
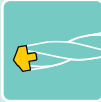


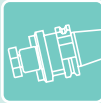





**2024-2025**  
**ROTATING**  
**METALCUTTING TOOLS**



# Contents

<b>Thread Making</b>		Contents Thread Milling Tapping	C2 C11 C57	<b>C</b>	<b>Thread Making</b>
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<b>MPT</b>		Contents Shanks and Heads Spare Parts	H2 H6 H58	<b>H</b>	<b>MPT</b>
<b>Materials &amp; Grades</b>		Grade Comparison Table Hardness Conversion Table Material Conversion Table	I2 I6 I8	<b>I</b>	<b>Materials &amp; Grades</b>
<b>Index</b>					<b>Index</b>

# How to use the catalogue page



## « Main Contents

Select an application line from the main Table of Contents. Each line is color coded in alphabetical order.



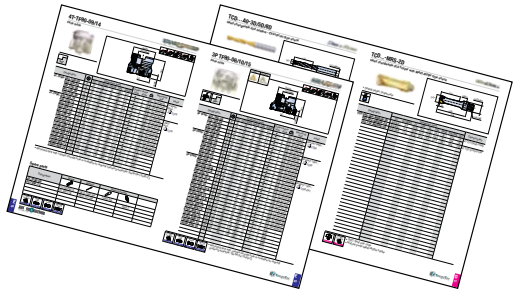
## Tool Selection Guide »

Choose the required machining solutions and tools from tool selection guide.



## Products Page »

Obtain detailed information of products such as dimensions, grades and related parts etc. Holder and insert pages are organized separately.



## Alphabetical Index »

All tools are listed in the alphabetical index at the end of the catalogue.

# ABC

Should you require more information and data from TaeguTec, please contact the nearest TaeguTec Global Service Center or visit our website. [www.taegutec.com](http://www.taegutec.com)

# THREAD MAKING



# THREAD MAKING



## contents

### Tool Selection Guide

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### TS-THREAD (Thread Milling)

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Tool Designation System	C32
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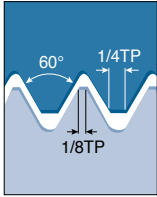
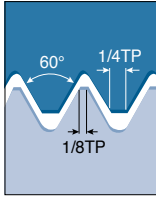
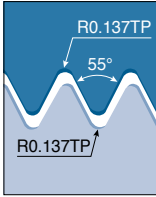
### Recommended Cutting Conditions

	C53
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# Tool Selection Guide

## Solid carbide threading end mills

Thread	<b>TS-THREAD</b>		
	<b>Metric ISO</b>	<b>American UN</b>	<b>Whitworth</b>
			
<b>Application</b>	General usage for all industries	General usage for all industries	General industries. Pipe fittings and couplings
MTEC General type	● C15	● C23	● C27
MTECB Internal coolant hole	● C13	● C22	● C27
MTECZ Internal coolant in the flutes	● C14	● C24	● C27
MTECS Short head	● C18-C19	● C25	
MTECSH Short head for hard materials	● C21	● C26	
MTECD Short head with internal coolant hole	● C20		
MTECQ Reduced neck diameter for deep threading	● C16		
MTECI Partial profile	● C31	● C31	
MTEC E External threading	● C17	● C24	

► For correct tool choice and CNC programming, use the 'TS-thread guide' software (Available at [www.taegutec.com](http://www.taegutec.com))

# Tool Selection Guide

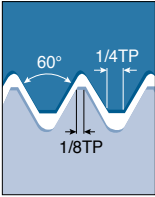
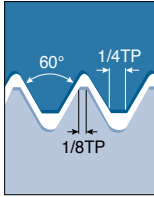
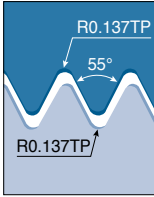
## Solid carbide threading end mills

<b>TS-THREAD</b>				
NPT	NPTF	BSPT	UNJ	MJ
Steam, gas and water pipes	Steam, gas and water pipes. Dry seal	55° form for steam, gas and water pipes	Aviation and aerospace industry	Aviation and aerospace industry
● C28	● C28	● C29		
● C28		● C29		
	● C28	● C29		
			● C30	● C30



# Tool Selection Guide

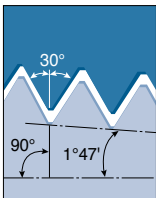
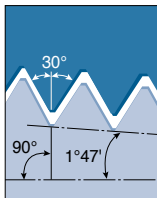
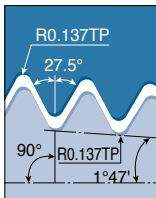
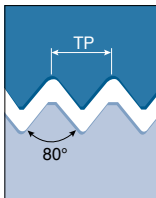
## Indexable insert type

Thread	<b>TS-THREAD</b>		
	Metric ISO	American UN	Whitworth
			
<b>Insert page</b>	C41, C49	C42, C43, C50	C44, C51
<b>Application</b>	General usage for all industries	General usage for all industries	General industries. Pipe fittings and couplings
MTE D C33 Single insert	•	•	•
MTE D-C C34 Solid carbide shank	•	•	•
MTE D-W C35 Twin insert	•	•	•
TMSTRH C36 Helical end mill	•	•	•
MTF D C37 Large diameter thread	•	•	•
MTFLE D C38 Multi tooth-external threading	•	•	•
TMSTRH C39 Helical shell mill	•	•	•

► For correct tool choice and CNC programming, use the 'TS-thread guide' software (Available at [www.taegutec.com](http://www.taegutec.com))




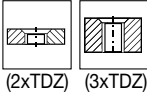
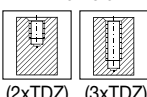
# Tool Selection Guide

## Indexable insert type

<b>TS-THREAD</b>			
<b>NPT</b>	<b>NPTF</b>	<b>BSPT</b>	<b>PG</b>
			
C45, C51	C46	C47, C52	C48
Steam, gas and water pipes	Steam, gas and water pipes. Dry seal	55° form for steam, gas and water pipes	Electrical connector
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•

# Tool Selection Guide

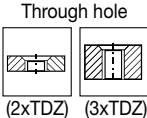
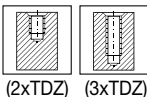
## Straight flute with spiral point tap

		<b>T-TAP</b>		
		<b>Straight flute with spiral point tap</b>		
<b>Series</b>		<b>TPH...52B</b>	<b>TPH...52B05</b>	<b>TPH...52B10</b>
				
<b>Pages</b>		C59	C60	C61
<b>Coating type</b>		Uncoated	Steam tempered	TiN coated
<b>Chamfer form</b>		Form B 4-5 threads chamfer	Form B 4-5 threads chamfer	Form B 4-5 threads chamfer
<b>Range (ISO metric)</b>	Coarse threads	M2 - M20	M2 - M20	M2 - M20
	Fine threads	M8 - M16	M8 - M16	M8 - M16
<b>Tolerance</b>		ISO 2-6H	ISO 2-6H	ISO 2-6H
<b>Material</b>	<b>P</b>	○	●	●
	<b>M</b>		●	●
	<b>K</b>	○	○	○
	<b>N</b>	●	○	○
	<b>S</b>			○
<b>Application</b>	Through hole  (2xTDZ) (3xTDZ)	●	●	●
	Blind hole  (2xTDZ) (3xTDZ)			

● Recommended, ○ Suitable

# Tool Selection Guide

## 40° right hand spiral flute tap

Series		<b>T-TAP</b>		
		<b>40° right hand spiral flute tap</b>		
		<b>TPH...54C</b>	<b>TPH...54C05</b>	<b>TPH...54C10</b>
<b>Pages</b>		C62	C63	C64
<b>Coating type</b>		Uncoated	Steam tempered	TiN coated
<b>Chamfer form</b>		Form C 2-3 threads chamfer	Form C 2-3 threads chamfer	Form C 2-3 threads chamfer
<b>Range (ISO metric)</b>	Coarse threads	M2 - M20	M2 - M20	M2 - M20
	Fine threads	M8 - M16	M8 - M16	M8 - M16
<b>Tolerance</b>		ISO 2-6H	ISO 2-6H	ISO 2-6H
<b>Material</b>	<b>P</b>	○	●	●
	<b>M</b>		●	●
	<b>K</b>	○	○	○
	<b>N</b>	●	○	○
	<b>S</b>			○
<b>Application</b>	Through hole  (2xTDZ) (3xTDZ)			
	Blind hole  (2xTDZ) (3xTDZ)	●	●	●

● Recommended, ○ Suitable

# Grades

## Thread making grades

Grades	ISO	Characteristics & applications									
<b>TT9030</b> PVD coated	<table border="1"><tr><td>P20</td><td>—</td><td>P40</td></tr><tr><td>M20</td><td>—</td><td>M40</td></tr><tr><td>S20</td><td>—</td><td>S40</td></tr></table>	P20	—	P40	M20	—	M40	S20	—	S40	<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>
P20	—	P40									
M20	—	M40									
S20	—	S40									

***TS-THREAD***

**Thread Milling**



# Designation System

Solid carbide end mill

**MTEC**  **06** **04** **C** **14** **1.0** **ISO** **TT9030**

**1**   **2**   **3**   **4**   **5**   **6**   **7**   **8**   **9**

## 1 TaeguTec mill thread

MT - Mill thread  
E - End mill  
C - Carbide

## 2 End mill type

B - Axial coolant bore  
Z - Coolant hole in the flutes  
S - Short head  
SH - Short head for threading hard materials  
Q - Reduced diameter neck  
I - Partial profile

## 3 Shank diameter

06 6.0 mm  
10 10.0 mm

## 4 Cutting diameter

031 3.1 mm  
04 4.0 mm

## 5 No. of flutes

C - 3 flutes  
D - 4 flutes  
E - 5 flutes  
F - 6 flutes

## 6 Length of thread (APMX)

10 10.0 mm

## 7 Thread pitch

0.25-4.0 mm (Thread pitch)  
72-7 TPI (Threads per inch)

## 8 Thread standard

ISO  
UN  
W  
NPT  
NPTF  
BSPT  
UNJ  
MJ

## 9 Grades

Coated  
TT9030  
TT1040























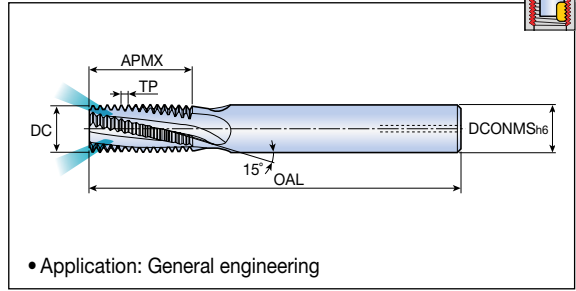
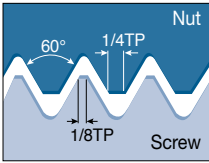




# MTECZ-UN



Solid carbide with internal coolant in the flutes for internal threading



Designation	TPI	UNC	UNF	UNEF	Dimension (mm)				NOF	Grade TT9030
					DCONMS	DC	APMX	OAL		
<b>MTECZ 1010D22 20 UN</b>	20	-	1/2	-	10	10.0	22.3	73	4	●
<b>12113D26 18 UN</b>	18	-	9/16-5/8	11/8-15/8	12	11.3	26.1	84	4	●
<b>08067C16 16 UN</b>	16	3/8	-	-	8	6.7	16.7	64	3	●
<b>10092C22 13 UN</b>	13	1/2	-	-	10	9.2	22.5	73	3	●



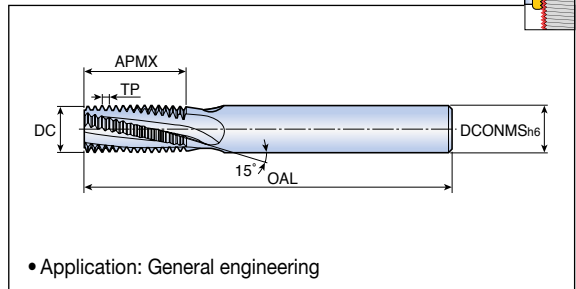
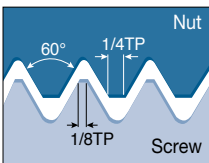
▶ NOF: Number of flutes

● Standard items

# MTEC E-UN



Solid carbide end mills for external threading



Designation	TPI	Dimension (mm)				NOF	Grade TT9030
		DCONMS	DC	APMX	OAL		
<b>MTEC E 1010D16 24 UN</b>	24	10	10.0	16.4	73	4	●



▶ NOF: Number of flutes

● Standard items



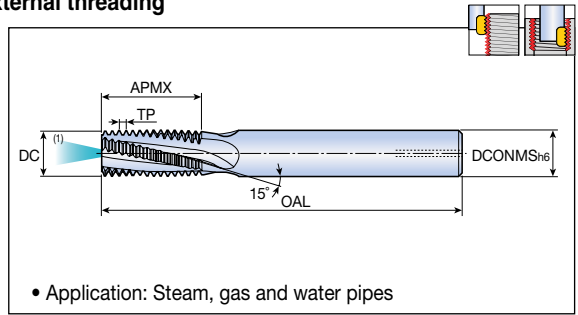
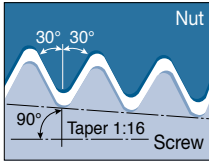




# MTECB-NPT / MTEC-NPT



Solid carbide end mills for internal or external threading



Designation	TPI	TDZ	Dimension (mm)				NOF	Grade TT9030
			DCONMS	DC	APMX	OAL		
<b>MTECB 08076C10 27 NPT</b>	27	1/8	8	7.6	10.8	64	3	●
<b>1010D16 18 NPT</b>	18	1/4-3/8	10	10.0	16.2	73	4	●
<b>16155D22 14 NPT</b>	14	1/2-3/4	16	15.5	22.7	105	4	●
<b>MTEC 0606C9 27 NPT</b>	27	1/8	6	6.0	9.9	58	3	●
<b>0808C14 18 NPT</b>	18	1/4-3/8	8	8.0	14.8	64	3	●
<b>1212D20 14 NPT</b>	14	1/2-3/4	12	12.0	20.9	84	4	●
<b>1616D27 11.5 NPT</b>	11.5	1-2	16	16.0	27.6	105	4	●



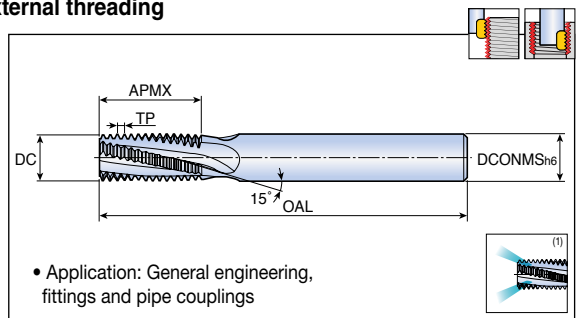
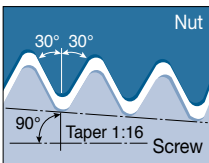
- ▶ TDZ: Thread diameter size
- ▶ NOF: Number of flutes
- ▶ <sup>(1)</sup> B type

●: Standard items

# MTECZ-NPTF / MTEC-NPTF



Solid carbide end mills for internal or external threading



Designation	TPI	TDZ	Dimension (mm)				NOF	Grade TT9030
			DCONMS	DC	APMX	OAL		
<b>MTECZ 1010D16 18 NPTF</b>	18	1/4-3/8	10	10.0	16.2	73	4	●
<b>MTEC 0606C9 27 NPTF</b>	27	1/8	6	6.0	9.9	58	3	●
<b>0808C14 18 NPTF</b>	18	1/4-3/8	8	8.0	14.8	64	3	●
<b>1212D20 14 NPTF</b>	14	1/2-3/4	12	12.0	20.9	84	4	●



- ▶ TDZ: Thread diameter size
- ▶ NOF: Number of flutes
- ▶ <sup>(1)</sup> Z type

●: Standard items









## End mills

**MT E D25 - 1 - W 20 (C) - 21**

**1 2 3 4 5 6 7 8**

### 1 Mill thread

M - Mill  
T - Thread

### 2 Tool type

E - End mills type

### 3 Cutting diameter

D25 - 25.0mm

### 4 Number of insert

1 1 insert  
2 2 inserts

### 5 Shank type

W - Weldon shank  
C - Cylindrical type

### 6 Shank diameter

20 - 20.0mm

### 7 Shank material

C Carbide shank

### 8 Insert size (APMX)

12 12.0 mm  
14 14.0 mm  
21 21.0 mm  
30 30.0 mm  
40 40.0 mm

## Cutters

**MT F D063 - 5 - 22 - 21**

**1 2 3 4 5 6**

### 1 Mill thread

M - Mill  
T - Thread

### 2 Tool type

F - Facemill type

### 3 Cutting diameter

D063 - 63.0mm

### 4 Number of insert

4 4 inserts  
5 5 inserts

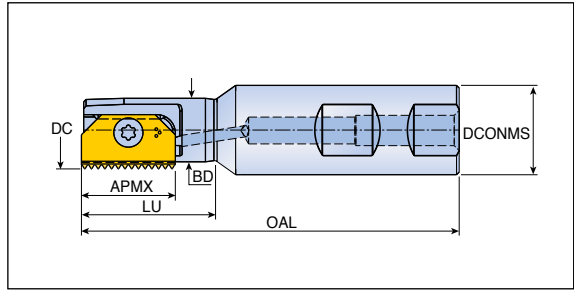
### 5 Bore diameter

22 22.0 mm  
27 27.0 mm  
32 32.0 mm

### 6 Insert size (APMX)

21 21.0 mm  
30 30.0 mm  
40 40.0 mm

## Indexable threading end mills - Weldon shank

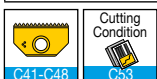


Designation		Dimension (mm)						Shank	Coolant hole	Kg	Insert
		APMX	DC	DCONMS	BD	LU	OAL				
<b>MTE D09.5-1-W20-12</b> <sup>(1)</sup>	1	12	9.5	20	7.5	15.5	85	W	●	0.16	TTMT12
<b>D09.9-1-W20-12</b>	1	12	9.9	20	7.5	16.0	85	W	●	0.16	TTMT12
<b>D12.2-1-W20-14</b>	1	14	12.2	20	8.8	20.0	75	W	●	0.15	TTMT14
<b>D14.5-1-W20-14</b>	1	14	14.5	20	10.8	27.1	85	W	●	0.16	TTMT14
<b>D17.0-1-W20-14</b>	1	14	17.0	20	12.8	30.0	85	W	●	0.23	TTMT14
<b>D18-1-W20-21</b> <sup>(2)</sup>	1	21	18.5	20	14.2	30.0	85	W	●	0.20	TTMT21
<b>D21-1-W20-21</b>	1	21	21.0	20	15.9	40.0	94	W	●	0.23	TTMT21
<b>D25-1-W20-21</b>	1	21	25.0	20	20.0	61.0	115	W	●	0.24	TTMT21
<b>D29-1-W25-30</b>	1	30	29.0	25	22.2	50.0	110	W	●	0.32	TTMT30
<b>D31-1-W25-30</b>	1	30	31.0	25	25.0	90.0	150	W	●	0.60	TTMT30
<b>D38-1-W32-30</b>	1	30	38.0	32	32.0	86.0	150	W	●	0.90	TTMT30
<b>D48-1-W40-40</b>	1	40	48.0	40	35.0	78.0	153	W	●	1.30	TTMT40
<b>D48-1-W40-40-B</b>	1	40	48.0	40	36.5	138.0	210	W	●	1.50	TTMT40

- ▶ Minimum bore should be one-third larger than DC (diameter)
- ▶ All end mills are equipped with a bore for internal coolant
- ▶ <sup>(1)</sup> Not suitable for inserts: TTMT12 18 NPT, TTMT12 18 NPTF, TTMT12 19 BSPT
- ▶ <sup>(2)</sup> Not suitable for inserts: TTMT21 I 3.50 ISO, TTMT21 I 7 UN, TTMT21 11.5 NPT, TTMT21 11.5 NPTF

## Spare parts

Designation	Screw	Wrench	Wrench handle	
<b>MTE D...12</b>	SR M2.5-T8-MT	BLD T08/M7	SW4-SD	-
<b>MTE D...14</b>	S11	BLD T08/M7	SW4-SD	-
<b>MTE D...21</b>	SR M4-IP15-MT	BLD IP15/S7	SW6-SD	-
<b>MTE D...30/40(-B)</b>	SR M5-IP25-MT	BLD IP25/S7	-	SW6-T

















**TTMT(H) 30 E 1.5 ISO TT9030**

1

2

3

4

5

6

### 1 TaeguTec mill thread

TT - TaeguTec  
M - Mill  
T - Thread  
H - Helical insert

### 2 Insert size (INSL)

12 12.0 mm  
14 14.0 mm  
21 21.0 mm  
30 30.0 mm  
40 40.0 mm



### 3 Application

E - External  
I - Internal  
□ - External + internal

### 4 Thread pitch

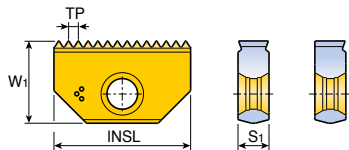
0.5 - 6.0 mm (Thread pitch)  
32 - 4 TPI (Threads per inch)

### 5 Thread standard

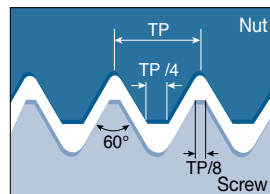
ISO  
UN  
WHIT  
NPT  
NPTF  
BSPT

### 6 Grades

Coated  
TT9030



TTMT12 I <sup>(1)</sup>



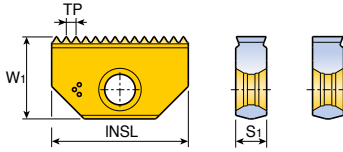
Insert	Designation	TP (mm)	Dimension (mm)			Grade
			INSL	W1	S1	
	<b>TTMT12 I 0.5 ISO<sup>(1)</sup></b>	0.50	12	6.5	2.9	●
	<b>TTMT12 I 0.75 ISO<sup>(1)</sup></b>	0.75	12	6.5	2.9	●
	<b>TTMT12 I 1.0 ISO<sup>(1)</sup></b>	1.00	12	6.5	2.9	●
	<b>TTMT12 I 1.25 ISO<sup>(1)</sup></b>	1.25	12	6.5	2.9	●
	<b>TTMT12 I 1.5 ISO<sup>(1)</sup></b>	1.50	12	6.5	2.9	●
	<b>TTMT14 I 0.5 ISO</b>	0.50	14	7.9	3.2	●
	<b>TTMT14 E/I 0.75 ISO</b>	0.75	14	7.9	3.2	●
	<b>TTMT14 E/I 1.0 ISO</b>	1.00	14	7.9	3.2	●
	<b>TTMT14 E/I 1.25 ISO</b>	1.25	14	7.9	3.2	●
	<b>TTMT14 E/I 1.5 ISO</b>	1.50	14	7.9	3.2	●
	<b>TTMT14 E/I 1.75 ISO</b>	1.75	14	7.9	3.2	●
	<b>TTMT14 E/I 2.0 ISO</b>	2.00	14	7.9	3.2	●
	<b>TTMT14 E/I 2.5 ISO</b>	2.50	14	7.9	3.2	●
	<b>TTMT21 E/I 1.0 ISO</b>	1.00	21	12.6	4.8	●
	<b>TTMT21 E/I 1.5 ISO</b>	1.50	21	12.6	4.8	●
	<b>TTMT21 I 1.75 ISO</b>	1.75	21	12.6	4.8	●
	<b>TTMT21 E/I 2.0 ISO</b>	2.00	21	12.6	4.8	●
	<b>TTMT21 E/I 2.5 ISO</b>	2.50	21	12.6	4.8	●
	<b>TTMT21 E/I 3.0 ISO</b>	3.00	21	12.6	4.8	●
	<b>TTMT21 I 3.5 ISO</b>	3.50	21	12.6	4.8	●
	<b>TTMT30 E/I 1.5 ISO</b>	1.50	30	16.7	5.6	●
	<b>TTMT30 E/I 2.0 ISO</b>	2.00	30	16.7	5.6	●
	<b>TTMT30 E/I 3.0 ISO</b>	3.00	30	16.7	5.6	●
	<b>TTMT30 E/I 3.5 ISO</b>	3.50	30	16.7	5.6	●
	<b>TTMT30 E/I 4.0 ISO</b>	4.00	30	16.7	5.6	●
	<b>TTMT30 I 4.5 ISO</b>	4.50	30	16.7	5.6	●
	<b>TTMT30 I 5.0 ISO</b>	5.00	30	16.7	5.6	●
	<b>TTMT40 E/I 1.5 ISO</b>	1.50	40	20.8	6.4	●
<b>TTMT40 E/I 2.0 ISO</b>	2.00	40	20.8	6.4	●	
<b>TTMT40 E/I 3.0 ISO</b>	3.00	40	20.8	6.4	●	
<b>TTMT40 I 3.5 ISO</b>	3.50	40	20.8	6.4	●	
<b>TTMT40 E/I 4.0 ISO</b>	4.00	40	20.8	6.4	●	
<b>TTMT40 I 4.5 ISO</b>	4.50	40	20.8	6.4	●	
<b>TTMT40 E/I 5.0 ISO</b>	5.00	40	20.8	6.4	●	
<b>TTMT40 I 5.5 ISO</b>	5.50	40	20.8	6.4	●	
<b>TTMT40 E/I 6.0 ISO</b>	6.00	40	20.8	6.4	●	



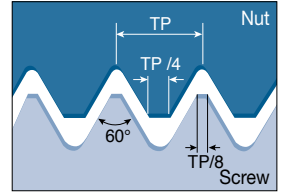
► <sup>(1)</sup> TTMT12 insert is only available with a single cutting edge

●: Standard items

UN, UNC, UNF, UNEF, UNS



TTMT12 I <sup>(1)</sup>



Insert	Designation	TPI	Dimension (mm)			Grade
			INSL	W1	S1	
	<b>TTMT12 I 32 UN <sup>(1)</sup></b>	32	12	6.5	2.9	●
	<b>TTMT12 I 28 UN <sup>(1)</sup></b>	28	12	6.5	2.9	●
	<b>TTMT12 I 24 UN <sup>(1)</sup></b>	24	12	6.5	2.9	●
	<b>TTMT12 I 20 UN <sup>(1)</sup></b>	20	12	6.5	2.9	●
	<b>TTMT12 I 18 UN <sup>(1)</sup></b>	18	12	6.5	2.9	●
	<b>TTMT12 I 16 UN <sup>(1)</sup></b>	16	12	6.5	2.9	●
	<b>TTMT14 E/I 32 UN</b>	32	14	7.9	3.2	●
	<b>TTMT14 E/I 28 UN</b>	28	14	7.9	3.2	●
	<b>TTMT14 I 27 UN</b>	27	14	7.9	3.2	●
	<b>TTMT14 E/I 24 UN</b>	24	14	7.9	3.2	●
	<b>TTMT14 E/I 20 UN</b>	20	14	7.9	3.2	●
	<b>TTMT14 E/I 18 UN</b>	18	14	7.9	3.2	●
	<b>TTMT14 E/I 16 UN</b>	16	14	7.9	3.2	●
	<b>TTMT14 E/I 14 UN</b>	14	14	7.9	3.2	●
	<b>TTMT14 E/I 12 UN</b>	12	14	7.9	3.2	●
	<b>TTMT14 I 11 UN</b>	11	14	7.9	3.2	●
	<b>TTMT14 I 10 UN</b>	10	14	7.9	3.2	●
	<b>TTMT21 E/I 24 UN</b>	24	21	12.6	4.8	●
	<b>TTMT21 E/I 20 UN</b>	20	21	12.6	4.8	●
	<b>TTMT21 E/I 18 UN</b>	18	21	12.6	4.8	●
	<b>TTMT21 E/I 16 UN</b>	16	21	12.6	4.8	●
	<b>TTMT21 E/I 14 UN</b>	14	21	12.6	4.8	●
	<b>TTMT21 E/I 12 UN</b>	12	21	12.6	4.8	●
	<b>TTMT21 E/I 10 UN</b>	10	21	12.6	4.8	●
	<b>TTMT21 I 8 UN</b>	8	21	12.6	4.8	●
	<b>TTMT21 I 7 UN</b>	7	21	12.6	4.8	●
	<b>TTMT30 E/I 20 UN</b>	20	30	16.7	5.6	●
	<b>TTMT30 E/I 18 UN</b>	18	30	16.7	5.6	●
	<b>TTMT30 E/I 16 UN</b>	16	30	16.7	5.6	●
	<b>TTMT30 E/I 14 UN</b>	14	30	16.7	5.6	●
	<b>TTMT30 E/I 12 UN</b>	12	30	16.7	5.6	●
	<b>TTMT30 E/I 10 UN</b>	10	30	16.7	5.6	●
	<b>TTMT30 E/I 8 UN</b>	8	30	16.7	5.6	●
<b>TTMT30 E/I 6 UN</b>	6	30	16.7	5.6	●	
<b>TTMT30 I 5 UN</b>	5	30	16.7	5.6	●	



▶ <sup>(1)</sup> TTMT12 insert is only available with a single cutting edge

● Standard items















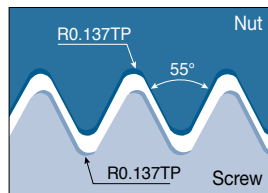
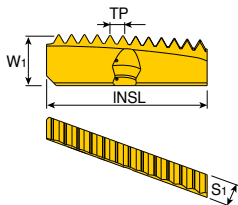




# TMTH-W



Helical inserts for whitworth threads, BSW, BSF, BSP (Internal and external)



Insert	Designation	TPI	THID	THOD	Dimension (mm)			Tool	Grade TT9030
					INSL	W1	S1		
	<b>TMTH 23 11 W</b>	11	≥G 1"	≥G 1"	27	8.0	3.5	TMTSRH 23-2	●
	<b>TMTH 32 11 W</b>	11	≥G 1 1/8"	≥G 1"	32	9.0	4.0	TMTSRH 32-5	●
	<b>TMTH 45 11 W</b>	11	≥G 1 3/4"	≥G 1"	37	11.9	5.0	TMTSRH 45-6	●
	<b>TMTH 63 11 W</b>	11	≥G 2 1/2"	≥G 1"	38	11.9	5.0	TMTSRH 63-9	●

TMTSRH ▶ THID: Thread designation inside  
 ▶ THOD: Thread designation outside

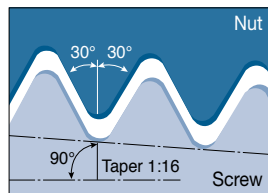
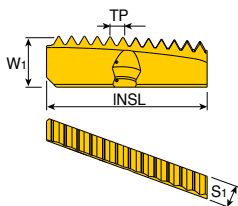
●: Standard item



# TMTH-NPT



Helical inserts for NPT threads (Internal and external)



Insert	Designation	TPI	THID	THOD	Dimension (mm)			Tool	Grade TT9030
					INSL	W1	S1		
	<b>TMTH 23 11.5 NPT</b>	11.5	1"-2" NPT	1"-2" NPT	27	8.0	3.5	TMTSRH 23-2	●
	<b>TMTH 32 11.5 NPT</b>	11.5	1 1/4"-2" NPT	1"-2" NPT	32	9.0	4.0	TMTSRH 32-5	●
	<b>TMTH 45 11.5 NPT</b>	11.5	2" NPT	1"-2" NPT	37	11.9	5.0	TMTSRH 45-6	●
	<b>TMTH 63 11.5 NPT</b>	11.5	-	≥1" NPT	38	11.9	5.0	TMTSRH 63-9	●

TMTSRH ▶ THID: Thread designation inside  
 ▶ THOD: Thread designation outside

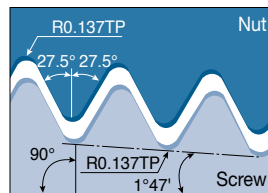
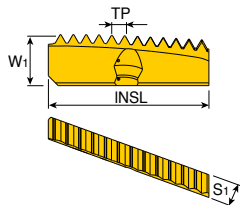
●: Standard items




# TMTH-BSPT



Helical inserts for BSPT threads (Internal and external)



Insert	Designation	TPI	THID	THOD	Dimension (mm)			Tool	Grade TT9030
					INSL	W1	S1		
	<b>TMTH 23 11 BSPT</b>	11	≥1" BSPT	≥1" BSPT	27	8.0	3.5	TMTSRH 23-2	●
	<b>TMTH 32 11 BSPT</b>	11	≥1 1/8" BSPT	≥1" BSPT	32	9.0	4.0	TMTSRH 32-5	●
	<b>TMTH 45 11 BSPT</b>	11	≥1 3/4" BSPT	≥1" BSPT	37	11.9	5.0	TMTSRH 45-6	●
	<b>TMTH 63 11 BSPT</b>	11	≥2 1/2" BSPT	≥1" BSPT	38	11.9	5.0	TMTSRH 63-9	●



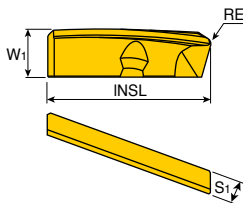
▶ THID: Thread designation inside  
▶ THOD: Thread designation outside


●: Standard Item

# TMTH-F



Helical long edge finishing inserts



Insert	Designation	Dimension (mm)				Tool	Grade TT9030
		INSL	W1	S1	RE		
	<b>TMTH 23F R0.2</b>	27	8.0	3.5	0.2	TMTSRH 23-2	●
	<b>TMTH 23F R0.5</b>	27	8.0	3.5	0.5	TMTSRH 23-2	●
	<b>TMTH 23F R1.0</b>	27	8.0	3.5	1.0	TMTSRH 23-2	●
	<b>TMTH 32F R0.2</b>	32	9.0	4.0	0.2	TMTSRH 32-5	●
	<b>TMTH 32F R0.5</b>	32	9.0	4.0	0.5	TMTSRH 32-5	●
	<b>TMTH 32F R1.0</b>	32	9.0	4.0	1.0	TMTSRH 32-5	●
	<b>TMTH 45F R0.2</b>	37	11.9	5.0	0.2	TMTSRH 45-6	●



●: Standard items

# Recommended Cutting Conditions

## Machining data for indexable insert of threading cutters

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc(m/min)		
						TT9030		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	100-200	
		>=0.25%C	Annealed	650	190	2	95-190	
		<0.55%C	Quenched and tempered	850	250	3	90-180	
		>=0.55%C	Annealed	750	220	4	90-170	
			Quenched and tempered	1000	300	5	80-150	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed		600	200	6	120-170
				Quenched and tempered	930	275	7	115-160
			Quenched and tempered		1000	300	8	105-150
					1200	350	9	140
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	90-170	
Quenched and tempered			1100	325	11	75-145		
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	110-170		
		Martensitic	820	240	13	100-160		
		Austenitic	600	180	14	90-145		
K	Gray cast iron (GG)	Ferritic		160	15	65-135		
		Pearlitic		250	16	65-110		
	Cast iron nodular (GGG)	Ferritic		180	17	65-135		
		Pearlitic		260	18	60-100		
	Malleable cast iron	Ferritic		130	19	65-135		
	Pearlitic		230	20	60-120			
N	Aluminum - Wrought alloy	Not cureable		60	21	110-260		
		Cured		100	22	110-200		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	145-350	
			Cured		90	24	145-275	
	>12% Si	High temp.		130	25	95-225		
		Free cutting		110	26	145-350		
	Copper alloys	Brass		90	27	145-350		
		Electrolitic copper		100	28	145-350		
	Non-metallic		Duroplastics, fiber plastics			29	90-370	
			Hard rubber			30	80-330	
S	High temp. alloys	Fe based	Annealed		200	31	20-60	
			Cured		280	32	20-50	
		Ni or Co based	Annealed		250	33	20-30	
			Cured		350	34	10-20	
			Cast		320	35	15-25	
	Titanium, Ti alloys	Pure	Rm 400	190	36	30-90		
Alpha+beta alloys cured		Rm 1050	310	37	20-70			
H	Hardened steel	Hardened		55HRC	38	25-60		
		Hardened		60HRC	39	20-40		
	Chilled cast iron	Cast		400	40	25-60		
	Cast iron nodular	Hardened		55HRC	41	20-50		

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

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

► Feed rate: 0.05 - 0.15 mm/tooth



# Recommended Cutting Conditions



## Machining data for solid carbide threading end mills

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc(m/min)	
							TT9030
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	100-250
		>=0.25%C	Annealed	650	190	2	80-210
		<0.55%C	Quenched and tempered	850	250	3	65-170
		>=0.55%C	Annealed	750	220	4	110-180
			Quenched and tempered	1000	300	5	95-160
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	Annealed	600	200	6	90-160
			930	275	7	65-200	
			1000	300	8	70-210	
			1200	350	9	95-160	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	130-170	
		Quenched and tempered	1100	325	11	75-100	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	110-170	
		Martensitic	820	240	13	70-155	
		Austenitic	600	180	14	85-100	
K	Gray cast iron (GG)	Ferritic		160	15	70-150	
		Pearlitic		250	16	110-140	
	Cast iron nodular (GGG)	Ferritic		180	17	120-160	
		Pearlitic		260	18	75-160	
	Malleable cast iron	Ferritic		130	19	120-160	
Pearlitic			230	20	110-140		
N	Aluminum - Wrought alloy	Not cureable		60	21	160-300	
		Cured		100	22		
	Aluminum-cast, alloyed	Cured	<=12% Si	Not cureable	75	23	
			>12% Si	High temp.	130	25	
			>1% Pb	Free cutting	110	26	
	Copper alloys	Brass		90	27		
		Electrolitic copper		100	28		
	Non-metallic	Duroplastics, fiber plastics				29	100-400
		Hard rubber				30	
S	High temp. alloys	Fe based	Annealed		200	31	
			Cured		280	32	
		Ni or Co based	Annealed		250	33	20-80
			Cured		350	34	
	Titanium, Ti alloys	Cast		320	35		
		Pure	Rm 400	190	36		
H	Hardened steel	Hardened		55HRC	38	55-65	
		Hardened		60HRC	39	45-55	
	Chilled cast iron	Cast		400	40	90-105	
	Cast iron nodular	Hardened			55HRC	41	55-65

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

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

# Recommended Cutting Conditions



## Machining data for solid carbide threading end mills

Feed (mm/tooth) for diameter (mm)											
Ø2	Ø3	Ø4	Ø6	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø30
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.1	0.12	0.15	0.18
0.02	0.03	0.03	0.05	0.06	0.07	0.08	0.09	0.1	0.12	0.15	0.18
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.02	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.1	0.11
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.03	0.04	0.04	0.06	0.07	0.08	0.09	0.11	0.12	0.15	0.18	0.21
0.05	0.06	0.07	0.09	0.1	0.11	0.12	0.13	0.15	0.18	0.22	0.25
0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05
0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05

► For cutters with long cutting flute, reduce feed rate by 40%

# Recommended Cutting Conditions



## Machining data for short solid carbide thread mills

ISO	Material	Hardness (HRC)	Cutting speed Vc (m/min)	Feed (mm/tooth) for diameter (mm)												
				Ø1.5	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø12	Ø14	Ø15
P	Low & medium carbon steels		60-120	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
	High carbon steels		60-90	0.04	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.14	0.16	0.17	0.18
	Alloy steels, treated steels		50-80	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12	0.13	0.14
	Cast steels		70-90	0.04	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.1	0.12	0.13	0.14
M	Stainless steels		60-90	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.1	0.11	0.12	0.13
K	Cast Iron		40-80	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
N	Aluminum		80-150	0.05	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
	Synthetics, duroplastics, thermoplastics		50-200	0.10	0.11	0.12	0.14	0.16	0.18	0.19	0.19	0.19	0.19	0.19	0.20	0.20
S	Nickel alloys, titanium alloys.		20-40	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
H	Hardened steel	45-50	60-70	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08				
		51-55	50-60	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07				
		56-62	40-50	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06				

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

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

# T-TAP

Tapping





## 1 TaeguTec T-Tap

<b>T</b>	TaeguTec
<b>P</b>	PM
<b>H</b>	HSSE

## 2 Standard

<b>4</b>	DIN371
<b>5</b>	DIN374
<b>6</b>	DIN376

## 3 ISO grade

<b>5</b>	Multi
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## 4 Flute

<b>2</b>	Straight flute-spiral point
<b>4</b>	Right hand spiral 40°

## 5 Chamfer

<b>B</b>	4-5 threads
<b>C</b>	2-3 threads

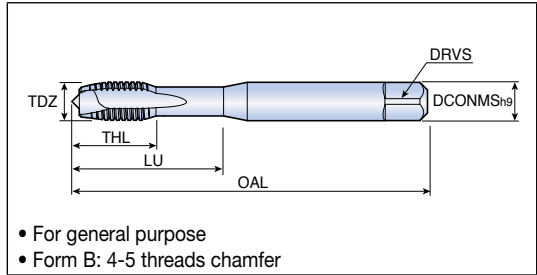
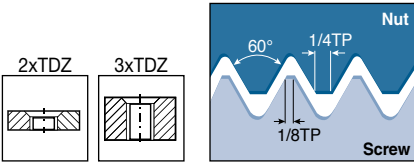
## 6 Coating

<b>None</b>	Uncoated
<b>05</b>	S.T.
<b>10</b>	TiN

## 7 Tap X Pitch

<b>M2 X 0.4</b>	M2 size 0.4 pitch
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## Straight flute with spiral point - Uncoated



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)							
					OAL	THL	LU	DCONMS	DRVS	Core hole		
<b>TPH452B M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	8	-	2.8	2.1	1.6		
<b>TPH452B M2.5x0.45</b>	M2.5	0.45			50	9	-	2.8	2.1	2.05		
<b>TPH452B M3x0.5</b>	M3	0.5			56	10	18	3.5	2.7	2.5		
<b>TPH452B M4x0.7</b>	M4	0.7			63	12	21	4.5	3.4	3.3		
<b>TPH452B M5x0.8</b>	M5	0.8			70	14	25	6	4.9	4.2		
<b>TPH452B M6x1.0</b>	M6	1			80	16	30	6	4.9	5		
<b>TPH452B M8x1.25</b>	M8	1.25			90	18	35	8	6.2	6.8		
<b>TPH452B M10x1.5</b>	M10	1.5			100	20	39	10	8	8.5		
<b>TPH652B M12x1.75</b>	M12	1.75			DIN376	ISO 2-6H	110	22	-	9	7	10.2
<b>TPH652B M14x2.0</b>	M14	2					110	24	-	11	9	12
<b>TPH652B M16x2.0</b>	M16	2	110	26			-	12	9	14		
<b>TPH652B M20x2.5</b>	M20	2.5	140	30			-	16	12	17.5		

Metric ISO fine thread DIN 13 standard

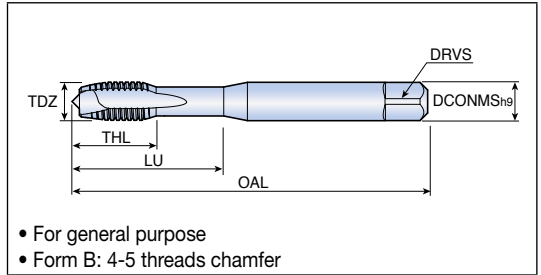
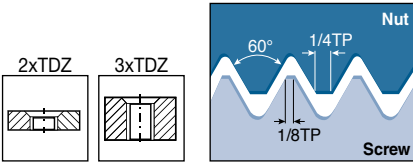
Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH552B MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH552B MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH552B MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH552B MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH552B MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5



# TPH...52B05



**Straight flute with spiral point - Steam tempered**



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)							
					OAL	THL	LU	DCONMS	DRVS	Core hole		
<b>TPH452B05 M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	8	-	2.8	2.1	1.6		
<b>TPH452B05 M2.5x0.45</b>	M2.5	0.45			50	9	-	2.8	2.1	2.05		
<b>TPH452B05 M3x0.5</b>	M3	0.5			56	10	18	3.5	2.7	2.5		
<b>TPH452B05 M4x0.7</b>	M4	0.7			63	12	21	4.5	3.4	3.3		
<b>TPH452B05 M5x0.8</b>	M5	0.8			70	14	25	6	4.9	4.2		
<b>TPH452B05 M6x1.0</b>	M6	1			80	16	30	6	4.9	5		
<b>TPH452B05 M8x1.25</b>	M8	1.25			90	18	35	8	6.2	6.8		
<b>TPH452B05 M10x1.5</b>	M10	1.5			100	20	39	10	8	8.5		
<b>TPH652B05 M12x1.75</b>	M12	1.75			DIN376	ISO 2-6H	110	22	-	9	7	10.2
<b>TPH652B05 M14x2.0</b>	M14	2					110	24	-	11	9	12
<b>TPH652B05 M16x2.0</b>	M16	2	110	26			-	12	9	14		
<b>TPH652B05 M20x2.5</b>	M20	2.5	140	30			-	16	12	17.5		

Metric ISO fine thread DIN 13 standard

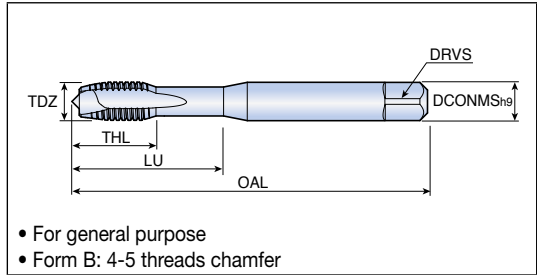
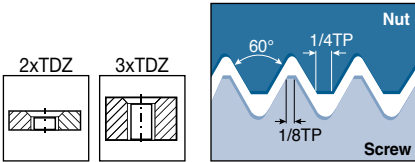
Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH552B05 MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH552B05 MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH552B05 MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH552B05 MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH552B05 MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5



# TPH...52B10



Straight flute with spiral point - TiN coated



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)							
					OAL	THL	LU	DCONMS	DRVS	Core hole		
<b>TPH452B10 M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	8	-	2.8	2.1	1.6		
<b>TPH452B10 M2.5x0.45</b>	M2.5	0.45			50	9	-	2.8	2.1	2.05		
<b>TPH452B10 M3x0.5</b>	M3	0.5			56	10	18	3.5	2.7	2.5		
<b>TPH452B10 M4x0.7</b>	M4	0.7			63	12	21	4.5	3.4	3.3		
<b>TPH452B10 M5x0.8</b>	M5	0.8			70	14	25	6	4.9	4.2		
<b>TPH452B10 M6x1.0</b>	M6	1			80	16	30	6	4.9	5		
<b>TPH452B10 M8x1.25</b>	M8	1.25			90	18	35	8	6.2	6.8		
<b>TPH452B10 M10x1.5</b>	M10	1.5			100	20	39	10	8	8.5		
<b>TPH652B10 M12x1.75</b>	M12	1.75			DIN376	ISO 2-6H	110	22	-	9	7	10.2
<b>TPH652B10 M14x2.0</b>	M14	2					110	24	-	11	9	12
<b>TPH652B10 M16x2.0</b>	M16	2	110	26			-	12	9	14		
<b>TPH652B10 M20x2.5</b>	M20	2.5	140	30			-	16	12	17.5		

Metric ISO fine thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH552B10 MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH552B10 MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH552B10 MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH552B10 MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH552B10 MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5

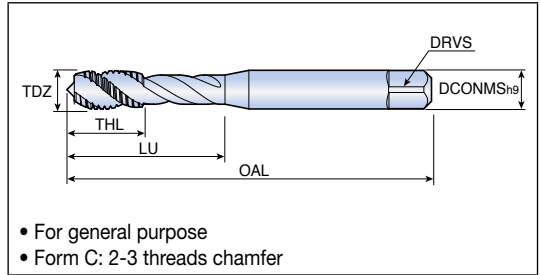
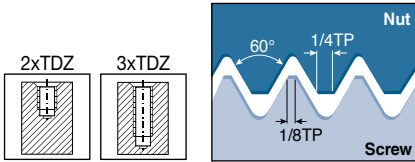




# TPH...54C



Right hand spiral flute (40°) - Uncoated



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH454C M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	6	10	2.8	2.1	1.6
<b>TPH454C M2.5x0.45</b>	M2.5	0.45			50	6	12	2.8	2.1	2.05
<b>TPH454C M3x0.5</b>	M3	0.5			56	7	18	3.5	2.7	2.5
<b>TPH454C M4x0.7</b>	M4	0.7			63	8	21	4.5	3.4	3.3
<b>TPH454C M5x0.8</b>	M5	0.8			70	10	25	6	4.9	4.2
<b>TPH454C M6x1.0</b>	M6	1			80	12	30	6	4.9	5
<b>TPH454C M8x1.25</b>	M8	1.25			90	15	35	8	6.2	6.8
<b>TPH454C M10x1.5</b>	M10	1.5			100	18	39	10	8	8.5
<b>TPH654C M12x1.75</b>	M12	1.75	DIN376	ISO 2-6H	110	18	-	9	7	10.2
<b>TPH654C M14x2.0</b>	M14	2			110	20	-	11	9	12
<b>TPH654C M16x2.0</b>	M16	2			110	20	-	12	9	14
<b>TPH654C M20x2.5</b>	M20	2.5			140	25	-	16	12	17.5

Metric ISO fine thread DIN 13 standard

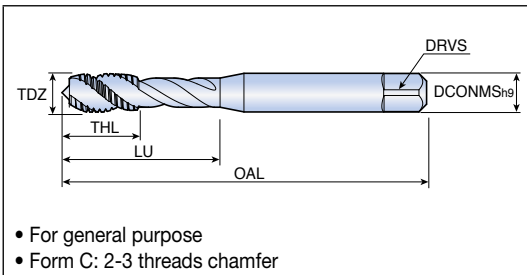
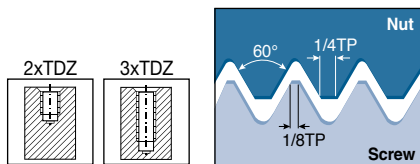
Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH554C MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH554C MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH554C MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH554C MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH554C MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5



# TPH...54C05



Right hand spiral flute (40°) - Steam tempered



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)							
					OAL	THL	LU	DCONMS	DRVS	Core hole		
<b>TPH454C05 M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	6	10	2.8	2.1	1.6		
<b>TPH454C05 M2.5x0.45</b>	M2.5	0.45			50	6	12	2.8	2.1	2.05		
<b>TPH454C05 M3x0.5</b>	M3	0.5			56	7	18	3.5	2.7	2.5		
<b>TPH454C05 M4x0.7</b>	M4	0.7			63	8	21	4.5	3.4	3.3		
<b>TPH454C05 M5x0.8</b>	M5	0.8			70	10	25	6	4.9	4.2		
<b>TPH454C05 M6x1.0</b>	M6	1			80	12	30	6	4.9	5		
<b>TPH454C05 M8x1.25</b>	M8	1.25			90	15	35	8	6.2	6.8		
<b>TPH454C05 M10x1.5</b>	M10	1.5			100	18	39	10	8	8.5		
<b>TPH654C05 M12x1.75</b>	M12	1.75			DIN376	ISO 2-6H	110	18	-	9	7	10.2
<b>TPH654C05 M14x2.0</b>	M14	2					110	20	-	11	9	12
<b>TPH654C05 M16x2.0</b>	M16	2	110	20			-	12	9	14		
<b>TPH654C05 M20x2.5</b>	M20	2.5	140	25			-	16	12	17.5		

Metric ISO fine thread DIN 13 standard

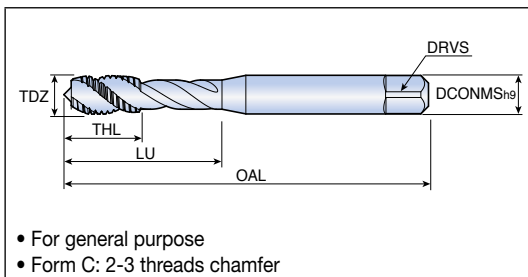
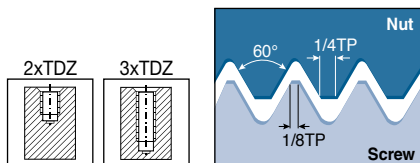
Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH554C05 MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH554C05 MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH554C05 MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH554C05 MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH554C05 MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5



# TPH...54C10



Right hand spiral flute (40°) - TiN coated



Metric ISO standard thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)							
					OAL	THL	LU	DCONMS	DRVS	Core hole		
<b>TPH454C10 M2x0.4</b>	M2	0.4	DIN371	ISO 2-6H	45	6	10	2.8	2.1	1.6		
<b>TPH454C10 M2.5x0.45</b>	M2.5	0.45			50	6	12	2.8	2.1	2.05		
<b>TPH454C10 M3x0.5</b>	M3	0.5			56	7	18	3.5	2.7	2.5		
<b>TPH454C10 M4x0.7</b>	M4	0.7			63	8	21	4.5	3.4	3.3		
<b>TPH454C10 M5x0.8</b>	M5	0.8			70	10	25	6	4.9	4.2		
<b>TPH454C10 M6x1.0</b>	M6	1			80	12	30	6	4.9	5		
<b>TPH454C10 M8x1.25</b>	M8	1.25			90	15	35	8	6.2	6.8		
<b>TPH454C10 M10x1.5</b>	M10	1.5			100	18	39	10	8	8.5		
<b>TPH654C10 M12x1.75</b>	M12	1.75			DIN376	ISO 2-6H	110	18	-	9	7	10.2
<b>TPH654C10 M14x2.0</b>	M14	2					110	20	-	11	9	12
<b>TPH654C10 M16x2.0</b>	M16	2	110	20			-	12	9	14		
<b>TPH654C10 M20x2.5</b>	M20	2.5	140	25			-	16	12	17.5		

Metric ISO fine thread DIN 13 standard

Designation	TDZ	TP (mm)	Standard (DIN)	Tolerance	Dimension (mm)					
					OAL	THL	LU	DCONMS	DRVS	Core hole
<b>TPH554C10 MF8x1.0</b>	M8	1	DIN374	ISO 2-6H	90	15	-	6	4.9	7
<b>TPH554C10 MF10x1.25</b>	M10	1.25			100	18	-	7	5.5	8.8
<b>TPH554C10 MF12x1.5</b>	M12	1.5			100	18	-	9	7	10.5
<b>TPH554C10 MF14x1.5</b>	M14	1.5			100	18	-	11	9	12.5
<b>TPH554C10 MF16x1.5</b>	M16	1.5			100	18	-	12	9	14.5



# Recommended Cutting Conditions



## Machining data for straight flute with spiral point tap

Cutting speed Vc(m/min)

ISO	Material	Condition	Straight flute with spiral point tap			Lubrication	
			Uncoated	Steam tempered	TiN coated		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	5-25	5-25 *	15-45 *	E/O
		>=0.25%C	Annealed	5-20	5-20 *	10-40 *	E/O
		<0.55%C	Quenched and tempered	-	2-15 *	5-25 *	E/O
		>=0.55%C	Annealed	5-20	5-20 *	10-40 *	E/O
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	-	2-15 *	5-25 *	E/O	
		Annealed	5-25	5-25 *	15-45 *	E/O	
		Quenched and tempered	-	2-15 *	5-20 *	E/O	
		Quenched and tempered	-	-	5-20	O/S	
M	Stainless steel and cast steel	Ferritic / martensitic	-	2-10 *	5-20 *	E/O	
		Martensitic	-	2-10 *	5-20 *	E/O	
		Austenitic	-	2-10 *	5-20 *	E/O	
K	Gray cast iron (GG)	Ferritic	10-15	10-25	15-45	E/D	
		Pearlitic	10-15	10-25	10-40	E/D	
	Cast iron nodular (GGG)	Ferritic	8-12	5-20	10-30	E/D	
		Pearlitic	8-12	5-15	10-25	E/D	
Malleable cast iron	Ferritic	10-15	10-25	15-45	E/D		
	Pearlitic	10-15	10-20	10-40	E/D		
N	Aluminum - wrought alloy	Not cureable	15-25 *	15-25	15-25	E/O	
		Cured	15-25 *	15-25	15-25	E/O	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	15-20 *	10-20	15-40 *	E/O
		Cured	15-20 *	10-20	15-40 *	E/O	
		>12% Si	High temp.	15-20 *	15-20	10-30	E/O
	Copper alloys	>1% Pb	Free cutting	15-25 *	15-25	10-30	E/O
		Brass	10-40	10-40	20-60	E/O	
Non-metallic	Electrolitic copper	10-15 *	2-10	5-25	E/O		
	Duroplastics, fiber plastics	-	10-20	10-20	D		
S	High temp. alloys	Fe based	Annealed	-	-	3-5	S
			Cured	-	-	3-5	S
		Ni or Co based	Annealed	-	-	2-4	S
			Cured	-	-	2-4	S
	Titanium, Ti alloys	Cast	-	-	2-4	S	
		Pure	-	-	4-6	S	
		Alpha+beta alloys cured	-	-	4-6	S	

\* : Recommended

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

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

► **Lubrication**   
**E:** Emulsion   
**O:** Cutting oil   
**S:** Special cutting oil   
**D:** Dry/air

# Recommended Cutting Conditions



Machining data for 40° right hand spiral flute tap

Cutting speed Vc(m/min)

ISO	Material	Condition	40° right hand spiral flute tap			Lubrication	
			Uncoated	Steam tempered	TiN coated		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	5-25	5-25*	15-45*	E/O
		>=0.25%C	Annealed	5-20	5-20*	10-40*	E/O
		<0.55%C	Quenched and tempered	-	2-15*	5-25*	E/O
		>=0.55%C	Annealed	5-20	5-20*	10-40*	E/O
			Quenched and tempered	-	2-15*	5-25*	E/O
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	5-25	5-25*	15-45*	E/O	
		Quenched and tempered	-	2-15*	5-20*	E/O	
	High alloy steel, cast steel and tool steel	Annealed	5-20	5-20	10-40*	E/O	
Quenched and tempered		-	-	5-20	O/S		
M	Stainless steel and cast steel	Ferritic / martensitic	-	2-10*	5-20*	E/O	
		Martensitic	-	2-10*	5-20*	E/O	
		Austenitic	-	2-10*	5-20*	E/O	
K	Gray cast iron (GG)	Ferritic	10-15	10-25	15-45	E/D	
		Pearlitic	10-15	10-20	10-40	E/D	
	Cast iron nodular (GGG)	Ferritic	8-12	5-20	10-30	E/D	
		Pearlitic	8-12	5-15	10-25	E/D	
	Malleable cast iron	Ferritic	10-15	10-25	15-45	E/D	
		Pearlitic	10-15	10-20	10-40	E/D	
N	Aluminum - wrought alloy	Not cureable	15-25*	15-25	15-25	E/O	
		Cured	15-25*	15-25	15-25	E/O	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	15-20*	10-20	15-40*	E/O
			Cured	15-20*	10-20	15-40*	E/O
		>12% Si	High temp.	15-20*	15-20	10-30	E/O
	Copper alloys	>1% Pb	Free cutting	15-25*	15-25	10-30	E/O
			Brass	10-40	10-40	50-60	E/O
			Electrolitic copper	10-15*	2-10	5-25	E/O
	Non-metallic	Duroplastics, fiber plastics	-	10-20	10-20	D	
		Hard rubber	-	10-20	10-20	D	
S	High temp. alloys	Fe based	Annealed	-	-	3-5	S
			Cured	-	-	3-5	S
		Ni or Co based	Annealed	-	-	2-4	S
			Cured	-	-	2-4	S
	Titanium, Ti alloys	Cast	-	-	2-4	S	
		Pure	-	-	4-6	S	
		Alpha+beta alloys cured	-	-	4-6	S	

\* : Recommended

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

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

► **Lubrication** E: Emulsion O: Cutting oil S: Special cutting oil D: Dry/air

# HOLEMAKING



# HOLEMAKING



## contents











<b>Tool Selection Guide</b>	D4
<b>Grades</b>	D16
<b>Indexable Drills</b>	
TOP-DRILL (Ø12-Ø80)	D18
T-DRILL (Ø12.5-Ø80)	D34
<b>Head Changeable Drills</b>	
DRILL-SFEED (Ø12-Ø25.9)	D55
WIN-DRILL (Small dia. Ø4-Ø5.9)	D58
DRILL-RUSH (Ø6-Ø25.9)	D59
WIN-DRILL (Modular type Ø6-Ø20.9)	D71
MODU-R-DRILL (Ø26-Ø50)	D75
SPADE-RUSH (Ø20-Ø41)	D80
<b>Solid Drills</b>	
SOLID-3-DRILL (Ø4-Ø12)	D83
H-DRILL (Ø3-Ø12)	D89
T-CHAMFER (Ø7-Ø20)	D107
<b>Multifunctional Tools</b>	
TOP-CAP (Ø8-Ø32)	D51





# Tool Selection Guide

## Drilling tools

Series			Indexable drill				
			<i>TOPDRILL</i>		<i>TDRILL</i>		<i>TOPCAP</i>
			TOP 2/3/4/5	TOP-CA	TDR 2/3/4/5	TDR-CA	TCAP
							
