395-32T2-09</b>	39.5	32	40	233	150	173	60	
<b>5300-32T2-09</b>	30.0	32	40	233	150	173	60	
<b>5305-32T2-09</b>	30.5	32	40	238	155	178	60	
<b>5310-32T2-09</b>	31.0	32	40	238	155	178	60	
<b>5320-32T2-11</b>	32.0	32	40	243	160	183	60	SOMT 11...DP D125
<b>5320-40T2-11</b>	32.0	40	50	253	160	183	70	
<b>5330-32T2-11</b>	33.0	32	40	248	165	188	60	
<b>5330-40T2-11</b>	33.0	40	50	258	165	188	70	
<b>5340-32T2-11</b>	34.0	32	40	253	170	193	60	
<b>5340-40T2-11</b>	34.0	40	50	263	170	193	70	
<b>5350-32T2-11</b>	35.0	32	40	258	175	198	60	
<b>5350-40T2-11</b>	35.0	40	50	268	175	198	70	
<b>5360-32T2-11</b>	36.0	32	40	263	180	203	60	
<b>5360-40T2-11</b>	36.0	40	50	273	180	203	70	
<b>5370-32T2-13</b>	37.0	32	50	273	185	213	60	SOMT 13...DP D125
<b>5370-40T2-13</b>	37.0	40	50	283	185	213	70	
<b>5380-32T2-13</b>	38.0	32	50	278	190	218	60	
<b>5380-40T2-13</b>	38.0	40	50	288	190	218	70	
<b>5390-32T2-13</b>	39.0	32	50	283	195	223	60	
<b>5390-40T2-13</b>	39.0	40	50	293	195	223	70	
<b>5400-32T2-13</b>	40.0	32	50	288	200	228	60	
<b>5400-40T2-13</b>	40.0	40	50	298	200	228	70	
<b>5410-40T2-13</b>	41.0	40	50	303	205	233	70	
<b>5420-40T2-13</b>	42.0	40	50	308	210	238	70	
<b>5430-40T2-13</b>	43.0	40	50	313	215	243	70	

• '\*1' Marked items are for inch sized hole





## Indexable drill holder



- Drilling depth: 5xdiameter

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

## Spare parts

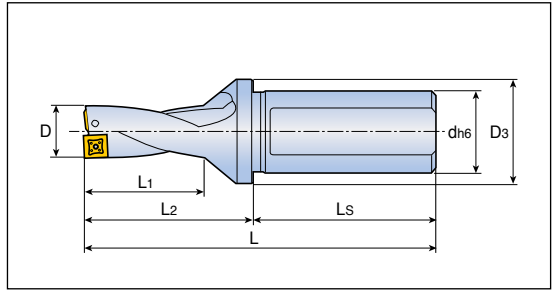
Designation	Screw	Wrench	Plug*	
<b>TOP 5140 - 5160</b>	TS 20043I/HG-P	TD 6P	SL 20M	
<b>TOP 5165 - 5220</b>	TS 22052I/HG-P	TD 7P	SL 25M	
<b>TOP 5225 - 5260</b>	SO 25065I	TD 7	SL 25M / SL 32M	
<b>TOP 5265 - 5360</b>	TS 35088I	TD 10	SL 25M / SL 32M	
<b>TOP 5370 - 5430</b>	TS 40093I	TD 15	SL 32M / SL 40M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



Contents

## Indexable drill holder

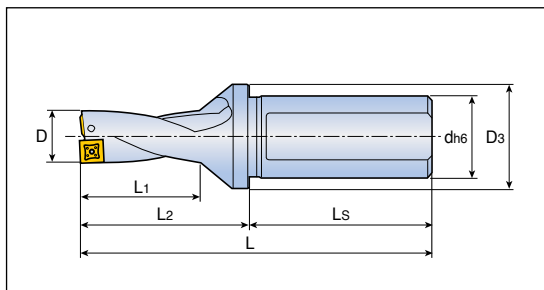


- Drilling depth: 2xdiameter

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



## Indexable drill holder

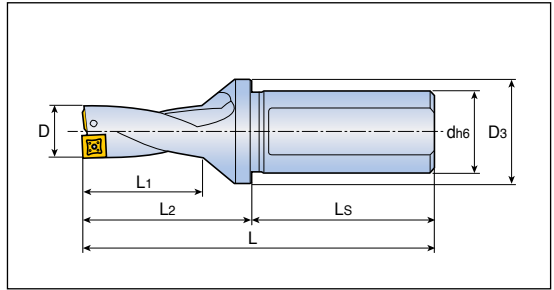


- Drilling depth: 2xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TDR 2260-32T2-07</b>	26.0	32	45	139	52	79	60	SPMG 07... DG/DK/DA D125
<b>2265-25T2-07</b>	26.5	25	45	137	54	81	56	
<b>2265-32T2-07</b>	26.5	32	45	141	54	81	60	
<b>2270-25T2-07</b>	27.0	25	45	137	54	81	56	
<b>2270-32T2-07</b>	27.0	32	45	141	54	81	60	
<b>2275-25T2-07</b>	27.5	25	45	140	56	84	56	
<b>2275-32T2-07</b>	27.5	32	45	144	56	84	60	
<b>2280-25T2-09</b>	28.0	25	45	140	56	84	56	SPMG 09... DG/DK/DA D125
<b>2280-32T2-09</b>	28.0	32	45	144	56	84	60	
<b>2285-25T2-09</b>	28.5	25	45	142	58	86	56	
<b>2285-32T2-09</b>	28.5	32	45	146	58	86	60	
<b>2290-25T2-09</b>	29.0	25	45	142	58	86	56	
<b>2290-32T2-09</b>	29.0	32	45	146	58	86	60	
<b>2295-32T2-09</b>	29.5	32	55	151	60	91	60	
<b>2295-40T2-09</b>	29.5	40	55	161	60	91	70	SPMG 11... DG/DA/DK D125
<b>2300-32T2-09</b>	30.0	32	55	151	60	91	60	
<b>2300-40T2-09</b>	30.0	40	55	161	60	91	70	
<b>2305-32T2-09</b>	30.5	32	55	154	62	94	60	
<b>2305-40T2-09</b>	30.5	40	55	164	62	94	70	
<b>2310-32T2-09</b>	31.0	32	55	154	62	94	60	
<b>2310-40T2-09</b>	31.0	40	55	164	62	94	70	
<b>2315-32T2-09</b>	31.5	32	55	156	64	96	60	SPMG 11... DG/DA/DK D125
<b>2315-40T2-09</b>	31.5	40	55	166	64	96	70	
<b>2320-32T2-09</b>	32.0	32	55	156	64	96	60	
<b>2320-40T2-09</b>	32.0	40	55	166	64	96	70	
<b>2325-32T2-09</b>	32.5	32	55	159	66	99	60	
<b>2325-40T2-09</b>	32.5	40	55	169	66	99	70	
<b>2330-32T2-09</b>	33.0	32	55	159	66	99	60	
<b>2330-40T2-09</b>	33.0	40	55	169	66	99	70	SPMG 11... DG/DA/DK D125
<b>2340-32T2-11</b>	34.0	32	55	161	68	101	60	
<b>2340-40T2-11</b>	34.0	40	55	171	68	101	70	
<b>2350-32T2-11</b>	35.0	32	55	164	70	104	60	
<b>2350-40T2-11</b>	35.0	40	55	174	70	104	70	
<b>2360-32T2-11</b>	36.0	32	55	167	72	107	60	
<b>2360-40T2-11</b>	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	
<b>TDR 2370-32T2-11</b>	37.0	32	55	170	74	110	60	SPMG 11... DG/DK/DA D125
<b>2370-40T2-11</b>	37.0	40	55	180	74	110	70	
<b>2380-32T2-11</b>	38.0	32	55	173	76	113	60	
<b>2380-40T2-11</b>	38.0	40	55	183	76	113	70	
<b>2390-32T2-11</b>	39.0	32	55	175	78	115	60	
<b>2390-40T2-11</b>	39.0	40	55	185	78	115	70	
<b>2400-32T2-11</b>	40.0	32	60	178	80	118	60	
<b>2400-40T2-11</b>	40.0	40	60	188	80	118	70	
<b>2410-40T2-11</b>	41.0	40	60	191	82	121	70	
<b>2420-40T2-14</b>	42.0	40	60	193	84	123	70	
<b>2430-40T2-14</b>	43.0	40	60	196	86	126	70	
<b>2440-40T2-14</b>	44.0	40	60	198	88	128	70	
<b>2450-40T2-14</b>	45.0	40	60	202	90	132	70	
<b>2460-40T2-14</b>	46.0	40	60	205	92	135	70	
<b>2470-40T2-14</b>	47.0	40	60	207	94	137	70	
<b>2480-40T2-14</b>	48.0	40	60	210	96	140	70	
<b>2490-40T2-14</b>	49.0	40	60	212	98	142	70	
<b>2500-40T2-14</b>	50.0	40	60	215	100	145	70	

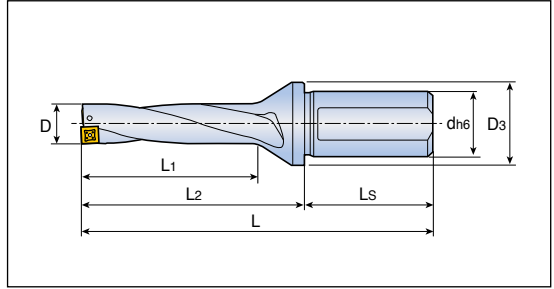
## Spare parts

Designation	Screw 	Wrench 	Plug 	Set screw 
<b>TDR 2125 - 2150</b>	TS 20043I/HG-P	TD 6P	SL 20 M	-
<b>TDR 2155 - 2215</b>	TS 22052I/HG	TD 7	SL 25 M	-
<b>TDR 2220 - 2270</b>	TS 25064I	TD 8	SL 25 M / SL 32 M	-
<b>TDR 2275</b>	TS 25064I	TD 8	-	SS M6x1x6
<b>TDR 2280 - 2330</b>	TS 35088I	TD 10	-	SS M6x1x6
<b>TDR 2340 - 2390</b>	TS 40093I	TD 15	-	SS M6x1x6
<b>TDR 2400 - 2410</b>	TS 40093I	TD 15	-	SS M8x1.25x8
<b>TDR 2420 - 2500</b>	SO 50090I	TD 20	-	SS M8x1.25x8



# TDR 3...-T2

## Indexable drill holder



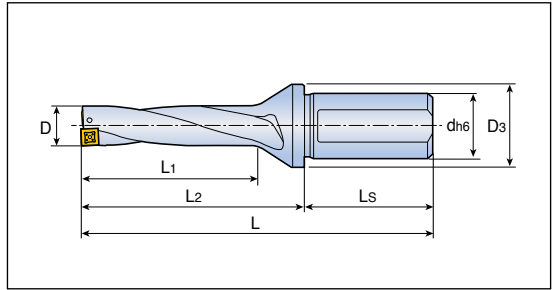
- Drilling depth: 3xdiameter

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

• \*\*! Marked items are for pre-thread hole making



## Indexable drill holder



- Drilling depth: 3x diameter

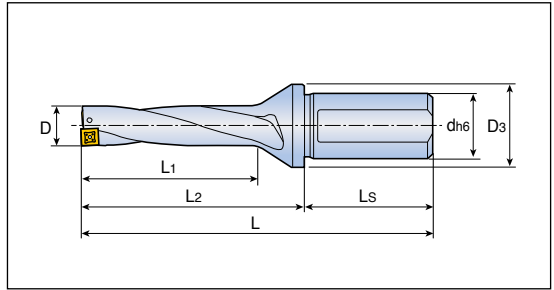
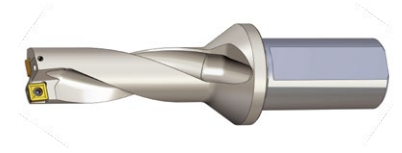
Designation	Dimension (mm)							Insert	
	D	d	D3	L	L1	L2	Ls		
<b>TDR 3255-25T2-07</b>	25.5	25	45	161	78	105	56	SPMG 07... DG/DK/DA D125	
<b>3255-32T2-07</b>	25.5	32	45	165	78	105	60		
<b>3260-25T2-07</b>	26.0	25	45	161	78	105	56		
<b>3260-32T2-07</b>	26.0	32	45	165	78	105	60		
<b>3264-25T2-07 *</b>	26.4	25	45	164	81	108	56		
<b>3264-32T2-07 *</b>	26.4	32	45	168	81	108	60		
<b>3265-25T2-07</b>	26.5	25	45	164	81	108	56		
<b>3265-32T2-07</b>	26.5	32	45	168	81	108	60		
<b>3270-25T2-07</b>	27.0	25	45	164	81	108	56		
<b>3270-32T2-07</b>	27.0	32	45	168	81	108	60		
<b>3275-25T2-07</b>	27.5	25	45	168	84	112	56		
<b>3275-32T2-07</b>	27.5	32	45	172	84	112	60		
<b>3280-25T2-09</b>	28.0	25	45	168	84	112	56		SPMG 09... DG/DK/DA D125
<b>3280-32T2-09</b>	28.0	32	45	172	84	112	60		
<b>3285-25T2-09</b>	28.5	25	45	171	87	115	56		
<b>3285-32T2-09</b>	28.5	32	45	171	87	115	56		
<b>3290-25T2-09</b>	29.0	25	45	171	87	115	56		
<b>3290-32T2-09</b>	29.0	32	45	175	87	115	60		
<b>3294-32T2-09 *</b>	29.4	32	55	181	90	121	60		
<b>3294-40T2-09 *</b>	29.4	40	55	191	90	121	70		
<b>3295-32T2-09</b>	29.5	32	55	181	90	121	60		
<b>3295-40T2-09</b>	29.5	40	55	191	90	121	70		
<b>3300-32T2-09</b>	30.0	32	55	181	90	121	60		
<b>3300-40T2-09</b>	30.0	40	55	191	90	121	70		
<b>3305-32T2-09</b>	30.5	32	55	185	93	125	60		
<b>3305-40T2-09</b>	30.5	40	55	195	93	125	70		
<b>3310-32T2-09</b>	31.0	32	55	185	93	125	60		
<b>3310-40T2-09</b>	31.0	40	55	195	93	125	70		
<b>3315-32T2-09</b>	31.5	32	55	188	96	128	60		
<b>3315-40T2-09</b>	31.5	40	55	198	96	128	70		
<b>3320-32T2-09</b>	32.0	32	55	188	96	128	60		
<b>3320-40T2-09</b>	32.0	40	55	198	96	128	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	Ls	
<b>TDR 3420-40T2-14</b>	42.0	40	60	235	126	165	70	SPMG 14... DG/DK/DA D125
<b>3430-40T2-14</b>	43.0	40	60	239	129	169	70	
<b>3440-40T2-14</b>	44.0	40	60	242	132	172	70	
<b>3450-40T2-14</b>	45.0	40	60	247	135	177	70	
<b>3460-40T2-14</b>	46.0	40	60	251	138	181	70	
<b>3470-40T2-14</b>	47.0	40	60	254	141	184	70	
<b>3480-40T2-14</b>	48.0	40	60	258	144	188	70	
<b>3490-40T2-14</b>	49.0	40	60	261	147	191	70	
<b>3500-40T2-14</b>	50.0	40	60	265	150	195	70	

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

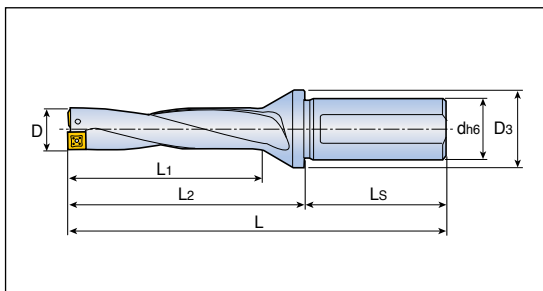
## Spare parts

Designation	Screw 	Wrench 	Plug 	Set screw 
<b>TDR 3125 - 3150</b>	TS 20043I/HG-P	TD 6P	SL 20 M	-
<b>TDR 3155 - 3215</b>	TS 22052I/HG	TD 7	SL 25 M	-
<b>TDR 3220 - 3270</b>	TS 25064I	TD 8	SL 25 M / SL 32 M	-
<b>TDR 3275</b>	TS 25064I	TD 8	-	SS M6x1x6
<b>TDR 3280 - 3330</b>	TS 35088I	TD 10	-	SS M6x1x6
<b>TDR 3340 - 3390</b>	TS 40093I	TD 15	-	SS M6x1x6
<b>TDR 3400 - 3410</b>	TS 40093I	TD 15	-	SS M8x1.25x8
<b>TDR 3420 - 3500</b>	SO 50090I	TD 20	-	SS M8x1.25x8





## Indexable drill holder

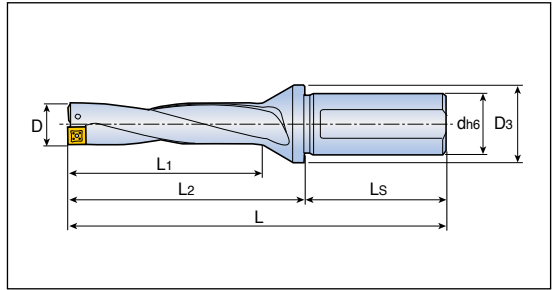


- Drilling depth: 4xdiameter

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



## Indexable drill holder

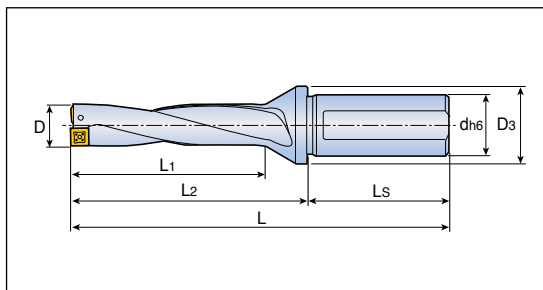


- Drilling depth: 4x diameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TDR 4260-32T2-07</b>	26.0	32	45	191	104	131	60	SPMG 07... DG/DK/DA D125
<b>4265-25T2-07</b>	26.5	25	45	191	108	135	56	
<b>4265-32T2-07</b>	26.5	32	45	195	108	135	60	
<b>4270-25T2-07</b>	27.0	25	45	191	108	135	56	
<b>4270-32T2-07</b>	27.0	32	45	195	108	135	60	
<b>4275-25T2-07</b>	27.5	25	45	196	112	140	56	
<b>4275-32T2-07</b>	27.5	32	45	200	112	140	60	
<b>4280-25T2-09</b>	28.0	25	45	196	112	140	56	SPMG 09... DG/DK/DA D125
<b>4280-32T2-09</b>	28.0	32	45	200	112	140	60	
<b>4285-25T2-09</b>	28.5	25	45	200	116	144	56	
<b>4285-32T2-09</b>	28.5	32	45	204	116	144	60	
<b>4290-25T2-09</b>	29.0	25	45	200	116	144	56	
<b>4290-32T2-09</b>	29.0	32	45	204	116	144	60	
<b>4295-32T2-09</b>	29.5	32	55	211	120	151	60	
<b>4295-40T2-09</b>	29.5	40	55	221	120	151	70	
<b>4300-32T2-09</b>	30.0	32	55	211	120	151	60	
<b>4300-40T2-09</b>	30.0	40	55	221	120	151	70	
<b>4305-32T2-09</b>	30.5	32	55	216	124	156	60	
<b>4305-40T2-09</b>	30.5	40	55	226	124	156	70	
<b>4310-32T2-09</b>	31.0	32	55	216	124	156	60	
<b>4310-40T2-09</b>	31.0	40	55	226	124	156	70	
<b>4315-32T2-09</b>	31.5	32	55	220	128	160	60	
<b>4315-40T2-09</b>	31.5	40	55	230	128	160	70	
<b>4320-32T2-09</b>	32.0	32	55	220	128	160	60	
<b>4320-40T2-09</b>	32.0	40	55	230	128	160	70	
<b>4325-32T2-09</b>	32.5	32	55	225	132	165	60	
<b>4325-40T2-09</b>	32.5	40	55	235	132	165	70	
<b>4330-32T2-09</b>	33.0	32	55	225	132	165	60	
<b>4330-40T2-09</b>	33.0	40	55	235	132	165	70	
<b>4340-32T2-11</b>	34.0	32	55	229	136	169	60	SPMG 11... DG/DK/DA D125
<b>4340-40T2-11</b>	34.0	40	55	239	136	169	70	
<b>4350-32T2-11</b>	35.0	32	55	234	140	174	60	
<b>4350-40T2-11</b>	35.0	40	55	244	140	174	70	
<b>4360-32T2-11</b>	36.0	32	55	239	144	179	60	
<b>4360-40T2-11</b>	36.0	40	55	249	144	179	70	



## Indexable drill holder



- Drilling depth: 4xdiameter

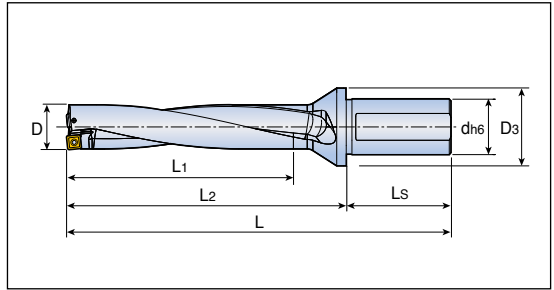
Designation	Dimension (mm)							Insert	
	D	d	D3	L	L1	L2	Ls		
<b>TDR 4370-32T2-11</b>	37.0	32	55	244	148	184	60	SPMG 11... DG/DK/DA D125	
<b>4370-40T2-11</b>	37.0	40	55	254	148	184	70		
<b>4380-32T2-11</b>	38.0	32	55	249	152	189	60		
<b>4380-40T2-11</b>	38.0	40	55	259	152	189	70		
<b>4390-32T2-11</b>	39.0	32	55	253	156	193	60		
<b>4390-40T2-11</b>	39.0	40	55	263	156	193	70		
<b>4400-32T2-11</b>	40.0	32	60	258	160	198	60		
<b>4400-40T2-11</b>	40.0	40	60	268	160	198	70		
<b>4410-40T2-11</b>	41.0	40	60	273	164	203	70		
<b>4420-40T2-14</b>	42.0	40	60	277	168	207	70		SPMG 14... DG/DK/DA D125
<b>4430-40T2-14</b>	43.0	40	60	282	172	212	70		
<b>4440-40T2-14</b>	44.0	40	60	286	176	216	70		
<b>4450-40T2-14</b>	45.0	40	60	292	180	222	70		
<b>4460-40T2-14</b>	46.0	40	60	297	184	227	70		
<b>4470-40T2-14</b>	47.0	40	60	301	188	231	70		
<b>4480-40T2-14</b>	48.0	40	60	306	192	236	70		
<b>4490-40T2-14</b>	49.0	40	60	310	196	240	70		
<b>4500-40T2-14</b>	50.0	40	60	315	200	245	70		

## Spare parts

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



## Indexable drill holder



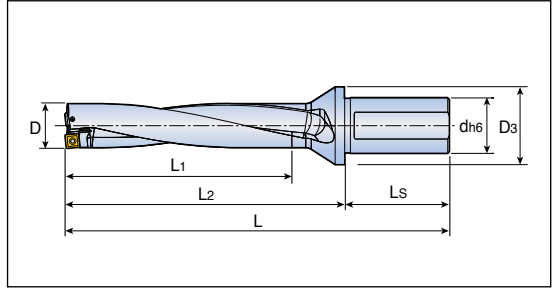
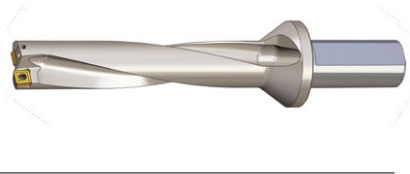
- Drilling depth: 5xdiameter

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



# TDR 5...-T2

## Indexable drill holder

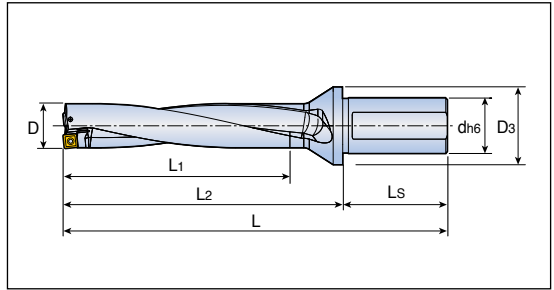


- Drilling depth: 5xdiameter

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



## Indexable drill holder



- Drilling depth: 5xdiameter

Designation	Dimension (mm)							Insert
	D	d	D3	L	L1	L2	Ls	
<b>TDR 5420-40T2-14</b>	42.0	40	60	319	210	249	70	SPMG 14... DG/DK/DA D125
<b>5430-40T2-14</b>	43.0	40	60	325	215	255	70	
<b>5440-40T2-14</b>	44.0	40	60	330	220	260	70	
<b>5450-40T2-14</b>	45.0	40	60	337	225	267	70	
<b>5460-40T2-14</b>	46.0	40	60	343	230	273	70	
<b>5470-40T2-14</b>	47.0	40	60	348	235	278	70	
<b>5480-40T2-14</b>	48.0	40	60	354	240	284	70	
<b>5490-40T2-14</b>	49.0	40	60	359	245	289	70	
<b>5500-40T2-14</b>	50.0	40	60	365	250	295	70	

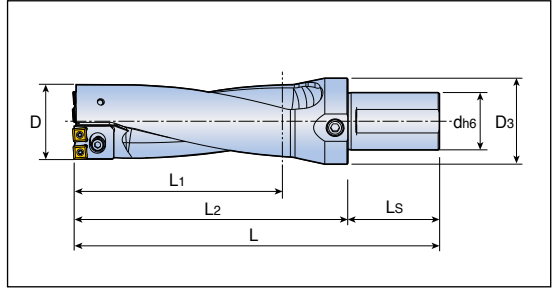
## Spare parts

Designation	Screw 	Wrench 	Plug 	Set screw 
<b>TDR 5125 - 5150</b>	TS 20043I/HG-P	TD 6P	SL 20 M	-
<b>TDR 5155 - 5215</b>	TS 22052I/HG	TD 7	SL 25 M	-
<b>TDR 5220 - 5270</b>	TS 25064I	TD 8	SL 25 M / SL 32 M	-
<b>TDR 5275</b>	TS 25064I	TD 8	-	SS M6x1x6
<b>TDR 5280 - 5330</b>	TS 35088I	TD 10	-	SS M6x1x6
<b>TDR 5340 - 5390</b>	TS 40093I	TD 15	-	SS M6x1x6
<b>TDR 5400 - 5410</b>	TS 40093I	TD 15	-	SS M8x1.25x8
<b>TDR 5420 - 5500</b>	SO 50090I	TD 20	-	SS M8x1.25x8



# TDR 25...CA-T

## Indexable cartridge drill holder



- Drilling depth: 2.5x diameter

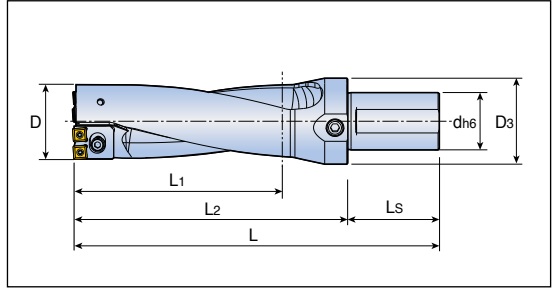
Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	L3		
<b>TDR 2551-53-50T2-07CA-T</b>	51	50	75	250	133	170	80	-	SPMG 07...
	52	50	75	250	133	170	80	TDP-0701	DG/DK/DA
	53	50	75	250	133	170	80	TDP-0702	D125
<b>2554-56-50T2-07CA-T</b>	54	50	75	260	140	180	80	-	SPMG 07...
	55	50	75	260	140	180	80	TDP-0701	DG/DK/DA
	56	50	75	260	140	180	80	TDP-0702	D125
<b>2557-62-50T2-09CA-T</b>	57	50	75	281	155	201	80	-	SPMG 09...
	58	50	75	281	155	201	80	TDP-0901	DG/DK/DA
	59	50	75	281	155	201	80	TDP-0902	D125
	60	50	75	281	155	201	80	TDP-0903	
	61	50	75	281	155	201	80	TDP-0904	
	62	50	75	281	155	201	80	TDP-0905	
<b>2563-66-50T2-09CA-T</b>	63	50	75	295	165	215	80	-	SPMG 09...
	64	50	75	295	165	215	80	TDP-0901	DG/DK/DA
	65	50	75	295	165	215	80	TDP-0902	D125
	66	50	75	295	165	215	80	TDP-0903	
<b>2567-73-50T2-11CA-T</b>	67	50	75	320	183	240	80	-	SPMG 11...
	68	50	75	320	183	240	80	TDP-1101	DG/DK/DA
	69	50	75	320	183	240	80	TDP-1102	D125
	70	50	75	320	183	240	80	TDP-1103	
	71	50	75	320	183	240	80	TDP-1104	
	72	50	75	320	183	240	80	TDP-1105	
	73	50	75	320	183	240	80	TDP-1106	



## Indexable cartridge drill holder



- Drilling depth: 2.5xdiameter



Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	Ls		
<b>TDR 2574-80-50T2-12CA-T</b>	74	50	75	330	200	250	80	-	SPMG 12...DG D125
	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 fo center
<b>TDR 2551</b>	TS 25064I	TDR 07CA-P1-T	TDR 07CA-C1-T
<b>TDR 2554</b>	TS 25064I	TDR 07CA-P2-T	TDR 07CA-C2-T
<b>TDR 2557</b>	TS 35088I	TDR 09CA-P1-T	TDR 09CA-C1-T
<b>TDR 2563</b>	TS 35088I	TDR 09CA-P2-T	TDR 09CA-C2-T
<b>TDR 2567</b>	TS 40093I	TDR 11CA-P1-T	TDR 11CA-C1-T
<b>TDR 2574</b>	TS 40093I	TDR 12CA-P2-T	TDR 12CA-C2-T

## Spare parts for cartridges

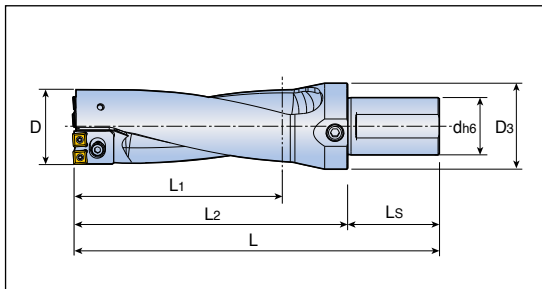
Cartridge	Cartridge clamping screw	Washer	Setting plate screw
TDR 07CA-P1-T	SH M4x0.7x16	MW 4.3x8	TS 20043I/HG-P
TDR 07CA-C1-T	SH M4x0.7x16	MW 4.3x8	-
TDR 07CA-P2-T	SH M4x0.7x16	MW 4.3x8	TS 20043I/HG-P
TDR 07CA-C2-T	SH M4x0.7x16	MW 4.3x8	-
TDR 09CA-P1-T	SH M5x0.8x16	MW 5.5x10	SO 30055I
TDR 09CA-C1-T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





# TDR 35...CA-T

## Indexable cartridge drill holder

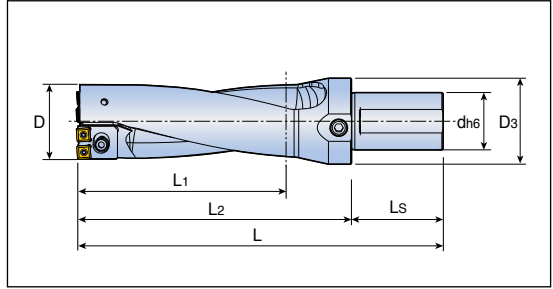
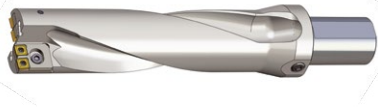


- Drilling depth: 3.5xdiameter

Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	Ls		
<b>TDR 3551-53-50T2-07CA-T</b>	51	50	75	303	186	223	80	-	SPMG 07...
	52	50	75	303	186	223	80	TDP-0701	DG/DK/DA
	53	50	75	303	186	223	80	TDP-0702	D125
<b>3554-56-50T2-07CA-T</b>	54	50	75	316	196	236	80	-	SPMG 07...
	55	50	75	316	196	236	80	TDP-0701	DG/DK/DA
	56	50	75	316	196	236	80	TDP-0702	D125
<b>3557-62-50T2-09CA-T</b>	57	50	75	343	217	263	80	-	SPMG 09...
	58	50	75	343	217	263	80	TDP-0901	DG/DK/DA
	59	50	75	343	217	263	80	TDP-0902	D125
	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	
<b>3563-66-50T2-09CA-T</b>	63	50	75	361	231	281	80	-	SPMG 09...
	64	50	75	361	231	281	80	TDP-0901	DG/DK/DA
	65	50	75	361	231	281	80	TDP-0902	D125
	66	50	75	361	231	281	80	TDP-0903	
<b>3567-73-50T2-11CA-T</b>	67	50	75	393	256	313	80	-	SPMG 11...
	68	50	75	393	256	313	80	TDP-1101	DG/DK/DA
	69	50	75	393	256	313	80	TDP-1102	D125
	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: 3.5xdiameter

Designation	Dimension (mm)							Setting plate	Insert
	D	d	D3	L	L1	L2	Ls		
<b>TDR 3574-80-50T2-12CA-T</b>	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 fo center
<b>TDR 3551</b>	TS 25064I	TDR 07CA-P1-T	TDR 07CA-C1-T
<b>TDR 3554</b>	TS 25064I	TDR 07CA-P2-T	TDR 07CA-C2-T
<b>TDR 3557</b>	TS 35088I	TDR 09CA-P1-T	TDR 09CA-C1-T
<b>TDR 3563</b>	TS 35088I	TDR 09CA-P2-T	TDR 09CA-C2-T
<b>TDR 3567</b>	TS 40093I	TDR 11CA-P1-T	TDR 11CA-C1-T
<b>TDR 3574</b>	TS 40093I	TDR 12CA-P2-T	TDR 12CA-C2-T