<b>Pages</b>			D18-D29	D30-D33	D34-D46	D47-D49	D51-D53
<b>DC(mm)</b>			Ø12.0-Ø50.0	Ø51.0-Ø80.0	Ø12.5-Ø50.0	Ø51.0-Ø80.0	Ø8.0-Ø32.0
<b>Drilling depth(L/D)</b>			2, 3, 4, 5 x Dc	2, 3, 4 x Dc	2, 3, 4, 5 x Dc	2.5, 3.5 x Dc	2.25, 3 x Dc
<b>Hole tolerance</b>			IT 11-13	IT 12-13	IT 12-13	IT 12-13	IT 10-12
<b>Application</b>	General drilling		●	●	●	●	●
	Cross hole drilling		●	●	●	●	
	Irregular surface drilling		○	○	○	○	●
	Interrupted drilling		○	○	○	○	
	Chamfering						
<b>Coolant supply</b>			Internal	Internal	Internal	Internal	Internal

# Tool Selection Guide








## Drilling tools

Head changeable drill					
<i>DRILLSPEED</i>	<i>WINDRILL</i>	<i>DRILLRUSH</i>			<i>WINDRILL</i>
3ED	TCD...AO	TCD	TCD-M	TCD...AO 3/5/8D	TCD-MRS/TCDM
					
D55-D57	D58	D59-D67	D68	D70	D71-D74
Ø12.0-Ø25.9	Ø4.0-Ø5.9	Ø6.0-Ø25.9	M8-M24 (ISO)	Ø6.0-Ø9.9	Ø6.0-Ø20.9
3, 5, 8 x Dc	3, 5 x Dc	1, 5, 3, 5, 8, 12 x Dc		3, 5, 8 x Dc	2, 3, 4 x Dc
IT 9-10	IT 9-10	IT 9-10	IT 9-10	IT 9-10	IT 9-10
●	●	●	●	●	●
○	●	●		●	●
			●		
Internal	Internal	Internal	Internal	Internal	Internal

● Recommended, ○ Suitable

# Tool Selection Guide

## Drilling tools

Series		Head changeable drill			Solid carbide drill
		<i>WINGUN</i>	<i>MODURDRILL</i>	<i>SPADERUSH</i>	<i>SOLID3DRILL</i>
		TCDGN	TNDH-TP/ MDB	LCD	3HD
					
<b>Pages</b>		D125-D126	D75-D79	D80-D82	D83-D88
<b>DC(mm)</b>		Ø10.0-Ø25.9	Ø26.0-Ø50.0	Ø20.0-Ø41.0	Ø4.0-Ø12.0
<b>Drilling depth(L/D)</b>		16, 20 x Dc	3, 5 x Dc	3, 5, 8 x Dc	3, 5, 8, 12 x Dc
<b>Hole tolerance</b>		IT 9-10	IT 10-12	IT 9-10	IT 8-10
<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 tools

Solid carbide drill













**HDRILL**

NHD-PE/PI	NHD-KI	SHO 10/15/20	SHO-M	CDF
				
D89-D100	D101-D102	D104	D105	D106
Ø3.0-Ø12.0	Ø3.0-Ø12.0	Ø4.0-Ø10.0	M4-M10 (ISO)	Ø3.0-Ø12.7
3, 5 x Dc	3, 5 x Dc	10, 15, 20 x Dc		
IT 8-10	IT 8-10	IT 8-10	IT 8-10	IT 8-10
●	●	●	●	●
●	●	○		
			●	
External / Internal	Internal	Internal	Internal	External

● Recommended, ○ Suitable

# Tool Selection Guide





## Reaming tools

Series			Indexable reamer		Solid reamer		
			<i>XM-REAM</i>	<i>TM-REAM</i>	<i>TB-REAM</i>	<i>TS-REAM</i>	
			XR-S0	TM	TB	TS	
							
<b>Pages</b>			D112-D113	D115	D118-D119	D122-D123	
<b>DC(mm)</b>			Ø8.000-Ø12.999	Ø11.501-Ø32.000	Ø8.000-Ø32.000	Ø3.000-Ø12.000	
<b>Reaming depth(L/D)</b>			3, 5 x Dc	3, 5, 8 x Dc	5-9 x Dc	7.5-10 x Dc	
<b>Hole tolerance</b>			IT 7 ★	IT 7 ★	IT 6 ★★	IT 7	
<b>Application</b>		<b>Through</b>	<b>Blind</b>				
	General reaming			•	•	•	•
	Cross hole reaming					•	•
	Irregular surface reaming					•	•
	Interrupted reaming			•	•	•	•
<b>Coolant supply</b>			Internal	Internal	Internal	Internal	

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

# Tool Selection Guide

## Deep drilling tools

Series		Indexable deep drill head				
						
		TRGD/TRGD3 /TRGDL	TBTA3	TBTA5	TBTA7	TBTA9
						
<b>Pages</b>		D127-D133	D134-D139	D140-D143	D144-D146	D147-D149
<b>DC(mm)</b>		Ø10.0-Ø36.0	Ø38.00-Ø106.99	Ø107.00-Ø168.99	Ø169.00-Ø232.99	Ø233.00-Ø293.99
<b>Drilling depth(L/D)</b>		10-25 x Dc	100 x Dc	100 x Dc	100 x Dc	100 x Dc
<b>Hole tolerance</b>		IT 10-11	IT 10	IT 10	IT 10	IT 10
<b>Surface finish</b>			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		Indexable deep drill & boring head			Brazed deep drill head	
						
		TBTA-FB	TBTA-TR	TBTA-R	BTA-SE/DE	BTS-SE
						
<b>Pages</b>		D150-D155	D162-D165	D156-D161	D166-D168	D169
<b>DC(mm)</b>		Ø25.00-Ø89.00	Ø16.00-Ø40.00	Ø25.00-Ø110.99	Ø12.60-Ø65.00	Ø8.00-Ø20.00
<b>Drilling 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 7 - IT 9	IT 9	IT 9
<b>Surface finish</b>		3µm	3µm	1-2µm	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

● Recommended

# Tool Selection Guide

## Drill inserts

		TOP DRILL		T DRILL		DRILL SPEED	
		SOMT	SPMG / SPGG	3ED-P+	3ED-F		
<b>Series</b>							
<b>Pages</b>		D180-D181	D182-D183	D184-D186	D187		
<b>Size</b>		04/05/06/07/08 09/11/13/15	05/06/07/09 11/12/14	Ø12.0-Ø25.9	Ø12.0-Ø25.9		
<b>Chip former</b>		DP, DK, DL, DA	DG, DK, DA	P+	F		
<b>Grades</b>		TT9080, TT9300 TT8020, TT6080, K10	TT9030, TT8020 TT7400, TT6030, K10	TT5130	TT5130		
<b>Application</b>	General drilling		•	•	•	•	
	Cross hole drilling		•	•	•	•	
	Irregular surface drilling		○	○	○	○	
	Interrupted drilling		○	○			
	Chamfering						

# Tool Selection Guide

## Drill inserts










WINDRILL		DRILLRUSH			
TCD-P	TCD-P/M/K/N	TCD-P+	TCD-F	AOMT	CRNG
					
D188	D189-D195	D196-D200	D201-D202	D203	D203
Ø4.0-Ø5.9	Ø6.0-Ø25.9	Ø6.0-Ø25.9	Ø6.0-Ø25.9	03,04,06-C30/C45	08-45CD
P	P/M/K/N	P+	F	-	-
TT9080	TT9080 UF10	TT9080	TT9080	TT9080	TT9080
●	●	●	●		
●	●	●	●		
○	○	○	○		
				●	●

● Recommended, ○ Suitable



# Tool Selection Guide

## Drill inserts

			<b>MODURDRILL</b>		<b>SPADEFUSH</b>	
			<b>TCD-P-CO+</b>	<b>SPGX...DW</b>	<b>LCD-P</b>	<b>LCD-P+</b>
<b>Series</b>						
<b>Pages</b>			D204	D204	D205-D206	D207
<b>Size</b>			Ø15.9-Ø25.9	06/07/09/11/14	Ø20.0-Ø41.0	Ø20.0-Ø34.5
<b>Chip former</b>			P-CO+	DW	P	P+
<b>Grades</b>			TT9080	TT9080	TT9080	TT9080
<b>Application</b>	General drilling		•	•	•	•
	Cross hole drilling		•	•	•	•
	Irregular surface drilling		○	○	○	○
	Interrupted drilling					
	Chamfering					

# Tool Selection Guide










## Drill inserts

<i>SPADE RUSH</i>	<i>T CHAMFER</i>	<i>TOP CAP</i>	<i>T DEEP</i>	
LCD-F	XCGT-C	XCGT-TA XCMT	NPHT NPMT	NPMX TPMX
				
D208-D209	D210	D211-D212	D213 -D215	D216
Ø20.0-Ø41.0	06/09	04/05/06/07/08 10/13/17	06/07/08/09 /11/13	08/14/17/24/28
F	C30/C45/C60	TA/GV/TC	R(L)-G... /R(L)-HF..	R-B/R-G
TT9080	TT9080	TT9080, TT8020, TT9030, K10	TT9030, TT9130, TT8125, TT6130, TT5030	TT9030, TT9130, TT8125, TT7200, TT6130, TT6020, TT5100, TT5030
●		●	●	●
●			○	○
○				
	●			

● Recommended, ○ Suitable












# Tool Selection Guide

## Drill inserts

		<b>T<sub>DEEP</sub></b>			
		<b>TOGT</b>	<b>ZSGT</b>	<b>LOGT</b>	<b>TPMX XPMT</b>
<b>Series</b>					
<b>Pages</b>		D218	D217	D217	D219
<b>Size</b>		07/08/09/10/11 /12/13/14	06	06	14/16/17/24
<b>Chip former</b>		RS/GF	RS	RS	LG/-45
<b>Grades</b>		TT9030	TT9130	TT9130, TT8125	TT9030, TT9130, TT6020, TT5100
<b>Application</b>	General drilling		●	●	●
	Cross hole drilling				○
	Irregular surface drilling				
	Interrupted drilling				
	Chamfering				

# Tool Selection Guide

## Reamer heads & blades

			<i><b>XM-REAM</b></i>	<i><b>TM-REAM</b></i>	<i><b>TBREAM</b></i>	
			<b>XR</b>	<b>TM</b>	<b>TB</b>	
<b>Series</b>						
<b>Pages</b>			D114	D116 - D117	D121	
<b>Size</b>			Ø8.000-Ø12.000	Ø11.50-Ø32.000	1/2/3/4	
<b>Chip former</b>			AS/BL	AS/BL	A06/B06/B12	
<b>Grades</b>			TT9030	TT9030	TT5030, TT5050	
<b>Application</b>		<b>Through</b>	<b>Blind</b>			
	General reaming			●	●	●
	Cross hole reaming					
	Irregular surface reaming					
	Interrupted reaming					

● Recommended, ○ Suitable

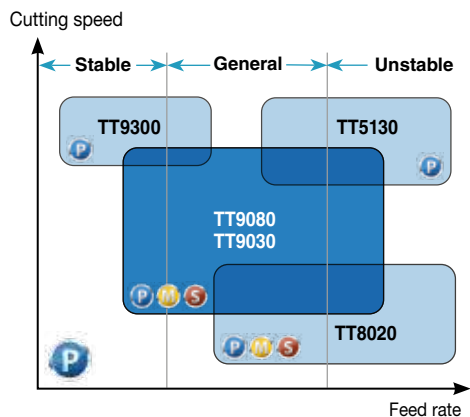
# Grades

## Holemaking grades

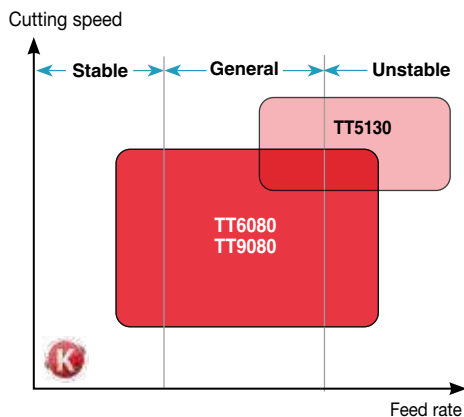
Grades	ISO	Characteristics & applications
<b>TT6080</b> PVD carbide	<b>K05</b> – <b>K25</b> <b>H05</b> – <b>H25</b>	<ul style="list-style-type: none"> <li>• General machining for gray and ductile cast iron</li> <li>• Finish and medium machining of hardened steel</li> </ul>
<b>TT9300</b> CVD carbide	<b>P10</b> – <b>P25</b>	<ul style="list-style-type: none"> <li>• High speed drilling of carbon &amp; alloy steel</li> </ul>
<b>TT5130</b> PVD carbide	<b>P20</b> – <b>P40</b> <b>K20</b> – <b>K40</b>	<ul style="list-style-type: none"> <li>• High speed drilling of carbon &amp; alloy steel</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>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>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>K10</b> Uncoated	<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>

## Selection guide for holemaking grades

### For steel



### For cast iron



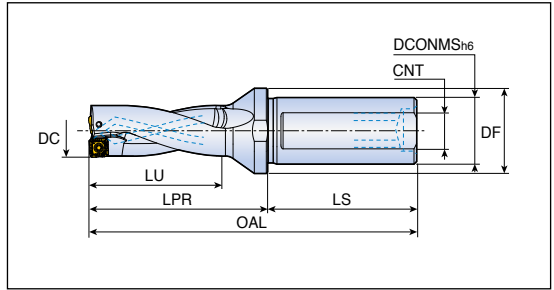
# Drilling Tools



## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 2120-20T2-04</b>	12.0	20	25	24	44	50	M13X1.0	SOMT 04...DP
<b>2125-20T2-04</b>	12.5	20	25	26	46	50	M13X1.0	D180
<b>2130-20T2-04</b>	13.0	20	25	26	46	50	M13X1.0	
<b>2135-20T2-04</b>	13.5	20	25	28	46	50	M13X1.0	SOMT 05...DP/DL/DK/DA
<b>2140-20T2-05</b>	14.0	20	25	28	46	50	M13X1.0	
<b>2145-20T2-05</b>	14.5	20	25	30	49	50	M13X1.0	D180-D181
<b>2150-20T2-05</b>	15.0	20	25	30	49	50	M13X1.0	
<b>2155-20T2-05</b>	15.5	20	25	32	52	50	M13X1.0	SOMT 06...DP/DL/DK/DA
<b>2160-20T2-05</b>	16.0	20	25	32	52	50	M13X1.0	
<b>2165-25T2-06</b>	16.5	25	32	34	54	56	M16X1.5	D180-D181
<b>2170-25T2-06</b>	17.0	25	32	34	54	56	M16X1.5	
<b>2175-25T2-06</b>	17.5	25	32	36	57	56	M16X1.5	SOMT 07...DP/DL/DK/DA
<b>2180-25T2-06</b>	18.0	25	32	36	57	56	M16X1.5	
<b>2185-25T2-06</b>	18.5	25	32	38	59	56	M16X1.5	D180-D181
<b>2190-25T2-06</b>	19.0	25	32	38	59	56	M16X1.5	
<b>2195-25T2-07</b>	19.5	25	32	40	63	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>2200-25T2-07</b>	20.0	25	32	40	63	56	M16X1.5	
<b>2205-25T2-07</b>	20.5	25	32	42	65	56	M16X1.5	D180-D181
<b>2210-25T2-07</b>	21.0	25	32	42	65	56	M16X1.5	
<b>2215-25T2-07</b>	21.5	25	32	44	67	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>2220-25T2-07</b>	22.0	25	32	44	67	56	M16X1.5	
<b>2225-25T2-08</b>	22.5	25	32	46	68	56	M16X1.5	D180-D181
<b>2230-25T2-08</b>	23.0	25	32	46	68	56	M16X1.5	
<b>2230-32T2-08</b>	23.0	32	40	46	68	60	M22X2.0	D180-D181
<b>2235-25T2-08</b>	23.5	25	32	48	70	56	M16X1.5	
<b>2235-32T2-08</b>	23.5	32	40	48	70	60	M22X2.0	SOMT 08...DP/DL/DK/DA
<b>2240-25T2-08</b>	24.0	25	32	48	70	56	M16X1.5	
<b>2240-32T2-08</b>	24.0	32	40	48	70	60	M22X2.0	D180-D181
<b>2245-25T2-08</b>	24.5	25	32	50	72	56	M16X1.5	
<b>2245-32T2-08</b>	24.5	32	40	50	72	60	M22X2.0	SOMT 08...DP/DL/DK/DA
<b>2250-25T2-08</b>	25.0	25	32	50	72	56	M16X1.5	
<b>2250-32T2-08</b>	25.0	32	40	50	72	60	M22X2.0	D180-D181
<b>2255-25T2-08</b>	25.5	25	32	52	73	56	M16X1.5	
<b>2255-32T2-08</b>	25.5	32	40	52	73	60	M22X2.0	SOMT 08...DP/DL/DK/DA
<b>2260-25T2-08</b>	26.0	25	32	52	73	56	M16X1.5	
<b>2260-32T2-08</b>	26.0	32	40	52	73	60	M22X2.0	D180-D181

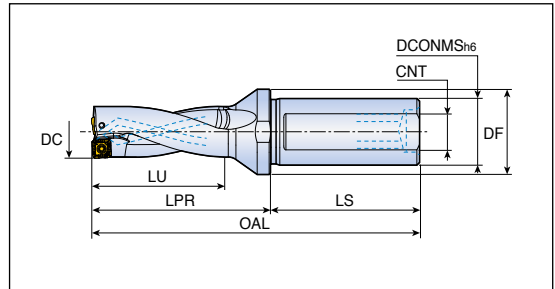


► OAL: LPR+LS

## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 2265-32T2-09</b>	26.5	32	40	54	77	60	M22X2.0	SOMT 09...DP/DL/DK/DA D180-D181
<b>2270-25T2-09</b>	27.0	25	40	54	77	56	M16X1.5	
<b>2270-32T2-09</b>	27.0	32	40	54	77	60	M22X2.0	
<b>2275-32T2-09</b>	27.5	32	40	56	79	60	M22X2.0	
<b>2280-25T2-09</b>	28.0	25	40	56	79	56	M16X1.5	
<b>2280-32T2-09</b>	28.0	32	40	56	79	60	M22X2.0	
<b>2285-32T2-09</b>	28.5	32	40	58	81	60	M22X2.0	
<b>2290-25T2-09</b>	29.0	25	40	58	81	56	M16X1.5	
<b>2290-32T2-09</b>	29.0	32	40	58	81	60	M22X2.0	
<b>2295-32T2-09</b>	29.5	32	40	60	83	60	M22X2.0	
<b>2300-32T2-09</b>	30.0	32	40	60	83	60	M22X2.0	
<b>2305-32T2-09</b>	30.5	32	40	62	85	60	M22X2.0	
<b>2310-32T2-09</b>	31.0	32	40	62	85	60	M22X2.0	
<b>2320-32T2-11</b>	32.0	32	40	64	87	60	M22X2.0	
<b>2320-40T2-11</b>	32.0	40	50	64	87	70	M30X2.0	
<b>2330-32T2-11</b>	33.0	32	40	66	89	60	M22X2.0	
<b>2330-40T2-11</b>	33.0	40	50	66	89	70	M30X2.0	
<b>2340-32T2-11</b>	34.0	32	40	68	91	60	M22X2.0	
<b>2340-40T2-11</b>	34.0	40	50	68	91	70	M30X2.0	
<b>2350-32T2-11</b>	35.0	32	40	70	93	60	M22X2.0	
<b>2350-40T2-11</b>	35.0	40	50	70	93	70	M30X2.0	
<b>2360-32T2-11</b>	36.0	32	40	72	95	60	M22X2.0	
<b>2360-40T2-11</b>	36.0	40	50	72	95	70	M30X2.0	
<b>2370-32T2-13</b>	37.0	32	50	74	102	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>2370-40T2-13</b>	37.0	40	50	74	102	70	M30X2.0	
<b>2380-32T2-13</b>	38.0	32	50	76	104	60	M22X2.0	
<b>2380-40T2-13</b>	38.0	40	50	76	104	70	M30X2.0	
<b>2390-32T2-13</b>	39.0	32	50	78	106	60	M22X2.0	
<b>2390-40T2-13</b>	39.0	40	50	78	106	70	M30X2.0	
<b>2400-32T2-13</b>	40.0	32	50	80	108	60	M22X2.0	
<b>2400-40T2-13</b>	40.0	40	50	80	108	70	M30X2.0	
<b>2410-40T2-13</b>	41.0	40	50	82	110	70	M30X2.0	
<b>2420-40T2-13</b>	42.0	40	50	84	112	70	M30X2.0	
<b>2430-40T2-13</b>	43.0	40	50	86	114	70	M30X2.0	



► OAL: LPR+LS



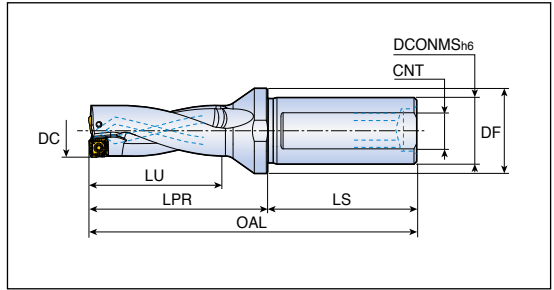
# TOP 2...-T2



## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 2440-40T2-15</b>	44.0	40	60	88	123	70	M30X2.0	SOMT 15...DP/DL/DK/DA D180-D181
<b>2450-40T2-15</b>	45.0	40	60	90	125	70	M30X2.0	
<b>2460-40T2-15</b>	46.0	40	60	92	127	70	M30X2.0	
<b>2470-40T2-15</b>	47.0	40	60	94	129	70	M30X2.0	
<b>2480-40T2-15</b>	48.0	40	60	96	131	70	M30X2.0	
<b>2490-40T2-15</b>	49.0	40	60	98	133	70	M30X2.0	
<b>2500-40T2-15</b>	50.0	40	60	100	135	70	M30X2.0	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<b>TOP 2120 - 2135</b>	TS 18041/HG	TD 6P	SL 20M	
<b>TOP 2140 - 2160</b>	TS 20043/HG-P	TD 6P	SL 20M	
<b>TOP 2165 - 2220</b>	TS 22052/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 / SL 40M	
<b>TOP 2370 - 2430</b>	TS 40093I	TD 15	SL 32M / SL 40M	
<b>TOP 2440 - 2550</b>	TS 50115I	TD 20	SL 40M	

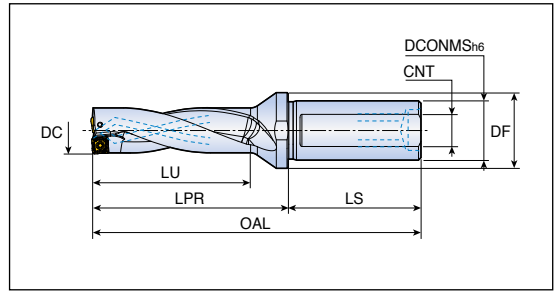


► \* Notice: Cooling hole plug for lathe should be ordered separately  
Order example) Plug for shank diameter 25.0mm: SL 25M

## Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 3120-20T2-04</b>	12.0	20	25	36	56	50	M13X1.0	SOMT 04...DP
<b>3125-20T2-04</b>	12.5	20	25	39	59	50	M13X1.0	D180
<b>3130-20T2-04</b>	13.0	20	25	39	59	50	M13X1.0	
<b>3135-20T2-04</b>	13.5	20	25	42	60	50	M13X1.0	
<b>3140-20T2-05</b>	14.0	20	25	42	60	50	M13X1.0	SOMT 05...DP/DL/DK/DA
<b>3145-20T2-05</b>	14.5	20	25	45	64	50	M13X1.0	D180-D181
<b>3150-20T2-05</b>	15.0	20	25	45	64	50	M13X1.0	
<b>3155-20T2-05</b>	15.5	20	25	48	68	50	M13X1.0	
<b>3160-20T2-05</b>	16.0	20	25	48	68	50	M13X1.0	
<b>3165-25T2-06</b>	16.5	25	32	51	71	56	M16X1.5	SOMT 06...DP/DL/DK/DA
<b>3167-25T2-06 *</b>	16.7	25	32	51	71	56	M16X1.5	D180-D181
<b>3170-25T2-06</b>	17.0	25	32	51	71	56	M16X1.5	
<b>3175-25T2-06</b>	17.5	25	32	54	75	56	M16X1.5	
<b>3180-25T2-06</b>	18.0	25	32	54	75	56	M16X1.5	
<b>3185-25T2-06</b>	18.5	25	32	57	78	56	M16X1.5	
<b>3190-25T2-06</b>	19.0	25	32	57	78	56	M16X1.5	
<b>3195-25T2-07</b>	19.5	25	32	60	83	56	M16X1.5	SOMT 07...DP/DL/DK/DA
<b>3200-25T2-07</b>	20.0	25	32	60	83	56	M16X1.5	D180-D181
<b>3205-25T2-07</b>	20.5	25	32	63	86	56	M16X1.5	
<b>3210-25T2-07</b>	21.0	25	32	63	86	56	M16X1.5	
<b>3215-25T2-07</b>	21.5	25	32	66	89	56	M16X1.5	
<b>3220-25T2-07</b>	22.0	25	32	66	89	56	M16X1.5	
<b>3222-25T2-07 *</b>	22.2	25	32	66	89	56	M16X1.5	
<b>3225-25T2-08</b>	22.5	25	32	69	91	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>3230-25T2-08</b>	23.0	25	32	69	91	56	M16X1.5	D180-D181
<b>3230-32T2-08</b>	23.0	32	40	69	91	60	M22X2.0	
<b>3235-25T2-08</b>	23.5	25	32	72	94	56	M16X1.5	
<b>3235-32T2-08</b>	23.5	32	40	72	94	60	M22X2.0	
<b>3240-25T2-08</b>	24.0	25	32	72	94	56	M16X1.5	
<b>3240-32T2-08</b>	24.0	32	40	72	94	60	M22X2.0	
<b>3245-25T2-08</b>	24.5	25	32	75	97	56	M16X1.5	
<b>3245-32T2-08</b>	24.5	32	40	75	97	60	M22X2.0	
<b>3250-25T2-08</b>	25.0	25	32	75	97	56	M16X1.5	
<b>3250-32T2-08</b>	25.0	32	40	75	97	60	M22X2.0	
<b>3254-25T2-08 *</b>	25.4	25	32	75	97	56	M16X1.5	

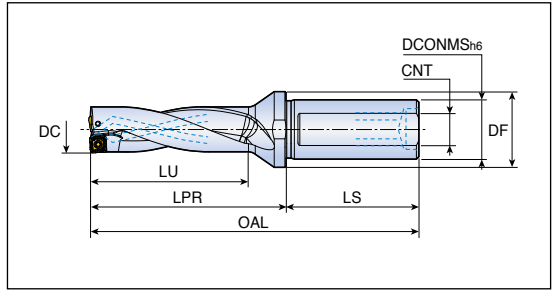


- ▶ \*: Inch sized hole
- ▶ OAL: LPR+LS

## Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 3255-25T2-08</b>	25.5	25	32	78	99	56	M16X1.5	SOMT 08...DP/DL/DK/DA D180-D181
<b>3255-32T2-08</b>	25.5	32	40	78	99	60	M22X2.0	
<b>3260-25T2-08</b>	26.0	25	32	78	99	56	M16X1.5	SOMT 09...DP/DL/DK/DA D180-D181
<b>3260-32T2-08</b>	26.0	32	32	78	99	60	M22X2.0	
<b>3265-25T2-09</b>	26.5	25	40	81	104	56	M16X1.5	SOMT 09...DP/DL/DK/DA D180-D181
<b>3265-32T2-09</b>	26.5	32	40	81	104	60	M22X2.0	
<b>3270-25T2-09</b>	27.0	25	40	81	104	56	M16X1.5	SOMT 11...DP/DL/DK/DA D180-D181
<b>3270-32T2-09</b>	27.0	32	40	81	104	60	M22X2.0	
<b>3275-25T2-09</b>	27.5	25	40	84	107	56	M16X1.5	SOMT 11...DP/DL/DK/DA D180-D181
<b>3275-32T2-09</b>	27.5	32	40	84	107	60	M22X2.0	
<b>3280-25T2-09</b>	28.0	25	40	84	107	56	M16X1.5	SOMT 13...DP/DL/DK/DA D180-D181
<b>3280-32T2-09</b>	28.0	32	40	84	107	60	M22X2.0	
<b>3285-25T2-09</b>	28.5	25	40	87	110	56	M16X1.5	SOMT 13...DP/DL/DK/DA D180-D181
<b>3285-32T2-09</b>	28.5	32	40	87	110	60	M22X2.0	
<b>3290-25T2-09</b>	29.0	25	40	87	110	56	M16X1.5	SOMT 13...DP/DL/DK/DA D180-D181
<b>3290-32T2-09</b>	29.0	32	40	87	110	60	M22X2.0	
<b>3295-32T2-09</b>	29.5	32	40	90	113	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3300-32T2-09</b>	30.0	32	40	90	113	60	M22X2.0	
<b>3305-32T2-09</b>	30.5	32	40	93	116	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3310-32T2-09</b>	31.0	32	40	93	116	60	M22X2.0	
<b>3320-32T2-11</b>	32.0	32	40	96	119	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3320-40T2-11</b>	32.0	40	50	96	119	70	M30X2.0	
<b>3330-32T2-11</b>	33.0	32	40	99	122	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3330-40T2-11</b>	33.0	40	50	99	122	70	M30X2.0	
<b>3340-32T2-11</b>	34.0	32	40	102	125	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3340-40T2-11</b>	34.0	40	50	102	125	70	M30X2.0	
<b>3350-32T2-11</b>	35.0	32	40	105	128	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3350-40T2-11</b>	35.0	40	50	105	128	70	M30X2.0	
<b>3360-32T2-11</b>	36.0	32	40	108	131	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3360-40T2-11</b>	36.0	40	50	108	131	70	M30X2.0	
<b>3370-32T2-13</b>	37.0	32	50	111	139	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3370-40T2-13</b>	37.0	40	50	111	139	70	M30X2.0	
<b>3380-32T2-13</b>	38.0	32	50	114	142	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3380-40T2-13</b>	38.0	40	50	114	142	70	M30X2.0	
<b>3390-32T2-13</b>	39.0	32	50	117	145	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181

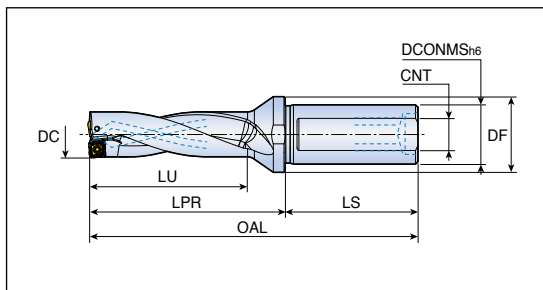


► OAL: LPR+LS

## Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 3390-40T2-13</b>	39.0	40	50	117	145	70	M30X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>3400-32T2-13</b>	40.0	32	50	120	148	60	M22X2.0	
<b>3400-40T2-13</b>	40.0	40	50	120	148	70	M30X2.0	
<b>3410-40T2-13</b>	41.0	40	50	123	151	70	M30X2.0	
<b>3420-40T2-13</b>	42.0	40	50	126	154	70	M30X2.0	
<b>3430-40T2-13</b>	43.0	40	50	129	157	70	M30X2.0	
<b>3440-40T2-15</b>	44.0	40	60	132	167	70	M30X2.0	SOMT 15...DP/DL/DK/DA D180-D181
<b>3450-40T2-15</b>	45.0	40	60	135	170	70	M30X2.0	
<b>3460-40T2-15</b>	46.0	40	60	138	173	70	M30X2.0	
<b>3470-40T2-15</b>	47.0	40	60	141	176	70	M30X2.0	
<b>3480-40T2-15</b>	48.0	40	60	144	179	70	M30X2.0	
<b>3490-40T2-15</b>	49.0	40	60	147	182	70	M30X2.0	
<b>3500-40T2-15</b>	50.0	40	60	150	185	70	M30X2.0	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<b>TOP 3120 - 3135</b>	TS 18041/HG	TD 6P	SL 20M	
<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 / SL 40M	
<b>TOP 3370 - 3430</b>	TS 40093I	TD 15	SL 32M / SL 40M	
<b>TOP 3440 - 3500</b>	TS 50115I	TD 20	SL 40M	



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

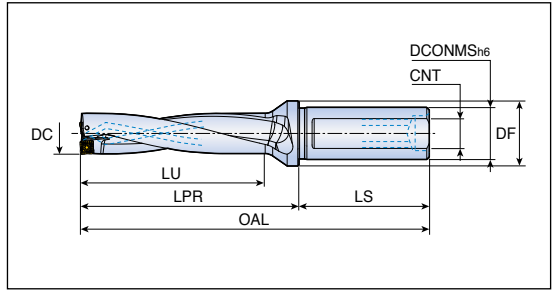
# TOP 4...-T2



## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 4120-20T2-04</b>	12.0	20	25	48	68	50	M13X1.0	SOMT 04...DP
<b>4125-20T2-04</b>	12.5	20	25	52	72	50	M13X1.0	D180
<b>4130-20T2-04</b>	13.0	20	25	52	72	50	M13X1.0	
<b>4135-20T2-04</b>	13.5	20	25	56	74	50	M13X1.0	
<b>4140-20T2-05</b>	14.0	20	25	56	74	50	M13X1.0	SOMT 05...DP/DL/DK/DA
<b>4145-20T2-05</b>	14.5	20	25	60	79	50	M13X1.0	D180-D181
<b>4150-20T2-05</b>	15.0	20	25	60	79	50	M13X1.0	
<b>4155-20T2-05</b>	15.5	20	25	64	84	50	M13X1.0	
<b>4160-20T2-05</b>	16.0	20	25	64	84	50	M13X1.0	
<b>4165-25T2-06</b>	16.5	25	32	68	88	56	M16X1.5	SOMT 06...DP/DL/DK/DA
<b>4170-25T2-06</b>	17.0	25	32	68	88	56	M16X1.5	D180-D181
<b>4175-25T2-06</b>	17.5	25	32	72	93	56	M16X1.5	
<b>4180-25T2-06</b>	18.0	25	32	72	93	56	M16X1.5	
<b>4185-25T2-06</b>	18.5	25	32	76	97	56	M16X1.5	
<b>4190-25T2-06</b>	19.0	25	32	76	97	56	M16X1.5	
<b>4195-25T2-07</b>	19.5	25	32	80	103	56	M16X1.5	SOMT 07...DP/DL/DK/DA
<b>4200-25T2-07</b>	20.0	25	32	80	103	56	M16X1.5	D180-D181
<b>4205-25T2-07</b>	20.5	25	32	84	107	56	M16X1.5	
<b>4210-25T2-07</b>	21.0	25	32	84	107	56	M16X1.5	
<b>4215-25T2-07</b>	21.5	25	32	88	111	56	M16X1.5	
<b>4220-25T2-07</b>	22.0	25	32	88	111	56	M16X1.5	
<b>4225-25T2-08</b>	22.5	25	32	92	114	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>4230-25T2-08</b>	23.0	25	32	92	114	56	M16X1.5	D180-D181
<b>4230-32T2-08</b>	23.0	32	40	92	114	60	M22X2.0	
<b>4235-25T2-08</b>	23.5	25	32	96	118	56	M16X1.5	
<b>4235-32T2-08</b>	23.5	32	40	96	118	60	M22X2.0	
<b>4240-25T2-08</b>	24.0	25	32	96	118	56	M16X1.5	
<b>4240-32T2-08</b>	24.0	32	40	96	118	60	M22X2.0	
<b>4245-25T2-08</b>	24.5	25	32	100	122	56	M16X1.5	
<b>4245-32T2-08</b>	24.5	32	40	100	122	60	M22X2.0	
<b>4250-25T2-08</b>	25.0	25	32	100	122	56	M16X1.5	
<b>4250-32T2-08</b>	25.0	32	40	100	122	60	M22X2.0	
<b>4254-25T2-08 *</b>	25.4	25	32	100	122	56	M16X1.5	
<b>4255-25T2-08</b>	25.5	25	32	104	125	56	M16X1.5	
<b>4255-32T2-08</b>	25.5	32	40	104	125	60	M22X2.0	



- ▶ \*: Inch sized hole
- ▶ OAL: LPR+LS

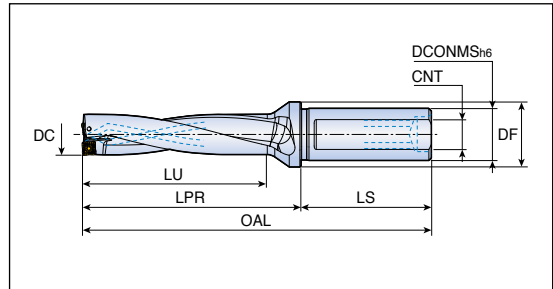
# TOP 4...-T2



## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 4260-25T2-08</b>	26.0	25	32	104	125	56	M16X1.5	SOMT 08...DP/DL/DK/DA D180-D181
<b>4260-32T2-08</b>	26.0	32	40	104	125	60	M22X2.0	
<b>4265-25T2-09</b>	26.5	25	40	108	131	56	M16X1.5	
<b>4265-32T2-09</b>	26.5	32	40	108	131	60	M22X2.0	
<b>4270-25T2-09</b>	27.0	25	40	108	131	56	M16X1.5	
<b>4270-32T2-09</b>	27.0	32	40	108	131	60	M22X2.0	
<b>4275-25T2-09</b>	27.5	25	40	112	135	56	M16X1.5	
<b>4275-32T2-09</b>	27.5	32	40	112	135	60	M22X2.0	
<b>4280-25T2-09</b>	28.0	25	40	112	135	56	M16X1.5	
<b>4280-32T2-09</b>	28.0	32	40	112	135	60	M22X2.0	
<b>4285-25T2-09</b>	28.5	25	40	116	139	56	M16X1.5	
<b>4285-32T2-09</b>	28.5	32	40	116	139	60	M22X2.0	
<b>4286-32T2-09 *</b>	28.6	32	40	116	139	60	M22X2.0	
<b>4290-25T2-09</b>	29.0	25	40	116	139	56	M16X1.5	
<b>4290-32T2-09</b>	29.0	32	40	116	139	60	M22X2.0	
<b>4295-32T2-09</b>	29.5	32	40	120	143	60	M22X2.0	
<b>4300-32T2-09</b>	30.0	32	40	120	143	60	M22X2.0	
<b>4305-32T2-09</b>	30.5	32	40	124	147	60	M22X2.0	
<b>4310-32T2-09</b>	31.0	32	40	124	147	60	M22X2.0	
<b>4318-32T2-11 *</b>	31.8	32	40	128	151	60	M22X2.0	SOMT 11...DP/DL/DK/DA D180-D181
<b>4320-32T2-11</b>	32.0	32	40	128	151	60	M22X2.0	
<b>4320-40T2-11</b>	32.0	40	50	128	151	70	M30X2.0	
<b>4330-32T2-11</b>	33.0	32	40	132	155	60	M22X2.0	
<b>4330-40T2-11</b>	33.0	40	50	132	155	70	M30X2.0	
<b>4340-32T2-11</b>	34.0	32	40	136	159	60	M22X2.0	
<b>4340-40T2-11</b>	34.0	40	50	136	159	70	M30X2.0	
<b>4349-40T2-11 *</b>	34.9	40	50	140	163	70	M30X2.0	
<b>4350-32T2-11</b>	35.0	32	40	140	163	60	M22X2.0	
<b>4350-40T2-11</b>	35.0	40	50	140	163	70	M30X2.0	
<b>4360-32T2-11</b>	36.0	32	40	144	167	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181
<b>4360-40T2-11</b>	36.0	40	50	144	167	70	M30X2.0	
<b>4370-32T2-13</b>	37.0	32	50	148	176	60	M22X2.0	
<b>4370-40T2-13</b>	37.0	40	50	148	176	70	M30X2.0	
<b>4371-40T2-13 *</b>	37.1	40	50	148	176	70	M30X2.0	

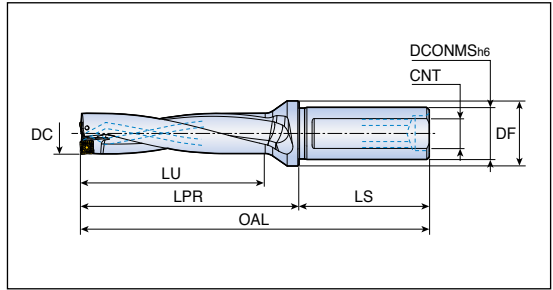


- ▶ \*: Inch sized hole
- ▶ OAL: LPR+LS

## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert	
	DC	DCONMS	DF	LU	LPR	LS	CNT		
<b>TOP 4380-32T2-13</b>	38.0	32	50	152	180	60	M22X2.0	SOMT 13...DP/DL/DK/DA D180-D181	
<b>4380-40T2-13</b>	38.0	40	50	152	180	70	M30X2.0		
<b>4381-40T2-13 *</b>	38.1	40	50	152	180	70	M30X2.0		
<b>4390-32T2-13</b>	39.0	32	50	156	184	60	M22X2.0		
<b>4390-40T2-13</b>	39.0	40	50	156	184	70	M30X2.0		
<b>4400-32T2-13</b>	40.0	32	50	160	188	60	M22X2.0		
<b>4400-40T2-13</b>	40.0	40	50	160	188	70	M30X2.0		
<b>4410-40T2-13</b>	41.0	40	50	164	192	70	M30X2.0		
<b>4413-40T2-13 *</b>	41.3	40	50	164	192	70	M30X2.0		
<b>4420-40T2-13</b>	42.0	40	50	168	196	70	M30X2.0		
<b>4429-40T2-13 *</b>	42.9	40	50	172	200	70	M30X2.0		
<b>4430-40T2-13</b>	43.0	40	50	172	200	70	M30X2.0		
<b>4440-40T2-15</b>	44.0	40	60	176	211	70	M30X2.0		SOMT 15...DP/DL/DK/DA D180-D181
<b>4445-40T2-15 *</b>	44.5	40	60	180	215	70	M30X2.0		
<b>4450-40T2-15</b>	45.0	40	60	180	215	70	M30X2.0		
<b>4460-40T2-15</b>	46.0	40	60	184	219	70	M30X2.0		
<b>4470-40T2-15</b>	47.0	40	60	188	223	70	M30X2.0		
<b>4476-40T2-15 *</b>	47.6	40	60	192	227	70	M30X2.0		
<b>4480-40T2-15</b>	48.0	40	60	192	227	70	M30X2.0		
<b>4490-40T2-15</b>	49.0	40	60	196	231	70	M30X2.0		
<b>4500-40T2-15</b>	50.0	40	60	200	235	70	M30X2.0		
<b>4508-40T2-15 *</b>	50.8	40	60	204	239	70	M30X2.0		

▶ \* Marked items are for inch sized hole

▶ OAL = LPR+LS

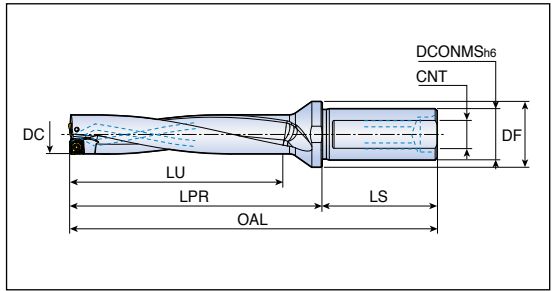
## Spare parts

Designation	Screw 	Wrench 	Plug* 	
<b>TOP 4120 - 4135</b>	TS 18041/HG	TD 6P	SL 20M	
<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 / SL 40M	
<b>TOP 4370 - 4430</b>	TS 40093I	TD 15	SL 32M / SL 40M	
<b>TOP 4440 - 4508</b>	TS 50115I	TD 20	SL 40M	



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

## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 5120-20T2-04</b>	12.0	20	25	60	80	50	M13X1.0	SOMT 04...DP
<b>5125-20T2-04</b>	12.5	20	25	65	85	50	M13X1.0	D180
<b>5130-20T2-04</b>	13.0	20	25	65	85	50	M13X1.0	
<b>5135-20T2-04</b>	13.5	20	25	70	88	50	M13X1.0	
<b>5140-20T2-05</b>	14.0	20	25	70	88	50	M13X1.0	SOMT 05...DP/DL/DK/DA
<b>5145-20T2-05</b>	14.5	20	25	75	94	50	M13X1.0	D180-D181
<b>5150-20T2-05</b>	15.0	20	25	75	94	50	M13X1.0	
<b>5155-20T2-05</b>	15.5	20	25	80	100	50	M13X1.0	
<b>5160-20T2-05</b>	16.0	20	25	80	100	50	M13X1.0	
<b>5165-25T2-06</b>	16.5	25	32	85	105	56	M16X1.5	SOMT 06...DP/DL/DK/DA
<b>5170-25T2-06</b>	17.0	25	32	85	105	56	M16X1.5	D180-D181
<b>5175-25T2-06</b>	17.5	25	32	90	111	56	M16X1.5	
<b>5180-25T2-06</b>	18.0	25	32	90	111	56	M16X1.5	
<b>5185-25T2-06</b>	18.5	25	32	95	116	56	M16X1.5	
<b>5190-25T2-06</b>	19.0	25	32	95	116	56	M16X1.5	
<b>5195-25T2-07</b>	19.5	25	32	100	123	56	M16X1.5	SOMT 07...DP/DL/DK/DA
<b>5200-25T2-07</b>	20.0	25	32	100	123	56	M16X1.5	D180-D181
<b>5205-25T2-07</b>	20.5	25	32	105	128	56	M16X1.5	
<b>5210-25T2-07</b>	21.0	25	32	105	128	56	M16X1.5	
<b>5215-25T2-07</b>	21.5	25	32	110	133	56	M16X1.5	
<b>5220-25T2-07</b>	22.0	25	32	110	133	56	M16X1.5	
<b>5222-25T2-07 *</b>	22.2	25	32	110	133	56	M16X1.5	
<b>5225-25T2-08</b>	22.5	25	32	115	137	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>5230-25T2-08</b>	23.0	25	32	115	137	56	M16X1.5	D180-D181
<b>5230-32T2-08</b>	23.0	32	40	115	137	60	M22X2.0	
<b>5235-25T2-08</b>	23.5	25	32	120	142	56	M16X1.5	
<b>5235-32T2-08</b>	23.5	32	40	120	142	60	M22X2.0	
<b>5240-25T2-08</b>	24.0	25	32	120	142	56	M16X1.5	
<b>5240-32T2-08</b>	24.0	32	40	120	142	60	M22X2.0	
<b>5245-25T2-08</b>	24.5	25	32	125	147	56	M16X1.5	
<b>5245-32T2-08</b>	24.5	32	40	125	147	60	M22X2.0	
<b>5250-25T2-08</b>	25.0	25	32	125	147	56	M16X1.5	
<b>5250-32T2-08</b>	25.0	32	40	125	147	60	M22X2.0	
<b>5255-25T2-08</b>	25.5	25	32	130	151	56	M16X1.5	
<b>5255-32T2-08</b>	25.5	32	40	130	151	60	M22X2.0	



- ▶ \*: Inch sized hole
- ▶ OAL: LPR+LS



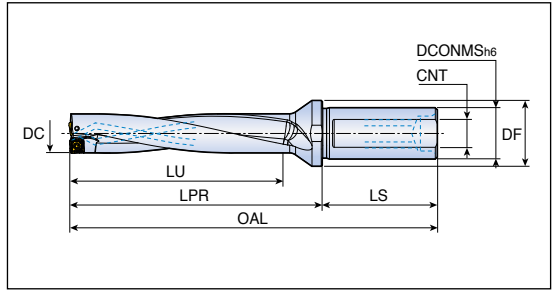
# TOP 5...-T2



## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 5260-25T2-08</b>	26.0	25	32	130	151	56	M16X1.5	SOMT 08...DP/DL/DK/DA
<b>5260-32T2-08</b>	26.0	32	40	130	151	60	M22X2.0	D180-D181
<b>5265-32T2-09</b>	26.5	32	40	135	158	60	M22X2.0	SOMT 09...DP/DL/DK/DA
<b>5270-25T2-09</b>	27.0	25	40	135	158	56	M16X1.5	D180-D181
<b>5270-32T2-09</b>	27.0	32	40	135	158	60	M22X2.0	
<b>5275-32T2-09</b>	27.5	32	40	140	163	60	M22X2.0	
<b>5280-25T2-09</b>	28.0	25	40	140	163	56	M16X1.5	
<b>5280-32T2-09</b>	28.0	32	40	140	163	60	M22X2.0	
<b>5282-32T2-09 *</b>	28.2	32	40	140	163	60	M22X2.0	
<b>5285-32T2-09</b>	28.5	32	40	145	168	60	M22X2.0	
<b>5290-25T2-09</b>	29.0	25	40	145	168	56	M16X1.5	
<b>5290-32T2-09</b>	29.0	32	40	145	168	60	M22X2.0	
<b>5295-32T2-09</b>	29.5	32	40	150	173	60	M22X2.0	
<b>5300-32T2-09</b>	30.0	32	40	150	173	60	M22X2.0	
<b>5305-32T2-09</b>	30.5	32	40	155	178	60	M22X2.0	
<b>5310-32T2-09</b>	31.0	32	40	155	178	60	M22X2.0	
<b>5320-32T2-11</b>	32.0	32	40	160	183	60	M22X2.0	SOMT 11...DP/DL/DK/DA
<b>5320-40T2-11</b>	32.0	40	50	160	183	70	M30X2.0	D180-D181
<b>5330-32T2-11</b>	33.0	32	40	165	188	60	M22X2.0	
<b>5330-40T2-11</b>	33.0	40	50	165	188	70	M30X2.0	
<b>5340-32T2-11</b>	34.0	32	40	170	193	60	M22X2.0	
<b>5340-40T2-11</b>	34.0	40	50	170	193	70	M30X2.0	
<b>5350-32T2-11</b>	35.0	32	40	175	198	60	M22X2.0	
<b>5350-40T2-11</b>	35.0	40	50	175	198	70	M30X2.0	
<b>5360-32T2-11</b>	36.0	32	40	180	203	60	M22X2.0	
<b>5360-40T2-11</b>	36.0	40	50	180	203	70	M30X2.0	
<b>5370-32T2-13</b>	37.0	32	50	185	213	60	M22X2.0	SOMT 13...DP/DL/DK/DA
<b>5370-40T2-13</b>	37.0	40	50	185	213	70	M30X2.0	D180-D181
<b>5380-32T2-13</b>	38.0	32	50	190	218	60	M22X2.0	
<b>5380-40T2-13</b>	38.0	40	50	190	218	70	M30X2.0	
<b>5390-32T2-13</b>	39.0	32	50	195	223	60	M22X2.0	
<b>5390-40T2-13</b>	39.0	40	50	195	223	70	M30X2.0	
<b>5400-32T2-13</b>	40.0	32	50	200	228	60	M22X2.0	
<b>5400-40T2-13</b>	40.0	40	50	200	228	70	M30X2.0	

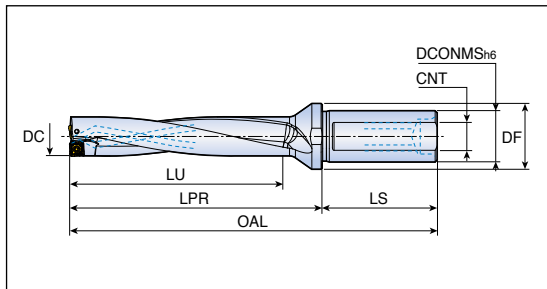


- ▶ \*: Inch sized hole
- ▶ OAL: LPR+LS

## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TOP 5410-40T2-13</b>	41.0	40	50	205	233	70	M30X2.0	SOMT 13...DP/DL/DK/DA
<b>5420-40T2-13</b>	42.0	40	50	210	238	70	M30X2.0	D180-D181
<b>5430-40T2-13</b>	43.0	40	50	215	243	70	M30X2.0	
<b>5440-40T2-15</b>	44.0	40	60	220	255	70	M30X2.0	SOMT 15...DP/DL/DK/DA
<b>5450-40T2-15</b>	45.0	40	60	225	260	70	M30X2.0	D180-D181
<b>5460-40T2-15</b>	46.0	40	60	230	265	70	M30X2.0	
<b>5470-40T2-15</b>	47.0	40	60	235	270	70	M30X2.0	
<b>5480-40T2-15</b>	48.0	40	60	240	275	70	M30X2.0	
<b>5490-40T2-15</b>	49.0	40	60	245	280	70	M30X2.0	
<b>5500-40T2-15</b>	50.0	40	60	250	285	70	M30X2.0	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<b>TOP 5120 - 5135</b>	TS 18041/HG	TD 6P	SL 20M	
<b>TOP 5140 - 5160</b>	TS 200431/HG-P	TD 6P	SL 20M	
<b>TOP 5165 - 5220</b>	TS 220521/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 / SL 40M	
<b>TOP 5370 - 5430</b>	TS 40093I	TD 15	SL 32M / SL 40M	
<b>TOP 5440 - 5500</b>	TS 50115I	TD 20	SL 40M	



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

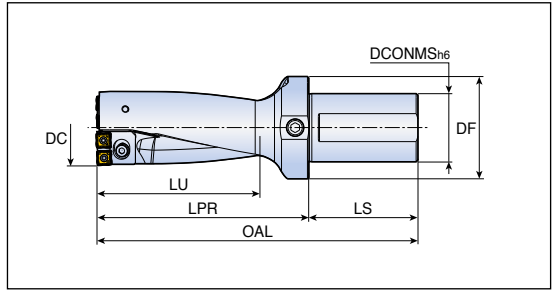
# TOP 20...CA



## Indexable drill holders for cartridge



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
<b>TOP 2051-55-50T2-09CA</b>	51	50	64	223	110	143	80	-	SOMT 09...
	52	50	64	223	110	143	80	TOP-0901	DP/DL/DK/DA
	53	50	64	223	110	143	80	TOP-0902	D180-D181
	54	50	64	223	110	143	80	TOP-0903	
	55	50	64	223	110	143	80	TOP-0904	
<b>TOP 2056-60-50T2-11CA</b>	56	50	64	236	120	156	80	-	SOMT 11...
	57	50	64	236	120	156	80	TOP-0901	DP/DL/DK/DA
	58	50	64	236	120	156	80	TOP-0902	D180-D181
	59	50	64	236	120	156	80	TOP-0903	
	60	50	64	236	120	156	80	TOP-0904	
<b>TOP 2061-65-50T2-11CA</b>	61	50	69	249	130	169	80	-	SOMT 11...
	62	50	69	249	130	169	80	TOP-0901	DP/DL/DK/DA
	63	50	69	249	130	169	80	TOP-0902	D180-D181
	64	50	69	249	130	169	80	TOP-0903	
	65	50	69	249	130	169	80	TOP-0904	
<b>TOP 2066-70-50T2-11CA</b>	66	50	69	262	140	182	80	-	SOMT 11...
	67	50	69	262	140	182	80	TOP-0901	DP/DL/DK/DA
	68	50	69	262	140	182	80	TOP-0902	D180-D181
	69	50	69	262	140	182	80	TOP-0903	
	70	50	69	262	140	182	80	TOP-0904	
<b>TOP 2071-75-50T2-13CA</b>	71	50	74	275	150	195	80	-	SOMT 13...
	72	50	74	275	150	195	80	TOP-0901	DP/DL/DK/DA
	73	50	74	275	150	195	80	TOP-0902	D180-D181
	74	50	74	275	150	195	80	TOP-0903	
	75	50	74	275	150	195	80	TOP-0904	
<b>TOP 2076-80-50T2-13CA</b>	76	50	74	288	160	208	80	-	SOMT 13...
	77	50	74	288	160	208	80	TOP-0901	DP/DL/DK/DA
	78	50	74	288	160	208	80	TOP-0902	D180-D181
	79	50	74	288	160	208	80	TOP-0903	
	80	50	74	288	160	208	80	TOP-0904	



► OAL: LPR+LS

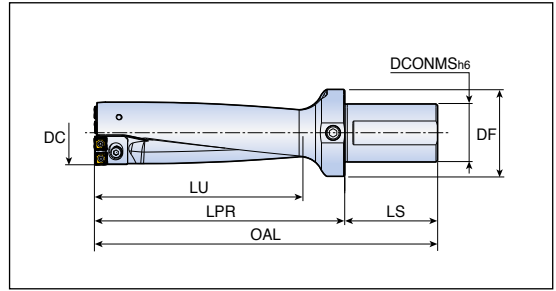
# TOP 30...CA



## Indexable drill holders for cartridge



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
<b>TOP 3051-55-50T2-09CA</b>	51	50	64	278	165	198	80	-	SOMT 09...
	52	50	64	278	165	198	80	TOP-0901	DP/DL/DK/DA
	53	50	64	278	165	198	80	TOP-0902	D180-D181
	54	50	64	278	165	198	80	TOP-0903	
	55	50	64	278	165	198	80	TOP-0904	
<b>TOP 3056-60-50T2-11CA</b>	56	50	64	296	180	216	80	-	SOMT 11...
	57	50	64	296	180	216	80	TOP-0901	DP/DL/DK/DA
	58	50	64	296	180	216	80	TOP-0902	D180-D181
	59	50	64	296	180	216	80	TOP-0903	
	60	50	64	296	180	216	80	TOP-0904	
<b>TOP 3061-65-50T2-11CA</b>	61	50	69	314	195	234	80	-	SOMT 11...
	62	50	69	314	195	234	80	TOP-0901	DP/DL/DK/DA
	63	50	69	314	195	234	80	TOP-0902	D180-D181
	64	50	69	314	195	234	80	TOP-0903	
	65	50	69	314	195	234	80	TOP-0904	
<b>TOP 3066-70-50T2-11CA</b>	66	50	69	332	210	252	80	-	SOMT 11...
	67	50	69	332	210	252	80	TOP-0901	DP/DL/DK/DA
	68	50	69	332	210	252	80	TOP-0902	D180-D181
	69	50	69	332	210	252	80	TOP-0903	
	70	50	69	332	210	252	80	TOP-0904	
<b>TOP 3071-75-50T2-13CA</b>	71	50	74	350	225	270	80	-	SOMT 13...
	72	50	74	350	225	270	80	TOP-0901	DP/DL/DK/DA
	73	50	74	350	225	270	80	TOP-0902	D180-D181
	74	50	74	350	225	270	80	TOP-0903	
	75	50	74	350	225	270	80	TOP-0904	
<b>TOP 3076-80-50T2-13CA</b>	76	50	74	368	240	288	80	-	SOMT 13...
	77	50	74	368	240	288	80	TOP-0901	DP/DL/DK/DA
	78	50	74	368	240	288	80	TOP-0902	D180-D181
	79	50	74	368	240	288	80	TOP-0903	
	80	50	74	368	240	288	80	TOP-0904	

Cutting Condition ▶ OAL: LPR+LS  
D230

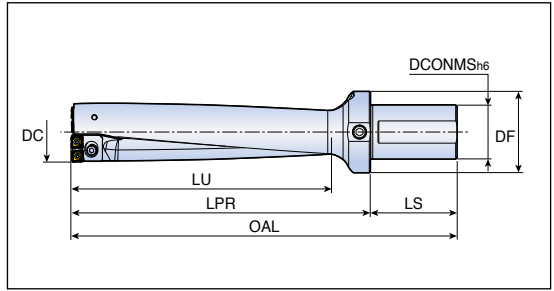
# TOP 40...CA



Indexable drill holders for cartridge



• Drilling depth: 4x diameter






Designation	Dimension (mm)							Setting Plate	Insert
	DC	DCONMS	DF	OAL	LU	LPR	LS		
<b>TOP 4051-55-50T2-09CA</b>	51	50	64	333	220	253	80	-	SOMT 09...
	52	50	64	333	220	253	80	TOP-0901	DP/DL/DK/DA
	53	50	64	333	220	253	80	TOP-0902	D180-D181
	54	50	64	333	220	253	80	TOP-0903	
	55	50	64	333	220	253	80	TOP-0904	
<b>TOP 4056-60-50T2-11CA</b>	56	50	64	356	240	276	80	-	SOMT 11...
	57	50	64	356	240	276	80	TOP-0901	DP/DL/DK/DA
	58	50	64	356	240	276	80	TOP-0902	D180-D181
	59	50	64	356	240	276	80	TOP-0903	
	60	50	64	356	240	276	80	TOP-0904	
<b>TOP 4061-65-50T2-11CA</b>	61	50	69	379	260	299	80	-	SOMT 11...
	62	50	69	379	260	299	80	TOP-0901	DP/DL/DK/DA
	63	50	69	379	260	299	80	TOP-0902	D180-D181
	64	50	69	379	260	299	80	TOP-0903	
	65	50	69	379	260	299	80	TOP-0904	
<b>TOP 4066-70-50T2-11CA</b>	66	50	69	402	280	322	80	-	SOMT 11...
	67	50	69	402	280	322	80	TOP-0901	DP/DL/DK/DA
	68	50	69	402	280	322	80	TOP-0902	D180-D181
	69	50	69	402	280	322	80	TOP-0903	
	70	50	69	402	280	322	80	TOP-0904	
<b>TOP 4071-75-50T2-13CA</b>	71	50	74	425	300	345	80	-	SOMT 13...
	72	50	74	425	300	345	80	TOP-0901	DP/DL/DK/DA
	73	50	74	425	300	345	80	TOP-0902	D180-D181
	74	50	74	425	300	345	80	TOP-0903	
	75	50	74	425	300	345	80	TOP-0904	
<b>TOP 4076-80-50T2-13CA</b>	76	50	74	448	320	368	80	-	SOMT 13...
	77	50	74	448	320	368	80	TOP-0901	DP/DL/DK/DA
	78	50	74	448	320	368	80	TOP-0902	D180-D181
	79	50	74	448	320	368	80	TOP-0903	
	80	50	74	448	320	368	80	TOP-0904	



► OAL: LPR+LS

## Indexable drill holders for cartridge

### Spare parts

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

### Spare parts for cartridge

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

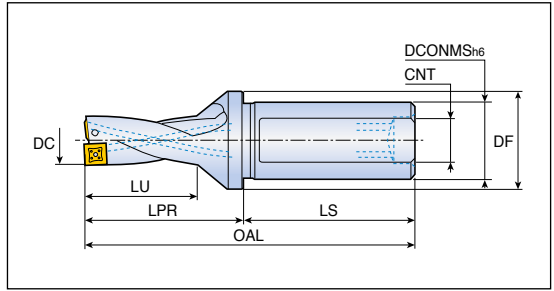
# TDR 2...-T2



## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 2125-20T2-05</b>	12.5	20	25	26	44	50	M13X1.0	SPMG 05...
<b>2130-20T2-05</b>	13.0	20	25	26	44	50	M13X1.0	DG/DK
<b>2135-20T2-05</b>	13.5	20	25	28	46	50	M13X1.0	SPGG 05..DA
<b>2140-20T2-05</b>	14.0	20	25	28	46	50	M13X1.0	D182-D183
<b>2145-20T2-05</b>	14.5	20	25	30	49	50	M13X1.0	
<b>2150-20T2-05</b>	15.0	20	25	30	49	50	M13X1.0	
<b>2155-25T2-06</b>	15.5	25	32	32	52	56	M16X1.5	SPMG 06...
<b>2160-25T2-06</b>	16.0	25	32	32	52	56	M16X1.5	DG/DK
<b>2165-25T2-06</b>	16.5	25	32	34	54	56	M16X1.5	SPGG 06..DA
<b>2170-25T2-06</b>	17.0	25	32	34	54	56	M16X1.5	D182-D183
<b>2175-25T2-06</b>	17.5	25	32	36	57	56	M16X1.5	
<b>2180-25T2-06</b>	18.0	25	32	36	57	56	M16X1.5	
<b>2185-25T2-06</b>	18.5	25	32	38	59	56	M16X1.5	
<b>2190-25T2-06</b>	19.0	25	32	38	59	56	M16X1.5	
<b>2195-25T2-06</b>	19.5	25	32	40	63	56	M16X1.5	
<b>2200-25T2-06</b>	20.0	25	32	40	63	56	M16X1.5	
<b>2205-25T2-06</b>	20.5	25	32	42	65	56	M16X1.5	
<b>2210-25T2-06</b>	21.0	25	32	42	65	56	M16X1.5	
<b>2215-25T2-06</b>	21.5	25	32	44	67	56	M16X1.5	
<b>2220-25T2-07</b>	22.0	25	32	44	67	56	M16X1.5	SPMG 07...
<b>2225-25T2-07</b>	22.5	25	32	46	71	56	M16X1.5	DG/DK
<b>2225-32T2-07</b>	22.5	32	40	46	71	60	M22X2.0	SPGG 07..DA
<b>2230-25T2-07</b>	23.0	25	32	46	71	56	M16X1.5	D182-D183
<b>2230-32T2-07</b>	23.0	32	40	46	71	60	M22X2.0	
<b>2235-25T2-07</b>	23.5	25	32	48	74	56	M16X1.5	
<b>2235-32T2-07</b>	23.5	32	40	48	74	60	M22X2.0	
<b>2240-25T2-07</b>	24.0	25	32	48	74	56	M16X1.5	
<b>2240-32T2-07</b>	24.0	32	40	48	74	60	M22X2.0	
<b>2245-25T2-07</b>	24.5	25	32	50	77	56	M16X1.5	
<b>2245-32T2-07</b>	24.5	32	40	50	77	60	M22X2.0	
<b>2250-25T2-07</b>	25.0	25	32	50	77	56	M16X1.5	
<b>2250-32T2-07</b>	25.0	32	40	50	77	60	M22X2.0	
<b>2255-25T2-07</b>	25.5	25	32	52	79	56	M16X1.5	
<b>2255-32T2-07</b>	25.5	32	40	52	79	60	M22X2.0	
<b>2260-25T2-07</b>	26.0	25	32	52	79	56	M16X1.5	



► OAL: LPR+LS

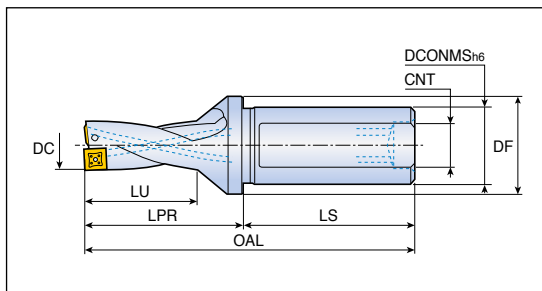
# TDR 2...-T2



## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 2260-32T2-07</b>	26.0	32	40	52	79	60	M22X2.0	SPMG 07... DG/DK SPGG 07..DA D182-D183
<b>2265-25T2-07</b>	26.5	25	32	54	81	56	M16X1.5	
<b>2265-32T2-07</b>	26.5	32	40	54	81	60	M22X2.0	
<b>2270-25T2-07</b>	27.0	25	32	54	81	56	M16X1.5	
<b>2270-32T2-07</b>	27.0	32	40	54	81	60	M22X2.0	
<b>2275-25T2-07</b>	27.5	25	32	56	84	56	Rc 1/8	
<b>2275-32T2-07</b>	27.5	32	40	56	84	60	Rc 1/4	SPMG 09... DG/DK SPGG 09..DA D182-D183
<b>2280-25T2-09</b>	28.0	25	40	56	84	56	Rc 1/8	
<b>2280-32T2-09</b>	28.0	32	40	56	84	60	Rc 1/4	
<b>2285-25T2-09</b>	28.5	25	40	58	86	56	Rc 1/8	
<b>2285-32T2-09</b>	28.5	32	40	58	86	60	Rc 1/4	
<b>2290-25T2-09</b>	29.0	25	40	58	86	56	Rc 1/8	
<b>2290-32T2-09</b>	29.0	32	40	58	86	60	Rc 1/4	
<b>2295-32T2-09</b>	29.5	32	40	60	91	60	Rc 1/4	
<b>2295-40T2-09</b>	29.5	40	50	60	91	70	Rc 1/4	
<b>2300-32T2-09</b>	30.0	32	40	60	91	60	Rc 1/4	
<b>2300-40T2-09</b>	30.0	40	50	60	91	70	Rc 1/4	
<b>2305-32T2-09</b>	30.5	32	40	62	94	60	Rc 1/4	
<b>2305-40T2-09</b>	30.5	40	50	62	94	70	Rc 1/4	
<b>2310-32T2-09</b>	31.0	32	40	62	94	60	Rc 1/4	
<b>2310-40T2-09</b>	31.0	40	50	62	94	70	Rc 1/4	
<b>2315-32T2-09</b>	31.5	32	40	64	96	60	Rc 1/4	
<b>2315-40T2-09</b>	31.5	40	50	64	96	70	Rc 1/4	
<b>2320-32T2-09</b>	32.0	32	40	64	96	60	Rc 1/4	
<b>2320-40T2-09</b>	32.0	40	50	64	96	70	Rc 1/4	
<b>2325-32T2-09</b>	32.5	32	40	66	99	60	Rc 1/4	
<b>2325-40T2-09</b>	32.5	40	50	66	99	70	Rc 1/4	
<b>2330-32T2-09</b>	33.0	32	40	66	99	60	Rc 1/4	
<b>2330-40T2-09</b>	33.0	40	50	66	99	70	Rc 1/4	
<b>2340-32T2-11</b>	34.0	32	50	68	101	60	Rc 1/4	SPMG 11... DG/DK SPGG 11..DA D182-D183
<b>2340-40T2-11</b>	34.0	40	55	68	101	70	Rc 1/4	
<b>2350-32T2-11</b>	35.0	32	50	70	104	60	Rc 1/4	
<b>2350-40T2-11</b>	35.0	40	55	70	104	70	Rc 1/4	
<b>2360-32T2-11</b>	36.0	32	50	72	107	60	Rc 1/4	
<b>2360-40T2-11</b>	36.0	40	55	72	107	70	Rc 1/4	

► OAL: LPR+LS





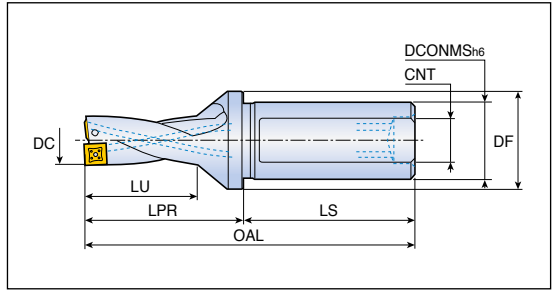
# TDR 2...-T2



## Indexable drill holders



- Drilling depth: 2x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 2370-32T2-11</b>	37.0	32	50	74	110	60	Rc 1/4	SPMG 11... DG/DK SPGG 11..DA D182-D183
<b>2370-40T2-11</b>	37.0	40	55	74	110	70	Rc 1/4	
<b>2380-32T2-11</b>	38.0	32	50	76	113	60	Rc 1/4	
<b>2380-40T2-11</b>	38.0	40	55	76	113	70	Rc 1/4	
<b>2390-32T2-11</b>	39.0	32	50	78	115	60	Rc 1/4	
<b>2390-40T2-11</b>	39.0	40	55	78	115	70	Rc 1/4	
<b>2400-32T2-11</b>	40.0	32	50	80	118	60	Rc 1/4	
<b>2400-40T2-11</b>	40.0	40	55	80	118	70	Rc 1/4	
<b>2410-40T2-11</b>	41.0	40	55	82	121	70	Rc 1/4	
<b>2420-40T2-14</b>	42.0	40	60	84	123	70	Rc 1/4	
<b>2430-40T2-14</b>	43.0	40	60	86	126	70	Rc 1/4	
<b>2440-40T2-14</b>	44.0	40	60	88	128	70	Rc 1/4	
<b>2450-40T2-14</b>	45.0	40	60	90	132	70	Rc 1/4	
<b>2460-40T2-14</b>	46.0	40	60	92	135	70	Rc 1/4	
<b>2470-40T2-14</b>	47.0	40	60	94	137	70	Rc 1/4	
<b>2480-40T2-14</b>	48.0	40	60	96	140	70	Rc 1/4	
<b>2490-40T2-14</b>	49.0	40	60	98	142	70	Rc 1/4	
<b>2500-40T2-14</b>	50.0	40	60	100	145	70	Rc 1/4	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<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	-	
<b>TDR 2280 - 2330</b>	TS 35088I	TD 10	-	
<b>TDR 2340 - 2390</b>	TS 40093I	TD 15	-	
<b>TDR 2400 - 2410</b>	TS 40093I	TD 15	-	
<b>TDR 2420 - 2500</b>	SO 50090I	TD 20	-	

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



D232

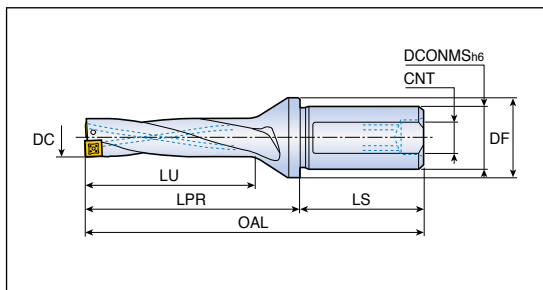
# TDR 3...-T2



## Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 3125-20T2-05</b>	12.5	20	25	39	57	50	M13X1.0	SPMG 05...
<b>3130-20T2-05</b>	13.0	20	25	39	57	50	M13X1.0	DG/DK
<b>3135-20T2-05</b>	13.5	20	25	42	60	50	M13X1.0	SPGG 05..DA
<b>3140-20T2-05</b>	14.0	20	25	42	60	50	M13X1.0	D182-D183
<b>3145-20T2-05</b>	14.5	20	25	45	64	50	M13X1.0	
<b>3150-20T2-05</b>	15.0	20	25	45	64	50	M13X1.0	
<b>3155-25T2-06</b>	15.5	25	32	48	68	56	M16X1.5	SPMG 06...
<b>3160-25T2-06</b>	16.0	25	32	48	68	56	M16X1.5	DG/DK
<b>3165-25T2-06</b>	16.5	25	32	51	71	56	M16X1.5	SPGG 06..DA
<b>3170-25T2-06</b>	17.0	25	32	51	71	56	M16X1.5	D182-D183
<b>3175-25T2-06</b>	17.5	25	32	54	75	56	M16X1.5	
<b>3180-25T2-06</b>	18.0	25	32	54	75	56	M16X1.5	
<b>3185-25T2-06</b>	18.5	25	32	57	78	56	M16X1.5	
<b>3190-25T2-06</b>	19.0	25	32	57	78	56	M16X1.5	
<b>3195-25T2-06</b>	19.5	25	32	60	83	56	M16X1.5	
<b>3200-25T2-06 *</b>	20.0	25	32	60	83	56	M16X1.5	
<b>3205-25T2-06</b>	20.5	25	32	63	86	56	M16X1.5	
<b>3209-25T2-06 *</b>	20.9	25	32	63	86	56	M16X1.5	
<b>3210-25T2-06</b>	21.0	25	32	63	86	56	M16X1.5	
<b>3215-25T2-06</b>	21.5	25	32	66	89	56	M16X1.5	
<b>3220-25T2-07</b>	22.0	25	32	66	89	56	M16X1.5	SPMG 07...
<b>3225-25T2-07</b>	22.5	25	32	69	94	56	M16X1.5	DG/DK
<b>3225-32T2-07</b>	22.5	32	40	69	94	60	M22X2.0	SPGG 07..DA
<b>3230-25T2-07</b>	23.0	25	32	69	94	56	M16X1.5	D182-D183
<b>3230-32T2-07</b>	23.0	32	40	69	94	60	M22X2.0	
<b>3235-25T2-07</b>	23.5	25	32	72	98	56	M16X1.5	
<b>3235-32T2-07</b>	23.5	32	40	72	98	60	M22X2.0	
<b>3239-25T2-07 *</b>	23.9	25	32	72	98	56	M16X1.5	
<b>3239-32T2-07 *</b>	23.9	32	45	72	98	60	M22X2.0	
<b>3240-25T2-07</b>	24.0	25	32	72	98	56	M16X1.5	
<b>3240-32T2-07</b>	24.0	32	40	72	98	60	M22X2.0	
<b>3245-25T2-07</b>	24.5	25	32	75	102	56	M16X1.5	
<b>3245-32T2-07</b>	24.5	32	40	75	102	60	M22X2.0	
<b>3250-25T2-07</b>	25.0	25	32	75	102	56	M16X1.5	
<b>3250-32T2-07</b>	25.0	32	40	75	102	60	M22X2.0	



- ▶ \*: Pre-thread hole making
- ▶ OAL: LPR+LS

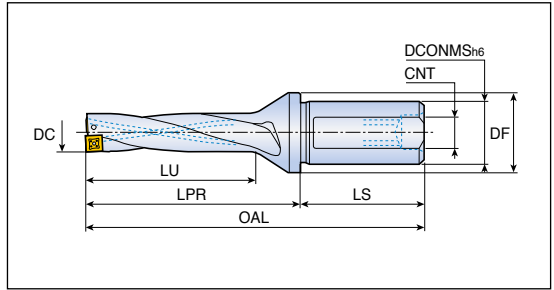
# TDR 3...-T2



## Indexable drill holders



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 3255-25T2-07</b>	25.5	25	32	78	105	56	M16X1.5	SPMG 07... DG/DK SPGG 07..DA D182-D183
<b>3255-32T2-07</b>	25.5	32	40	78	105	60	M22X2.0	
<b>3260-25T2-07</b>	26.0	25	32	78	105	56	M16X1.5	
<b>3260-32T2-07</b>	26.0	32	40	78	105	60	M22X2.0	
<b>3264-25T2-07 *</b>	26.4	25	45	81	108	56	M16X1.5	
<b>3264-32T2-07 *</b>	26.4	32	45	81	108	60	M22X2.0	
<b>3265-25T2-07</b>	26.5	25	32	81	108	56	M16X1.5	
<b>3265-32T2-07</b>	26.5	32	40	81	108	60	M22X2.0	
<b>3270-25T2-07</b>	27.0	25	32	81	108	56	M16X1.5	
<b>3270-32T2-07</b>	27.0	32	40	81	108	60	M22X2.0	
<b>3275-25T2-07</b>	27.5	25	32	84	112	56	Rc 1/8	
<b>3275-32T2-07</b>	27.5	32	40	84	112	60	Rc 1/4	
<b>3280-25T2-09</b>	28.0	25	40	84	112	56	Rc 1/8	SPMG 09... DG/DK SPGG 09..DA D182-D183
<b>3280-32T2-09</b>	28.0	32	40	84	112	60	Rc 1/4	
<b>3285-25T2-09</b>	28.5	25	40	87	115	56	Rc 1/8	
<b>3285-32T2-09</b>	28.5	32	40	87	115	56	Rc 1/4	
<b>3290-25T2-09</b>	29.0	25	40	87	115	56	Rc 1/8	
<b>3290-32T2-09</b>	29.0	32	40	87	115	60	Rc 1/4	
<b>3294-32T2-09 *</b>	29.4	32	55	90	121	60	Rc 1/4	
<b>3294-40T2-09 *</b>	29.4	40	55	90	121	70	Rc 1/4	
<b>3295-32T2-09</b>	29.5	32	40	90	121	60	Rc 1/4	
<b>3295-40T2-09</b>	29.5	40	50	90	121	70	Rc 1/4	
<b>3300-32T2-09</b>	30.0	32	40	90	121	60	Rc 1/4	
<b>3300-40T2-09</b>	30.0	40	50	90	121	70	Rc 1/4	
<b>3305-32T2-09</b>	30.5	32	40	93	125	60	Rc 1/4	
<b>3305-40T2-09</b>	30.5	40	50	93	125	70	Rc 1/4	
<b>3310-32T2-09</b>	31.0	32	40	93	125	60	Rc 1/4	
<b>3310-40T2-09</b>	31.0	40	50	93	125	70	Rc 1/4	
<b>3315-32T2-09</b>	31.5	32	40	96	128	60	Rc 1/4	
<b>3315-40T2-09</b>	31.5	40	50	96	128	70	Rc 1/4	
<b>3320-32T2-09</b>	32.0	32	40	96	128	60	Rc 1/4	
<b>3320-40T2-09</b>	32.0	40	50	96	128	70	Rc 1/4	



- ▶ \*: Pre-thread hole making
- ▶ OAL: LPR+LS

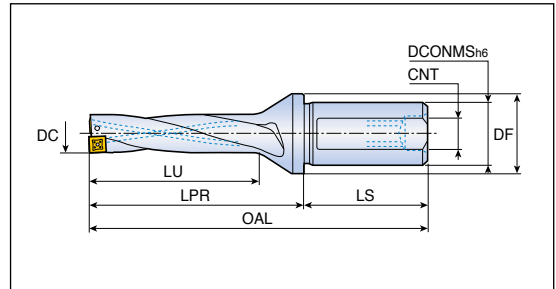
# TDR 3...-T2



## Indexable drill holders



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 3325-32T2-09</b>	32.5	32	40	99	132	60	Rc 1/4	SPMG 09...
<b>3325-40T2-09</b>	32.5	40	50	99	132	70	Rc 1/4	DG/DK
<b>3330-32T2-09</b>	33.0	32	40	99	132	60	Rc 1/4	SPGG 09..DA
<b>3330-40T2-09</b>	33.0	40	50	99	132	70	Rc 1/4	D182-D183
<b>3340-32T2-11</b>	34.0	32	50	102	135	60	Rc 1/4	SPMG 11...
<b>3340-40T2-11</b>	34.0	40	55	102	135	70	Rc 1/4	DG/DK
<b>3350-32T2-11</b>	35.0	32	50	105	139	60	Rc 1/4	SPGG 09..DA
<b>3350-40T2-11</b>	35.0	40	55	105	139	70	Rc 1/4	D182-D183
<b>3360-32T2-11</b>	36.0	32	50	108	143	60	Rc 1/4	
<b>3360-40T2-11</b>	36.0	40	55	108	143	70	Rc 1/4	
<b>3370-32T2-11</b>	37.0	32	50	111	147	60	Rc 1/4	
<b>3370-40T2-11</b>	37.0	40	55	111	147	70	Rc 1/4	
<b>3375-32T2-11 *</b>	37.5	32	55	114	151	60	Rc 1/4	
<b>3375-40T2-11 *</b>	37.5	40	55	114	151	70	Rc 1/4	
<b>3380-32T2-11</b>	38.0	32	50	114	151	60	Rc 1/4	
<b>3380-40T2-11</b>	38.0	40	55	114	151	70	Rc 1/4	
<b>3390-32T2-11</b>	39.0	32	50	117	154	60	Rc 1/4	
<b>3390-40T2-11</b>	39.0	40	55	117	154	70	Rc 1/4	
<b>3400-32T2-11</b>	40.0	32	50	120	158	60	Rc 1/4	
<b>3400-40T2-11</b>	40.0	40	55	120	158	70	Rc 1/4	
<b>3405-40T2-11 *</b>	40.5	40	60	123	162	70	Rc 1/4	
<b>3410-40T2-11</b>	41.0	40	55	123	162	70	Rc 1/4	



- ▶ \*: Pre-thread hole making
- ▶ OAL: LPR+LS

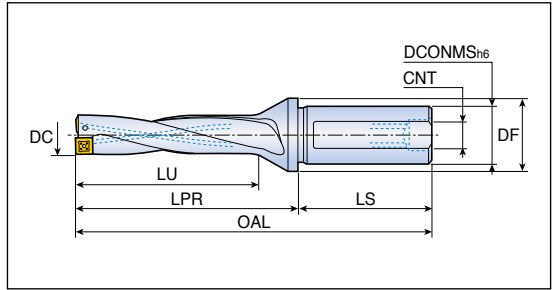
# TDR 3...-T2



## Indexable drill holders



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 3420-40T2-14</b>	42.0	40	60	126	165	70	Rc 1/4	SPMG 14...
<b>3430-40T2-14</b>	43.0	40	60	129	169	70	Rc 1/4	DG/DK
<b>3440-40T2-14</b>	44.0	40	60	132	172	70	Rc 1/4	SPGG 14..DA
<b>3450-40T2-14</b>	45.0	40	60	135	177	70	Rc 1/4	D182-D183
<b>3460-40T2-14</b>	46.0	40	60	138	181	70	Rc 1/4	
<b>3470-40T2-14</b>	47.0	40	60	141	184	70	Rc 1/4	
<b>3480-40T2-14</b>	48.0	40	60	144	188	70	Rc 1/4	
<b>3490-40T2-14</b>	49.0	40	60	147	191	70	Rc 1/4	
<b>3500-40T2-14</b>	50.0	40	60	150	195	70	Rc 1/4	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<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	-	
<b>TDR 3280 - 3330</b>	TS 35088I	TD 10	-	
<b>TDR 3340 - 3390</b>	TS 40093I	TD 15	-	
<b>TDR 3400 - 3410</b>	TS 40093I	TD 15	-	
<b>TDR 3420 - 3500</b>	SO 50090I	TD 20	-	

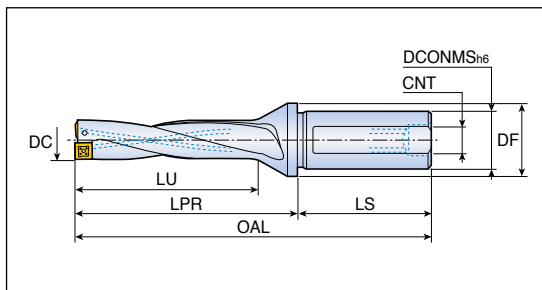


► \* Notice: Cooling hole plug for lathe should be ordered separately  
 Order example) Plug for shank diameter 25.0mm : SL 25M

## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 4125-20T2-05</b>	12.5	20	25	52	70	50	M13X1.0	SPMG 05...
<b>4130-20T2-05</b>	13.0	20	25	52	70	50	M13X1.0	DG/DK
<b>4135-20T2-05</b>	13.5	20	25	56	74	50	M13X1.0	SPGG 05..DA
<b>4140-20T2-05</b>	14.0	20	25	56	74	50	M13X1.0	D182-D183
<b>4145-20T2-05</b>	14.5	20	25	60	79	50	M13X1.0	
<b>4150-20T2-05</b>	15.0	20	25	60	79	50	M13X1.0	
<b>4155-25T2-06</b>	15.5	25	32	64	84	56	M16X1.5	SPMG 06...
<b>4160-25T2-06</b>	16.0	25	32	64	84	56	M16X1.5	DG/DK
<b>4165-25T2-06</b>	16.5	25	32	68	88	56	M16X1.5	SPGG 06..DA
<b>4170-25T2-06</b>	17.0	25	32	68	88	56	M16X1.5	D182-D183
<b>4175-25T2-06</b>	17.5	25	32	72	93	56	M16X1.5	
<b>4180-25T2-06</b>	18.0	25	32	72	93	56	M16X1.5	
<b>4185-25T2-06</b>	18.5	25	32	76	97	56	M16X1.5	
<b>4190-25T2-06</b>	19.0	25	32	76	97	56	M16X1.5	
<b>4195-25T2-06</b>	19.5	25	32	80	103	56	M16X1.5	
<b>4200-25T2-06</b>	20.0	25	32	80	103	56	M16X1.5	
<b>4205-25T2-06</b>	20.5	25	32	84	107	56	M16X1.5	
<b>4210-25T2-06</b>	21.0	25	32	84	107	56	M16X1.5	
<b>4215-25T2-06</b>	21.5	25	32	88	111	56	M16X1.5	
<b>4220-25T2-07</b>	22.0	25	32	88	111	56	M16X1.5	SPMG 07...
<b>4225-25T2-07</b>	22.5	25	32	92	117	56	M16X1.5	DG/DK
<b>4225-32T2-07</b>	22.5	32	40	92	117	60	M22X2.0	SPGG 07..DA
<b>4230-25T2-07</b>	23.0	25	32	92	117	56	M16X1.5	D182-D183
<b>4230-32T2-07</b>	23.0	32	40	92	117	60	M22X2.0	
<b>4235-25T2-07</b>	23.5	25	32	96	122	56	M16X1.5	
<b>4235-32T2-07</b>	23.5	32	40	96	122	60	M22X2.0	
<b>4240-25T2-07</b>	24.0	25	32	96	122	56	M16X1.5	
<b>4240-32T2-07</b>	24.0	32	40	96	122	60	M22X2.0	
<b>4245-25T2-07</b>	24.5	25	32	100	127	56	M16X1.5	
<b>4245-32T2-07</b>	24.5	32	40	100	127	60	M22X2.0	
<b>4250-25T2-07</b>	25.0	25	32	100	127	56	M16X1.5	
<b>4250-32T2-07</b>	25.0	32	40	100	127	60	M22X2.0	
<b>4255-25T2-07</b>	25.5	25	32	104	131	56	M16X1.5	
<b>4255-32T2-07</b>	25.5	32	40	104	131	60	M22X2.0	
<b>4260-25T2-07</b>	26.0	25	32	104	131	56	M16X1.5	



► OAL: LPR+LS

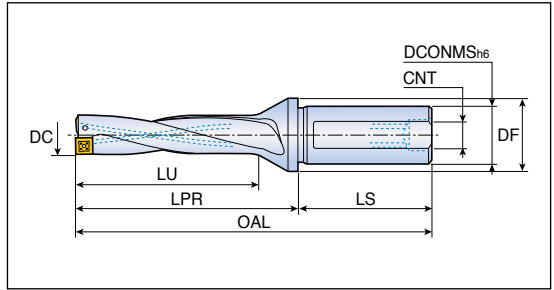
# TDR 4...-T2



## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 4260-32T2-07</b>	26.0	32	40	104	131	60	M22X2.0	SPMG 07...
<b>4265-25T2-07</b>	26.5	25	32	108	135	56	M16X1.5	DG/DK
<b>4265-32T2-07</b>	26.5	32	40	108	135	60	M22X2.0	SPGG 07..DA
<b>4270-25T2-07</b>	27.0	25	32	108	135	56	M16X1.5	D182-D183
<b>4270-32T2-07</b>	27.0	32	40	108	135	60	M22X2.0	
<b>4275-25T2-07</b>	27.5	25	32	112	140	56	Rc 1/8	
<b>4275-32T2-07</b>	27.5	32	40	112	140	60	Rc 1/4	
<b>4280-25T2-09</b>	28.0	25	40	112	140	56	Rc 1/8	SPMG 09...
<b>4280-32T2-09</b>	28.0	32	40	112	140	60	Rc 1/4	DG/DK
<b>4285-25T2-09</b>	28.5	25	40	116	144	56	Rc 1/8	SPGG 09..DA
<b>4285-32T2-09</b>	28.5	32	40	116	144	60	Rc 1/4	D182-D183
<b>4290-25T2-09</b>	29.0	25	40	116	144	56	Rc 1/8	
<b>4290-32T2-09</b>	29.0	32	40	116	144	60	Rc 1/4	
<b>4295-32T2-09</b>	29.5	32	40	120	151	60	Rc 1/4	
<b>4295-40T2-09</b>	29.5	40	50	120	151	70	Rc 1/4	
<b>4300-32T2-09</b>	30.0	32	40	120	151	60	Rc 1/4	
<b>4300-40T2-09</b>	30.0	40	50	120	151	70	Rc 1/4	
<b>4305-32T2-09</b>	30.5	32	40	124	156	60	Rc 1/4	
<b>4305-40T2-09</b>	30.5	40	50	124	156	70	Rc 1/4	
<b>4310-32T2-09</b>	31.0	32	40	124	156	60	Rc 1/4	
<b>4310-40T2-09</b>	31.0	40	50	124	156	70	Rc 1/4	
<b>4315-32T2-09</b>	31.5	32	40	128	160	60	Rc 1/4	
<b>4315-40T2-09</b>	31.5	40	50	128	160	70	Rc 1/4	
<b>4320-32T2-09</b>	32.0	32	40	128	160	60	Rc 1/4	
<b>4320-40T2-09</b>	32.0	40	50	128	160	70	Rc 1/4	
<b>4325-32T2-09</b>	32.5	32	40	132	165	60	Rc 1/4	
<b>4325-40T2-09</b>	32.5	40	50	132	165	70	Rc 1/4	
<b>4330-32T2-09</b>	33.0	32	40	132	165	60	Rc 1/4	
<b>4330-40T2-09</b>	33.0	40	50	132	165	70	Rc 1/4	
<b>4340-32T2-11</b>	34.0	32	50	136	169	60	Rc 1/4	SPMG 11...
<b>4340-40T2-11</b>	34.0	40	55	136	169	70	Rc 1/4	DG/DK
<b>4350-32T2-11</b>	35.0	32	50	140	174	60	Rc 1/4	SPGG 11..DA
<b>4350-40T2-11</b>	35.0	40	55	140	174	70	Rc 1/4	D182-D183
<b>4360-32T2-11</b>	36.0	32	50	144	179	60	Rc 1/4	
<b>4360-40T2-11</b>	36.0	40	55	144	179	70	Rc 1/4	

Cutting Condition D232 ▶ OAL: LPR+LS

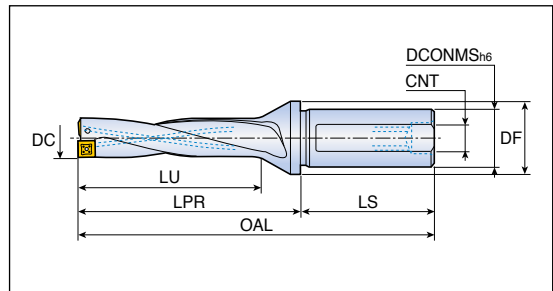
# TDR 4...-T2



## Indexable drill holders



- Drilling depth: 4x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 4370-32T2-11</b>	37.0	32	50	148	184	60	Rc 1/4	SPMG 11...
<b>4370-40T2-11</b>	37.0	40	55	148	184	70	Rc 1/4	DG/DK
<b>4380-32T2-11</b>	38.0	32	50	152	189	60	Rc 1/4	SPGG 11..DA
<b>4380-40T2-11</b>	38.0	40	55	152	189	70	Rc 1/4	D182-D183
<b>4390-32T2-11</b>	39.0	32	50	156	193	60	Rc 1/4	
<b>4390-40T2-11</b>	39.0	40	55	156	193	70	Rc 1/4	
<b>4400-32T2-11</b>	40.0	32	50	160	198	60	Rc 1/4	
<b>4400-40T2-11</b>	40.0	40	55	160	198	70	Rc 1/4	
<b>4410-40T2-11</b>	41.0	40	55	164	203	70	Rc 1/4	
<b>4420-40T2-14</b>	42.0	40	60	168	207	70	Rc 1/4	SPMG 14...
<b>4430-40T2-14</b>	43.0	40	60	172	212	70	Rc 1/4	DG/DK
<b>4440-40T2-14</b>	44.0	40	60	176	216	70	Rc 1/4	SPGG 14..DA
<b>4450-40T2-14</b>	45.0	40	60	180	222	70	Rc 1/4	D182-D183
<b>4460-40T2-14</b>	46.0	40	60	184	227	70	Rc 1/4	
<b>4470-40T2-14</b>	47.0	40	60	188	231	70	Rc 1/4	
<b>4480-40T2-14</b>	48.0	40	60	192	236	70	Rc 1/4	
<b>4490-40T2-14</b>	49.0	40	60	196	240	70	Rc 1/4	
<b>4500-40T2-14</b>	50.0	40	60	200	245	70	Rc 1/4	

► OAL = LPR+LS

## Spare parts

Designation	Screw 	Wrench 	Plug* 	
<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	-	
<b>TDR 4280 - 4330</b>	TS 35088I	TD 10	-	
<b>TDR 4340 - 4390</b>	TS 40093I	TD 15	-	
<b>TDR 4400 - 4410</b>	TS 40093I	TD 15	-	
<b>TDR 4420 - 4500</b>	SO 50090I	TD 20	-	

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





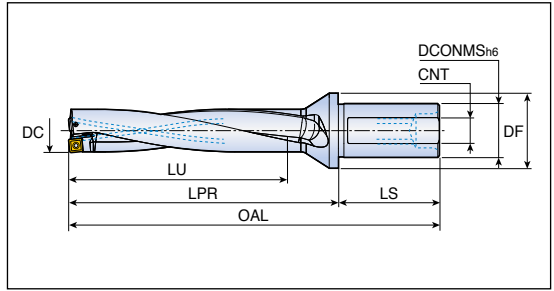
# TDR 5...-T2



## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 5125-20T2-05</b>	12.5	20	25	65	83	50	M13X1.0	SPMG 05...
<b>5130-20T2-05</b>	13.0	20	25	65	83	50	M13X1.0	DG/DK
<b>5135-20T2-05</b>	13.5	20	25	70	88	50	M13X1.0	SPGG 05..DA
<b>5140-20T2-05</b>	14.0	20	25	70	88	50	M13X1.0	D182-D183
<b>5145-20T2-05</b>	14.5	20	25	75	94	50	M13X1.0	
<b>5150-20T2-05</b>	15.0	20	25	75	94	50	M13X1.0	
<b>5155-25T2-06</b>	15.5	25	32	80	100	56	M16X1.5	SPMG 06...
<b>5160-25T2-06</b>	16.0	25	32	80	100	56	M16X1.5	DG/DK
<b>5165-25T2-06</b>	16.5	25	32	85	105	56	M16X1.5	SPGG 06..DA
<b>5170-25T2-06</b>	17.0	25	32	85	105	56	M16X1.5	D182-D183
<b>5175-25T2-06</b>	17.5	25	32	90	111	56	M16X1.5	
<b>5180-25T2-06</b>	18.0	25	32	90	111	56	M16X1.5	
<b>5185-25T2-06</b>	18.5	25	32	95	116	56	M16X1.5	
<b>5190-25T2-06</b>	19.0	25	32	95	116	56	M16X1.5	
<b>5195-25T2-06</b>	19.5	25	32	100	123	56	M16X1.5	
<b>5200-25T2-06</b>	20.0	25	32	100	123	56	M16X1.5	
<b>5205-25T2-06</b>	20.5	25	32	105	128	56	M16X1.5	
<b>5210-25T2-06</b>	21.0	25	32	105	128	56	M16X1.5	
<b>5215-25T2-06</b>	21.5	25	32	110	133	56	M16X1.5	
<b>5220-25T2-07</b>	22.0	25	32	110	133	56	M22X2.0	SPMG 07...
<b>5225-32T2-07</b>	22.5	32	40	115	140	60	M22X2.0	DG/DK
<b>5230-32T2-07</b>	23.0	32	40	115	140	60	M22X2.0	SPGG 07..DA
<b>5235-32T2-07</b>	23.5	32	40	120	146	60	M22X2.0	D182-D183
<b>5240-32T2-07</b>	24.0	32	40	120	146	60	M22X2.0	
<b>5245-32T2-07</b>	24.5	32	40	125	152	60	M22X2.0	
<b>5250-32T2-07</b>	25.0	32	40	125	152	60	M22X2.0	
<b>5255-32T2-07</b>	25.5	32	40	130	157	60	M22X2.0	
<b>5260-32T2-07</b>	26.0	32	40	130	157	60	M22X2.0	
<b>5265-32T2-07</b>	26.5	32	40	135	162	60	M22X2.0	
<b>5270-32T2-07</b>	27.0	32	40	135	162	60	M22X2.0	
<b>5275-32T2-07</b>	27.5	32	40	140	168	60	Rc 1/4	



► OAL: LPR + LS

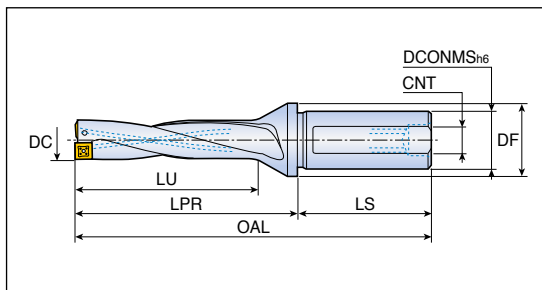
# TDR 5...-T2



## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert	
	DC	DCONMS	DF	LU	LPR	LS	CNT		
<b>TDR 5280-32T2-09</b>	28.0	32	40	140	168	60	Rc 1/4	SPMG 09... DG/DK SPGG 09..DA D182-D183	
<b>5285-32T2-09</b>	28.5	32	40	145	173	60	Rc 1/4		
<b>5290-32T2-09</b>	29.0	32	40	145	173	60	Rc 1/4		
<b>5295-32T2-09</b>	29.5	32	40	150	181	60	Rc 1/4		
<b>5300-32T2-09</b>	30.0	32	40	150	181	60	Rc 1/4		
<b>5300-40T2-09</b>	30.0	40	50	150	181	70	Rc 1/4		
<b>5310-32T2-09</b>	31.0	32	40	155	187	60	Rc 1/4		
<b>5310-40T2-09</b>	31.0	40	50	155	187	70	Rc 1/4		
<b>5320-32T2-09</b>	32.0	32	40	160	192	60	Rc 1/4		
<b>5320-40T2-09</b>	32.0	40	50	160	192	70	Rc 1/4		
<b>5330-32T2-09</b>	33.0	32	40	165	198	60	Rc 1/4		
<b>5330-40T2-09</b>	33.0	40	50	165	198	70	Rc 1/4		
<b>5340-32T2-11</b>	34.0	32	50	170	203	60	Rc 1/4		SPMG 11... DG/DK SPGG 11..DA D182-D183
<b>5340-40T2-11</b>	34.0	40	55	170	203	70	Rc 1/4		
<b>5350-32T2-11</b>	35.0	32	50	175	209	60	Rc 1/4		
<b>5350-40T2-11</b>	35.0	40	55	175	209	70	Rc 1/4		
<b>5360-32T2-11</b>	36.0	32	50	180	215	60	Rc 1/4		
<b>5360-40T2-11</b>	36.0	40	55	180	215	70	Rc 1/4		
<b>5370-32T2-11</b>	37.0	32	50	185	221	60	Rc 1/4		
<b>5370-40T2-11</b>	37.0	40	55	185	221	70	Rc 1/4		
<b>5380-32T2-11</b>	38.0	32	50	190	227	60	Rc 1/4		
<b>5380-40T2-11</b>	38.0	40	55	190	227	70	Rc 1/4		
<b>5390-32T2-11</b>	39.0	32	50	195	232	60	Rc 1/4		
<b>5390-40T2-11</b>	39.0	40	55	195	232	70	Rc 1/4		
<b>5400-32T2-11</b>	40.0	32	50	200	238	60	Rc 1/4		
<b>5400-40T2-11</b>	40.0	40	55	200	238	70	Rc 1/4		
<b>5410-40T2-11</b>	41.0	40	55	205	244	70	Rc 1/4		

Cutting Condition  
 D234  
 ▶ OAL: LPR+LS

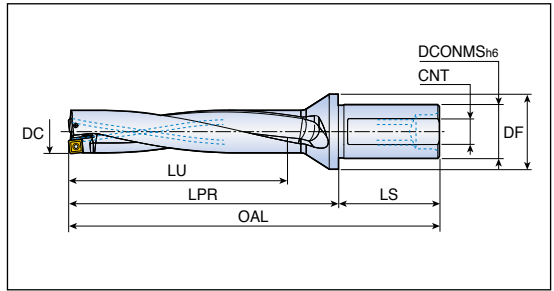
# TDR 5...-T2



## Indexable drill holders



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Insert
	DC	DCONMS	DF	LU	LPR	LS	CNT	
<b>TDR 5420-40T2-14</b>	42.0	40	60	210	249	70	Rc 1/4	SPMG 14...
<b>5430-40T2-14</b>	43.0	40	60	215	255	70	Rc 1/4	DG/DK
<b>5440-40T2-14</b>	44.0	40	60	220	260	70	Rc 1/4	SPGG 14..DA
<b>5450-40T2-14</b>	45.0	40	60	225	267	70	Rc 1/4	D182-D183
<b>5460-40T2-14</b>	46.0	40	60	230	273	70	Rc 1/4	
<b>5470-40T2-14</b>	47.0	40	60	235	278	70	Rc 1/4	
<b>5480-40T2-14</b>	48.0	40	60	240	284	70	Rc 1/4	
<b>5490-40T2-14</b>	49.0	40	60	245	289	70	Rc 1/4	
<b>5500-40T2-14</b>	50.0	40	60	250	295	70	Rc 1/4	

► OAL: LPR+LS

## Spare parts

Designation	Screw	Wrench	Plug*	
<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	-	
<b>TDR 5280 - 5330</b>	TS 35088I	TD 10	-	
<b>TDR 5340 - 5390</b>	TS 40093I	TD 15	-	
<b>TDR 5400 - 5410</b>	TS 40093I	TD 15	-	
<b>TDR 5420 - 5500</b>	SO 50090I	TD 20	-	



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

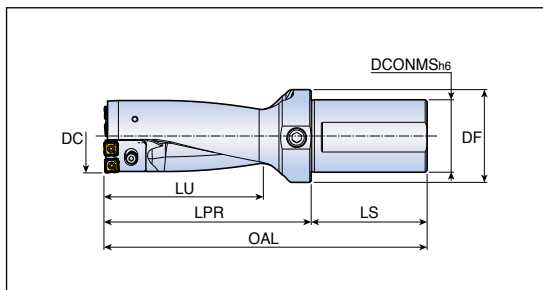
# TDR 25...CA-T



## Indexable cartridge drill holders



- Drilling depth: 2.5x diameter



Designation	Dimension (mm)						Setting plate	Insert
	DC	DCONMS	DF	LU	LPR	LS		
<b>TDR 2551-53-50T2-07CA-T</b>	51	50	64	133	170	80	-	SPMG 07... DG/DK SPGG 07..DA D182-D183
	52	50	64	133	170	80	TDP-0701	
	53	50	64	133	170	80	TDP-0702	
<b>2554-56-50T2-07CA-T</b>	54	50	64	140	180	80	-	SPMG 07... DG/DK SPGG 07..DA D182-D183
	55	50	64	140	180	80	TDP-0701	
	56	50	64	140	180	80	TDP-0702	
<b>2557-62-50T2-09CA-T</b>	57	50	64	155	201	80	-	SPMG 09... DG/DK SPGG 09..DA D182-D183
	58	50	64	155	201	80	TDP-0901	
	59	50	64	155	201	80	TDP-0902	
	60	50	64	155	201	80	TDP-0903	
	61	50	64	155	201	80	TDP-0904	
	62	50	64	155	201	80	TDP-0905	
<b>2563-66-50T2-09CA-T</b>	63	50	69	165	215	80	-	SPMG 09... DG/DK SPGG 09..DA D182-D183
	64	50	69	165	215	80	TDP-0901	
	65	50	69	165	215	80	TDP-0902	
	66	50	69	165	215	80	TDP-0903	
<b>2567-73-50T2-11CA-T</b>	67	50	69	183	240	80	-	SPMG 11... DG/DK SPGG 11..DA D182-D183
	68	50	69	183	240	80	TDP-1101	
	69	50	69	183	240	80	TDP-1102	
	70	50	69	183	240	80	TDP-1103	
	71	50	69	183	240	80	TDP-1104	
	72	50	69	183	240	80	TDP-1105	
	73	50	69	183	240	80	TDP-1106	
<b>2574-80-50T2-12CA-T</b>	74	50	74	200	250	80	-	SPMG 12...DG D182
	75	50	74	200	250	80	TDP-1101	
	76	50	74	200	250	80	TDP-1102	
	77	50	74	200	250	80	TDP-1103	
	78	50	74	200	250	80	TDP-1104	
	79	50	74	200	250	80	TDP-1105	
	80	50	74	200	250	80	TDP-1106	



► OAL: LPR+LS

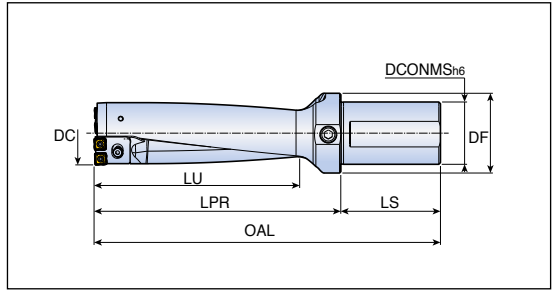
# TDR 35...CA-T



## Indexable cartridge drill holders



- Drilling depth: 3.5x diameter



Designation	Dimension (mm)						Setting plate	Insert
	DC	DCONMS	DF	LU	LPR	LS		
<b>TDR 3551-53-50T2-07CA-T</b>	51	50	64	186	223	80	-	SPMG 07...
	52	50	75	186	223	80	TDP-0701	DG/DK SPGG 07..DA
	53	50	75	186	223	80	TDP-0702	SPGG 07..DA D182-D183
<b>3554-56-50T2-07CA-T</b>	54	50	75	196	236	80	-	SPMG 07...
	55	50	75	196	236	80	TDP-0701	DG/DK SPGG 07..DA
	56	50	75	196	236	80	TDP-0702	SPGG 07..DA D182-D183
<b>3557-62-50T2-09CA-T</b>	57	50	75	217	263	80	-	SPMG 09...
	58	50	75	217	263	80	TDP-0901	DG/DK SPGG 09..DA
	59	50	75	217	263	80	TDP-0902	SPGG 09..DA D182-D183
	60	50	75	217	263	80	TDP-0903	D182-D183
	61	50	75	217	263	80	TDP-0904	
	62	50	75	217	263	80	TDP-0905	
<b>3563-66-50T2-09CA-T</b>	63	50	75	231	281	80	-	SPMG 09...
	64	50	75	231	281	80	TDP-0901	DG/DK SPGG 09..DA
	65	50	75	231	281	80	TDP-0902	SPGG 09..DA D182-D183
	66	50	75	231	281	80	TDP-0903	D182-D183
<b>3567-73-50T2-11CA-T</b>	67	50	75	256	313	80	-	SPMG 11...
	68	50	75	256	313	80	TDP-1101	DG/DK SPGG 11..DA
	69	50	75	256	313	80	TDP-1102	SPGG 11..DA D182-D183
	70	50	75	256	313	80	TDP-1103	D182-D183
	71	50	75	256	313	80	TDP-1104	
	72	50	75	256	313	80	TDP-1105	
	73	50	75	256	313	80	TDP-1106	



► OAL: LPR+LS

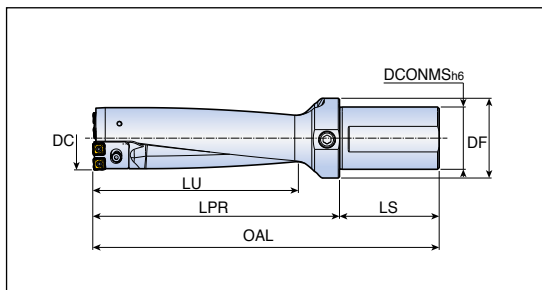
# TDR 35...CA-T



## Indexable cartridge drill holders



- Drilling depth: 3.5x diameter



Designation	Dimension (mm)						Setting plate	Insert
	DC	DCONMS	DF	LU	LPR	LS		
<b>TDR 3574-80-50T2-12CA-T</b>	74	50	75	280	330	80	-	SPMG 12...DG D182
	75	50	75	280	330	80	TDP-1101	
	76	50	75	280	330	80	TDP-1102	
	77	50	75	280	330	80	TDP-1103	
	78	50	75	280	330	80	TDP-1104	
	79	50	75	280	330	80	TDP-1105	
80	50	75	280	330	80	TDP-1106		

▶ OAL: LPR+LS

## Spare parts

Designation	Screw	Cartridge for peripheral	Cartridge for center
<b>TDR.. 51-53...</b>	TS 250641	TDR 07CA-P1-T	TDR 07CA-C1-T
<b>TDR.. 54-56...</b>	TS 250641	TDR 07CA-P2-T	TDR 07CA-C2-T
<b>TDR.. 57-62...</b>	TS 350881	TDR 09CA-P1-T	TDR 09CA-C1-T
<b>TDR.. 63-66...</b>	TS 350881	TDR 09CA-P2-T	TDR 09CA-C2-T
<b>TDR.. 67-73...</b>	TS 400931	TDR 11CA-P1-T	TDR 11CA-C1-T
<b>TDR.. 74-80...</b>	TS 400931	TDR 12CA-P2-T	TDR 12CA-C2-T

## Spare parts for cartridges

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





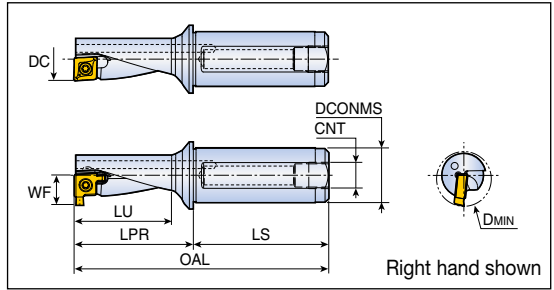
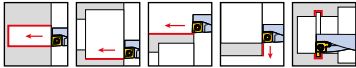
# TCAP...-2.25DN



## Multi-function toolholders - 2.25xD



• Internal coolant



Designation	Dimension (mm)								Insert	
	DC	DCONMS	WF	LU	LPR	LS	DMIN	CNT	For drilling, boring, turning	For grooving
<b>TCAP 08R/L-2.25DN</b>	8	12	-	18.0	22.5	42	-	G 1/16	XCM(G)T 04...TC/TA	-
<b>10R/L-2.25DN-GV</b>	10	12	7.1	22.5	27.5	42	12.0	G 1/16	XCM(G)T 05...TC/TA	XCMT 05R...GV
<b>12R/L-2.25DN-GV</b>	12	16	8.5	27.0	33.0	45	14.5	G 1/8	XCM(G)T 06...TC/TA	XCMT 06R...GV
<b>14R/L-2.25DN-GV</b>	14	16	9.5	31.5	38.5	45	16.5	G 1/8	XCM(G)T 07...TC/TA	XCMT 07R...GV
<b>16R/L-2.25DN-GV</b>	16	20	11.1	36.0	44.0	50	19.0	G 1/8	XCM(G)T 08...TC/TA	XCMT 08R...GV
<b>20R/L-2.25DN-GV</b>	20	25	13.2	45.0	55.0	56	23.5	G 1/8	XCM(G)T 10...TC/TA	XCMT 10R...GV
<b>25R/L-2.25DN-GV</b>	25	32	16.5	56.2	69.0	61	29.0	G 1/8	XCM(G)T 13...TC/TA	XCMT 13R...GV
<b>32R/L-2.25DN-GV</b>	32	40	20.5	72.0	86.0	74	36.5	G 1/8	XCM(G)T 17...TC/TA	XCMT 17R...GV
									D211-D212	D211

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

## 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





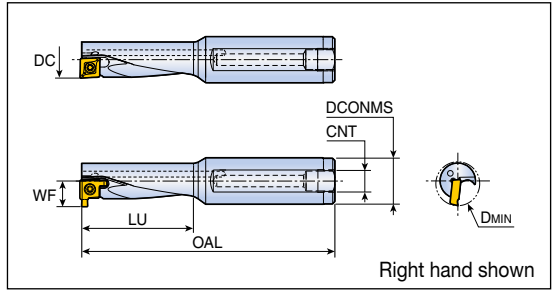
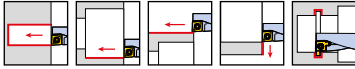
# TCAP...-3.0DN



## Multi-function toolholders - 3.0xD



• Internal coolant



Designation	Dimension (mm)							Insert	
	DC	DCONMS	WF	LU	OAL	DMIN	CNT	For drilling, boring, turning	For grooving
<b>TCAP 08R/L-3.0DN12</b>	8	12	-	24	80	-	G 1/16	XCM(G)T 04...TC/TA	-
<b>10R/L-3.0DN-GV</b>	10	12	7.1	30	85	12.0	G 1/16	XCM(G)T 05...TC/TA	XCMT 05R...GV
<b>12R/L-3.0DN-GV</b>	12	16	8.5	36	95	14.5	G 1/8	XCM(G)T 06...TC/TA	XCMT 06R...GV
<b>14R/L-3.0DN-GV</b>	14	16	9.5	42	100	16.5	G 1/8	XCM(G)T 07...TC/TA	XCMT 07R...GV
<b>16R/L-3.0DN-GV</b>	16	20	11.1	48	110	19.0	G 1/8	XCM(G)T 08...TC/TA	XCMT 08R...GV
<b>20R/L-3.0DN-GV</b>	20	25	13.2	60	130	23.5	G 1/8	XCM(G)T 10...TC/TA	XCMT 10R...GV
<b>25R/L-3.0DN-GV</b>	25	32	16.5	75	150	29.0	G 1/8	XCM(G)T 13...TC/TA	XCMT 13R...GV
<b>32R/L-3.0DN-GV</b>	32	40	20.5	96	185	36.5	G 1/8	XCM(G)T 17...TC/TA	XCMT 17R...GV
								D211-D212	D211

- ▶ OA: LPR+LS
- ▶ Grooving insert is available for right handed type

## 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



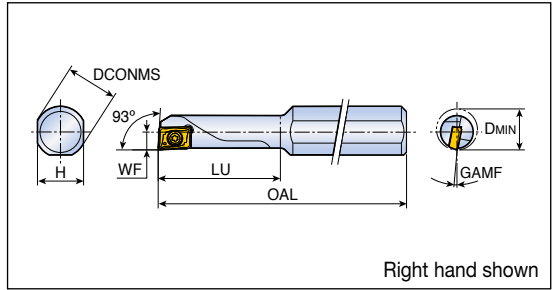
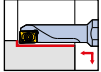
# S...SXUCR/L



## Boring bars with TOP-CAP inserts



- For boring
- External coolant



Designation	Dimension (mm)							Insert
	DCONMS	H	OAL	LU	WF	DMIN	GAMF	
<b>S10H SXUCR/L 04-06</b> <sup>(1)</sup>	10	9	100	21	3.0	6	9°	XCMT 04...R/L TC
<b>S10J SXUCR/L 04-07</b> <sup>(1)</sup>	10	9	110	24.5	3.5	7	5°	D212
<b>S10K SXUCR/L 04-08</b> <sup>(1)</sup>	10	9	110	28	4.0	8	2°	
<b>S10L SXUCR/L 05-10</b>	10	9	125	35	5.0	10	2°	XCMT 05..TC D212

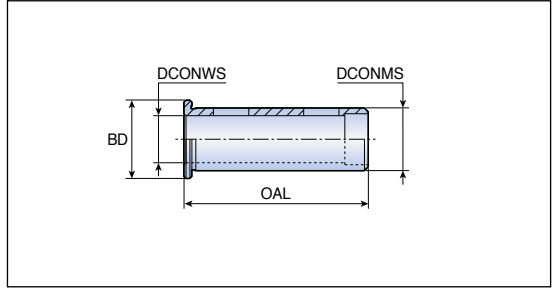
▶ <sup>(1)</sup> Right hand Insert should be used in right hand boring bar

## Spare parts

Designation	Screw	Wrench		
<b>S10H SXUCR/L 04-06</b>	TS 18034I/HG-P	T 6P		
<b>S10J SXUCR/L 04-07</b>	TS 18034I/HG-P	T 6P		
<b>S10K SXUCR/L 04-08</b>	TS 18034I/HG-P	T 6P		
<b>S10L SXUCR/L 05-10</b>	TS 20038I/HG-P	T 6P		



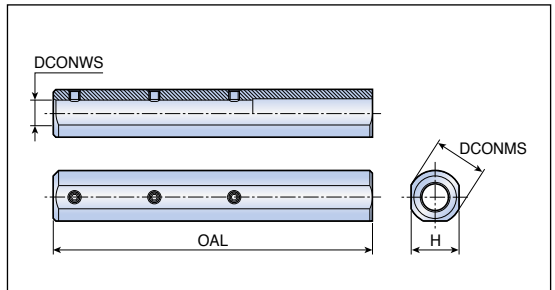
## Sleeves for clamping unit



Designation	Dimension (mm)				Toolholders
	DCONMS	DCONWS	BD	OAL	
<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)			
	DCONMS	DCONWS	OAL	H
<b>TBSL 20-10-120</b>	20	10	120	18

## Spare parts

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

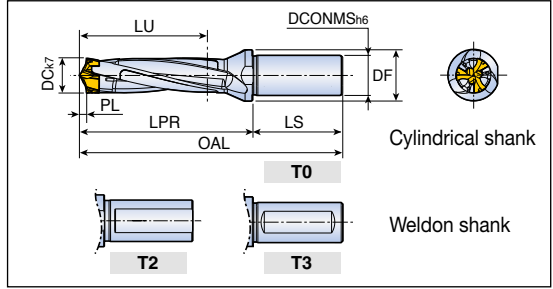
# 3ED...T...-3D



## Head changeable 3 flute drill holder



- Drilling depth: 3x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
<b>3ED 120-124-16T3/T0-3D</b>	12.0-12.4	16	20	40.0	60.7	48	2.74	12	K 3ED D12-D13
<b>125-129-16T3/T0-3D</b>	12.5-12.9	16	20	41.5	62.5	48	2.76	12	
<b>130-134-16T3/T0-3D</b>	13.0-13.4	16	20	43.0	64.8	48	2.91	13	
<b>135-139-16T3/T0-3D</b>	13.5-13.9	16	20	44.5	66.6	48	2.93	13	
<b>140-144-16T3/T0-3D</b>	14.0-14.4	16	20	46.0	68.9	48	3.17	14	K 3ED D14-D15
<b>145-149-16T3/T0-3D</b>	14.5-14.9	16	20	47.5	70.7	48	3.19	14	
<b>150-159-20T3/T0-3D</b>	15.0-15.9	20	25	49.0	73.9	50	3.31	15	
<b>160-169-20T3/T0-3D</b>	16.0-16.9	20	25	52.0	79.0	50	3.70	16	K 3ED D16-D17
<b>170-179-20T3/T0-3D</b>	17.0-17.9	20	25	55.0	84.0	50	3.88	17	
<b>180-189-25T2/T0-3D</b>	18.0-18.9	25	32	58.0	90.1	56	4.07	18	K 3ED D18-D19
<b>190-199-25T2/T0-3D</b>	19.0-19.9	25	32	61.0	94.7	56	4.26	19	
<b>200-209-25T2/T0-3D</b>	20.0-20.9	25	32	64.0	99.3	56	4.44	20	K 3ED D20-D21
<b>210-219-25T2/T0-3D</b>	21.0-21.9	25	32	67.0	103.8	56	4.62	21	
<b>220-229-25T2/T0-3D</b>	22.0-22.9	25	32	70.0	108.4	56	4.78	22	K 3ED D22-D23
<b>230-239-32T2/T0-3D</b>	23.0-23.9	32	42	73.0	112.8	60	5.02	23	
<b>240-249-32T2/T0-3D</b>	24.0-24.9	32	42	76.0	117.4	60	5.18	24	K 3ED D24-D25
<b>250-259-32T2/T0-3D</b>	25.0-25.9	32	42	79.0	122.0	60	5.29	25	