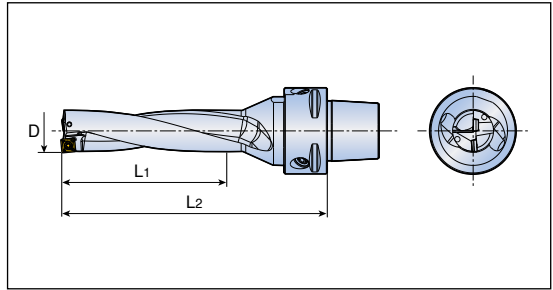
## Spare parts for cartridges

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



# TDR 3...-C4

Indexable drill with C-adapter system (Assembly product)

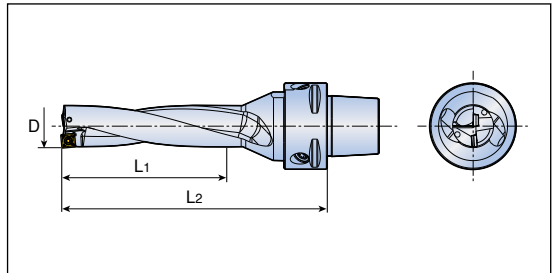
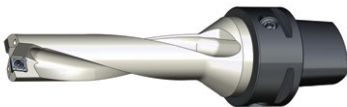


- Drilling depth: 3xdiameter

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

# TDR 4...-C4

Indexable drill with C-adapter system (Assembly product)



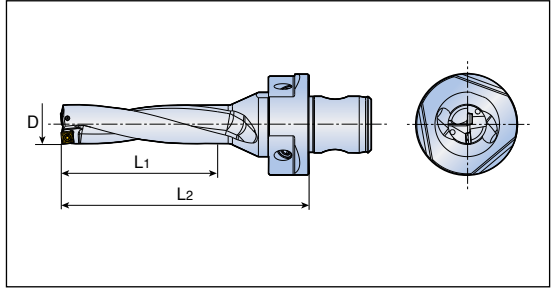
- Drilling depth: 4xdiameter

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

# TDR 3...-BBS50

**T-DRILL**

Indexable drill with BBS system (Assembly product)



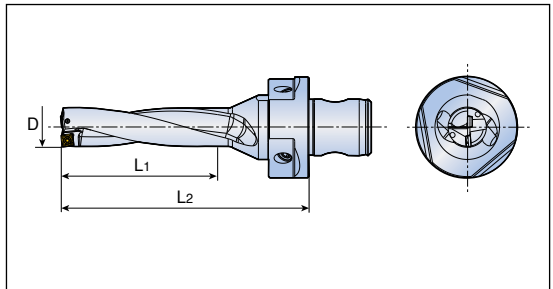
- Drilling depth: 3xdiameter

Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L <sub>1</sub>	L <sub>2</sub>		
<b>TDR 3160-BBS50-06</b>	16	48	88	TDR 3160-20DT-06	BBS50-TDR-20DT
<b>3170-BBS50-06</b>	17	51	91	TDR 3170-20DT-06	
<b>3180-BBS50-06</b>	18	54	95	TDR 3180-20DT-06	
<b>3190-BBS50-06</b>	19	57	98	TDR 3190-20DT-06	
<b>3200-BBS50-06</b>	20	60	103	TDR 3200-20DT-06	

# TDR 4...-BBS50

**T-DRILL**

Indexable drill with BBS system (Assembly product)

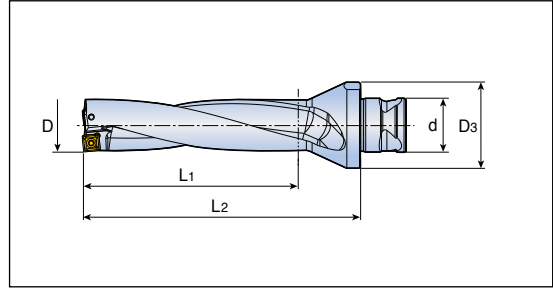


- Drilling depth: 4xdiameter

Designation	Dimension (mm)			T-DRILL	Adaptation
	D	L <sub>1</sub>	L <sub>2</sub>		
<b>TDR 4160-BBS50-06</b>	16	64	104	TDR 4160-20DT-06	BBS50-TDR-20DT
<b>4170-BBS50-06</b>	17	68	108	TDR 4170-20DT-06	
<b>4180-BBS50-06</b>	18	72	113	TDR 4180-20DT-06	
<b>4190-BBS50-06</b>	19	76	117	TDR 4190-20DT-06	
<b>4200-BBS50-06</b>	20	80	123	TDR 4200-20DT-06	

# TDR 3...-20DT

Indexable drill holder for modular type

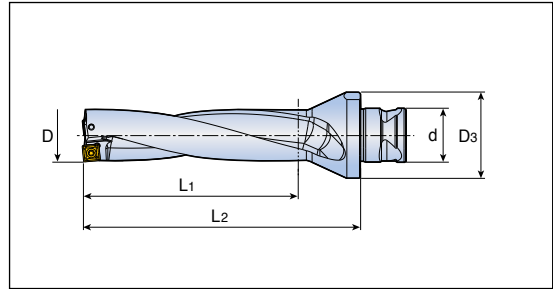


- Drilling depth: 3xdiameter

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

# TDR 4...-20DT

Indexable drill holder for modular type



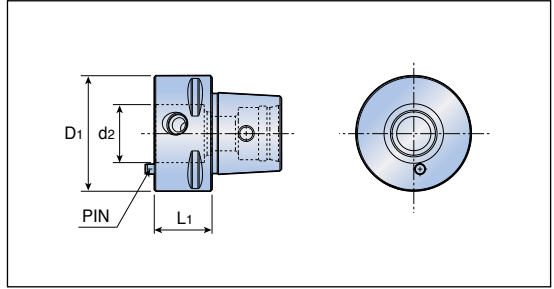
- Drilling depth: 4xdiameter

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

# C...TDR-20DT

**T-DRILL**

C-adapter system

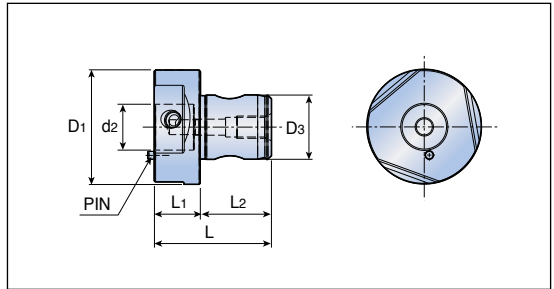


Designation	Dimension (mm)			Screw
	D1	d2	L1	
<b>C4-TDR-20DT</b>	40	20	20	SS M6x1x10-NL
<b>C5-TDR-20DT</b>	50	20	30	
<b>C6-TDR-20DT</b>	63	20	30	

# BBS...TDR-20DT

**T-DRILL**

BBS adapter system



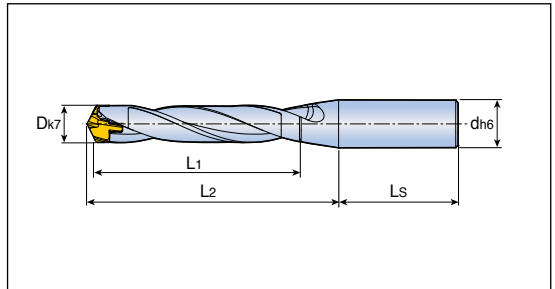
Designation	Dimension (mm)						Screw
	D1	d2	D3	L1	L2	L	
<b>BBS50-TDR-20DT</b>	50	20	28	20	31	51	SS M6x1x10-NL
<b>BBS63-TDR-20DT</b>	63	20	34	39	38	77	







## Head changeable drill holder - Cylindrical type shank

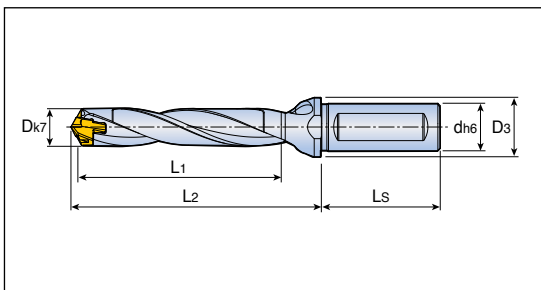


- Drilling depth: 1.5xdiameter

Designation	Dimension (mm)						Clamping key
	D range	d	L1	L2	Ls	Pocket size	
<b>TCD 070-074-12S0-1.5D</b>	7.0-7.4	12	11	25.1	45	7	K TCD D060-D099
<b>075-079-12S0-1.5D</b>	7.5-7.9	12	11.3	25.9	45	7	
<b>080-089-12S0-1.5D</b>	8.0-8.9	12	12	27.9	45	8	
<b>090-099-12S0-1.5D</b>	9.0-9.9	12	14	29.3	45	9	
<b>100-109-16S0-1.5D</b>	10.0-10.9	16	15	31.2	48	10	K TCD D100-D199
<b>110-119-16S0-1.5D</b>	11.0-11.9	16	17	33.1	48	11	
<b>120-129-16S0-1.5D</b>	12.0-12.9	16	18	35.0	48	12	
<b>130-139-16S0-1.5D</b>	13.0-13.9	16	20	37.1	48	13	
<b>140-149-16S0-1.5D</b>	14.0-14.9	16	21	41.1	48	14	
<b>150-159-20S0-1.5D</b>	15.0-15.9	20	23	46.2	50	15	
<b>160-169-20S0-1.5D</b>	16.0-16.9	20	24	49.3	50	16	
<b>170-179-20S0-1.5D</b>	17.0-17.9	20	26	52.4	50	17	K TCD D200-D269
<b>180-189-25S0-1.5D</b>	18.0-18.9	25	27	55.5	56	18	
<b>190-199-25S0-1.5D</b>	19.0-19.9	25	29	58.5	56	19	
<b>200-209-25S0-1.5D</b>	20.0-20.9	25	30	61.6	56	20	
<b>210-219-25S0-1.5D</b>	21.0-21.9	25	32	64.7	56	21	
<b>220-229-25S0-1.5D</b>	22.0-22.9	25	33	67.8	56	22	
<b>230-239-32S0-1.5D</b>	23.0-23.9	32	35	70.9	60	23	
<b>240-249-32S0-1.5D</b>	24.0-24.9	32	36	74.0	60	24	
<b>250-259-32S0-1.5D</b>	25.0-25.9	32	38	77.0	60	25	



## Head changeable drill holder - Weldon type shank

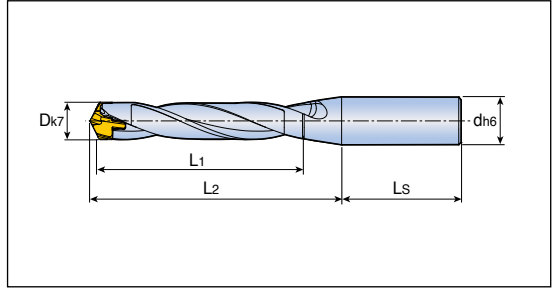


- Drilling depth: 3xdiameter

Designation	Dimension (mm)							Clamping key	
	D range	d	D3	L1	L2	Ls	Pocket size		
<b>TCD 070-074-12T3-3D</b>	7.0-7.4	12	16	21	35.6	45	7	K TCD D060-D099	
<b>075-079-12T3-3D</b>	7.5-7.9	12	16	23	37.1	45	7		
<b>080-084-12T3-3D</b>	8.0-8.4	12	16	24	39.4	45	8		
<b>085-089-12T3-3D</b>	8.5-8.9	12	16	26	40.9	45	8		
<b>090-094-12T3-3D</b>	9.0-9.4	12	16	27	42.8	45	9		
<b>095-099-12T3-3D</b>	9.5-9.9	12	16	29	44.3	45	9		
<b>100-104-16T3-3D</b>	10.0-10.4	16	20	30	46.2	48	10		K TCD D100-D199
<b>105-109-16T3-3D</b>	10.5-10.9	16	20	32	47.7	48	10		
<b>110-114-16T3-3D</b>	11.0-11.4	16	20	33	49.6	48	11		
<b>115-119-16T3-3D</b>	11.5-11.9	16	20	35	51.1	48	11		
<b>120-124-16T3-3D</b>	12.0-12.4	16	20	36	53.0	48	12		
<b>125-129-16T3-3D</b>	12.5-12.9	16	20	37	54.5	48	12		
<b>130-134-16T3-3D</b>	13.0-13.4	16	20	39	56.6	48	13		
<b>135-139-16T3-3D</b>	13.5-13.9	16	20	41	58.1	48	13		
<b>140-144-16T3-3D</b>	14.0-14.4	16	20	42	62.1	48	14		
<b>145-149-16T3-3D</b>	14.5-14.9	16	20	44	63.6	48	14		
<b>150-159-20T3-3D</b>	15.0-15.9	20	25	45	68.7	50	15	K TCD D200-D269	
<b>160-169-20T3-3D</b>	16.0-16.9	20	25	48	73.3	50	16		
<b>170-179-20T3-3D</b>	17.0-17.9	20	25	51	77.9	50	17		
<b>180-189-25T2-3D</b>	18.0-18.9	25	32	54	82.5	56	18		
<b>190-199-25T2-3D</b>	19.0-19.9	25	32	57	87.0	56	19		
<b>200-209-25T2-3D</b>	20.0-20.9	25	32	60	91.6	56	20		
<b>210-219-25T2-3D</b>	21.0-21.9	25	32	63	96.2	56	21		
<b>220-229-25T2-3D</b>	22.0-22.9	25	32	66	100.8	56	22		
<b>230-239-32T2-3D</b>	23.0-23.9	32	42	69	105.4	60	23		
<b>240-249-32T2-3D</b>	24.0-24.9	32	42	72	109.9	60	24		
<b>250-259-32T2-3D</b>	25.0-25.9	32	42	75	114.5	60	25		



## Head changeable drill holder - Cylindrical type shank

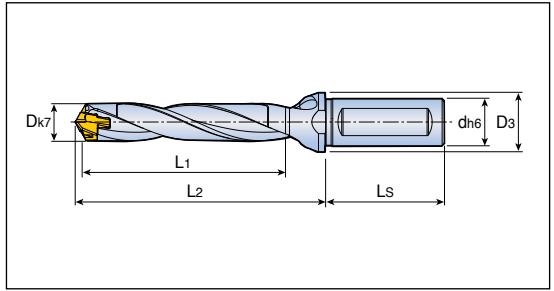


- Drilling depth: 3xdiameter

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



## Head changeable drill holder - Weldon type shank

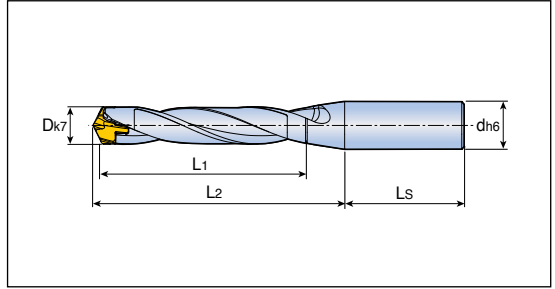


- Drilling depth: 5xdiameter

Designation	Dimension (mm)							Clamping key	
	D range	d	D3	L1	L2	Ls	Pocket size		
<b>TCD 070-074-12T3-5D</b>	7.0-7.4	12	16	35	49.6	45	7	K TCD D060-D099	
<b>075-079-12T3-5D</b>	7.5-7.9	12	16	38	52.1	45	7		
<b>080-084-12T3-5D</b>	8.0-8.4	12	16	40	55.4	45	8		
<b>085-089-12T3-5D</b>	8.5-8.9	12	16	43	57.9	45	8		
<b>090-094-12T3-5D</b>	9.0-9.4	12	16	45	60.8	45	9		
<b>095-099-12T3-5D</b>	9.5-9.9	12	16	48	63.3	45	9		
<b>100-104-16T3-5D</b>	10.0-10.4	16	20	50	66.2	48	10		K TCD D100-D199
<b>105-109-16T3-5D</b>	10.5-10.9	16	20	53	68.7	48	10		
<b>110-114-16T3-5D</b>	11.0-11.4	16	20	55	71.6	48	11		
<b>115-119-16T3-5D</b>	11.5-11.9	16	20	58	74.1	48	11		
<b>120-124-16T3-5D</b>	12.0-12.4	16	20	60	77.0	48	12		
<b>125-129-16T3-5D</b>	12.5-12.9	16	20	62	79.5	48	12		
<b>130-134-16T3-5D</b>	13.0-13.4	16	20	65	82.6	48	13		
<b>135-139-16T3-5D</b>	13.5-13.9	16	20	68	85.1	48	13		
<b>140-144-16T3-5D</b>	14.0-14.4	16	20	70	90.2	48	14		
<b>145-149-16T3-5D</b>	14.5-14.9	16	20	73	92.7	48	14		
<b>150-159-20T3-5D</b>	15.0-15.9	20	25	75	98.7	50	15	K TCD D200-D269	
<b>160-169-20T3-5D</b>	16.0-16.9	20	25	80	105.3	50	16		
<b>170-179-20T3-5D</b>	17.0-17.9	20	25	85	111.9	50	17		
<b>180-189-25T2-5D</b>	18.0-18.9	25	32	90	118.5	56	18		
<b>190-199-25T2-5D</b>	19.0-19.9	25	32	95	125.0	56	19		
<b>200-209-25T2-5D</b>	20.0-20.9	25	32	100	131.6	56	20		
<b>210-219-25T2-5D</b>	21.0-21.9	25	32	105	138.2	56	21		
<b>220-229-25T2-5D</b>	22.0-22.9	25	32	110	144.8	56	22		
<b>230-239-32T2-5D</b>	23.0-23.9	32	42	115	151.4	60	23		
<b>240-249-32T2-5D</b>	24.0-24.9	32	42	120	158.0	60	24		
<b>250-259-32T2-5D</b>	25.0-25.9	32	42	125	164.5	60	25		



## Head changeable drill holder - Cylindrical type shank

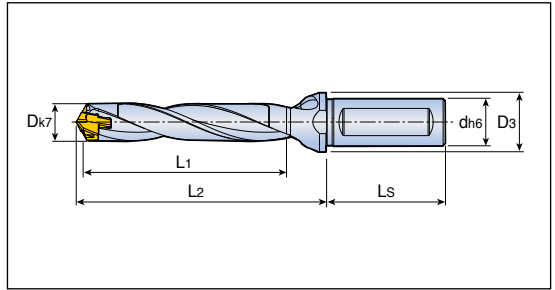


- Drilling depth: 5xdiameter

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



## Head changeable drill holder - Weldon type shank



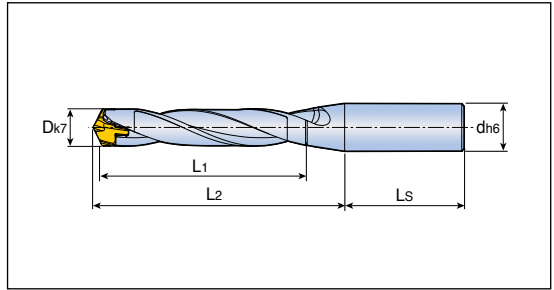
- Drilling depth: 8xdiameter

Designation	Dimension (mm)							Clamping key	
	D range	d	D3	L1	L2	Ls	Pocket size		
<b>TCD 070-074-12T3-8D</b>	7.0-7.4	12	16	56	70.6	45	7	K TCD D060-D099	
<b>075-079-12T3-8D</b>	7.5-7.9	12	16	60	74.6	45	7		
<b>080-084-12T3-8D</b>	8.0-8.4	12	16	64	79.4	45	8		
<b>085-089-12T3-8D</b>	8.5-8.9	12	16	68	84.4	45	8		
<b>090-094-12T3-8D</b>	9.0-9.4	12	16	72	87.8	45	9		
<b>095-099-12T3-8D</b>	9.5-9.9	12	16	76	92.7	45	9		
<b>100-104-16T3-8D</b>	10.0-10.4	16	20	80	96.2	48	10		K TCD D100-D199
<b>105-109-16T3-8D</b>	10.5-10.9	16	20	84	100.2	48	10		
<b>110-114-16T3-8D</b>	11.0-11.4	16	20	88	104.6	48	11		
<b>115-119-16T3-8D</b>	11.5-11.9	16	20	92	108.6	48	11		
<b>120-124-16T3-8D</b>	12.0-12.4	16	20	96	113.0	48	12		
<b>125-129-16T3-8D</b>	12.5-12.9	16	20	100	117.0	48	12		
<b>130-134-16T3-8D</b>	13.0-13.4	16	20	104	121.6	48	13		
<b>135-139-16T3-8D</b>	13.5-13.9	16	20	108	125.6	48	13		
<b>140-144-16T3-8D</b>	14.0-14.4	16	20	112	132.1	48	14		
<b>145-149-16T3-8D</b>	14.5-14.9	16	20	116	136.2	48	14		
<b>150-159-20T3-8D</b>	15.0-15.9	20	25	120	143.7	50	15	K TCD D200-D269	
<b>160-169-20T3-8D</b>	16.0-16.9	20	25	128	153.3	50	16		
<b>170-179-20T3-8D</b>	17.0-17.9	20	25	136	162.9	50	17		
<b>180-189-25T2-8D</b>	18.0-18.9	25	32	144	172.5	56	18		
<b>190-199-25T2-8D</b>	19.0-19.9	25	32	152	182.0	56	19		
<b>200-209-25T2-8D</b>	20.0-20.9	25	32	160	191.6	56	20		
<b>210-219-25T2-8D</b>	21.0-21.9	25	32	168	201.2	56	21		
<b>220-229-25T2-8D</b>	22.0-22.9	25	32	176	210.8	56	22		
<b>230-239-32T2-8D</b>	23.0-23.9	32	42	184	220.4	60	23		
<b>240-249-32T2-8D</b>	24.0-24.9	32	42	192	230.0	60	24		
<b>250-259-32T2-8D</b>	25.0-25.9	32	42	200	239.5	60	25		

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

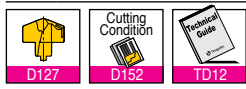


## Head changeable drill holder - Cylindrical type shank



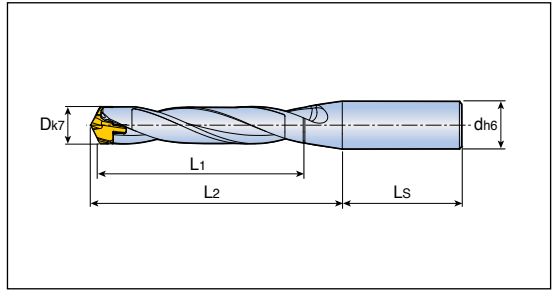
- Drilling depth: 8xdiameter

Designation	Dimension (mm)						Clamping key
	D range	d	L1	L2	Ls	Pocket size	
<b>TCD 070-074-12S0-8D</b>	7.0-7.4	12	56	70.6	45	7	K TCD D060-D099
<b>075-079-12S0-8D</b>	7.5-7.9	12	60	74.6	45	7	
<b>080-084-12S0-8D</b>	8.0-8.4	12	64	79.4	45	8	
<b>085-089-12S0-8D</b>	8.5-8.9	12	68	84.4	45	8	
<b>090-094-12S0-8D</b>	9.0-9.4	12	72	87.8	45	9	
<b>095-099-12S0-8D</b>	9.5-9.9	12	76	92.7	45	9	
<b>100-104-16S0-8D</b>	10.0-10.4	16	80	96.2	48	10	K TCD D100-D199
<b>105-109-16S0-8D</b>	10.5-10.9	16	84	100.2	48	10	
<b>110-114-16S0-8D</b>	11.0-11.4	16	88	104.6	48	11	
<b>115-119-16S0-8D</b>	11.5-11.9	16	92	108.6	48	11	
<b>120-124-16S0-8D</b>	12.0-12.4	16	96	113.0	48	12	
<b>125-129-16S0-8D</b>	12.5-12.9	16	100	117.0	48	12	
<b>130-134-16S0-8D</b>	13.0-13.4	16	104	121.6	48	13	
<b>135-139-16S0-8D</b>	13.5-13.9	16	108	125.6	48	13	
<b>140-144-16S0-8D</b>	14.0-14.4	16	112	132.1	48	14	
<b>145-149-16S0-8D</b>	14.5-14.9	16	116	136.2	48	14	
<b>150-159-20S0-8D</b>	15.0-15.9	20	120	143.7	50	15	K TCD D200-D269
<b>160-169-20S0-8D</b>	16.0-16.9	20	128	153.3	50	16	
<b>170-179-20S0-8D</b>	17.0-17.9	20	136	162.9	50	17	
<b>180-189-25S0-8D</b>	18.0-18.9	25	144	172.5	56	18	
<b>190-199-25S0-8D</b>	19.0-19.9	25	152	182.0	56	19	
<b>200-209-25S0-8D</b>	20.0-20.9	25	160	191.6	56	20	
<b>210-219-25S0-8D</b>	21.0-21.9	25	168	201.2	56	21	
<b>220-229-25S0-8D</b>	22.0-22.9	25	176	210.8	56	22	
<b>230-239-32S0-8D</b>	23.0-23.9	32	184	220.4	60	23	
<b>240-249-32S0-8D</b>	24.0-24.9	32	192	230.0	60	24	
<b>250-259-32S0-8D</b>	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: 12xdiameter

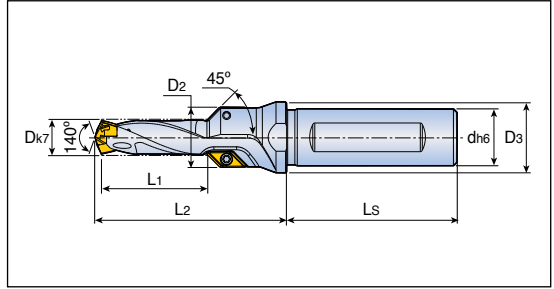
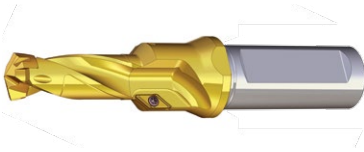
Designation	Dimension (mm)						Clamping key	
	D range	d	L1	L2	Ls	Pocket size		
<b>TCD 120-124-16S0-12D</b>	12.0-12.4	16	144	161	48	12	K TCD D100-D199	
<b>125-129-16S0-12D</b>	12.5-12.9	16	150	167	48	12		
<b>130-134-16S0-12D</b>	13.0-13.4	16	156	173	48	13		
<b>135-139-16S0-12D</b>	13.5-13.9	16	162	179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



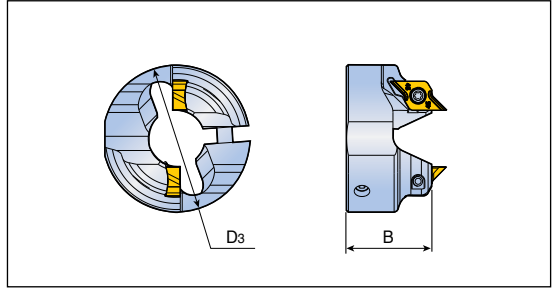
Designation	ISO thread	Drill dia.(D)	Dimension (mm)							Drill dia. range	Insert
			L1	L2	Ls	D2	d	D3			
<b>TCD 085X26X12T3-M10</b>	M10	8.5	26	50	45	15.5	12	16	8.5-8.9	AOMT 06...-C45 D131	
<b>102X30X16T3-M12</b>	M12	10.2	30	54	48	17.0	16	20	10.0-10.4		
<b>120X35X16T3-M14</b>	M14	12.0	35	61	48	19.0	16	20	12.0-12.4		
<b>140X39X20T3-M16</b>	M16	14.0	39	69	50	21.0	20	25	14.0-14.4		
<b>175X42X20T3-M20</b>	M20	17.5	42	72	50	24.5	20	27	17.0-17.9		
<b>210X48X25T2-M24</b>	M24	21.0	48	80	56	28.0	25	32	21.0-21.9		

### Spare parts

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







## Chamfering ring tool



Designation	Dimension (mm)		Chamfer size	Chamfer insert
	D <sub>3</sub>	B		
CFR D100-A45	34	20	3	CRNG 08...-45CD
D105-A45	34	20	3	D131
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	

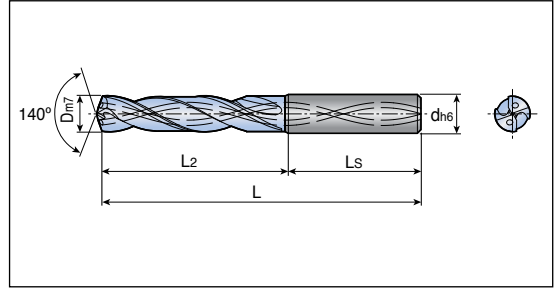
## Spare parts

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

• <sup>(1)</sup> Clamping torque: 2-3 [N·m] <sup>(2)</sup> Clamping torque: 3.5-4.5 [N·m] <sup>(3)</sup> Clamping torque: 5-6 [N·m]



## Solid carbide drill with oil holes

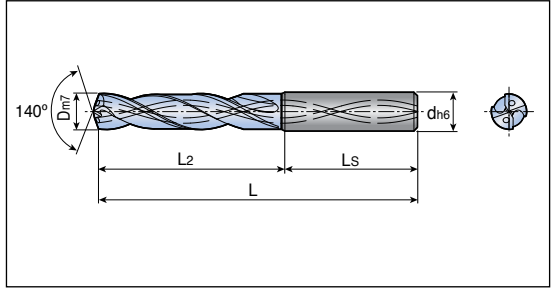


Designation	Dimension (mm)					Grade TT9030	Designation	Dimension (mm)					Grade TT9030
	D	d	L	L2	Ls			D	d	L	L2	Ls	
<b>SHO 3030</b>	3.0	6	62	20	42	●	<b>SHO 3065</b>	6.5	8	73	35	38	●
<b>3031</b>	3.1	6	62	20	42	●	<b>3066</b>	6.6	8	73	35	38	●
<b>3032</b>	3.2	6	62	20	42	●	<b>3067</b>	6.7	8	73	35	38	●
<b>3033</b>	3.3	6	62	20	42	●	<b>3068</b>	6.8	8	73	35	38	●
<b>3034</b>	3.4	6	62	20	42	●	<b>3069</b>	6.9	8	73	35	38	●
<b>3035</b>	3.5	6	62	20	42	●	<b>3070</b>	7.0	8	73	35	38	●
<b>3036</b>	3.6	6	62	20	42	●	<b>3071</b>	7.1	8	79	41	38	●
<b>3037</b>	3.7	6	62	20	42	●	<b>3072</b>	7.2	8	79	41	38	●
<b>3038</b>	3.8	6	66	24	42	●	<b>3073</b>	7.3	8	79	41	38	●
<b>3039</b>	3.9	6	66	24	42	●	<b>3074</b>	7.4	8	79	41	38	●
<b>3040</b>	4.0	6	66	24	42	●	<b>3075</b>	7.5	8	79	41	38	●
<b>3041</b>	4.1	6	66	24	42	●	<b>3076</b>	7.6	8	79	41	38	●
<b>3042</b>	4.2	6	66	24	42	●	<b>3077</b>	7.7	8	79	41	38	●
<b>3043</b>	4.3	6	66	24	42	●	<b>3078</b>	7.8	8	79	41	38	●
<b>3044</b>	4.4	6	66	24	42	●	<b>3079</b>	7.9	8	79	41	38	●
<b>3045</b>	4.5	6	66	24	42	●	<b>3080</b>	8.0	8	79	41	38	●
<b>3046</b>	4.6	6	66	24	42	●	<b>3081</b>	8.1	10	90	48	42	●
<b>3047</b>	4.7	6	66	24	42	●	<b>3082</b>	8.2	10	90	48	42	●
<b>3048</b>	4.8	6	66	28	38	●	<b>3083</b>	8.3	10	90	48	42	●
<b>3049</b>	4.9	6	66	28	38	●	<b>3084</b>	8.4	10	90	48	42	●
<b>3050</b>	5.0	6	68	30	38	●	<b>3085</b>	8.5	10	90	48	42	●
<b>3051</b>	5.1	6	68	30	38	●	<b>3086</b>	8.6	10	90	48	42	●
<b>3052</b>	5.2	6	68	30	38	●	<b>3087</b>	8.7	10	90	48	42	●
<b>3053</b>	5.3	6	68	30	38	●	<b>3088</b>	8.8	10	90	48	42	●
<b>3054</b>	5.4	6	68	30	38	●	<b>3089</b>	8.9	10	90	48	42	●
<b>3055</b>	5.5	6	68	30	38	●	<b>3090</b>	9.0	10	90	48	42	●
<b>3056</b>	5.6	6	68	30	38	●	<b>3091</b>	9.1	10	90	48	42	●
<b>3057</b>	5.7	6	68	30	38	●	<b>3092</b>	9.2	10	90	48	42	●
<b>3058</b>	5.8	6	68	30	38	●	<b>3093</b>	9.3	10	90	48	42	●
<b>3059</b>	5.9	6	68	30	38	●	<b>3094</b>	9.4	10	90	48	42	●
<b>3060</b>	6.0	6	68	30	38	●	<b>3095</b>	9.5	10	90	48	42	●
<b>3061</b>	6.1	8	73	35	38	●	<b>3096</b>	9.6	10	90	48	42	●
<b>3062</b>	6.2	8	73	35	38	●	<b>3097</b>	9.7	10	90	48	42	●
<b>3063</b>	6.3	8	73	35	38	●	<b>3098</b>	9.8	10	90	48	42	●
<b>3064</b>	6.4	8	73	35	38	●	<b>3099</b>	9.9	10	90	48	42	●