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

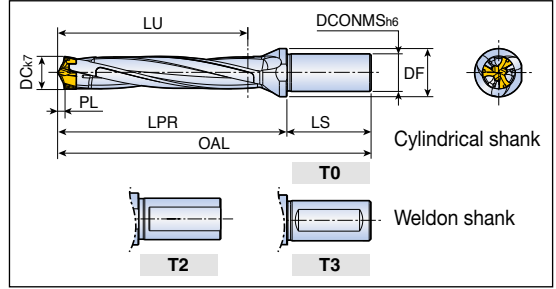
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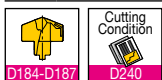
## Head changeable 3 flute drill holder



• Drilling depth: 5x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
<b>3ED 120-124-16T3/T0-5D</b>	12.0-12.4	16	20	64.0	84.7	48	2.74	12	K 3ED D12-D13
<b>125-129-16T3/T0-5D</b>	12.5-12.9	16	20	66.5	87.5	48	2.76	12	
<b>130-134-16T3/T0-5D</b>	13.0-13.4	16	20	69.0	90.8	48	2.91	13	
<b>135-139-16T3/T0-5D</b>	13.5-13.9	16	20	71.5	93.6	48	2.93	13	
<b>140-144-16T3/T0-5D</b>	14.0-14.4	16	20	74.0	96.9	48	3.17	14	K 3ED D14-D15
<b>145-149-16T3/T0-5D</b>	14.5-14.9	16	20	76.5	99.7	48	3.19	14	
<b>150-159-20T3/T0-5D</b>	15.0-15.9	20	25	79.0	103.9	50	3.31	15	
<b>160-169-20T3/T0-5D</b>	16.0-16.9	20	25	84.0	111.0	50	3.70	16	K 3ED D16-D17
<b>170-179-20T3/T0-5D</b>	17.0-17.9	20	25	89.0	118.0	50	3.88	17	
<b>180-189-25T2/T0-5D</b>	18.0-18.9	25	32	94.0	126.1	56	4.07	18	K 3ED D18-D19
<b>190-199-25T2/T0-5D</b>	19.0-19.9	25	32	99.0	132.7	56	4.26	19	
<b>200-209-25T2/T0-5D</b>	20.0-20.9	25	32	104.0	139.3	56	4.44	20	K 3ED D20-D21
<b>210-219-25T2/T0-5D</b>	21.0-21.9	25	32	109.0	145.8	56	4.62	21	
<b>220-229-25T2/T0-5D</b>	22.0-22.9	25	32	114.0	152.4	56	4.78	22	K 3ED D22-D23
<b>230-239-32T2/T0-5D</b>	23.0-23.9	32	42	119.0	158.8	60	5.02	23	
<b>240-249-32T2/T0-5D</b>	24.0-24.9	32	42	124.0	165.4	60	5.18	24	K 3ED D24-D25
<b>250-259-32T2/T0-5D</b>	25.0-25.9	32	42	129.0	172.0	60	5.29	25	



► OAL: LPR+LS  
 ► SSC: Seat size code

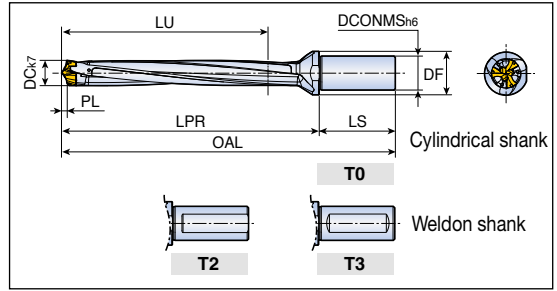
# 3ED...T...-8D



Head changeable 3 flute drill holder



- Drilling depth: 8x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
<b>3ED 120-124-16T3/T0-8D</b>	12.0-12.4	16	20	100	120.7	48	2.74	12	K 3ED D12-D13
<b>125-129-16T3/T0-8D</b>	12.5-12.9	16	20	104	125.0	48	2.76	12	
<b>130-134-16T3/T0-8D</b>	13.0-13.4	16	20	108	129.8	48	2.91	13	
<b>135-139-16T3/T0-8D</b>	13.5-13.9	16	20	112	134.1	48	2.93	13	K 3ED D14-D15
<b>140-144-16T3/T0-8D</b>	14.0-14.4	16	20	116	138.9	48	3.17	14	
<b>145-149-16T3/T0-8D</b>	14.5-14.9	16	20	120	143.2	48	3.19	14	
<b>150-159-20T3/T0-8D</b>	15.0-15.9	20	25	124	148.9	50	3.31	15	K 3ED D16-D17
<b>160-169-20T3/T0-8D</b>	16.0-16.9	20	25	132	159.0	50	3.70	16	
<b>170-179-20T3/T0-8D</b>	17.0-17.9	20	25	140	169.0	50	3.88	17	
<b>180-189-25T2/T0-8D</b>	18.0-18.9	25	32	148	180.1	56	4.07	18	K 3ED D18-D19
<b>190-199-25T2/T0-8D</b>	19.0-19.9	25	32	156	189.7	56	4.26	19	
<b>200-209-25T2/T0-8D</b>	20.0-20.9	25	32	164	199.3	56	4.44	20	
<b>210-219-25T2/T0-8D</b>	21.0-21.9	25	32	172	208.8	56	4.62	21	K 3ED D20-D21
<b>220-229-25T2/T0-8D</b>	22.0-22.9	25	32	180	218.4	56	4.78	22	
<b>230-239-32T2/T0-8D</b>	23.0-23.9	32	42	188	227.8	60	5.02	23	
<b>240-249-32T2/T0-8D</b>	24.0-24.9	32	42	196	237.4	60	5.18	24	K 3ED D22-D23
<b>250-259-32T2/T0-8D</b>	25.0-25.9	32	42	204	247.0	60	5.29	25	
									K 3ED D24-D25



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

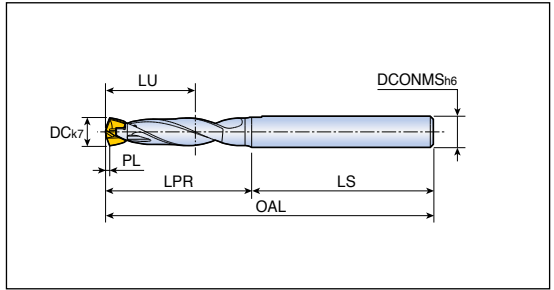
# TCD...-3D



## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
<b>TCD 040-044-06A0-3D</b>	4.0-4.4	6	13	22.7	35	0.62	4	K TCD D040-D049
<b>045-049-06A0-3D</b>	4.5-4.9	6	14	24.7	35	0.66	4.5	
<b>050-054-06A0-3D</b>	5.0-5.4	6	16	26.3	35	0.73	5	K TCD D050-D059
<b>055-059-06A0-3D</b>	5.5-5.9	6	17	28.2	35	0.81	5.5	



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

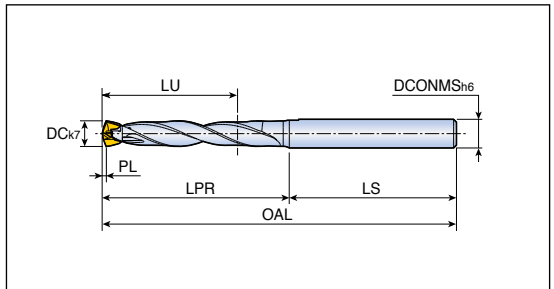
# TCD...-5D



## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 5xdiameter



Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
<b>TCD 040-044-06A0-5D</b>	4.0-4.4	6	21	30.7	35	0.62	4	K TCD D040-D049
<b>045-049-06A0-5D</b>	4.5-4.9	6	23	33.7	35	0.66	4.5	
<b>050-054-06A0-5D</b>	5.0-5.4	6	26	36.3	35	0.73	5	K TCD D050-D059
<b>055-059-06A0-5D</b>	5.5-5.9	6	28	39.2	35	0.81	5.5	



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

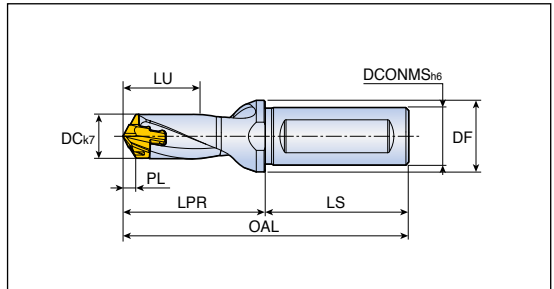
# TCD...T...-1.5D



## Head changeable drill holders - Weldon type shank



- Drilling depth: 1.5x diameter



Designation	Dimension (mm)								Clamping key	
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC		
<b>TCD 060-064-12T3-1.5D</b>	6.0-6.4	12	16	10	23.0	45	0.96	6	K TCD D060-D099	
<b>065-069-12T3-1.5D</b>	6.5-6.9	12	16	11	24.1	45	1.18	6.5		
<b>070-074-12T3-1.5D</b>	7.0-7.4	12	16	12	25.1	45	1.01	7		
<b>075-079-12T3-1.5D</b>	7.5-7.9	12	16	12	25.9	45	1.10	7		
<b>080-089-12T3-1.5D</b>	8.0-8.9	12	16	13	27.4	45	1.20	8		
<b>090-099-12T3-1.5D</b>	9.0-9.9	12	16	15	29.3	45	1.35	9		
<b>100-109-16T3-1.5D</b>	10.0-10.9	16	20	17	31.2	48	1.50	10		K TCD D100-D199
<b>110-119-16T3-1.5D</b>	11.0-11.9	16	20	19	33.1	48	1.67	11		
<b>120-129-16T3-1.5D</b>	12.0-12.9	16	20	20	35.0	48	1.82	12		
<b>130-139-16T3-1.5D</b>	13.0-13.9	16	20	22	37.1	48	1.96	13		
<b>140-149-16T3-1.5D</b>	14.0-14.9	16	20	23	41.1	48	2.12	14		
<b>150-159-20T3-1.5D</b>	15.0-15.9	20	25	25	46.2	50	2.27	15		
<b>160-169-20T3-1.5D</b>	16.0-16.9	20	25	26	49.3	50	2.42	16		
<b>170-179-20T3-1.5D</b>	17.0-17.9	20	25	29	52.4	50	2.59	17		
<b>180-189-25T2-1.5D</b>	18.0-18.9	25	32	30	55.5	56	2.73	18		
<b>190-199-25T2-1.5D</b>	19.0-19.9	25	32	32	58.5	56	2.88	19	K TCD D200-D269	
<b>200-209-25T2-1.5D</b>	20.0-20.9	25	32	33	61.6	56	3.02	20		
<b>210-219-25T2-1.5D</b>	21.0-21.9	25	32	35	64.7	56	3.18	21		
<b>220-229-25T2-1.5D</b>	22.0-22.9	25	32	36	67.8	56	3.24	22		
<b>230-239-32T2-1.5D</b>	23.0-23.9	32	42	38	70.8	60	3.46	23		
<b>240-249-32T2-1.5D</b>	24.0-24.9	32	42	40	73.9	60	3.62	24		
<b>250-259-32T2-1.5D</b>	25.0-25.9	32	42	42	77.0	60	3.80	25		

D189-D202

Sleeve  
D109

Cutting Condition  
D242

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



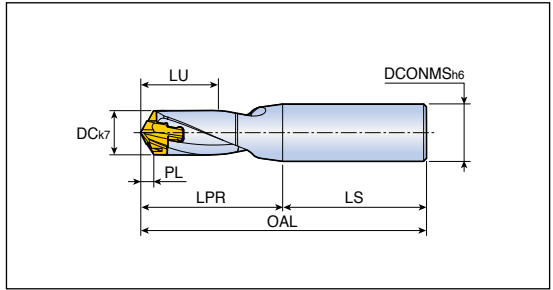
# TCD...S0-1.5D



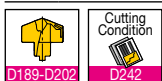
## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 1.5xdiameter



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

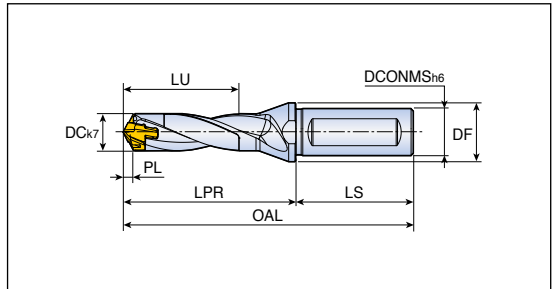


- ▶ OAL: LPR+LS
- ▶ SSC: Seat size code

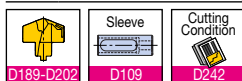
## Head changeable drill holders - Weldon type shank



- Drilling depth: 3xdiameter



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



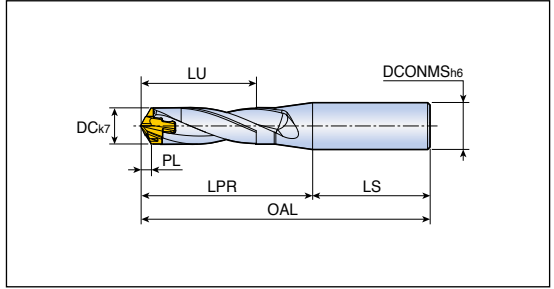
- ▶ OAL: LPR+LS
- ▶ SSC: Seat size code

# TCD...S0-3D

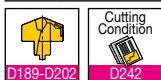
## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 3x diameter



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

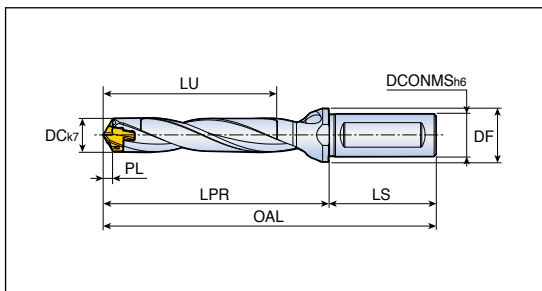


- ▶ OAL: LPR+LS
- ▶ SSC: Seat size code

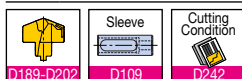
## Head changeable drill holders - Weldon type shank



- Drilling depth: 5xdiameter



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



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

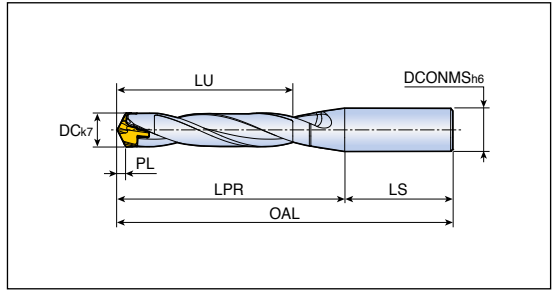
# TCD...S0-5D



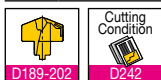
## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 5x diameter



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



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

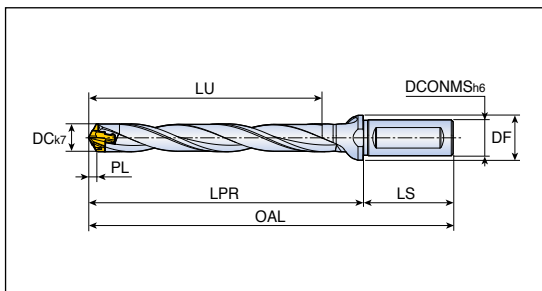
# TCD...T...-8D



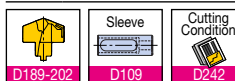
## Head changeable drill holders - Weldon type shank



- Drilling depth: 8x diameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC	
<b>TCD 070-074-12T3-8D</b>	7.0-7.4	12	16	57	70.6	45	1.01	7	K TCD D060-D099
<b>075-079-12T3-8D</b>	7.5-7.9	12	16	61	74.6	45	1.10	7	
<b>080-084-12T3-8D</b>	8.0-8.4	12	16	65	79.4	45	1.20	8	
<b>085-089-12T3-8D</b>	8.5-8.9	12	16	69	83.4	45	1.29	8	
<b>090-094-12T3-8D</b>	9.0-9.4	12	16	73	87.8	45	1.35	9	
<b>095-099-12T3-8D</b>	9.5-9.9	12	16	77	91.8	45	1.44	9	
<b>100-104-16T3-8D</b>	10.0-10.4	16	20	82	96.2	48	1.50	10	K TCD D100-D199
<b>105-109-16T3-8D</b>	10.5-10.9	16	20	86	100.2	48	1.59	10	
<b>110-114-16T3-8D</b>	11.0-11.4	16	20	90	104.6	48	1.67	11	
<b>115-119-16T3-8D</b>	11.5-11.9	16	20	94	108.6	48	1.76	11	
<b>120-124-16T3-8D</b>	12.0-12.4	16	20	98	113.0	48	1.82	12	
<b>125-129-16T3-8D</b>	12.5-12.9	16	20	102	117.0	48	1.91	12	
<b>130-134-16T3-8D</b>	13.0-13.4	16	20	106	121.6	48	1.96	13	
<b>135-139-16T3-8D</b>	13.5-13.9	16	20	110	125.6	48	2.05	13	
<b>140-144-16T3-8D</b>	14.0-14.4	16	20	114	132.2	48	2.12	14	
<b>145-149-16T3-8D</b>	14.5-14.9	16	20	118	136.2	48	2.21	14	
<b>150-159-20T3-8D</b>	15.0-15.9	20	25	122	143.7	50	2.27	15	K TCD D200-D269
<b>160-169-20T3-8D</b>	16.0-16.9	20	25	130	153.3	50	2.42	16	
<b>170-179-20T3-8D</b>	17.0-17.9	20	25	139	162.9	50	2.59	17	
<b>180-189-25T2-8D</b>	18.0-18.9	25	32	147	172.5	56	2.73	18	
<b>190-199-25T2-8D</b>	19.0-19.9	25	32	155	182.0	56	2.88	19	
<b>200-209-25T2-8D</b>	20.0-20.9	25	32	163	191.6	56	3.02	20	
<b>210-219-25T2-8D</b>	21.0-21.9	25	32	171	201.2	56	3.18	21	
<b>220-229-25T2-8D</b>	22.0-22.9	25	32	179	210.8	56	3.24	22	
<b>230-239-32T2-8D</b>	23.0-23.9	32	42	187	220.3	60	3.46	23	
<b>240-249-32T2-8D</b>	24.0-24.9	32	42	196	229.9	60	3.62	24	
<b>250-259-32T2-8D</b>	25.0-25.9	32	42	204	239.5	60	3.80	25	



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

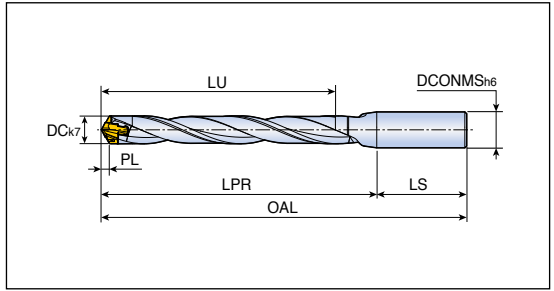
# TCD...S0-8D



## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 8x diameter



Designation	Dimension (mm)							Clamping key	
	DC	DCONMS	LU	LPR	LS	PL	SSC		
<b>TCD 060-064-12S0-8D</b>	6.0-6.4	12	49	62.0	45	0.96	6	K TCD D060-D099	
<b>065-069-12S0-8D</b>	6.5-6.9	12	53	66.3	45	1.18	6.5		
<b>070-074-12S0-8D</b>	7.0-7.4	12	57	70.6	45	1.01	7		
<b>075-079-12S0-8D</b>	7.5-7.9	12	61	74.6	45	1.10	7		
<b>080-084-12S0-8D</b>	8.0-8.4	12	65	79.4	45	1.20	8		
<b>085-089-12S0-8D</b>	8.5-8.9	12	69	83.4	45	1.29	8		
<b>090-094-12S0-8D</b>	9.0-9.4	12	73	87.8	45	1.35	9		
<b>095-099-12S0-8D</b>	9.5-9.9	12	77	91.8	45	1.44	9		
<b>100-104-16S0-8D</b>	10.0-10.4	16	82	96.2	48	1.50	10		K TCD D100-D199
<b>105-109-16S0-8D</b>	10.5-10.9	16	86	100.2	48	1.59	10		
<b>110-114-16S0-8D</b>	11.0-11.4	16	90	104.6	48	1.67	11		
<b>115-119-16S0-8D</b>	11.5-11.9	16	94	108.6	48	1.76	11		
<b>120-124-16S0-8D</b>	12.0-12.4	16	98	113.0	48	1.82	12		
<b>125-129-16S0-8D</b>	12.5-12.9	16	102	117.0	48	1.91	12		
<b>130-134-16S0-8D</b>	13.0-13.4	16	106	121.6	48	1.96	13		
<b>135-139-16S0-8D</b>	13.5-13.9	16	110	125.6	48	2.05	13		
<b>140-144-16S0-8D</b>	14.0-14.4	16	114	132.2	48	2.12	14		
<b>145-149-16S0-8D</b>	14.5-14.9	16	118	136.2	48	2.21	14		
<b>150-159-20S0-8D</b>	15.0-15.9	20	122	143.7	50	2.27	15	K TCD D200-D269	
<b>160-169-20S0-8D</b>	16.0-16.9	20	130	153.3	50	2.42	16		
<b>170-179-20S0-8D</b>	17.0-17.9	20	139	162.9	50	2.59	17		
<b>180-189-25S0-8D</b>	18.0-18.9	25	147	172.5	56	2.73	18		
<b>190-199-25S0-8D</b>	19.0-19.9	25	155	182.0	56	2.88	19		
<b>200-209-25S0-8D</b>	20.0-20.9	25	163	191.6	56	3.02	20		
<b>210-219-25S0-8D</b>	21.0-21.9	25	171	201.2	56	3.18	21		
<b>220-229-25S0-8D</b>	22.0-22.9	25	179	210.8	56	3.24	22		
<b>230-239-32S0-8D</b>	23.0-23.9	32	187	220.3	60	3.46	23		
<b>240-249-32S0-8D</b>	24.0-24.9	32	196	229.9	60	3.62	24		
<b>250-259-32S0-8D</b>	25.0-25.9	32	204	239.5	60	3.80	25		

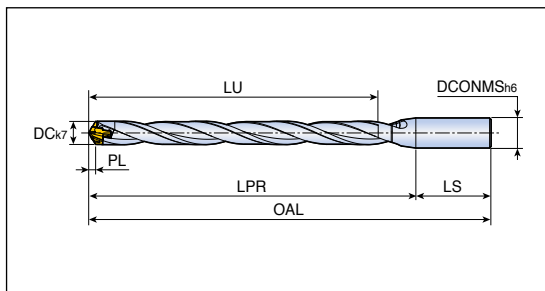


- ▶ It is recommended to make the pilot hole with a 1.5D holder
- ▶ OAL: LPR+LS
- ▶ SSC: Seat size code

# TCD...S0-12D



## Head changeable drill holders - Cylindrical type shank



• Drilling depth: 12xdiameter



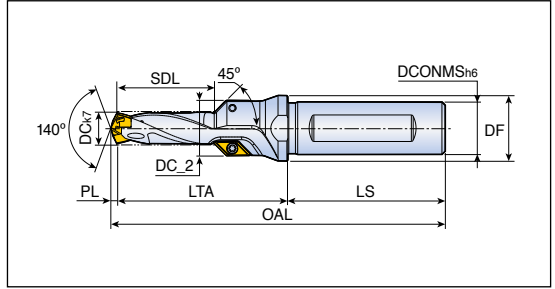
Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
<b>TCD 080-084-12S0-12D</b>	8.0-8.4	12	97	111.4	45	1.20	8	K TCD D060-D099
<b>085-089-12S0-12D</b>	8.5-8.9	12	103	117.4	45	1.29	8	
<b>090-094-12S0-12D</b>	9.0-9.4	12	109	123.8	45	1.35	9	
<b>095-099-12S0-12D</b>	9.5-9.9	12	115	129.8	45	1.44	9	
<b>100-104-16S0-12D</b>	10.0-10.4	16	122	136.2	48	1.50	10	
<b>105-109-16S0-12D</b>	10.5-10.9	16	128	142.2	48	1.59	10	
<b>110-114-16S0-12D</b>	11.0-11.4	16	134	148.6	48	1.67	11	
<b>115-119-16S0-12D</b>	11.5-11.9	16	140	154.6	48	1.76	11	
<b>120-124-16S0-12D</b>	12.0-12.4	16	146	161.0	48	1.82	12	
<b>125-129-16S0-12D</b>	12.5-12.9	16	152	167.0	48	1.91	12	
<b>130-134-16S0-12D</b>	13.0-13.4	16	158	173.6	48	1.96	13	
<b>135-139-16S0-12D</b>	13.5-13.9	16	164	179.6	48	2.05	13	
<b>140-144-16S0-12D</b>	14.0-14.4	16	170	188.2	48	2.12	14	
<b>145-149-16S0-12D</b>	14.5-14.9	16	176	194.2	48	2.21	14	
<b>150-159-20S0-12D</b>	15.0-15.9	20	182	203.7	50	2.27	15	K TCD D200-D269
<b>160-169-20S0-12D</b>	16.0-16.9	20	194	217.3	50	2.42	16	
<b>170-179-20S0-12D</b>	17.0-17.9	20	207	230.9	50	2.59	17	
<b>180-189-25S0-12D</b>	18.0-18.9	25	219	244.5	56	2.73	18	
<b>190-199-25S0-12D</b>	19.0-19.9	25	221	258.0	56	2.88	19	
<b>200-209-25S0-12D</b>	20.0-20.9	25	243	271.6	56	3.02	20	
<b>210-219-25S0-12D</b>	21.0-21.9	25	255	285.2	56	3.18	21	
<b>220-229-25S0-12D</b>	22.0-22.9	25	267	298.8	56	3.24	22	
<b>230-239-32S0-12D</b>	23.0-23.9	32	289	312.3	60	3.46	23	
<b>240-249-32S0-12D</b>	24.0-24.9	32	292	325.9	60	3.62	24	
<b>250-259-32S0-12D</b>	25.0-25.9	32	304	339.5	60	3.80	25	



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



## Head changeable drill holders for pre-thread hole



Designation	ISO thread	DC	Dimension (mm)							Drill dia. range	Insert
			SDL	LTA	LS	DC_2	DCONMS	DF	PL		
<b>TCD 068x21x12T3-M8</b>	M8	6.8	21	43.77	45	13.5	12	16	1.23	6.5-6.9	AOMT 06...-C45 D203
<b>085x26x12T3-M10</b>	M10	8.5	26	48.71	45	15.5	12	16	1.29	8.5-8.9	
<b>102x30x16T3-M12</b>	M12	10.2	30	52.46	48	17.0	16	20	1.54	10.0-10.4	
<b>120x35x16T3-M14</b>	M14	12.0	35	59.18	48	19.0	16	20	1.82	12.0-12.4	
<b>140x39x20T3-M16</b>	M16	14.0	39	66.88	50	21.0	20	25	2.12	14.0-14.4	
<b>175x42x20T3-M20</b>	M20	17.5	42	69.32	50	24.5	20	27	2.68	17.0-17.9	
<b>210x48x25T2-M24</b>	M24	21.0	48	76.82	56	28.0	25	32	3.18	21.0-21.9	

▶ OAL: LTA+LS+PL

## Spare parts

Designation	Screw	Wrench	Clamping key	
<b>TCD 068</b>	TS 22046I	TD 7	K TCD D060-D099	
<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	



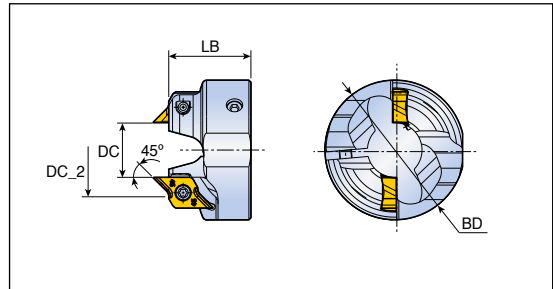
## Plug for coolant supply in a stationary machines

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

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



## Chamfering ring tools



Designation	Dimension (mm)				Chamfer size	Chamfer insert
	DC	DC_2	BD	LB		
<b>CFR D100-A45</b>	9.8	16.56	34	20	2.5	CRNG 08...-45CD D203
<b>D105-A45</b>	10.3	17.06	34	20	2.5	
<b>D110-A45</b>	10.8	17.56	34	20	2.5	
<b>D115-A45</b>	11.3	18.06	34	20	2.5	
<b>D120-A45</b>	11.8	18.56	34	20	2.5	
<b>D125-A45</b>	12.3	19.06	34	20	2.5	
<b>D130-A45</b>	12.8	19.56	34	20	2.5	
<b>D135-A45</b>	13.3	20.06	34	20	2.5	
<b>D140-A45</b>	13.8	20.56	38	22	2.5	
<b>D145-A45</b>	14.3	21.06	38	22	2.5	
<b>D150-A45</b>	14.6	21.36	38	22	2.5	
<b>D160-A45</b>	15.6	22.36	42	23	2.5	
<b>D170-A45</b>	16.6	23.36	42	23	2.5	
<b>D180-A45</b>	17.6	24.36	42	23	2.5	
<b>D190-A45</b>	18.6	25.36	42	24	2.5	
<b>D200-A45</b>	19.6	26.36	42	24	2.5	
<b>D210-A45</b>	20.6	27.36	47	24	2.5	
<b>D220-A45</b>	21.6	28.36	47	24	2.5	
<b>D230-A45</b>	22.6	29.36	47	24	2.5	
<b>D240-A45</b>	23.6	30.36	47	24	2.5	
<b>D250-A45</b>	24.6	31.36	47	24	2.5	

## Spare parts

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

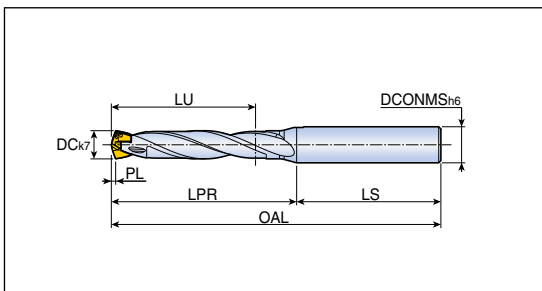
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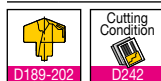
## Head changeable drill holders - Cylindrical type shank



- Drilling depth: 3/5/8xdiameter



Designation	Dimension (mm)							Clamping key
	DC	DCONMS	LU	LPR	LS	PL	SSC	
<b>TCD 060-064-08A0-3D</b>	6.0-6.4	8	19	28.0	36	0.96	6	K TCD D060-D099
<b>065-069-08A0-3D</b>	6.5-6.9	8	21	29.8	36	1.18	6.5	
<b>070-074-08A0-3D</b>	7.0-7.4	8	22	31.6	36	1.01	7	
<b>075-079-08A0-3D</b>	7.5-7.9	8	24	33.1	36	1.10	7.5	
<b>080-084-10A0-3D</b>	8.0-8.4	10	25	35.4	40	1.20	8	
<b>085-089-10A0-3D</b>	8.5-8.9	10	27	36.9	40	1.29	8.5	
<b>090-094-10A0-3D</b>	9.0-9.4	10	28	38.8	40	1.35	9	
<b>095-099-10A0-3D</b>	9.5-9.9	10	30	40.3	40	1.44	9.5	
<b>TCD 060-064-08A0-5D</b>	6.0-6.4	8	31	40.0	36	0.96	6	
<b>065-069-08A0-5D</b>	6.5-6.9	8	34	42.8	36	1.18	6.5	
<b>070-074-08A0-5D</b>	7.0-7.4	8	36	45.6	36	1.01	7	
<b>075-079-08A0-5D</b>	7.5-7.9	8	39	48.1	36	1.10	7.5	
<b>080-084-10A0-5D</b>	8.0-8.4	10	41	51.4	40	1.20	8	
<b>085-089-10A0-5D</b>	8.5-8.9	10	44	53.9	40	1.29	8.5	
<b>090-094-10A0-5D</b>	9.0-9.4	10	46	56.8	40	1.35	9	
<b>095-099-10A0-5D</b>	9.5-9.9	10	49	59.3	40	1.44	9.5	
<b>TCD 060-064-08A0-8D</b>	6.0-6.4	8	49	58.0	36	0.96	6	K TCD D060-D099
<b>065-069-08A0-8D</b>	6.5-6.9	8	53	62.3	36	1.18	6.5	
<b>070-074-08A0-8D</b>	7.0-7.4	8	57	66.6	36	1.01	7	
<b>075-079-08A0-8D</b>	7.5-7.9	8	61	70.6	36	1.10	7.5	
<b>080-084-10A0-8D</b>	8.0-8.4	10	65	75.4	40	1.20	8	
<b>085-089-10A0-8D</b>	8.5-8.9	10	69	79.4	40	1.29	8.5	
<b>090-094-10A0-8D</b>	9.0-9.4	10	73	83.8	40	1.35	9	
<b>095-099-10A0-8D</b>	9.5-9.9	10	77	87.8	40	1.44	9.5	



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

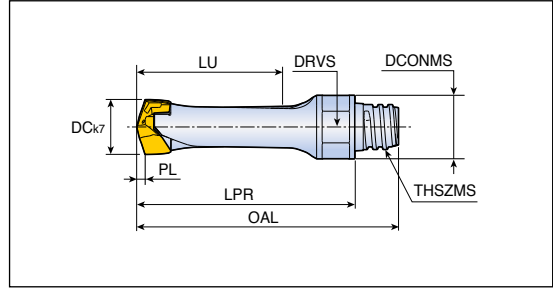
# TCD...-MRS-2D





Head changeable drill holder with MAXI-RUSH type shank



• Drilling depth: 2xdiameter



Designation	Dimension (mm)										Clamping key
	DC	DCONMS	LU	LPR	PL	OAL	DRVS	THSZMS	SSC		
<b>TCD 060-064-MRS06-2D</b>	6.0-6.4	9.6	13.0	28.0	1.0	34.3	8	S06	6	K TCD D060-D099	
<b>080-084-MRS06-2D</b>	8.0-8.4	9.6	17.2	32.9	1.2	39.2	8	S06	8		
<b>100-104-MRS08-2D</b>	10.0-10.4	11.6	21.5	39.8	1.5	47.3	10	S08	10	K TCD D100-D199	



 ▶ SSC: Seat size code  
 ▶ Matched with MAXI-RUSH holder



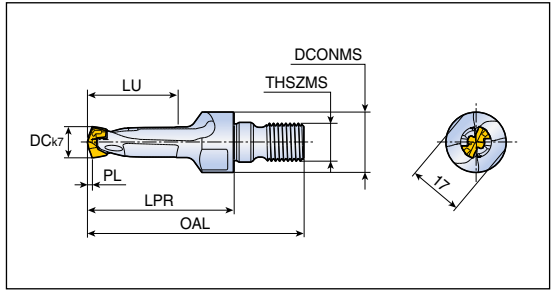
# TCDM...-M12-2D



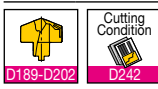
Head changeable drill holder with T-FLEXTEC type shank



- Drilling depth: 2xdiameter



Designation	Dimension (mm)								Clamping key	
	DC	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC		
<b>TCDM 100-104-M12-2D</b>	10.0-10.4	19	28.7	46.2	1.5	68.2	M12	10	K TCD D100-D199	
<b>105-109-M12-2D</b>	10.5-10.9	19	29.7	47.2	1.6	69.2	M12	10		
<b>110-114-M12-2D</b>	11.0-11.4	19	31.1	48.6	1.7	70.6	M12	11		
<b>115-119-M12-2D</b>	11.5-11.9	19	32.1	49.6	1.8	71.6	M12	11		
<b>120-124-M12-2D</b>	12.0-12.4	19	33.5	51.0	1.8	73.0	M12	12		
<b>125-129-M12-2D</b>	12.5-12.9	19	34.5	52.0	1.9	74.0	M12	12		
<b>130-134-M12-2D</b>	13.0-13.4	19	36.1	53.6	2.0	75.6	M12	13		
<b>135-139-M12-2D</b>	13.5-13.9	19	37.1	54.6	2.1	76.6	M12	13		
<b>140-144-M12-2D</b>	14.0-14.4	19	38.7	56.2	2.1	78.2	M12	14		
<b>145-149-M12-2D</b>	14.5-14.9	19	39.7	57.2	2.2	79.2	M12	14		
<b>150-159-M12-2D</b>	15.0-15.9	19	41.2	58.7	2.3	80.7	M12	15		



- ▶ SSC: Seat size code
- ▶ Matched with T-FLEXTEC holder

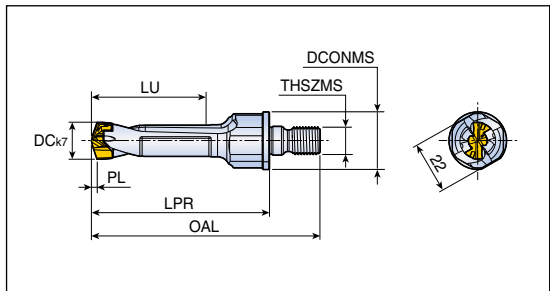
# TCDM...-M12-3D



Head changeable drill holder with T-FLEXTEC type shank



- Drilling depth: 3xdiameter



Designation	Dimension (mm)								Clamping key	
	DC	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC		
<b>TCDM 060-064-M12-3D</b>	6.0-6.4	25	19.0	42.0	1.0	64.0	M12	6	K TCD D060-D099	
<b>065-069-M12-3D</b>	6.5-6.9	25	20.7	44.3	1.2	66.3	M12	6.5		
<b>070-074-M12-3D</b>	7.0-7.4	25	22.0	45.6	1.0	67.6	M12	7		
<b>075-079-M12-3D</b>	7.5-7.9	25	23.6	47.6	1.1	69.6	M12	7		
<b>080-084-M12-3D</b>	8.0-8.4	25	25.2	49.4	1.2	71.4	M12	8		
<b>085-089-M12-3D</b>	8.5-8.9	25	26.8	50.4	1.3	72.4	M12	8		
<b>090-094-M12-3D</b>	9.0-9.4	25	28.4	52.8	1.4	74.8	M12	9		
<b>095-099-M12-3D</b>	9.5-9.9	25	29.9	54.8	1.4	76.8	M12	9		
<b>100-104-M12-3D</b>	10.0-10.4	25	31.5	56.2	1.5	78.2	M12	10		K TCD D100-D199
<b>105-109-M12-3D</b>	10.5-10.9	25	33.1	58.2	1.6	80.2	M12	10		
<b>110-114-M12-3D</b>	11.0-11.4	25	34.7	59.6	1.7	81.6	M12	11		
<b>115-119-M12-3D</b>	11.5-11.9	25	36.3	61.6	1.8	83.6	M12	11		
<b>120-124-M12-3D</b>	12.0-12.4	25	37.8	63.0	1.8	85.0	M12	12		
<b>125-129-M12-3D</b>	12.5-12.9	25	39.4	64.0	1.9	86.0	M12	12		
<b>130-134-M12-3D</b>	13.0-13.4	25	41.0	66.6	2.0	88.6	M12	13		
<b>135-139-M12-3D</b>	13.5-13.9	25	42.6	68.6	2.1	90.6	M12	13		
<b>140-144-M12-3D</b>	14.0-14.4	25	44.1	70.2	2.1	92.2	M12	14		
<b>145-149-M12-3D</b>	14.5-14.9	25	45.7	72.2	2.2	94.2	M12	14		
<b>150-159-M12-3D</b>	15.0-15.9	25	47.3	73.7	2.3	95.7	M12	15		
<b>160-169-M12-3D</b>	16.0-16.9	25	50.4	77.3	2.4	99.3	M12	16		
<b>170-179-M12-3D</b>	17.0-17.9	25	53.6	80.9	2.6	102.9	M12	17	K TCD D200-D269	
<b>180-189-M12-3D</b>	18.0-18.9	25	56.7	84.5	2.7	106.5	M12	18		
<b>190-199-M12-3D</b>	19.0-19.9	25	59.9	88.0	2.9	110.0	M12	19		
<b>200-209-M12-3D</b>	20.0-20.9	25	63.0	91.6	3.0	113.6	M12	20		



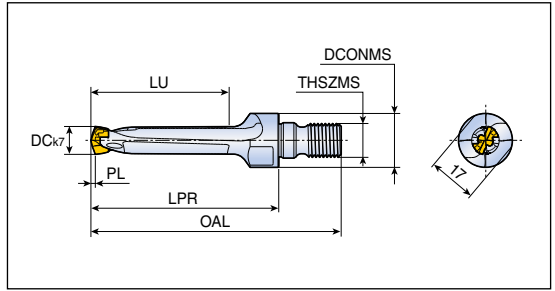
- ▶ SSC: Seat size code
- ▶ Matched with T-FLEXTEC holder

# TCDM...-M12-4D

Head changeable drill holder with T-FLEXTEC type shank



- Drilling depth: 4xdiameter



Designation	Dimension (mm)								Clamping key
	DC	DCONMS	LU	LPR	PL	OAL	THSZMS	SSC	
<b>TCDM 100-104-M12-4D</b>	10.0-10.4	19	48.7	66.2	1.5	88.2	M12	10	K TCD D100-D199
<b>105-109-M12-4D</b>	10.5-10.9	19	50.7	68.2	1.6	90.2	M12	10	
<b>110-114-M12-4D</b>	11.0-11.4	19	53.1	70.6	1.7	92.6	M12	11	
<b>115-119-M12-4D</b>	11.5-11.9	19	55.1	72.6	1.8	94.6	M12	11	
<b>120-124-M12-4D</b>	12.0-12.4	19	57.5	75.0	1.8	97.0	M12	12	
<b>125-129-M12-4D</b>	12.5-12.9	19	59.5	77.0	1.9	99.0	M12	12	
<b>130-134-M12-4D</b>	13.0-13.4	19	62.1	79.6	2.0	101.6	M12	13	
<b>135-139-M12-4D</b>	13.5-13.9	19	64.1	81.6	2.1	103.6	M12	13	
<b>140-144-M12-4D</b>	14.0-14.4	19	66.7	84.2	2.1	106.2	M12	14	
<b>145-149-M12-4D</b>	14.5-14.9	19	68.7	86.2	2.2	108.2	M12	14	
<b>150-159-M12-4D</b>	15.0-15.9	19	71.2	88.7	2.3	110.7	M12	15	



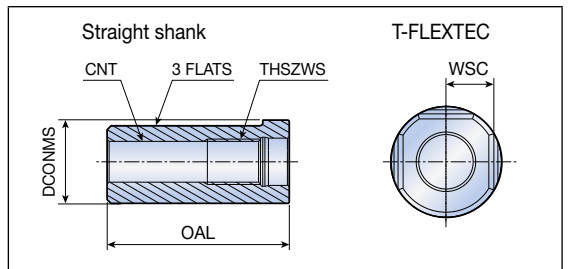
- ▶ SSC: Seat size code
- ▶ Matched with T-FLEXTEC holder

D189-D202

D242

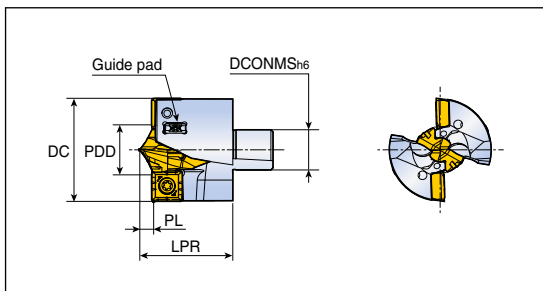
# TFLEX-TCD-M12

T-FLEXTEC shank



Designation	Dimension (mm)				CNT
	THSZWS	DCONMS	OAL	WSC	
<b>TFLEX 160X36-TCD-M12</b>	M12	16	36	7.5	UNF 5/16
<b>1905X36-TCD-M12</b>	M12	19.05	36	8.5	UNF 5/16
<b>200X36-TCD-M12</b>	M12	20	36	8.5	G 1/8
<b>220X48-TCD-M12</b>	M12	22	48	9.5	G 1/8
<b>250X54-TCD-M12</b>	M12	25	54	11	G 1/8
<b>254X54-TCD-M12</b>	M12	25.4	54	11	G 1/8

## Modular drill heads



Designation	Dimension (mm)					Clamping Key	Insert	
	DC	DCONMS	LPR	PL	PDD		Center	Outer
<b>TNDH 2600-C26-TP</b>	26	10.4	24.9	3.98	15.9	K TCD D15-D16 CO	TCD-159-P-CO+	SPGX 06...DW
<b>2700-C26-TP</b>	27	10.4	25.4	4.14	16.9	K TCD D15-D16 CO	TCD-169-P-CO+	D204
<b>2800-C28-TP</b>	28	11.2	26.9	4.29	17.9	K TCD D17-D19 CO	TCD-179-P-CO+	
<b>2900-C28-TP</b>	29	11.2	26.6	3.97	15.9	K TCD D15-D16 CO	TCD-159-P-CO+	SPGX 07...DW
<b>3000-C30-TP</b>	30	12.0	28.3	4.14	16.9	K TCD D15-D16 CO	TCD-169-P-CO+	D204
<b>3100-C30-TP</b>	31	12.0	28.5	4.30	17.9	K TCD D17-D19 CO	TCD-179-P-CO+	
<b>3200-C32-TP</b>	32	12.8	30.3	4.46	18.9	K TCD D17-D19 CO	TCD-189-P-CO+	
<b>3300-C32-TP</b>	33	12.8	29.8	3.97	15.9	K TCD D15-D16 CO	TCD-159-P-CO+	SPGX 09...DW
<b>3400-C34-TP</b>	34	13.6	31.6	4.14	16.9	K TCD D15-D16 CO	TCD-169-P-CO+	D204
<b>3500-C34-TP</b>	35	13.6	31.8	4.30	17.9	K TCD D17-D19 CO	TCD-179-P-CO+	
<b>3600-C36-TP</b>	36	14.4	33.5	4.46	18.9	K TCD D17-D19 CO	TCD-189-P-CO+	
<b>3700-C36-TP</b>	37	14.4	33.3	4.14	16.9	K TCD D15-D16 CO	TCD-169-P-CO+	SPGX 11...DW
<b>3800-C38-TP</b>	38	15.2	35.0	4.30	17.9	K TCD D17-D19 CO	TCD-179-P-CO+	D204
<b>3900-C38-TP</b>	39	15.2	35.2	4.46	18.9	K TCD D17-D19 CO	TCD-189-P-CO+	
<b>4000-C40-TP</b>	40	16.0	36.9	4.62	19.9	K TCD D17-D19 CO	TCD-199-P-CO+	
<b>4100-C40-TP</b>	41	16.0	37.1	4.78	20.9	K TCD D20-D21 CO	TCD-209-P-CO+	
<b>4200-C42-TP</b>	42	16.8	38.9	4.95	21.9	K TCD D20-D21 CO	TCD-219-P-CO+	
<b>4300-C42-TP</b>	43	16.8	38.9	5.11	22.9	K TCD D22-D23 CO	TCD-229-P-CO+	

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

## Spare parts

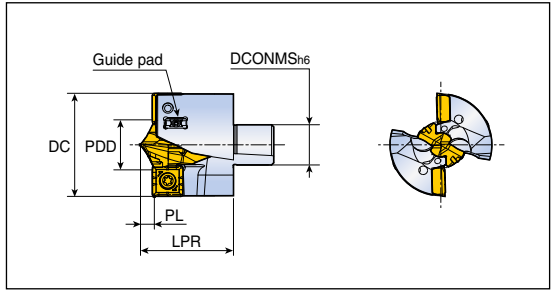
Designation	For double pitch screw		For SPGX		For Guide pad	
	Screw1	Wrench1	Screw2	Wrench2	Screw3	Wrench3
<b>TNDH 2600-2800</b>	TDPS 0512-T7	TD 7	TS 220521/HG	TD 7	TS 200431/HG-P	TD 6P
<b>TNDH 2900-3200</b>	TDPS 0512-T7	TD 7	TS 250641	TD 8	TS 200431/HG-P	TD 6P
<b>TNDH 3300-3500</b>	TDPS 0512-T7	TD 7	TS 350881	TD 10	TS 200431/HG-P	TD 6P
<b>TNDH 3600</b>	TDPS 0618-T8	TD 8	TS 350881	TD 10	TS 200431/HG-P	TD 6P
<b>TNDH 3700-4300</b>	TDPS 0618-T8	TD 8	TS 400931	TD 15	TS 200431/HG-P	TD 6P





# TNDH-TP

## Modular drill heads

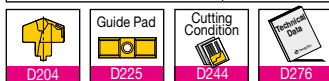


Designation	Dimension (mm)					Clamping Key	Insert	
	DC	DCONMS	LPR	PL	PDD		Center	Outer
<b>TNDH 4400-C44-TP</b>	44	17.6	40.8	5.28	23.9	K TCD D22-D23 CO	TCD-239-P-CO+	SPGX 11...DW
<b>4500-C44-TP</b>	45	17.6	41.0	5.44	24.9	K TCD D24-D25 CO	TCD-249-P-CO+	D204
<b>4600-C46-TP</b>	46	18.4	42.2	4.95	21.9	K TCD D20-D21 CO	TCD-219-P-CO+	SPGX 14...DW
<b>4700-C46-TP</b>	47	18.4	42.3	5.11	22.9	K TCD D22-D23 CO	TCD-229-P-CO+	D204
<b>4800-C48-TP</b>	48	19.2	44.0	5.28	23.9	K TCD D22-D23 CO	TCD-239-P-CO+	
<b>4900-C48-TP</b>	49	19.2	44.3	5.44	24.9	K TCD D24-D25 CO	TCD-249-P-CO+	
<b>5000-C48-TP</b>	50	19.2	46.0	5.61	25.9	K TCD D24-D25 CO	TCD-259-P-CO+	

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

## Spare parts

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

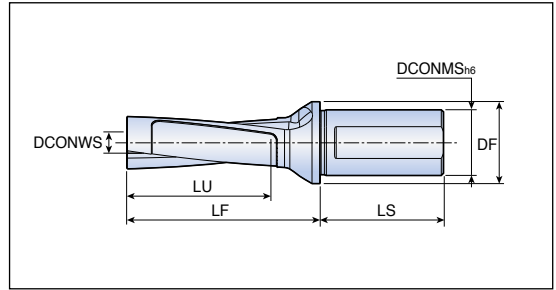


# MDB...T2-3

## Modular drill holders - Weldon type shank



- Drilling depth: 3xdiameter



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

- ▶ DC: Cutting diameter range
- ▶ DCONWS: Modular head connection size
- ▶ Refer to the Modular head information on page [D75-D76](#)

### Spare parts

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

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

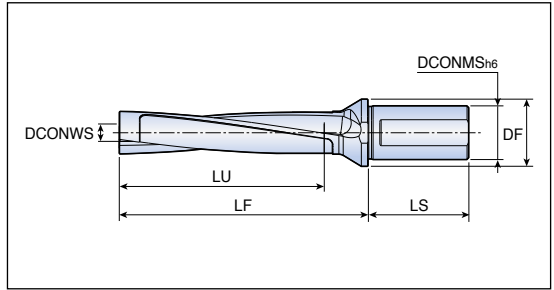


# MDB...T2-5

## Modular drill holders - Weldon type shank



- Drilling depth: 5x diameter



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

- ▶ DC: Cutting diameter range
- ▶ DCONWS: Modular head connection size
- ▶ Refer to the Modular head information on page D75-D76

## Spare parts

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

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

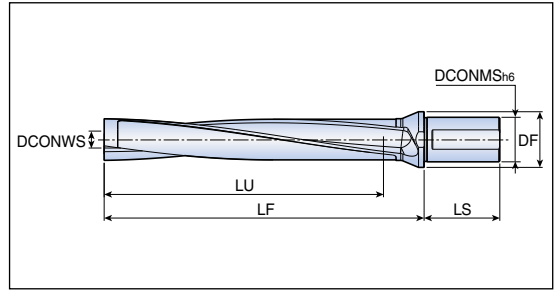


# MDB...T2-7

## Modular drill holders - Weldon type shank



- Drilling depth: 7x diameter



Designation	Dimension (mm)						
	DC	DCONWS	DCONMS	DF	LU	LF	LS
<b>MDB D26/27-189-32T2-C26-7</b>	26-27	10.4	32	40	168	202.3	60
<b>D28/29-203-32T2-C28-7</b>	28-29	11.2	32	40	180	216.5	60
<b>D30/31-217-32T2-C30-7</b>	30-31	12.0	32	40	193	229.5	60
<b>D32/33-231-32T2-C32-7</b>	32-33	12.8	32	40	205	243.7	60
<b>D34/35-245-40T2-C34-7</b>	34-35	13.6	40	50	218	260.2	68
<b>D36/37-259-40T2-C36-7</b>	36-37	14.4	40	50	230	274.5	68
<b>D38/39-273-40T2-C38-7</b>	38-39	15.2	40	50	242	287.4	68
<b>D40/41-287-40T2-C40-7</b>	40-41	16.0	40	50	255	301.6	68

- ▶ DC: Cutting diameter range
- ▶ DCONWS: Modular head connection size
- ▶ Refer to the Modular head information on page [D75-D76](#)

### Spare parts

Designation	Wrench	Wrench handle		
<b>MDB D26/27-7</b>	BLD H-W2.5x280	SW6-T-SH		
<b>MDB D28/29-D34/35-7</b>	BLD H-W2.5x350	SW6-T-SH		
<b>MDB D36/37-D40/41-7</b>	BLD H-W3.0x400	SW6-T-SH		

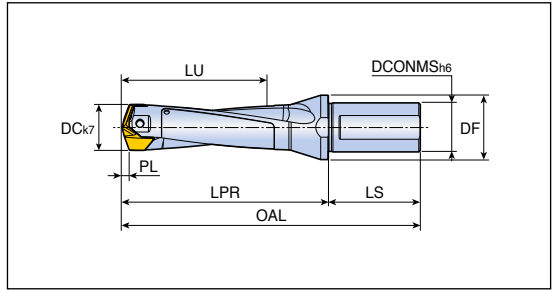
- ▶ Wrench: Disassemble the modular head from the modular body (Insert from the rear shank)



## Head changeable drill holders - Weldon type shank



- Drilling depth: 3x diameter



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

► OAL: LPR+LS    ► SSC: Seat size code

### Spare parts

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



D205-D208

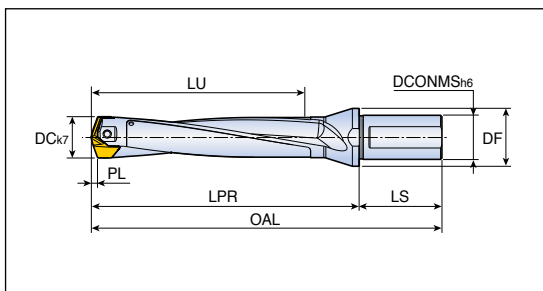


D246

## Head changeable drill holders - Weldon type shank



- Drilling depth: 5xdiameter



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

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

### Spare parts

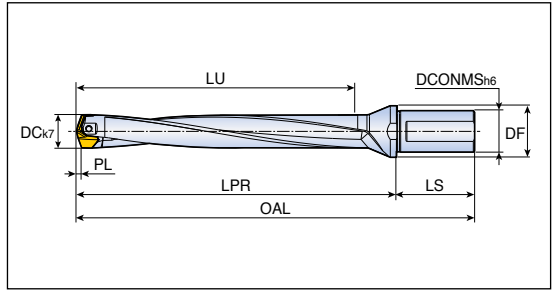
Designation	Screw	Wrench	Wrench handle	
<b>LCD 200-219-5D</b>	TS 40178D25	BLD T20/S7	SW6-T-SH	
<b>LCD 220-239-5D</b>	TS 40198D28	BLD T20/S7	SW6-T-SH	
<b>LCD 240-259-5D</b>	TS 40210D3	BLD T20/S7	SW6-T-SH	
<b>LCD 260-279-5D</b>	TS 50230D3	BLD T20/S7	SW6-T-SH	
<b>LCD 280-299-5D</b>	TS 50250D35	BLD T25/S7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



## Head changeable drill holders - Weldon type shank



- Drilling depth: 8x diameter

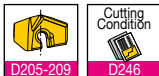


Designation	Dimension (mm)							
	DC	DCONMS	DF	LU	LPR	LS	PL	SSC
<b>LCD 200-209-25T2-8D</b>	20.0-20.9	25	32	163.1	192.1	56	3.11	20
<b>210-219-25T2-8D</b>	21.0-21.9	25	32	171.3	200.1	56	3.29	21
<b>220-229-25T2-8D</b>	22.0-22.9	25	32	179.4	208.4	56	3.42	22
<b>230-239-25T2-8D</b>	23.0-23.9	25	32	187.6	216.4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

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

### Spare parts

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



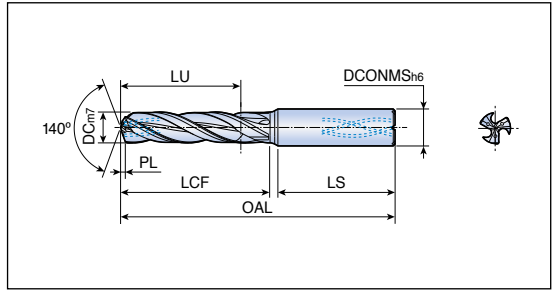
# 3HD...PI3



## 3 flute solid carbide drills with oil holes



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	
<b>3HD 040-017-06 PI3</b>	4.0	6	66	17	25	35	0.82	●
<b>045-017-06 PI3</b>	4.5	6	66	17	25	35	0.88	●
<b>050-020-06 PI3</b>	5.0	6	66	20	29	36	0.96	●
<b>051-020-06 PI3</b>	5.1	6	66	20	29	36	0.98	●
<b>055-020-06 PI3</b>	5.5	6	66	20	29	36	1.08	●
<b>060-020-06 PI3</b>	6.0	6	66	20	29	36	1.17	●
<b>065-024-08 PI3</b>	6.5	8	79	24	35	36	1.26	●
<b>068-024-08 PI3</b>	6.8	8	79	24	35	36	1.31	●
<b>070-024-08 PI3</b>	7.0	8	79	24	35	36	1.35	●
<b>075-029-08 PI3</b>	7.5	8	79	29	42	36	1.40	●
<b>080-029-08 PI3</b>	8.0	8	79	29	42	36	1.49	●
<b>085-035-10 PI3</b>	8.5	10	89	35	48	40	1.63	●
<b>086-035-10 PI3</b>	8.6	10	89	35	48	40	1.65	●
<b>090-035-10 PI3</b>	9.0	10	89	35	48	40	1.72	●
<b>095-035-10 PI3</b>	9.5	10	89	35	48	40	1.75	●
<b>100-035-10 PI3</b>	10.0	10	89	35	48	40	1.85	●
<b>103-040-12 PI3</b>	10.3	12	102	40	55	45	1.94	●
<b>105-040-12 PI3</b>	10.5	12	102	40	55	45	1.98	●
<b>110-040-12 PI3</b>	11.0	12	102	40	55	45	2.07	●
<b>115-040-12 PI3</b>	11.5	12	102	40	56	45	2.12	●
<b>120-040-12 PI3</b>	12.0	12	102	40	56	45	2.21	●



●: Standard items



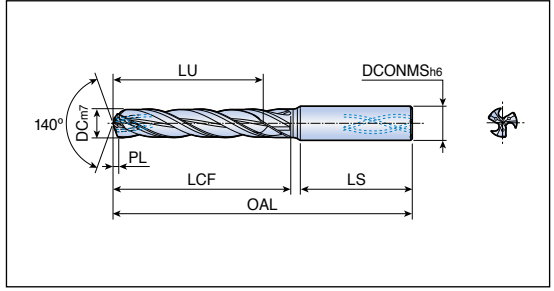
# 3HD...PI5



3 flute solid carbide drills with oil holes



• Drilling depth: 5xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT5130
<b>3HD 040-029-06 PI5</b>	4.0	6	74	29	37	35	0.82	●
<b>045-029-06 PI5</b>	4.5	6	74	29	37	35	0.88	●
<b>050-035-06 PI5</b>	5.0	6	82	35	45	36	0.96	●
<b>051-035-06 PI5</b>	5.1	6	82	35	45	36	0.98	●
<b>055-035-06 PI5</b>	5.5	6	82	35	45	36	1.08	●
<b>060-035-06 PI5</b>	6.0	6	82	35	45	36	1.17	●
<b>065-043-08 PI5</b>	6.5	8	91	43	54	36	1.26	●
<b>068-043-08 PI5</b>	6.8	8	91	43	54	36	1.31	●
<b>070-043-08 PI5</b>	7.0	8	91	43	54	36	1.35	●
<b>075-043-08 PI5</b>	7.5	8	91	43	54	36	1.40	●
<b>080-043-08 PI5</b>	8.0	8	91	43	54	36	1.49	●
<b>085-049-10 PI5</b>	8.5	10	103	49	62	40	1.63	●
<b>086-049-10 PI5</b>	8.6	10	103	49	62	40	1.65	●
<b>090-049-10 PI5</b>	9.0	10	103	49	62	40	1.72	●
<b>095-049-10 PI5</b>	9.5	10	103	49	62	40	1.75	●
<b>100-049-10 PI5</b>	10.0	10	103	49	62	40	1.85	●
<b>103-056-12 PI5</b>	10.3	12	118	56	71	45	1.94	●
<b>105-056-12 PI5</b>	10.5	12	118	56	71	45	1.98	●
<b>110-056-12 PI5</b>	11.0	12	118	56	71	45	2.07	●
<b>115-056-12 PI5</b>	11.5	12	118	56	72	45	2.12	●
<b>120-056-12 PI5</b>	12.0	12	118	56	72	45	2.21	●

• Standard items



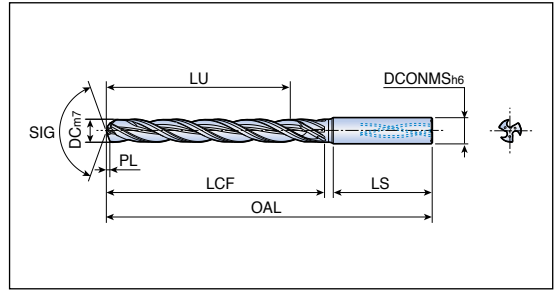
# 3HD...PI8



## 3 flute solid carbide drills with oil holes



• Drilling depth: 8x diameter



Designation	Dimension (mm)									Grade
	DC	DCONMS	OAL	SIG	LU	LCF	LS	PL	TT5130	
<b>3HD 040-036-06 P18</b>	4.0	6	81	140	36	43	35	0.82	●	
<b>045-036-06 P18</b>	4.5	6	81	140	36	43	35	0.88	●	
<b>050-048-06 P18</b>	5.0	6	95	140	48	57	36	0.96	●	
<b>055-048-06 P18</b>	5.5	6	95	140	48	57	36	1.08	●	
<b>060-048-06 P18</b>	6.0	6	95	140	48	57	36	1.17	●	
<b>065-064-08 P18</b>	6.5	8	114	140	64	76	36	1.26	●	
<b>070-064-08 P18</b>	7.0	8	114	140	64	76	36	1.35	●	
<b>075-064-08 P18</b>	7.5	8	114	140	64	76	36	1.40	●	
<b>080-064-08 P18</b>	8.0	8	114	140	64	76	36	1.49	●	
<b>085-080-10 P18</b>	8.5	10	142	130	80	95	40	2.04	●	
<b>090-080-10 P18</b>	9.0	10	142	130	80	95	40	2.16	●	
<b>095-080-10 P18</b>	9.5	10	142	130	80	95	40	2.29	●	
<b>100-080-10 P18</b>	10.0	10	142	130	80	95	40	2.33	●	
<b>105-096-12 P18</b>	10.5	12	162	130	96	113	45	2.50	●	
<b>110-096-12 P18</b>	11.0	12	162	130	96	113	45	2.61	●	
<b>115-096-12 P18</b>	11.5	12	162	130	96	113	45	2.67	●	
<b>120-096-12 P18</b>	12.0	12	162	130	96	113	45	2.80	●	

▶ Ø4.00-Ø8.00: SIG 140°  
 ▶ Ø8.01-Ø12.00: SIG 130°

• Standard items

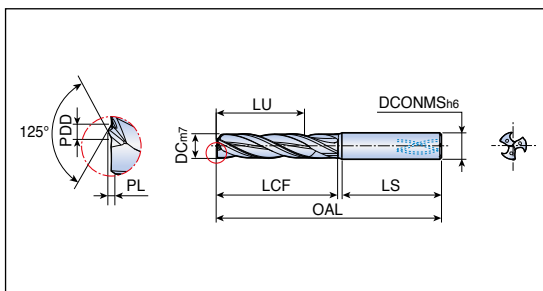


# 3HD...FI3

3 flute solid carbide drills for flat bottom holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)								Grade TT5130
	DC	DCONMS	OAL	LU	LCF	LS	PDD	PL	
<b>3HD 040-017-06 FI3</b>	4.0	6	66	17	25	35	0.77	0.43	●
<b>045-017-06 FI3</b>	4.5	6	66	17	25	35	0.86	0.45	●
<b>050-020-06 FI3</b>	5.0	6	66	20	29	36	0.97	0.47	●
<b>055-020-06 FI3</b>	5.5	6	66	20	29	36	1.08	0.58	●
<b>060-020-06 FI3</b>	6.0	6	66	20	29	36	1.08	0.58	●
<b>065-024-08 FI3</b>	6.5	8	79	24	35	36	1.26	0.62	●
<b>070-024-08 FI3</b>	7.0	8	79	24	35	36	1.26	0.62	●
<b>075-029-08 FI3</b>	7.5	8	79	29	42	36	1.44	0.66	●
<b>080-029-08 FI3</b>	8.0	8	79	29	42	36	1.44	0.66	●
<b>085-035-10 FI3</b>	8.5	10	89	35	48	40	1.62	0.79	●
<b>090-035-10 FI3</b>	9.0	10	89	35	48	40	1.62	0.79	●
<b>095-035-10 FI3</b>	9.5	10	89	35	48	40	1.80	0.82	●
<b>100-035-10 FI3</b>	10.0	10	89	35	48	40	1.80	0.82	●
<b>105-040-12 FI3</b>	10.5	12	102	40	55	45	1.98	0.95	●
<b>110-040-12 FI3</b>	11.0	12	102	40	55	45	1.98	0.95	●
<b>115-040-12 FI3</b>	11.5	12	102	40	56	45	2.16	0.98	●
<b>120-040-12 FI3</b>	12.0	12	102	40	56	45	2.16	0.98	●



●: Standard items

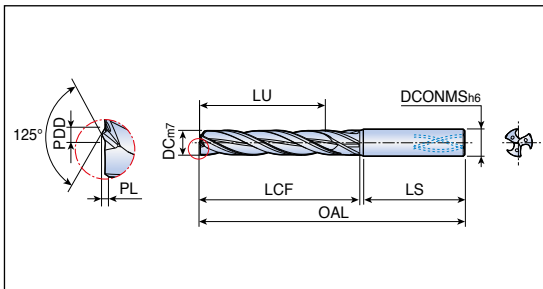
# 3HD...F15



3 flute solid carbide drills for flat bottom holes



• Drilling depth: 5xdiameter



Designation	Dimension (mm)								Grade
	DC	DCONMS	OAL	LU	LCF	LS	PDD	PL	TT5130
<b>3HD 040-029-06 F15</b>	4.0	6	74	29	37	35	0.77	0.43	•
<b>045-029-06 F15</b>	4.5	6	74	29	37	35	0.86	0.45	•
<b>050-035-06 F15</b>	5.0	6	82	35	45	36	0.97	0.47	•
<b>055-035-06 F15</b>	5.5	6	82	35	45	36	1.08	0.58	•
<b>060-035-06 F15</b>	6.0	6	82	35	45	36	1.08	0.58	•
<b>065-043-08 F15</b>	6.5	8	91	43	54	36	1.26	0.62	•
<b>070-043-08 F15</b>	7.0	8	91	43	54	36	1.26	0.62	•
<b>075-043-08 F15</b>	7.5	8	91	43	54	36	1.44	0.66	•
<b>080-043-08 F15</b>	8.0	8	91	43	54	36	1.44	0.66	•
<b>085-049-10 F15</b>	8.5	10	103	49	62	40	1.62	0.79	•
<b>090-049-10 F15</b>	9.0	10	103	49	62	40	1.62	0.79	•
<b>095-049-10 F15</b>	9.5	10	103	49	62	40	1.80	0.82	•
<b>100-049-10 F15</b>	10.0	10	103	49	62	40	1.80	0.82	•
<b>105-056-12 F15</b>	10.5	12	118	56	71	45	1.98	0.95	•
<b>110-056-12 F15</b>	11.0	12	118	56	71	45	1.98	0.95	•
<b>115-056-12 F15</b>	11.5	12	118	56	72	45	2.16	0.98	•
<b>120-056-12 F15</b>	12.0	12	118	56	72	45	2.16	0.98	•

• Standard items



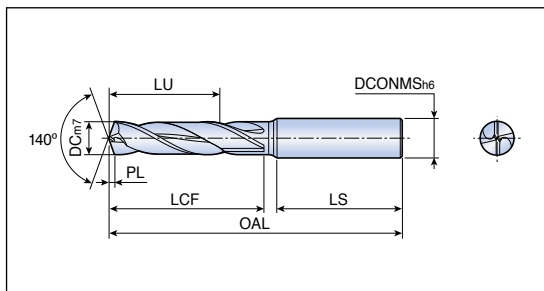
# NHD...PE3



Solid carbide drills without oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-014-06 PE3</b>	3.0	6	62	14	21	34	0.5	●
<b>031-014-06 PE3</b>	3.1	6	62	14	21	34	0.5	●
<b>032-014-06 PE3</b>	3.2	6	62	14	21	34	0.5	●
<b>033-014-06 PE3</b>	3.3	6	62	14	21	34	0.5	●
<b>034-014-06 PE3</b>	3.4	6	62	14	21	34	0.5	●
<b>035-014-06 PE3</b>	3.5	6	62	14	21	34	0.6	●
<b>036-014-06 PE3</b>	3.6	6	62	14	21	34	0.6	●
<b>037-014-06 PE3</b>	3.7	6	62	14	21	34	0.6	●
<b>038-017-06 PE3</b>	3.8	6	66	17	25	35	0.6	●
<b>039-017-06 PE3</b>	3.9	6	66	17	25	35	0.6	●
<b>040-017-06 PE3</b>	4.0	6	66	17	25	35	0.6	●
<b>041-017-06 PE3</b>	4.1	6	66	17	25	35	0.7	●
<b>042-017-06 PE3</b>	4.2	6	66	17	25	35	0.7	●
<b>043-017-06 PE3</b>	4.3	6	66	17	25	35	0.7	●
<b>044-017-06 PE3</b>	4.4	6	66	17	25	35	0.7	●
<b>045-017-06 PE3</b>	4.5	6	66	17	25	35	0.7	●
<b>046-017-06 PE3</b>	4.6	6	66	17	25	35	0.7	●
<b>047-017-06 PE3</b>	4.7	6	66	17	25	35	0.8	●
<b>048-020-06 PE3</b>	4.8	6	66	20	29	36	0.8	●
<b>049-020-06 PE3</b>	4.9	6	66	20	29	36	0.8	●
<b>050-020-06 PE3</b>	5.0	6	66	20	29	36	0.8	●
<b>051-020-06 PE3</b>	5.1	6	66	20	29	36	0.8	●
<b>052-020-06 PE3</b>	5.2	6	66	20	29	36	0.8	●
<b>053-020-06 PE3</b>	5.3	6	66	20	29	36	0.8	●
<b>054-020-06 PE3</b>	5.4	6	66	20	29	36	0.8	●
<b>055-020-06 PE3</b>	5.5	6	66	20	29	36	0.9	●
<b>056-020-06 PE3</b>	5.6	6	66	20	29	36	0.9	●
<b>057-020-06 PE3</b>	5.7	6	66	20	29	36	0.9	●
<b>058-020-06 PE3</b>	5.8	6	66	20	29	36	0.9	●
<b>059-020-06 PE3</b>	5.9	6	66	20	29	36	0.9	●
<b>060-020-06 PE3</b>	6.0	6	66	20	29	36	0.9	●
<b>061-024-08 PE3</b>	6.1	8	79	24	35	36	1.0	●
<b>062-024-08 PE3</b>	6.2	8	79	24	35	36	1.0	●
<b>063-024-08 PE3</b>	6.3	8	79	24	35	36	1.0	●
<b>064-024-08 PE3</b>	6.4	8	79	24	35	36	1.0	●

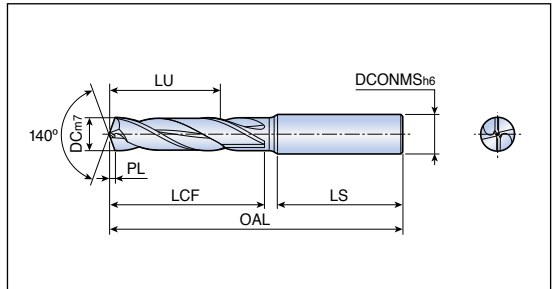
- : Standard items



## Solid carbide drills without oil holes



• Drilling depth: 3x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 065-024-08 PE3</b>	6.5	8	79	24	35	36	1.0	●
<b>066-024-08 PE3</b>	6.6	8	79	24	35	36	1.0	●
<b>067-024-08 PE3</b>	6.7	8	79	24	35	36	1.1	●
<b>068-024-08 PE3</b>	6.8	8	79	24	35	36	1.1	●
<b>069-024-08 PE3</b>	6.9	8	79	24	35	36	1.1	●
<b>070-024-08 PE3</b>	7.0	8	79	24	35	36	1.1	●
<b>071-029-08 PE3</b>	7.1	8	79	29	42	36	1.1	●
<b>072-029-08 PE3</b>	7.2	8	79	29	42	36	1.1	●
<b>073-029-08 PE3</b>	7.3	8	79	29	42	36	1.1	●
<b>074-029-08 PE3</b>	7.4	8	79	29	42	36	1.2	●
<b>075-029-08 PE3</b>	7.5	8	79	29	42	36	1.2	●
<b>076-029-08 PE3</b>	7.6	8	79	29	42	36	1.2	●
<b>077-029-08 PE3</b>	7.7	8	79	29	42	36	1.2	●
<b>078-029-08 PE3</b>	7.8	8	79	29	42	36	1.2	●
<b>079-029-08 PE3</b>	7.9	8	79	29	42	36	1.3	●
<b>080-029-08 PE3</b>	8.0	8	79	29	42	36	1.3	●
<b>081-035-10 PE3</b>	8.1	10	89	35	48	40	1.3	●
<b>082-035-10 PE3</b>	8.2	10	89	35	48	40	1.3	●
<b>083-035-10 PE3</b>	8.3	10	89	35	48	40	1.3	●
<b>084-035-10 PE3</b>	8.4	10	89	35	48	40	1.3	●
<b>085-035-10 PE3</b>	8.5	10	89	35	48	40	1.3	●
<b>086-035-10 PE3</b>	8.6	10	89	35	48	40	1.4	●
<b>087-035-10 PE3</b>	8.7	10	89	35	48	40	1.4	●
<b>088-035-10 PE3</b>	8.8	10	89	35	48	40	1.4	●
<b>089-035-10 PE3</b>	8.9	10	89	35	48	40	1.4	●
<b>090-035-10 PE3</b>	9.0	10	89	35	48	40	1.4	●
<b>091-035-10 PE3</b>	9.1	10	89	35	48	40	1.4	●
<b>092-035-10 PE3</b>	9.2	10	89	35	48	40	1.4	●
<b>093-035-10 PE3</b>	9.3	10	89	35	48	40	1.5	●
<b>094-035-10 PE3</b>	9.4	10	89	35	48	40	1.5	●
<b>095-035-10 PE3</b>	9.5	10	89	35	48	40	1.5	●
<b>096-035-10 PE3</b>	9.6	10	89	35	48	40	1.5	●
<b>097-035-10 PE3</b>	9.7	10	89	35	48	40	1.5	●
<b>098-035-10 PE3</b>	9.8	10	89	35	48	40	1.6	●
<b>099-035-10 PE3</b>	9.9	10	89	35	48	40	1.6	●

• Standard items



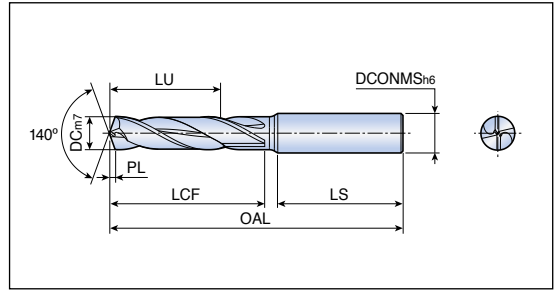
# NHD...PE3



Solid carbide drills without oil holes



• Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 100-035-10 PE3</b>	10.0	10	89	35	48	40	1.6	●
<b>101-040-12 PE3</b>	10.1	12	101	40	54	45	1.6	●
<b>102-040-12 PE3</b>	10.2	12	101	40	54	45	1.6	●
<b>103-040-12 PE3</b>	10.3	12	101	40	54	45	1.6	●
<b>104-040-12 PE3</b>	10.4	12	101	40	54	45	1.6	●
<b>105-040-12 PE3</b>	10.5	12	101	40	54	45	1.6	●
<b>106-040-12 PE3</b>	10.6	12	101	40	54	45	1.7	●
<b>107-040-12 PE3</b>	10.7	12	101	40	54	45	1.7	●
<b>108-040-12 PE3</b>	10.8	12	101	40	54	45	1.7	●
<b>109-040-12 PE3</b>	10.9	12	101	40	54	45	1.7	●
<b>110-040-12 PE3</b>	11.0	12	101	40	54	45	1.7	●
<b>111-040-12 PE3</b>	11.1	12	101	40	55	45	1.7	●
<b>112-040-12 PE3</b>	11.2	12	101	40	55	45	1.8	●
<b>113-040-12 PE3</b>	11.3	12	101	40	55	45	1.8	●
<b>114-040-12 PE3</b>	11.4	12	101	40	55	45	1.8	●
<b>115-040-12 PE3</b>	11.5	12	101	40	55	45	1.8	●
<b>116-040-12 PE3</b>	11.6	12	101	40	55	45	1.8	●
<b>117-040-12 PE3</b>	11.7	12	101	40	55	45	1.9	●
<b>118-040-12 PE3</b>	11.8	12	101	40	55	45	1.9	●
<b>119-040-12 PE3</b>	11.9	12	101	40	55	45	1.9	●
<b>120-040-12 PE3</b>	12.0	12	101	40	55	45	1.9	●

●: Standard items

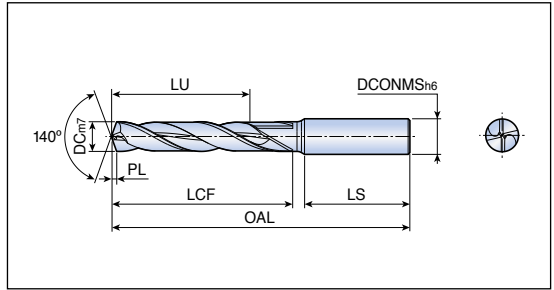




## Solid carbide drills without oil holes



• Drilling depth: 5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-023-06 PE5</b>	3.0	6	66	23	29	34	0.5	●
<b>031-023-06 PE5</b>	3.1	6	66	23	29	34	0.5	●
<b>032-023-06 PE5</b>	3.2	6	66	23	29	34	0.5	●
<b>033-023-06 PE5</b>	3.3	6	66	23	29	34	0.5	●
<b>034-023-06 PE5</b>	3.4	6	66	23	29	34	0.5	●
<b>035-023-06 PE5</b>	3.5	6	66	23	29	34	0.6	●
<b>036-023-06 PE5</b>	3.6	6	66	23	29	34	0.6	●
<b>037-023-06 PE5</b>	3.7	6	66	23	29	34	0.6	●
<b>038-029-06 PE5</b>	3.8	6	74	29	37	35	0.6	●
<b>039-029-06 PE5</b>	3.9	6	74	29	37	35	0.6	●
<b>040-029-06 PE5</b>	4.0	6	74	29	37	35	0.6	●
<b>041-029-06 PE5</b>	4.1	6	74	29	37	35	0.7	●
<b>042-029-06 PE5</b>	4.2	6	74	29	37	35	0.7	●
<b>043-029-06 PE5</b>	4.3	6	74	29	37	35	0.7	●
<b>044-029-06 PE5</b>	4.4	6	74	29	37	35	0.7	●
<b>045-029-06 PE5</b>	4.5	6	74	29	37	35	0.7	●
<b>046-029-06 PE5</b>	4.6	6	74	29	37	35	0.7	●
<b>047-029-06 PE5</b>	4.7	6	74	29	37	35	0.8	●
<b>048-035-06 PE5</b>	4.8	6	82	35	45	36	0.8	●
<b>049-035-06 PE5</b>	4.9	6	82	35	45	36	0.8	●
<b>050-035-06 PE5</b>	5.0	6	82	35	45	36	0.8	●
<b>051-035-06 PE5</b>	5.1	6	82	35	45	36	0.8	●
<b>052-035-06 PE5</b>	5.2	6	82	35	45	36	0.8	●
<b>053-035-06 PE5</b>	5.3	6	82	35	45	36	0.8	●
<b>054-035-06 PE5</b>	5.4	6	82	35	45	36	0.8	●
<b>055-035-06 PE5</b>	5.5	6	82	35	45	36	0.9	●
<b>056-035-06 PE5</b>	5.6	6	82	35	45	36	0.9	●
<b>057-035-06 PE5</b>	5.7	6	82	35	45	36	0.9	●
<b>058-035-06 PE5</b>	5.8	6	82	35	45	36	0.9	●
<b>059-035-06 PE5</b>	5.9	6	82	35	45	36	0.9	●
<b>060-035-06 PE5</b>	6.0	6	82	35	45	36	0.9	●
<b>061-043-08 PE5</b>	6.1	8	91	43	54	36	1.0	●
<b>062-043-08 PE5</b>	6.2	8	91	43	54	36	1.0	●
<b>063-043-08 PE5</b>	6.3	8	91	43	54	36	1.0	●
<b>064-043-08 PE5</b>	6.4	8	91	43	54	36	1.0	●

• Standard items



D250

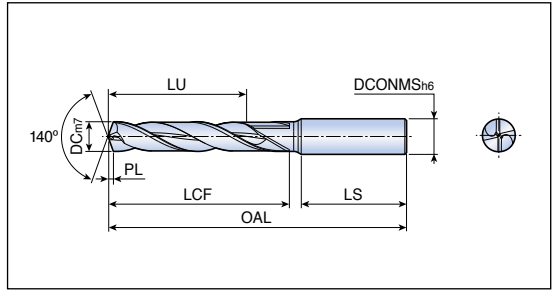
# NHD...PE5



Solid carbide drills without oil holes



- Drilling depth: 5xdiameter



Designation	Dimension (mm)							Grade TT9030
	DC	DCONMS	OAL	LU	LCF	LS	PL	
<b>NHD 065-043-08 PE5</b>	6.5	8	91	43	54	36	1.0	●
<b>066-043-08 PE5</b>	6.6	8	91	43	54	36	1.0	●
<b>067-043-08 PE5</b>	6.7	8	91	43	54	36	1.1	●
<b>068-043-08 PE5</b>	6.8	8	91	43	54	36	1.1	●
<b>069-043-08 PE5</b>	6.9	8	91	43	54	36	1.1	●
<b>070-043-08 PE5</b>	7.0	8	91	43	54	36	1.1	●
<b>071-043-08 PE5</b>	7.1	8	91	43	54	36	1.1	●
<b>072-043-08 PE5</b>	7.2	8	91	43	54	36	1.1	●
<b>073-043-08 PE5</b>	7.3	8	91	43	54	36	1.1	●
<b>074-043-08 PE5</b>	7.4	8	91	43	54	36	1.2	●
<b>075-043-08 PE5</b>	7.5	8	91	43	54	36	1.2	●
<b>076-043-08 PE5</b>	7.6	8	91	43	54	36	1.2	●
<b>077-043-08 PE5</b>	7.7	8	91	43	54	36	1.2	●
<b>078-043-08 PE5</b>	7.8	8	91	43	54	36	1.2	●
<b>079-043-08 PE5</b>	7.9	8	91	43	54	36	1.3	●
<b>080-043-08 PE5</b>	8.0	8	91	43	54	36	1.3	●
<b>081-049-10 PE5</b>	8.1	10	103	49	62	40	1.3	●
<b>082-049-10 PE5</b>	8.2	10	103	49	62	40	1.3	●
<b>083-049-10 PE5</b>	8.3	10	103	49	62	40	1.3	●
<b>084-049-10 PE5</b>	8.4	10	103	49	62	40	1.3	●
<b>085-049-10 PE5</b>	8.5	10	103	49	62	40	1.3	●
<b>086-049-10 PE5</b>	8.6	10	103	49	62	40	1.4	●
<b>087-049-10 PE5</b>	8.7	10	103	49	62	40	1.4	●
<b>088-049-10 PE5</b>	8.8	10	103	49	62	40	1.4	●
<b>089-049-10 PE5</b>	8.9	10	103	49	62	40	1.4	●
<b>090-049-10 PE5</b>	9.0	10	103	49	62	40	1.4	●
<b>091-049-10 PE5</b>	9.1	10	103	49	62	40	1.4	●
<b>092-049-10 PE5</b>	9.2	10	103	49	62	40	1.4	●
<b>093-049-10 PE5</b>	9.3	10	103	49	62	40	1.5	●
<b>094-049-10 PE5</b>	9.4	10	103	49	62	40	1.5	●
<b>095-049-10 PE5</b>	9.5	10	103	49	62	40	1.5	●
<b>096-049-10 PE5</b>	9.6	10	103	49	62	40	1.5	●
<b>097-049-10 PE5</b>	9.7	10	103	49	62	40	1.5	●
<b>098-049-10 PE5</b>	9.8	10	103	49	62	40	1.6	●
<b>099-049-10 PE5</b>	9.9	10	103	49	62	40	1.6	●

●: Standard items



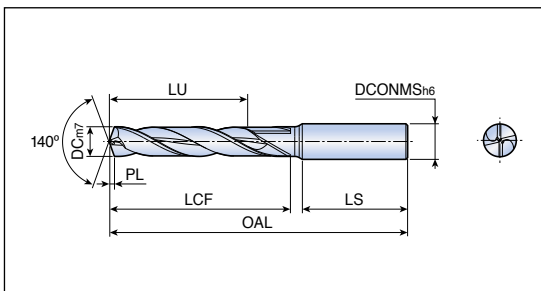
# NHD...PE5



Solid carbide drills without oil holes



• Drilling depth: 5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	PL	LS	TT9030
<b>NHD 100-049-10 PE5</b>	10.0	10	103	49	62	1.6	40	●
<b>101-056-12 PE5</b>	10.1	12	118	56	71	1.6	45	●
<b>102-056-12 PE5</b>	10.2	12	118	56	71	1.6	45	●
<b>103-056-12 PE5</b>	10.3	12	118	56	71	1.6	45	●
<b>104-056-12 PE5</b>	10.4	12	118	56	71	1.6	45	●
<b>105-056-12 PE5</b>	10.5	12	118	56	71	1.6	45	●
<b>106-056-12 PE5</b>	10.6	12	118	56	71	1.7	45	●
<b>107-056-12 PE5</b>	10.7	12	118	56	71	1.7	45	●
<b>108-056-12 PE5</b>	10.8	12	118	56	71	1.7	45	●
<b>109-056-12 PE5</b>	10.9	12	118	56	71	1.7	45	●
<b>110-056-12 PE5</b>	11.0	12	118	56	71	1.7	45	●
<b>111-056-12 PE5</b>	11.1	12	118	56	72	1.7	45	●
<b>112-056-12 PE5</b>	11.2	12	118	56	72	1.8	45	●
<b>113-056-12 PE5</b>	11.3	12	118	56	72	1.8	45	●
<b>114-056-12 PE5</b>	11.4	12	118	56	72	1.8	45	●
<b>115-056-12 PE5</b>	11.5	12	118	56	72	1.8	45	●
<b>116-056-12 PE5</b>	11.6	12	118	56	72	1.8	45	●
<b>117-056-12 PE5</b>	11.7	12	118	56	72	1.9	45	●
<b>118-056-12 PE5</b>	11.8	12	118	56	72	1.9	45	●
<b>119-056-12 PE5</b>	11.9	12	118	56	72	1.9	45	●
<b>120-056-12 PE5</b>	12.0	12	118	56	72	1.9	45	●

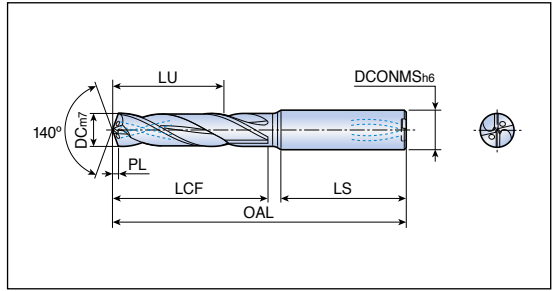
• Standard items



# NHD...PI3



Solid carbide drills with oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-014-06 PI3</b>	3.0	6	62	14	21	34	0.5	●
<b>031-014-06 PI3</b>	3.1	6	62	14	21	34	0.5	●
<b>032-014-06 PI3</b>	3.2	6	62	14	21	34	0.5	●
<b>033-014-06 PI3</b>	3.3	6	62	14	21	34	0.5	●
<b>034-014-06 PI3</b>	3.4	6	62	14	21	34	0.5	●
<b>035-014-06 PI3</b>	3.5	6	62	14	21	34	0.6	●
<b>036-014-06 PI3</b>	3.6	6	62	14	21	34	0.6	●
<b>037-014-06 PI3</b>	3.7	6	62	14	21	34	0.6	●
<b>038-017-06 PI3</b>	3.8	6	66	17	25	35	0.6	●
<b>039-017-06 PI3</b>	3.9	6	66	17	25	35	0.6	●
<b>040-017-06 PI3</b>	4.0	6	66	17	25	35	0.6	●
<b>041-017-06 PI3</b>	4.1	6	66	17	25	35	0.7	●
<b>042-017-06 PI3</b>	4.2	6	66	17	25	35	0.7	●
<b>043-017-06 PI3</b>	4.3	6	66	17	25	35	0.7	●
<b>044-017-06 PI3</b>	4.4	6	66	17	25	35	0.7	●
<b>045-017-06 PI3</b>	4.5	6	66	17	25	35	0.7	●
<b>046-017-06 PI3</b>	4.6	6	66	17	25	35	0.7	●
<b>047-017-06 PI3</b>	4.7	6	66	17	25	35	0.8	●
<b>048-020-06 PI3</b>	4.8	6	66	20	29	36	0.8	●
<b>049-020-06 PI3</b>	4.9	6	66	20	29	36	0.8	●
<b>050-020-06 PI3</b>	5.0	6	66	20	29	36	0.8	●
<b>051-020-06 PI3</b>	5.1	6	66	20	29	36	0.8	●
<b>052-020-06 PI3</b>	5.2	6	66	20	29	36	0.8	●
<b>053-020-06 PI3</b>	5.3	6	66	20	29	36	0.8	●
<b>054-020-06 PI3</b>	5.4	6	66	20	29	36	0.8	●
<b>055-020-06 PI3</b>	5.5	6	66	20	29	36	0.9	●
<b>056-020-06 PI3</b>	5.6	6	66	20	29	36	0.9	●
<b>057-020-06 PI3</b>	5.7	6	66	20	29	36	0.9	●
<b>058-020-06 PI3</b>	5.8	6	66	20	29	36	0.9	●
<b>059-020-06 PI3</b>	5.9	6	66	20	29	36	0.9	●
<b>060-020-06 PI3</b>	6.0	6	66	20	29	36	0.9	●
<b>061-024-08 PI3</b>	6.1	8	79	24	35	36	1.0	●
<b>062-024-08 PI3</b>	6.2	8	79	24	35	36	1.0	●
<b>063-024-08 PI3</b>	6.3	8	79	24	35	36	1.0	●
<b>064-024-08 PI3</b>	6.4	8	79	24	35	36	1.0	●

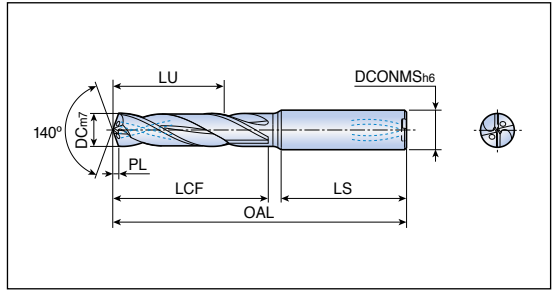
- Standard items



## Solid carbide drills with oil holes



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 065-024-08 PI3</b>	6.5	8	79	24	35	36	1.0	•
<b>066-024-08 PI3</b>	6.6	8	79	24	35	36	1.0	•
<b>067-024-08 PI3</b>	6.7	8	79	24	35	36	1.1	•
<b>068-024-08 PI3</b>	6.8	8	79	24	35	36	1.1	•
<b>069-024-08 PI3</b>	6.9	8	79	24	35	36	1.1	•
<b>070-024-08 PI3</b>	7.0	8	79	24	35	36	1.1	•
<b>071-029-08 PI3</b>	7.1	8	79	29	42	36	1.1	•
<b>072-029-08 PI3</b>	7.2	8	79	29	42	36	1.1	•
<b>073-029-08 PI3</b>	7.3	8	79	29	42	36	1.1	•
<b>074-029-08 PI3</b>	7.4	8	79	29	42	36	1.2	•
<b>075-029-08 PI3</b>	7.5	8	79	29	42	36	1.2	•
<b>076-029-08 PI3</b>	7.6	8	79	29	42	36	1.2	•
<b>077-029-08 PI3</b>	7.7	8	79	29	42	36	1.2	•
<b>078-029-08 PI3</b>	7.8	8	79	29	42	36	1.2	•
<b>079-029-08 PI3</b>	7.9	8	79	29	42	36	1.3	•
<b>080-029-08 PI3</b>	8.0	8	79	29	42	36	1.3	•
<b>081-035-10 PI3</b>	8.1	10	89	35	48	40	1.3	•
<b>082-035-10 PI3</b>	8.2	10	89	35	48	40	1.3	•
<b>083-035-10 PI3</b>	8.3	10	89	35	48	40	1.3	•
<b>084-035-10 PI3</b>	8.4	10	89	35	48	40	1.3	•
<b>085-035-10 PI3</b>	8.5	10	89	35	48	40	1.3	•
<b>086-035-10 PI3</b>	8.6	10	89	35	48	40	1.4	•
<b>087-035-10 PI3</b>	8.7	10	89	35	48	40	1.4	•
<b>088-035-10 PI3</b>	8.8	10	89	35	48	40	1.4	•
<b>089-035-10 PI3</b>	8.9	10	89	35	48	40	1.4	•
<b>090-035-10 PI3</b>	9.0	10	89	35	48	40	1.4	•
<b>091-035-10 PI3</b>	9.1	10	89	35	48	40	1.4	•
<b>092-035-10 PI3</b>	9.2	10	89	35	48	40	1.4	•
<b>093-035-10 PI3</b>	9.3	10	89	35	48	40	1.5	•
<b>094-035-10 PI3</b>	9.4	10	89	35	48	40	1.5	•
<b>095-035-10 PI3</b>	9.5	10	89	35	48	40	1.5	•
<b>096-035-10 PI3</b>	9.6	10	89	35	48	40	1.5	•
<b>097-035-10 PI3</b>	9.7	10	89	35	48	40	1.5	•
<b>098-035-10 PI3</b>	9.8	10	89	35	48	40	1.6	•
<b>099-035-10 PI3</b>	9.9	10	89	35	48	40	1.6	•

- Standard items



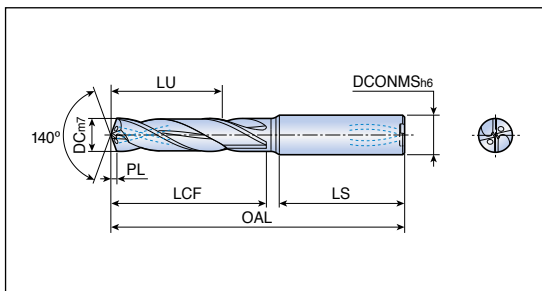
# NHD...PI3



Solid carbide drills with oil holes



- Drilling depth: 3x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 100-035-10 PI3</b>	10.0	10	89	35	48	40	1.6	●
<b>101-040-12 PI3</b>	10.1	12	102	40	55	45	1.6	●
<b>102-040-12 PI3</b>	10.2	12	102	40	55	45	1.6	●
<b>103-040-12 PI3</b>	10.3	12	102	40	55	45	1.6	●
<b>104-040-12 PI3</b>	10.4	12	102	40	55	45	1.6	●
<b>105-040-12 PI3</b>	10.5	12	102	40	55	45	1.6	●
<b>106-040-12 PI3</b>	10.6	12	102	40	55	45	1.7	●
<b>107-040-12 PI3</b>	10.7	12	102	40	55	45	1.7	●
<b>108-040-12 PI3</b>	10.8	12	102	40	55	45	1.7	●
<b>109-040-12 PI3</b>	10.9	12	102	40	55	45	1.7	●
<b>110-040-12 PI3</b>	11.0	12	102	40	55	45	1.7	●
<b>111-040-12 PI3</b>	11.1	12	102	40	56	45	1.7	●
<b>112-040-12 PI3</b>	11.2	12	102	40	56	45	1.8	●
<b>113-040-12 PI3</b>	11.3	12	102	40	56	45	1.8	●
<b>114-040-12 PI3</b>	11.4	12	102	40	56	45	1.8	●
<b>115-040-12 PI3</b>	11.5	12	102	40	56	45	1.8	●
<b>116-040-12 PI3</b>	11.6	12	102	40	56	45	1.8	●
<b>117-040-12 PI3</b>	11.7	12	102	40	56	45	1.9	●
<b>118-040-12 PI3</b>	11.8	12	102	40	56	45	1.9	●
<b>119-040-12 PI3</b>	11.9	12	102	40	56	45	1.9	●
<b>120-040-12 PI3</b>	12.0	12	102	40	56	45	1.9	●

●: Standard items



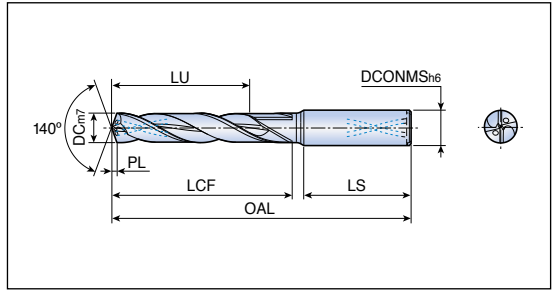
# NHD...PI5



Solid carbide drills with oil holes



• Drilling depth: 5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-023-06 PI5</b>	3.0	6	66	23	29	34	0.5	●
<b>031-023-06 PI5</b>	3.1	6	66	23	29	34	0.5	●
<b>032-023-06 PI5</b>	3.2	6	66	23	29	34	0.5	●
<b>033-023-06 PI5</b>	3.3	6	66	23	29	34	0.5	●
<b>034-023-06 PI5</b>	3.4	6	66	23	29	34	0.5	●
<b>035-023-06 PI5</b>	3.5	6	66	23	29	34	0.6	●
<b>036-023-06 PI5</b>	3.6	6	66	23	29	34	0.6	●
<b>037-023-06 PI5</b>	3.7	6	66	23	29	34	0.6	●
<b>038-029-06 PI5</b>	3.8	6	74	29	37	35	0.6	●
<b>039-029-06 PI5</b>	3.9	6	74	29	37	35	0.6	●
<b>040-029-06 PI5</b>	4.0	6	74	29	37	35	0.6	●
<b>041-029-06 PI5</b>	4.1	6	74	29	37	35	0.7	●
<b>042-029-06 PI5</b>	4.2	6	74	29	37	35	0.7	●
<b>043-029-06 PI5</b>	4.3	6	74	29	37	35	0.7	●
<b>044-029-06 PI5</b>	4.4	6	74	29	37	35	0.7	●
<b>045-029-06 PI5</b>	4.5	6	74	29	37	35	0.7	●
<b>046-029-06 PI5</b>	4.6	6	74	29	37	35	0.7	●
<b>047-029-06 PI5</b>	4.7	6	74	29	37	35	0.8	●
<b>048-035-06 PI5</b>	4.8	6	82	35	45	36	0.8	●
<b>049-035-06 PI5</b>	4.9	6	82	35	45	36	0.8	●
<b>050-035-06 PI5</b>	5.0	6	82	35	45	36	0.8	●
<b>051-035-06 PI5</b>	5.1	6	82	35	45	36	0.8	●
<b>052-035-06 PI5</b>	5.2	6	82	35	45	36	0.8	●
<b>053-035-06 PI5</b>	5.3	6	82	35	45	36	0.8	●
<b>054-035-06 PI5</b>	5.4	6	82	35	45	36	0.8	●
<b>055-035-06 PI5</b>	5.5	6	82	35	45	36	0.9	●
<b>056-035-06 PI5</b>	5.6	6	82	35	45	36	0.9	●
<b>057-035-06 PI5</b>	5.7	6	82	35	45	36	0.9	●
<b>058-035-06 PI5</b>	5.8	6	82	35	45	36	0.9	●
<b>059-035-06 PI5</b>	5.9	6	82	35	45	36	0.9	●
<b>060-035-06 PI5</b>	6.0	6	82	35	45	36	0.9	●
<b>061-043-08 PI5</b>	6.1	8	91	43	54	36	1.0	●
<b>062-043-08 PI5</b>	6.2	8	91	43	54	36	1.0	●
<b>063-043-08 PI5</b>	6.3	8	91	43	54	36	1.0	●
<b>064-043-08 PI5</b>	6.4	8	91	43	54	36	1.0	●

• Standard items



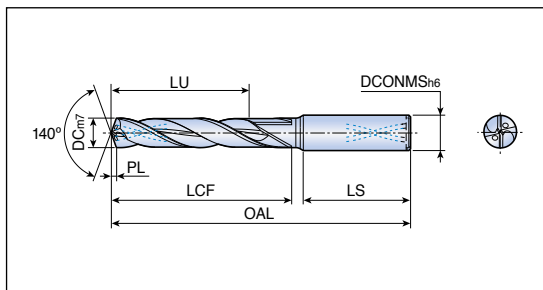
# NHD...PI5



Solid carbide drills with oil holes



- Drilling depth: 5xdiameter



Designation	Dimension (mm)							Grade TT9030
	DC	DCONMS	OAL	LU	LCF	LS	PL	
<b>NHD 065-043-08 PI5</b>	6.5	8	91	43	54	36	1.0	●
<b>066-043-08 PI5</b>	6.6	8	91	43	54	36	1.0	●
<b>067-043-08 PI5</b>	6.7	8	91	43	54	36	1.1	●
<b>068-043-08 PI5</b>	6.8	8	91	43	54	36	1.1	●
<b>069-043-08 PI5</b>	6.9	8	91	43	54	36	1.1	●
<b>070-043-08 PI5</b>	7.0	8	91	43	54	36	1.1	●
<b>071-043-08 PI5</b>	7.1	8	91	43	54	36	1.1	●
<b>072-043-08 PI5</b>	7.2	8	91	43	54	36	1.1	●
<b>073-043-08 PI5</b>	7.3	8	91	43	54	36	1.1	●
<b>074-043-08 PI5</b>	7.4	8	91	43	54	36	1.2	●
<b>075-043-08 PI5</b>	7.5	8	91	43	54	36	1.2	●
<b>076-043-08 PI5</b>	7.6	8	91	43	54	36	1.2	●
<b>077-043-08 PI5</b>	7.7	8	91	43	54	36	1.2	●
<b>078-043-08 PI5</b>	7.8	8	91	43	54	36	1.2	●
<b>079-043-08 PI5</b>	7.9	8	91	43	54	36	1.3	●
<b>080-043-08 PI5</b>	8.0	8	91	43	54	36	1.3	●
<b>081-049-10 PI5</b>	8.1	10	103	49	62	40	1.3	●
<b>082-049-10 PI5</b>	8.2	10	103	49	62	40	1.3	●
<b>083-049-10 PI5</b>	8.3	10	103	49	62	40	1.3	●
<b>084-049-10 PI5</b>	8.4	10	103	49	62	40	1.3	●
<b>085-049-10 PI5</b>	8.5	10	103	49	62	40	1.3	●
<b>086-049-10 PI5</b>	8.6	10	103	49	62	40	1.4	●
<b>087-049-10 PI5</b>	8.7	10	103	49	62	40	1.4	●
<b>088-049-10 PI5</b>	8.8	10	103	49	62	40	1.4	●
<b>089-049-10 PI5</b>	8.9	10	103	49	62	40	1.4	●
<b>090-049-10 PI5</b>	9.0	10	103	49	62	40	1.4	●
<b>091-049-10 PI5</b>	9.1	10	103	49	62	40	1.4	●
<b>092-049-10 PI5</b>	9.2	10	103	49	62	40	1.4	●
<b>093-049-10 PI5</b>	9.3	10	103	49	62	40	1.5	●
<b>094-049-10 PI5</b>	9.4	10	103	49	62	40	1.5	●
<b>095-049-10 PI5</b>	9.5	10	103	49	62	40	1.5	●
<b>096-049-10 PI5</b>	9.6	10	103	49	62	40	1.5	●
<b>097-049-10 PI5</b>	9.7	10	103	49	62	40	1.5	●
<b>098-049-10 PI5</b>	9.8	10	103	49	62	40	1.6	●
<b>099-049-10 PI5</b>	9.9	10	103	49	62	40	1.6	●

- : Standard items





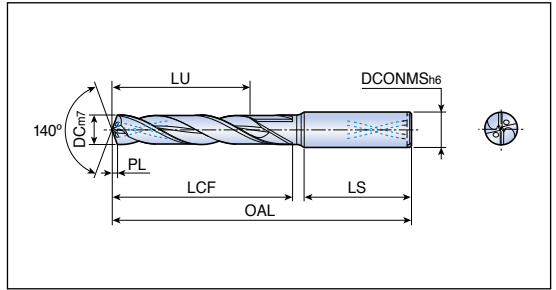
# NHD...PI5



Solid carbide drills with oil holes



• Drilling depth: 5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 100-049-10 PI5</b>	10.0	10	103	49	62	40	1.6	●
<b>101-056-12 PI5</b>	10.1	12	118	56	71	45	1.6	●
<b>102-056-12 PI5</b>	10.2	12	118	56	71	45	1.6	●
<b>103-056-12 PI5</b>	10.3	12	118	56	71	45	1.6	●
<b>104-056-12 PI5</b>	10.4	12	118	56	71	45	1.6	●
<b>105-056-12 PI5</b>	10.5	12	118	56	71	45	1.6	●
<b>106-056-12 PI5</b>	10.6	12	118	56	71	45	1.7	●
<b>107-056-12 PI5</b>	10.7	12	118	56	71	45	1.7	●
<b>108-056-12 PI5</b>	10.8	12	118	56	71	45	1.7	●
<b>109-056-12 PI5</b>	10.9	12	118	56	71	45	1.7	●
<b>110-056-12 PI5</b>	11.0	12	118	56	71	45	1.7	●
<b>111-056-12 PI5</b>	11.1	12	118	56	72	45	1.7	●
<b>112-056-12 PI5</b>	11.2	12	118	56	72	45	1.8	●
<b>113-056-12 PI5</b>	11.3	12	118	56	72	45	1.8	●
<b>114-056-12 PI5</b>	11.4	12	118	56	72	45	1.8	●
<b>115-056-12 PI5</b>	11.5	12	118	56	72	45	1.8	●
<b>116-056-12 PI5</b>	11.6	12	118	56	72	45	1.8	●
<b>117-056-12 PI5</b>	11.7	12	118	56	72	45	1.9	●
<b>118-056-12 PI5</b>	11.8	12	118	56	72	45	1.9	●
<b>119-056-12 PI5</b>	11.9	12	118	56	72	45	1.9	●
<b>120-056-12 PI5</b>	12.0	12	118	56	72	45	1.9	●

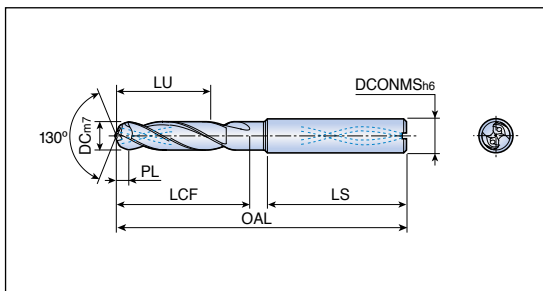


• Standard items

# NHD...KI3



Solid carbide drills with oil holes for cast iron machining



- Drilling depth: 3xdiameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-014-06 KI3</b>	3.0	6	62	14	20	34	1.4	●
<b>033-014-06 KI3</b>	3.3	6	62	14	20	34	1.6	●
<b>035-014-06 KI3</b>	3.5	6	62	14	20	34	1.7	●
<b>040-017-06 KI3</b>	4.0	6	66	17	24	35	1.9	●
<b>041-017-06 KI3</b>	4.1	6	66	17	24	35	2.0	●
<b>042-017-06 KI3</b>	4.2	6	66	17	24	35	2.0	●
<b>045-017-06 KI3</b>	4.5	6	66	17	24	35	2.2	●
<b>046-017-06 KI3</b>	4.6	6	66	17	24	35	2.2	●
<b>050-020-06 KI3</b>	5.0	6	66	20	27	36	2.4	●
<b>051-020-06 KI3</b>	5.1	6	66	20	27	36	2.5	●
<b>052-020-06 KI3</b>	5.2	6	66	20	27	36	2.5	●
<b>055-020-06 KI3</b>	5.5	6	66	20	27	36	2.6	●
<b>060-020-06 KI3</b>	6.0	6	66	20	27	36	2.9	●
<b>061-024-08 KI3</b>	6.1	8	79	24	34	36	2.9	●
<b>065-024-08 KI3</b>	6.5	8	79	24	34	36	3.1	●
<b>067-024-08 KI3</b>	6.7	8	79	24	34	36	3.2	●
<b>068-024-08 KI3</b>	6.8	8	79	24	34	36	3.3	●
<b>070-024-08 KI3</b>	7.0	8	79	24	34	36	3.4	●
<b>075-029-08 KI3</b>	7.5	8	79	29	40	36	3.6	●
<b>080-029-08 KI3</b>	8.0	8	79	29	40	36	3.8	●
<b>081-035-10 KI3</b>	8.1	10	89	35	45	40	3.9	●
<b>085-035-10 KI3</b>	8.5	10	89	35	45	40	4.1	●
<b>087-035-10 KI3</b>	8.7	10	89	35	45	40	4.2	●
<b>089-035-10 KI3</b>	8.9	10	89	35	45	40	4.3	●
<b>090-035-10 KI3</b>	9.0	10	89	35	45	40	4.3	●
<b>095-035-10 KI3</b>	9.5	10	89	35	45	40	4.6	●
<b>100-035-10 KI3</b>	10.0	10	89	35	45	40	4.8	●
<b>103-040-12 KI3</b>	10.3	12	102	40	53	45	4.9	●
<b>105-040-12 KI3</b>	10.5	12	102	40	53	45	5.0	●
<b>110-040-12 KI3</b>	11.0	12	102	40	53	45	5.3	●
<b>115-040-12 KI3</b>	11.5	12	102	40	53	45	5.5	●
<b>120-040-12 KI3</b>	12.0	12	102	40	53	45	5.8	●



- : Standard items

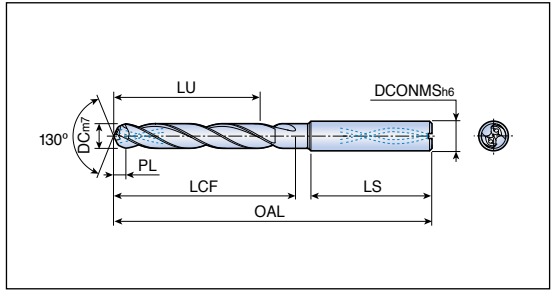
# NHD...KI5



Solid carbide drills with oil holes for cast iron machining



- Drilling depth: 5x diameter



Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
<b>NHD 030-023-06 KI5</b>	3.0	6	66	23	27	34	1.4	●
<b>033-023-06 KI5</b>	3.3	6	66	23	27	34	1.6	●
<b>035-023-06 KI5</b>	3.5	6	66	23	27	34	1.7	●
<b>040-029-06 KI5</b>	4.0	6	74	29	34	35	1.9	●
<b>042-029-06 KI5</b>	4.2	6	74	29	34	35	2.0	●
<b>045-029-06 KI5</b>	4.5	6	74	29	35	35	2.2	●
<b>046-029-06 KI5</b>	4.6	6	74	29	35	35	2.2	●
<b>050-035-06 KI5</b>	5.0	6	82	35	43	36	2.4	●
<b>052-035-06 KI5</b>	5.2	6	82	35	43	36	2.5	●
<b>055-035-06 KI5</b>	5.5	6	82	35	43	36	2.6	●
<b>060-035-06 KI5</b>	6.0	6	82	35	43	36	2.9	●
<b>065-043-08 KI5</b>	6.5	8	91	43	52	36	3.1	●
<b>067-043-08 KI5</b>	6.7	8	91	43	52	36	3.2	●
<b>068-043-08 KI5</b>	6.8	8	91	43	52	36	3.3	●
<b>070-043-08 KI5</b>	7.0	8	91	43	52	36	3.4	●
<b>075-043-08 KI5</b>	7.5	8	91	43	52	36	3.6	●
<b>080-043-08 KI5</b>	8.0	8	91	43	52	36	3.8	●
<b>081-049-10 KI5</b>	8.1	10	103	49	59	40	3.9	●
<b>085-049-10 KI5</b>	8.5	10	103	49	59	40	4.1	●
<b>087-049-10 KI5</b>	8.7	10	103	49	59	40	4.2	●
<b>089-049-10 KI5</b>	8.9	10	103	49	59	40	4.3	●
<b>090-049-10 KI5</b>	9.0	10	103	49	59	40	4.3	●
<b>095-049-10 KI5</b>	9.5	10	103	49	59	40	4.6	●
<b>100-049-10 KI5</b>	10.0	10	103	49	59	40	4.8	●
<b>103-056-12 KI5</b>	10.3	12	118	56	69	45	4.9	●
<b>105-056-12 KI5</b>	10.5	12	118	56	69	45	5.0	●
<b>110-056-12 KI5</b>	11.0	12	118	56	69	45	5.3	●
<b>115-056-12 KI5</b>	11.5	12	118	56	69	45	5.5	●
<b>120-056-12 KI5</b>	12.0	12	118	56	69	45	5.8	●

• Standard items

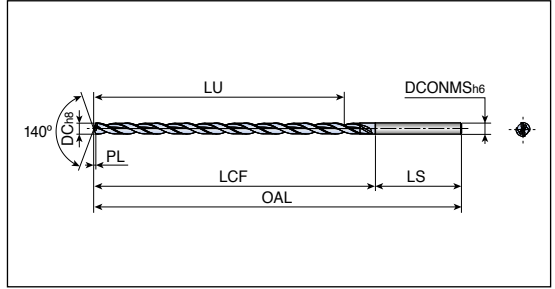




## Solid long drills with oil holes



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



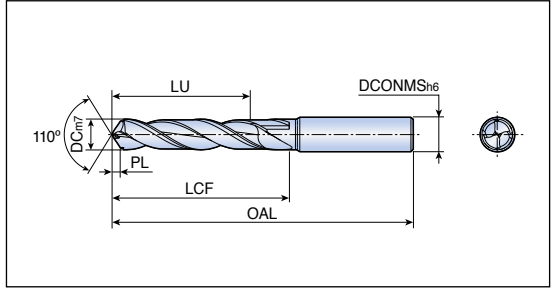
Designation	Dimension (mm)							Grade
	DC	DCONMS	OAL	LU	LCF	LS	PL	TT9030
SHO 10040	4.0	4	105.6	50	55.6	50	0.6	●
10050	5.0	5	115.8	60	65.8	50	0.8	●
10060	6.0	6	131.0	76	81.0	50	1.0	●
10070	7.0	7	141.1	86	91.1	50	1.1	●
10080	8.0	8	156.3	98	106.3	50	1.3	●
10090	9.0	9	171.4	108	116.4	55	1.4	●
10100	10.0	10	191.6	123	131.6	60	1.6	●
15040	4.0	4	125.6	70	75.6	50	0.6	●
15050	5.0	5	140.8	85	90.8	50	0.8	●
15060	6.0	6	161.0	106	111.0	50	1.0	●
15070	7.0	7	176.1	121	126.1	50	1.1	●
15080	8.0	8	196.3	138	146.3	50	1.3	●
15090	9.0	9	221.4	153	161.4	60	1.4	●
15100	10.0	10	241.6	173	181.6	60	1.6	●
20040	4.0	4	140.6	85	90.6	50	0.6	●
20050	5.0	5	165.8	110	115.8	50	0.8	●
20060	6.0	6	191.0	136	141.0	50	1.0	●
20070	7.0	7	211.1	156	161.1	50	1.1	●
20080	8.0	8	231.3	173	181.3	50	1.3	●
20090	9.0	9	266.4	198	206.4	60	1.4	●
20100	10.0	10	286.6	218	226.6	60	1.6	●

● Standard items





## Solid carbide drills for composite material



Designation	Dimension (mm)							Grade
	DC (Metric)	DC (Inch)	DCONMS	OAL	LU	LCF	PL	TTD610
<b>CDF 030-027-06</b>	3	-	6	72.7	28	34.7	0.7	●
<b>040-027-06</b>	4	-	6	73.0	28	35.0	1.0	●
<b>0476-034-06</b>	4.76	3/16	6	81.3	35	43.3	1.3	●
<b>050-034-06</b>	5	-	6	81.3	35	43.3	1.3	●
<b>060-034-06</b>	6	-	6	81.7	36	43.7	1.7	●
<b>0635-040-08</b>	6.35	-	8	89.7	42	51.7	1.7	●
<b>070-040-08</b>	7	-	8	89.9	42	51.9	1.9	●
<b>0794-040-08</b>	7.94	5/16	8	90.2	42	52.2	2.2	●
<b>080-040-08</b>	8	-	8	90.2	42	52.2	2.2	●
<b>090-045-10</b>	9	-	10	101.5	48	59.5	2.5	●
<b>0952-045-10</b>	9.52	3/8	10	101.6	48	59.6	2.6	●
<b>100-045-10</b>	10	-	10	101.8	48	59.8	2.8	●
<b>110-052-12</b>	11	-	12	117.1	55	70.1	3.1	●
<b>1111-052-12</b>	11.11	7/16	12	117.1	55	70.1	3.1	●
<b>120-052-12</b>	12	-	12	117.4	55	70.4	3.4	●
<b>127-055-14</b>	12.7	1/2	14	122.6	59c	75.6	3.6	●

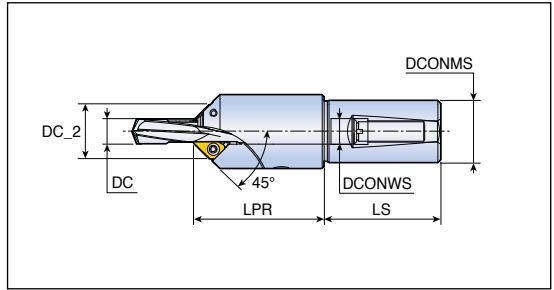
● Standard items



# T-CHAMFER...T1



Chamfering tools with solid carbide drill



Designation	DC	Dimension (mm)					Insert
		DCONWS	DC_2	DCONMS	LPR	LS	
<b>T-CHAMFER 080-20T1-06</b>	7.1-8.0	8	18.8	20	47.4	50	XCGT 06...-C..
<b>090-20T1-06</b>	8.1-9.0	9	19.8	20	47.4	50	D210
<b>100-32T1-09</b>	9.1-10.0	10	24.9	32	67.3	60	XCGT 09...-C..
<b>110-32T1-09</b>	10.1-11.0	11	25.9	32	67.3	60	D210
<b>120-32T1-09</b>	11.1-12.0	12	26.9	32	67.3	60	
<b>130-32T1-09</b>	12.1-13.0	13	27.9	32	67.3	60	
<b>140-32T1-09</b>	13.1-14.0	14	28.4	32	67.3	60	
<b>150-32T1-09</b>	14.1-15.0	15	29.4	32	67.3	60	
<b>160-32T1-09</b>	15.1-16.0	16	30.4	32	67.3	60	
<b>170-32T1-09</b>	16.1-17.0	17	31.4	32	67.3	60	
<b>180-32T1-09</b>	17.1-18.0	18	32.4	32	67.3	60	
<b>190-32T1-09</b>	18.1-19.0	19	33.4	32	75.0	60	
<b>200-32T1-09</b>	19.1-20.0	20	34.4	32	75.0	60	