● Standard item



## Solid carbide drill with oil holes



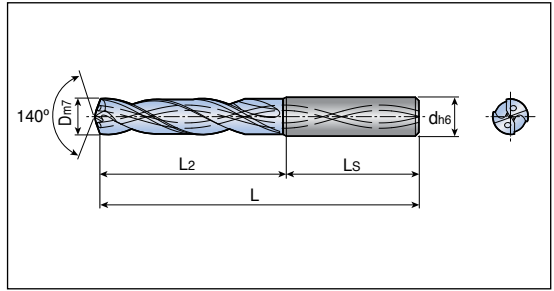
Designation	Dimension (mm)					Grade TT9030	Designation	Dimension (mm)					Grade TT9030
	D	d	L	L2	Ls			D	d	L	L2	Ls	
<b>SHO 3100</b>	10.0	10	90	48	42	●	<b>SHO 3135</b>	13.5	14	109	62	47	●
<b>3101</b>	10.1	12	102	55	47	●	<b>3136</b>	13.6	14	109	62	47	●
<b>3102</b>	10.2	12	102	55	47	●	<b>3137</b>	13.7	14	109	62	47	●
<b>3103</b>	10.3	12	102	55	47	●	<b>3138</b>	13.8	14	109	62	47	●
<b>3104</b>	10.4	12	102	55	47	●	<b>3139</b>	13.9	14	109	62	47	●
<b>3105</b>	10.5	12	102	55	47	●	<b>3140</b>	14.0	14	109	62	47	●
<b>3106</b>	10.6	12	102	55	47	●	<b>3141</b>	14.1	16	118	68	50	●
<b>3107</b>	10.7	12	102	55	47	●	<b>3142</b>	14.2	16	118	68	50	●
<b>3108</b>	10.8	12	102	55	47	●	<b>3143</b>	14.3	16	118	68	50	●
<b>3109</b>	10.9	12	102	55	47	●	<b>3144</b>	14.4	16	118	68	50	●
<b>3110</b>	11.0	12	102	55	47	●	<b>3145</b>	14.5	16	118	68	50	●
<b>3111</b>	11.1	12	102	55	47	●	<b>3146</b>	14.6	16	118	68	50	●
<b>3112</b>	11.2	12	102	55	47	●	<b>3147</b>	14.7	16	118	68	50	●
<b>3113</b>	11.3	12	102	55	47	●	<b>3148</b>	14.8	16	118	68	50	●
<b>3114</b>	11.4	12	102	55	47	●	<b>3149</b>	14.9	16	118	68	50	●
<b>3115</b>	11.5	12	102	55	47	●	<b>3150</b>	15.0	16	118	68	50	●
<b>3116</b>	11.6	12	102	55	47	●	<b>3151</b>	15.1	16	118	68	50	●
<b>3117</b>	11.7	12	102	55	47	●	<b>3152</b>	15.2	16	118	68	50	●
<b>3118</b>	11.8	12	102	55	47	●	<b>3153</b>	15.3	16	118	68	50	●
<b>3119</b>	11.9	12	102	55	47	●	<b>3154</b>	15.4	16	118	68	50	●
<b>3120</b>	12.0	12	102	55	47	●	<b>3155</b>	15.5	16	118	68	50	●
<b>3121</b>	12.1	14	109	62	47	●	<b>3156</b>	15.6	16	118	68	50	●
<b>3122</b>	12.2	14	109	62	47	●	<b>3157</b>	15.7	16	118	68	50	●
<b>3123</b>	12.3	14	109	62	47	●	<b>3158</b>	15.8	16	118	68	50	●
<b>3124</b>	12.4	14	109	62	47	●	<b>3159</b>	15.9	16	118	68	50	●
<b>3125</b>	12.5	14	109	62	47	●	<b>3160</b>	16.0	16	118	68	50	●
<b>3126</b>	12.6	14	109	62	47	●	<b>3161</b>	16.1	18	125	75	50	●
<b>3127</b>	12.7	14	109	62	47	●	<b>3162</b>	16.2	18	125	75	50	●
<b>3128</b>	12.8	14	109	62	47	●	<b>3163</b>	16.3	18	125	75	50	●
<b>3129</b>	12.9	14	109	62	47	●	<b>3164</b>	16.4	18	125	75	50	●
<b>3130</b>	13.0	14	109	62	47	●	<b>3165</b>	16.5	18	125	75	50	●
<b>3131</b>	13.1	14	109	62	47	●	<b>3166</b>	16.6	18	125	75	50	●
<b>3132</b>	13.2	14	109	62	47	●	<b>3167</b>	16.7	18	125	75	50	●
<b>3133</b>	13.3	14	109	62	47	●	<b>3168</b>	16.8	18	125	75	50	●
<b>3134</b>	13.4	14	109	62	47	●	<b>3169</b>	16.9	18	125	75	50	●

● Standard item



# SHO 3

Solid carbide drill with oil holes

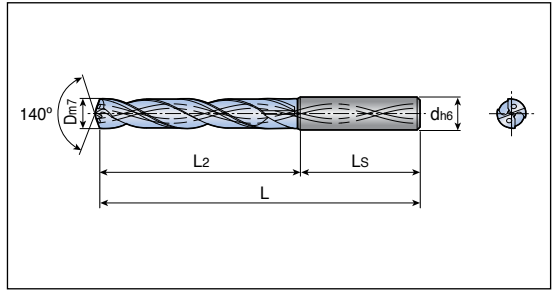


Designation	Dimension (mm)					Grade
	D	d	L	L2	Ls	TT9030
<b>SHO 3170</b>	17.0	18	125	75	50	●
<b>3171</b>	17.1	18	125	75	50	●
<b>3172</b>	17.2	18	125	75	50	●
<b>3173</b>	17.3	18	125	75	50	●
<b>3174</b>	17.4	18	125	75	50	●
<b>3175</b>	17.5	18	125	75	50	●
<b>3176</b>	17.6	18	125	75	50	●
<b>3177</b>	17.7	18	125	75	50	●
<b>3178</b>	17.8	18	125	75	50	●
<b>3179</b>	17.9	18	125	75	50	●
<b>3180</b>	18.0	18	125	75	50	●
<b>3181</b>	18.1	20	134	82	52	●
<b>3182</b>	18.2	20	134	82	52	●
<b>3183</b>	18.3	20	134	82	52	●
<b>3184</b>	18.4	20	134	82	52	●
<b>3185</b>	18.5	20	134	82	52	●
<b>3186</b>	18.6	20	134	82	52	●
<b>3187</b>	18.7	20	134	82	52	●
<b>3188</b>	18.8	20	134	82	52	●
<b>3189</b>	18.9	20	134	82	52	●
<b>3190</b>	19.0	20	134	82	52	●
<b>3191</b>	19.1	20	134	82	52	●
<b>3192</b>	19.2	20	134	82	52	●
<b>3193</b>	19.3	20	134	82	52	●
<b>3194</b>	19.4	20	134	82	52	●
<b>3195</b>	19.5	20	134	82	52	●
<b>3196</b>	19.6	20	134	82	52	●
<b>3197</b>	19.7	20	134	82	52	●
<b>3198</b>	19.8	20	134	82	52	●
<b>3199</b>	19.9	20	134	82	52	●
<b>3200</b>	20.0	20	134	82	52	●

● Standard item



## Solid carbide drill with oil holes

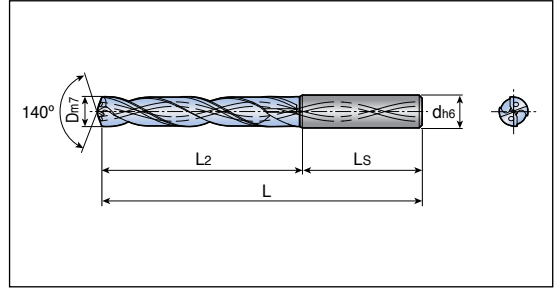


Designation	Dimension (mm)					Grade TT9030	Designation	Dimension (mm)					Grade TT9030
	D	d	L	L2	Ls			D	d	L	L2	Ls	
<b>SHO 5030</b>	3.0	6	66	28	38	●	<b>SHO 5065</b>	6.5	8	94	56	38	●
<b>5031</b>	3.1	6	66	28	38	●	<b>5066</b>	6.6	8	94	56	38	●
<b>5032</b>	3.2	6	66	28	38	●	<b>5067</b>	6.7	8	94	56	38	●
<b>5033</b>	3.3	6	66	28	38	●	<b>5068</b>	6.8	8	94	56	38	●
<b>5034</b>	3.4	6	66	28	38	●	<b>5069</b>	6.9	8	94	56	38	●
<b>5035</b>	3.5	6	66	28	38	●	<b>5070</b>	7.0	8	94	56	38	●
<b>5036</b>	3.6	6	66	28	38	●	<b>5071</b>	7.1	8	94	56	38	●
<b>5037</b>	3.7	6	66	28	38	●	<b>5072</b>	7.2	8	94	56	38	●
<b>5038</b>	3.8	6	74	36	38	●	<b>5073</b>	7.3	8	94	56	38	●
<b>5039</b>	3.9	6	74	36	38	●	<b>5074</b>	7.4	8	94	56	38	●
<b>5040</b>	4.0	6	74	36	38	●	<b>5075</b>	7.5	8	94	56	38	●
<b>5041</b>	4.1	6	74	36	38	●	<b>5076</b>	7.6	8	94	56	38	●
<b>5042</b>	4.2	6	74	36	38	●	<b>5077</b>	7.7	8	94	56	38	●
<b>5043</b>	4.3	6	74	36	38	●	<b>5078</b>	7.8	8	94	56	38	●
<b>5044</b>	4.4	6	74	36	38	●	<b>5079</b>	7.9	8	94	56	38	●
<b>5045</b>	4.5	6	74	36	38	●	<b>5080</b>	8.0	8	94	56	38	●
<b>5046</b>	4.6	6	74	36	38	●	<b>5081</b>	8.1	10	107	65	42	●
<b>5047</b>	4.7	6	74	36	38	●	<b>5082</b>	8.2	10	107	65	42	●
<b>5048</b>	4.8	6	82	44	38	●	<b>5083</b>	8.3	10	107	65	42	●
<b>5049</b>	4.9	6	82	44	38	●	<b>5084</b>	8.4	10	107	65	42	●
<b>5050</b>	5.0	6	84	46	38	●	<b>5085</b>	8.5	10	107	65	42	●
<b>5051</b>	5.1	6	84	46	38	●	<b>5086</b>	8.6	10	107	65	42	●
<b>5052</b>	5.2	6	84	46	38	●	<b>5087</b>	8.7	10	107	65	42	●
<b>5053</b>	5.3	6	84	46	38	●	<b>5088</b>	8.8	10	107	65	42	●
<b>5054</b>	5.4	6	84	46	38	●	<b>5089</b>	8.9	10	107	65	42	●
<b>5055</b>	5.5	6	84	46	38	●	<b>5090</b>	9.0	10	107	65	42	●
<b>5056</b>	5.6	6	84	46	38	●	<b>5091</b>	9.1	10	107	65	42	●
<b>5057</b>	5.7	6	84	46	38	●	<b>5092</b>	9.2	10	107	65	42	●
<b>5058</b>	5.8	6	84	46	38	●	<b>5093</b>	9.3	10	107	65	42	●
<b>5059</b>	5.9	6	84	46	38	●	<b>5094</b>	9.4	10	107	65	42	●
<b>5060</b>	6.0	6	84	46	38	●	<b>5095</b>	9.5	10	107	65	42	●
<b>5061</b>	6.1	8	94	56	38	●	<b>5096</b>	9.6	10	107	65	42	●
<b>5062</b>	6.2	8	94	56	38	●	<b>5097</b>	9.7	10	107	65	42	●
<b>5063</b>	6.3	8	94	56	38	●	<b>5098</b>	9.8	10	107	65	42	●
<b>5064</b>	6.4	8	94	56	38	●	<b>5099</b>	9.9	10	107	65	42	●

● Standard item



## Solid carbide drill with oil holes

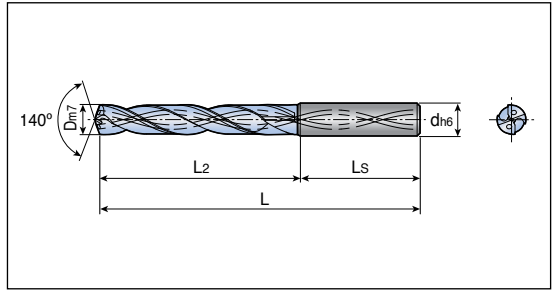


Designation	Dimension (mm)					Grade TT9030	Designation	Dimension (mm)					Grade TT9030
	D	d	L	L2	Ls			D	d	L	L2	Ls	
<b>SHO 5100</b>	10.0	10	107	65	42	●	<b>SHO 5135</b>	13.5	14	138	91	47	●
<b>5101</b>	10.1	12	125	78	47	●	<b>5136</b>	13.6	14	138	91	47	●
<b>5102</b>	10.2	12	125	78	47	●	<b>5137</b>	13.7	14	138	91	47	●
<b>5103</b>	10.3	12	125	78	47	●	<b>5138</b>	13.8	14	138	91	47	●
<b>5104</b>	10.4	12	125	78	47	●	<b>5139</b>	13.9	14	138	91	47	●
<b>5105</b>	10.5	12	125	78	47	●	<b>5140</b>	14.0	14	138	91	47	●
<b>5106</b>	10.6	12	125	78	47	●	<b>5141</b>	14.1	16	154	104	50	●
<b>5107</b>	10.7	12	125	78	47	●	<b>5142</b>	14.2	16	154	104	50	●
<b>5108</b>	10.8	12	125	78	47	●	<b>5143</b>	14.3	16	154	104	50	●
<b>5109</b>	10.9	12	125	78	47	●	<b>5144</b>	14.4	16	154	104	50	●
<b>5110</b>	11.0	12	125	78	47	●	<b>5145</b>	14.5	16	154	104	50	●
<b>5111</b>	11.1	12	125	78	47	●	<b>5146</b>	14.6	16	154	104	50	●
<b>5112</b>	11.2	12	125	78	47	●	<b>5147</b>	14.7	16	154	104	50	●
<b>5113</b>	11.3	12	125	78	47	●	<b>5148</b>	14.8	16	154	104	50	●
<b>5114</b>	11.4	12	125	78	47	●	<b>5149</b>	14.9	16	154	104	50	●
<b>5115</b>	11.5	12	125	78	47	●	<b>5150</b>	15.0	16	154	104	50	●
<b>5116</b>	11.6	12	125	78	47	●	<b>5151</b>	15.1	16	154	104	50	●
<b>5117</b>	11.7	12	125	78	47	●	<b>5152</b>	15.2	16	154	104	50	●
<b>5118</b>	11.8	12	125	78	47	●	<b>5153</b>	15.3	16	154	104	50	●
<b>5119</b>	11.9	12	125	78	47	●	<b>5154</b>	15.4	16	154	104	50	●
<b>5120</b>	12.0	12	125	78	47	●	<b>5155</b>	15.5	16	154	104	50	●
<b>5121</b>	12.1	14	138	91	47	●	<b>5156</b>	15.6	16	154	104	50	●
<b>5122</b>	12.2	14	138	91	47	●	<b>5157</b>	15.7	16	154	104	50	●
<b>5123</b>	12.3	14	138	91	47	●	<b>5158</b>	15.8	16	154	104	50	●
<b>5124</b>	12.4	14	138	91	47	●	<b>5159</b>	15.9	16	154	104	50	●
<b>5125</b>	12.5	14	138	91	47	●	<b>5160</b>	16.0	16	154	104	50	●
<b>5126</b>	12.6	14	138	91	47	●	<b>5161</b>	16.1	18	167	117	50	●
<b>5127</b>	12.7	14	138	91	47	●	<b>5162</b>	16.2	18	167	117	50	●
<b>5128</b>	12.8	14	138	91	47	●	<b>5163</b>	16.3	18	167	117	50	●
<b>5129</b>	12.9	14	138	91	47	●	<b>5164</b>	16.4	18	167	117	50	●
<b>5130</b>	13.0	14	138	91	47	●	<b>5165</b>	16.5	18	167	117	50	●
<b>5131</b>	13.1	14	138	91	47	●	<b>5166</b>	16.6	18	167	117	50	●
<b>5132</b>	13.2	14	138	91	47	●	<b>5167</b>	16.7	18	167	117	50	●
<b>5133</b>	13.3	14	138	91	47	●	<b>5168</b>	16.8	18	167	117	50	●
<b>5134</b>	13.4	14	138	91	47	●	<b>5169</b>	16.9	18	167	117	50	●

● Standard item



## Solid carbide drill with oil holes



Designation	Dimension (mm)					Grade
	D	d	L	L2	Ls	TT9030
<b>SHO 5170</b>	17.0	18	167	117	50	●
<b>5171</b>	17.1	18	167	117	50	●
<b>5172</b>	17.2	18	167	117	50	●
<b>5173</b>	17.3	18	167	117	50	●
<b>5174</b>	17.4	18	167	117	50	●
<b>5175</b>	17.5	18	167	117	50	●
<b>5176</b>	17.6	18	167	117	50	●
<b>5177</b>	17.7	18	167	117	50	●
<b>5178</b>	17.8	18	167	117	50	●
<b>5179</b>	17.9	18	167	117	50	●
<b>5180</b>	18.0	18	167	117	50	●
<b>5181</b>	18.1	20	182	130	52	●
<b>5182</b>	18.2	20	182	130	52	●
<b>5183</b>	18.3	20	182	130	52	●
<b>5184</b>	18.4	20	182	130	52	●
<b>5185</b>	18.5	20	182	130	52	●
<b>5186</b>	18.6	20	182	130	52	●
<b>5187</b>	18.7	20	182	130	52	●
<b>5188</b>	18.8	20	182	130	52	●
<b>5189</b>	18.9	20	182	130	52	●
<b>5190</b>	19.0	20	182	130	52	●
<b>5191</b>	19.1	20	182	130	52	●
<b>5192</b>	19.2	20	182	130	52	●
<b>5193</b>	19.3	20	182	130	52	●
<b>5194</b>	19.4	20	182	130	52	●
<b>5195</b>	19.5	20	182	130	52	●
<b>5196</b>	19.6	20	182	130	52	●
<b>5197</b>	19.7	20	182	130	52	●
<b>5198</b>	19.8	20	182	130	52	●
<b>5199</b>	19.9	20	182	130	52	●
<b>5200</b>	20.0	20	182	130	52	●



● Standard item

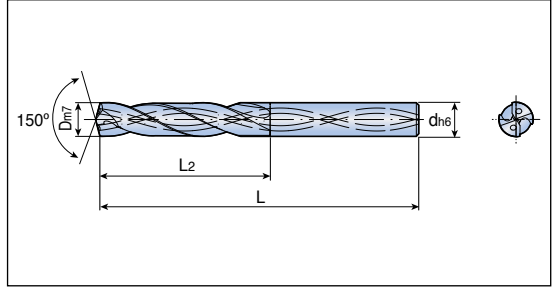


# SHO 3...-PH

Solid pilot drill with oil holes



• M.Q.L drilling is available



Designation	Dimension (mm)				Grade
	D	d	L	L2	TT9030
<b>SHO 30403-PH</b>	4.03	4	66	24	●
<b>30503-PH</b>	5.03	5	68	30	●
<b>30603-PH</b>	6.03	6	68	30	●
<b>30703-PH</b>	7.03	7	73	35	●
<b>30803-PH</b>	8.03	8	79	41	●
<b>30903-PH</b>	9.03	9	90	48	●
<b>31003-PH</b>	10.03	10	90	48	●



• Standard item

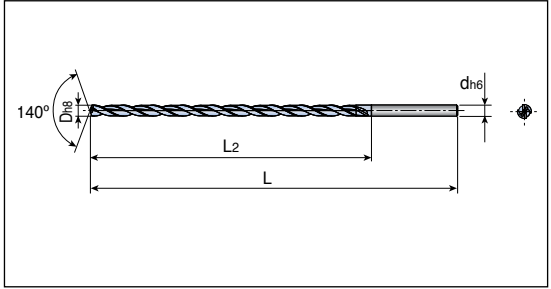
# SHO 10/15/20

**H-DRILL**

Solid long drill with oil holes



- Drilling depth: 10/15/20x diameter
- M.Q.L drilling is available



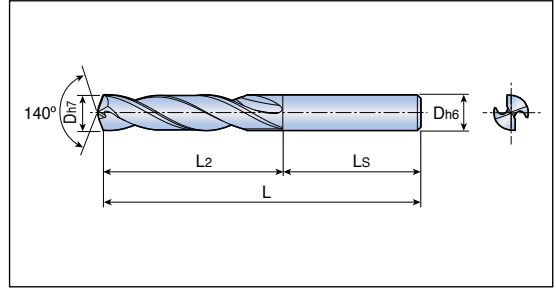
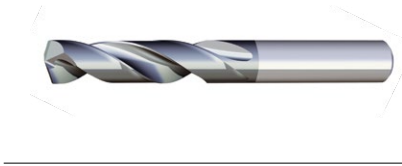
Designation	Dimension (mm)				Grade TT9030
	D	d	L	L <sub>2</sub>	
SHO 10040	4.0	4	105	55	•
10050	5.0	5	115	65	•
10060	6.0	6	130	80	•
10070	7.0	7	140	90	•
10080	8.0	8	155	105	•
10090	9.0	9	170	115	•
10100	10.0	10	190	130	•
15040	4.0	4	125	75	•
15050	5.0	5	140	90	•
15060	6.0	6	160	110	•
15070	7.0	7	175	125	•
15080	8.0	8	195	145	•
15090	9.0	9	220	160	•
15100	10.0	10	240	180	•
20040	4.0	4	140	90	•
20050	5.0	5	165	115	•
20060	6.0	6	190	140	•
20070	7.0	7	210	160	•
20080	8.0	8	230	180	•
20090	9.0	9	265	205	•
20100	10.0	10	285	225	•



• Standard item

# SHD 3

Solid carbide drill without oil holes



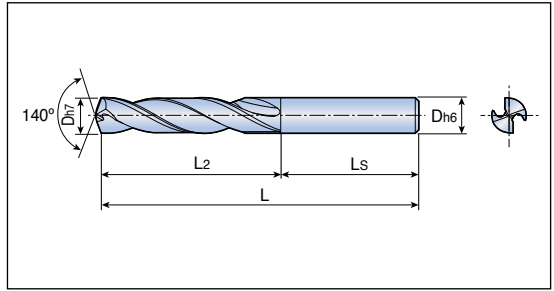
Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls	
<b>SHD 3030</b>	3.0	49	19	30	●
<b>3031</b>	3.1	49	19	30	●
<b>3032</b>	3.2	49	19	30	●
<b>3033</b>	3.3	49	19	30	●
<b>3034</b>	3.4	52	20	32	●
<b>3035</b>	3.5	52	20	32	●
<b>3036</b>	3.6	52	20	32	●
<b>3037</b>	3.7	52	20	32	●
<b>3038</b>	3.8	55	30	25	●
<b>3039</b>	3.9	55	30	25	●
<b>3040</b>	4.0	55	30	25	●
<b>3041</b>	4.1	55	30	25	●
<b>3042</b>	4.2	55	30	25	●
<b>3043</b>	4.3	58	30	28	●
<b>3044</b>	4.4	58	30	28	●
<b>3045</b>	4.5	58	30	28	●
<b>3046</b>	4.6	58	30	28	●
<b>3047</b>	4.7	58	30	28	●
<b>3048</b>	4.8	62	34	28	●
<b>3049</b>	4.9	62	34	28	●
<b>3050</b>	5.0	62	34	28	●
<b>3051</b>	5.1	62	34	28	●
<b>3052</b>	5.2	62	34	28	●
<b>3053</b>	5.3	62	34	28	●
<b>3054</b>	5.4	66	36	30	●
<b>3055</b>	5.5	66	36	30	●
<b>3056</b>	5.6	66	36	30	●
<b>3057</b>	5.7	66	36	30	●
<b>3058</b>	5.8	66	36	30	●
<b>3059</b>	5.9	66	36	30	●
<b>3060</b>	6.0	66	36	30	●
<b>3061</b>	6.1	70	39	31	●
<b>3062</b>	6.2	70	39	31	●
<b>3063</b>	6.3	70	39	31	●
<b>3064</b>	6.4	70	39	31	●

Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls	
<b>SHD 3065</b>	6.5	70	39	31	●
<b>3066</b>	6.6	70	39	31	●
<b>3067</b>	6.7	70	39	31	●
<b>3068</b>	6.8	74	41	33	●
<b>3069</b>	6.9	74	41	33	●
<b>3070</b>	7.0	74	41	33	●
<b>3071</b>	7.1	74	41	33	●
<b>3072</b>	7.2	74	41	33	●
<b>3073</b>	7.3	74	41	33	●
<b>3074</b>	7.4	74	41	33	●
<b>3075</b>	7.5	74	41	33	●
<b>3076</b>	7.6	79	44	35	●
<b>3077</b>	7.7	79	44	35	●
<b>3078</b>	7.8	79	44	35	●
<b>3079</b>	7.9	79	44	35	●
<b>3080</b>	8.0	79	44	35	●
<b>3081</b>	8.1	79	44	35	●
<b>3082</b>	8.2	79	44	35	●
<b>3083</b>	8.3	79	44	35	●
<b>3084</b>	8.4	79	44	35	●
<b>3085</b>	8.5	79	44	35	●
<b>3086</b>	8.6	84	47	37	●
<b>3087</b>	8.7	84	47	37	●
<b>3088</b>	8.8	84	47	37	●
<b>3089</b>	8.9	84	47	37	●
<b>3090</b>	9.0	84	47	37	●
<b>3091</b>	9.1	84	47	37	●
<b>3092</b>	9.2	84	47	37	●
<b>3093</b>	9.3	84	47	37	●
<b>3094</b>	9.4	84	47	37	●
<b>3095</b>	9.5	84	47	37	●
<b>3096</b>	9.6	89	50	39	●
<b>3097</b>	9.7	89	50	39	●
<b>3098</b>	9.8	89	50	39	●
<b>3099</b>	9.9	89	50	39	●



● Standard item

## Solid carbide drill without oil holes



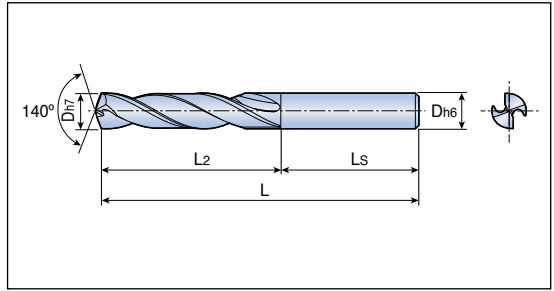
Designation	Dimension (mm)				Grade TT9030	Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls			D	L	L2	Ls	
<b>SHD 3100</b>	10.0	89	50	39	●	<b>SHD 3135</b>	13.5	107	61	46	●
<b>3101</b>	10.1	89	50	39	●	<b>3136</b>	13.6	107	61	46	●
<b>3102</b>	10.2	89	50	39	●	<b>3137</b>	13.7	107	61	46	●
<b>3103</b>	10.3	89	50	39	●	<b>3138</b>	13.8	107	61	46	●
<b>3104</b>	10.4	89	50	39	●	<b>3139</b>	13.9	107	61	46	●
<b>3105</b>	10.5	89	50	39	●	<b>3140</b>	14.0	107	61	46	●
<b>3106</b>	10.6	89	50	39	●	<b>3141</b>	14.1	111	64	47	●
<b>3107</b>	10.7	95	54	41	●	<b>3142</b>	14.2	111	64	47	●
<b>3108</b>	10.8	95	54	41	●	<b>3143</b>	14.3	111	64	47	●
<b>3109</b>	10.9	95	54	41	●	<b>3144</b>	14.4	111	64	47	●
<b>3110</b>	11.0	95	54	41	●	<b>3145</b>	14.5	111	64	47	●
<b>3111</b>	11.1	95	54	41	●	<b>3146</b>	14.6	111	64	47	●
<b>3112</b>	11.2	95	54	41	●	<b>3147</b>	14.7	111	64	47	●
<b>3113</b>	11.3	95	54	41	●	<b>3148</b>	14.8	111	64	47	●
<b>3114</b>	11.4	95	54	41	●	<b>3149</b>	14.9	111	64	47	●
<b>3115</b>	11.5	95	54	41	●	<b>3150</b>	15.0	111	64	47	●
<b>3116</b>	11.6	95	54	41	●	<b>3151</b>	15.1	115	66	49	●
<b>3117</b>	11.7	95	54	41	●	<b>3152</b>	15.2	115	66	49	●
<b>3118</b>	11.8	95	54	41	●	<b>3153</b>	15.3	115	66	49	●
<b>3119</b>	11.9	102	58	44	●	<b>3154</b>	15.4	115	66	49	●
<b>3120</b>	12.0	102	58	44	●	<b>3155</b>	15.5	115	66	49	●
<b>3121</b>	12.1	102	58	44	●	<b>3156</b>	15.6	115	66	49	●
<b>3122</b>	12.2	102	58	44	●	<b>3157</b>	15.7	115	66	49	●
<b>3123</b>	12.3	102	58	44	●	<b>3158</b>	15.8	115	66	49	●
<b>3124</b>	12.4	102	58	44	●	<b>3159</b>	15.9	115	66	49	●
<b>3125</b>	12.5	102	58	44	●	<b>3160</b>	16.0	115	66	49	●
<b>3126</b>	12.6	102	58	44	●	<b>3161</b>	16.1	119	68	51	●
<b>3127</b>	12.7	102	58	44	●	<b>3162</b>	16.2	119	68	51	●
<b>3128</b>	12.8	102	58	44	●	<b>3163</b>	16.3	119	68	51	●
<b>3129</b>	12.9	102	58	44	●	<b>3164</b>	16.4	119	68	51	●
<b>3130</b>	13.0	102	58	44	●	<b>3165</b>	16.5	119	68	51	●
<b>3131</b>	13.1	102	58	44	●	<b>3166</b>	16.6	119	68	51	●
<b>3132</b>	13.2	102	58	44	●	<b>3167</b>	16.7	119	68	51	●
<b>3133</b>	13.3	107	61	46	●	<b>3168</b>	16.8	119	68	51	●
<b>3134</b>	13.4	107	61	46	●	<b>3169</b>	16.9	119	68	51	●

● Standard item



# SHD 3

Solid carbide drill without oil holes

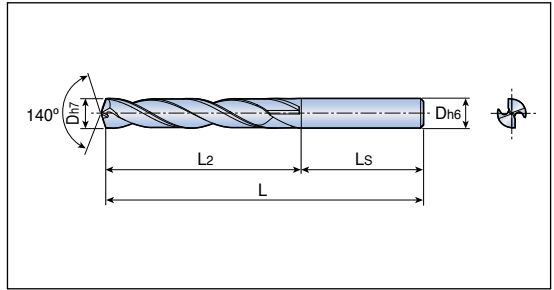
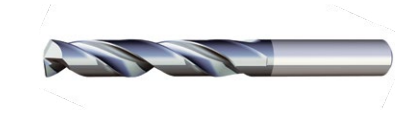


Designation	Dimension (mm)				Grade
	D	L	L2	Ls	TT9030
<b>SHD 3170</b>	17.0	119	68	51	●
<b>3171</b>	17.1	123	70	53	●
<b>3172</b>	17.2	123	70	53	●
<b>3173</b>	17.3	123	70	53	●
<b>3174</b>	17.4	123	70	53	●
<b>3175</b>	17.5	123	70	53	●
<b>3176</b>	17.6	123	70	53	●
<b>3177</b>	17.7	123	70	53	●
<b>3178</b>	17.8	123	70	53	●
<b>3179</b>	17.9	123	70	53	●
<b>3180</b>	18.0	123	70	53	●
<b>3181</b>	18.1	127	72	55	●
<b>3182</b>	18.2	127	72	55	●
<b>3183</b>	18.3	127	72	55	●
<b>3184</b>	18.4	127	72	55	●
<b>3185</b>	18.5	127	72	55	●
<b>3186</b>	18.6	127	72	55	●
<b>3187</b>	18.7	127	72	55	●
<b>3188</b>	18.8	127	72	55	●
<b>3189</b>	18.9	127	72	55	●
<b>3190</b>	19.0	127	72	55	●
<b>3191</b>	19.1	131	76	55	●
<b>3192</b>	19.2	131	76	55	●
<b>3193</b>	19.3	131	76	55	●
<b>3194</b>	19.4	131	76	55	●
<b>3195</b>	19.5	131	76	55	●
<b>3196</b>	19.6	131	76	55	●
<b>3197</b>	19.7	131	76	55	●
<b>3198</b>	19.8	131	76	55	●
<b>3199</b>	19.9	131	76	55	●
<b>3200</b>	20.0	131	76	55	●

● Standard item



## Solid carbide drill without oil holes



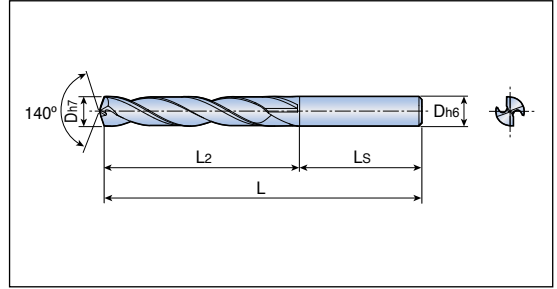
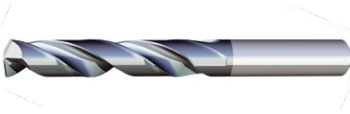
Designation	Dimension (mm)				Grade TT9030	Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls			D	L	L2	Ls	
<b>SHD 5030</b>	3.0	76	40	36	●	<b>SHD 5065</b>	6.5	91	53	38	●
<b>5031</b>	3.1	76	40	36	●	<b>5066</b>	6.6	91	53	38	●
<b>5032</b>	3.2	76	40	36	●	<b>5067</b>	6.7	91	53	38	●
<b>5033</b>	3.3	76	40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

●: Standard item



# SHD 5

Solid carbide drill without oil holes

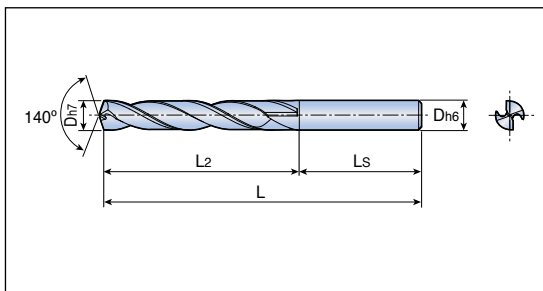
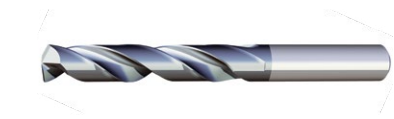