## 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

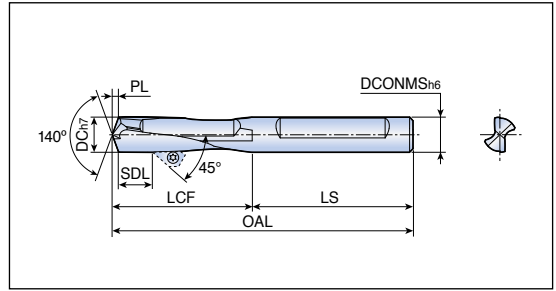




# SHD 3...-CF



## Solid carbide drills for T-CHAMFER



Designation	Dimension (mm)								Grade
	DC	DCONMS	OAL	LCF	LS	SDL <sub>min</sub>	SDL <sub>max</sub>	PL	
<b>SHD 3080-CF</b>	8.0	8.0	80.3	37.3	43	9.5	17.5	1.3	●
<b>3090-CF</b>	9.0	9.0	85.4	42.4	43	13.0	23.5	1.4	●
<b>3100-CF</b>	10.0	10.0	90.6	47.6	43	15.5	25.0	1.6	●
<b>3110-CF</b>	11.0	11.0	96.8	53.8	43	21.5	30.0	1.8	●
<b>3120-CF</b>	12.0	12.0	103.9	60.9	43	25.5	37.0	1.9	●
<b>3130-CF</b>	13.0	13.0	104.1	61.1	43	25.5	35.0	2.1	●
<b>3150-CF</b>	15.0	15.0	113.4	65.4	48	26.5	40.5	2.4	●
<b>3170-CF</b>	17.0	17.0	121.7	71.7	50	24.5	44.0	2.7	●
<b>3180-CF</b>	18.0	18.0	125.9	75.9	50	26.5	48.0	2.9	●
<b>3190-CF</b>	19.0	19.0	130.0	76.0	54	26.5	49.0	3.0	●

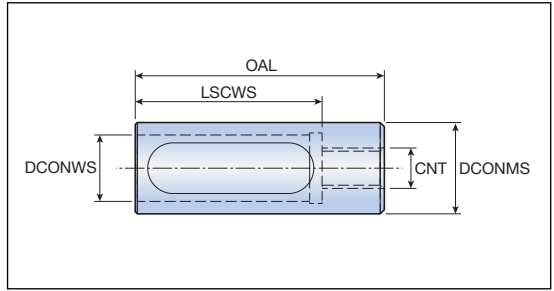
- ▶ 'SDL' is factored with a 45° insert positioned in insert pocket
  - ▶ Solid carbide drill with internal coolant holes is available on request
- : Standard items

Insert	Chamfer angle (°)	Chamfer size
<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

# TSL-NC

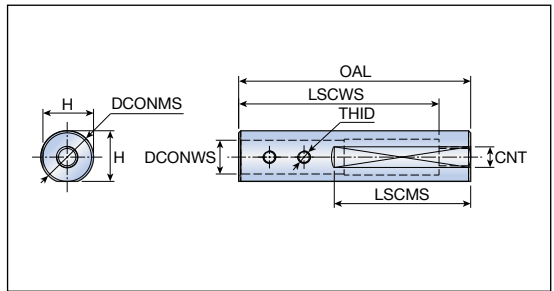
Drill sleeves for Swiss type automatic lathes (Fixed type, internal coolant)



Designation	Dimension (mm)				
	DCONMS	DCONWS	LSCWS	OAL	CNT
<b>TSL-NC 19.05-12</b>	19.05	12.0	45	60	Rc 1/8
<b>19.05-16</b>	19.05	16.0	45	60	Rc 1/8
<b>20-12</b>	20.0	12.0	45	60	Rc 1/8
<b>20-16</b>	20.0	16.0	45	60	Rc 1/8
<b>22-16</b>	22.0	16.0	45	60	Rc 1/8
<b>25-20</b>	25.0	20.0	45	60	Rc 1/8
<b>25.4-20</b>	25.4	20.0	45	60	Rc 1/8
<b>32-25</b>	32.0	25.0	45	60	Rc 1/8

# TSL-SW

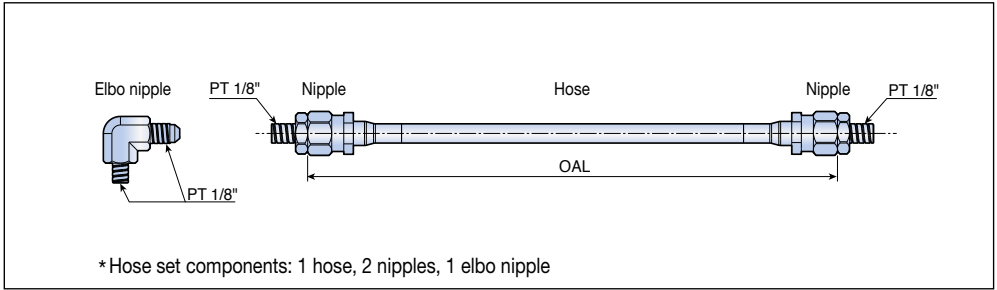
Drill sleeves for Swiss type automatic lathes (Adjustable type, internal coolant)



Designation	Dimension (mm)							
	DCONMS	DCONWS	LSCWS	LSCMS	OAL	H	THID	CNT
<b>TSL-SW 22-12</b>	22.0	12.0	95	65	110	21.0	M6	Rc 1/8
<b>25-12</b>	25.0	12.0	95	65	110	24.0	M8	Rc 1/8
<b>25-16</b>	25.0	16.0	95	65	110	24.0	M6	Rc 1/8
<b>25.4-12</b>	25.4	12.0	95	65	110	24.4	M8	Rc 1/8
<b>25.4-16</b>	25.4	16.0	95	65	110	24.4	M6	Rc 1/8
<b>32-12</b>	32.0	12.0	95	65	110	31.0	M8	Rc 1/8
<b>32-16</b>	32.0	16.0	95	65	110	31.0	M8	Rc 1/8
<b>32-20</b>	32.0	20.0	95	65	110	31.0	M8	Rc 1/8

# Accessories



## Hose set



Designation	Dimension (mm)	
	OAL (mm)	Max. pressure (bar)
<b>S-TSL HOSE R1/8-220</b>	220	100
<b>R1/8-350</b>	350	100

► Hose set is ordered separately

## Spare parts

Designation	Mounting screw	Wrench		
				
<b>TSL-SW 22-12</b>	SS M6X1X5	L-W 3		
<b>TSL-SW 25-12</b>	SS M8X1.25X6	L-W 4		
<b>TSL-SW 25-16</b>	SS M6X1X5	L-W 3		
<b>TSL-SW 25.4-12</b>	SS M8X1.25X6	L-W 4		
<b>TSL-SW 25.4-16</b>	SS M6X1X5	L-W 3		
<b>TSL-SW 32-12</b>	SS M8X1.25X6	L-W 4		
<b>TSL-SW 32-16</b>	SS M8X1.25X6	L-W 4		
<b>TSL-SW 32-20</b>	SS M8X1.25X6	L-W 4		

# Reaming Tools



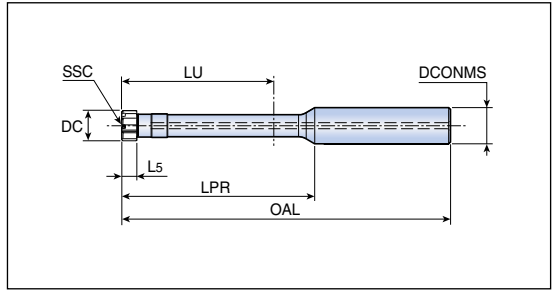
# XR...-3B/5B-SO



Head changeable reamer holders for small diameter blind hole



• Cylindrical shank



Designation	DC	SSC	Dimension (mm)					Overhang
			DCONMS	L5	OAL	LU	LPR	
<b>XR-D08-3B-10S0</b>	8.000-8.999	8	10	4.0	81.0	28.0	36.0	3XD
<b>D09-3B-10S0</b>	9.000-9.999	9	10	4.5	85.5	31.5	40.5	
<b>D10-3B-12S0</b>	10.000-10.999	10	12	5.0	89.0	35.0	44.0	
<b>D11-3B-12S0</b>	11.000-11.999	11	12	5.5	92.5	38.5	47.5	
<b>D12-3B-12S0</b>	12.000-12.999	12	12	6.0	96.0	42.0	51.0	
<b>XR-D08-5B-10S0</b>	8.000-8.999	8	10	4.0	97.0	44.0	52.0	5XD
<b>D09-5B-10S0</b>	9.000-9.999	9	10	4.5	103.5	49.5	58.5	
<b>D10-5B-12S0</b>	10.000-10.999	10	12	5.0	109.0	55.0	64.0	
<b>D11-5B-12S0</b>	11.000-11.999	11	12	5.5	114.5	60.5	69.5	
<b>D12-5B-12S0</b>	12.000-12.999	12	12	6.0	120.0	66.0	75.0	

- ▶ SSC: Seat size code
- ▶ Matched with XR...-AS reamer heads
- ▶ Reamer head is sold separately from reamer holder

## Spare parts

Designation	Clamping key	Key handle
<b>XR-D08</b>	W XR D08-KEY	SW6-T-SH
<b>XR-D09</b>	W XR D08-KEY	SW6-T-SH
<b>XR-D10</b>	W XR D10-KEY	SW6-T-SH
<b>XR-D11</b>	W XR D10-KEY	SW6-T-SH
<b>XR-D12</b>	W XR D12-KEY	SW6-T-SH

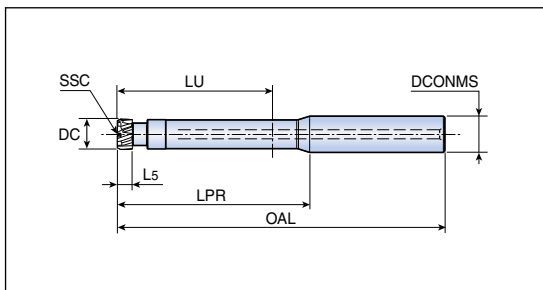


▶ Clamping key & clamping screw are included

# XR...-3T/5T-S0



Head changeable reamer holders for small diameter through hole



• Cylindrical shank



Designation	DC	SSC	Dimension (mm)					Overhang
			DCONMS	L5	OAL	LU	LPR	
<b>XR-D08-3T-10S0</b>	8.000-8.999	8	10	4.0	81.0	28.0	36.0	3XD
<b>D09-3T-10S0</b>	9.000-9.999	9	10	4.5	85.5	31.5	40.5	
<b>D10-3T-12S0</b>	10.000-10.999	10	12	5.0	89.0	35.0	44.0	
<b>D11-3T-12S0</b>	11.000-11.999	11	12	5.5	92.5	38.5	47.5	
<b>D12-3T-12S0</b>	12.000-12.999	12	12	6.0	95.0	42.0	50.0	
<b>XR-D08-5T-10S0</b>	8.000-8.999	8	10	4.0	97.0	44.0	52.0	5XD
<b>D09-5T-10S0</b>	9.000-9.999	9	10	4.5	103.5	49.5	58.5	
<b>D10-5T-12S0</b>	10.000-10.999	10	12	5.0	109.0	55.0	64.0	
<b>D11-5T-12S0</b>	11.000-11.999	11	12	5.5	114.5	60.5	69.5	
<b>D12-5T-12S0</b>	12.000-12.999	12	12	6.0	119.0	66.0	74.0	

- ▶ SSC: Seat size code
- ▶ Matched with XR...-BL reamer heads
- ▶ Reamer head is sold separately from reamer holder

## Spare parts

Designation	Clamping key	Key handle
<b>XR-D08</b>	W XR D08-KEY	SW6-T-SH
<b>XR-D09</b>	W XR D08-KEY	SW6-T-SH
<b>XR-D10</b>	W XR D10-KEY	SW6-T-SH
<b>XR-D11</b>	W XR D10-KEY	SW6-T-SH
<b>XR-D12</b>	W XR D12-KEY	SW6-T-SH

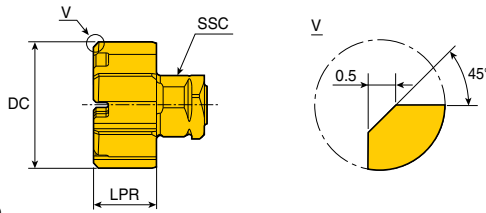


▶ Clamping key & clamping screw are included

# XR...-AS



## Head changeable reamer head



- Straight flute for blind hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		NOF	SSC	Flute type	Edge type	Grade TT9030
		DC	LPR					
	<b>XR-08.000-AS</b>	8.000	4.0	6	8	S	A	●
	<b>09.000-AS</b>	9.000	4.5	6	9	S	A	●
	<b>10.000-AS</b>	10.000	5.0	6	10	S	A	●
	<b>11.000-AS</b>	11.000	5.5	6	11	S	A	●
	<b>12.000-AS</b>	12.000	6.0	6.0	6	12	S	A



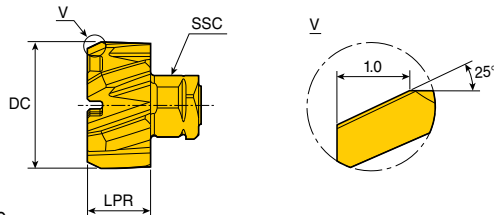
- ▶ NOF: Number of flutes
- ▶ SSC: Seat size code

●: Standard items

# XR...-BL



## Head changeable reamer head



- Helical flute for through hole
- For H7 hole tolerance

Head	Designation	Dimension (mm)		NOF	SSC	Flute type	Edge type	Grade TT9030
		DC	LPR					
	<b>XR-08.000-BL</b>	8.000	4.0	6	8	L	B	●
	<b>09.000-BL</b>	9.000	4.5	6	9	L	B	●
	<b>10.000-BL</b>	10.000	5.0	6	10	L	B	●
	<b>11.000-BL</b>	11.000	5.5	6	11	L	B	●
	<b>12.000-BL</b>	12.000	6.0	6.0	6	12	L	B



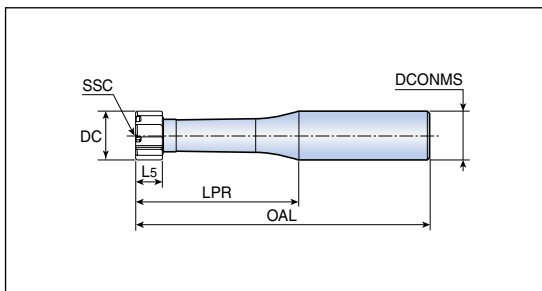
- ▶ NOF: Number of flutes
- ▶ SSC: Seat size code

●: Standard items

## Head changeable reamer holders



- Cylindrical shank

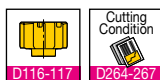


Designation	DC	SSC	Dimension (mm)				Overhang
			DCONMS	L5	OAL	LPR	
<b>TM-3B5-16TO</b>	11.501-13.500	B5	16	9.3	97.8	49.8	3XD
<b>3B6-16TO</b>	13.501-16.000	B6	16	9.4	105.4	57.4	
<b>3B7-20TO</b>	16.000-20.000	B7	20	10.6	120.6	70.6	
<b>3B8-20TO</b>	20.001-25.400	B8	20	12.8	137.8	87.8	
<b>3B9-32TO</b>	25.401-32.000	B9	32	12.8	167.1	107.1	
<b>5B5-16TO</b>	11.501-13.500	B5	16	9.3	125.0	77.0	5XD
<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	
<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	8XD
<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	
<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	

- ▶ SSC: Seat size code
- ▶ Reamer head is sold separately from reamer holder

## Spare parts

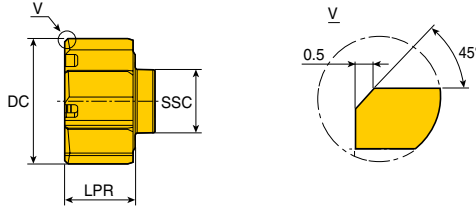
Designation	Clamping screw	Clamping key
<b>TM...B5-16TO</b>	TM-B5-SCR	TM-B5-KEY
<b>TM...B6-16TO</b>	TM-B6-SCR	TM-B6-KEY
<b>TM...B7-20TO</b>	TM-B7-SCR	TM-B7-KEY
<b>TM...B8-20TO</b>	TM-B8-SCR	TM-B8-KEY
<b>TM...B9-32TO</b>	TM-B9-SCR	TM-B9-KEY



- ▶ Clamping key & clamping screw are included



## Head changeable reamer heads



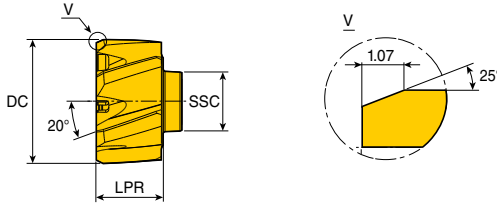
- Straight flute for blind hole
- For H7 hole tolerance

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

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

● Standard items

## Head changeable reamer heads



- Helical flute for through hole
- For H7 hole tolerance

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

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

●: Standard items















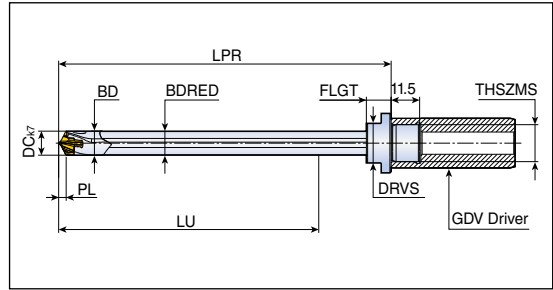
# Deep Drilling Tools



## DRILL-RUSH head-changeable and modular shank gundrill holders



- Drilling depth: 16-20x diameter



Designation	Dimension (mm)										Clamping Key
	DC	LU	LPR	PL	THSZMS	BD	BDRED	FLGT	DRVS	SSC	
<b>TCDGN 100X200-MF16X1</b>	10.0-10.4	200	274	2.33	MF16X1	9.7	9.6	10	16	10	K TCD D100-D199
<b>100X400-MF16X1</b>	10.0-10.4	400	474	2.33	MF16X1	9.7	9.6	10	16	10	
<b>110X200-MF16X1</b>	11.0-11.4	200	275	2.50	MF16X1	10.7	10.6	10	16	11	
<b>110X400-MF16X1</b>	11.0-11.4	400	474	2.50	MF16X1	10.7	10.6	10	16	11	
<b>120X200-MF16X1</b>	12.0-12.4	200	275	2.67	MF16X1	11.7	11.6	10	16	12	
<b>120X400-MF16X1</b>	12.0-12.4	400	475	2.67	MF16X1	11.7	11.6	10	16	12	
<b>130X200-MF16X1</b>	13.0-13.4	200	276	2.85	MF16X1	12.7	12.6	12	16	13	
<b>130X400-MF16X1</b>	13.0-13.4	400	476	2.85	MF16X1	12.7	12.6	12	16	13	
<b>140X250-MF16X1</b>	14.0-14.4	250	326	3.02	MF16X1	13.7	13.6	12	16	14	
<b>140X400-MF16X1</b>	14.0-14.4	400	476	3.02	MF16X1	13.7	13.6	12	16	14	
<b>145X250-MF16X1</b>	14.5-14.9	250	326	3.02	MF16X1	14.2	14.1	12	18	14	
<b>145X400-MF16X1</b>	14.5-14.9	400	476	3.02	MF16X1	14.2	14.1	12	18	14	
<b>150X400-MF16X1</b>	15.0-15.9	400	484	3.19	MF16X1	14.7	14.6	12	18	15	
<b>160X400-MF20X1</b>	16.0-16.9	400	484	3.46	MF20X1	15.5	15.4	12	18	16	
<b>170X400-MF20X1</b>	17.0-17.9	400	485	3.63	MF20X1	16.5	16.4	12	22	17	
<b>180X400-MF20X1</b>	18.0-18.9	400	486	3.81	MF20X1	17.5	17.4	12	22	18	
<b>190X400-MF20X1</b>	19.0-19.9	400	486	3.98	MF20X1	18.5	18.4	12	22	19	
<b>200X400-MF20X1</b>	20.0-20.9	400	487	4.15	MF20X1	19.5	19.4	12	22	20	K TCD D200-D269
<b>210X400-MF20X1</b>	21.0-21.9	400	503	4.32	MF20X1	20.5	20.4	21	28	21	
<b>220X400-MF20X1</b>	22.0-22.9	400	504	4.50	MF20X1	21.5	21.4	21	28	22	
<b>230X400-MF20X1</b>	23.0-23.9	400	504	4.67	MF20X1	22.5	22.4	21	28	23	
<b>240X400-MF20X1</b>	24.0-24.9	400	505	4.84	MF20X1	23.5	23.4	21	28	24	
<b>250X400-MF20X1</b>	25.0-25.9	400	506	5.01	MF20X1	24.5	24.4	21	28	25	



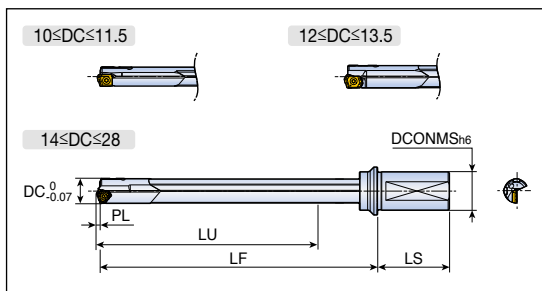
- ▶ OAL: LPR+11.5
- ▶ Driver is sold separately from drill holder
- ▶ SSC: Seat size code



## Standard gundrill holders



- Drilling depth: 10-25x diameter



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
<b>TRGD 16.00xM25-10</b>	16.0	172	209	56	25	2.2	10
<b>16.50xM25-10</b>	16.5	172	209	56	25	2.2	10
<b>17.00xM25-10</b>	17.0	182	220	56	25	2.2	10
<b>18.00xM25-10</b>	18.0	193	232	56	25	3.0	10
<b>19.00xM25-10</b>	19.0	203	243	56	25	3.0	10
<b>20.00xM32-10</b>	20.0	213	255	60	32	3.2	10
<b>29.00xFM40-10</b>	29.0	294.6	360	69	40	4.57	10
<b>30.00xFM40-10</b>	30.0	314.6	383	69	40	4.57	10
<b>31.00xFM40-10</b>	31.0	314.6	383	69	40	4.57	10
<b>32.00xFM40-10</b>	33.0	324.6	395	69	40	4.57	10
<b>12.00XM20-15</b>	12.0	196.8	225	50	20	1.8	15
<b>12.50XM20-15</b>	12.5	196.8	226	50	20	1.8	15
<b>13.00XM25-15</b>	13.0	211.8	245	56	25	1.8	15
<b>13.50XM25-15</b>	13.5	211.8	245	56	25	1.8	15
<b>14.00xM25-15</b>	14.0	227	261	56	25	2.0	15
<b>14.50xM25-15</b>	14.5	227	262	56	25	2.0	15
<b>15.00xM25-15</b>	15.0	242	278	56	25	2.0	15
<b>16.00xM25-15</b>	16.0	257	294	56	25	2.2	15
<b>16.50xM25-15</b>	16.5	257	294	56	25	2.2	15
<b>17.00xM25-15</b>	17.0	272	310	56	25	2.2	15
<b>17.50xM25-15</b>	17.5	272	310	56	25	2.2	15
<b>18.00xM25-15</b>	18.0	288	327	56	25	3.0	15
<b>18.50xM25-15</b>	18.5	288	327	56	25	3.0	15
<b>19.00xM25-15</b>	19.0	303	343	56	25	3.0	15
<b>19.50xM25-15</b>	19.5	303	343	56	25	3.0	15
<b>20.00xM32-15</b>	20.0	318	360	60	32	3.2	15
<b>21.00xM32-15</b>	21.0	333	376	60	32	3.2	15
<b>22.00xM32-15</b>	22.0	348	393	60	32	3.4	15
<b>23.00xM32-15</b>	23.0	363	409	60	32	3.4	15
<b>24.00xM32-15</b>	24.0	378	426	60	32	3.4	15
<b>25.00xM32-15</b>	25.0	394	442	60	32	3.6	15
<b>26.00xM40-15</b>	26.0	409	449	70	40	3.6	15
<b>27.00xM40-15</b>	27.0	424	465	70	40	3.6	15
<b>28.00xM40-15</b>	28.0	424	467	70	40	3.6	15



► Guide pad is sold separately from drill body

► Available upon request

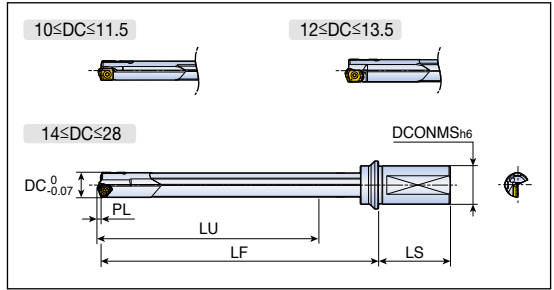
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D260

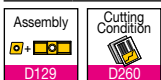
## Standard gundrill holders



- Drilling depth: 10-25x diameter



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
<b>TRGD 12.00XM20-20</b>	12.0	261.8	290	50	20	1.8	20
<b>12.50XM20-20</b>	12.5	261.8	291	50	20	1.8	20
<b>13.00XM25-20</b>	13.0	281.8	315	56	25	1.8	20
<b>13.50XM25-20</b>	13.5	281.8	315	56	25	1.8	20
<b>14.00xM25-20</b>	14.0	302	336	56	25	2.0	20
<b>14.50xM25-20</b>	14.5	302	337	56	25	2.0	20
<b>15.00xM25-20</b>	15.0	322	358	56	25	2.0	20
<b>29.00xFM40-20</b>	29.0	584.6	650	69	40	4.57	20
<b>30.00xFM40-20</b>	30.0	624.6	693	69	40	4.57	20
<b>31.00xFM40-20</b>	31.0	624.6	693	69	40	4.57	20
<b>32.00xFM40-20</b>	32.0	644.6	715	69	40	4.57	20
<b>10.00XM20-25</b>	10.0	264.5	289.5	50	20	1.8	25
<b>11.00XM20-25</b>	11.0	301.7	329	50	20	1.8	25
<b>11.50XM20-25</b>	11.5	301.7	329	50	20	1.8	25
<b>12.00XM20-25</b>	12.0	326.8	355	50	20	1.8	25
<b>12.50XM20-25</b>	12.5	326.8	356	50	20	1.8	25
<b>13.00XM25-25</b>	13.0	351.8	385	56	25	1.8	25
<b>13.50XM25-25</b>	13.5	351.8	385	56	25	1.8	25
<b>14.00xM25-25</b>	14.0	377	411	56	25	2.0	25
<b>14.50xM25-25</b>	14.5	377	412	56	25	2.0	25
<b>15.00xM25-25</b>	15.0	402	438	56	25	2.0	25
<b>16.00xM25-25</b>	16.0	427	464	56	25	2.2	25
<b>16.50xM25-25</b>	16.5	427	464	56	25	2.2	25
<b>17.00xM25-25</b>	17.0	452	490	56	25	2.2	25
<b>17.50xM25-25</b>	17.5	452	490	56	25	2.2	25
<b>18.00xM25-25</b>	18.0	478	517	56	25	3.0	25
<b>18.50xM25-25</b>	18.5	478	517	56	25	3.0	25
<b>19.00xM25-25</b>	19.0	503	543	56	25	3.0	25
<b>19.50xM25-25</b>	19.5	503	543	56	25	3.0	25
<b>20.00xM32-25</b>	20.0	528	570	60	32	3.2	25
<b>21.00xM32-25</b>	21.0	553	596	60	32	3.2	25
<b>22.00xM32-25</b>	22.0	578	623	60	32	3.4	25
<b>23.00xM32-25</b>	23.0	603	649	60	32	3.4	25
<b>24.00xM32-25</b>	24.0	628	676	60	32	3.4	25
<b>25.00xM32-25</b>	25.0	654	702	60	32	3.6	25



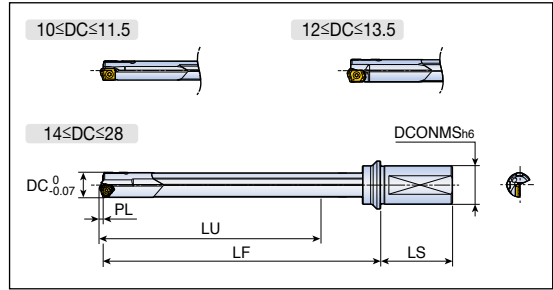
▶ Guide pad is sold separately from drill body

▶ Available upon request

## Standard gundrill holders



- Drilling depth: 10-25x diameter



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
<b>TRGD 26.00xM40-25</b>	26.0	679	729	70	40	3.6	25
<b>27.00xM40-25</b>	27.0	704	755	70	40	3.6	25
<b>28.00xM40-25</b>	28.0	704	757	70	40	3.6	25

## Insert & guide pad

Tool dia. (mm)	Insert			Guide pad		
	Insert	Screw	Wrench	Guide pad	Screw	Wrench
10.00-10.99	ZSGT 060204R-RS	SR-M2.5X0.35L3.8	T-7F	PAD-GP04-16-045-DC-SB	CSTB-2	T-6F
11.00-11.99	LOGT 060204R-RS	SR 10503833L040	T-7F	PAD-GP04-16-050-DC-SB	CSTB-2	T-6F
12.00-13.99				PAD-GP04-16-055-DC-SB	TS 200431/HG-P	IP-6F
12.00-13.99			PAD-GP04-16-055-DC-SC			
14.00-15.99	TOGT 070304 RS TT9030	CSTB2.5S*	T-8F	PAD-GP05-18-060-DC-SB PAD-GP05-18-060-DC-SC	SR 34-508	T-7F
16.00-18.00	TOGT 080305 RS TT9030	CSTB2.5S*	T-8F	PAD-GP05-18-075-DC-SB PAD-GP05-18-075-DC-SC	SR 34-508	T-7F
18.01-20.00	TOGT 090305 RS TT9030	CSTB2.5S*	T-8F	PAD-GP06-20-085-DC-SB PAD-GP06-20-085-DC-SC	SR 34-508	T-7F
20.01-21.00	TOGT 100305 RS TT9030	CSTB3S*	T-9F			
21.01-21.99	TOGT 100305 RS TT9030	CSTB3S*	T-9F	PAD-GP06-20-100-DC-SB PAD-GP06-20-100-DC-SC	SR 34-508	T-7F
22.00-25.00	TOGT 110405 RS TT9030	SR14-571/S	T-10/5			
25.01-28.00	TOGT 120405 RS TT9030	CSTB4S	T-15F	PAD-GP06-20-120-DC-SB PAD-GP06-20-120-DC-SC	SR 34-508	T-7F
28.01-29.99	TOGT 130408 RS	SR 16-212/L10	T-20/5	PAD-GP06-20-120-DC-SB PAD-GP06-20-120-DC-SC	SR 34-508	T-7F
30.00-32.00	TOGT 130408 RS	SR 16-212/L10	T-20/5	PAD-GP07-20-120-DC-SB PAD-GP07-20-120-DC-SC	CSTB-3S	T-9F

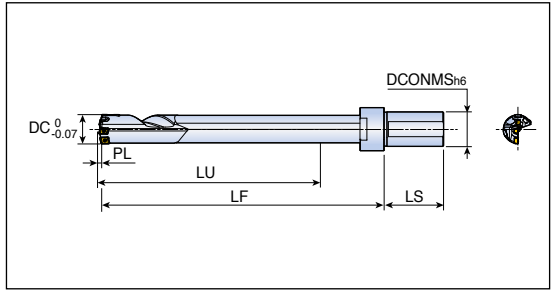


- ▶ Guide pad with "SB" is the first choice in general purpose machining
- "SC" is an excellent toughness grade used with water-soluble coolant
- ▶ Inserts and guide pads must be ordered separately

## Standard gundrill holders



- Drilling depth: 10-15x diameter



Designation	Dimension (mm)						
	DC	LU	LF	LS	DCONMS	PL	L/D
<b>TRGD3 29.00xFM40-10</b>	29.0	293	360	69	40	2.6	10
<b>30.00xFM40-10</b>	30.0	313	383	69	40	2.9	10
<b>31.00xFM40-10</b>	31.0	313	383	69	40	2.9	10
<b>32.00xFM40-10</b>	32.0	323	395	69	40	3.0	10
<b>33.00xFM40-10</b>	33.0	333	406	69	40	3.1	10
<b>34.00xFM40-10</b>	34.0	343	418	69	40	3.0	10
<b>35.00xFM40-10</b>	35.0	353	428	69	40	3.1	10
<b>36.00xFM40-10</b>	36.0	363	441	69	40	3.1	10
<b>29.00xFM40-15</b>	29.0	438	505	69	40	2.6	15
<b>30.00xFM40-15</b>	30.0	468	538	69	40	2.9	15
<b>31.00xFM40-15</b>	31.0	468	538	69	40	2.9	15
<b>32.00xFM40-15</b>	32.0	483	555	69	40	3.0	15
<b>33.00xFM40-15</b>	33.0	498	571	69	40	3.1	15
<b>34.00xFM40-15</b>	34.0	513	588	69	40	3.0	15
<b>35.00xFM40-15</b>	35.0	528	603	69	40	3.1	15
<b>36.00xFM40-15</b>	36.0	543	621	69	40	3.1	15

- ▶ Guide pad is sold separately from drill body.
- ▶ Supply up to 40.0mm drill diameter

▶ Available upon request

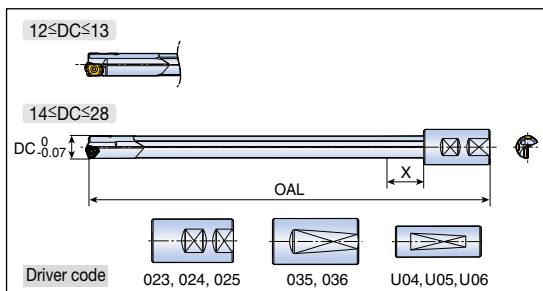
## Insert & guide pad

Parts	Diameter (mm)				
	29.0-29.99	30.0-33.0	33.01-35.0	35.01-36.0	
Insert	Peripheral insert	NPHT 060304R-G-P	NPHT 080404R-G-P	NPHT 080404R-G-P	NPHT 080404R-G-P
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-7F	T-8F	T-8F	T-8F
	Inner insert	NPMT 060304R-G-I	NPMT 070404R-G-I	NPMT 070404R-G-I	NPMT 070404R-G-I
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-7F	T-8F	T-8F	T-8F
	Center insert	NPMT 070408L-G-C	NPMT 070408L-G-C	NPMT 070408L-G-C	NPMT 080408L-L-C
	Screw	CSTB2.5	CSTB2.5	CSTB2.5	CSTB2.5
	Wrench	T-8F	T-8F	T-8F	T-8F
Pad	Guide pad	PAD-GP06-20-120-DC-SB	PAD-GP06-20-120-DC-SB	PAD-GP07-20-120-DC-SB	PAD-GP07-20-120-DC-SB
	Screw	PAD-GP06-20-120-DC-SC	PAD-GP06-20-120-DC-SC	PAD-GP07-20-120-DC-SC	PAD-GP07-20-120-DC-SC
	Wrench	SR 34-508	SR 34-508	CSTB3S	CSTB3S



- ▶ Inserts and guide pads must be ordered separately

## Standard gundrill holders



Designation	Driver code	Dimension (mm)		
		DC	OAL	X
<b>TRGDL 12.00X800-XXX</b>	U03 022	12	801.8	18
<b>12.00X800-XXX</b>		12	801.8	18
<b>12.00X1000-XXX</b>		12	1001.8	18
<b>12.00X1000-XXX</b>		12	1001.8	18
<b>12.00X1650-XXX</b>		12	1651.8	18
<b>12.00X1650-XXX</b>		12	1651.8	18
<b>12.70X1219-XXX</b>	U04	12.7	1220.8	19
<b>12.70X1524-XXX</b>		12.7	1525.8	19
<b>13.00X800-XXX</b>	U04 023	13	801.8	20
<b>13.00X800-XXX</b>		13	801.8	20
<b>13.00X1000-XXX</b>		13	1001.8	20
<b>13.00X1000-XXX</b>		13	1001.8	20
<b>13.00X1650-XXX</b>		13	1651.8	20
<b>13.00X1650-XXX</b>		13	1651.8	20
<b>13.49X1219-XXX</b>	U04	13.49	1220.8	20
<b>13.49X1527-XXX</b>		13.49	1528.8	20
<b>14.00x800-XXX</b>	U04 023	14	800	21
<b>14.00x1000-XXX</b>		14	1000	21
<b>14.00x1650-XXX</b>		14	1650	21
<b>14.50x800-XXX</b>		14.5	800	22
<b>14.50x1000-XXX</b>		14.5	1000	22
<b>14.50x1650-XXX</b>		14.5	1650	22
<b>15.00x800-XXX</b>	U04 023 035	15	800	23
<b>15.00x1000-XXX</b>		15	1000	23
<b>15.00x1650-XXX</b>		15	1650	23
<b>16.00x800-XXX</b>		16	800	24
<b>16.00x1000-XXX</b>		16	1000	24
<b>16.00x1500-XXX</b>		16	1500	24
<b>17.00x1000-XXX</b>		17	1000	25
<b>17.00x1500-XXX</b>		17	1500	25
<b>18.00x800-XXX</b>		18	800	27
<b>18.00x1000-XXX</b>		18	1000	27
<b>18.00x1500-XXX</b>		18	1500	27
<b>19.00x800-XXX</b>		19	800	28
<b>19.00x1000-XXX</b>	19	1000	28	
<b>19.00x1500-XXX</b>	19	1500	28	

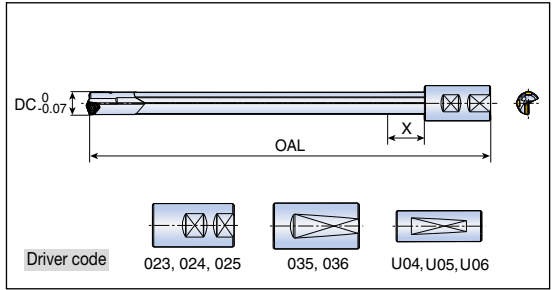


▶ Guide pad is sold separately from drill body

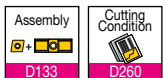
▶ Available upon request  
▶ Select "XXX" driver code



## Standard gundrill holders



Designation	Driver code	Dimension (mm)			
		DC	OAL	X	
<b>TRGDL 20.00x800-XXX</b>	U05 024 036	20	800	30	
<b>20.00x1000-XXX</b>		20	1000	30	
<b>20.00x1500-XXX</b>		20	1500	30	
<b>21.00x1000-XXX</b>		21	1000	31	
<b>21.00x1500-XXX</b>		21	1500	31	
<b>22.00x1000-XXX</b>		22	1000	33	
<b>22.00x1500-XXX</b>		22	1500	33	
<b>23.00x1000-XXX</b>		23	1000	34	
<b>23.00x1500-XXX</b>		23	1500	34	
<b>24.00x1000-XXX</b>		24	1000	36	
<b>24.00x1500-XXX</b>		24	1500	36	
<b>25.00x1000-XXX</b>		25	1000	37	
<b>25.00x1500-XXX</b>		25	1500	37	
<b>26.00x1000-XXX</b>		U06 025 026 036	26	1000	39
<b>26.00x1500-XXX</b>			26	1500	39
<b>27.00x1000-XXX</b>			27	1000	40
<b>27.00x1500-XXX</b>	27		1500	40	
<b>28.00x1000-XXX</b>	28		1000	42	
<b>28.00x1500-XXX</b>	28		1500	42	



▶ Guide pad is sold separately from drill body

▶ Available upon request  
▶ Select "XXX" driver code

## Insert & guide pad

Tool dia. (mm)	Insert			Guide pad		
	Insert	Screw	Wrench	Guide pad	Screw	Wrench
12.00-13.99	LOGT 060204R-RS	SR 10503833L040	T-7F	PAD-GP04-16-055-DC-SB PAD-GP04-16-055-DC-SC	TS 20043/HG-P	T-7F
14.00-15.99	TOGT 070304 RS TT9030	CSTB2.5S	T-8F	PAD-GP05-18-060-DC-SB PAD-GP05-18-060-DC-SC	SR 34-508	T-7F
16.00-18.00	TOGT 080305 RS TT9030	CSTB2.5S	T-8F	PAD-GP05-18-075-DC-SB PAD-GP05-18-075-DC-SC	SR 34-508	T-7F
18.01-20.00	TOGT 090305 RS TT9030	CSTB2.5S*	T-8F	PAD-GP06-20-085-DC-SB PAD-GP06-20-085-DC-SC	SR 34-508	T-7F
20.01-21.00	TOGT 100305 RS TT9030	CSTB3S*	T-9F			
21.01-21.99	TOGT 100305 RS TT9030	CSTB3S*	T-9F	PAD-GP06-20-100-DC-SB PAD-GP06-20-100-DC-SC	SR 34-508	T-7F
22.00-25.00	TOGT 110405 RS TT9030	SR14-571/S	T-10/5			
25.01-28.00	TOGT 120405 RS TT9030	CSTB4S	T-15F	PAD-GP07-20-120-DC-SB PAD-GP07-20-120-DC-SC	SR 34-508	T-7F



- ▶ Guide pad with "SB" is the first choice in general purpose machining
- "SC" is a excellent toughness grade used with water-soluble coolant
- ▶ Inserts and guide pads must be ordered separately

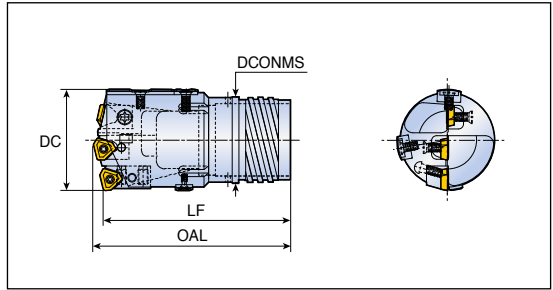
## Driver for TRGDL Type

Driver	Driver code	Dimension (mm)	
		LS	DCONMS
	022	50	20.00
	023	56	25.00
	024	60	32.00
	025	70	40.00
	026	80	50.00
	035	56	25.00
	036	60	32.00
	U03	70	19.05
	U04	70	25.40
	U05	70	31.75
	U06	70	38.10

# TBTA3...SE4



Single tube system



- Outer four start thread

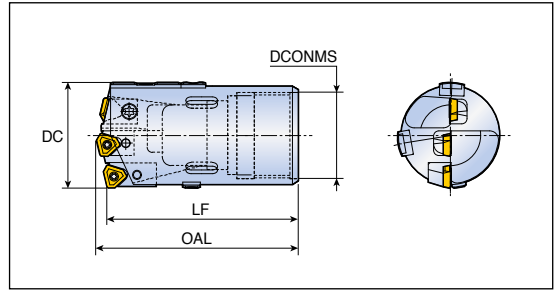
Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
<b>TBTA3- xxx.xxSE4-33</b>	38.00-39.60	85	90	30	BTSI 033	33
<b>xxx.xxSE4-36</b>	39.61-43.00	85	91	33	BTSI 036	36
<b>xxx.xxSE4-39</b>	43.01-47.00	95	101	36	BTSI 039	39
<b>xxx.xxSE4-43</b>	47.01-51.70	95	102	39	BTSI 043	43
<b>xxx.xxSE4-47</b>	51.71-56.20	100	107	43	BTSI 047	47
<b>xxx.xxSE4-51</b>	56.21-60.60	110	118	47	BTSI 051	51
<b>xxx.xxSE4-56A</b>	60.61-64.99	110	119	51	BTSI 056A	56
<b>xxx.xxSE4-56B</b>	65.00-66.99	150	159	52	BTSI 056B	56
<b>xxx.xxSE4-62</b>	67.00-72.99	150	159	58	BTSI 062	62
<b>xxx.xxSE4-68</b>	73.00-79.99	150	160	63	BTSI 068	68
<b>xxx.xxSE4-75</b>	80.00-86.99	180	191	70	BTSI 075	75
<b>xxx.xxSE4-82</b>	87.00-99.99	180	193	77	BTSI 082	82
<b>xxx.xxSE4-94</b>	100.00-106.99	180	193	89	BTSI 094	94

Assembly D137	Tube D170-D171	Cutting Condition D252
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# TBTA3...SI1



## Single tube system



- Inner single start thread

Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
<b>TBTA3- xxx.xxSI1-33</b>	38.00-39.99	80	85	30	BTSE 033	33
<b>xxx.xxSI1-36</b>	40.00-43.99	80	86	33	BTSE 036	36
<b>xxx.xxSI1-39</b>	44.00-46.99	90	96	37	BTSE 039	39
<b>xxx.xxSI1-43</b>	47.00-51.99	90	97	41	BTSE 043	43
<b>xxx.xxSI1-47</b>	52.00-56.99	100	107	44	BTSE 047	47
<b>xxx.xxSI1-51</b>	57.00-60.99	110	118	49	BTSE 051	51
<b>xxx.xxSI1-56</b>	61.00-67.99	110	119	53	BTSE 056	56
<b>xxx.xxSI1-62</b>	68.00-74.99	120	129	59	BTSE 062	62
<b>xxx.xxSI1-68</b>	75.00-80.99	150	161	65	BTSE 068	68
<b>xxx.xxSI1-75</b>	81.00-90.99	150	162	71	BTSE 075	75
<b>xxx.xxSI1-82</b>	91.00-98.99	150	162	79	BTSE 082	82
<b>xxx.xxSI1-94</b>	99.00-106.99	150	163	90	BTSE 094	94

Assembly 	Tube 	Cutting Condition 
D137	D172-D173	D252

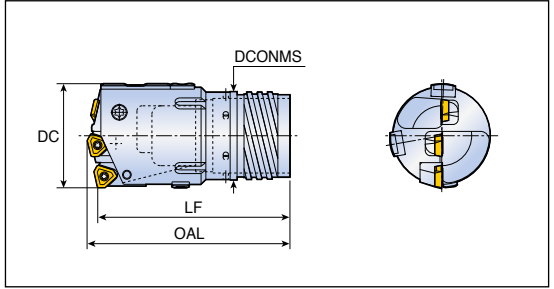
# TBTA3...DE4



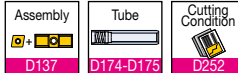
## Double tube system



- Outer four start thread



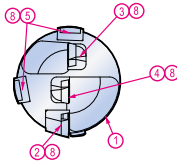
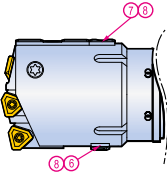
Designation	DC	Dimension (mm)			Tube		
		LF	OAL	DCONMS	Outer tube	Inner tube	Diameter (mm)
<b>TBTA3- xxx.xxDE4-35.5</b>	38.00-39.60	85	90	33	BTDO 035.5	BTDI 026	35.5
<b>xxx.xxDE4-39</b>	39.61-43.00	85	91	36	BTDO 039	BTDI 029	39.0
<b>xxx.xxDE4-42.5</b>	43.01-47.00	95	101	39	BTDO 042.5	BTDI 032	42.5
<b>xxx.xxDE4-46.5</b>	47.01-51.70	100	102	43	BTDO 046.5	BTDI 035	46.5
<b>xxx.xxDE4-51</b>	51.71-56.20	100	107	47	BTDO 051	BTDI 039	51.0
<b>xxx.xxDE4-55.5</b>	56.21-65.00	110	119	51	BTDO 055.5	BTDI 043A	55.5
<b>xxx.xxDE4-56</b>	65.00-66.99	150	159	52	BTDO 056	BTDI 043B	56.0
<b>xxx.xxDE4-62</b>	67.00-72.99	150	159	58	BTDO 062	BTDI 048	62.0
<b>xxx.xxDE4-68</b>	73.00-79.99	150	160	63	BTDO 068	BTDI 053	68.0
<b>xxx.xxDE4-75</b>	80.00-86.99	180	191	70	BTDO 075	BTDI 059	75.0
<b>xxx.xxDE4-82</b>	87.00-99.99	180	193	77	BTDO 082	BTDI 066	82.0
<b>xxx.xxDE4-94</b>	100.00-106.99	180	193	89	BTDO 094	BTDI 078	94.0



# TBTA3 Series



## Assembly of TBTA3 series

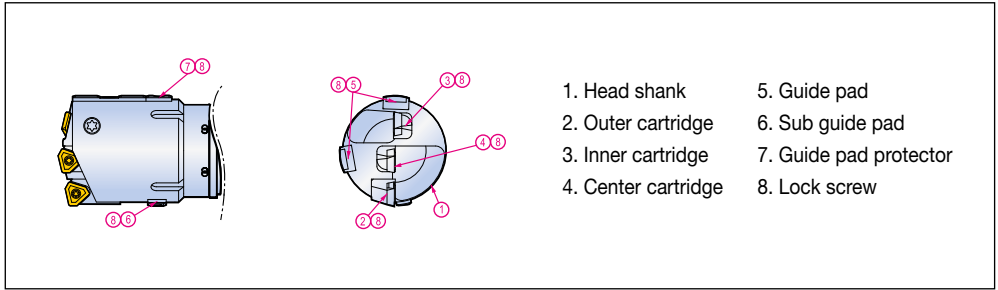


- 1. Head shank
- 2. Outer cartridge
- 3. Inner cartridge
- 4. Center cartridge
- 5. Guide pad
- 6. Sub guide pad
- 7. Guide pad protector
- 8. Lock screw

Parts		Diameter (mm)				
		38.00-39.99	40.00-44.99	45.00-47.99	48.00-51.99	52.00-54.99
<b>Cartridge</b>	Outer	PERC 05R	PERC 402-04	PERC 402-04	PERC 402-04	PERC 402-32
	Adjust screw	AS0003-5	AS0004-8	AS0004-8	AS0004-8	AS0005-10
	Wrench	H1.5	H2	H2	H2	H2.5
	Screw	LS1803RH	LS1803.5RH	LS1803.5RH	LS1803.5RH	LS1805RH
	Wrench	H2	H2.5	H2.5	H2.5	H3
	Inner	CENC 05R	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3	CSTB3.5	CSTB3.5
	Wrench	T-9D	T-9D	T-9D	T-15D	T-15D
	Center	CENC 05R	CENC 05R	CENC 402-04	CENC 402-04	CENC 402-04
	Screw	CSTB3	CSTB3	CSTB3.5	CSTB3.5	CSTB3.5
Wrench	T-9D	T-9D	T-15D	T-15D	T-15D	
<b>Insert</b>	Outer	NPMX 080308R-G	TPMX 140308R-G	TPMX 140308R-G	TPMX 140308R-G	TPMX 170408R-G
	Screw	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5	CSTB3.5D
	Wrench	T-7D	T-8D	T-8D	T-8D	T-9D
	Inner	NPMX 080308R-G	NPMX 080308R-G	NPMX 080308R-G	TPMX 140308R-G	TPMX 140308R-G
	Screw	CSTB2.2	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5
	Wrench	T-7D	T-7D	T-7D	T-8D	T-8D
	Center	NPMX 080308R-G	NPMX 080308R-G	TPMX 140308R-G	TPMX 140308R-G	TPMX 140308R-G
Screw	CSTB2.2	CSTB2.2	CSTB2.5	CSTB2.5	CSTB2.5	
Wrench	T-7D	T-7D	T-8D	T-8D	T-8D	
<b>Pad</b>	Guide pad	PAD-GP08-25-155-DC-SB	PAD-GP08-25-155-DC-SB	PAD-GP10-35-200-DC-SB	PAD-GP10-35-200-DC-SB	PAD-GP10-35-200-DC-SB
	Screw	PAD-GP08-25-155-DC-SC	PAD-GP08-25-155-DC-SC	PAD-GP10-35-200-DC-SC	PAD-GP10-35-200-DC-SC	PAD-GP10-35-200-DC-SC
	Wrench	T-9D	T-9D	T-15D	T-15D	T-15D
	Guide pad protector	PAD-P08	PAD-P08	PAD-P10	PAD-P10	PAD-P10
	Screw	CSTB3S	CSTB3S	CSTB4S	CSTB4S	CSTB4S
	Wrench	T-9D	T-9D	T-15D	T-15D	T-15D
	Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S08	PAD-S08
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T-9D	T-9D	T-9D	T-9D	T-9D



## Assembly of TBTA3 series



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

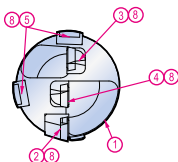
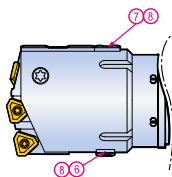
Parts		Diameter (mm)				
		55.00-57.99	58.00-59.99	60.00-63.99	64.00-67.99	68.00-77.99
Cartridge	Outer	PERC 402-32	PERC 402-32	PERC 402-32	PERC 402-43	PERC 402-32
	Adjust screw	AS0005-10	AS0005-10	AS0005-10	AS0005-15	AS0005-10
	Wrench	H2.5	H2.5	H2.5	H2.5	H2.5
	Screw	LS1805RH	LS1805RH	LS1805RH	LS1806RH	LS1805RH
	Wrench	H3	H3	H3	H4	H3
	Inner	CENC 402-04	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTB3.5	CSTA5	CSTA5	CSTA5	LS1206
	Wrench	T-15D	T-15D	T-15D	T-15D	H3
	Center	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-32	CENC 402-43
	Screw	CSTA5	CSTA5	CSTA5	CSTA5	LS1206
Wrench	T-15D	T-15D	T-15D	T-15D	H3	
Insert	Outer	TPMX 170408R-G	TPMX 170408R-G	TPMX 170408R-G	TPMX 240512R-G	TPMX 170408R-G
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M	CSTB3.5D
	Wrench	T-9D	T-9D	T-9D	T-15D	T-9D
	Inner	TPMX 140308R-G	TPMX 170408R-G	TPMX 170408R-G	TPMX 170408R-G	TPMX 240512R-G
	Screw	CSTB2.5	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
	Wrench	T-8D	T-9D	T-9D	T-9D	T-15D
	Center	TPMX 170408R-G	TPMX 170408R-G	TPMX 170408R-G	TPMX 170408R-G	TPMX 240512R-G
	Screw	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB3.5D	CSTB4M
Wrench	T-9D	T-9D	T-9D	T-9D	T-15D	
Pad	Guide pad	PAD-GP10-35-200-DC-SB	PAD-GP10-35-200-DC-SB	PAD-GP14-40-250-DC-SB	PAD-GP14-40-250-DC-SB	PAD-GP14-40-250-DC-SB
		PAD-GP10-35-200-DC-SC	PAD-GP10-35-200-DC-SC	PAD-GP14-40-250-DC-SC	PAD-GP14-40-250-DC-SC	PAD-GP14-40-250-DC-SC
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Guide pad protector	PAD-P10	PAD-P10	PAD-P14	PAD-P14	PAD-P14
	Screw	CSTB4S	CSTB4S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Sub guide pad	PAD-S08	PAD-S08	PAD-S08	PAD-S10	PAD-S10
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S	CSTB3S
	Wrench	T-9D	T-9D	T-9D	T-9D	T-9D



# TBTA3 Series



## Assembly of TBTA3 series



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

Parts	Diameter (mm)				
	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
<b>Insert</b>	Outer	TPMX 240512R-G	TPMX 280716R-G	TPMX 240512R-G	TPMX 280716R-G
	Screw	CSTB4M	CSTB5	CSTB4M	CSTB5
	Wrench	T-15D	T-20D	T-15D	T-20D
	Inner	TPMX 240512R-G	TPMX 240512R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-20D	T-20D
	Center	TPMX 240512R-G	TPMX 240512R-G	TPMX 280716R-G	TPMX 280716R-G
<b>Pad</b>	Screw	CSTB4M	CSTB4M	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-20D	T-20D
	Guide pad	PAD-GP14-40-250-DC-SB	PAD-GP14-40-250-DC-SB	PAD-GP14-40-250-DC-SB	PAD-GP18-40-300-DC-SB
	Screw	PAD-GP14-40-250-DC-SC	PAD-GP14-40-250-DC-SC	PAD-GP14-40-250-DC-SC	PAD-GP18-40-300-DC-SC
	Wrench	CSTA5S	CSTA5S	CSTA5S	LS1206S
	Wrench	T-15D	T-15D	T-15D	H3
	Guide pad protector	PAD-P14	PAD-P14	PAD-P14	PAD-P18
	Screw	CSTA5S	CSTA5S	CSTA5SS	LS1206S
	Wrench	T-15D	T-15D	T-15D	H3
	Sub guide pad	PAD-S10	PAD-S10	PAD-S10	PAD-S14
Screw	CSTB3S	CSTB3S	CSTB3S	CSTA5S	
Wrench	T-9D	T-9D	T-9D	T-15D	





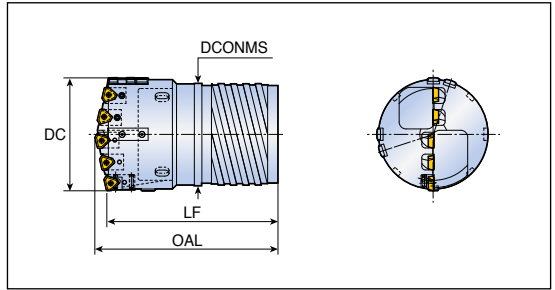
# TBTA5...SE4



## Single tube system



- Outer four start thread



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

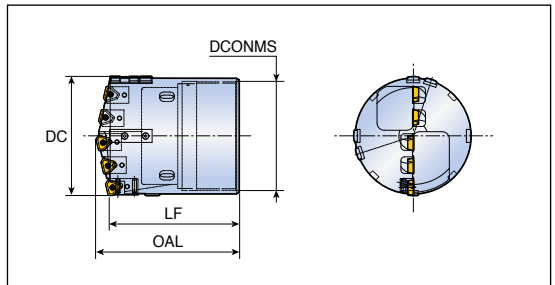
# TBTA5...SI1



## Single tube system



- Inner single start thread

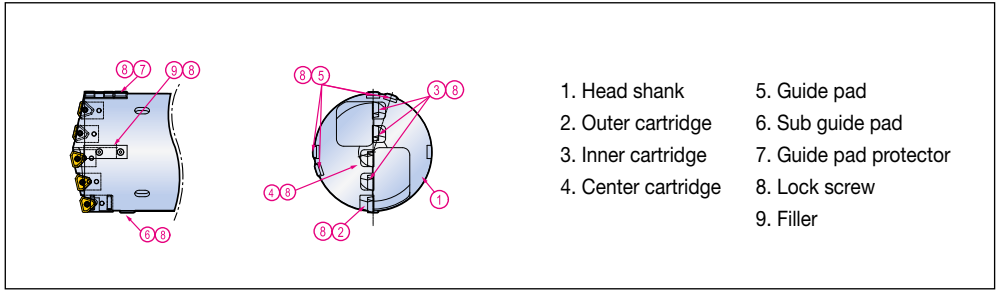


Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
<b>TBTA5- xxx.xxSI1-094</b>	107.00-110.99	150	164	90	BTSE 094	94
<b>xxx.xxSI1-106</b>	111.00-122.99	150	165	102	BTSE 106	106
<b>xxx.xxSI1-118</b>	123.00-134.99	150	167	114	BTSE 118	118
<b>xxx.xxSI1-130</b>	135.00-148.99	150	168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

Assembly D142	Tube D171, D173	Cutting Condition D252
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## Assembly of TBTA5 series



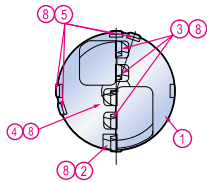
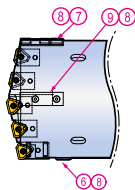
Parts		Diameter (mm)			
		107.00-117.99	118.00-135.99	136.00-144.99	145.00-150.99
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-32	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	CSTA5	LS1206	LS1206	LS1206
	Wrench	T-15D	H3	H3	H3
	Center	CENC 402-43	CENC 402-43	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
Wrench	H3	H3	H3	H3	
Insert	Outer	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
	Inner	TPMX 170408R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G
	Screw	CSTB3.5D	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-9D	T-15D	T-15D	T-15D
	Center	TPMX 240512R-G	TPMX 240512R-G	TPMX 280716R-G	TPMX 280716R-G
Screw	CSTB4M	CSTB4M	CSTB5	CSTB5	
Wrench	T-15D	T-15D	T-20D	T-20D	
Pad	Guide pad	PAD-GP18-40-300-DC-SB PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SB PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SB PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SB PAD-GP18-40-300-DC-SC
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



# TBTA5 Series



## Assembly of TBTA5 series



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

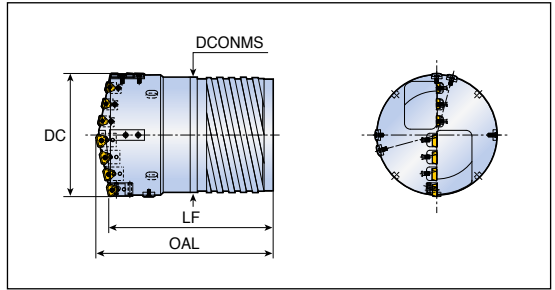
Parts	Diameter (mm)			
	151.00-156.99	157.00-162.99	163.00-168.99	
<b>Cartridge</b>	Outer	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3
	Screw	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S
<b>Insert</b>	Outer	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D
	Inner	TPMX 240512R-G	TPMX 240512R-G	TPMX 280716R-G
	Screw	CSTB4M	CSTB4M	CSTB5
	Wrench	T-15D	T-15D	T-20D
	Center	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
<b>Pad</b>	Screw	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D
	Guide pad	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB
		PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3L
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14
Screw	CSTA5S	CSTA5S	CSTA5S	
Wrench	T-15D	T-15D	T-15D	