Designation	Dimension (mm)				Grade TT9030	Designation	Dimension (mm)				Grade TT9030
	D	L	L2	Ls			D	L	L2	Ls	
<b>SHD 5100</b>	10.0	107	65	42	●	<b>SHD 5135</b>	13.5	147	96	51	●
<b>5101</b>	10.1	118	73	45	●	<b>5136</b>	13.6	147	96	51	●
<b>5102</b>	10.2	118	73	45	●	<b>5137</b>	13.7	147	96	51	●
<b>5103</b>	10.3	118	73	45	●	<b>5138</b>	13.8	147	96	51	●
<b>5104</b>	10.4	118	73	45	●	<b>5139</b>	13.9	147	96	51	●
<b>5105</b>	10.5	118	73	45	●	<b>5140</b>	14.0	147	96	51	●
<b>5106</b>	10.6	118	73	45	●	<b>5141</b>	14.1	153	100	53	●
<b>5107</b>	10.7	118	73	45	●	<b>5142</b>	14.2	153	100	53	●
<b>5108</b>	10.8	118	73	45	●	<b>5143</b>	14.3	153	100	53	●
<b>5109</b>	10.9	118	73	45	●	<b>5144</b>	14.4	153	100	53	●
<b>5110</b>	11.0	118	73	45	●	<b>5145</b>	14.5	153	100	53	●
<b>5111</b>	11.1	125	78	47	●	<b>5146</b>	14.6	153	100	53	●
<b>5112</b>	11.2	125	78	47	●	<b>5147</b>	14.7	153	100	53	●
<b>5113</b>	11.3	125	78	47	●	<b>5148</b>	14.8	153	100	53	●
<b>5114</b>	11.4	125	78	47	●	<b>5149</b>	14.9	153	100	53	●
<b>5115</b>	11.5	125	78	47	●	<b>5150</b>	15.0	153	100	53	●
<b>5116</b>	11.6	125	78	47	●	<b>5151</b>	15.1	160	107	53	●
<b>5117</b>	11.7	125	78	47	●	<b>5152</b>	15.2	160	107	53	●
<b>5118</b>	11.8	125	78	47	●	<b>5153</b>	15.3	160	107	53	●
<b>5119</b>	11.9	125	78	47	●	<b>5154</b>	15.4	160	107	53	●
<b>5120</b>	12.0	125	78	47	●	<b>5155</b>	15.5	160	107	53	●
<b>5121</b>	12.1	138	91	47	●	<b>5156</b>	15.6	160	107	53	●
<b>5122</b>	12.2	138	91	47	●	<b>5157</b>	15.7	160	107	53	●
<b>5123</b>	12.3	138	91	47	●	<b>5158</b>	15.8	160	107	53	●
<b>5124</b>	12.4	138	91	47	●	<b>5159</b>	15.9	160	107	53	●
<b>5125</b>	12.5	138	91	47	●	<b>5160</b>	16.0	160	107	53	●
<b>5126</b>	12.6	138	91	47	●	<b>5161</b>	16.1	167	117	50	●
<b>5127</b>	12.7	138	91	47	●	<b>5162</b>	16.2	167	117	50	●
<b>5128</b>	12.8	138	91	47	●	<b>5163</b>	16.3	167	117	50	●
<b>5129</b>	12.9	138	91	47	●	<b>5164</b>	16.4	167	117	50	●
<b>5130</b>	13.0	138	91	47	●	<b>5165</b>	16.5	167	117	50	●
<b>5131</b>	13.1	147	96	51	●	<b>5166</b>	16.6	167	117	50	●
<b>5132</b>	13.2	147	96	51	●	<b>5167</b>	16.7	167	117	50	●
<b>5133</b>	13.3	147	96	51	●	<b>5168</b>	16.8	167	117	50	●
<b>5134</b>	13.4	147	96	51	●	<b>5169</b>	16.9	167	117	50	●

● Standard item



Solid carbide drill without oil holes



Designation	Dimension (mm)				Grade
	D	L	L <sub>2</sub>	L <sub>s</sub>	TT9030
<b>SHD 5170</b>	17.0	167	117	50	●
<b>5171</b>	17.1	167	117	50	●
<b>5172</b>	17.2	167	117	50	●
<b>5173</b>	17.3	167	117	50	●
<b>5174</b>	17.4	167	117	50	●
<b>5175</b>	17.5	167	117	50	●
<b>5176</b>	17.6	167	117	50	●
<b>5177</b>	17.7	167	117	50	●
<b>5178</b>	17.8	167	117	50	●
<b>5179</b>	17.9	167	117	50	●
<b>5180</b>	18.0	167	117	50	●
<b>5181</b>	18.1	182	130	52	●
<b>5182</b>	18.2	182	130	52	●
<b>5183</b>	18.3	182	130	52	●
<b>5184</b>	18.4	182	130	52	●
<b>5185</b>	18.5	182	130	52	●
<b>5186</b>	18.6	182	130	52	●
<b>5187</b>	18.7	182	130	52	●
<b>5188</b>	18.8	182	130	52	●
<b>5189</b>	18.9	182	130	52	●
<b>5190</b>	19.0	182	130	52	●
<b>5191</b>	19.1	182	130	52	●
<b>5192</b>	19.2	182	130	52	●
<b>5193</b>	19.3	182	130	52	●
<b>5194</b>	19.4	182	130	52	●
<b>5195</b>	19.5	182	130	52	●
<b>5196</b>	19.6	182	130	52	●
<b>5197</b>	19.7	182	130	52	●
<b>5198</b>	19.8	182	130	52	●
<b>5199</b>	19.9	182	130	52	●
<b>5200</b>	20.0	182	130	52	●



●: Standard item

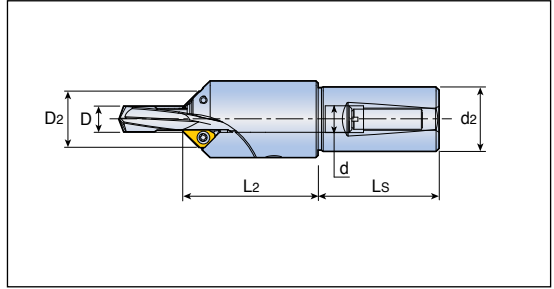
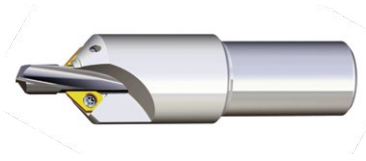




# T-CHAMFER...T1

**T-CHAMFER**

Chamfering tool with solid carbide drill



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

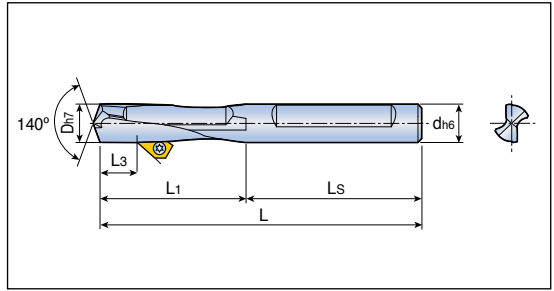
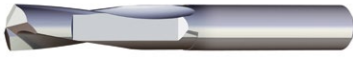
## Spare parts

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



# SHD 3...-CF

Solid carbide drill for T-CHAMFER



Designation	Dimension (mm)							Grade
	D	d	L	L1	Ls	L3 min	L3 max	TT9030
<b>SHD 3080-CF</b>	8.0	8.0	79	36	43	9.5	17.5	●
<b>3090-CF</b>	9.0	9.0	84	41	43	13.0	23.5	●
<b>3100-CF</b>	10.0	10.0	89	46	43	15.5	25.0	●
<b>3110-CF</b>	11.0	11.0	95	52	43	21.5	30.0	●
<b>3120-CF</b>	12.0	12.0	102	59	43	25.5	37.0	●
<b>3130-CF</b>	13.0	13.0	102	59	43	25.5	35.0	●
<b>3140-CF</b>	14.0	14.0	107	61	46	22.5	38.0	●
<b>3150-CF</b>	15.0	15.0	111	63	48	26.5	40.5	●
<b>3160-CF</b>	16.0	16.0	115	67	48	25.0	43.5	●
<b>3170-CF</b>	17.0	17.0	119	69	50	24.5	44.0	●
<b>3180-CF</b>	18.0	18.0	123	73	50	26.5	48.0	●
<b>3190-CF</b>	19.0	19.0	127	73	54	26.5	49.0	●
<b>3200-CF</b>	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

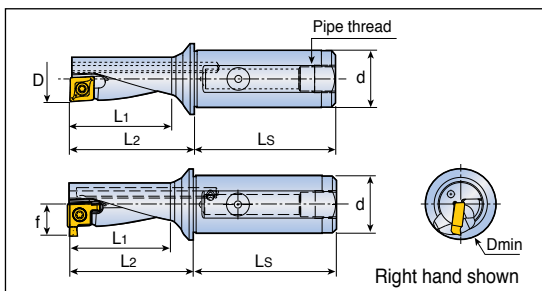
Insert	Chamfer angle (°)	Chamfer size
<b>XCGT 0603-C30</b>	30°	1.5
<b>0603-C45</b>	45°	4.5
<b>0603-C60</b>	60°	2.5
<b>XCGT 0903-C30</b>	30°	1.5
<b>0903-C45</b>	45°	6.0
<b>0903-C60</b>	60°	3.5

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

# TCAP...-2.25DN

**TOPCAP**

Multi-function toolholder - 2.25xD



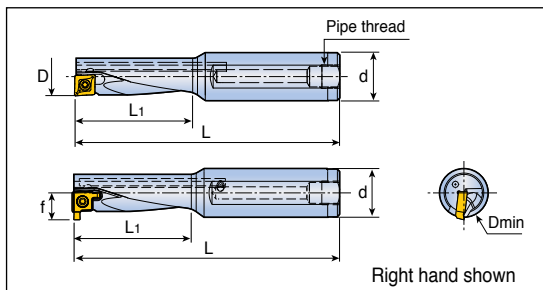
Designation	Dimension (mm)							Pipe thread	Insert	
	f	D	d	L1	L2	Ls	Dmin		For drilling, boring, turning	For grooving
<b>TCAP 08R/L-2.25DN</b>	-	8	12	18.0	22.5	42	-	G 1/16	XCMT 04...TC	-
<b>10R/L-2.25DN-GV</b>	7.1	10	12	22.5	27.5	42	12.0	G 1/16	XCMT 05...TC	XCMT 05R...GV
<b>12R/L-2.25DN-GV</b>	8.5	12	16	27.0	33.0	45	14.5	G 1/8	XCMT 06...TC	XCMT 06R...GV
<b>14R/L-2.25DN-GV</b>	9.5	14	16	31.5	38.5	45	16.5	G 1/8	XCMT 07...TC	XCMT 07R...GV
<b>16R/L-2.25DN-GV</b>	11.1	16	20	36.0	44.0	50	19.0	G 1/8	XCMT 08...TC	XCMT 08R...GV
<b>20R/L-2.25DN-GV</b>	13.2	20	25	45.0	55.0	56	23.5	G 1/8	XCMT 10...TC	XCMT 10R...GV
<b>25R/L-2.25DN-GV</b>	16.5	25	32	56.5	69.0	61	29.0	G 1/8	XCMT 13...TC	XCMT 13R...GV
<b>32R/L-2.25DN-GV</b>	20.5	32	40	72.0	86.0	74	36.5	G 1/8	XCMT 17...TC	XCMT 17R...GV
									D134	D133

## Spare parts

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



## Multi-function toolholder - 3.0xD



Designation	Dimension (mm)						Pipe thread	Insert	
	f	D	d	L <sub>1</sub>	L	D <sub>min</sub>		For drilling, boring, turning	For grooving
<b>TCAP 08R/L-3.0DN12</b>	-	8	12	24	80	-	G 1/16	XCMT 04...TC	-
<b>10R/L-3.0DN-GV</b>	7.1	10	12	30	85	12.0	G 1/16	XCMT 05...TC	XCMT 05R...GV
<b>12R/L-3.0DN-GV</b>	8.5	12	16	36	95	14.5	G 1/8	XCMT 06...TC	XCMT 06R...GV
<b>14R/L-3.0DN-GV</b>	9.5	14	16	42	100	16.5	G 1/8	XCMT 07...TC	XCMT 07R...GV
<b>16R/L-3.0DN-GV</b>	11.1	16	20	48	110	19.0	G 1/8	XCMT 08...TC	XCMT 08R...GV
<b>20R/L-3.0DN-GV</b>	13.2	20	25	60	130	23.5	G 1/8	XCMT 10...TC	XCMT 10R...GV
<b>25R/L-3.0DN-GV</b>	16.5	25	32	75	150	29.0	G 1/8	XCMT 13...TC	XCMT 13R...GV
<b>32R/L-3.0DN-GV</b>	20.5	32	40	96	185	36.5	G 1/8	XCMT 17...TC	XCMT 17R...GV
								D134	D133

## Spare parts

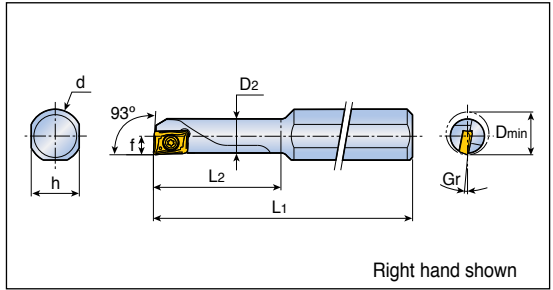
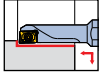
Designation	Screw	Wrench		
<b>TCAP 08</b>	TS 18034I/HG-P	T 6P		
<b>TCAP 10</b>	TS 20038I/HG-P	T 6P		
<b>TCAP 12</b>	TS 22052I/HG-P	T 7P		
<b>TCAP 14</b>	TS 25064I/HG-P	T 8P		
<b>TCAP 16</b>	TS 30100I/HG-P	TD 9P		
<b>TCAP 20</b>	TS 35088I/HG-P	TD10P		
<b>TCAP 25</b>	TS 45A100I/HG	TD 20		
<b>TCAP 32</b>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



## Boring bars with TOPCAP inserts



• For boring



Designation	Dimension (mm)								Insert
	d	D <sub>2</sub>	h	L <sub>1</sub>	L <sub>2</sub>	f	D <sub>min</sub>	Gr	
<b>S10H SXUCR/L 04-06</b> <sup>(1)</sup>	10	5.4	9	100	20	3.0	6	9°	XCMT 04...R/L TC
<b>S10J SXUCR/L 04-07</b> <sup>(1)</sup>	10	6.4	9	110	23	3.5	7	5°	D134
<b>S10J SXUCR/L 04-08</b> <sup>(1)</sup>	10	7.4	9	110	27	4.0	8	2°	D134
<b>S10K SXUCR/L 05-10</b>	10	9.0	9	125	34	5.0	10	2°	

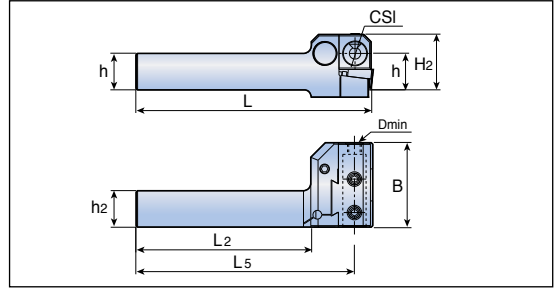
• <sup>(1)</sup>Right hand Insert should be used in right hand boring bar

## Spare parts

Designation	Screw	Wrench		
<b>S10H SXUCR/L 04-06</b>	TS 18034I/HG	T6		
<b>S10J SXUCR/L 04-07</b>	TS 18034I/HG	T6		
<b>S10J SXUCR/L 04-08</b>	TS 18034I/HG	T6		
<b>S10K SXUCR/L 05-10</b>	TS 20038I/HG-P	T6		



## Clamping units (Centre alignment system)



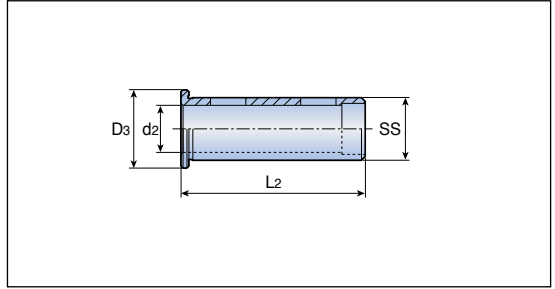
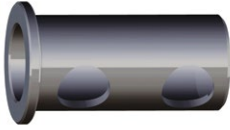
Designation	Dimension (mm)								Toolholders
	h	h <sub>2</sub>	CSI	H <sub>2</sub>	B	L <sub>2</sub>	L <sub>5</sub>	L	
<b>TGHR 2020-D16</b>	20	20	16	38	58	120	150	161	TCAP 08R/L...
<b>2525-D16</b>	25	25	16	38	58	120	150	161	TCAP 10R/L...
									TCAP 12R/L...
									TCAP 14R/L...
<b>2525-D25</b>	25	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
<b>TGHR 2020-D16</b>	TGHR-D16-BL	TGHR-WD	WSR 4	TGH-WS	TGH-MPI	TGH-MPS	SSxM8 1.25X10-C	SSxM8 x1.25x8	-	L-W 4
<b>TGHR 2525-D16</b>										
<b>TGHR 2525-D25</b>	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



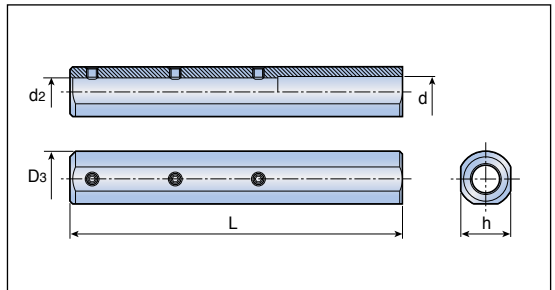
## Sleeves for clamping units



Designation	Dimension (mm)				Toolholders
	SS	d2	D3	L2	
<b>TSL 16-12</b>	16	12	20	47	TCAP 10R/L...
<b>25-20</b>	25	20	32	55	TCAP 16R/L...

# TBSL

## Sleeves for boring bar



Designation	Dimension (mm)				
	D3	d2	d	L	h
<b>TBSL 20-10-120</b>	20	10	11	120	18

## Spare parts

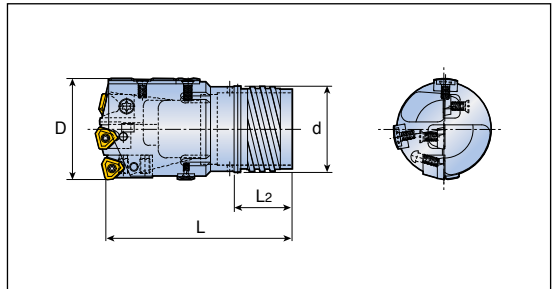
Designation	Screw	Wrench		
<b>TBSL 20-10-120</b>	SS M4x0.7x4	L-W 2		



# Deep Drilling Holders



## Single tube system



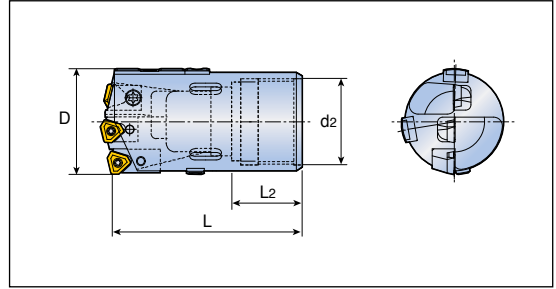
- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L <sub>2</sub>	d	Part	Diameter (mm)
<b>TBTA3- xxx.xxSE4-33</b>	38.00-39.60	85	30.5	30	BTSI 033	33
<b>xxx.xxSE4-36</b>	39.61-43.00	85	30.5	33	BTSI 036	36
<b>xxx.xxSE4-39</b>	43.01-47.00	95	30.5	36	BTSI 039	39
<b>xxx.xxSE4-43</b>	47.01-51.70	95	30.5	39	BTSI 043	43
<b>xxx.xxSE4-47</b>	51.71-56.20	100	34.5	43	BTSI 047	47
<b>xxx.xxSE4-51</b>	56.21-60.60	110	34.5	47	BTSI 051	51
<b>xxx.xxSE4-56A</b>	60.61-65.00	110	34.5	51	BTSI 056A	56
<b>xxx.xxSE4-56B</b>	65.00-66.99	150	62	52	BTSI 056B	56
<b>xxx.xxSE4-62</b>	67.00-72.99	150	62	58	BTSI 062	62
<b>xxx.xxSE4-68</b>	73.00-79.99	150	62	63	BTSI 068	68
<b>xxx.xxSE4-75</b>	80.00-86.99	180	82	70	BTSI 075	75
<b>xxx.xxSE4-82</b>	87.00-99.99	180	82	77	BTSI 082	82
<b>xxx.xxSE4-94</b>	100.00-106.99	180	82	89	BTSI 094	94

 Assembly D85	 Tube D113	 Cutting Condition D158	 Technical Guide TD30
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# TBTA3...SI1

## Single tube system



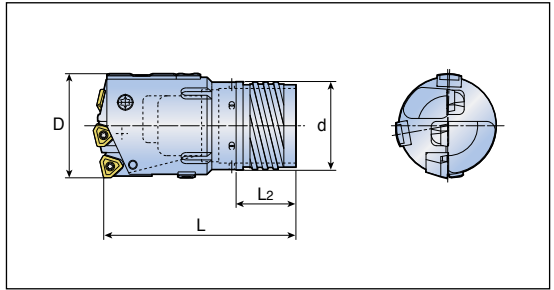
- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
<b>TBTA3- xxx.xxSI1-33</b>	38.00-39.99	80	40	30	BTSE 033	33
<b>xxx.xxSI1-36</b>	40.00-43.99	80	40	33	BTSE 036	36
<b>xxx.xxSI1-39</b>	44.00-46.99	90	40	37	BTSE 039	39
<b>xxx.xxSI1-43</b>	47.00-51.99	90	40	41	BTSE 043	43
<b>xxx.xxSI1-47</b>	52.00-56.99	100	40	44	BTSE 047	47
<b>xxx.xxSI1-51</b>	57.00-60.99	110	40	49	BTSE 051	51
<b>xxx.xxSI1-56</b>	61.00-67.99	110	40	53	BTSE 056	56
<b>xxx.xxSI1-62</b>	68.00-74.99	120	40	59	BTSE 062	62
<b>xxx.xxSI1-68</b>	75.00-80.99	150	70	65	BTSE 068	68
<b>xxx.xxSI1-75</b>	81.00-90.99	150	70	71	BTSE 075	75
<b>xxx.xxSI1-82</b>	91.00-98.99	150	70	79	BTSE 082	82
<b>xxx.xxSI1-94</b>	99.00-106.99	150	70	90	BTSE 094	94

 Assembly D85	 Tube D113	 Cutting Condition D158	 Technical Guide TD30
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# TBTA3...DE4

## Double tube system



- Outer four start thread

Designation	D range	Dimension (mm)			Tube		
		L	L2	d	Outer tube	Inner tube	Diameter (mm)
<b>TBTA3- xxx.xxDE4-35.5</b>	38.00-39.60	85	30.5	33	BTDO 035.5	BTDI 026	35.5
<b>xxx.xxDE4-39</b>	39.61-43.00	85	30.5	36	BTDO 039	BTDI 029	39.0
<b>xxx.xxDE4-42.5</b>	43.01-47.00	95	30.5	39	BTDO 042.5	BTDI 032	42.5
<b>xxx.xxDE4-46.5</b>	47.01-51.70	95	34.5	43	BTDO 046.5	BTDI 035	46.5
<b>xxx.xxDE4-51</b>	51.71-56.20	100	34.5	47	BTDO 051	BTDI 039	51.0
<b>xxx.xxDE4-55.5</b>	56.21-65.00	110	34.5	51	BTDO 055.5	BTDI 043A	55.5
<b>xxx.xxDE4-56</b>	65.00-66.99	150	62	52	BTDO 056	BTDI 043B	56.0
<b>xxx.xxDE4-62</b>	67.00-72.99	150	62	58	BTDO 062	BTDI 048	62.0
<b>xxx.xxDE4-68</b>	73.00-79.99	150	62	63	BTDO 068	BTDI 053	68.0
<b>xxx.xxDE4-75</b>	80.00-86.99	180	82	70	BTDO 075	BTDI 059	75.0
<b>xxx.xxDE4-82</b>	87.00-99.99	180	82	77	BTDO 082	BTDI 066	82.0
<b>xxx.xxDE4-94</b>	100.00-106.99	180	82	89	BTDO 094	BTDI 078	94.0

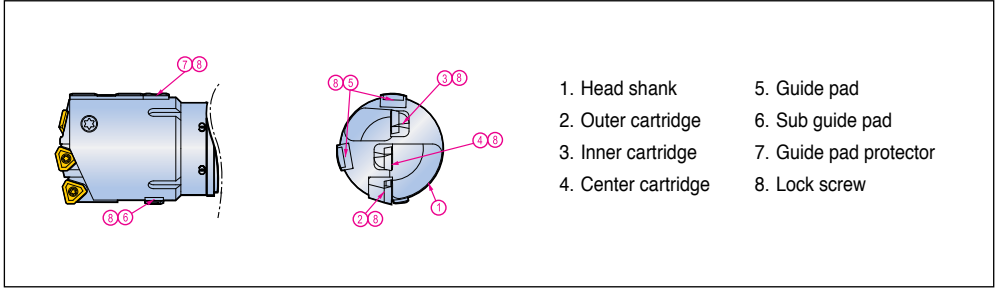
**Assembly**  
  
D85

**Tube**  
  
D113

**Cutting Condition**  
  
D158

**Feedrate Guide**  
  
TD30

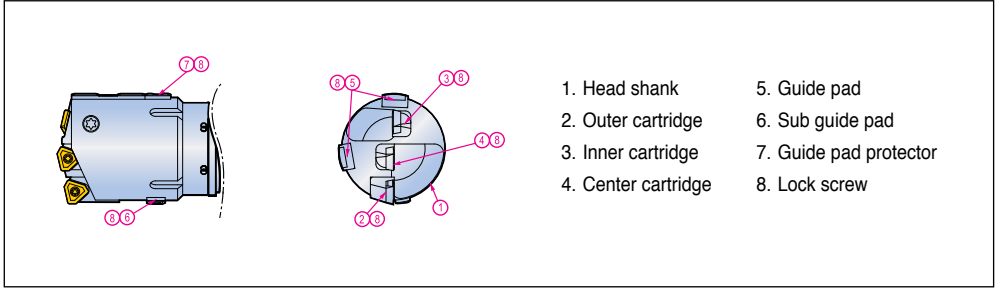
## Assembly of TBTA3 series



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
Insert	Wrench	T9	T9	T15	T15	T15
	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
	Wrench					
Wrench						
Wrench						
Wrench						
Wrench						
Wrench						



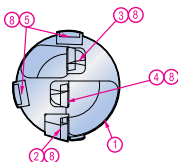
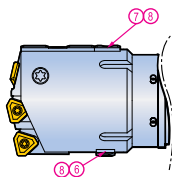
## Assembly of TBTA3 series



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
	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
	Wrench					
Wrench						
Wrench						
Wrench						
Wrench						
Wrench						



## Assembly of TBTA3 series



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

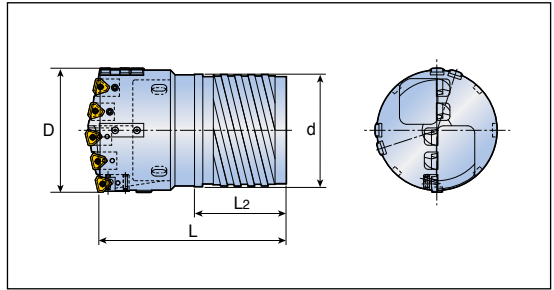
Parts	Diameter (mm)				
	78.00-84.99	85.00-91.99	92.00-98.99	99.00-106.99	
<b>Cartridge</b>	Outer	PERC 402-43	PERC 402-63	PERC 402-43	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0005-15	AS0006-15
	Wrench	H2.5	H3	H2.5	H3
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	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	
<b>Insert</b>	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
	<b>Pad</b>	Guide pad	PAD-GC14	PAD-GC14	PAD-GC14
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



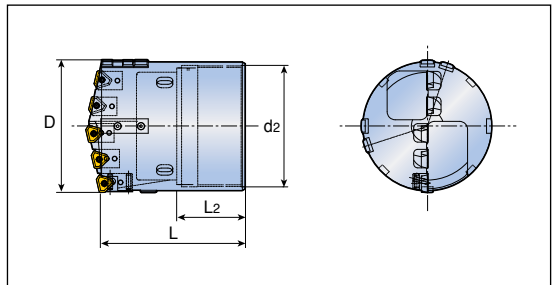
- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d	Part	Diameter (mm)
<b>TBTA5- xxx.xxSE4-094</b>	107.00-111.99	180	82	89	BTSI 094	94
<b>xxx.xxSE4-106</b>	112.00-123.99	205	102	101	BTSI 106	106
<b>xxx.xxSE4-118</b>	124.00-135.99	205	102	113	BTSI 118	118
<b>xxx.xxSE4-130</b>	136.00-147.99	205	102	125	BTSI 130	130
<b>xxx.xxSE4-142</b>	148.00-159.99	225	122	137	BTSI 142	142
<b>xxx.xxSE4-154</b>	160.00-168.99	225	122	149	BTSI 154	154

# TBTA5...SI1

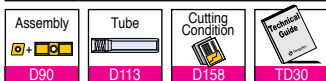
**T-DEEP**

## Single tube system



- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
<b>TBTA5- xxx.xxSI1-094</b>	107.00-110.99	150	70	90	BTSE 094	94
<b>xxx.xxSI1-106</b>	111.00-122.99	150	70	102	BTSE 106	106
<b>xxx.xxSI1-118</b>	123.00-134.99	150	70	114	BTSE 118	118
<b>xxx.xxSI1-130</b>	135.00-148.99	150	70	126	BTSE 130	130
<b>xxx.xxSI1-142</b>	149.00-161.99	150	70	139	BTSE 142	142
<b>xxx.xxSI1-154</b>	162.00-168.99	190	85	151	BTSE 154	154

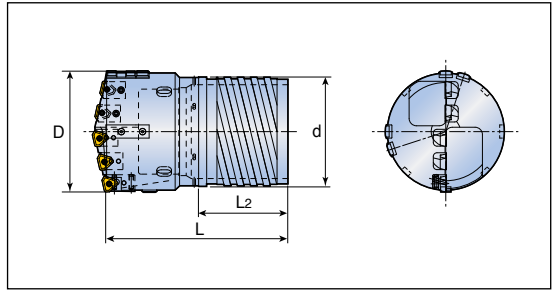




# TBTA5...DE4



## Double tube system

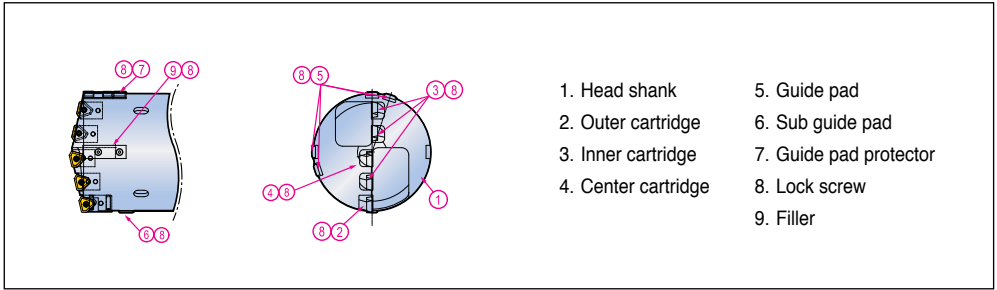


- Outer four start thread

Designation	D Range	Dimension (mm)			Tube		
		L	L2	d	Part		Diameter (mm)
<b>TBTA5- xxx.xxDE4-094</b>	107.00-111.99	180	82	89	BTDO 094	BTDI 078	94
<b>xxx.xxDE4-106</b>	112.00-123.99	205	102	101	BTDO 106	BTDI 090	106
<b>xxx.xxDE4-118</b>	124.00-135.99	205	102	113	BTDO 118	BTDI 092	118
<b>xxx.xxDE4-130</b>	136.00-147.99	205	102	125	BTDO 130	BTDI 093	130
<b>xxx.xxDE4-142</b>	148.00-159.99	225	122	137	BTDO 142	BTDI 094	142
<b>xxx.xxDE4-154</b>	160.00-168.99	225	122	149	BTDO 154	BTDI 095	154

Assembly D90	Tube D113	Cutting Condition D158	Treatment Guide TD30
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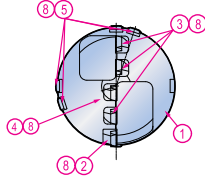
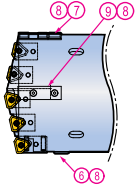
## Assembly of TBTA5 series



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
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
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	
<b>Cartridge</b>	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
Wrench	H3	H3	H3	
<b>Insert</b>	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	
<b>Pad</b>	Guide pad	PAD-GC18	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



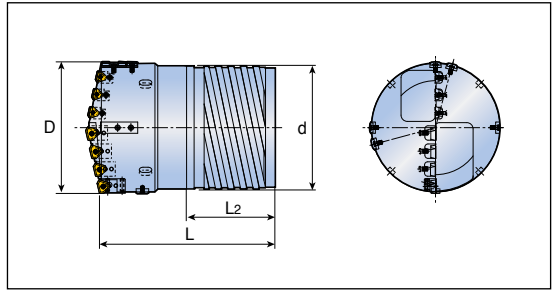
# TBTA7...SE4

**T-DEEP**

## Single tube system



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



Designation	D range	Dimension (mm)			Tube	
		L	L2	d	Part	Diameter (mm)
TBTA7- xxx.xxSE4-154	169.00-171.99	230	122	149	BTSI 154	154
xxx.xxSE4-166	172.00-183.99	230	122	161	BTSI 166	166
xxx.xxSE4-178	184.00-195.99	250	142	173	BTSI 178	178
xxx.xxSE4-190	196.00-207.99	250	142	185	BTSI 190	190
xxx.xxSE4-202	208.00-219.99	250	142	197	BTSI 202	202
xxx.xxSE4-214	220.00-231.99	270	162	208	BTSI 214	214
xxx.xxSE4-226	232.00-232.99	270	162	220	BTSI 226	226

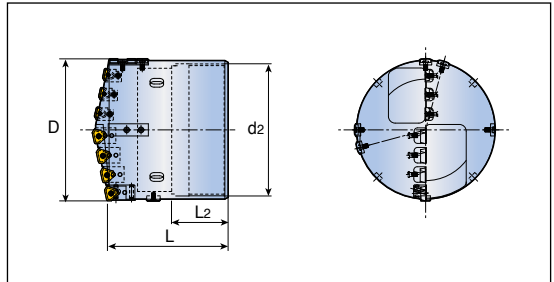
# TBTA7...SI1

**T-DEEP**

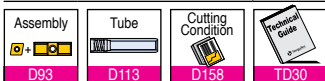
## Single tube system



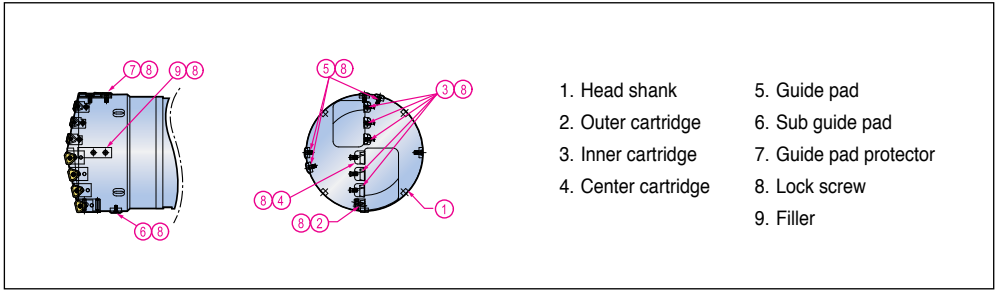
- Inner single start thread



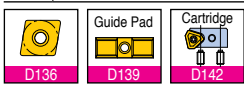
Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
TBTA7- xxx.xxSI1-154	169.00-173.99	190	85	145	BTSE 154	154
xxx.xxSI1-166	174.00-185.99	190	85	157	BTSE 166	166
xxx.xxSI1-178	186.00-197.99	190	85	169	BTSE 178	178
xxx.xxSI1-190	198.00-209.99	190	85	181	BTSE 190	190
xxx.xxSI1-202	210.00-221.99	190	85	193	BTSE 202	202
xxx.xxSI1-214	222.00-233.99	190	85	205	BTSE 214	214



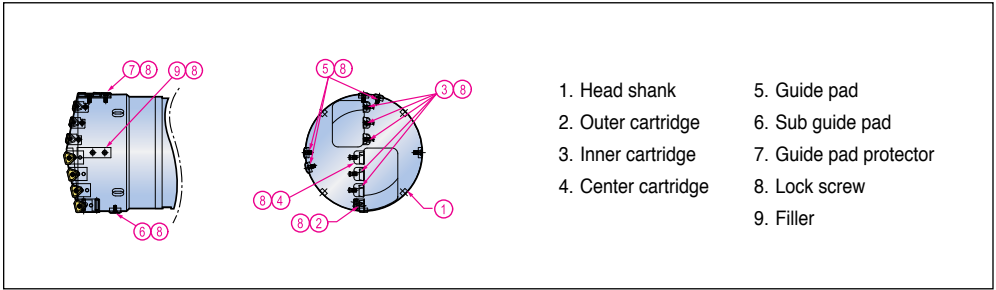
## Assembly of TBTA7 series



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
Pad	Screw	CSTB4M	CSTB5	CSTB5	CSTB5
	Wrench	T15	T20	T20	T20
	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 TBTA7 series



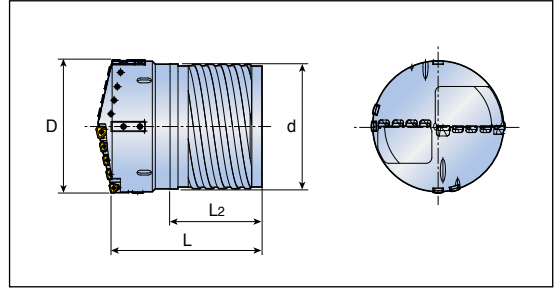
Parts		Diameter (mm)			
		209.00-214.99	215.00-220.99	221.00-226.99	227.00-232.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0005-15
	Wrench	H3	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 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
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
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20	T20
	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



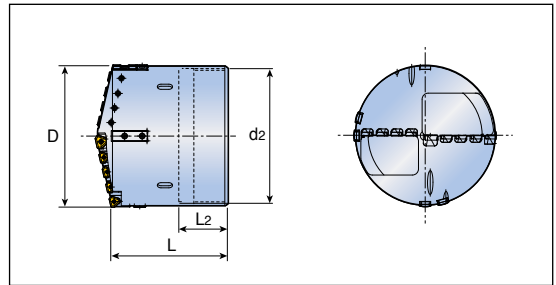
- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d	Part	Diameter (mm)
<b>TBTA9- xxx.xxSE4-226</b>	233.00-243.99	294	164	220	BTSE 226	226
<b>xxx.xxSE4-238</b>	244.00-255.99	294	164	232	BTSE 238	238
<b>xxx.xxSE4-250</b>	256.00-267.99	322	184	244	BTSE 250	250
<b>xxx.xxSE4-262</b>	268.00-279.99	323	184	256	BTSE 262	262
<b>xxx.xxSE4-274</b>	280.00-291.99	325	184	268	BTSE 274	274

# TBTA9...SI1

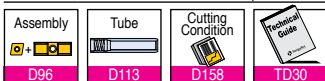
**T-DEEP**

## Single tube system



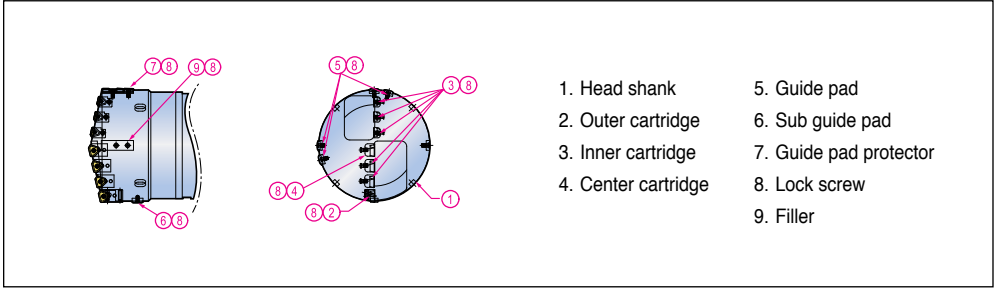
- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
<b>TBTA9- xxx.xxSI1-214</b>	233.00-233.99	217	86	211	BTSE 214	214
<b>xxx.xxSI1-226</b>	234.00-245.99	219	86	223	BTSE 226	226
<b>xxx.xxSI1-238</b>	246.00-257.99	221	86	235	BTSE 238	238
<b>xxx.xxSI1-250</b>	258.00-269.99	242	121	247	BTSE 250	250
<b>xxx.xxSI1-262</b>	270.00-281.99	244	121	259	BTSE 262	262
<b>xxx.xxSI1-274</b>	282.00-293.99	245	121	271	BTSE 274	274



[Contents](#)

## Assembly of TBTA9 series

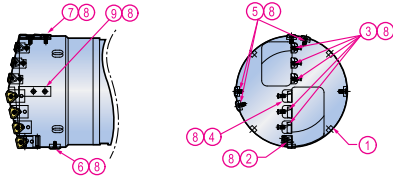


Parts		Diameter (mm)				
		233.00-247.99	248.00-253.99	254.00-258.99	259.00-264.99	265.00-271.99
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0006-15	AS0006-15	AS0006-15
	Wrench	H2.5	H3	H3	H3	H3
	Screw	LS1806RH	L1806RH	L1806RH	L1806RH	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

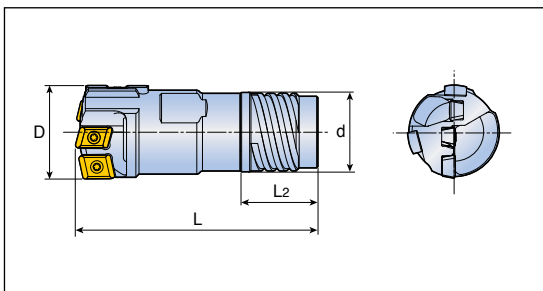


1. Head shank
2. Outer cartridge
3. Inner cartridge
4. Center cartridge
5. Guide pad
6. Sub guide pad
7. Guide pad protector
8. Lock screw
9. Filler

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
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
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T20	T20	T20	T20
	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



## Single tube system

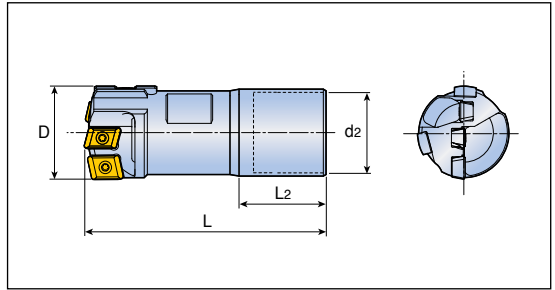


- Outer four start thread

Designation	D range	Dimension (mm)			Tube	
		L	L <sub>2</sub>	d	Part	Diameter (mm)
<b>TBTA-FB xx.xxSE4-22</b>	25.00-26.40	73	70	19.5	BTSI 022	22
<b>xx.xxSE4-24</b>	26.41-28.70	73	70	21.0	BTSI 024	24
<b>xx.xxSE4-26</b>	28.71-31.00	78	75	23.5	BTSI 026	26
<b>xx.xxSE4-28</b>	31.01-33.30	78	75	25.5	BTSI 028	28
<b>xx.xxSE4-30</b>	33.31-36.20	83	80	28.0	BTSI 030	30
<b>xx.xxSE4-33</b>	36.21-39.60	93	90	30.0	BTSI 033	33
<b>xx.xxSE4-36</b>	39.61-43.00	99	95	33.0	BTSI 036	36
<b>xx.xxSE4-39</b>	43.01-47.00	104	100	36.0	BTSI 039	39
<b>xx.xxSE4-43</b>	47.01-51.70	104	100	39.0	BTSI 043	43
<b>xx.xxSE4-47</b>	51.71-56.20	114	110	43.0	BTSI 047	47
<b>xx.xxSE4-51</b>	56.21-60.60	120	115	47.0	BTSI 051	51
<b>xx.xxSE4-56</b>	60.61-65.00	120	115	51.0	BTSI 056A	56

 <b>Assembly</b> D101	 <b>Tube</b> D113	 <b>Cutting Condition</b> D160	 <b>Feeding Guide</b> TD30
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## Single tube system



- Inner single start thread

Designation	D range	Dimension (mm)			Tube	
		L	L2	d2	Part	Diameter (mm)
<b>TBTA-FB xx.xxSI1-22</b>	25.00-26.99	73	70	20	BTSE 022	22
<b>xx.xxSI1-24</b>	27.00-29.00	73	70	22	BTSE 024	24
<b>xx.xxSI1-24</b>	29.01-29.99	73	70	22	BTSE 024	24
<b>xx.xxSI1-26</b>	30.00-31.99	78	75	24	BTSE 026	26
<b>xx.xxSI1-28</b>	32.00-33.99	78	75	26	BTSE 028	28
<b>xx.xxSI1-28</b>	34.00-36.99	93	90	27	BTSE 028	28
<b>xx.xxSI1-30</b>	37.00-39.99	98	95	30	BTSE 030	30
<b>xx.xxSI1-30</b>	40.00-43.99	104	100	33	BTSE 030	30
<b>xx.xxSI1-33</b>	44.00-46.99	109	105	37	BTSE 033	33
<b>xx.xxSI1-33</b>	47.00-51.99	109	105	41	BTSE 033	33
<b>xx.xxSI1-36</b>	52.00-56.99	114	110	44	BTSE 036	36
<b>xx.xxSI1-36</b>	57.00-60.99	120	115	49	BTSE 036	36
<b>xx.xxSI1-39</b>	61.00-65.00	120	115	53	BTSE 039	39

Assembly  
D101

Tube  
D113

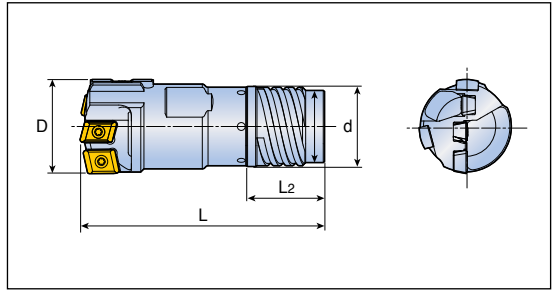
Cutting Condition  
D160

Technical Guide  
TD30

# TBTA-FB...DE4


**T-DEEP**

## Double tube system




- Outer four start thread


Designation	D range	Dimension (mm)			Tube		
		L	L2	d	Outer tube	Inner tube	Diameter (mm)
<b>TBTA-FB xx.xxDE4-23.5</b>	25.00-26.40	73	2	21.0	BTDO 023.5	BTDI 016	23.5
<b>xx.xxDE4-26</b>	26.41-28.70	78	75	23.5	BTDO 026	BTDI 018	26.0
<b>xx.xxDE4-28</b>	28.71-31.00	78	75	25.5	BTDO 028	BTDI 020	28.0
<b>xx.xxDE4-30.5</b>	31.01-33.30	83	80	28.0	BTDO 030.5	BTDI 022	30.5
<b>xx.xxDE4-33</b>	33.31-36.20	93	90	30.0	BTDO 033	BTDI 024	33.0
<b>xx.xxDE4-35.5</b>	36.21-39.60	99	95	33.0	BTDO 035.5	BTDI 026	35.5
<b>xx.xxDE4-39</b>	39.61-43.00	104	100	36.0	BTDO 039	BTDI 029	39.0
<b>xx.xxDE4-42.5</b>	43.01-47.00	104	100	39.0	BTDO 042.5	BTDI 032	42.5
<b>xx.xxDE4-46.5</b>	47.01-51.70	114	110	43.0	BTDO 046.5	BTDI 035	46.5
<b>xx.xxDE4-51</b>	51.71-56.20	120	115	47.5	BTDO 051	BTDI 039	51.0
<b>xx.xxDE4-55.5</b>	56.21-65.00	120	115	51.0	BTDO 055.5	BTDI 043A	55.5




Assembly  
D101



Tube  
D113

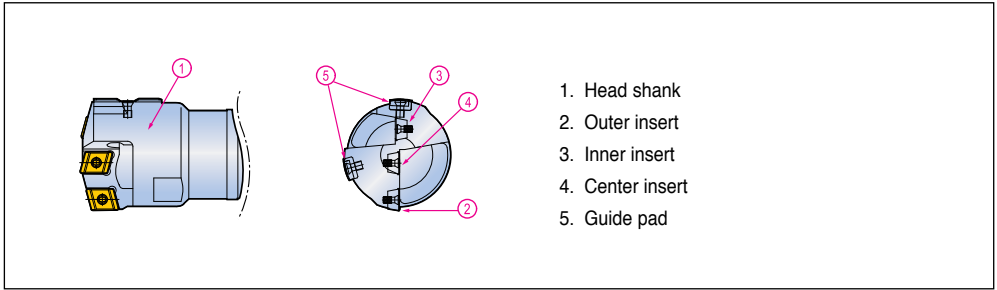


Cutting Condition  
D160



Feeding Guide  
TD30

## Assembly of TBTA-FB series



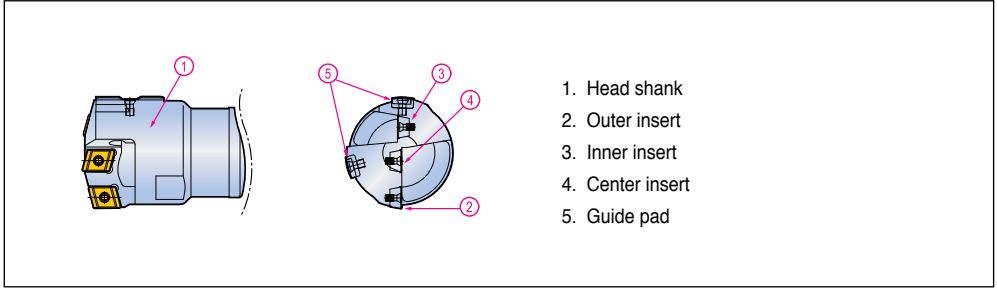
1. Head shank
2. Outer insert
3. Inner insert
4. Center insert
5. Guide pad

Parts		Diameter (mm)			
		25.00-28.00	28.01-29.99	30.00-35.00	35.01-38.00
Insert	PER	NPHT 06003 RG	NPHT 06003 RG	NPHT 07504 RG	NPHT 07504 RG
	Screw	CSTB2.2	CSTB2.2	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	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
Insert	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	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

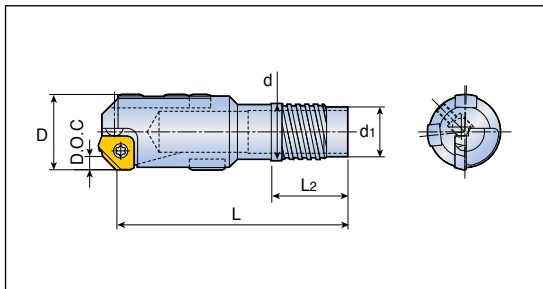
Parts		Diameter (mm)		
		57.01-60.00	60.01-64.00	64.01-65.00
Insert	PER	NPHT 11004 RG	NPHT 13004 RG	NPHT 13004 RG
	Screw	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-8F	T-8F	T-8F
	INT	NPMT 09504 RG	NPMT 09504 RG	NPMT 12504 RG
	Screw	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-8F	T-8F	T-8F
	CEN	NPMT 12504 LG	NPMT 12504 LG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



D135

D140

Single tube system



- Outer four start thread

Designation	D range	D.O.C (mm)	Dimension (mm)				Tube	
			L	L <sub>2</sub>	d <sub>1</sub>	d	Part	Diameter (mm)
<b>TBTA-R xxx.xxSE4-22</b>	25.00-26.40	2.8	70	21.5	17.5	19.5	BTSI 022	22
<b>xxx.xxSE4-24</b>	26.41-28.70	2.8	70	21.5	19.0	21.0	BTSI 024	24
<b>xxx.xxSE4-26</b>	28.71-31.00	2.8	75	24.5	21.0	23.5	BTSI 026	26
<b>xxx.xxSE4-28</b>	31.01-33.30	2.8	75	24.5	23.0	25.5	BTSI 028	28
<b>xxx.xxSE4-30</b>	33.31-36.20	2.8	75	24.5	25.5	28.0	BTSI 030	30
<b>xxx.xxSE4-33</b>	36.21-39.60	2.8	90	30.5	27.0	30.0	BTSI 033	33
<b>xxx.xxSE4-36</b>	39.61-39.99	2.8	90	30.5	30.0	33.0	BTSI 036	36

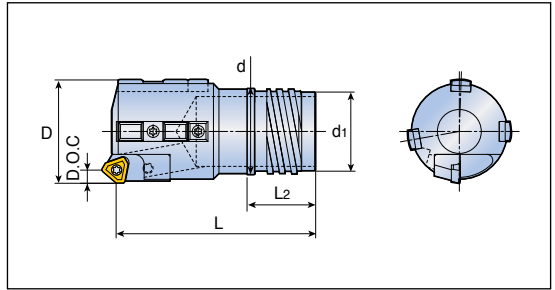
 Assembly D106	 Tube D113	 Cutting Condition D153	 Technical Guide TD30
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Contents

# TBTA-R...SE4



## Single tube system



- Outer four start thread

Designation	D range	D.O.C (mm)		Dimension (mm)				Tube	
		Standard	Precision	L	L2	d1	d	Part	Diameter (mm)
TBTA-R xxx.xxSE4-36	40.00-43.00	6.4	4	90	30.5	30.0	33.0	BTSI 036	36
xxx.xxSE4-39	43.01-47.00	6.4	4	95	30.5	33.0	36.0	BTSI 039	39
xxx.xxSE4-43	47.01-51.70	6.4	4	100	30.5	36.0	39.0	BTSI 043	43
xxx.xxSE4-47	51.71-56.20	6.4/7.2	4/4.8	100	34.5	39.5	43.0	BTSI 047	47
xxx.xxSE4-51	56.21-60.60	7.2	4.8	105	34.5	43.5	47.0	BTSI 051	51
xxx.xxSE4-56A	60.61-65.00	7.2	4.8	110	34.5	47.5	51.0	BTSI 056A	56
xxx.xxSE4-56B	65.00-66.99	7.2	4.8	150	62.0	47.0	52.0	BTSI 056B	56
xxx.xxSE4-62	67.00-72.99	10.4	6.4	150	62.0	53.0	58.0	BTSI 062	62
xxx.xxSE4-68	73.00-79.99	10.4	6.4	150	62.0	58.0	63.0	BTSI 068	68
xxx.xxSE4-75	80.00-86.99	10.4	6.4	180	82.0	64.0	70.0	BTSI 075	75
xxx.xxSE4-82	87.00-99.99	10.4	6.4	180	82.0	71.0	77.0	BTSI 082	82

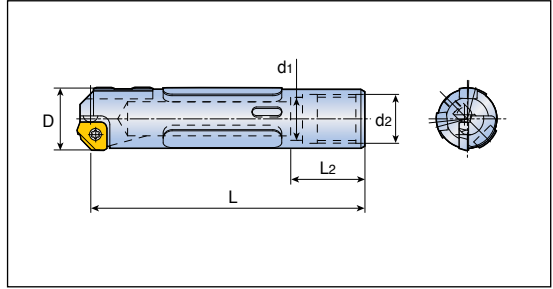
Assembly D106	Tube D113	Cutting Condition D158	Feeding Guide TD30
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# TBTA-R...S11

**T-DEEP**

## Single tube system



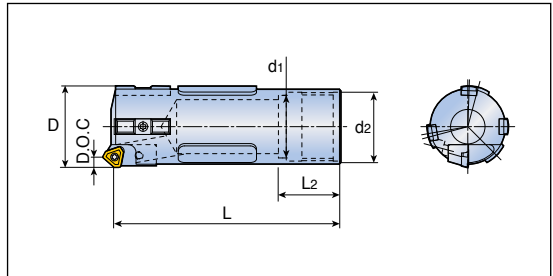
- Inner single start thread

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

# TBTA-R...S11

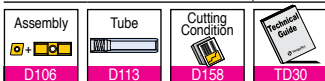
**T-DEEP**

## Single tube system



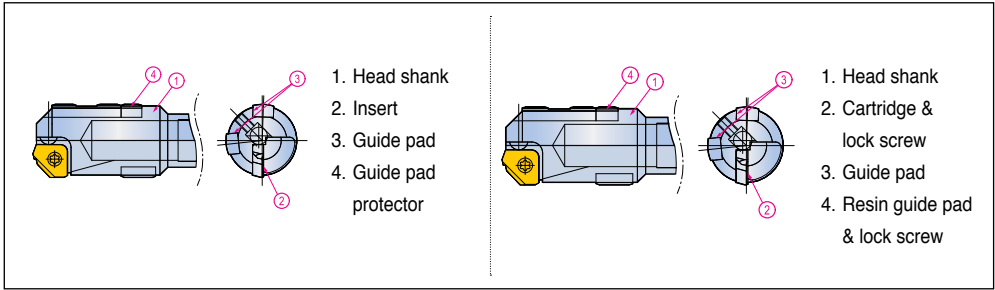
- Inner single start thread

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



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## Assembly of TBTA-R series

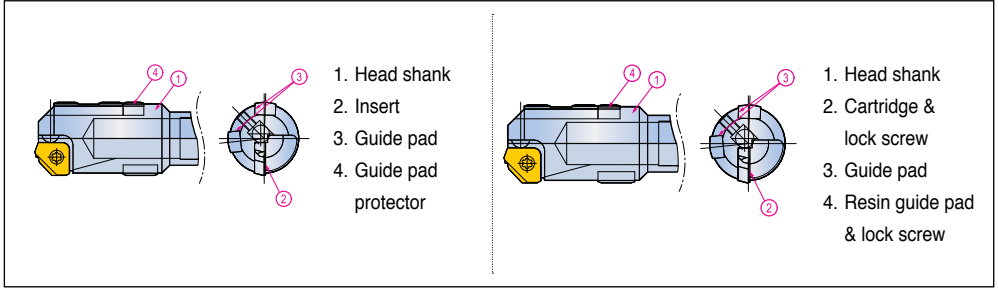


Parts		Diameter (mm)				
		25.00-27.99	28.00-29.99	30.00-36.99	37.00-39.99	
Close tolerance	Cartridge	Outer	-	-	-	-
		Adjust screw	-	-	-	-
		Wrench	-	-	-	-
		Screw	-	-	-	-
	Insert	Wrench	-	-	-	-
		Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
Wrench	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

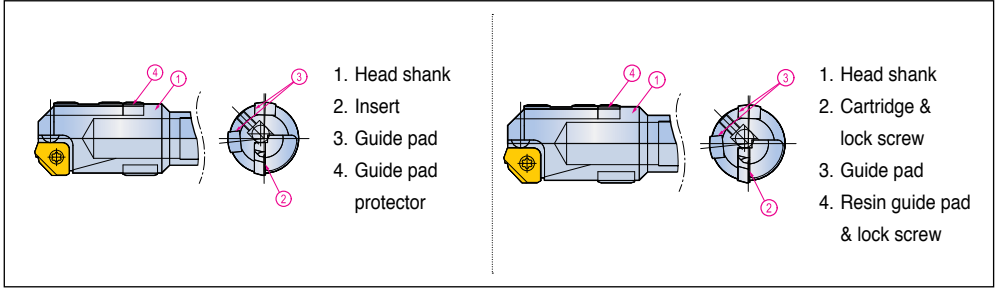


Parts		Diameter (mm)				
		40.00-45.99	46.00-51.99	52.00-56.99	57.00-66.99	
Close tolerance	Cartridge	Outer	PERC-P 04R	PERC-P 04R	PERC-P 32R	PERC-P 32R
		Adjust screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
	Insert	Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
		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
		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

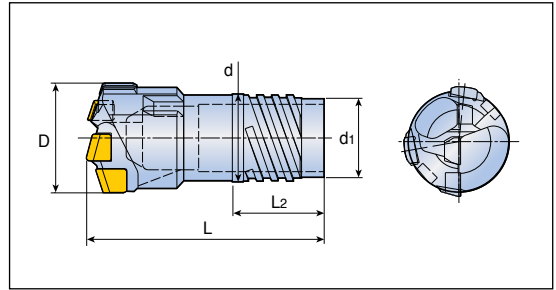
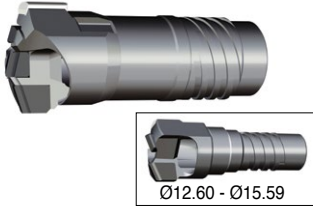


Parts		Diameter (mm)				
		67.00-80.99	81.00-90.99	91.00-99.99	100.00-122.99	
Close tolerance	Cartridge	Outer	PERC-P 43R	PERC-P 43R	PERC-P 43R	PERC-P 43R
		Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5	H2.5
		Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Insert	Wrench	H4	H4	H4	H4
		Insert	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG	TPMX 2405LG
		Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
Normal tolerance	Cartridge	Wrench	T15	T15	T15	T15
		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
		Wrench	T15	T15	T15	T15
		Wrench	T15	T15	T15	T15
	Screw	Screw	LS0905-12	LS0906-15	LS0906-15	LS0906-15
		Wrench	+H3	+H4	+H4	+H4
		Wrench	+H3	+H4	+H4	+H4
		Wrench	+H3	+H4	+H4	+H4
Screw	Screw	LS0905-12	LS0906-15	LS0906-15	LS0906-15	
	Wrench	+H3	+H4	+H4	+H4	
	Wrench	+H3	+H4	+H4	+H4	
	Wrench	+H3	+H4	+H4	+H4	



- 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	L <sub>2</sub>	d <sub>1</sub>	d	Part	Diameter (mm)
<b>BTA xxx.xx SE2-11*</b>	12.60-13.10	43.0	23.5	8.2	9.6	BTSI011	11
<b>xxx.xx SE2-11*</b>	13.11-13.60	43.0	23.5	8.2	9.6	BTSI011	11
<b>xxx.xx SE2-12*</b>	13.61-14.10	43.0	23.5	9.2	10.6	BTSI012	12
<b>xxx.xx SE2-12*</b>	14.11-14.60	43.0	23.5	9.2	10.6	BTSI012	12
<b>xxx.xx SE2-13*</b>	14.61-15.10	43.0	23.5	10.2	11.6	BTSI013	13
<b>xxx.xx SE2-13*</b>	15.11-15.59	43.0	23.5	10.2	11.6	BTSI013	13
<b>xxx.xx SE4-14</b>	15.60-16.20	43.0	20.0	10.8	12.6	BTSI014	14
<b>xxx.xx SE4-14</b>	16.21-16.70	43.0	20.0	10.8	12.6	BTSI014	14
<b>xxx.xx SE4-15</b>	16.71-17.20	43.0	20.0	11.8	13.6	BTSI015	15
<b>xxx.xx SE4-15</b>	17.21-17.70	43.0	20.0	11.8	13.6	BTSI015	15
<b>xxx.xx SE4-16</b>	17.71-18.40	47.0	21.5	12.5	14.5	BTSI016	16
<b>xxx.xx SE4-16</b>	18.41-18.90	47.0	21.5	12.5	14.5	BTSI016	16
<b>xxx.xx SE4-17</b>	18.91-19.20	47.0	21.5	13.5	15.5	BTSI017	17
<b>xxx.xx SE4-17</b>	19.21-20.00	47.0	21.5	13.5	15.5	BTSI017	17
<b>xxx.xx SE4-18</b>	20.01-20.90	52.5	21.5	14.0	16.0	BTSI018	18
<b>xxx.xx SE4-18</b>	20.91-21.80	52.5	21.5	14.0	16.0	BTSI018	18
<b>xxx.xx SE4-20</b>	21.81-22.90	56.0	21.5	16.0	18.0	BTSI020	20
<b>xxx.xx SE4-20</b>	22.91-24.10	56.0	21.5	16.0	18.0	BTSI020	20
<b>xxx.xx SE4-22</b>	24.11-25.20	57.5	21.5	17.5	19.5	BTSI022	22
<b>xxx.xx SE4-22</b>	25.21-26.40	57.5	21.5	17.5	19.5	BTSI022	22
<b>xxx.xx SE4-24</b>	26.41-27.50	57.5	21.5	19.0	21.0	BTSI024	24
<b>xxx.xx SE4-24</b>	27.51-28.70	57.5	21.5	19.0	21.0	BTSI024	24
<b>xxx.xx SE4-26</b>	28.71-29.80	63.5	24.5	21.0	23.5	BTSI026	26
<b>xxx.xx SE4-26</b>	29.81-31.00	63.5	24.5	21.0	23.5	BTSI026	26
<b>xxx.xx SE4-28</b>	31.01-32.10	63.5	24.5	23.0	25.5	BTSI028	28
<b>xxx.xx SE4-28</b>	32.11-33.30	63.5	24.5	23.0	25.5	BTSI028	28
<b>xxx.xx SE4-30</b>	33.31-34.80	63.5	24.5	25.5	28.0	BTSI030	30
<b>xxx.xx SE4-30</b>	34.81-36.20	63.5	24.5	25.5	28.0	BTSI030	30
<b>xxx.xx SE4-33</b>	36.21-37.30	73.5	30.5	27.0	30.0	BTSI033	33
<b>xxx.xx SE4-33</b>	37.31-38.40	73.5	30.5	27.0	30.0	BTSI033	33
<b>xxx.xx SE4-33</b>	38.41-39.60	73.5	30.5	27.0	30.0	BTSI033	33
<b>xxx.xx SE4-36</b>	39.61-40.60	73.5	30.5	30.0	33.0	BTSI036	36
<b>xxx.xx SE4-36</b>	40.61-41.80	73.5	30.5	30.0	33.0	BTSI036	36
<b>xxx.xx SE4-36</b>	41.81-43.00	73.5	30.5	30.0	33.0	BTSI036	36
<b>xxx.xx SE4-39</b>	43.01-44.30	75.0	30.5	33.0	36.0	BTSI039	39

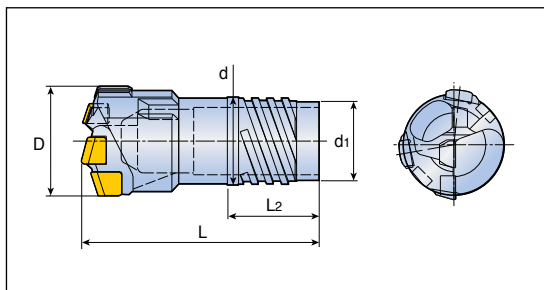
- '\*1' 2 cutting edge head



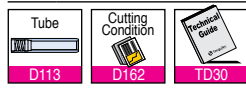
## Single tube system



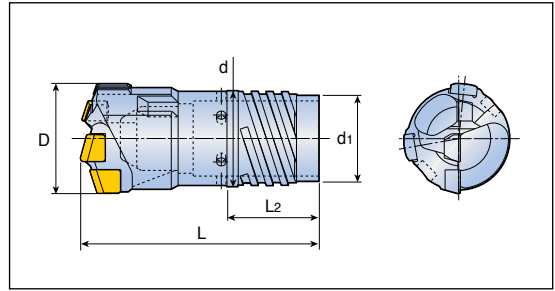
- Outer four start thread



Designation	D range	Dimension (mm)				Tube	
		L	L <sub>2</sub>	d <sub>1</sub>	d	Part	Diameter (mm)
<b>BTA xxx.xx SE4-39</b>	44.31-45.60	75.0	30.5	33.0	36.0	BTSI039	39
<b>xxx.xx SE4-39</b>	45.61-47.00	75	30.5	33.0	36.0	BTSI039	39
<b>xxx.xx SE4-43</b>	47.01-48.50	75	30.5	36.0	39.0	BTSI043	43
<b>xxx.xx SE4-43</b>	48.51-50.10	75	30.5	36.0	39.0	BTSI043	43
<b>xxx.xx SE4-43</b>	50.11-51.70	75	30.5	36.0	39.0	BTSI043	43
<b>xxx.xx SE4-47</b>	51.71-53.20	82	34.5	39.5	43.0	BTSI047	47
<b>xxx.xx SE4-47</b>	53.21-54.70	82	34.5	39.5	43.0	BTSI047	47
<b>xxx.xx SE4-47</b>	54.71-56.20	82	34.5	39.5	43.0	BTSI047	47
<b>xxx.xx SE4-51</b>	56.21-58.40	84	34.5	43.5	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	58.41-60.60	84	34.5	43.5	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	60.61-62.80	84	34.5	43.5	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	62.81-65.00	84	34.5	43.5	47.0	BTSI051	51
<b>xxx.xx SE4-56</b>	60.61-62.80	84	34.5	47.5	51.0	BTSI056	56
<b>xxx.xx SE4-56</b>	62.81-65.00	84	34.5	47.5	51.0	BTSI056	56