# TBTA7...SE4



## Single tube system



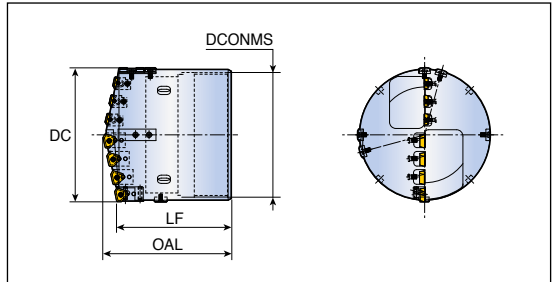
- Outer four start thread
- Double tube system also available on request

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

# TBTA7...SI1

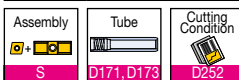


## Single tube system



- Inner single start thread

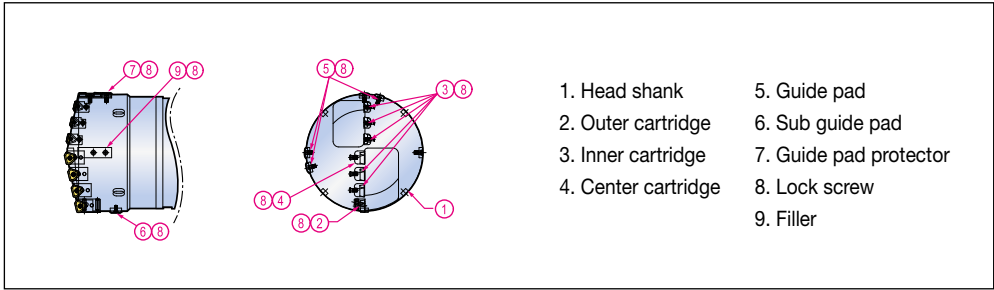
Designation	DC	Dimension (mm)			Tube	
		LF	OAL	DCONMS	Part	Diameter (mm)
<b>TBTA7- xxx.xxSI1-154</b>	169.00-173.99	190	211	151	BTSE 154	154
<b>xxx.xxSI1-166</b>	174.00-185.99	190	213	163	BTSE 166	166
<b>xxx.xxSI1-178</b>	186.00-197.99	190	212	175	BTSE 178	178
<b>xxx.xxSI1-190</b>	198.00-209.99	190	215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



# TBTA7 Series



## Assembly of TBTA7 series



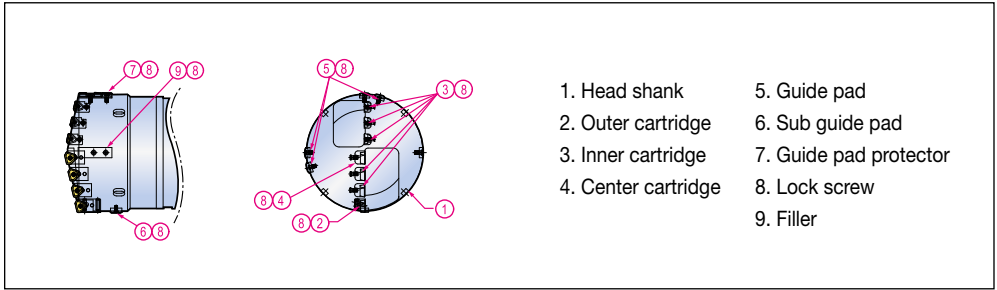
Parts		Diameter (mm)			
		169.00-188.99	189.00-196.99	197.00-202.99	203.00-208.99
Cartridge	Outer	PERC 402-43	PERC 402-43	PERC 402-43	PERC 402-43
	Adjust screw	AS0005-15	AS0005-15	AS0005-15	AS0005-15
	Wrench	H2.5	H2.5	H2.5	H2.5
	Screw	LS1806RH	LS1806RH	LS1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-43	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206	LS1206S	LS1206S	LS1206S
Insert	Outer	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
	Inner	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D
	Center	TPMX 240512R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
Pad	Screw	CSTB4M	CSTB5	CSTB5	CSTB5
	Wrench	T-15D	T-15D	T-15D	T-15D
	Guide pad	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB
		PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S	
Wrench	T-15D	T-15D	T-15D	T-15D	



# TBTA7 Series



## Assembly of TBTA7 series



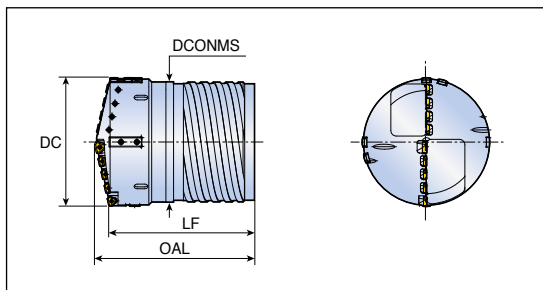
Parts		Diameter (mm)			
		209.00-214.99	215.00-220.99	221.00-226.99	227.00-232.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0005-15
	Wrench	H3	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH	LS1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-63
	Screw	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206	LS1206	LS1206S
Insert	Outer	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 280716R-G
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB5
	Wrench	T-15D	T-15D	T-15D	T-15D
	Center	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
Pad	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Guide pad	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB
		PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S	
Wrench	T-15D	T-15D	T-15D	T-15D	



# TBTA9...SE4



## Single tube system



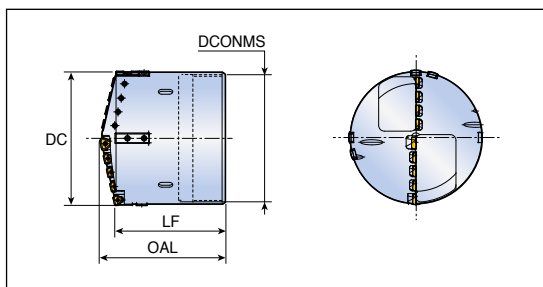
- Outer four start thread

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

# TBTA9...SI1



## Single tube system



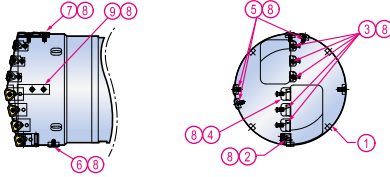
- Inner single start thread

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

Assembly D148	Tube D171, D173	Cutting Condition D252
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## Assembly of TBTA9 series



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

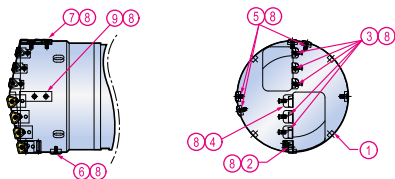
Parts		Diameter (mm)				
		233.00-247.99	248.00-253.99	254.00-258.99	259.00-264.99	265.00-271.99
Cartridge	Outer	PERC 402-43	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0005-15	AS0006-15	AS0006-15	AS0006-15	AS0006-15
	Wrench	H2.5	H3	H3	H3	H3
	Screw	LS1806RH	L1806RH	L1806RH	L1806RH	L1806RH
	Wrench	H4	H4	H4	H4	H4
	Inner	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43	CENC 402-43
	Screw	LS1206	LS1206	LS1206	LS1206	LS1206
	Wrench	H3L	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
Wrench	H3L	H3L	H3L	H3L	H3L	
Insert	Outer	TPMX 240512R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB4M	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-15D	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G	TPMX 240512R-G
	Screw	CSTB4M	CSTB4M	CSTB4M	CSTB4M	CSTB4M
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D
	Center	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
Screw	CSTB5	CSTB5	CSTB5	CSTB5	CSTB5	
Wrench	T-20D	T-20D	T-20D	T-20D	T-20D	
Pad	Guide pad	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D	T-15D



# TBTA9 Series



## Assembly of TBTA9 series



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

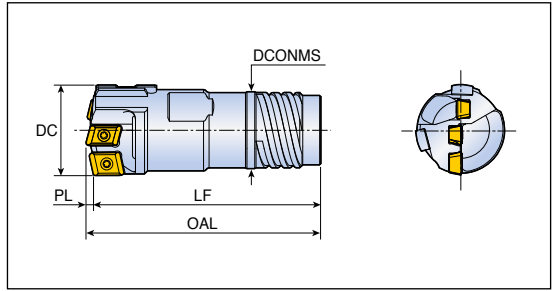
Parts		Diameter (mm)			
		272.00-275.99	276.00-284.99	285.00-289.99	290.00-293.99
Cartridge	Outer	PERC 402-63	PERC 402-63	PERC 402-63	PERC 402-63
	Adjust screw	AS0006-15	AS0006-15	AS0006-15	AS0006-15
	Wrench	H3	H3	H3	H3
	Screw	L1806RH	L1806RH	L1806RH	L1806RH
	Wrench	H4	H4	H4	H4
	Inner	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3L	H3L	H3L	H3L
	Center	CENC 402-63	CENC 402-63	CENC 402-63	CENC 402-63
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
Insert	Outer	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Inner	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
	Screw	CSTB5	CSTB5	CSTB5	CSTB5
	Wrench	T-20D	T-20D	T-20D	T-20D
	Center	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G	TPMX 280716R-G
Pad	Guide pad	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB	PAD-GP18-40-300-DC-SB
		PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC	PAD-GP18-40-300-DC-SC
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Guide pad protector	PAD-P18	PAD-P18	PAD-P18	PAD-P18
	Screw	LS1206S	LS1206S	LS1206S	LS1206S
	Wrench	H3	H3	H3	H3
	Sub guide pad	PAD-S14	PAD-S14	PAD-S14	PAD-S14
	Screw	CSTA5S	CSTA5S	CSTA5S	CSTA5S
	Wrench	T-15D	T-15D	T-15D	T-15D



# TBTA-FB...SE4



## Single tube system



- Outer four start thread

Designation	DC	Dimension (mm)				Tube	
		LF	OAL	DCONMS	PL	Part	Diameter (mm)
<b>TBTA-FB xx.xxSE4-22</b>	25.00-26.40	70	73	19.5	3	BTSI 022	22
<b>xx.xxSE4-24</b>	26.41-28.70	70	73	21.0	3	BTSI 024	24
<b>xx.xxSE4-26</b>	28.71-31.00	75	78	23.5	3	BTSI 026	26
<b>xx.xxSE4-28</b>	31.01-33.30	75	78	25.5	3	BTSI 028	28
<b>xx.xxSE4-30</b>	33.31-36.20	80	83	28.0	3	BTSI 030	30
<b>xx.xxSE4-33</b>	36.21-39.60	90	93	30.0	3	BTSI 033	33
<b>xx.xxSE4-36</b>	39.61-43.00	95	99	33.0	4	BTSI 036	36
<b>xx.xxSE4-39</b>	43.01-47.00	100	104	36.0	4	BTSI 039	39
<b>xx.xxSE4-43</b>	47.01-51.70	100	104	39.0	4	BTSI 043	43
<b>xx.xxSE4-47</b>	51.71-56.20	110	114	43.0	4	BTSI 047	47
<b>xx.xxSE4-51</b>	56.21-60.60	115	120	47.0	5	BTSI 051	51
<b>xx.xxSE4-51</b>	60.61-65.00	115	120	47.0	5	BTSI 051	51
<b>xx.xxSE4-56A</b>	60.61-65.00	115	120	51.0	5	BTSI 056A	56
<b>xx.xxSE4-56B</b>	65.01-66.99	141	149	52.0	8	BTSI 056B	56
<b>xx.xxSE4-62</b>	67.00-72.99	141	149	58.0	8	BTSI 062	62
<b>xx.xxSE4-68</b>	73.00-79.99	141	150	63.0	9	BTSI 068	68
<b>xx.xxSE4-75</b>	80.00-86.99	164	173	70.0	9	BTSI 075	75
<b>xx.xxSE4-82</b>	87.00-89.00	164	173	77.0	9	BTSI 082	82

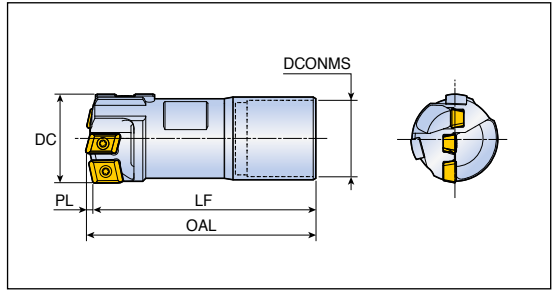
Assembly 	Tube 	Cutting Condition 
D153	D170-D171	D254

► Insert and guide pad are sold separately from drill body

# TBTA-FB...SI1



## Single tube system



- Inner single start thread

Designation	DC	Dimension (mm)				Tube	
		LF	OAL	DCONMS	PL	Part	Diameter (mm)
<b>TBTA-FB xx.xxSI1-22</b>	25.00-26.99	70	73	20	3	BTSE 022	22
<b>xx.xxSI1-24</b>	27.00-29.00	70	73	22	3	BTSE 024	24
<b>xx.xxSI1-24</b>	29.01-29.99	70	73	22	3	BTSE 024	24
<b>xx.xxSI1-26</b>	30.00-31.99	75	78	24	3	BTSE 026	26
<b>xx.xxSI1-28</b>	32.00-33.99	75	78	26	3	BTSE 028	28
<b>xx.xxSI1-30</b>	34.00-36.99	90	93	27	3	BTSE 030	30
<b>xx.xxSI1-33</b>	37.00-39.99	95	98	30	3	BTSE 033	33
<b>xx.xxSI1-36</b>	40.00-43.99	100	104	33	4	BTSE 036	36
<b>xx.xxSI1-39</b>	44.00-46.99	105	109	37	4	BTSE 039	39
<b>xx.xxSI1-43</b>	47.00-51.99	105	109	41	4	BTSE 043	43
<b>xx.xxSI1-47</b>	52.00-56.99	110	114	44	4	BTSE 047	47
<b>xx.xxSI1-51</b>	57.00-60.99	115	120	49	5	BTSE 051	51
<b>xx.xxSI1-56</b>	61.00-65.00	115	120	53	5	BTSE 056	56
<b>xx.xxSI1-56</b>	65.01-67.99	104	112	53	8	BTSE 056	56
<b>xx.xxSI1-62</b>	68.00-74.99	104	113	59	9	BTSE 062	62
<b>xx.xxSI1-68</b>	75.00-80.99	134	143	65	9	BTSE 068	68
<b>xx.xxSI1-75</b>	81.00-89.00	134	143	71	9	BTSE 075	75

<b>Assembly</b>  D153	<b>Tube</b>  D172-D173	<b>Cutting Condition</b>  D254
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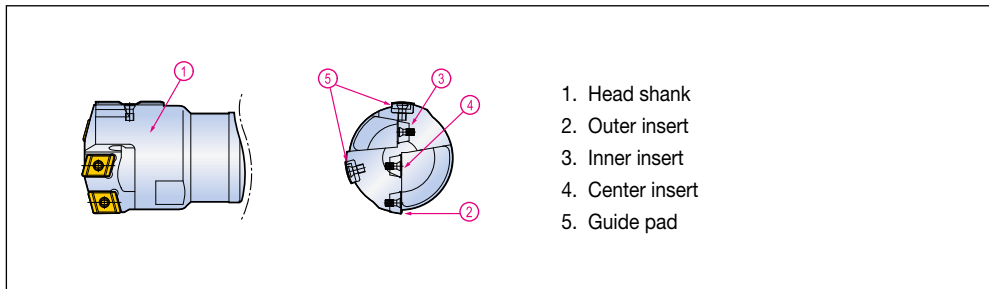
► Insert and guide pad are sold separately from drill body



# TBTA-FB Series



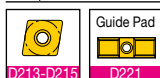
## Assembly of TBTA-FB series



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

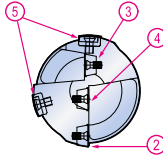
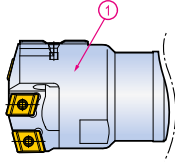
Parts		Diameter (mm)			
		25.00-28.00	28.01-29.99	30.00-35.00	35.01-38.00
Insert	PER	NPHT 060304R-G-P	NPHT 060304R-G-P	NPHT 080404R-G-P	NPHT 080404R-G-P
	Screw	CSTB2.2	CSTB2.2	SR 14-560-HG	SR 14-560-HG
	Wrench	T-7F	T-7F	T-8F	T-8F
	INT	NPMT 060304R-G-I	NPMT 060304R-G-I	NPMT 070404R-G-I	NPMT 070404R-G-I
	Screw	CSTB2.2	CSTB2.2	SR 14-560-HG	SR 14-560-HG
	Wrench	T-7F	T-7F	T-8F	T-8F
	CEN	NPMT 060308L-G-C	NPMT 070408L-G-C	NPMT 070408L-G-C	NPMT 080480L-G-C
	Screw	CSTB2.2	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Pad	Wrench	T-7F	T-8F	T-8F	T-8F
		Wrench	T-7F	T-7F	T-9F
	PAD	PAD-GP06-20-120-DC-SB	PAD-GP06-20-120-DC-SB	PAD-GP07-20-120-DC-SB	PAD-GP07-20-120-DC-SB
		PAD-GP06-20-120-DC-SC	PAD-GP06-20-120-DC-SC	PAD-GP07-20-120-DC-SC	PAD-GP07-20-120-DC-SC
	Screw	CSTB2.2S	CSTB2.2S	CSTB3S	CSTB3S

Parts		Diameter (mm)			
		38.01-39.00	39.01-41.00	41.01-44.00	44.01-45.00
Insert	PER	NPHT 090404R-G-P	NPHT 090404R-G-P	NPHT 090404R-G-P	NPHT 090404R-G-P
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	INT	NPMT 070404R-G-I	NPMT 070404R-G-I	NPMT 080404R-G-I	NPMT 080404R-G-I
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	CEN	NPMT 080408L-G-C	NPMT 080408L-G-C	NPMT 080408L-G-C	NPMT 100408L-G-C
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Pad	Wrench	T-8F	T-8F	T-8F	T-8F
		Wrench	T-9F	T-9F	T-9F
	PAD	PAD-GP07-20-120-DC-SB	PAD-GP08-25-155-DC-SB	PAD-GP08-25-155-DC-SB	PAD-GP08-25-155-DC-SB
		PAD-GP07-20-120-DC-SC	PAD-GP08-25-155-DC-SC	PAD-GP08-25-155-DC-SC	PAD-GP08-25-155-DC-SC
	Screw	CSTB3S	CSTB3S	CSTB3S	CSTB3S



▶ Insert and guide pad are sold separately from drill body

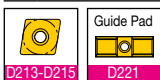
## Assembly of TBTA-FB series



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

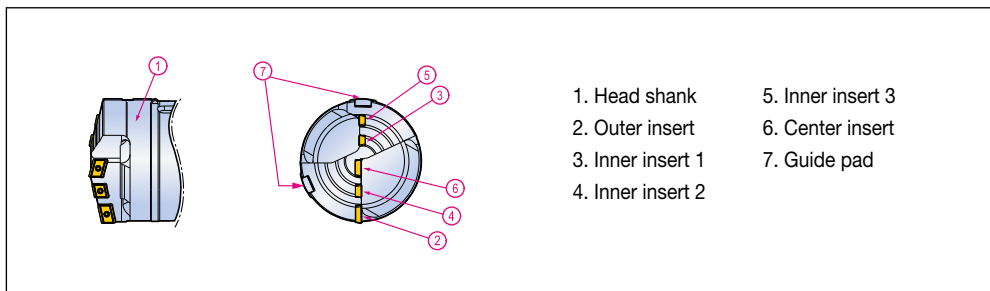
Parts		Diameter (mm)			
		45.01-47.00	47.01-51.00	51.01-54.00	54.01-57.00
Insert	PER	NPHT 090404R-G-P	NPHT 110404R-G-P	NPHT 110404R-G-P	NPHT 110404R-G-P
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	INT	NPMT 080404R-G-I	NPMT 080404R-G-I	NPMT 100404R-G-I	NPMT 100404R-G-I
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
	CEN	NPMT 100408L-G-C	NPMT 100408L-G-C	NPMT 100408L-G-C	NPMT 130408L-G-C
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F	T-8F
Pad	PAD	PAD-GP10-30-200-DC-SB	PAD-GP10-30-200-DC-SB	PAD-GP10-30-200-DC-SB	PAD-GP10-30-200-DC-SB
		PAD-GP10-30-200-DC-SC	PAD-GP10-30-200-DC-SC	PAD-GP10-30-200-DC-SC	PAD-GP10-30-200-DC-SC
	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 110404R-G-P	NPHT 130404R-G-P	NPHT 130404R-G-P
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F
	INT	NPMT 100404R-G-I	NPMT 100404R-G-I	NPMT 130404R-G-I
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F
	CEN	NPMT 130408L-G-C	NPMT 130408L-G-C	NPMT 130408L-G-C
	Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
	Wrench	T-8F	T-8F	T-8F
Pad	PAD	PAD-GP12-35-250-DC-SB	PAD-GP12-35-250-DC-SB	PAD-GP12-35-250-DC-SB
		PAD-GP12-35-250-DC-SC	PAD-GP12-35-250-DC-SC	PAD-GP12-35-250-DC-SC
	Screw	CSTB3.5	CSTB3.5	CSTB3.5
	Wrench	T-15F	T-15F	T-15F



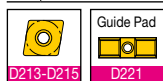
▶ Insert and guide pad are sold separately from drill body

## Assembly of TBTA-FB series



- |                   |                   |
|-------------------|-------------------|
| 1. Head shank     | 5. Inner insert 3 |
| 2. Outer insert   | 6. Center insert  |
| 3. Inner insert 1 | 7. Guide pad      |
| 4. Inner insert 2 |                   |

Parts	Diameter (mm)		
	65.01-71.00	71.01-83.00	83.01-89.00
PER	NPHT 110404R-G-P	NPHT 130404R-G-P	NPHT 130404R-G-P
Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Wrench	T-8F	T-8F	T-8F
INT	NPMT 080404R-G-I	NPMT 080404R-G-I	NPMT 080404R-G-I
Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Wrench	T-8F	T-8F	T-8F
INT2	NPMT 080404R-G-I	NPMT 080404R-G-I	NPMT 100404R-G-I
Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Wrench	T-8F	T-8F	T-8F
INT3	NPMT 070404R-G-I	NPMT 080404R-G-I	NPMT 080404R-G-I
Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Wrench	T-8F	T-8F	T-8F
CEN	NPMT 100408L-G-C	NPMT 100408L-G-C	NPMT 130408L-G-C
Screw	SR 14-560-HG	SR 14-560-HG	SR 14-560-HG
Wrench	T-8F	T-8F	T-8F
PAD	PAD-GP12-35-250-DC-SB	PAD-GP12-35-250-DC-SB	PAD-GP12-35-250-DC-SB
	PAD-GP12-35-250-DC-SC	PAD-GP12-35-250-DC-SC	PAD-GP12-35-250-DC-SC
Screw	CSTB3.5	CSTB3.5	CSTB3.5
Wrench	T-15F	T-15F	T-15F



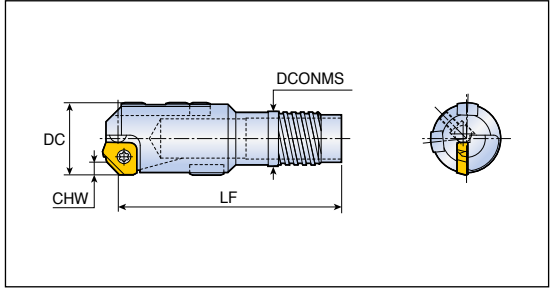
▶ Insert and guide pad are sold separately from drill body



# TBTA-R...SE4



## Single tube system



- Outer four start thread

Designation	DC	CHW	Dimension (mm)		Tube	
			LF	DCONMS	Part	Diameter (mm)
<b>TBTA-R xxx.xxSE4-22</b>	25.00-26.40	2.8	72.5	19.5	BTSI 022	22
<b>xxx.xxSE4-24</b>	26.41-28.70	2.8	72.5	21.0	BTSI 024	24
<b>xxx.xxSE4-26</b>	28.71-31.00	2.8	72.5	23.5	BTSI 026	26
<b>xxx.xxSE4-28</b>	31.01-33.30	2.8	75.5	25.5	BTSI 028	28
<b>xxx.xxSE4-30</b>	33.31-36.20	2.8	75.5	28.0	BTSI 030	30
<b>xxx.xxSE4-33</b>	36.21-39.60	2.8	90.5	30.0	BTSI 033	33
<b>xxx.xxSE4-36</b>	39.61-39.99	2.8	90.5	33.0	BTSI 036	36

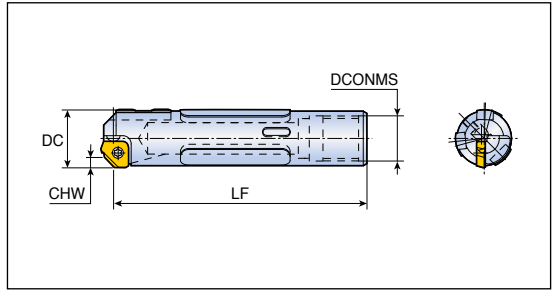
Assembly 	Tube 	Cutting Condition 
D159	D170-D171	D252



# TBTA-R...SI1



## Single tube system



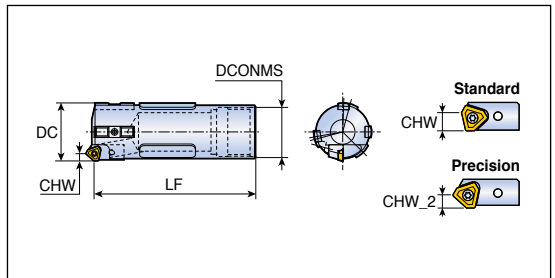
- Inner single start thread

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

# TBTA-R...SI1



## Single tube system



- Inner single start thread

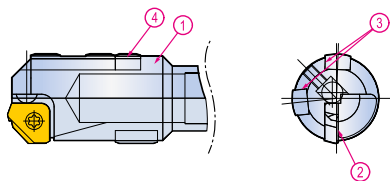
Designation	DC	CHW (mm)		Dimension (mm)		Tube	
		Standard	Precision	LF	DCONMS	Part	Diameter (mm)
<b>TBTA-R- xxx.xxSI1-36</b>	40.00-43.99	6.4	4	135	33	BTSE 036	36
<b>xxx.xxSI1-39</b>	44.00-46.99	6.4	4	135	37	BTSE 039	39
<b>xxx.xxSI1-43</b>	47.00-51.99	6.4	4	145	41	BTSE 043	43
<b>xxx.xxSI1-47</b>	52.00-56.99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

Assembly	Tube	Cutting Condition
D159	D172-D173	D252

# TBTA-R Series



## Assembly of TBTA-R series



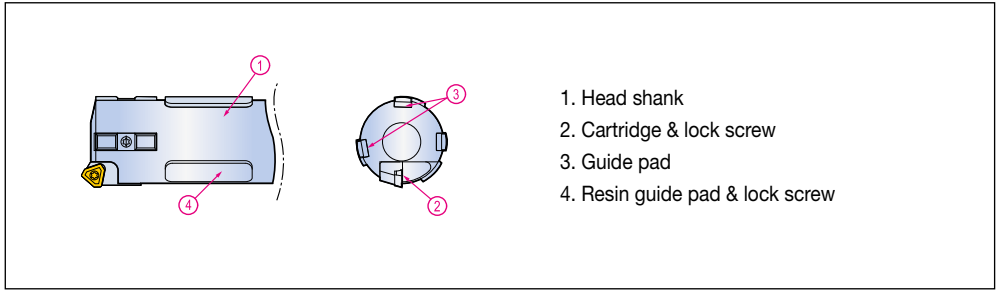
1. Head shank
2. Insert
3. Guide pad
4. Guide pad protector

Parts		Diameter (mm)				
		25.00-27.99	28.00-29.99	30.00-37.99	38.00-39.99	
Close tolerance	Cartridge	Adjust ball	BALL5	BALL5	BALL5	BALL5
		Adjust screw	AS0005-5	AS0005-5	AS0005-5	AS0005-5
		Wrench	H2.5	H2.5	H2.5	H2.5
	Insert	Screw	-	-	-	-
		Wrench	-	-	-	-
		Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
Normal tolerance	Cartridge	Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
		Wrench	T-9D	T-9D	T-9D	T-9D
		Outer	-	-	-	-
		Adjust screw	-	-	-	-
		Wrench	-	-	-	-
	Insert	Screw	-	-	-	-
		Wrench	-	-	-	-
		Insert	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45	XPMT 16002-45
		Screw	CSTANO3	CSTANO3	CSTANO3	CSTANO3
		Wrench	T-9D	T-9D	T-9D	T-9D
	Pad	Guide pad (A)	PAD-GP06-20-120-DC-SB	PAD-GP06-20-120-DC-SB	PAD-GP07-20-120-DC-SB	PAD-GP08-25-155-DC-SB
			PAD-GP06-20-120-DC-SC	PAD-GP06-20-120-DC-SC	PAD-GP07-20-120-DC-SC	PAD-GP08-25-155-DC-SC
Screw		CSTB2.2S	CSTB2.2S	CSTB3S	CSTB3S	
Wrench		T-9D	T-9D	T-9D	T-9D	
Guide pad protector (B)		-	-	-	PAD-P08	
		Screw	-	-	-	CSTB3S
Wrench		-	-	-	T-9D	
Resin guide pad (C)		PAD-R10	PAD-R10	PAD-R12	PAD-R15	
		Screw	LS0902, 5-6	LS0902, 5-6	LS0903-8	LS0904-10
Wrench		-	-	H2	H2.5	



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

## Assembly of TBTA-R series



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

Parts		Diameter (mm)				
		40.00-45.99	46.00-51.99	52.00-56.99	57.00-59.99	
Close tolerance	Cartridge	Outer	PERC-P 04R	PERC-P 04R	PERC-P 32R	PERC-P 32R
		Adjust screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
	Insert	Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
		Insert	TPMX 1403LG	TPMX 1403LG	TPMX 1704LG	TPMX 1704LG
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
Wrench	T-8D	T-8D	T-8D	T-8D		
Normal tolerance	Cartridge	Outer	PERC 402-04	PERC 402-04	PERC 402-32	PERC 402-32
		Adjust screw	AS0004-8	AS0004-8	AS0005-10	AS0005-10
		Wrench	H2	H2	H2.5	H2.5
	Insert	Screw	LS1803.5RH	LS1803.5RH	LS1805RH	LS1805RH
		Wrench	H2.5	H2.5	H3	H3
		Insert	TPMX 140308R-G	TPMX 140308R-G	TPMX 170408R-G	TPMX 170408R-G
		Screw	CSTB2.5	CSTB2.5	CSTB3.5D	CSTB3.5D
	Wrench	T-8D	T-8D	T-8D	T-8D	
	Pad	Guide pad (A)	PAD-GP08-25-155-DC-SB	PAD-GP10-35-200-DC-SB	PAD-GP10-35-200-DC-SB	PAD-GP10-35-200-DC-SB
			PAD-GP08-25-155-DC-SC	PAD-GP10-35-200-DC-SC	PAD-GP10-35-200-DC-SC	PAD-GP10-35-200-DC-SC
Screw		CSTB3S	CSTB4S	CSTB4S	CSTB4S	
Wrench		T-9D	T-15D	T-15D	T-15D	
Guide pad protector (B)		PAD-P08	PAD-P10	PAD-P10	PAD-P14	
		Screw	CSTB3S	CSTB4S	CSTB4S	CSTB4S
Wrench		T-9D	T-15D	T-15D	T-15D	
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	H2.5	H3	

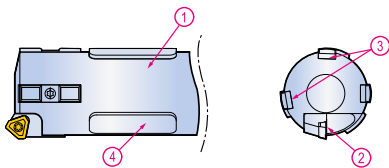


- ▶ A+B is for outer four start thread connection type
- ▶ A+C is for inner single start thread connection type

# TBTA-R Series



## Assembly of TBTA-R series



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

Parts		Diameter (mm)			
		60.00-66.99	67.00-99.99	100.00-122.99	
Close tolerance	Cartridge	Outer	PERC-P 32R	PERC-P 43R	PERC-P 43R
		Adjust screw	AS0005-10	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5
	Insert	Screw	LS1805RH	LS1806RH	LS1806RH
		Wrench	H3	H4	H4
		Insert	TPMX 1704LG	TPMX 2405LG	TPMX 2405LG
Normal tolerance	Cartridge	Screw	CSTB3.5D	CSTB4M	CSTB4M
		Wrench	T-8D	T-15D	T-15D
		Outer	PERC 402-32	PERC 402-43	PERC 402-43
	Cartridge	Adjust screw	AS0005-10	AS0005-15	AS0005-15
		Wrench	H2.5	H2.5	H2.5
		Screw	LS1805RH	LS1806RH	LS1806RH
	Insert	Wrench	H3	H4	H4
		Insert	TPMX 170408R-G	TPMX 240512R-G	TPMX 240512R-G
		Screw	CSTB3.5D	CSTB4M	CSTB4M
	Wrench	T-8D	T-15D	T-15D	
	Pad	Guide pad (A)	PAD-GP14-40-250-DC-SB	PAD-GP14-40-250-DC-SB	PAD-GP18-40-300-DC-SB
			PAD-GP14-40-250-DC-SC	PAD-GP14-40-250-DC-SC	PAD-GP18-40-300-DC-SC
Screw		CSTA5S	CSTA5S	LS1206S	
Wrench		T-15D	T-15D	H3	
Guide pad protector (B)		PAD-P14	PAD-P14	PAD-P18	
		Screw	CSTA5S	CSTA5S	LS1206S
Wrench		T-15D	T-15D	H3	
Resin guide pad (C)		PAD-R20	PAD-R35	PAD-R35	
		Screw	LS0905-12	LS0906-15	LS0906-15
Wrench		H3	H4	H4	



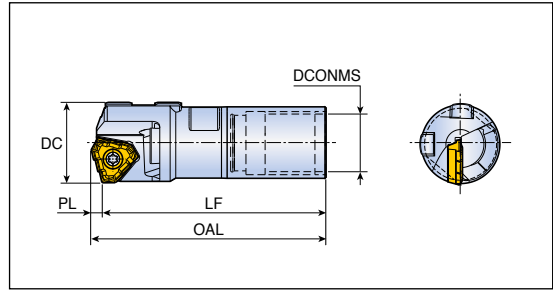
- ▶ A+B is for outer four start thread connection type
- ▶ A+C is for inner single start thread connection type



# TBTA-TR...S11



## Single tube system



- Inner single start thread

Designation	DC	Dimension (mm)				Tube	
		LF	OAL	DCONMS	PL	Part	Diameter (mm)
<b>TBTA- TR16.00S11-13A</b>	16.00	53.5	55.7	10.8	2.2	BTSE 013A	13
<b>TRxx.xxS11-13B</b>	16.01-16.50	53.5	55.7	11.1	2.2	BTSE 013B	13
<b>TRxx.xxS11-14A</b>	16.51-17.25	53.5	55.7	11.8	2.2	BTSE 014A	14
<b>TRxx.xxS11-14B</b>	17.26-18.00	53.5	55.7	12.1	2.2	BTSE 014B	14
<b>TRxx.xxS11-15</b>	18.01-19.00	53.5	56.5	12.8	3.0	BTSE 015	15
<b>TRxx.xxS11-16.5</b>	19.01-19.99	53.5	56.7	13.8	3.2	BTSE 016.5	16.5
<b>TRxx.xxS11-18</b>	20.00-21.99	58.0	61.2	14.5	3.2	BTSE 018	18
<b>TRxx.xxS11-20</b>	22.00-24.99	60.0	63.4	16.0	3.4	BTSE 020	20
<b>TRxx.xxS11-22</b>	25.00	60.0	63.5	17.0	3.5	BTSE 022	22
<b>TRxx.xxS11-22</b>	25.01-26.99	65.0	68.5	17.0	3.5	BTSE 022	22
<b>TRxx.xxS11-24</b>	27.00-28.00	65.0	68.5	19.0	3.5	BTSE 024	24
<b>TRxx.xxS11-24</b>	28.01-29.99	70.0	74.6	22.0	4.6	BTSE 024	24
<b>TRxx.xxS11-26</b>	30.00-31.99	75.0	79.6	24.0	4.6	BTSE 026	26
<b>TRxx.xxS11-28</b>	32.00	75.0	79.6	26.0	4.6	BTSE 028	28
<b>TRxx.xxS11-28</b>	32.01-33.99	74.5	79.9	26.0	5.4	BTSE 028	28
<b>TRxx.xxS11-30</b>	34.00-36.99	89.5	94.9	27.0	5.4	BTSE 030	30
<b>TRxx.xxS11-33</b>	37.00-39.00	94.5	99.9	30.0	5.4	BTSE 033	33
<b>TRxx.xxS11-33</b>	39.01-39.99	94.5	99.9	30.0	5.4	BTSE 033	33
<b>TRxx.xxS11-36</b>	40.00	99.5	104.9	33.0	5.4	BTSE 036	36


Assembly 	Tube 	Cutting Condition 
D165	D172	D260

► Insert and guide pad are sold separately from drill body

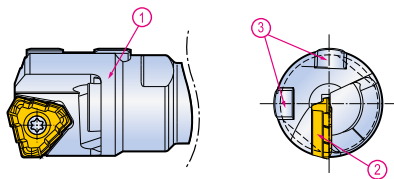




# TBTA-TR Series



## Assembly of TBTA-TR series



1. Head shank
2. Insert
3. Guide pad

Parts		Diameter (mm)		
		16.00-18.00	18.01-20.00	20.01-21.00
Insert	Insert	TOGT 080305 RS	TOGT 090305 RS	TOGT 100305 RS
	Screw	CSTB2.5S	CSTB2.5S*	CSTB3S*
	Wrench	T-8F	T-8F	T-9F
Guide Pad	Guide Pad	PAD-GP06-20-075-DC-SB	PAD-GP06-20-085-DC-SB	PAD-GP06-20-085-DC-SB
		PAD-GP06-20-075-DC-SC	PAD-GP06-20-085-DC-SC	PAD-GP06-20-085-DC-SC
	Screw	CSTB2.2S	CSTB2.2S*	CSTB2.2S*
	Wrench	T-7F	T-7F	T-7F

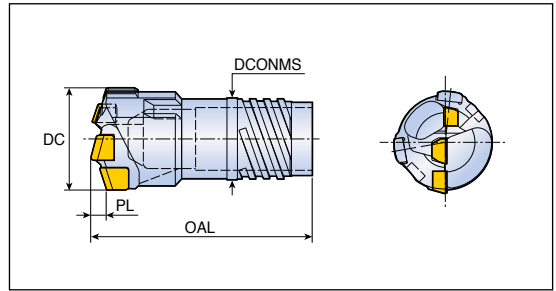
Parts		Diameter (mm)		
		21.01-21.99	22.00-25.00	25.01-28.00
Insert	Insert	TOGT 100305 RS	TOGT 110405 RS	TOGT 120405 RS
	Screw	CSTB3S*	SR14-571/S	CSTB4S
	Wrench	T-9F	T-10/5	T-15F
Guide Pad	Guide Pad	PAD-GP06-20-100-DC-SB	PAD-GP06-20-100-DC-SB	PAD-GP06-20-120-DC-SB
		PAD-GP06-20-100-DC-SC	PAD-GP06-20-100-DC-SC	PAD-GP06-20-120-DC-SC
	Screw	CSTB2.2S*	CSTB2.2S*	CSTB2.2S*
	Wrench	T-7F	T-7F	T-7F

Parts		Diameter (mm)			
		28.01-29.99	30.00-32.00	32.01-39.00	39.01-40.00
Insert	Insert	TOGT 130408 RS	TOGT 130408 RS	TOGT 140510 RS	TOGT 140510 RS
	Screw	SR 16-212/L10	SR 16-212/L10	SR 16-212/L10	SR 16-212/L10
	Wrench	T-20/5	T-20/5	T-20/5	T-20/5
Guide Pad	Guide Pad	PAD-GP06-20-120-DC-SB	PAD-GP07-20-120-DC-SB	PAD-GP07-20-120-DC-SB	PAD-GP08-25-155-DC-SB
		PAD-GP06-20-120-DC-SC	PAD-GP07-20-120-DC-SC	PAD-GP07-20-120-DC-SC	PAD-GP08-25-155-DC-SC
	Screw	CSTB2.2	CSTB3S	CSTB3S	CSTB3S
	Wrench	T-7F	T-9F	T-9F	T-9F



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

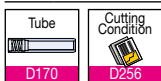
## Single tube system



- Outer four start thread

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

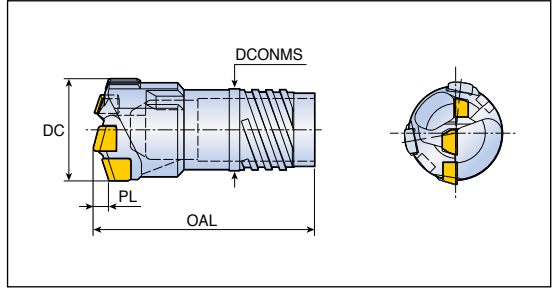
► \*: 2 cutting edge head, 2 start thread



# BTA...SE4

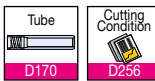


## Single tube system

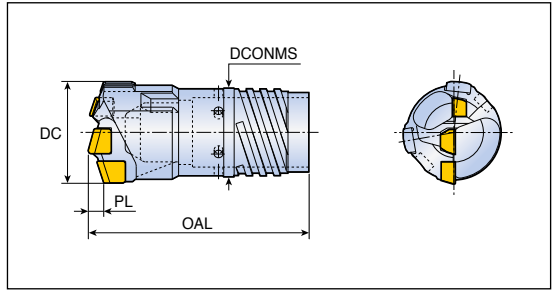


- Outer four start thread

Designation	DC	Dimension (mm)			Tube	
		OAL	PL	DCONMS	Part	Diameter (mm)
<b>BTA xxx.xx SE4-39</b>	44.31-45.60	75.0	5.4	36.0	BTSI039	39
<b>xxx.xx SE4-39</b>	45.61-47.00	75.0	5.4	36.0	BTSI039	39
<b>xxx.xx SE4-43</b>	47.01-48.50	75.0	6.1	39.0	BTSI043	43
<b>xxx.xx SE4-43</b>	48.51-50.10	75.0	6.1	39.0	BTSI043	43
<b>xxx.xx SE4-43</b>	50.11-51.70	75.0	6.1	39.0	BTSI043	43
<b>xxx.xx SE4-47</b>	51.71-53.20	82.0	6.5	43.0	BTSI047	47
<b>xxx.xx SE4-47</b>	53.21-54.70	82.0	6.5	43.0	BTSI047	47
<b>xxx.xx SE4-47</b>	54.71-56.20	82.0	6.5	43.0	BTSI047	47
<b>xxx.xx SE4-51</b>	56.21-58.40	84.0	6.6	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	58.41-60.60	84.0	6.6	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	60.61-62.80	84.0	7.0	47.0	BTSI051	51
<b>xxx.xx SE4-51</b>	62.81-65.00	84.0	7.0	47.0	BTSI051	51
<b>xxx.xx SE4-56</b>	60.61-62.80	84.0	7.0	51.0	BTSI056	56
<b>xxx.xx SE4-56</b>	62.81-65.00	84.0	7.0	51.0	BTSI056	56

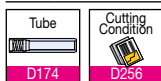


## Double tube system



- Outer four start thread

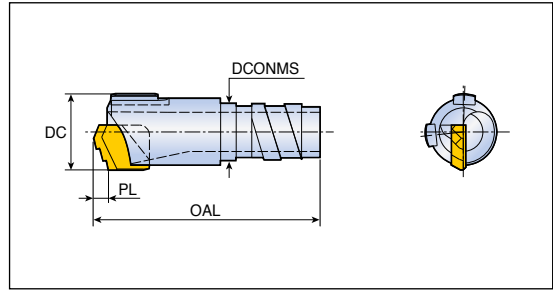
Designation	DC	Dimension (mm)			Tube		
		OAL	PL	DCONMS	Outer tube	Inner tube	Diameter (mm)
<b>BTA xxx.xx DE4-18</b>	18.41-19.20	50.0	2.9	16.0	BTDO018	BTDI012	18.0
<b>xxx.xx DE4-18</b>	19.21-20.00	50.0	2.9	16.0	BTDO018	BTDI012	18.0
<b>xxx.xx DE4-19.5</b>	20.01-20.90	56.0	3.2	18.0	BTDO019.5	BTDI014	19.5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



# BTS...SE1



## Single tube system



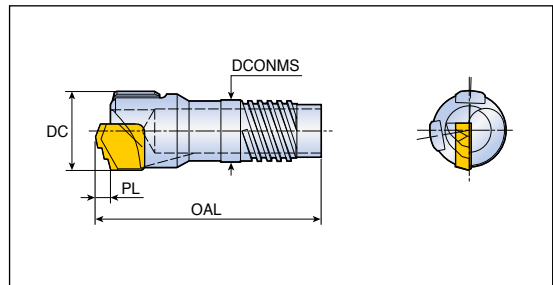
- Outer single start thread

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

# BTS...SE2/SE4



## Single tube system



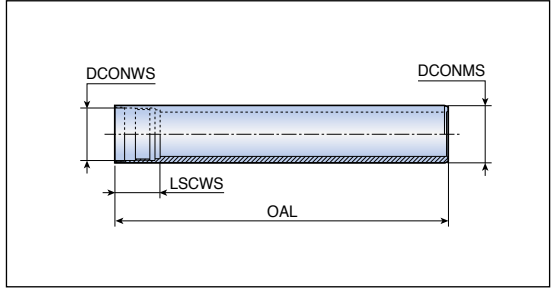
- Outer four start thread

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



► \*: Designates outer two start thread

## Single tube

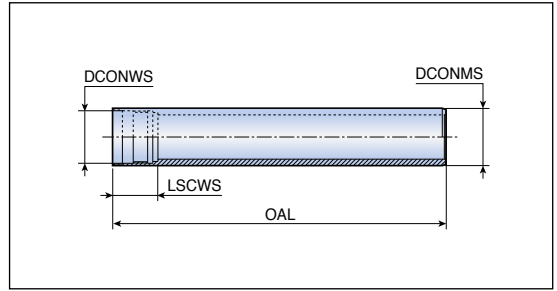


- Inner four start thread

Designation	DC	Dimension (mm)		
		DCONMS	DCONWS	LSCWS
<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 (OAL) when ordering  
 ▶ \*: Indicates parts are inner two start thread

**Single tube**



- Inner four start thread

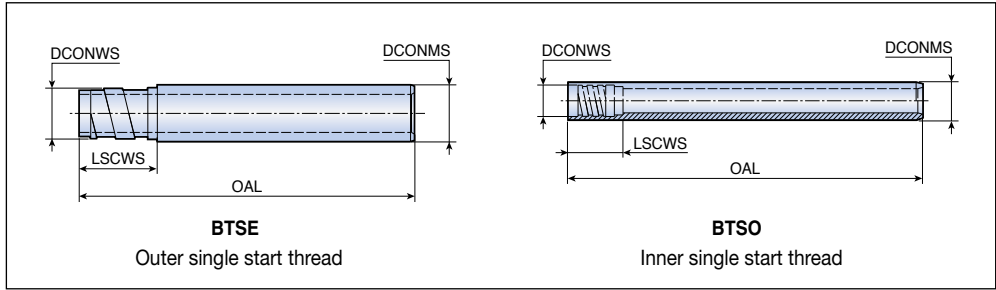
Designation	DC	Dimension (mm)		
		DCONMS	DCONWS	LSCWS
<b>BTSI 051</b>	56.21-60.60	51.0	47.0	44
<b>056A</b>	60.61-65.00	56.0	51.0	44
<b>056B</b>	65.00-66.99	56.0	52.0	75
<b>062</b>	67.00-72.99	62.0	58.0	75
<b>068</b>	73.00-79.99	68.0	63.0	75
<b>075</b>	80.00-86.99	75.0	70.0	97
<b>082</b>	87.00-99.99	82.0	77.0	97
<b>094</b>	100.00-111.99	94.0	89.0	97
<b>106</b>	112.00-123.99	106.0	101.0	118
<b>118</b>	124.00-135.99	118.0	113.0	118
<b>130</b>	136.00-147.99	130.0	125.0	118
<b>142</b>	148.00-159.99	142.0	137.0	139
<b>154</b>	160.00-171.99	154.0	149.0	139
<b>166</b>	172.00-183.99	166.0	161.0	139
<b>178</b>	184.00-195.99	178.0	173.0	144
<b>190</b>	196.00-207.99	190.0	185.0	144
<b>202</b>	208.00-219.99	202.0	197.0	144
<b>214</b>	220.00-231.99	214.0	208.0	164
<b>226</b>	232.00-243.99	226.0	220.0	164
<b>238</b>	244.00-255.99	238.0	232.0	164
<b>250</b>	256.00-267.99	250.0	244.0	184
<b>262</b>	268.00-279.99	262.0	256.0	184
<b>274</b>	280.00-291.99	274.0	268.0	184

▶ Please indicate overall length (OAL) when ordering





## Single tube

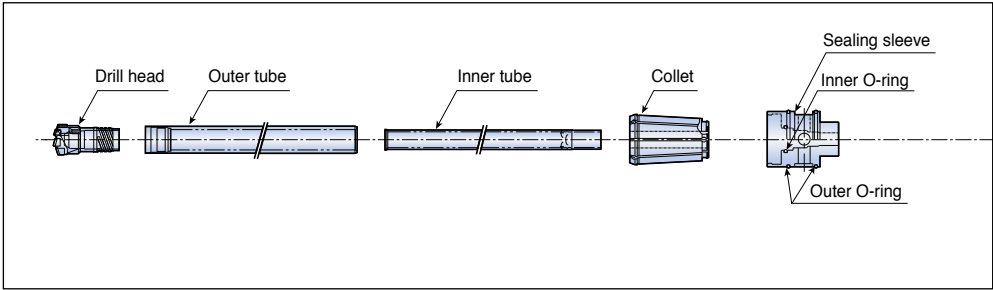


Designation	DC	Dimension (mm)			
		DCONMS	DCONWS		LSCWS
<b>BTSE 047</b>	52.00-56.99	47.0	44	-	41
<b>051</b>	57.00-60.99	51.0	49	-	41
<b>056</b>	61.00-67.99	56.0	53	-	41
<b>062</b>	68.00-74.99	62.0	59	-	41
<b>068</b>	75.00-80.99	68.0	65	-	71
<b>075</b>	81.00-90.99	75.0	71	-	71
<b>082</b>	91.00-98.99	82.0	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	13.5
<b>083</b>	9.00-9.99	8.3	-	7.2	13.5
<b>090</b>	10.00-10.99	9.0	-	7.6	13.5
<b>100</b>	11.00-11.99	10.0	-	8.6	13.5
<b>110</b>	12.00-13.49	11.0	-	9.1	13.5
<b>120</b>	13.50-14.79	12.0	-	10.8	13.5

► Please indicate overall length (OAL) when ordering



# Assembly of Double Tube System



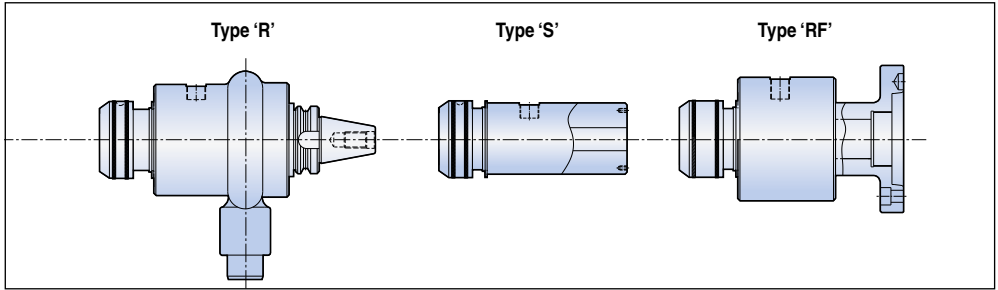
Designation		DC	Collet
<b>BTDO 018</b>	<b>BTDI 012</b>	18.40-19.20	COLLET 4-18
<b>018</b>	<b>012</b>	19.21-20.00	COLLET 4-18
<b>019.5</b>	<b>014</b>	20.01-20.90	COLLET 4-19.5
<b>019.5</b>	<b>014</b>	20.91-21.80	COLLET 4-19.5
<b>021.5</b>	<b>015</b>	21.81-22.90	COLLET 4-21.5
<b>021.5</b>	<b>015</b>	22.91-24.10	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

▶ Inner tube should be longer than outer tube. Please refer to page D174 for details

# Assembly of Double Tube System

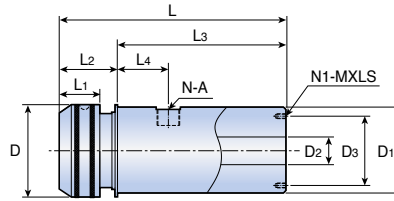


## Connector



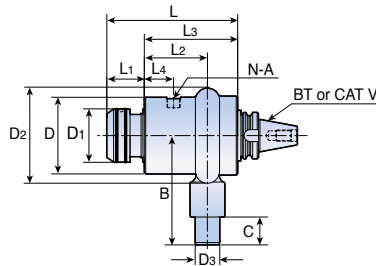
Sealing sleeve	Outer O-ring	Inner O-ring	Connector
SEALING SLEEVE 4R-18	OOR 25.24	IOR18	DTC-4S/4R/4RF
SEALING SLEEVE 4R-18		IOR18	
SEALING SLEEVE 4R-19.5		IOR19.5	
SEALING SLEEVE 4R-19.5		IOR19.5	
SEALING SLEEVE 4R-21.5		IOR21.5	
SEALING SLEEVE 4R-21.5		IOR21.5	
SEALING SLEEVE 4R-23.5		IOR23.5	
SEALING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

## 'S' type connector



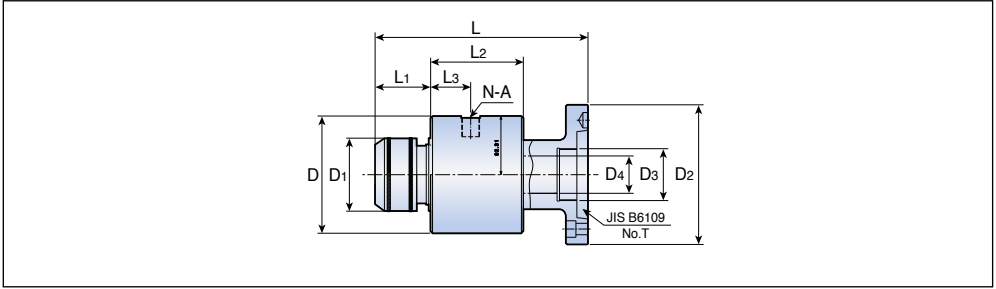
Designation	DC	D	D1	D2	D3	L	L1	L2	L3	L4	N-A	N1-MXLS
<b>DTC 4S</b>	18.4-65.0	115	100	45	80	310	50	60	250	68	2-PT3/4"	4-M8x15
<b>5S</b>	65.0-123.9	164	140	81	120	415	47	115	300		2-PT1"	6-M8x20

## 'R' type connector



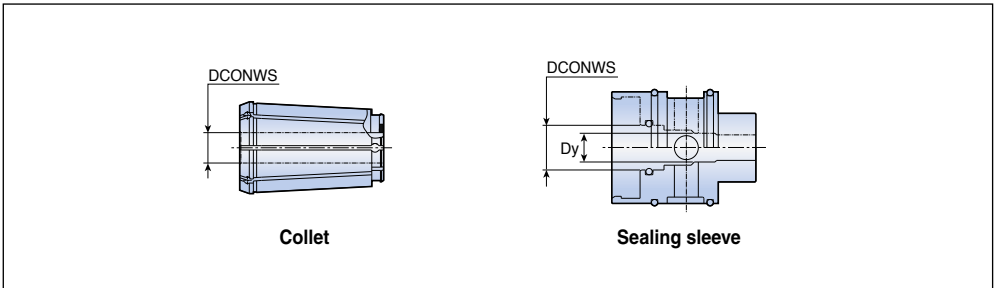
Designation	DC	D	D1	D2	D3	B	C	L	L1	L2	L3	L4	N-A
<b>DTC 4R</b>	18.4-65.0	165	115	206	53	186.5	60	319.7	59.2	152	228	75	2-PT1"
<b>5R</b>	65.0-123.9	225	164	312	100	310	100	382	62	201	320	95	2-PT1 1/4"
<b>6R</b>	124.0-183.9	350	244	445	152.4	412	120	487	75	250	412	118	4-PT1-1/4"

## 'RF' type connector



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

## Collet / Sealing Sleeve



Designation	DC	DCONWS	Designation	DC	DCONWS	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

# Drilling Heads & Inserts

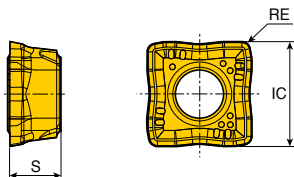




# SOMT...DP



Inserts for general purpose



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

Insert	Designation	Coated						Uncoated	
		TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
	<b>SOMT 040204 DP</b>	●	●	●					
	<b>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>	●	●	●					



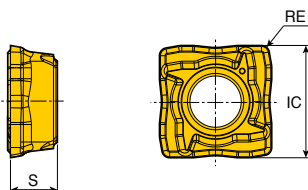
- ▶ TT9080: First choice for general purpose
- ▶ TT8020: For unstable condition
- ▶ TT9300: For high speed machining on a steel application (Peripheral **ONLY**)

●: Standard items

# SOMT...DL



Inserts for low carbon steel



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

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



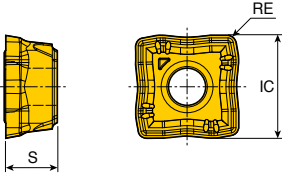
- ▶ TT9080: First choice for general purpose

●: Standard items

# SOMT...DK



Inserts for cast iron



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

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

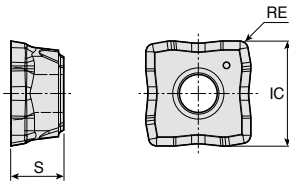


●: Standard items

# SOMT...DA



Inserts for aluminum alloy



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

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

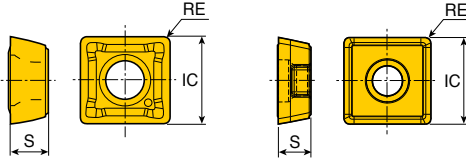


●: Standard items

# SPMG...DG



Inserts for general purpose



SPMG 120408 DG

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

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>		●	●			●		



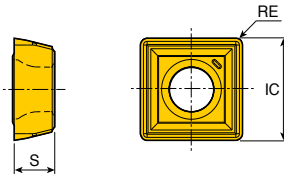
- ▶ TT9030: First choice for general purpose
- ▶ TT8020: For unstable condition
- ▶ TT7400: For high speed machining on a steel application (Peripheral **ONLY**)

●: Standard items

# SPMG...DK



Inserts for cast iron



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

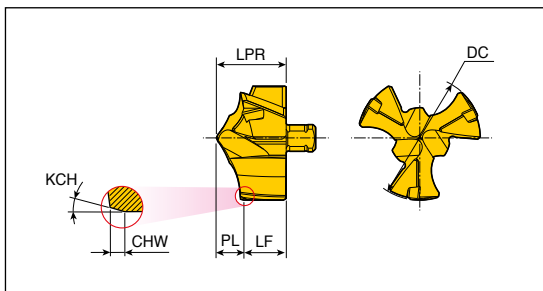
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		
	<b>SPMG 050204 DK</b>				●				
	<b>060204 DK</b>				●				
	<b>07T308 DK</b>				●				
	<b>090408 DK</b>				●				
	<b>110408 DK</b>				●				
	<b>120408 DK</b>								
	<b>140512 DK</b>				●				