## Double tube system

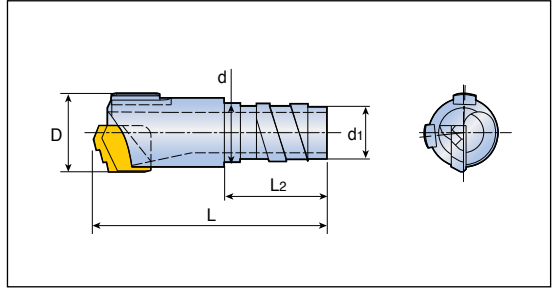


- Outer four start thread

Designation	D range	Dimension (mm)				Tube		
		L	L2	d1	d	Outer tube	Inner tube	Diameter (mm)
<b>BTA xxx.xx DE4-18</b>	18.41-19.20	50.0	21.5	14.0	16.0	BTDO018	BTDI012	18.0
<b>xxx.xx DE4-18</b>	19.21-20.00	50.0	21.5	14.0	16.0	BTDO018	BTDI012	18.0
<b>xxx.xx DE4-19.5</b>	20.01-20.90	56.0	21.5	16.0	18.0	BTDO019.5	BTDI014	19.5
<b>xxx.xx DE4-19.5</b>	20.91-21.80	56.0	21.5	16.0	18.0	BTDO019.5	BTDI014	19.5
<b>xxx.xx DE4-21.5</b>	21.81-22.90	56.0	21.5	17.5	19.5	BTDO021.5	BTDI015	21.5
<b>xxx.xx DE4-21.5</b>	22.91-24.10	56.0	21.5	17.5	19.5	BTDO021.5	BTDI015	21.5
<b>xxx.xx DE4-23.5</b>	24.11-25.20	57.5	21.5	19.0	21.0	BTDO023.5	BTDI016	23.5
<b>xxx.xx DE4-23.5</b>	25.21-26.40	57.5	21.5	19.0	21.0	BTDO023.5	BTDI016	23.5
<b>xxx.xx DE4-26</b>	26.41-27.50	60.5	24.5	21.0	23.5	BTDO026	BTDI018	26.0
<b>xxx.xx DE4-26</b>	27.51-28.70	60.5	24.5	21.0	23.5	BTDO026	BTDI018	26.0
<b>xxx.xx DE4-28</b>	28.71-29.80	63.5	24.5	23.0	25.5	BTDO028	BTDI020	28.0
<b>xxx.xx DE4-28</b>	29.81-31.00	63.5	24.5	23.0	25.5	BTDO028	BTDI020	28.0
<b>xxx.xx DE4-30.5</b>	31.01-32.10	63.5	24.5	25.5	28.0	BTDO030.5	BTDI022	30.5
<b>xxx.xx DE4-30.5</b>	32.11-33.30	63.5	24.5	25.5	28.0	BTDO030.5	BTDI022	30.5
<b>xxx.xx DE4-33</b>	33.31-34.80	70.5	30.5	27.0	30.0	BTDO033.0	BTDI024	33.0
<b>xxx.xx DE4-33</b>	34.81-36.20	70.5	30.5	27.0	30.0	BTDO033.0	BTDI024	33.0
<b>xxx.xx DE4-35.5</b>	36.21-37.30	73.5	30.5	30.0	33.0	BTDO035.5	BTDI026	35.5
<b>xxx.xx DE4-35.5</b>	37.31-38.40	73.5	30.5	30.0	33.0	BTDO035.5	BTDI026	35.5
<b>xxx.xx DE4-35.5</b>	38.41-39.60	73.5	30.5	30.0	33.0	BTDO035.5	BTDI026	35.5
<b>xxx.xx DE4-39</b>	39.61-40.60	73.5	30.5	33.0	36.0	BTDO039	BTDI029	39.0
<b>xxx.xx DE4-39</b>	40.61-41.80	73.5	30.5	33.0	36.0	BTDO039	BTDI029	39.0
<b>xxx.xx DE4-39</b>	41.81-43.00	73.5	30.5	33.0	36.0	BTDO039	BTDI029	39.0
<b>xxx.xx DE4-42.5</b>	43.01-44.30	75.0	30.5	36.0	39.0	BTDO042.5	BTDI032	42.5
<b>xxx.xx DE4-42.5</b>	44.31-45.60	75.0	30.5	36.0	39.0	BTDO042.5	BTDI032	42.5
<b>xxx.xx DE4-42.5</b>	45.61-47.00	75.0	30.5	36.0	39.0	BTDO042.5	BTDI032	42.5
<b>xxx.xx DE4-46.5</b>	47.01-48.50	79.0	34.5	39.5	43.0	BTDO046.5	BTDI035	46.5
<b>xxx.xx DE4-46.5</b>	48.51-50.10	79.0	34.5	39.5	43.0	BTDO046.5	BTDI035	46.5
<b>xxx.xx DE4-46.5</b>	50.11-51.70	79.0	34.5	39.5	43.0	BTDO046.5	BTDI035	46.5
<b>xxx.xx DE4-51</b>	51.71-53.20	82.0	34.5	43.5	47.0	BTDO051	BTDI039	51.0
<b>xxx.xx DE4-51</b>	53.21-54.70	82.0	34.5	43.5	47.0	BTDO051	BTDI039	51.0
<b>xxx.xx DE4-51</b>	54.71-56.20	82.0	34.5	43.5	47.0	BTDO051	BTDI039	51.0
<b>xxx.xx DE4-55.5</b>	56.21-58.40	84.0	34.5	47.5	51.0	BTDO055.5	BTDI043A	55.5
<b>xxx.xx DE4-55.5</b>	58.41-60.60	84.0	34.5	47.5	51.0	BTDO055.5	BTDI043A	55.5
<b>xxx.xx DE4-55.5</b>	60.61-62.80	84.0	34.5	47.5	51.0	BTDO055.5	BTDI043A	55.5
<b>xxx.xx DE4-55.5</b>	62.81-65.00	84.0	34.5	47.5	51.0	BTDO055.5	BTDI043A	55.5



## Single tube system

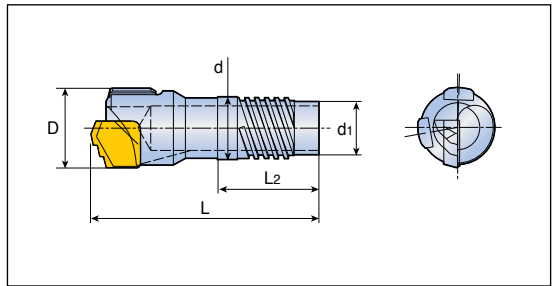


- Outer single start thread

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

# BTS...SE2/SE4

## Single tube system



- Outer four start thread

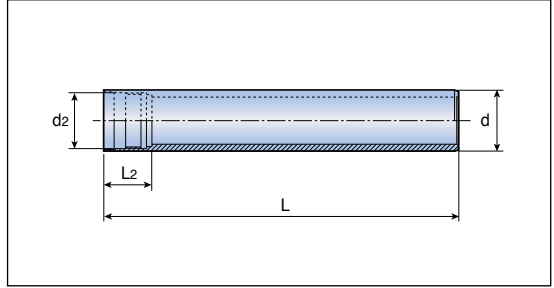
Designation	D range	Dimension (mm)				Tube	
		L	L2	d1	d	Part	Diameter (mm)
<b>BTS xxx.xx SE2-11*</b>	12.60-13.60	42.6	20.5	8.2	9.6	BTSI011	11
<b>xxx.xx SE2-12*</b>	13.61-14.60	42.7	22.5	9.2	10.6	BTSI012	12
<b>xxx.xx SE2-13*</b>	14.61-15.59	42.7	22.5	10.2	11.6	BTSI013	13
<b>xxx.xx SE4-14</b>	15.60-16.70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



- '\*1' Designates outer two start thread



## Single tube

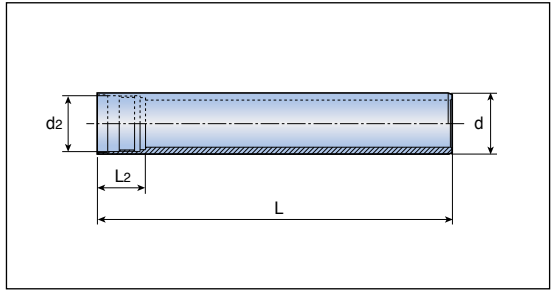


- Inner four start thread

Designation	D range	Dimension (mm)		
		d	d2	L2
<b>BTSI 011 *</b>	12.60-13.60	11.0	9.6	22
<b>012 *</b>	13.61-14.60	12.0	10.6	22
<b>013 *</b>	14.61-15.59	13.0	11.6	22
<b>014</b>	15.60-16.70	14.0	12.6	21
<b>015</b>	16.71-17.70	15.0	13.6	21
<b>016</b>	17.71-18.90	16.0	14.5	22
<b>017</b>	18.91-20.00	17.0	15.5	22
<b>018</b>	20.01-21.80	18.0	16.0	27.5
<b>020</b>	21.81-24.10	20.0	18.0	30
<b>022</b>	24.11-26.40	22.0	19.5	30
<b>024</b>	26.41-28.70	24.0	21.0	30
<b>026</b>	28.71-31.00	26.0	23.5	33
<b>028</b>	31.01-33.30	28.0	25.5	33
<b>030</b>	33.31-36.20	30.0	28.0	33
<b>033</b>	36.21-39.60	33.0	30.0	40
<b>036</b>	39.61-43.00	36.0	33.0	40
<b>039</b>	43.01-47.00	39.0	36.0	40
<b>043</b>	47.01-51.70	43.0	39.0	40
<b>047</b>	51.71-56.20	47.0	43.0	44

- Please indicate overall length (L) when ordering
- '\*' Indicates parts are inner two start thread

## Single tube

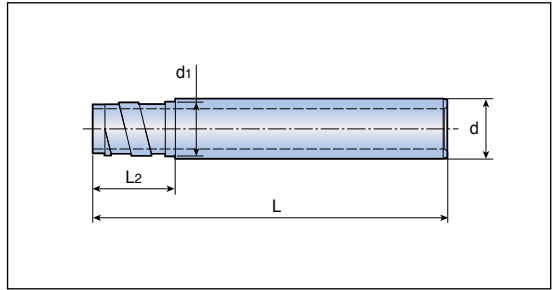


- Inner four start thread

Designation	D range	Dimension (mm)		
		d	d2	L2
<b>BTSI 051</b>	56.21-60.60	51.0	47	44
<b>056A</b>	60.61-65.00	56.0	51	44
<b>056B</b>	65.00-66.99	56.0	52	75
<b>062</b>	67.00-72.99	62.0	58	75
<b>068</b>	73.00-79.99	68.0	63	75
<b>075</b>	80.00-86.99	75.0	70	97
<b>082</b>	87.00-99.99	82.0	77	97
<b>094</b>	100.00-111.99	94.0	89	97
<b>106</b>	112.00-123.99	106.0	101	118
<b>118</b>	124.00-135.99	118.0	113	118
<b>130</b>	136.00-147.99	130.0	125	118
<b>142</b>	148.00-159.99	142.0	137	139
<b>154</b>	160.00-171.99	154.0	149	139
<b>166</b>	172.00-183.99	166.0	161	139
<b>178</b>	184.00-195.99	178.0	173	144
<b>190</b>	196.00-207.99	190.0	185	144
<b>202</b>	208.00-219.99	202.0	197	144
<b>214</b>	220.00-231.99	214.0	208	164
<b>226</b>	232.00-243.99	226.0	220	164
<b>238</b>	244.00-255.99	238.0	232	164
<b>250</b>	256.00-269.99	250.0	244	184
<b>262</b>	268.00-279.99	262.0	256	184
<b>274</b>	280.00-291.99	274.0	268	184

- Please indicate overall length (L) when ordering

## Single tube

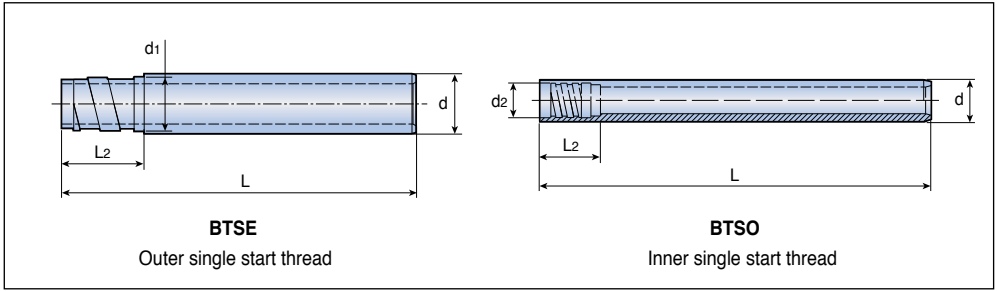


- Outer single start thread

Designation	D range	Dimension (mm)		
		d	d1	L2
<b>BTSE 012A</b>	14.50-15.00	12.0	11.5	23
<b>012B</b>	15.01-15.50	12.0	11.8	23
<b>013A</b>	15.51-16.00	13.0	12.4	23
<b>013B</b>	16.01-16.50	13.0	12.7	23
<b>014A</b>	16.51-17.25	14.0	13.4	23
<b>014B</b>	17.26-18.00	14.0	13.7	23
<b>015</b>	18.01-19.00	15.0	14.4	23
<b>016.5</b>	19.01-19.99	16.5	15.4	23
<b>018</b>	20.00-21.99	18.0	16.5	26
<b>020</b>	22.00-24.99	20.0	19.0	26
<b>022</b>	25.00-26.99	22.0	20.0	26
<b>024</b>	27.00-29.99	24.0	22.0	26
<b>026</b>	30.00-31.99	26.0	24.0	26
<b>028</b>	32.00-33.99	28.0	26.0	26
<b>030</b>	34.00-36.99	30.0	27.0	41
<b>033</b>	37.00-39.99	33.0	30.0	41
<b>036</b>	40.00-43.99	36.0	33.0	41
<b>039</b>	44.00-46.99	39.0	37.0	41
<b>043</b>	47.00-51.99	43.0	41.0	41

- Please indicate overall length (L) when ordering

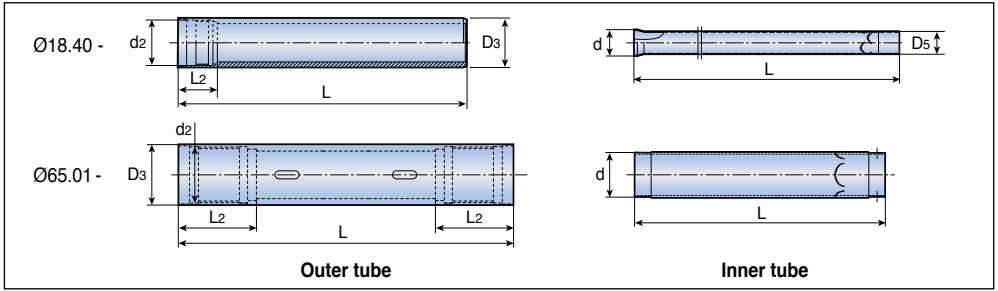
## Single tube



Designation	D range	Dimension (mm)			
		d	d1	d2	L2
<b>BTSE 047</b>	52.00-56.99	47.0	44	-	41
<b>051</b>	57.00-60.99	51.0	49	-	41
<b>056</b>	61.00-67.99	56.0	53	-	41
<b>062</b>	68.00-74.99	62.0	59	-	41
<b>068</b>	75.00-80.99	68.0	65	-	71
<b>075</b>	81.00-90.99	75.0	71	-	71
<b>082</b>	91.00-98.99	82.0	79	-	71
<b>094</b>	99.00-110.99	94.0	90	-	71
<b>106</b>	111.00-122.99	106.0	102	-	71
<b>118</b>	123.00-134.99	118.0	114	-	71
<b>130</b>	135.00-148.99	130.0	126	-	71
<b>142</b>	149.00-161.99	142.0	139	-	71
<b>154</b>	162.00-173.99	154.0	151	-	86
<b>166</b>	174.00-185.99	166.0	163	-	86
<b>178</b>	186.00-197.99	178.0	175	-	86
<b>190</b>	198.00-209.99	190.0	187	-	86
<b>202</b>	210.00-221.99	202.0	199	-	86
<b>214</b>	222.00-233.99	214.0	211	-	86
<b>226</b>	234.00-245.99	226.0	223	-	86
<b>238</b>	246.00-257.99	238.0	235	-	86
<b>250</b>	258.00-269.99	250.0	247	-	121
<b>262</b>	270.00-281.99	262.0	259	-	121
<b>274</b>	282.00-293.99	274.0	271	-	121
<b>BTSO 071</b>	8.00-8.99	7.1	-	6.0	16
<b>083</b>	9.00-9.99	8.3	-	7.2	16
<b>090</b>	10.00-10.99	9.0	-	7.6	16
<b>100</b>	11.00-11.99	10.0	-	8.6	16
<b>110</b>	12.00-13.49	11.0	-	9.1	16
<b>120</b>	13.50-14.79	12.0	-	10.8	16

• Please indicate overall length (L) when ordering

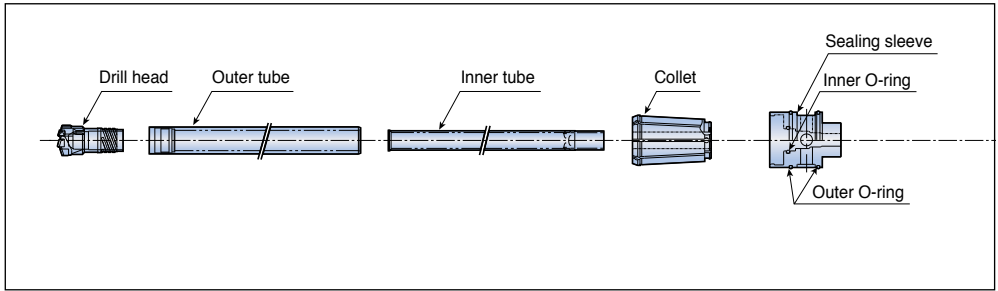
## Double tube



D Range	Outer tube	Dimension (mm)			Inner tube	Dimension (mm)	
		D3	d2	L2		d	D5
18.40-20.00	<b>BTDO 018</b>	18.0	16	27.5	<b>BTDI 012</b>	10	12
20.01-21.80	<b>019.5</b>	19.5	18	30	<b>014</b>	12	14
21.81-24.10	<b>021.5</b>	21.5	19.5	30	<b>015</b>	13	15
24.11-26.40	<b>023.5</b>	23.5	21	30	<b>016</b>	14	16
26.41-28.70	<b>026</b>	26.0	23.5	33	<b>018</b>	16	18
28.71-31.00	<b>028</b>	28.0	25.5	33	<b>020</b>	18	20
31.01-33.30	<b>030.5</b>	30.5	28	33	<b>022</b>	20	22
33.31-36.20	<b>033</b>	33.0	30	40	<b>024</b>	22	24
36.21-39.60	<b>035.5</b>	35.5	33	40	<b>026</b>	24	26
39.61-43.00	<b>039</b>	39.0	36	40	<b>029</b>	27	29
43.01-47.00	<b>042.5</b>	42.5	39	40	<b>032</b>	30	32
47.01-51.70	<b>046.5</b>	46.5	43	44	<b>035</b>	32	35
51.71-56.20	<b>051</b>	51.0	47	44	<b>039</b>	36	39
56.21-65.00	<b>055.5</b>	55.5	51	44	<b>043A</b>	40	43
65.01-69.99	<b>056</b>	56.0	52	75	<b>043B</b>	40	-
70.00-72.99	<b>062</b>	62.0	58	75	<b>048</b>	44	-
73.00-79.99	<b>068</b>	68.0	63	75	<b>053</b>	48	-
80.00-86.99	<b>075</b>	75.0	70	97	<b>059</b>	54	-
87.00-99.99	<b>082</b>	82.0	77	97	<b>066</b>	60	-
100.00-111.99	<b>094</b>	94.0	89	97	<b>078</b>	70	-
112.00-123.99	<b>106</b>	106.0	101	118	<b>090</b>	80	-
124.00-135.99	<b>118</b>	118.0	113	118	<b>092</b>	80	-
136.00-147.99	<b>130</b>	130.0	125	118	<b>104</b>	95	-
148.00-159.99	<b>142</b>	142.0	137	139	<b>116</b>	100	-
160.00-171.99	<b>154</b>	154.0	149	139	<b>128</b>	120	-
172.00-183.99	<b>166</b>	166.0	161	139	<b>138</b>	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

# Assembly of Double Tube System

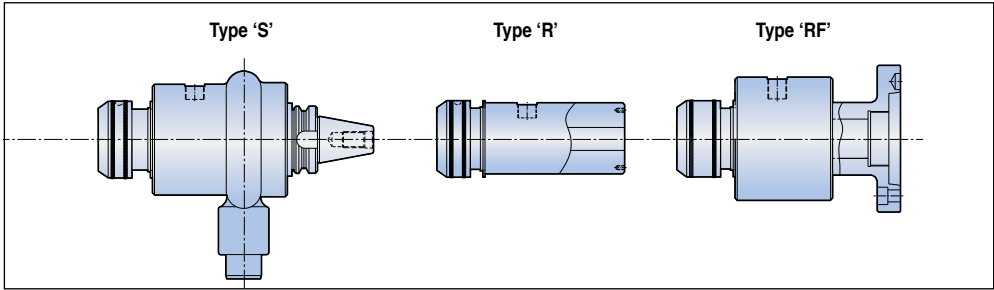


Designation		D range	Collet
<b>BTDO 018</b>	<b>BTDI 012</b>	18.40-19.20	COLLET 4-18 *
<b>018</b>	<b>012</b>	19.21-20.00	COLLET 4-18 *
<b>019.5</b>	<b>014</b>	20.01-20.90	COLLET 4-19.5 *
<b>019.5</b>	<b>014</b>	20.91-21.80	COLLET 4-19.5 *
<b>021.5</b>	<b>015</b>	21.81-22.90	COLLET 4-21.5 *
<b>021.5</b>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

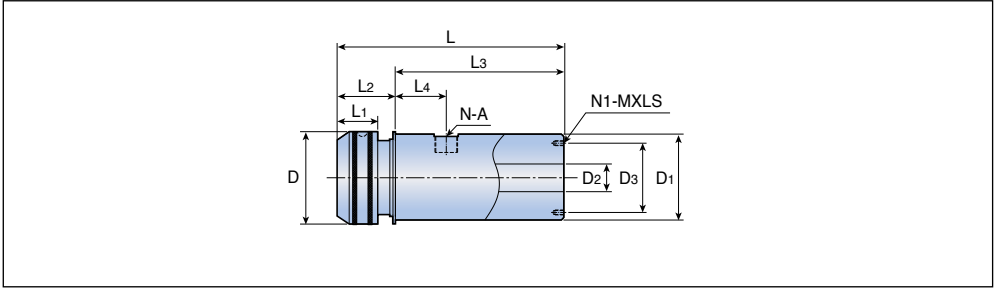
## Connector



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	
SEALING SLEEVE 4R-33 *	IOR33		
SEALING SLEEVE 4R-35.5	OOR65	IOR35.5	DTC-4S/4R/4RF
SEALING SLEEVE 4R-35.5		IOR35.5	
SEALING SLEEVE 4R-35.5		IOR35.5	
SEALING SLEEVE 4R-39		IOR39	
SEALING SLEEVE 4R-39		IOR39	
SEALING SLEEVE 4R-39		IOR39	
SEALING SLEEVE 4R-42.5		IOR42.5	
SEALING SLEEVE 4R-42.5		IOR42.5	
SEALING SLEEVE 4R-42.5		IOR42.5	
SEALING SLEEVE 4R-46.5		IOR46.5	
SEALING SLEEVE 4R-46.5		IOR46.5	
SEALING SLEEVE 4R-46.5		IOR46.5	
SEALING SLEEVE 4R-51		IOR51	
SEALING SLEEVE 4R-51		IOR51	
SEALING SLEEVE 4R-51		IOR51	
SEALING SLEEVE 4R-55.5	IOR55.5		
SEALING SLEEVE 4R-55.5	IOR55.5		
SEALING SLEEVE 4R-55.5	IOR55.5		
SEALING SLEEVE 4R-55.5	IOR55.5		

- **!\*!** 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

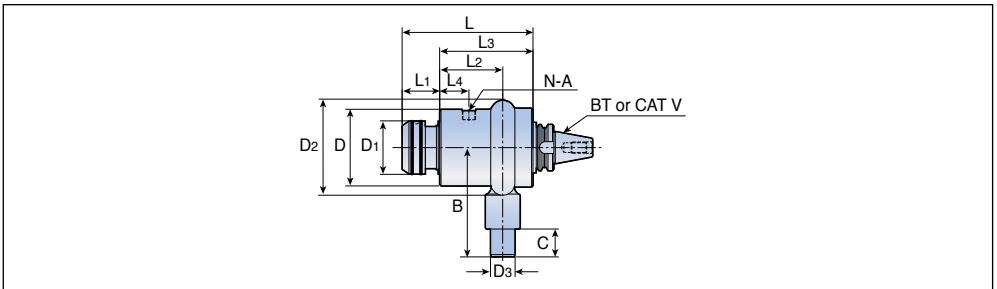
## 'S' type connector



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

# DTC-R

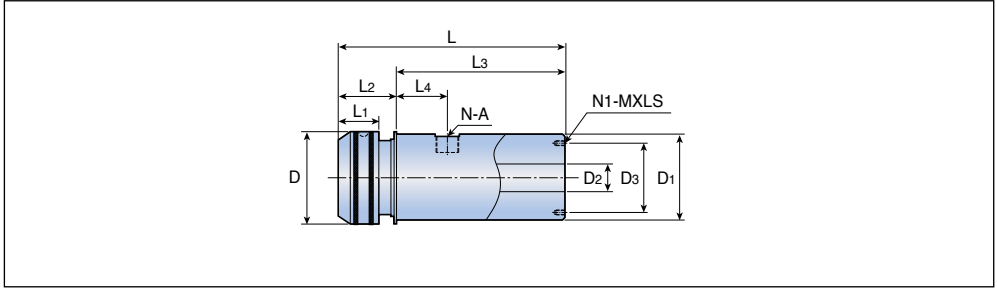
## 'R' type connector



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

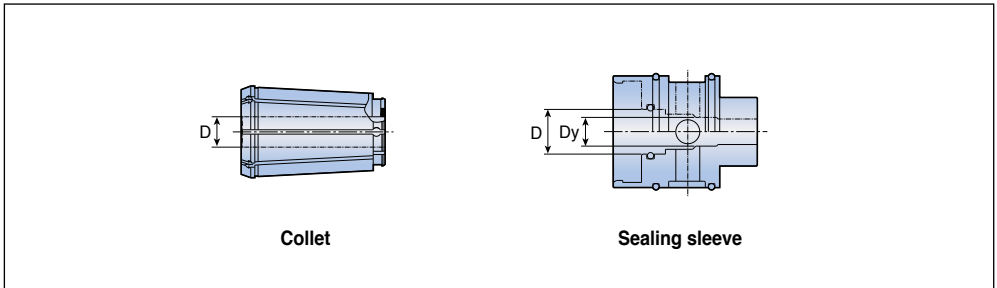


## 'RF' type connector



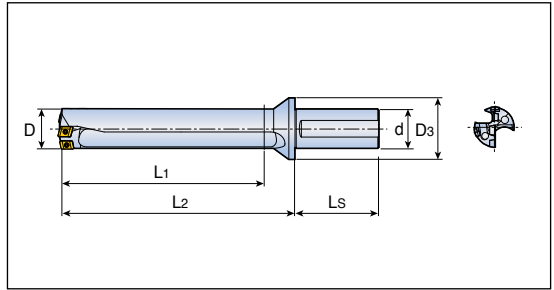
Designation	D range	D	D1	D2	D3	L	L1	L2	L3	L4	N-A	N1-MXLS
<b>DTC 3RF</b>	18.4-26.4	110	74	135	M30x1.5	18	234	39	130	65	2-PT3/4"	A1-5
<b>4RF</b>	18.4-65.0	165	115	210	M62x2	40	293	72	146	63	2-PT1"	A1-8
<b>5RF</b>	65.0-123.9	226	164	280	85	81	335	62	190	95	2-PT1 1/4"	A1-11

## Collet / Sealing Sleeve



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

## Indexable deep drill holder



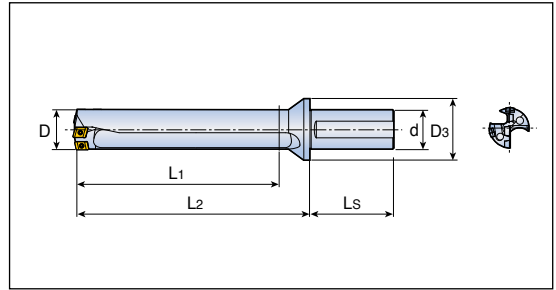
- Deep hole drilling application
- Drilling depth: 6xD - 14xD
- Pilot hole required

Designation	Dimension (mm)						
	D	d	D <sub>3</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>s</sub>	L/D
<b>HFD 300-32T2-14D</b>	30	32	40	420	449	60	14
<b>310-32T2-13D</b>	31	32	40	420	449	60	13
<b>320-40T2-13D</b>	32	40	50	420	449	70	13
<b>330-40T2-12D</b>	33	40	50	420	449	70	12
<b>340-40T2-12D</b>	34	40	50	420	450	70	12
<b>350-40T2-12D</b>	35	40	50	420	450	70	12
<b>360-40T2-11D</b>	36	40	50	420	450	70	11
<b>370-40T2-11D</b>	37	40	50	420	453	70	11
<b>380-40T2-11D</b>	38	40	50	420	453	70	11
<b>390-40T2-10D</b>	39	40	50	420	453	70	10
<b>400-40T2-10D</b>	40	40	50	420	454	70	10
<b>410-40T2-10D</b>	41	40	50	420	454	70	10
<b>420-40T2-10D</b>	42	40	50	420	454	70	10
<b>430-40T2-9D</b>	43	40	50	420	456	70	9
<b>440-40T2-9D</b>	44	40	50	420	456	70	9
<b>450-40T2-9D</b>	45	40	50	420	456	70	9
<b>460-40T2-9D</b>	46	40	50	420	459	70	9
<b>470-40T2-8D</b>	47	40	50	420	459	70	8
<b>480-40T2-8D</b>	48	40	50	420	459	70	8
<b>490-40T2-8D</b>	49	40	50	420	461	70	8
<b>500-40T2-8D</b>	50	40	50	420	461	70	8
<b>510-40T2-8D</b>	51	40	50	420	461	70	8
<b>520-40T2-8D</b>	52	40	-	420	464	70	8
<b>530-40T2-7D</b>	53	40	-	420	464	70	7
<b>540-40T2-7D</b>	54	40	-	420	464	70	7
<b>550-40T2-7D</b>	55	40	-	420	464	70	7
<b>560-40T2-7D</b>	56	40	-	420	464	70	7
<b>570-40T2-7D</b>	57	40	-	420	464	70	7
<b>580-40T2-7D</b>	58	40	-	420	470	70	7
<b>590-40T2-7D</b>	59	40	-	420	470	70	7
<b>600-40T2-7D</b>	60	40	-	420	470	70	7
<b>610-40T2-6D</b>	61	40	-	420	470	70	6
<b>620-40T2-6D</b>	62	40	-	420	470	70	6
<b>630-40T2-6D</b>	63	40	-	420	470	70	6
<b>640-40T2-6D</b>	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	D <sub>3</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>s</sub>	L/D
<b>HFD 650-40T2-6D</b>	65	40	-	420	473	70	6
<b>660-40T2-6D</b>	66	40	-	420	473	70	6
<b>670-40T2-6D</b>	67	40	-	420	473	70	6
<b>680-40T2-6D</b>	68	40	-	420	473	70	6
<b>690-40T2-6D</b>	69	40	-	420	473	70	6

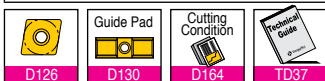
- Available on request

## 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	H8	Min. 10.0
39.01-45.00	H8	Min. 12.5
45.01-57.00	H8	Min. 15.0
57.01-69.00	H8	Min. 17.5

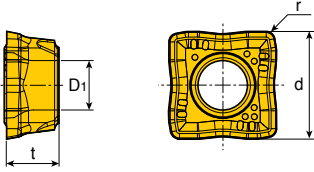


# Holemaking Inserts



[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		
	<b>SOMT 050204 DP</b>	●	●	●					
	<b>060204 DP</b>	●	●	●					
	<b>070306 DP</b>	●	●	●					
	<b>08T306 DP</b>	●	●	●					
	<b>09T308 DP</b>	●	●	●					
	<b>11T308 DP</b>	●	●	●					
	<b>130408 DP</b>	●	●	●					
	<b>150510 DP</b>	●	●	●					

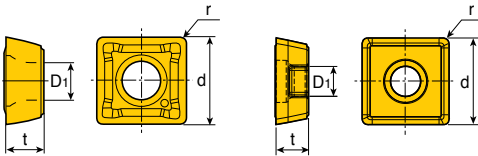


- TT9080: First choice for general purpose
- TT8020: For unstable condition
- TT9300: For high speed machining on a steel application (Peripheral **ONLY**)

●: 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

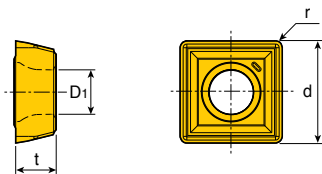
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		
	<b>SPMG 050204 DG</b>		●	●			●		
	<b>060204 DG</b>		●	●			●		
	<b>07T308 DG</b>		●	●			●		
	<b>090408 DG</b>		●	●			●		
	<b>110408 DG</b>		●	●			●		
	<b>120408 DG</b>		●						
	<b>140512 DG</b>		●	●			●		



- 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
<b>05</b>	5.00	2.38	0.4	2.25
<b>06</b>	6.00	2.38	0.4	2.61
<b>07</b>	7.94	3.97	0.8	2.85
<b>09</b>	9.80	4.30	0.8	4.05
<b>11</b>	11.50	4.80	0.8	4.45
<b>14</b>	14.30	5.20	1.2	5.75

- For cast iron

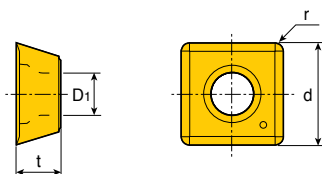
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		K10
	<b>SPMG 050204 DK</b>				•				
	<b>060204 DK</b>				•				
	<b>07T308 DK</b>				•				
	<b>090408 DK</b>				•				
	<b>110408 DK</b>				•				
	<b>140512 DK</b>				•				



- Standard item

# SPGG...DA

## Insert



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

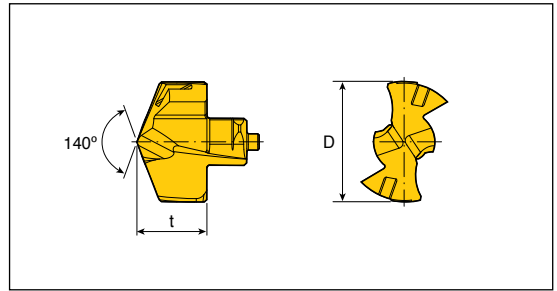
- For aluminum alloy

Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		K10
	<b>SPGG 050204 DA</b>								•
	<b>060204 DA</b>								•
	<b>07T308 DA</b>								•
	<b>090408 DA</b>								•
	<b>110408 DA</b>								•
	<b>140512 DA</b>								•



- Standard item

## Drill head



Designation	Dimension (mm)			Grade TT9080	Designation	Dimension (mm)			Grade TT9080
	D	t	Pocket size			D	t	Pocket size	
<b>TCD - 070-P/M/K</b>	7.0	4.6	7	●	<b>TCD - 105-P/M/K</b>	10.5	6.2	10	●
<b>071-P/M/K</b>	7.1	4.6	7	●	<b>106-P/M/K</b>	10.6	6.2	10	●
<b>072-P/M/K</b>	7.2	4.6	7	●	<b>107-P/M/K</b>	10.7	6.2	10	●
<b>073-P/M/K</b>	7.3	4.6	7	●	<b>108-P/M/K</b>	10.8	6.2	10	●
<b>074-P/M/K</b>	7.4	4.6	7	●	<b>109-P/M/K</b>	10.9	6.2	10	●
<b>075-P/M/K</b>	7.5	4.6	7	●	<b>110-P/M/K</b>	11.0	6.6	11	●
<b>076-P/M/K</b>	7.6	4.6	7	●	<b>111-P/M/K</b>	11.1	6.6	11	●
<b>077-P/M/K</b>	7.7	4.6	7	●	<b>112-P/M/K</b>	11.2	6.6	11	●
<b>078-P/M/K</b>	7.8	4.6	7	●	<b>113-P/M/K</b>	11.3	6.6	11	●
<b>079-P/M/K</b>	7.9	4.6	7	●	<b>114-P/M/K</b>	11.4	6.6	11	●
<b>080-P/M/K</b>	8.0	5.4	8	●	<b>115-P/M/K</b>	11.5	6.6	11	●
<b>081-P/M/K</b>	8.1	5.4	8	●	<b>116-P/M/K</b>	11.6	6.6	11	●
<b>082-P/M/K</b>	8.2	5.4	8	●	<b>117-P/M/K</b>	11.7	6.6	11	●
<b>083-P/M/K</b>	8.3	5.4	8	●	<b>118-P/M/K</b>	11.8	6.6	11	●
<b>084-P/M/K</b>	8.4	5.4	8	●	<b>119-P/M/K</b>	11.9	6.6	11	●
<b>085-P/M/K</b>	8.5	5.4	8	●	<b>120-P/M/K</b>	12.0	7.0	12	●
<b>086-P/M/K</b>	8.6	5.4	8	●	<b>121-P/M/K</b>	12.1	7.0	12	●
<b>087-P/M/K</b>	8.7	5.4	8	●	<b>122-P/M/K</b>	12.2	7.0	12	●
<b>088-P/M/K</b>	8.8	5.4	8	●	<b>123-P/M/K</b>	12.3	7.0	12	●
<b>089-P/M/K</b>	8.9	5.4	8	●	<b>124-P/M/K</b>	12.4	7.0	12	●
<b>090-P/M/K</b>	9.0	5.8	9	●	<b>125-P/M/K</b>	12.5	7.0	12	●
<b>091-P/M/K</b>	9.1	5.8	9	●	<b>126-P/M/K</b>	12.6	7.0	12	●
<b>092-P/M/K</b>	9.2	5.8	9	●	<b>127-P/M/K</b>	12.7	7.0	12	●
<b>093-P/M/K</b>	9.3	5.8	9	●	<b>128-P/M/K</b>	12.8	7.0	12	●
<b>094-P/M/K</b>	9.4	5.8	9	●	<b>129-P/M/K</b>	12.9	7.0	12	●
<b>095-P/M/K</b>	9.5	5.8	9	●	<b>130-P/M/K</b>	13.0	7.6	13	●
<b>096-P/M/K</b>	9.6	5.8	9	●	<b>131-P/M/K</b>	13.1	7.6	13	●
<b>097-P/M/K</b>	9.7	5.8	9	●	<b>132-P/M/K</b>	13.2	7.6	13	●
<b>098-P/M/K</b>	9.8	5.8	9	●	<b>133-P/M/K</b>	13.3	7.6	13	●
<b>099-P/M/K</b>	9.9	5.8	9	●	<b>134-P/M/K</b>	13.4	7.6	13	●
<b>100-P/M/K</b>	10.0	6.2	10	●	<b>135-P/M/K</b>	13.5	7.6	13	●
<b>101-P/M/K</b>	10.1	6.2	10	●	<b>136-P/M/K</b>	13.6	7.6	13	●
<b>102-P/M/K</b>	10.2	6.2	10	●	<b>137-P/M/K</b>	13.7	7.6	13	●
<b>103-P/M/K</b>	10.3	6.2	10	●	<b>138-P/M/K</b>	13.8	7.6	13	●
<b>104-P/M/K</b>	10.4	6.2	10	●	<b>139-P/M/K</b>	13.9	7.6	13	●

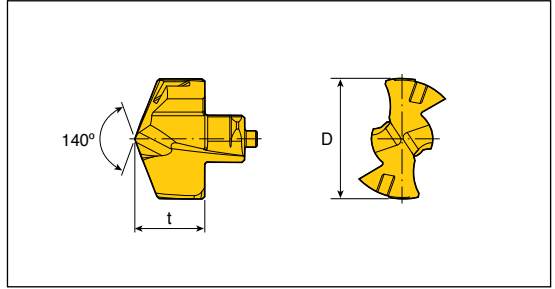


● Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

● Standard item

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

## Drill head



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



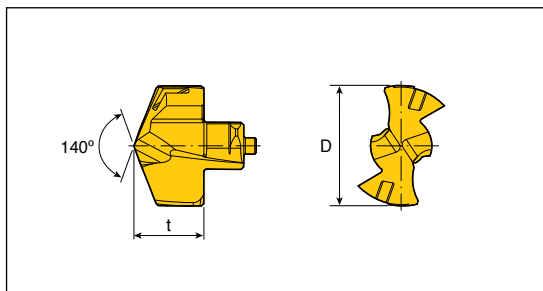
• Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

• Standard item

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



## Drill head



Designation	Dimension (mm)			Grade TT9080	Designation	Dimension (mm)			Grade TT9080
	D	t	Pocket size			D	t	Pocket size	
<b>TCD - 210-P/M/K</b>	21.0	12.1	21	●	<b>TCD - 245-P/M/K</b>	24.5	13.9	24	●
<b>211-P/M/K</b>	21.1	12.1	21	●	<b>246-P/M/K</b>	24.6	13.9	24	●
<b>212-P/M/K</b>	21.2	12.1	21	●	<b>247-P/M/K</b>	24.7	13.9	24	●
<b>213-P/M/K</b>	21.3	12.1	21	●	<b>248-P/M/K</b>	24.8	13.9	24	●
<b>214-P/M/K</b>	21.4	12.1	21	●	<b>249-P/M/K</b>	24.9	13.9	24	●
<b>215-P/M/K</b>	21.5	12.1	21	●	<b>250-P/M/K</b>	25.0	14.5	25	●
<b>216-P/M/K</b>	21.6	12.1	21	●	<b>251-P/M/K</b>	25.1	14.5	25	●
<b>217-P/M/K</b>	21.7	12.1	21	●	<b>252-P/M/K</b>	25.2	14.5	25	●
<b>218-P/M/K</b>	21.8	12.1	21	●	<b>253-P/M/K</b>	25.3	14.5	25	●
<b>219-P/M/K</b>	21.9	12.1	21	●	<b>254-P/M/K</b>	25.4	14.5	25	●
<b>220-P/M/K</b>	22.0	12.7	22	●	<b>255-P/M/K</b>	25.5	14.5	25	●
<b>221-P/M/K</b>	22.1	12.7	22	●	<b>256-P/M/K</b>	25.6	14.5	25	●
<b>222-P/M/K</b>	22.2	12.7	22	●	<b>257-P/M/K</b>	25.7	14.5	25	●
<b>223-P/M/K</b>	22.3	12.7	22	●	<b>258-P/M/K</b>	25.8	14.5	25	●
<b>224-P/M/K</b>	22.4	12.7	22	●	<b>259-P/M/K</b>	25.9	14.5	25	●
<b>225-P/M/K</b>	22.5	12.7	22	●					
<b>226-P/M/K</b>	22.6	12.7	22	●					
<b>227-P/M/K</b>	22.7	12.7	22	●					
<b>228-P/M/K</b>	22.8	12.7	22	●					
<b>229-P/M/K</b>	22.9	12.7	22	●					
<b>230-P/M/K</b>	23.0	13.3	23	●					
<b>231-P/M/K</b>	23.1	13.3	23	●					
<b>232-P/M/K</b>	23.2	13.3	23	●					
<b>233-P/M/K</b>	23.3	13.3	23	●					
<b>234-P/M/K</b>	23.4	13.3	23	●					
<b>235-P/M/K</b>	23.5	13.3	23	●					
<b>236-P/M/K</b>	23.6	13.3	23	●					
<b>237-P/M/K</b>	23.7	13.3	23	●					
<b>238-P/M/K</b>	23.8	13.3	23	●					
<b>239-P/M/K</b>	23.9	13.3	23	●					
<b>240-P/M/K</b>	24.0	13.9	24	●					
<b>241-P/M/K</b>	24.1	13.9	24	●					
<b>242-P/M/K</b>	24.2	13.9	24	●					
<b>243-P/M/K</b>	24.3	13.9	24	●					
<b>244-P/M/K</b>	24.4	13.9	24	●					

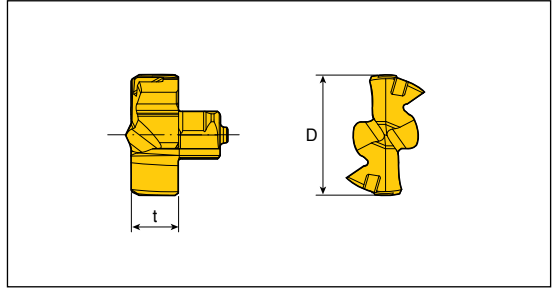


● Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

● Standard item

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

## Drill head for flat bottom hole



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

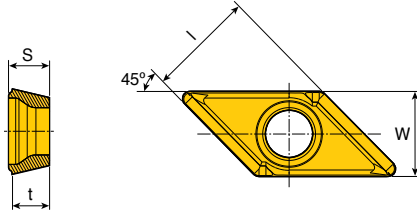
●: Standard item



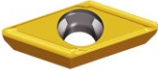
D48

# AOMT 060204-C45

Chamfering insert for pre-thread hole



Size	Dimension (mm)			
	W	l	S	t
<b>06</b>	4.4	5.66	2.16	1.96

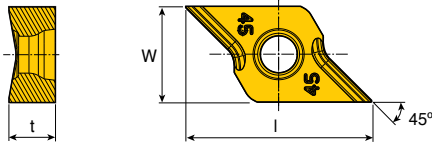
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		
	<b>AOMT 060204-C45</b>	●						K10	




● Standard item

# CRNG 0802-45CD

Chamfering insert for chamfering ring



Size	Dimension (mm)			
	W	l	t	
<b>08</b>	7.5	14.80	3.65	

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

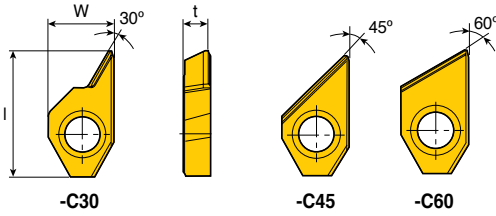


● Standard item


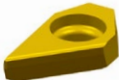

# XCGT ...-C

**T-CHAMFER**

Chamfering insert for T-CHAMFER holder



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

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

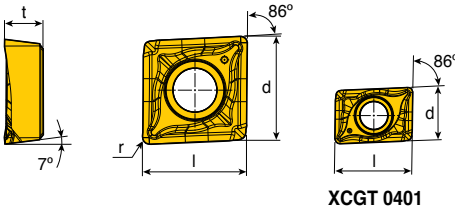
• Standard item



D74

# XCGT...TA

## Insert



**XCGT 0401**

Size	Dimension (mm)			
	d	l	t	r
<b>04</b>	4.4	6.4	1.70	0.4
<b>05</b>	5.6	5.6	2.10	0.4
<b>06</b>	6.4	6.4	2.38	0.4
<b>07</b>	7.5	7.5	3.18	0.4
<b>08</b>	8.4	8.4	3.18	0.4
<b>10</b>	10.5	10.5	3.97	0.4
<b>13</b>	13.4	13.4	4.76	0.4
<b>17</b>	17.5	17.5	5.56	0.8

• For aluminum alloy

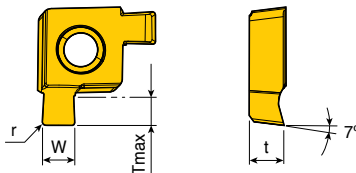
Insert	Designation	Turning		Drilling	Coated					Uncoated	
		Feed (mm/rev)	ap (mm)	Feed (mm/rev)	TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10
<p>Right hand shown (XCGT 0401)</p>	<b>XCGT 040104R TA</b>	0.02-0.15	0.2-1.8	0.02-0.09							●
	<b>040104L TA</b>	0.02-0.15	0.2-1.8	0.02-0.09							●
	<b>050204 TA</b>	0.03-0.18	0.2-2.2	0.02-0.11							●
	<b>060204 TA</b>	0.03-0.20	0.3-2.5	0.03-0.12							●
	<b>070304 TA</b>	0.05-0.22	0.4-2.8	0.03-0.13							●
	<b>080304 TA</b>	0.06-0.25	0.4-3.2	0.03-0.13							●
	<b>10T304 TA</b>	0.06-0.30	0.5-3.5	0.03-0.13							●
	<b>130404 TA</b>	0.08-0.33	0.6-4.3	0.03-0.13							●
	<b>170508 TA</b>	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
<b>05</b>	2.0	1.8	2.28	0.2
<b>06</b>	2.0	2.0	2.65	0.2
<b>07</b>	2.5	2.0	3.41	0.2
<b>08</b>	2.5	2.5	3.50	0.2
<b>10</b>	3.0	3.0	4.34	0.3
<b>13</b>	3.5	3.5	5.18	0.3
<b>17</b>	4.0	4.0	6.00	0.4

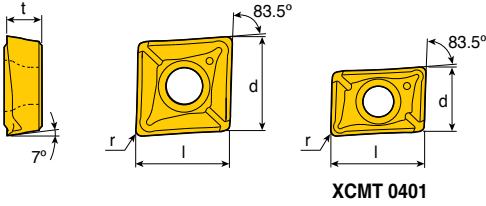
• For grooving

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



• Standard item

## Insert



Size	Dimension (mm)			
	d	l	t	r
<b>04</b>	4.4	6.4	1.70	0.4
<b>05</b>	5.6	5.6	2.10	0.4
<b>06</b>	6.4	6.4	2.38	0.4
<b>07</b>	7.5	7.5	3.18	0.4
<b>08</b>	8.4	8.4	3.18	0.4
<b>10</b>	10.5	10.5	3.97	0.4/0.8
<b>13</b>	13.4	13.4	4.76	0.4/0.8
<b>17</b>	17.4	17.4	5.56	0.8

- For drilling, boring and turning

Insert	Designation	Turning		Drilling	Coated						Uncoated	
		Feed (mm/rev)	ap (mm)	Feed (mm/rev)	TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
 Right hand shown (XCMT 0401)	<b>XCMT 040104R TC</b>	0.02-0.15	0.2-1.8	0.02-0.09	●	●	●					
	<b>040104L TC</b>	0.02-0.15	0.2-1.8	0.02-0.09	●	●	●					
	<b>050204 TC</b>	0.03-0.18	0.2-2.2	0.02-0.11	●	●	●					
	<b>060204 TC</b>	0.03-0.20	0.3-2.5	0.03-0.12	●	●	●					
	<b>070304 TC</b>	0.05-0.22	0.4-2.8	0.03-0.13	●	●	●					
	<b>080304 TC</b>	0.06-0.25	0.4-3.2	0.03-0.13	●	●	●					
	<b>10T304 TC</b>	0.06-0.30	0.5-3.5	0.03-0.13	●	●	●					
	<b>10T308 TC</b>	0.06-0.30	0.5-3.5	0.03-0.13	●	●	●					
	<b>130404 TC</b>	0.08-0.33	0.6-4.3	0.03-0.13	●	●	●					
	<b>130408 TC</b>	0.08-0.33	0.6-4.3	0.03-0.13	●	●	●					
<b>170508 TC</b>	0.10-0.38	0.7-5.3	0.03-0.13	●	●	●						

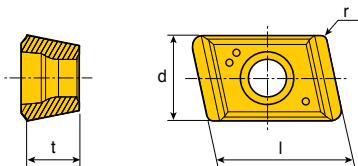


● Standard item


# NPHT...RG

**T-DEEP**

Insert for TBTA-FB



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

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

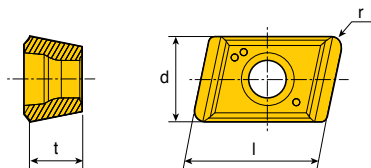


●: Standard item


# NPMT...LG

**T-DEEP**

Insert for TBTA-FB



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

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

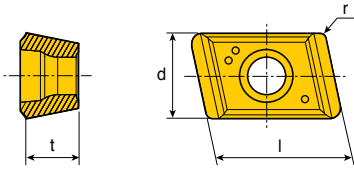


●: Standard item


# NPMT...RG

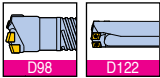
**T-DEEP**

Insert for TBTA-FB



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

Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	<b>NPMT 05503RG</b>		●		●	●			●				
	<b>06504RG</b>		●		●	●			●				
	<b>08004RG</b>		●		●	●			●				
	<b>09504RG</b>		●		●	●			●				
	<b>12504RG</b>		●		●	●			●				

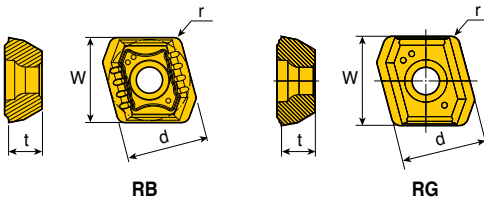


● Standard item


# NPMX...RB/RG

**T-DEEP**

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



Size	Dimension (mm)			
	d	t	r	W
<b>08</b>	8.0	3.18	0.8	8.36

Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	<b>NPMX 0803RB</b>	●	●	●	●								
	<b>0803RG</b>	●	●	●	●					●			



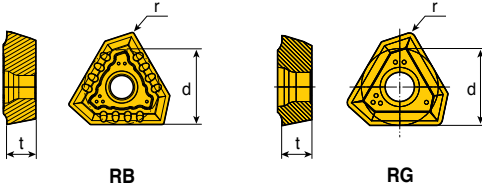
● Standard item



# 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	TT3500	TT6020	TT9300	TT7400	K10	
	TPMX 1403RB	●	●	●	●	●							
	1403RG	●	●	●	●	●							
	1704RB	●	●	●	●								
	1704RG	●	●	●	●		●	●		●			
	2405RB	●	●	●	●								
	2405RG	●	●	●	●					●			
	2807RB	●	●	●	●								
	2807RG	●	●	●	●						●		

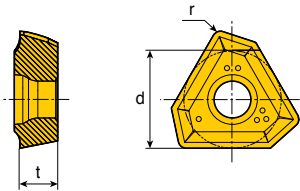


● Standard item

# 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	

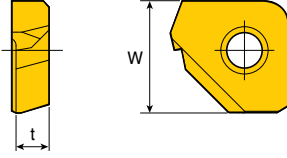
Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10	
	TPMX 1403LG			●	●								
	1704LG			●	●								
	2405LG			●	●								




● Standard item

# XPMT...-45

Insert for TBTA-R

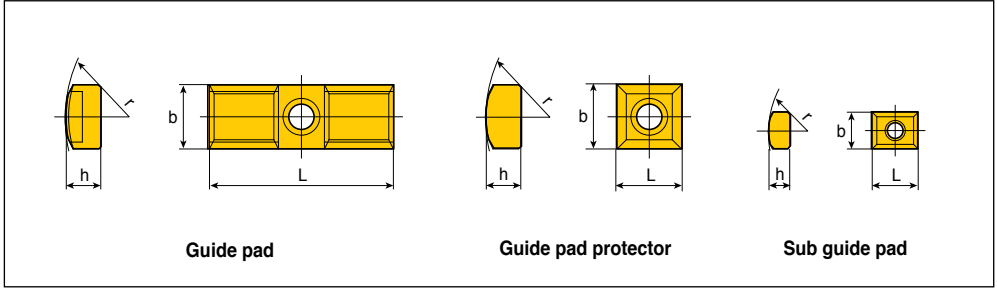


Size	Dimension (mm)			
	t	W		
<b>16</b>	2.70	9.5		

Insert	Designation	Pocket			Coated							Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7100	TT3500	TT6020	TT9300	TT7400	K10		
	<b>XPMT 16002-45</b>			•	•									

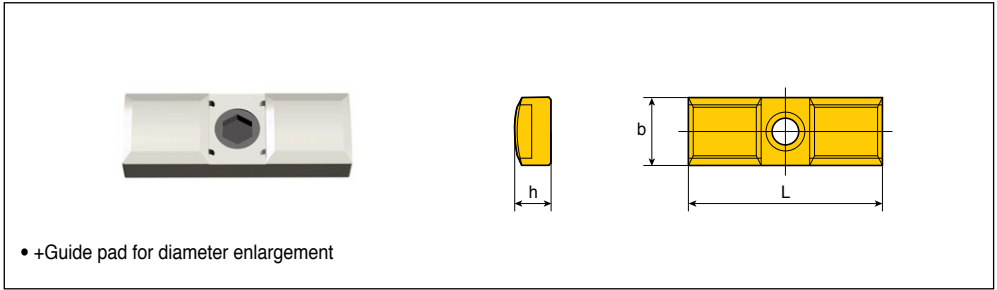
• Standard item





Designation		Dimension (mm)				Screw
		b	h	L	R	
Guide pad	<b>PAD - GC08</b>	8	4.5	25	17.5	CSTB3S
	<b>GC10</b>	10	6.0	35	20.0	CSTB4S
	<b>GC14</b>	14	7.5	40	25.0	CSTA5S
	<b>GC18</b>	18	9.0	40	30.0	LS1206S
Guide pad protector	<b>PAD - P08</b>	8	4.5	8	17.5	CSTB3S
	<b>P10</b>	10	6.0	10	20.0	CSTB4S
	<b>P14</b>	14	7.5	14	25.0	CSTA5S
	<b>P18</b>	18	9.0	18	30.0	LS1206S
Sub guide pad	<b>PAD - S08</b>	8	4.5	10	17.5	CSTB3S
	<b>S10</b>	10	5.0	10	29.0	CSTB3S
	<b>S14</b>	14	7.0	20	45.0	CCSTA5S

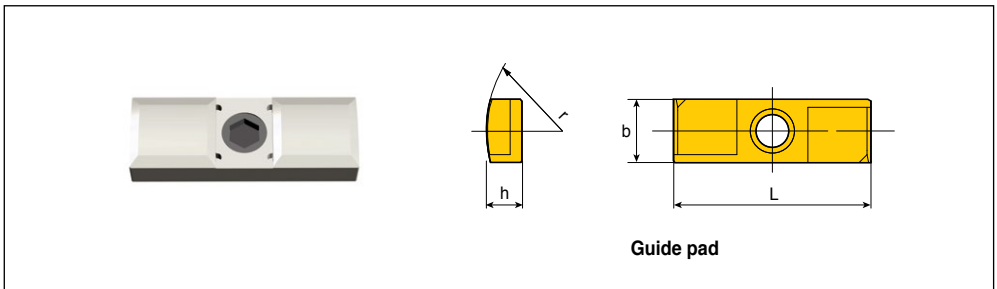




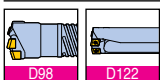
Designation										
D	D+1mm	h	D+2mm	h	D+3mm	h	D+4mm	h	D+5mm	h
PAD-GC08	PAD-GC08+1	5.0	PAD-GC08+2	5.5	PAD-GC08+3	6.0	-	-	-	-
PAD-GC10	PAD-GC10+1	6.5	PAD-GC10+2	7.0	PAD-GC10+3	7.5	PAD-GC10+4	8.0	-	-
PAD-GC14	PAD-GC14+1	8.0	PAD-GC14+2	8.5	PAD-GC14+3	9.0	PAD-GC14+4	9.5	PAD-GC14+5	10.0
PAD-GC18	PAD-GC18+1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

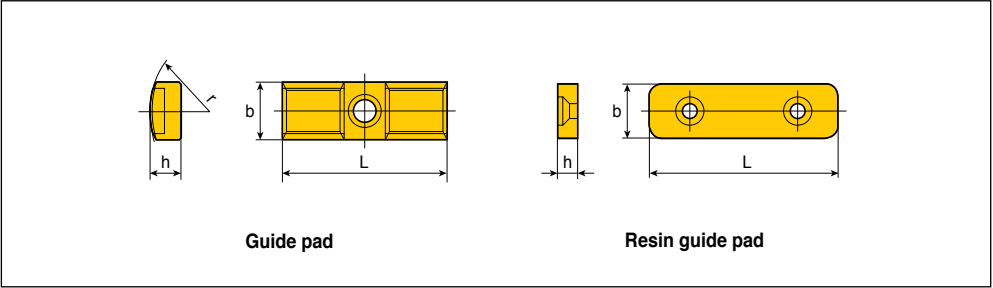


## Pad for TBTA-FB



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

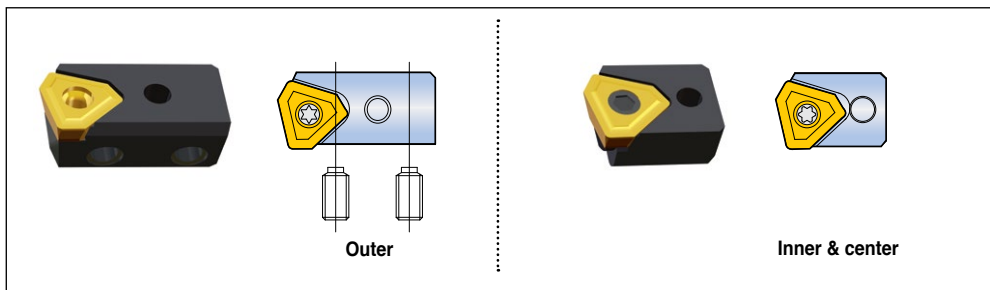




Designation		Dimension (mm)				Screw
		b	h	L	R	
Guide pad	<b>PAD - GC08-120</b>	8	4.4	25	17.5	CSTB3S
	<b>GC08</b>	8	4.5	25	17.5	CSTB3S
	<b>GC10</b>	10	6.0	35	20.0	CSTB4S
	<b>GC14</b>	14	7.5	40	25.0	CSTA5S
	<b>GC18</b>	18	9.0	40	30.0	LS1206S
Resin guide pad	<b>PAD - R10</b>	10	4.0	40	-	LS0902.5-6
	<b>R12</b>	12	5.0	45	-	LS0903-8
	<b>R15</b>	15	5.8	50	-	LS0904-10
	<b>R20</b>	20	7.5	70	-	LS0905-12
	<b>R30</b>	30	12.5	80	-	LS0906-15
	<b>R35</b>	35	15.5	100	-	LS0906-15

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

**T-DEEP**

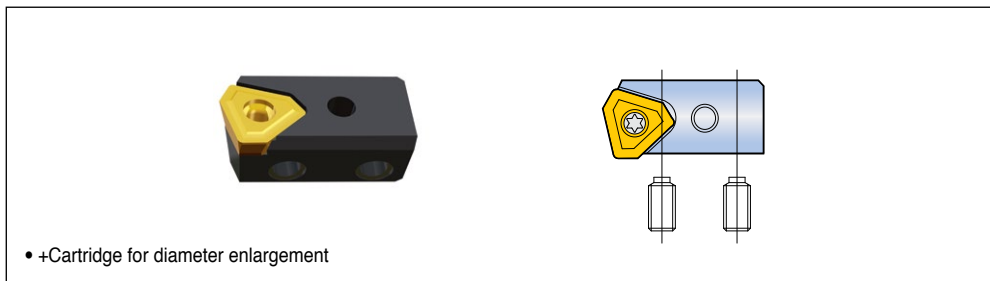


	Designation	Adjust screw	Wrench	Lock screw	Wrench	Insert
Outer	<b>PERC 05R</b>	AS0003-5	H1.5	LS1803RH	H2	NPMX0803..
	<b>402-04</b>	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403..
	<b>402-32</b>	AS0005-10	H2.5	LS1805RH	H3	TPMX1704..
	<b>402-43</b>	AS0005-15	H2.5	L1806RH	H4	TPMX2405..
	<b>402-63</b>	AS0006-15	H3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



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

**T-DEEP**



• +Cartridge for diameter enlargement

Designation					
D	D+1mm	D+2mm	D+3mm	D+4mm	D+5mm
<b>PERC 05R</b>	<b>PERC 05R+1</b>	<b>PERC 05R+2</b>	-	-	-
<b>PERC 402-04</b>	<b>PERC 402-04+1</b>	<b>PERC 402-04+2</b>	<b>PERC 402-04+3</b>	-	-
<b>PERC 402-32</b>	<b>PERC 402-32+1</b>	<b>PERC 402-32+2</b>	<b>PERC 402-32+3</b>	<b>PERC 402-32+4</b>	-
<b>PERC 402-43</b>	<b>PERC 402-43+1</b>	<b>PERC 402-43+2</b>	<b>PERC 402-43+3</b>	<b>PERC 402-43+4</b>	<b>PERC 402-43+5</b>
<b>PERC 402-63</b>	<b>PERC 402-63+1</b>	<b>PERC 402-63+2</b>	<b>PERC 402-63+3</b>	<b>PERC 402-63+4</b>	<b>PERC 402-63+5</b>





# Recommended Cutting Conditions

**TOPDRILL**

## Machining data for TOPDRILL 2,3,4xD

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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	
			Electrolitic copper		100	28	150-250	
	Non-metallic		Duroplastics, fiber plastics			29	150-250	
			Hard rubber			30	150-250	
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-60	
		Ni or Co based	Annealed		250	33	30-60	
			Cured		350	34	30-60	
			Cast		320	35	30-60	
	Titanium, Ti alloys			Rm 400		36	50-80	
		Alpha+beta alloys cured		Rm 1050		37	50-80	
H	Hardened steel	Hardened			55HRC	38	30-60	
		Hardened			60HRC	39	30-60	
	Chilled cast iron	Cast			400	40	30-60	
	Cast iron nodular	Hardened			55HRC	41	30-60	

• For more information of material groups, see the 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
0.08-0.14	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 <sup>2</sup> )	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	
			Electrolitic copper		100	28	150-250	
	Non-metallic		Duroplastics, fiber plastics			29	150-250	
			Hard rubber			30	150-250	
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-60	
		Ni or Co based	Annealed		250	33	30-60	
			Cured		350	34	30-60	
			Cast		320	35	30-60	
	Titanium, Ti alloys			Rm 400		36	50-80	
		Alpha+beta alloys cured		Rm 1050		37	50-80	
H	Hardened steel	Hardened		55HRC	38	30-60		
		Hardened		60HRC	39	30-60		
	Chilled cast iron	Cast		400	40	30-60		
	Cast iron nodular	Hardened		55HRC	41	30-60		

• For more information of material groups, see the 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
0.06-0.12	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	0.08-0.15	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	0.08-0.15	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	0.08-0.15	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	0.10-0.16	0.10-0.16	0.10-0.17	0.10-0.17
0.06-0.15	0.06-0.15	0.08-0.16	0.08-0.16	0.10-0.16	0.10-0.16	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
0.05-0.08	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

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

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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	120-160
			Quenched and tempered		1000	300	8	120-160
					1200	350	9	120-160
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	140-180	
			Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240		
		Martensitic	820	240	13	170-240		
		Austenitic	600	180	14	170-240		
K	Gray cast iron (GG)	Ferritic		160	15	180-250		
		Pearlitic		250	16	180-250		
	Cast iron nodular (GGG)	Ferritic		180	17	180-250		
		Pearlitic		260	18	180-250		
	Malleable cast iron	Ferritic		130	19	130-200		
Pearlitic			230	20	130-200			
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380		
		Cured		100	22	330-380		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380	
			Cured		90	24	330-380	
		>12% Si	High temp.		130	25	330-380	
	Copper alloys	>1% Pb	Free cutting		110	26	150-230	
			Brass		90	27	150-230	
			Electrolitic copper		100	28	150-230	
	Non-metallic		Duroplastics, fiber plastics			29	150-230	
			Hard rubber			30	150-230	
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-60	
		Ni or Co based	Annealed		250	33	30-60	
			Cured		350	34	30-60	
			Cast		320	35	30-60	
	Titanium, Ti alloys			Rm 400		36	30-60	
		Alpha+beta alloys cured		Rm 1050		37	30-60	
H	Hardened steel	Hardened			55HRC	38	30-60	
		Hardened			60HRC	39	30-60	
	Chilled cast iron	Cast			400	40	30-60	
	Cast iron nodular	Hardened			55HRC	41	30-60	

• For more information of material groups, see the Technical Guide "material conversion table".

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

# Recommended Cutting Conditions

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

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD					
SPMG 05 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	0.04-0.08	0.04-0.08	0.06-0.10	0.06-0.12
0.05-0.08	0.06-0.10	0.06-0.12	0.07-0.13	0.08-0.15	0.08-0.16
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
0.06-0.12	0.08-0.15	0.10-0.18	0.12-0.22	0.12-0.24	0.13-0.25
0.06-0.12	0.08-0.14	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
0.06-0.14	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
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 <sup>2</sup> )	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	120-160
			Quenched and tempered		1000	300	8	120-160
					1200	350	9	120-160
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	140-180	
			Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240		
		Martensitic	820	240	13	170-240		
		Austenitic	600	180	14	170-240		
K	Gray cast iron (GG)	Ferritic		160	15	180-250		
		Pearlitic		250	16	180-250		
	Cast iron nodular (GGG)	Ferritic		180	17	180-250		
		Pearlitic		260	18	180-250		
	Malleable cast iron	Ferritic		130	19	130-200		
Pearlitic			230	20	130-200			
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380		
		Cured		100	22	330-380		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380	
			Cured		90	24	330-380	
		>12% Si	High temp.		130	25	330-380	
	Copper alloys		>1% Pb	Free cutting		110	26	150-230
				Brass		90	27	150-230
				Electrolitic copper		100	28	150-230
	Non-metallic		Duroplastics, fiber plastics			29	150-230	
			Hard rubber			30	150-230	
S	High temp. alloys	Fe based	Annealed		200	31	30-60	
			Cured		280	32	30-60	
		Ni or Co based	Annealed		250	33	30-60	
			Cured		350	34	30-60	
			Cast		320	35	30-60	
	Titanium, Ti alloys			Rm 400		36	30-60	
				Alpha+beta alloys cured	Rm 1050		37	30-60
H	Hardened steel		Hardened		55HRC	38	30-60	
			Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60		
	Cast iron nodular	Hardened			55HRC	41	30-60	

• For more information of material groups, see the Technical Guide "material conversion table".

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

# Recommended Cutting Conditions

## Machining data for T-DRILL 5xD

Feed (mm/rev) vs. drill diameter Drill length 5xD					
SPMG 05 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	0.08-0.12	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	0.06-0.12	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 <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc(m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	80-140
		>=0.25%C	Annealed	650	190	2	80-130
		<0.55%C	Quenched and tempered	850	250	3	80-120
		>=0.55%C	Annealed	750	220	4	70-110
			Quenched and tempered	1000	300	5	50-90
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	70-120
			Quenched and tempered	930	275	7	70-110
				1000	300	8	50-90
				1200	350	9	40-70
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-90
			Quenched and tempered	1100	325	11	40-80
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-70	
		Martensitic	820	240	13	40-70	
		Austenitic	600	180	14	30-70	
K	Gray cast iron (GG)	Ferritic		160	15	90-160	
		Pearlitic		250	16	80-140	
	Cast iron nodular (GGG)	Ferritic		180	17	90-180	
		Pearlitic		260	18	80-140	
	Malleable cast iron	Ferritic		130	19	90-160	
Pearlitic			230	20	80-140		
N	Aluminum - Wrought alloy	Not cureable		60	21	90-220	
		Cured		100	22	90-220	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	90-220
		>12% Si	Cured		90	24	90-220
			High temp.		130	25	80-160
	Copper alloys	>1% Pb	Free cutting		110	26	90-220
			Brass		90	27	90-220
			Electrolitic copper		100	28	90-220
	Non-metallic		Duroplastics, fiber plastics			29	
			Hard rubber			30	
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	20-50
		Ni or Co based	Annealed		250	33	20-50
			Cured		350	34	20-50
			Cast		320	35	20-50
	Titanium, Ti alloys			Rm 400		36	20-50
			Alpha+beta alloys cured	Rm 1050		37	20-50
H	Hardened steel	Hardened		55HRC	38	20-50	
		Hardened		60HRC	39	20-50	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

• For more information of material groups, see the Technical Guide "material conversion table".

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





# Recommended Cutting Conditions

**H-DRILL**

## Machining data for H-DRILL

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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
					930	275	7	70-90
			Quenched and tempered		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		
				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
0.10-0.20	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
0.10-0.25	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

## Machining data for TOPCAP

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

• For more information of material groups, see the 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 <sup>2</sup> )	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	60-100		
		Pearlitic		250	16	60-100		
	Cast iron nodular (GGG)	Ferritic		180	17	60-100		
		Pearlitic		260	18	60-100		
	Malleable cast iron	Ferritic		130	19	60-100		
Pearlitic			230	20	60-100			
N	Aluminum - Wrought alloy	Not cureable		60	21	60-130		
		Cured		100	22	60-130		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	60-130	
			Cured		90	24	60-130	
		>12% Si	High temp.		130	25	60-130	
	Copper alloys	>1% Pb	Free cutting		110	26	60-130	
			Brass		90	27	60-130	
		Electrolytic copper		100	28	60-130		
	Non-metallic		Duroplastics, fiber plastics			29		
			Hard rubber			30		
S	High temp. alloys	Fe based	Annealed		200	31	20-65	
			Cured		280	32	20-65	
		Ni or Co based	Annealed		250	33	20-65	
			Cured		350	34	20-65	
			Cast		320	35	20-65	
	Titanium, Ti alloys			Rm 400		36	30-100	
			Alpha+beta alloys cured	Rm 1050		37	30-100	
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

• For more information of material groups, see the Technical Guide "material conversion table".

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

# Recommended Cutting Conditions

## Machining data for TBTA 3/5/7/9

Feed (mm/rev) vs. drill diameter

Ø38.00 - Ø39.99	Ø40.00 - Ø51.99	Ø52.00 - Ø63.99	Ø64.00 - Ø84.99	Ø85.00 -
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.13	0.10-0.15	0.13-0.18	0.15-0.20	0.18-0.23
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.20	0.10-0.25	0.13-0.28	0.15-0.30	0.18-0.33
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30
0.08-0.15	0.10-0.20	0.13-0.23	0.15-0.25	0.18-0.30

# Recommended Cutting Conditions

**T-DEEP**

## Machining data for TBTA-FB

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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
					930	275	7	60-120
			Quenched and tempered		1000	300	8	60-120
					1200	350	9	60-120
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	70-130	
Quenched and tempered			1100	325	11	70-130		
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	70-130		
		Martensitic	820	240	13	70-130		
		Austenitic	600	180	14	70-130		
K	Gray cast iron (GG)	Ferritic		160	15	60-110		
		Pearlitic		250	16	60-110		
	Cast iron nodular (GGG)	Ferritic		180	17	50-110		
		Pearlitic		260	18	50-110		
	Malleable cast iron	Ferritic		130	19	70-110		
Pearlitic			230	20	70-110			
N	Aluminum - Wrought alloy	Not cureable		60	21	65-130		
		Cured		100	22	65-130		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	65-130	
			Cured		90	24	65-130	
		>12% Si	High temp.		130	25	65-130	
	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	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

## Machining data for TBTA-FB

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

# Recommended Cutting Conditions

**T-DEEP**

## Machining data for BTA & BTS

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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	
	Malleable cast iron	Ferritic		130	19	50-100	
Pearlitic			230	20	50-100		
N	Aluminum - Wrought alloy	Not cureable		60	21	65-130	
		Cured		100	22	65-100	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	65-130
			Cured		90	24	65-130
		>12% Si	High temp.		130	25	65-130
	Copper alloys	>1% Pb	Free cutting		110	26	65-130
			Brass		90	27	65-130
		Electrolitic copper		100	28	65-130	
	Non-metallic		Duroplastics, fiber plastics			29	
			Hard rubber			30	
S	High temp. alloys	Fe based	Annealed		200	31	10-50
			Cured		280	32	10-50
		Ni or Co based	Annealed		250	33	10-50
			Cured		350	34	10-50
			Cast		320	35	10-50
	Titanium, Ti alloys			Rm 400		36	30-50
			Alpha+beta alloys cured	Rm 1050		37	30-50
H	Hardened steel	Hardened		55HRC	38		
		Hardened		60HRC	39		
	Cast iron nodular	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 <sup>2</sup> )	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
			Electrolitic 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

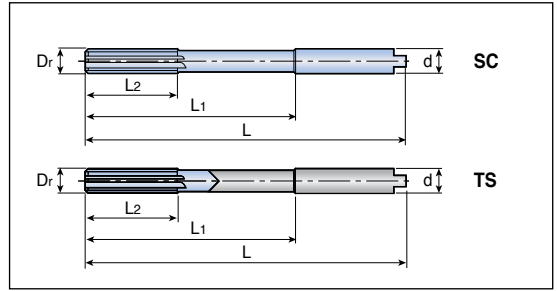
## Machining data for HFD

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



## Solid reamer



- Straight flute - DIN8093

Designation	Dimension (mm)					No. of flute	Grade UF1A
	Dr	L	L1	L2	d		
<b>TS- S0300-SC</b>	3	61	30	15	3.0	6	●
<b>S0400-SC</b>	4	75	44	19	4.0	6	●
<b>S0500-SC</b>	5	86	53	23	5.0	6	●
<b>S0600-SC</b>	6	93	56	26	5.6	6	●
<b>S0700-SC</b>	7	109	69	31	7.1	6	●
<b>S0800-SC</b>	8	117	75	33	8.0	6	●
<b>S0900-TS</b>	9	125	81	36	9.0	6	●
<b>S1000-TS</b>	10	133	87	38	10.0	6	●
<b>S1100-TS</b>	11	142	96	41	10.0	6	●
<b>S1200-TS</b>	12	151	105	44	10.0	6	●
<b>S1300-TS</b>	13	151	105	44	10.0	6	●
<b>S1400-TS</b>	14	160	110	47	12.5	8	●
<b>S1500-TS</b>	15	162	112	50	12.5	8	●
<b>S1600-TS</b>	16	170	120	52	12.5	8	●

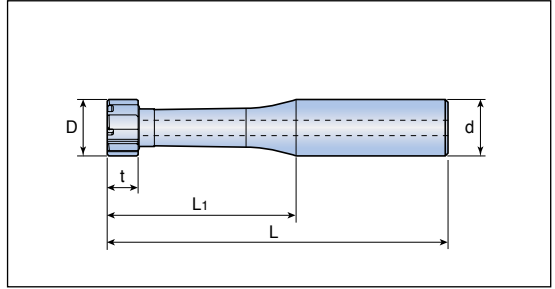


- Reamers above diameter 5mm have a tang back-end design
- TiAlN coated reamer is available on request
- Special diameters are available on request
- Standard item





## Head changeable reamer



- Cylindrical shank

Designation	D range	Head size	Dimension (mm)				Overhang
			d	t	L	L <sub>1</sub>	
<b>TM 3B5-16TO</b>	11.501-13.500	B5	16	9.3	97.8	49.8	3XD
<b>3B6-16TO</b>	13.501-16.000	B6	16	9.4	105.4	57.4	
<b>3B7-20TO</b>	16.000-20.000	B7	20	10.6	120.6	70.6	
<b>3B8-20TO</b>	20.001-25.400	B8	20	12.8	137.8	87.8	
<b>3B9-32TO</b>	25.401-32.000	B9	32	12.8	167.1	107.1	5XD
<b>5B5-16TO</b>	11.501-13.500	B5	16	9.3	125.0	77.0	
<b>5B6-16TO</b>	13.501-16.000	B6	16	9.4	137.4	89.4	
<b>5B7-20TO</b>	16.000-20.000	B7	20	10.6	160.6	110.6	
<b>5B8-20TO</b>	20.001-25.400	B8	20	12.8	187.8	137.8	8XD
<b>5B9-32TO</b>	25.401-32.000	B9	32	12.8	231.1	171.1	
<b>8B5-16TO</b>	11.501-13.500	B5	16	9.3	165.5	117.5	
<b>8B6-16TO</b>	13.501-16.000	B6	16	9.4	185.4	137.4	
<b>8B7-20TO</b>	16.000-20.000	B7	20	10.6	220.6	170.6	8XD
<b>8B8-20TO</b>	20.001-25.400	B8	20	12.8	262.8	212.8	
<b>8B9-32TO</b>	25.401-32.000	B9	32	12.8	327.1	267.1	

- Clamping key & clamping screw are included



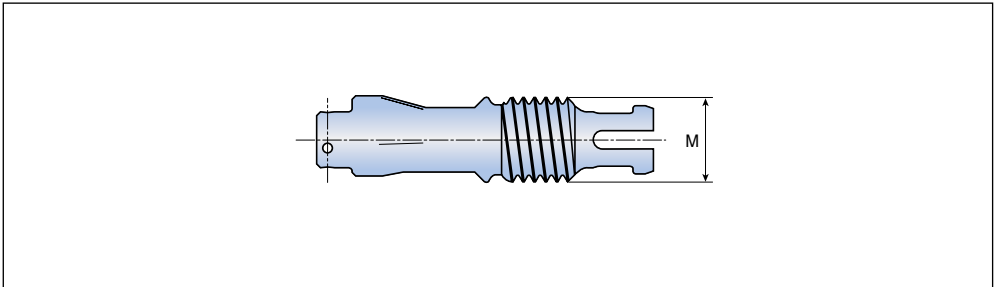
## Clamping key



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

# TM...SCR

## Clamping screw



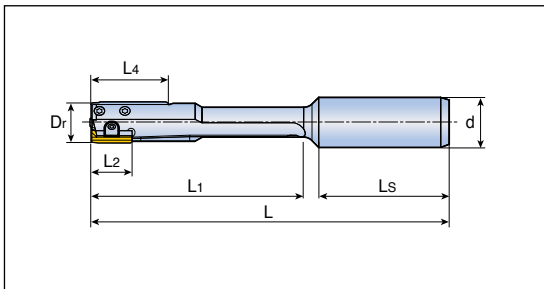
Designation	Clamping screw	
	Head diameter range (mm)	M
<b>TM - B5-SCR</b>	11.501-13.500	M5
<b>B6-SCR</b>	13.501-16.000	M6
<b>B7-SCR</b>	16.001-20.000	M7
<b>B8-SCR</b>	20.001-25.400	M8
<b>B9-SCR</b>	25.401-32.000	M9



## Indexable reamer holder



• For blind hole

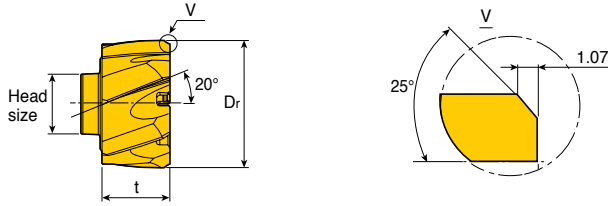


Designation	Dimension (mm)							Blade size
	D <sub>r</sub>	L <sub>2</sub>	L <sub>s</sub>	L <sub>1</sub>	L	L <sub>4</sub>	d	
<b>TB-B08.000-S-16T0-1B</b>	8	15.5	123.5	75	45	30	16	1
<b>B09.000-S-16T0-1B</b>	9	15.5	123.5	75	45	30	16	1
<b>B10.000-S-16T0-2B</b>	10	15.5	123.5	75	45	30	16	2
<b>B11.000-S-16T0-2B</b>	11	15.5	123.5	75	45	30	16	2
<b>B12.000-S-16T0-3B</b>	12	17.0	135	85	45	30	16	3
<b>B13.000-S-16T0-3B</b>	13	17.0	135	85	45	30	16	3
<b>B14.000-S-16T0-3B</b>	14	17.0	135	85	45	30	16	3
<b>B15.000-S-16T0-3B</b>	15	17.0	135	85	45	30	16	3
<b>B16.000-S-20T0-3B</b>	16	17.0	165	110	50	30	20	3
<b>B17.000-S-20T0-3B</b>	17	17.0	165	110	50	30	20	3
<b>B18.000-S-20T0-3B</b>	18	17.0	165	110	50	30	20	3
<b>B19.000-S-20T0-3B</b>	19	17.0	165	110	50	30	20	3
<b>B20.000-S-25T0-3B</b>	20	17.0	171	110	56	30	25	3
<b>B21.000-S-25T0-3B</b>	21	17.0	171	110	56	30	25	3
<b>B22.000-S-25T0-3B</b>	22	17.0	191	130	56	30	25	3
<b>B23.000-S-25T0-3B</b>	23	17.0	191	130	56	30	25	3
<b>B24.000-S-25T0-3B</b>	24	17.0	191	130	56	30	25	3
<b>B25.000-S-25T0-3B</b>	25	17.0	191	130	56	30	25	3
<b>B26.000-S-25T0-4B</b>	26	22.5	221	160	56	30	25	4
<b>B27.000-S-25T0-4B</b>	27	22.5	221	160	56	30	25	4
<b>B28.000-S-25T0-4B</b>	28	22.5	221	160	56	30	25	4
<b>B29.000-S-25T0-4B</b>	29	22.5	221	160	56	30	25	4
<b>B30.000-S-25T0-4B</b>	30	22.5	221	160	56	30	25	4
<b>B31.000-S-25T0-4B</b>	31	22.5	221	160	56	30	25	4
<b>B32.000-S-25T0-4B</b>	32	22.5	221	160	56	30	25	4





## Head changeable reamer head



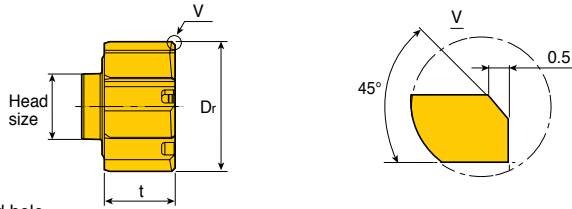
- Left-handed flute for through hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		Flute	Head size	Flute type	Edge type	Grade	
		Dr	t					TT9030	
	<b>TM - 11.501-BL-B5</b>	11.501	9.3	6	B5	L	B	●	
	<b>12.000-BL-B5</b>	12.000	9.3	6	B5	L	B	●	
	<b>13.000-BL-B5</b>	13.000	9.3	6	B5	L	B	●	
	<b>13.500-BL-B5</b>	13.500	9.3	6	B5	L	B	●	
	<b>13.501-BL-B6</b>	13.501	9.4	6	B6	L	B	●	
	<b>14.000-BL-B6</b>	14.000	9.4	6	B6	L	B	●	
	<b>15.000-BL-B6</b>	15.000	9.4	6	B6	L	B	●	
	<b>16.000-BL-B6</b>	16.000	9.4	6	B6	L	B	●	
	<b>16.001-BL-B7</b>	16.001	10.6	6	B7	L	B	●	
	<b>17.000-BL-B7</b>	17.000	10.6	6	B7	L	B	●	
	<b>18.000-BL-B7</b>	18.000	10.6	6	B7	L	B	●	
	<b>19.000-BL-B7</b>	19.000	10.6	6	B7	L	B	●	
	<b>20.000-BL-B7</b>	20.000	10.6	6	B7	L	B	●	
	<b>20.001-BL-B8</b>	20.001	12.8	8	B8	L	B	●	
	<b>21.000-BL-B8</b>	21.000	12.8	8	B8	L	B	●	
	<b>22.000-BL-B8</b>	22.000	12.8	8	B8	L	B	●	
	<b>23.000-BL-B8</b>	23.000	12.8	8	B8	L	B	●	
	<b>24.000-BL-B8</b>	24.000	12.8	8	B8	L	B	●	
	<b>25.000-BL-B8</b>	25.000	12.8	8	B8	L	B	●	
	<b>26.000-BL-B9</b>	26.000	12.8	8	B9	L	B	●	
	<b>27.000-BL-B9</b>	27.000	12.8	8	B9	L	B	●	
	<b>28.000-BL-B9</b>	28.000	12.8	8	B9	L	B	●	
	<b>29.000-BL-B9</b>	29.000	12.8	8	B9	L	B	●	
	<b>30.000-BL-B9</b>	30.000	12.8	8	B9	L	B	●	
	<b>31.000-BL-B9</b>	31.000	12.8	8	B9	L	B	●	
	<b>32.000-BL-B9</b>	32.000	12.8	8	B9	L	B	●	

● Standard item



## Head changeable reamer head



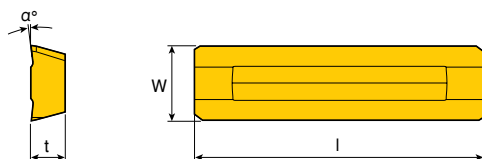
- Straight flute for blind hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		Flute	Head size	Flute type	Edge type	Grade	
		Dr	t					TT9030	
	<b>TM- 11.501-AS-B5</b>	11.501	9.3	6	B5	S	A	●	
	<b>12.000-AS-B5</b>	12.000	9.3	6	B5	S	A	●	
	<b>13.000-AS-B5</b>	13.000	9.3	6	B5	S	A	●	
	<b>13.500-AS-B5</b>	13.500	9.3	6	B5	S	A	●	
	<b>13.501-AS-B6</b>	13.501	9.4	6	B6	S	A	●	
	<b>14.000-AS-B6</b>	14.000	9.4	6	B6	S	A	●	
	<b>15.000-AS-B6</b>	15.000	9.4	6	B6	S	A	●	
	<b>16.000-AS-B6</b>	16.000	9.4	6	B6	S	A	●	
	<b>16.001-AS-B7</b>	16.001	10.6	6	B7	S	A	●	
	<b>17.000-AS-B7</b>	17.000	10.6	6	B7	S	A	●	
	<b>18.000-AS-B7</b>	18.000	10.6	6	B7	S	A	●	
	<b>19.000-AS-B7</b>	19.000	10.6	6	B7	S	A	●	
	<b>20.000-AS-B7</b>	20.000	10.6	6	B7	S	A	●	
	<b>20.001-AS-B8</b>	20.001	12.8	8	B8	S	A	●	
	<b>21.000-AS-B8</b>	21.000	12.8	8	B8	S	A	●	
	<b>22.000-AS-B8</b>	22.000	12.8	8	B8	S	A	●	
	<b>23.000-AS-B8</b>	23.000	12.8	8	B8	S	A	●	
	<b>24.000-AS-B8</b>	24.000	12.8	8	B8	S	A	●	
	<b>25.000-AS-B8</b>	25.000	12.8	8	B8	S	A	●	
	<b>26.000-AS-B9</b>	26.000	12.8	8	B9	S	A	●	
	<b>27.000-AS-B9</b>	27.000	12.8	8	B9	S	A	●	
	<b>28.000-AS-B9</b>	28.000	12.8	8	B9	S	A	●	
	<b>29.000-AS-B9</b>	29.000	12.8	8	B9	S	A	●	
	<b>30.000-AS-B9</b>	30.000	12.8	8	B9	S	A	●	
	<b>31.000-AS-B9</b>	31.000	12.8	8	B9	S	A	●	
	<b>32.000-AS-B9</b>	32.000	12.8	8	B9	S	A	●	

● Standard item



## Head changeable reamer head



• For H6 hole tolerance

Insert	Designation	Dimension (mm)				Blade size	Lead type	Grades	
		Rake angle (α°)	l	W	t			TT5030	TT5050
	<b>TB- 1B06</b>	6	15.5	2.8	1.5	1	B	●	
	<b>1B12</b>	12	15.5	2.8	1.5	1	B	●	
	<b>1A06</b>	6	15.5	2.8	1.5	1	A		●
	<b>1B06</b>	6	15.5	2.8	1.5	1	B		●
	<b>2B06</b>	6	15.5	3.6	1.5	2	B	●	
	<b>2B12</b>	12	15.5	3.6	1.5	2	B	●	
	<b>2A06</b>	6	15.5	3.6	1.5	2	A		●
	<b>2B06</b>	6	15.5	3.6	1.5	2	B		●
	<b>3B06</b>	6	17.0	4.4	2.0	3	B	●	
	<b>3B12</b>	12	17.0	4.4	2.0	3	B	●	
	<b>3A06</b>	6	17.0	4.4	2.0	3	A		●
	<b>3B06</b>	6	17.0	4.4	2.0	3	B		●
	<b>4B06</b>	6	22.5	6.6	3.0	4	B	●	
	<b>4B12</b>	12	22.5	6.6	3.0	4	B	●	
	<b>4A06</b>	6	22.5	6.6	3.0	4	A		●
	<b>4B06</b>	6	22.5	6.6	3.0	4	B		●



• Grades application  
 -TT5030: TiAlN coating for steel(P) and stainless steel(M)  
 -TT5050: TiCN + TiN coating for cast iron(K)

• Standard item



# Recommended Cutting Conditions

## Machining data for TS-REAM

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	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	
			1200	350	9	6-15	0.15-0.25	0.20-0.35	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	6-15	0.12-0.20	0.15-0.30	
Quenched and tempered		1100	325	11	6-15	0.12-0.20	0.15-0.30		
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12				
		Martensitic	820	240	13				
		Austenitic	600	180	14				
K	Gray cast iron (GG)	Ferritic		160	15	10-25	0.20-0.30	0.30-0.45	
		Pearlitic		250	16	10-25	0.20-0.30	0.30-0.45	
	Cast iron nodular (GGG)	Ferritic		180	17	10-20	0.15-0.25	0.20-0.35	
		Pearlitic		260	18	10-20	0.15-0.25	0.20-0.35	
Malleable cast iron	Ferritic		130	19	8-15	0.15-0.25	0.20-0.40		
	Pearlitic		230	20	8-15	0.15-0.25	0.20-0.40		
N	Aluminum - Wrought alloy	Not cureable		60	21	10-30	0.20-0.30	0.30-0.50	
		Cured		100	22	10-30	0.20-0.30	0.30-0.50	
	<=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	
	>1% Pb	Free cutting		110	26	20-60	0.30-0.60	0.40-0.80	
		Brass		90	27	20-60	0.30-0.60	0.40-0.80	
	Copper alloys	Electrolitic copper		100	28	20-60	0.30-0.60	0.40-0.80	
		Duroplastics, fiber plastics			29	15-30	0.30-0.60	0.40-0.80	
	Non-metallic	Hard rubber			30	15-30	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		Rm 400		36	6-15	0.12-0.20	0.15-0.30	
Alpha+beta alloys cured		Rm 1050		37	6-15	0.12-0.20	0.15-0.30		
H	Hardened steel	Hardened		55HRC	38				
		Hardened		60HRC	39				
	Chilled cast iron	Cast		400	40				
	Cast iron nodular	Hardened		55HRC	41				

• For more information of material groups, see the 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	
11				B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11	
				B7 - B9	fz = 0.07 - 0.17	B7 - B9	fz = 0.05 - 0.14	
M	Stainless steel and cast steel	Ferritic / martensitic		12	TT9030	BL	TT9030	BL
					Vc = 20 - 40		Vc = 20 - 40	
		Martensitic		13	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11
	Austenitic		14	B7 - B9	fz = 0.07 - 0.17	B7 - B9	fz = 0.05 - 0.14	
K	Gray cast iron (GG)	Ferritic		15	Vc = 120 - 220		Vc = 80 - 200	
		Pearlitic		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
					Vc = 160 - 280		Vc = 150 - 250	
		Pearlitic		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
			Vc = 100 - 220		Vc = 100 - 220			
	Pearlitic		20	B4 - B6	fz = 0.11 - 0.20	B4 - B6	fz = 0.06 - 0.15	
				B7 - B9	fz = 0.11 - 0.24	B7 - B9	fz = 0.08 - 0.20	

• For more information of material groups, see the Technical Guide "material conversion table".

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

# Recommended Cutting Conditions

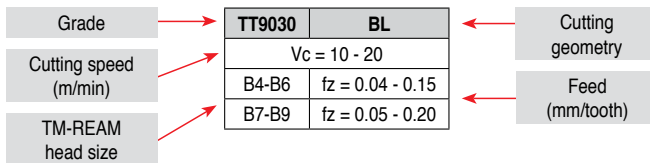
## Machining data for TM-REAM - Through hole

ISO	Material	Condition	Material No.	Through hole		Interrupted through Hole		
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	
	Non-metallic		Electrolitic copper	28	B7 - B9	fz = 0.10 - 0.23	B7 - B9	fz = 0.07 - 0.16
			Duroplastics, fiber plastics	29	TT9030	AS	TT9030	AS
Vc = 25 - 80					Vc = 25 - 80			
Hard rubber			30	B4 - B6	fz = 0.05 - 0.10	B4 - B6	fz = 0.05 - 0.10	
	B7 - B9	fz = 0.10 - 0.20		B7 - B9	fz = 0.10 - 0.20			
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *
			Cured	32	Vc = 15 - 50		Vc = 15 - 50	
		Ni or Co based	Annealed	33	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08
			Cured	34				
	Cast	35	B7 - B9	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11		
		36						
Titanium, Ti alloys	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				
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered		5	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16
		Annealed		6	TT9030	AS	TT9030	AS
		Quenched and tempered		7	Vc = 60-160		Vc = 60 - 120	
	High alloy steel, cast steel and tool steel	Quenched and tempered		8	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15
		Quenched and tempered		9	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16
		Annealed		10	TT9030	AS	TT9030	AS
		Quenched and tempered		11	Vc = 20 - 60		Vc = 20 - 60	
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
K	Gray cast iron (GG)	Ferritic		15	B7 - B9	fz = 0.05 - 0.13	B7 - B9	fz = 0.05 - 0.10
		Pearlitic		16	TT9030	AS	TT9030	AS
	Cast iron nodular (GGG)	Ferritic		17	Vc = 80 - 200		Vc = 60 - 120	
		Pearlitic		18	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.13
	Malleable cast iron	Ferritic		19	B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18
		Pearlitic		20	TT9030	AS	TT9030	AS
		Ferritic		19	Vc = 160 - 280		Vc = 160 - 240	
		Pearlitic		18	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.06 - 0.16
Malleable cast iron	Ferritic		19	B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18	
	Pearlitic		20	TT9030	AS	TT9030	AS	
Malleable cast iron	Ferritic		19	Vc = 100 - 220		Vc = 100 - 220		
	Pearlitic		20	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15	
Malleable cast iron	Ferritic		19	B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.20	
	Pearlitic		20	B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.20	

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■ Steel   
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# Recommended Cutting Conditions

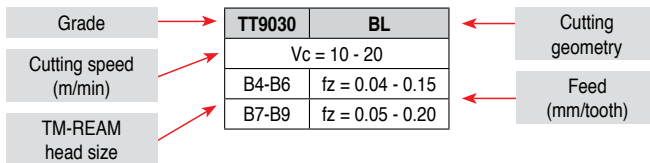
## Machining data for TM-REAM - Blind hole

ISO	Material	Condition	Material No.	Blind hole		Interrupted blind hole		
N	Aluminum - Wrought alloy	Not cureable	21	TTAL10	GS or AS	TTAL10	GS or AS	
		Cured	22	Vc = 150 - 400		Vc = 150 - 300		
	Aluminum-cast, alloyed	<=12% Si	Not cureable	23	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.07 - 0.15
			Cured	24				
		>12% Si	High temp.	25	B7 - B9	fz = 0.11 - 0.20	B7 - B9	fz = 0.11 - 0.20
	Copper alloys	>1% Pb	Free cutting	26	TT9030	AS	TT9030	AS
					Vc = 50 - 200		Vc = 50 - 200	
		Brass	27	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.08 - 0.16	
	Non-metallic		Electrolitic copper	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	
	B7 - B9	fz = 0.10 - 0.20		B7 - B9	fz = 0.10 - 0.20			
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *
			Cured	32	Vc = 15 - 50		Vc = 15 - 50	
		Ni or Co based	Annealed	33	B4 - B6	fz = 0.03 - 0.08	B4 - B6	fz = 0.03 - 0.08
			Cured	34				
			Cast	35				
	Titanium, Ti alloys	Alpha+beta alloys cured	36	B7 - B9	fz = 0.04 - 0.11	B7 - B9	fz = 0.04 - 0.11	
37								
H	Hardened steel	Hardened	38	TT9030	AS	TT9030	AS	
		Hardened	39	Vc = 25 - 50		Vc = 25 - 50		
	Chilled cast iron	Cast	40	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.05 - 0.13	
Cast iron nodular	Hardened	41	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		

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**Legend:**



# Recommended Cutting Conditions

## Machining data for TB-REAM

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

			Lead C (75°) (Reaming allowance: 0.2~0.4)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				
ISO	Material	Material No.			Carbide	Coated carbide	Cermet	PCD	CBN
P	Non-alloy steel and cast steel, free cutting steel	1 - 5							
	Low alloy steel and cast steel (Less than 5% of alloying elements)	6 - 9							
	High alloyed steel, cast steel and tool steel	10 - 11							
M	Stainless steel, cast steel	12 - 14							
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)				PCD
ISO	Material	Material No.			Carbide	Coated carbide	Cermet		
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)				PCD
ISO	Material	Material No.			Carbide	Coated carbide	Cermet		
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							

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