●: Standard items



## 3 flute drill heads



Designation	Dimension (mm)							Grade TT5130
	DC	LPR	PL	LF	CHW	KCH	SSC	
<b>3ED-120-P+</b>	12.0	6.7	2.74	3.96	0.4	15	12	●
<b>121-P+</b>	12.1	6.7	2.74	3.96	0.4	15	12	●
<b>122-P+</b>	12.2	6.7	2.74	3.96	0.4	15	12	●
<b>123-P+</b>	12.3	6.7	2.74	3.96	0.4	15	12	●
<b>124-P+</b>	12.4	6.7	2.74	3.96	0.4	15	12	●
<b>125-P+</b>	12.5	6.7	2.76	3.94	0.4	15	12	●
<b>126-P+</b>	12.6	6.7	2.76	3.94	0.4	15	12	●
<b>127-P+</b>	12.7	6.7	2.76	3.94	0.4	15	12	●
<b>128-P+</b>	12.8	6.7	2.76	3.94	0.4	15	12	●
<b>129-P+</b>	12.9	6.7	2.76	3.94	0.4	15	12	●
<b>130-P+</b>	13.0	7.3	2.91	4.39	0.4	15	13	●
<b>131-P+</b>	13.1	7.3	2.91	4.39	0.4	15	13	●
<b>132-P+</b>	13.2	7.3	2.91	4.39	0.4	15	13	●
<b>133-P+</b>	13.3	7.3	2.91	4.39	0.4	15	13	●
<b>134-P+</b>	13.4	7.3	2.91	4.39	0.4	15	13	●
<b>135-P+</b>	13.5	7.3	2.93	4.37	0.4	15	13	●
<b>136-P+</b>	13.6	7.3	2.93	4.37	0.4	15	13	●
<b>137-P+</b>	13.7	7.3	2.93	4.37	0.4	15	13	●
<b>138-P+</b>	13.8	7.3	2.93	4.37	0.4	15	13	●
<b>139-P+</b>	13.9	7.3	2.93	4.37	0.4	15	13	●
<b>140-P+</b>	14.0	7.9	3.17	4.73	0.4	15	14	●
<b>141-P+</b>	14.1	7.9	3.17	4.73	0.4	15	14	●
<b>142-P+</b>	14.2	7.9	3.17	4.73	0.4	15	14	●
<b>143-P+</b>	14.3	7.9	3.17	4.73	0.4	15	14	●
<b>144-P+</b>	14.4	7.9	3.17	4.73	0.4	15	14	●
<b>145-P+</b>	14.5	7.9	3.19	4.71	0.4	15	14	●
<b>146-P+</b>	14.6	7.9	3.19	4.71	0.4	15	14	●
<b>147-P+</b>	14.7	7.9	3.19	4.71	0.4	15	14	●
<b>148-P+</b>	14.8	7.9	3.19	4.71	0.4	15	14	●
<b>149-P+</b>	14.9	7.9	3.19	4.71	0.4	15	14	●
<b>150-P+</b>	15.0	8.4	3.31	5.09	0.5	30	15	●
<b>151-P+</b>	15.1	8.4	3.31	5.09	0.5	30	15	●
<b>152-P+</b>	15.2	8.4	3.31	5.09	0.5	30	15	●
<b>153-P+</b>	15.3	8.4	3.31	5.09	0.5	30	15	●
<b>154-P+</b>	15.4	8.4	3.31	5.09	0.5	30	15	●

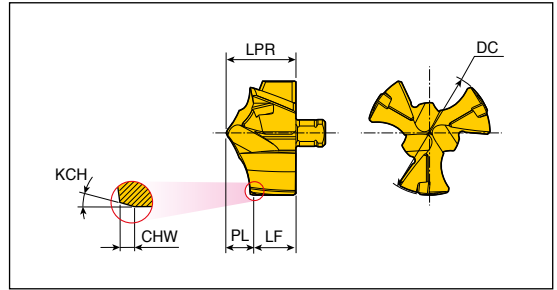


► SSC: Seat size code

●: Standard items

# 3ED...-P+

## 3 flute drill heads



Designation	Dimension (mm)							Grade TT5130
	DC	LPR	PL	LF	CHW	KCH	SSC	
<b>3ED-155-P+</b>	15.5	8.4	3.32	5.08	0.5	30	15	●
<b>156-P+</b>	15.6	8.4	3.32	5.08	0.5	30	15	●
<b>157-P+</b>	15.7	8.4	3.32	5.08	0.5	30	15	●
<b>158-P+</b>	15.8	8.4	3.32	5.08	0.5	30	15	●
<b>159-P+</b>	15.9	8.4	3.32	5.08	0.5	30	15	●
<b>160-P+</b>	16.0	9.0	3.70	5.30	0.7	30	16	●
<b>161-P+</b>	16.1	9.0	3.70	5.30	0.7	30	16	●
<b>162-P+</b>	16.2	9.0	3.70	5.30	0.7	30	16	●
<b>163-P+</b>	16.3	9.0	3.70	5.30	0.7	30	16	●
<b>164-P+</b>	16.4	9.0	3.70	5.30	0.7	30	16	●
<b>165-P+</b>	16.5	9.0	3.71	5.29	0.7	30	16	●
<b>166-P+</b>	16.6	9.0	3.71	5.29	0.7	30	16	●
<b>167-P+</b>	16.7	9.0	3.71	5.29	0.7	30	16	●
<b>168-P+</b>	16.8	9.0	3.71	5.29	0.7	30	16	●
<b>169-P+</b>	16.9	9.0	3.71	5.29	0.7	30	16	●
<b>170-P+</b>	17.0	9.5	3.88	5.62	0.7	30	17	●
<b>171-P+</b>	17.1	9.5	3.88	5.62	0.7	30	17	●
<b>172-P+</b>	17.2	9.5	3.88	5.62	0.7	30	17	●
<b>173-P+</b>	17.3	9.5	3.88	5.62	0.7	30	17	●
<b>174-P+</b>	17.4	9.5	3.88	5.62	0.7	30	17	●
<b>175-P+</b>	17.5	9.5	3.89	5.61	0.7	30	17	●
<b>176-P+</b>	17.6	9.5	3.89	5.61	0.7	30	17	●
<b>177-P+</b>	17.7	9.5	3.89	5.61	0.7	30	17	●
<b>178-P+</b>	17.8	9.5	3.89	5.61	0.7	30	17	●
<b>179-P+</b>	17.9	9.5	3.89	5.61	0.7	30	17	●
<b>180-P+</b>	18.0	10.1	4.07	6.03	0.7	30	18	●
<b>181-P+</b>	18.1	10.1	4.07	6.03	0.7	30	18	●
<b>182-P+</b>	18.2	10.1	4.07	6.03	0.7	30	18	●
<b>183-P+</b>	18.3	10.1	4.07	6.03	0.7	30	18	●
<b>184-P+</b>	18.4	10.1	4.07	6.03	0.7	30	18	●
<b>185-P+</b>	18.5	10.1	4.08	6.02	0.7	30	18	●
<b>186-P+</b>	18.6	10.1	4.08	6.02	0.7	30	18	●
<b>187-P+</b>	18.7	10.1	4.08	6.02	0.7	30	18	●
<b>188-P+</b>	18.8	10.1	4.08	6.02	0.7	30	18	●
<b>189-P+</b>	18.9	10.1	4.08	6.02	0.7	30	18	●

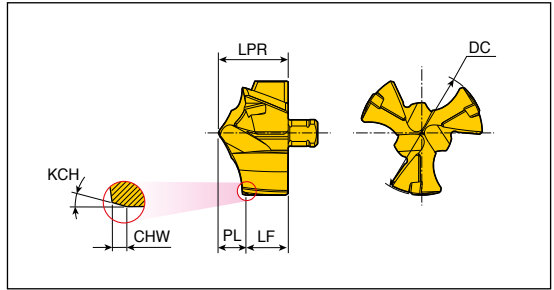


► SSC: Seat size code

●: Standard items

D55-D57

## 3 flute drill heads



Designation	Dimension (mm)							Grade TT5130
	DC	LPR	PL	LF	CHW	KCH	SSC	
<b>3ED-190-P+</b>	19.0	10.7	4.26	6.44	0.7	30	19	●
<b>191-P+</b>	19.1	10.7	4.26	6.44	0.7	30	19	●
<b>192-P+</b>	19.2	10.7	4.26	6.44	0.7	30	19	●
<b>193-P+</b>	19.3	10.7	4.26	6.44	0.7	30	19	●
<b>194-P+</b>	19.4	10.7	4.26	6.44	0.7	30	19	●
<b>195-P+</b>	19.5	10.7	4.27	6.43	0.7	30	19	●
<b>196-P+</b>	19.6	10.7	4.27	6.43	0.7	30	19	●
<b>197-P+</b>	19.7	10.7	4.27	6.43	0.7	30	19	●
<b>198-P+</b>	19.8	10.7	4.27	6.43	0.7	30	19	●
<b>199-P+</b>	19.9	10.7	4.27	6.43	0.7	30	19	●
<b>200-P+</b>	20.0	11.3	4.44	6.86	0.7	30	20	●
<b>201-P+</b>	20.1	11.3	4.44	6.86	0.7	30	20	●
<b>202-P+</b>	20.2	11.3	4.44	6.86	0.7	30	20	●
<b>203-P+</b>	20.3	11.3	4.44	6.86	0.7	30	20	●
<b>204-P+</b>	20.4	11.3	4.44	6.86	0.7	30	20	●
<b>205-P+</b>	20.5	11.3	4.45	6.85	0.7	30	20	●
<b>206-P+</b>	20.6	11.3	4.45	6.85	0.7	30	20	●
<b>207-P+</b>	20.7	11.3	4.45	6.85	0.7	30	20	●
<b>208-P+</b>	20.8	11.3	4.45	6.85	0.7	30	20	●
<b>209-P+</b>	20.9	11.3	4.45	6.85	0.7	30	20	●
<b>210-P+</b>	21.0	11.8	4.62	7.18	0.4	15	21	●
<b>215-P+</b>	21.5	11.8	4.64	7.16	0.4	15	21	●
<b>220-P+</b>	22.0	12.4	4.78	7.62	0.4	15	22	●
<b>225-P+</b>	22.5	12.4	4.80	7.60	0.4	15	22	●
<b>230-P+</b>	23.0	12.8	5.02	7.78	0.4	15	23	●
<b>235-P+</b>	23.5	12.8	5.04	7.76	0.4	15	23	●
<b>240-P+</b>	24.0	13.4	5.18	8.22	0.4	15	24	●
<b>245-P+</b>	24.5	13.4	5.20	8.20	0.4	15	24	●
<b>250-P+</b>	25.0	14.0	5.29	8.71	0.4	15	25	●
<b>255-P+</b>	25.5	14.0	5.31	8.69	0.4	15	25	●



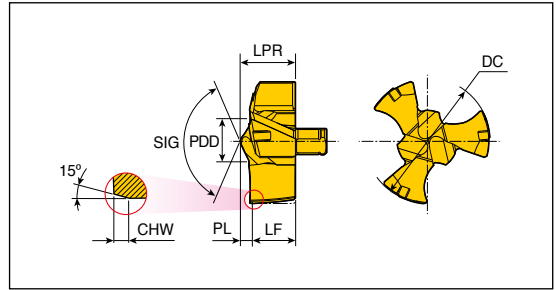
► SSC: Seat size code

●: Standard items

D65-D57

# 3ED...-F

## 3 flute drill heads for flat bottom hole



Designation	Dimension (mm)								Grade TT5130
	DC	LPR	PL	LF	PDD	SIG	CHW	SSC	
<b>3ED- 120-F</b>	12.0	5.14	1.18	3.96	3.38	133	0.4	12	●
<b>125-F</b>	12.5	5.14	1.20	3.94	3.38	133	0.4	12	●
<b>130-F</b>	13.0	5.61	1.22	4.39	3.58	132	0.4	13	●
<b>135-F</b>	13.5	5.61	1.24	4.37	3.58	132	0.4	13	●
<b>140-F</b>	14.0	6.01	1.28	4.73	4.01	133	0.4	14	●
<b>145-F</b>	14.5	6.01	1.30	4.71	4.01	133	0.4	14	●
<b>150-F</b>	15.0	6.38	1.32	5.06	4.16	133	0.4	15	●
<b>155-F</b>	15.5	6.38	1.34	5.04	4.16	133	0.4	15	●
<b>160-F</b>	16.0	6.86	1.38	5.48	4.52	134	0.4	16	●
<b>165-F</b>	16.5	6.86	1.40	5.46	4.52	134	0.4	16	●
<b>170-F</b>	17.0	7.22	1.45	5.77	4.79	134	0.4	17	●
<b>175-F</b>	17.5	7.22	1.47	5.75	4.79	134	0.4	17	●
<b>180-F</b>	18.0	7.93	1.75	6.18	5.96	133	0.4	18	●
<b>185-F</b>	18.5	7.93	1.77	6.16	5.96	133	0.4	18	●
<b>190-F</b>	19.0	8.41	1.83	6.58	6.32	133	0.4	19	●
<b>195-F</b>	19.5	8.41	1.85	6.56	6.32	133	0.4	19	●
<b>200-F</b>	20.0	8.89	1.90	6.99	6.61	133	0.4	20	●
<b>205-F</b>	20.5	8.89	1.92	6.97	6.61	133	0.4	20	●
<b>210-F</b>	21.0	9.17	1.99	7.18	7.01	133	0.4	21	●
<b>215-F</b>	21.5	9.17	2.01	7.16	7.01	133	0.4	21	●
<b>220-F</b>	22.0	9.72	2.10	7.62	7.30	133	0.4	22	●
<b>225-F</b>	22.5	9.72	2.12	7.60	7.30	133	0.4	22	●
<b>230-F</b>	23.0	9.96	2.18	7.78	7.49	132	0.4	23	●
<b>235-F</b>	23.5	9.96	2.20	7.76	7.49	132	0.4	23	●
<b>240-F</b>	24.0	10.46	2.24	8.22	7.81	132	0.4	24	●
<b>245-F</b>	24.5	10.46	2.26	8.20	7.81	132	0.4	24	●
<b>250-F</b>	25.0	11.03	2.31	8.72	8.16	132	0.4	25	●
<b>255-F</b>	25.5	11.03	2.33	8.70	8.16	132	0.4	25	●



► SSC: Seat size code

●: Standard items

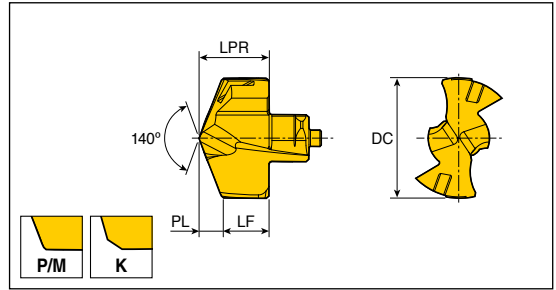




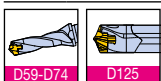
# TCD...P/M/K



## Drill heads



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

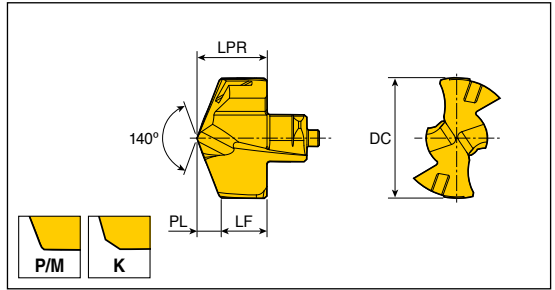


► Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

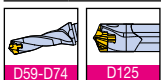
●: Standard items

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

## Drill heads

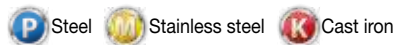


Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	
<b>TCD - 095-P/M/K</b>	9.5	5.8	1.44	4.36	9	●
<b>096-P/M/K</b>	9.6	5.8	1.46	4.34	9	●
<b>097-P/M/K</b>	9.7	5.8	1.48	4.32	9	●
<b>098-P/M/K</b>	9.8	5.8	1.50	4.30	9	●
<b>099-P/M/K</b>	9.9	5.8	1.51	4.29	9	●
<b>100-P/M/K</b>	10.0	6.2	1.50	4.70	10	●
<b>101-P/M/K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

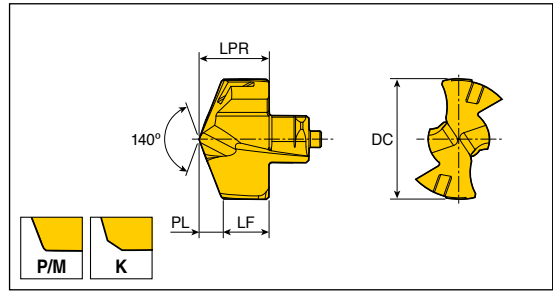


▶ Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

●: Standard items



## Drill heads



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



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

●: Standard items

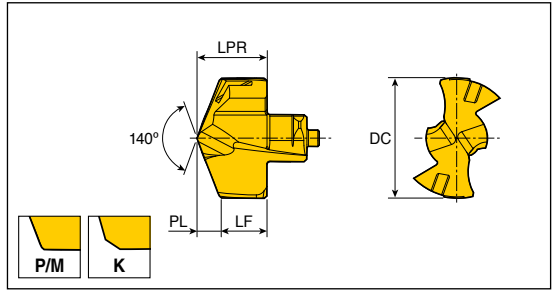


Stainless steel

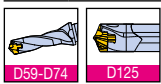


Cast iron

## Drill heads



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

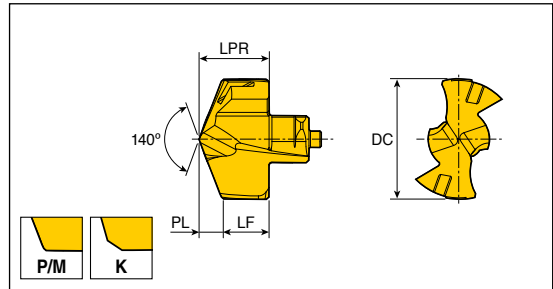


► Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

●: Standard items

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

## Drill heads



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



D59-D74



D125

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

●: Standard items

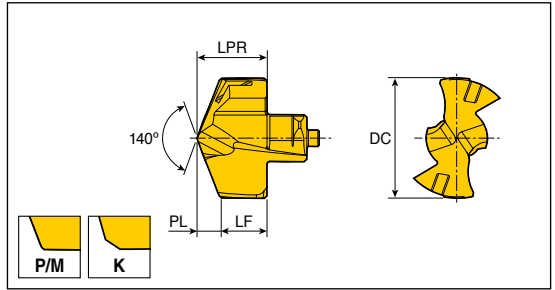


Stainless steel

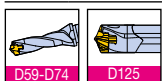


Cast iron

## Drill heads

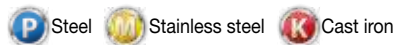


Designation	Dimension (mm)					Grade
	DC	LPR	PL	LF	SSC	
<b>TCD - 235-P/M/K</b>	23.5	13.3	3.55	9.75	23	●
<b>236-P/M/K</b>	23.6	13.3	3.57	9.73	23	●
<b>237-P/M/K</b>	23.7	13.3	3.59	9.71	23	●
<b>238-P/M/K</b>	23.8	13.3	3.61	9.69	23	●
<b>239-P/M/K</b>	23.9	13.3	3.62	9.68	23	●
<b>240-P/M/K</b>	24.0	13.9	3.62	10.28	24	●
<b>241-P/M/K</b>	24.1	13.9	3.64	10.26	24	●
<b>242-P/M/K</b>	24.2	13.9	3.66	10.24	24	●
<b>243-P/M/K</b>	24.3	13.9	3.67	10.23	24	●
<b>244-P/M/K</b>	24.4	13.9	3.69	10.21	24	●
<b>245-P/M/K</b>	24.5	13.9	3.71	10.19	24	●
<b>246-P/M/K</b>	24.6	13.9	3.73	10.17	24	●
<b>247-P/M/K</b>	24.7	13.9	3.75	10.15	24	●
<b>248-P/M/K</b>	24.8	13.9	3.77	10.13	24	●
<b>249-P/M/K</b>	24.9	13.9	3.78	10.12	24	●
<b>250-P/M/K</b>	25.0	14.5	3.80	10.70	25	●
<b>251-P/M/K</b>	25.1	14.5	3.82	10.68	25	●
<b>252-P/M/K</b>	25.2	14.5	3.84	10.66	25	●
<b>253-P/M/K</b>	25.3	14.5	3.85	10.65	25	●
<b>254-P/M/K</b>	25.4	14.5	3.87	10.63	25	●
<b>255-P/M/K</b>	25.5	14.5	3.89	10.61	25	●
<b>256-P/M/K</b>	25.6	14.5	3.91	10.59	25	●
<b>257-P/M/K</b>	25.7	14.5	3.93	10.57	25	●
<b>258-P/M/K</b>	25.8	14.5	3.95	10.55	25	●
<b>259-P/M/K</b>	25.9	14.5	3.96	10.54	25	●



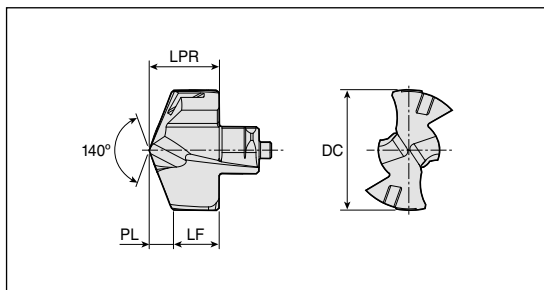
► Drill head can be ordered by an application  
 Order example) Diameter 10.0mm drill head for  
 ISO P application: TCD-100-P TT9080

●: Standard items

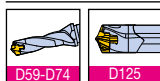


# TCD...N

## Drill heads for aluminum alloy



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



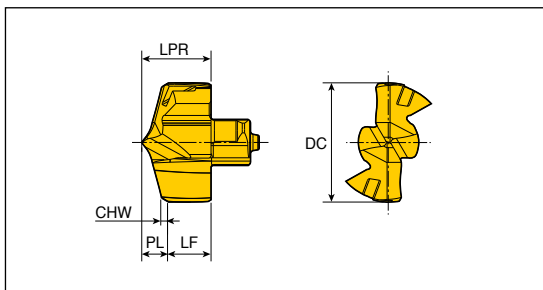
► SSC: Seat size code

●: Standard items

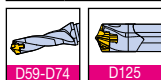
N Nonferrous



## Self-centering drill heads



Designation	Dimension (mm)						Grade TT9080
	DC	LPR	PL	LF	CHW	SSC	
<b>TCD-060-P+</b>	6.0	4.00	1.46	2.54	0.5	6	●
<b>065-P+</b>	6.5	4.30	1.55	2.75	0.5	6.5	●
<b>068-P+</b>	6.8	4.30	1.59	2.71	0.5	6.5	●
<b>070-P+</b>	7.0	4.60	1.64	2.96	0.5	7	●
<b>072-P+</b>	7.2	4.60	1.67	2.93	0.5	7	●
<b>075-P+</b>	7.5	4.60	1.71	2.89	0.5	7	●
<b>080-P+</b>	8.0	5.40	1.81	3.59	0.5	8	●
<b>081-P+</b>	8.1	5.40	1.82	3.58	0.5	8	●
<b>082-P+</b>	8.2	5.40	1.84	3.56	0.5	8	●
<b>083-P+</b>	8.3	5.40	1.85	3.55	0.5	8	●
<b>085-P+</b>	8.5	5.40	1.88	3.52	0.5	8	●
<b>086-P+</b>	8.6	5.40	1.89	3.51	0.5	8	●
<b>087-P+</b>	8.7	5.40	1.90	3.50	0.5	8	●
<b>088-P+</b>	8.8	5.40	1.92	3.48	0.5	8	●
<b>089-P+</b>	8.9	5.40	1.93	3.47	0.5	8	●
<b>090-P+</b>	9.0	5.80	1.98	3.82	0.5	9	●
<b>093-P+</b>	9.3	5.80	2.02	3.78	0.5	9	●
<b>095-P+</b>	9.5	5.80	2.05	3.75	0.5	9	●
<b>096-P+</b>	9.6	5.80	2.06	3.74	0.5	9	●
<b>097-P+</b>	9.7	5.80	2.07	3.73	0.5	9	●
<b>098-P+</b>	9.8	5.80	2.09	3.71	0.5	9	●
<b>099-P+</b>	9.9	5.80	2.10	3.70	0.5	9	●
<b>100-P+</b>	10.0	6.20	2.33	3.87	0.7	10	●
<b>101-P+</b>	10.1	6.20	2.34	3.86	0.7	10	●
<b>102-P+</b>	10.2	6.20	2.36	3.84	0.7	10	●
<b>103-P+</b>	10.3	6.20	2.37	3.83	0.7	10	●
<b>105-P+</b>	10.5	6.20	2.40	3.80	0.7	10	●
<b>106-P+</b>	10.6	6.20	2.41	3.79	0.7	10	●
<b>107-P+</b>	10.7	6.20	2.42	3.78	0.7	10	●
<b>108-P+</b>	10.8	6.20	2.44	3.76	0.7	10	●
<b>109-P+</b>	10.9	6.20	2.45	3.75	0.7	10	●
<b>110-P+</b>	11.0	6.60	2.50	4.10	0.7	11	●
<b>111-P+</b>	11.1	6.60	2.51	4.09	0.7	11	●
<b>112-P+</b>	11.2	6.60	2.53	4.07	0.7	11	●
<b>113-P+</b>	11.3	6.60	2.54	4.06	0.7	11	●

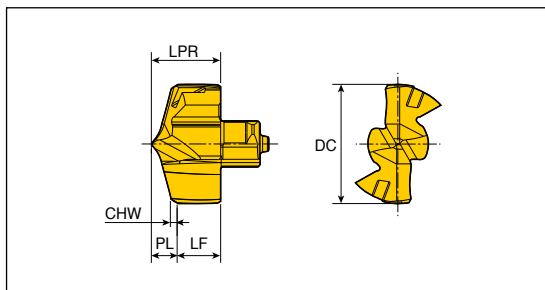


▶ SSC: Seat size code

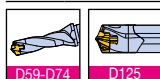
●: Standard items

# TCD-P+

## Self-centering drill heads



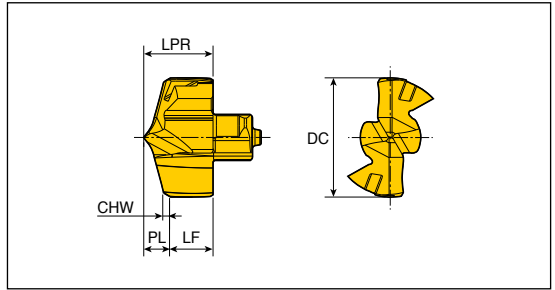
Designation	Dimension (mm)						Grade TT9080
	DC	LPR	PL	LF	CHW	SSC	
<b>TCD-114-P+</b>	11.4	6.60	2.55	4.05	0.7	11	●
<b>115-P+</b>	11.5	6.60	2.57	4.03	0.7	11	●
<b>116-P+</b>	11.6	6.60	2.58	4.02	0.7	11	●
<b>117-P+</b>	11.7	6.60	2.59	4.01	0.7	11	●
<b>118-P+</b>	11.8	6.60	2.61	3.99	0.7	11	●
<b>119-P+</b>	11.9	6.60	2.62	3.98	0.7	11	●
<b>120-P+</b>	12.0	7.00	2.67	4.33	0.7	12	●
<b>121-P+</b>	12.1	7.00	2.68	4.32	0.7	12	●
<b>122-P+</b>	12.2	7.00	2.70	4.30	0.7	12	●
<b>123-P+</b>	12.3	7.00	2.71	4.29	0.7	12	●
<b>124-P+</b>	12.4	7.00	2.72	4.28	0.7	12	●
<b>125-P+</b>	12.5	7.00	2.74	4.26	0.7	12	●
<b>126-P+</b>	12.6	7.00	2.75	4.25	0.7	12	●
<b>127-P+</b>	12.7	7.00	2.76	4.24	0.7	12	●
<b>128-P+</b>	12.8	7.00	2.78	4.22	0.7	12	●
<b>130-P+</b>	13.0	7.60	2.85	4.75	0.7	13	●
<b>131-P+</b>	13.1	7.60	2.86	4.74	0.7	13	●
<b>132-P+</b>	13.2	7.60	2.88	4.72	0.7	13	●
<b>133-P+</b>	13.3	7.60	2.89	4.71	0.7	13	●
<b>134-P+</b>	13.4	7.60	2.90	4.70	0.7	13	●
<b>135-P+</b>	13.5	7.60	2.92	4.68	0.7	13	●
<b>136-P+</b>	13.6	7.60	2.93	4.67	0.7	13	●
<b>137-P+</b>	13.7	7.60	2.94	4.66	0.7	13	●
<b>138-P+</b>	13.8	7.60	2.96	4.64	0.7	13	●
<b>139-P+</b>	13.9	7.60	2.97	4.63	0.7	13	●
<b>140-P+</b>	14.0	8.15	3.02	5.13	0.7	14	●
<b>141-P+</b>	14.1	8.15	3.03	5.12	0.7	14	●
<b>142-P+</b>	14.2	8.15	3.05	5.10	0.7	14	●
<b>143-P+</b>	14.3	8.15	3.06	5.09	0.7	14	●
<b>144-P+</b>	14.4	8.15	3.07	5.08	0.7	14	●
<b>145-P+</b>	14.5	8.15	3.09	5.06	0.7	14	●
<b>146-P+</b>	14.6	8.15	3.10	5.05	0.7	14	●
<b>147-P+</b>	14.7	8.15	3.11	5.04	0.7	14	●
<b>148-P+</b>	14.8	8.15	3.13	5.02	0.7	14	●
<b>150-P+</b>	15.0	8.73	3.19	5.54	0.7	15	●



► SSC: Seat size code

●: Standard items

## Self-centering drill heads



Designation	Dimension (mm)						Grade TT9080
	DC	LPR	PL	LF	CHW	SSC	
<b>TCD-151-P+</b>	15.1	8.73	3.20	5.53	0.7	15	●
<b>152-P+</b>	15.2	8.73	3.22	5.51	0.7	15	●
<b>153-P+</b>	15.3	8.73	3.23	5.50	0.7	15	●
<b>154-P+</b>	15.4	8.73	3.24	5.49	0.7	15	●
<b>155-P+</b>	15.5	8.73	3.26	5.47	0.7	15	●
<b>156-P+</b>	15.6	8.73	3.27	5.46	0.7	15	●
<b>157-P+</b>	15.7	8.73	3.28	5.45	0.7	15	●
<b>158-P+</b>	15.8	8.73	3.30	5.43	0.7	15	●
<b>159-P+</b>	15.9	8.73	3.31	5.42	0.7	15	●
<b>160-P+</b>	16.0	9.30	3.46	5.84	0.81	16	●
<b>161-P+</b>	16.1	9.30	3.47	5.83	0.81	16	●
<b>162-P+</b>	16.2	9.30	3.49	5.81	0.81	16	●
<b>163-P+</b>	16.3	9.30	3.50	5.80	0.81	16	●
<b>164-P+</b>	16.4	9.30	3.51	5.79	0.81	16	●
<b>165-P+</b>	16.5	9.30	3.53	5.77	0.81	16	●
<b>166-P+</b>	16.6	9.30	3.54	5.76	0.81	16	●
<b>167-P+</b>	16.7	9.30	3.55	5.75	0.81	16	●
<b>168-P+</b>	16.8	9.30	3.57	5.73	0.81	16	●
<b>170-P+</b>	17.0	9.90	3.63	6.27	0.81	17	●
<b>171-P+</b>	17.1	9.90	3.64	6.26	0.81	17	●
<b>172-P+</b>	17.2	9.90	3.66	6.24	0.81	17	●
<b>173-P+</b>	17.3	9.90	3.67	6.23	0.81	17	●
<b>174-P+</b>	17.4	9.90	3.68	6.22	0.81	17	●
<b>175-P+</b>	17.5	9.90	3.70	6.20	0.81	17	●
<b>176-P+</b>	17.6	9.90	3.71	6.19	0.81	17	●
<b>177-P+</b>	17.7	9.90	3.72	6.18	0.81	17	●
<b>178-P+</b>	17.8	9.90	3.74	6.16	0.81	17	●
<b>179-P+</b>	17.9	9.90	3.75	6.15	0.81	17	●
<b>180-P+</b>	18.0	10.50	3.81	6.69	0.81	18	●
<b>181-P+</b>	18.1	10.50	3.82	6.68	0.81	18	●
<b>182-P+</b>	18.2	10.50	3.84	6.66	0.81	18	●
<b>183-P+</b>	18.3	10.50	3.85	6.65	0.81	18	●
<b>185-P+</b>	18.5	10.50	3.88	6.62	0.81	18	●
<b>186-P+</b>	18.6	10.50	3.89	6.61	0.81	18	●
<b>187-P+</b>	18.7	10.50	3.90	6.60	0.81	18	●

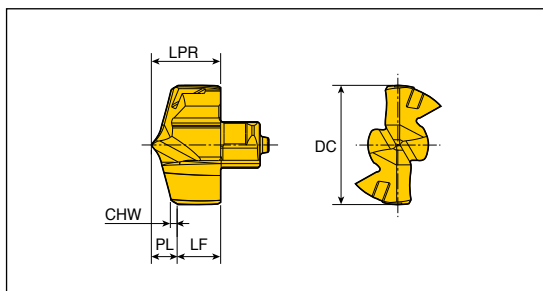


► SSC: Seat size code

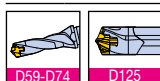
●: Standard items

# TCD-P+

## Self-centering drill heads



Designation	Dimension (mm)						Grade TT9080
	DC	LPR	PL	LF	CHW	SSC	
<b>TCD-188-P+</b>	18.8	10.50	3.92	6.58	0.81	18	●
<b>190-P+</b>	19.0	11.00	3.98	7.02	0.81	19	●
<b>191-P+</b>	19.1	11.00	3.99	7.01	0.81	19	●
<b>192-P+</b>	19.2	11.00	4.01	6.99	0.81	19	●
<b>193-P+</b>	19.3	11.00	4.02	6.98	0.81	19	●
<b>194-P+</b>	19.4	11.00	4.03	6.97	0.81	19	●
<b>195-P+</b>	19.5	11.00	4.05	6.95	0.81	19	●
<b>196-P+</b>	19.6	11.00	4.06	6.94	0.81	19	●
<b>197-P+</b>	19.7	11.00	4.07	6.93	0.81	19	●
<b>198-P+</b>	19.8	11.00	4.09	6.91	0.81	19	●
<b>199-P+</b>	19.9	11.00	4.10	6.90	0.81	19	●
<b>200-P+</b>	20.0	11.60	4.15	7.45	0.81	20	●
<b>201-P+</b>	20.1	11.60	4.16	7.44	0.81	20	●
<b>202-P+</b>	20.2	11.60	4.18	7.42	0.81	20	●
<b>205-P+</b>	20.5	11.60	4.22	7.38	0.81	20	●
<b>206-P+</b>	20.6	11.60	4.23	7.37	0.81	20	●
<b>207-P+</b>	20.7	11.60	4.24	7.36	0.81	20	●
<b>210-P+</b>	21.0	12.18	4.32	7.86	0.81	21	●
<b>212-P+</b>	21.2	12.18	4.35	7.83	0.81	21	●
<b>213-P+</b>	21.3	12.18	4.36	7.82	0.81	21	●
<b>214-P+</b>	21.4	12.18	4.37	7.81	0.81	21	●
<b>215-P+</b>	21.5	12.18	4.39	7.79	0.81	21	●
<b>218-P+</b>	21.8	12.18	4.43	7.75	0.81	21	●
<b>220-P+</b>	22.0	12.76	4.50	8.26	0.81	22	●
<b>225-P+</b>	22.5	12.76	4.57	8.19	0.81	22	●
<b>229-P+</b>	22.9	12.76	4.62	8.14	0.81	22	●
<b>230-P+</b>	23.0	13.33	4.67	8.66	0.81	23	●
<b>235-P+</b>	23.5	13.33	4.74	8.59	0.81	23	●
<b>240-P+</b>	24.0	13.90	4.84	9.06	0.81	24	●
<b>245-P+</b>	24.5	13.90	4.91	8.99	0.81	24	●
<b>250-P+</b>	25.0	14.50	5.01	9.49	0.81	25	●
<b>254-P+</b>	25.4	14.50	5.06	9.44	0.81	25	●
<b>255-P+</b>	25.5	14.50	5.08	9.42	0.81	25	●
<b>256-P+</b>	25.6	14.50	5.09	9.41	0.81	25	●
<b>257-P+</b>	25.7	14.50	5.10	9.40	0.81	25	●

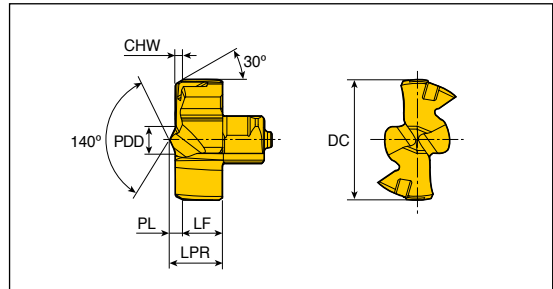


► SSC: Seat size code

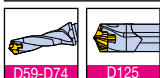
●: Standard items



## Drill heads for flat bottom hole



Designation	Dimension (mm)							Grade TT9080
	DC	PDD	LPR	PL	LF	CHW	SSC	
<b>TCD - 080-F</b>	8.0	2.33	4.4	1.09	3.3	0.7	8	●
<b>085-F</b>	8.5	2.33	4.4	1.09	3.3	0.7	8	●
<b>090-F</b>	9.0	2.29	4.6	1.11	3.5	0.7	9	●
<b>095-F</b>	9.5	2.29	4.6	1.11	3.5	0.7	9	●
<b>100-F</b>	10.0	2.44	4.9	1.17	3.7	0.7	10	●
<b>105-F</b>	10.5	2.44	4.9	1.17	3.7	0.7	10	●
<b>110-F</b>	11.0	3.09	5.1	1.25	3.8	0.7	11	●
<b>115-F</b>	11.5	3.09	5.1	1.25	3.8	0.7	11	●
<b>120-F</b>	12.0	2.95	5.4	1.26	4.1	0.7	12	●
<b>125-F</b>	12.5	2.95	5.4	1.26	4.1	0.7	12	●
<b>130-F</b>	13.0	3.04	5.7	1.30	4.4	0.7	13	●
<b>135-F</b>	13.5	3.04	5.7	1.30	4.4	0.7	13	●
<b>140-F</b>	14.0	3.30	6.1	1.31	4.8	0.7	14	●
<b>145-F</b>	14.5	3.30	6.1	1.31	4.8	0.7	14	●
<b>150-F</b>	15.0	3.54	6.6	1.35	5.23	0.7	15	●
<b>155-F</b>	15.5	3.54	6.6	1.35	5.23	0.7	15	●
<b>160-F</b>	16.0	3.74	7.0	1.39	5.6	0.7	16	●
<b>165-F</b>	16.5	3.74	7.0	1.39	5.6	0.7	16	●
<b>170-F</b>	17.0	3.75	7.3	1.40	5.9	0.7	17	●
<b>175-F</b>	17.5	3.75	7.3	1.40	5.9	0.7	17	●
<b>180-F</b>	18.0	3.85	7.6	1.42	6.18	0.7	18	●
<b>185-F</b>	18.5	3.85	7.6	1.42	6.18	0.7	18	●
<b>190-F</b>	19.0	3.86	7.9	1.44	6.5	0.7	19	●
<b>195-F</b>	19.5	3.86	7.9	1.44	6.5	0.7	19	●
<b>200-F</b>	20.0	6.76	9.3	1.77	7.5	0.7	20	●
<b>205-F</b>	20.5	6.76	9.3	1.77	7.5	0.7	20	●
<b>210-F</b>	21.0	6.98	9.7	1.79	7.9	0.7	21	●
<b>215-F</b>	21.5	6.98	9.7	1.79	7.9	0.7	21	●
<b>220-F</b>	22.0	7.42	10.0	1.81	8.2	0.7	22	●
<b>225-F</b>	22.5	7.42	10.0	1.81	8.2	0.7	22	●
<b>230-F</b>	23.0	7.60	10.4	1.83	8.6	0.7	23	●
<b>235-F</b>	23.5	7.60	10.4	1.83	8.6	0.7	23	●
<b>240-F</b>	24.0	8.13	10.9	1.86	9.0	0.7	24	●
<b>245-F</b>	24.5	8.13	10.9	1.86	9.0	0.7	24	●
<b>250-F</b>	25.0	8.16	11.3	1.89	9.4	0.7	25	●

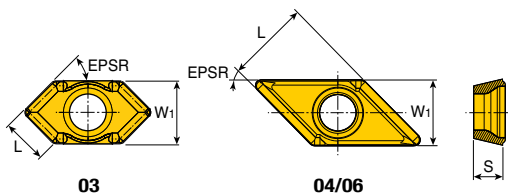


► SSC: Seat size code

●: Standard items



## Chamfering inserts for pre-thread hole



Size	Dimension (mm)			
	W1	L	S	EPSR
<b>03-C30</b>	4.0	4.00	1.59	30
<b>03-C45</b>	4.0	2.80	1.59	45
<b>04-C45</b>	3.6	5.20	1.80	45
<b>06-C45</b>	4.5	5.66	1.96	45

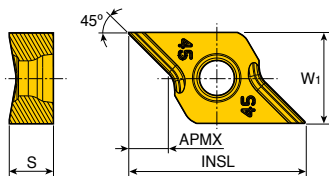
Insert	Designation	Coated						Uncoated	
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400		
	<b>AOMT 030204-C30</b>	●						K10	
	<b>030204-C45</b>	●							
	<b>AOMT 040204-C45</b>	●							
	<b>060204-C45</b>	●							



●: Standard items

# CRNG 0802-45CD

## Chamfering inserts for chamfering ring



Size	Dimension (mm)			
	W1	INSL	S	APMX
<b>08</b>	7.5	14.80	3.65	3.3

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

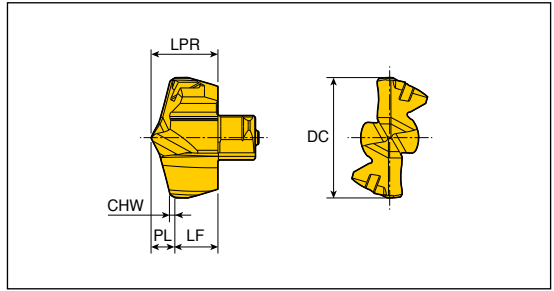


●: Standard items



# TCD...P-CO+

## Drill heads



Designation	Dimension (mm)						Grade
	DC	LPR	PL	LF	CHW	SSC	TT9080
<b>TCD-159-P-CO+</b>	15.9	8.73	3.17	5.56	0.7	15	●
<b>169-P-CO+</b>	16.9	9.30	3.34	5.96	0.81	16	●
<b>179-P-CO+</b>	17.9	9.90	3.50	6.40	0.81	17	●
<b>189-P-CO+</b>	18.9	10.50	3.66	6.84	0.81	18	●
<b>199-P-CO+</b>	19.9	11.00	3.82	7.18	0.81	19	●
<b>209-P-CO+</b>	20.9	11.60	3.98	7.62	0.81	20	●
<b>219-P-CO+</b>	21.9	12.18	4.15	8.03	0.81	21	●
<b>229-P-CO+</b>	22.9	12.76	4.31	8.45	0.81	22	●
<b>239-P-CO+</b>	23.9	13.33	4.48	8.85	0.81	23	●
<b>249-P-CO+</b>	24.9	13.90	4.64	9.26	0.81	24	●
<b>259-P-CO+</b>	25.9	14.50	4.81	9.69	0.81	25	●

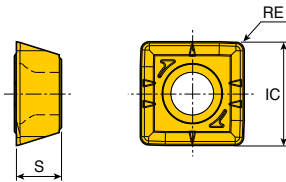


► SSC: Seat size code

●: Standard items

# SPGX...DW

## Inserts



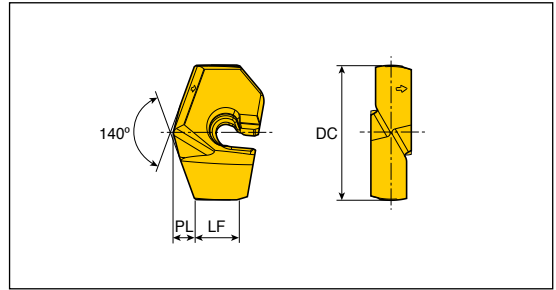
Size	Dimension (mm)			
	IC	S	RE	
<b>06</b>	6.07	2.38	0.4	
<b>07</b>	8.02	3.97	0.8	
<b>09</b>	9.91	4.30	0.8	
<b>11</b>	11.62	4.80	0.8	
<b>14</b>	14.41	5.20	1.2	

Insert	Designation	Coated						Uncoated	
		TT9080	TT8020	TT9300	TT9030	TT6030	TT7400	K10	
	<b>SPGX 060204 DW</b>	●							
	<b>07T308 DW</b>	●							
	<b>090408 DW</b>	●							
	<b>110408 DW</b>	●							
	<b>140512 DW</b>	●							



●: Standard items

## Drill heads



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



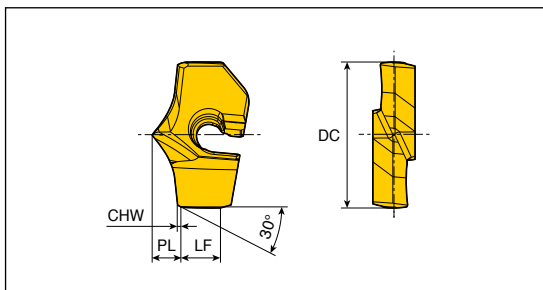
► SSC: Seat size code

●: Standard items



# LCD...-P+

## Self-centering drill head



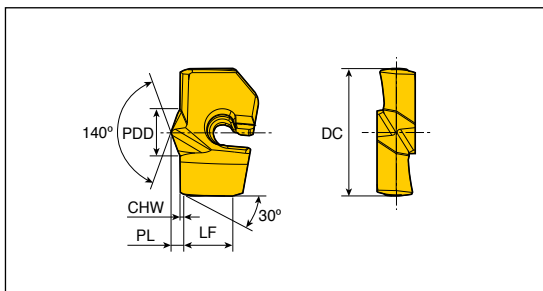
Designation	Dimension (mm)					Grade
	DC	PL	LF	CHW	SSC	
<b>LCD- 200-P+</b>	20.0	4.55	5.83	0.86	20	●
<b>205-P+</b>	20.5	4.58	5.60	0.86	20	●
<b>210-P+</b>	21.0	4.60	5.36	0.86	21	●
<b>215-P+</b>	21.5	4.63	5.13	0.86	21	●
<b>220-P+</b>	22.0	4.92	6.21	0.86	22	●
<b>225-P+</b>	22.5	4.95	5.98	0.86	22	●
<b>230-P+</b>	23.0	4.97	5.74	0.86	23	●
<b>235-P+</b>	23.5	5.00	5.51	0.86	23	●
<b>240-P+</b>	24.0	5.30	5.93	0.86	24	●
<b>245-P+</b>	24.5	5.33	5.70	0.86	24	●
<b>250-P+</b>	25.0	5.35	5.46	0.86	25	●
<b>255-P+</b>	25.5	5.38	5.23	0.86	25	●
<b>260-P+</b>	26.0	5.67	7.39	0.86	26	●
<b>265-P+</b>	26.5	5.70	7.16	0.86	26	●
<b>270-P+</b>	27.0	5.72	6.92	0.86	27	●
<b>275-P+</b>	27.5	5.75	6.69	0.86	27	●
<b>280-P+</b>	28.0	5.73	7.26	0.86	28	●
<b>285-P+</b>	28.5	5.76	7.03	0.86	28	●
<b>290-P+</b>	29.0	5.78	6.79	0.86	29	●
<b>295-P+</b>	29.5	5.81	6.56	0.86	29	●
<b>300-P+</b>	30.0	6.08	9.17	0.86	30	●
<b>305-P+</b>	30.5	6.11	8.94	0.86	30	●
<b>310-P+</b>	31.0	6.13	8.70	0.86	31	●
<b>315-P+</b>	31.5	6.16	8.47	0.86	31	●
<b>320-P+</b>	32.0	6.43	9.18	0.86	32	●
<b>325-P+</b>	32.5	6.46	8.95	0.86	32	●
<b>330-P+</b>	33.0	6.48	8.71	0.86	33	●
<b>335-P+</b>	33.5	6.51	8.48	0.86	33	●
<b>340-P+</b>	34.0	6.53	8.24	0.86	34	●
<b>345-P+</b>	34.5	6.56	8.01	0.86	34	●



► SSC: Seat size code

●: Standard items

## Drill heads for flat bottom hole



Designation	Dimension (mm)						Grade
	DC	PL	LF	CHW	SSC	PDD	TT9080
<b>LCD - 200-F</b>	20.0	2.18	7.63	0.7	20	8.3	●
<b>205-F</b>	20.5	2.18	7.63	0.7	20	8.3	●
<b>210-F</b>	21.0	2.18	7.63	0.7	21	8.3	●
<b>215-F</b>	21.5	2.18	7.63	0.7	21	8.3	●
<b>220-F</b>	22.0	2.38	8.17	0.7	22	9.0	●
<b>225-F</b>	22.5	2.38	8.17	0.7	22	9.0	●
<b>230-F</b>	23.0	2.38	8.17	0.7	23	9.0	●
<b>235-F</b>	23.5	2.38	8.17	0.7	23	9.0	●
<b>240-F</b>	24.0	2.52	8.10	0.7	24	10.0	●
<b>245-F</b>	24.5	2.52	8.10	0.7	24	10.0	●
<b>250-F</b>	25.0	2.52	8.10	0.7	25	10.0	●
<b>255-F</b>	25.5	2.52	8.10	0.7	25	10.0	●
<b>260-F</b>	26.0	2.48	9.84	0.7	26	10.5	●
<b>265-F</b>	26.5	2.48	9.84	0.7	26	10.5	●
<b>270-F</b>	27.0	2.48	9.84	0.7	27	10.5	●
<b>275-F</b>	27.5	2.48	9.84	0.7	27	10.5	●
<b>280-F</b>	28.0	2.72	9.50	0.7	28	11.6	●
<b>285-F</b>	28.5	2.72	9.50	0.7	28	11.6	●
<b>290-F</b>	29.0	2.72	9.50	0.7	29	11.6	●
<b>295-F</b>	29.5	2.72	9.50	0.7	29	11.6	●
<b>300-F</b>	30.0	2.80	11.63	0.7	30	12.4	●
<b>305-F</b>	30.5	2.80	11.63	0.7	30	12.4	●
<b>310-F</b>	31.0	2.80	11.63	0.7	31	12.4	●
<b>315-F</b>	31.5	2.80	11.63	0.7	31	12.4	●
<b>320-F</b>	32.0	3.13	11.59	0.7	32	13.6	●
<b>325-F</b>	32.5	3.13	11.59	0.7	32	13.6	●
<b>330-F</b>	33.0	3.13	11.59	0.7	33	13.6	●
<b>335-F</b>	33.5	3.13	11.59	0.7	33	13.6	●
<b>340-F</b>	34.0	3.13	11.59	0.7	34	13.6	●
<b>345-F</b>	34.5	3.13	11.59	0.7	34	13.6	●
<b>350-F</b>	35.0	3.31	13.20	0.7	35	14.6	●
<b>355-F</b>	35.5	3.31	13.20	0.7	35	14.6	●
<b>360-F</b>	36.0	3.31	13.20	0.7	36	14.6	●
<b>365-F</b>	36.5	3.31	13.20	0.7	36	14.6	●
<b>370-F</b>	37.0	3.31	13.20	0.7	37	14.6	●



▶ SSC: Seat size code

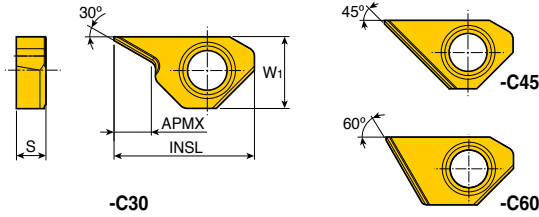
●: Standard items



# XCGT ...-C



## Chamfering inserts for T-CHAMFER holder



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

Insert	Designation	Coated						Uncoated
		TT9080	TT9030	TT8020	TT6030	TT9300	TT7400	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>	•						

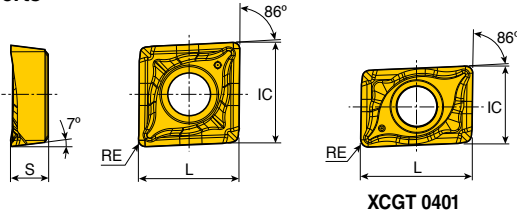
• Standard items



# XCGT...TA



## Inserts



Size	Dimension (mm)			
	IC	L	S	RE
<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

**XCGT 0401**

• For aluminum alloy

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

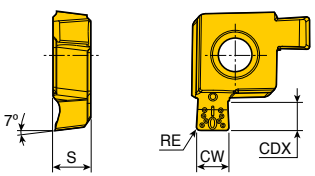


•: Standard items

# XCMT..R-GV



## Inserts



Size	Dimension (mm)			
	CW	CDX	S	RE
<b>05</b>	2.0	1.8	2.27	0.2
<b>06</b>	2.0	2.0	2.62	0.2
<b>07</b>	2.5	2.0	3.42	0.2
<b>08</b>	2.5	2.5	3.50	0.2
<b>10</b>	3.0	3.0	4.37	0.3
<b>13</b>	3.5	3.5	5.24	0.3
<b>17</b>	4.0	4.0	6.06	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>	•	•						

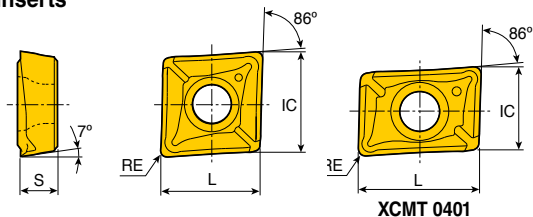


► Grooving insert is available only for right handed type

•: Standard items



## Inserts



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

●: Standard items

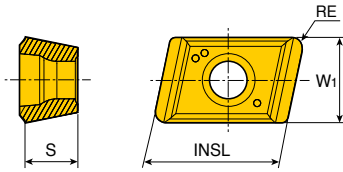




# NPMT...L-G-C/L-HF-C



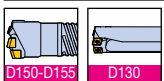
Inserts for TBTA-FB & TRGD



Size	Dimension (mm)			
	W1	INSL	S	RE
<b>06</b>	5.5	8	3.0	0.8
<b>07</b>	6.5	10	4.0	0.8
<b>08</b>	8.0	10	4.0	0.8
<b>10</b>	10.0	10	4.0	0.8
<b>13</b>	12.5	10	4.0	0.8

Insert	Designation	Pocket			Coated						Uncoated			
		Center	Inner	Outer	TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10	
	NPMT <b>060308L-G-C</b>	•			•	•	•		•			•		
	<b>060308L-HF-C</b>	•			•	•	•		•			•		
	<b>070408L-G-C</b>	•			•	•	•		•			•		
	<b>070408L-HF-C</b>	•			•	•	•		•			•		
	<b>080408L-G-C</b>	•			•	•	•		•			•		
	<b>080408L-HF-C</b>	•			•	•	•		•			•		
	<b>100408L-G-C</b>	•			•	•	•		•			•		
	<b>100408L-HF-C</b>	•			•	•	•		•			•		
	<b>130408L-G-C</b>	•			•	•	•		•			•		
	<b>130408L-HF-C</b>	•			•	•	•		•			•		

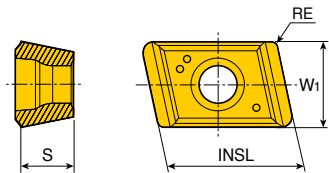
•: Standard items



# NPMT...R-G-I/R-HF-I



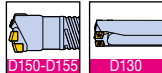
Inserts for TBTA-FB & TRGD



Size	Dimension (mm)			
	W <sub>1</sub>	INSL	S	RE
<b>06</b>	5.5	8	3.0	0.4
<b>07</b>	6.5	10	4.0	0.4
<b>08</b>	8.0	10	4.0	0.4
<b>10</b>	10.0	10	4.0	0.4
<b>13</b>	12.5	10	4.0	0.4

Insert	Designation	Pocket			Coated						Uncoated		
		Center	Inner	Outer	TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10
	<b>NPMT 060304R-G-I</b>		•		•	•	•	•			•		
	<b>060304R-HF-I</b>		•		•	•	•	•			•		
	<b>070404R-G-I</b>		•		•	•	•	•			•		
	<b>070404R-HF-I</b>		•		•	•	•	•			•		
	<b>080404R-G-I</b>		•		•	•	•	•			•		
	<b>080404R-HF-I</b>		•		•	•	•	•			•		
	<b>100404R-G-I</b>		•		•	•	•	•			•		
	<b>100404R-HF-I</b>		•		•	•	•	•			•		
	<b>130404R-G-I</b>		•		•	•	•	•			•		
	<b>130404R-HF-I</b>		•		•	•	•	•			•		

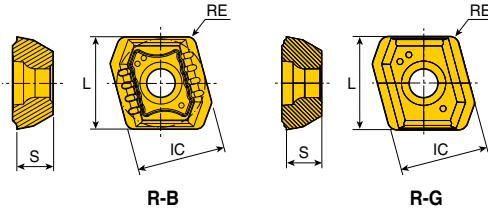
•: Standard items



# NPMX...R-B/R-G



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



Size	Dimension (mm)			
	IC	L	S	RE
<b>08</b>	8.0	8.36	3.18	0.8

Insert	Designation	Pocket			Coated					Uncoated		
		Center	Inner	Outer	TT9030	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10
	<b>NPMX 080308R-B</b>	●	●	●	●	●		●				
	<b>080308R-G</b>	●	●	●	●	●			●	●		

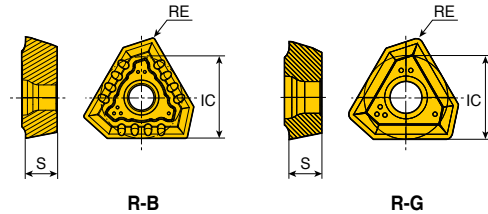


●: Standard items

# TPMX...R-B/R-G



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



Size	Dimension (mm)		
	IC	S	RE
<b>140304 R-B</b>	8.45	3.5	0.4
<b>140308 R-B/R-G</b>	8.45	3.5	0.8
<b>170404 R-B</b>	10.30	4.0	0.4
<b>170408 R-B/R-G</b>	10.30	4.0	0.8
<b>240504 R-B</b>	14.20	5.5	0.4
<b>240512 R-B/R-G</b>	14.20	5.5	1.2
<b>280708 R-B</b>	17.00	7.5	0.8
<b>280716 R-B/R-G</b>	17.00	7.5	1.6

Insert	Designation	Pocket			Coated					Uncoated			
		Center	Inner	Outer	TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10
	<b>TPMX 140304R-B</b>	●	●	●	●		●						
	<b>140308R-B</b>	●	●	●		●					●		
	<b>140308R-G</b>	●	●	●	●	●	●			●	●	●	
	<b>170404R-B</b>	●	●	●	●		●		●				
	<b>170408R-B</b>	●	●	●		●						●	
	<b>170408R-G</b>	●	●	●	●	●	●			●	●	●	
	<b>240504R-B</b>	●	●	●	●		●		●				
	<b>240512R-B</b>	●	●	●		●						●	
	<b>240512R-G</b>	●	●	●	●	●	●			●	●	●	
	<b>280708R-B</b>	●	●	●	●				●				
	<b>280716R-B</b>	●	●	●	●	●						●	
<b>280716R-G</b>	●	●	●	●	●	●	●		●	●	●		

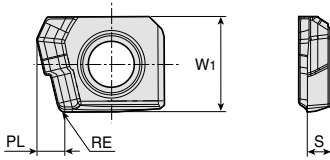


●: Standard items

# ZSGT



Deep drilling inserts with single chip splitting cutting edge and a wiper for high hole surface quality



Size	Dimension (mm)			
	W1	RE	PL	S
<b>06</b>	6.00	0.40	1.80	1.50

Insert	Designation	Coated							Uncoated		
		TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10	
	<b>ZSGT 060204R-RS</b>		●								

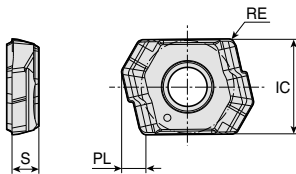


●: Standard items

# LOGT



Deep drilling inserts with 2 chip splitting cutting edges, positive rake chipbreaker and a wiper for high hole surface quality



Size	Dimension (mm)			
	IC	RE	PL	S
<b>06</b>	7.00	0.40	1.80	2.00

Insert	Designation	Coated							Uncoated		
		TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10	
	<b>LOGT 060204R-RS</b>		●	●							



●: Standard items

D127, D131

## Inserts for TBTA-TR & TRGD

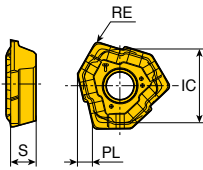


Fig.1

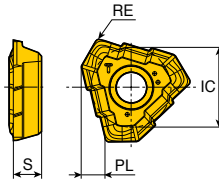



Fig.2

Size	Dimension (mm)			
	IC	PL	S	RE
<b>07</b>	7.69	2.0	2.3	0.4
<b>08</b>	8.32	2.2	2.8	0.5
<b>09</b>	8.55	3.0	3.0	0.5
<b>10</b>	9.23	3.2	3.3	0.5
<b>11</b>	10.40	3.4	3.8	0.5
<b>12</b>	11.59	3.7	4.3	0.5
<b>13</b>	12.85	4.6	4.8	0.8
<b>14</b>	16.85	5.4	5.3	1.0

Insert	Designation	Fig.	Coated						Uncoated	
			TT9030	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10
	<b>TOGT 070304 RS</b>	1	●							
	<b>070304 GF</b>	1	●							
	<b>080305 RS</b>	1	●							
	<b>080305 GF</b>	1	●							
	<b>090305 RS</b>	2	●							
	<b>090305 GF</b>	2	●							
	<b>100305 RS</b>	2	●							
	<b>100305 GF</b>	2	●							
	<b>110405 RS</b>	2	●							
	<b>110405 GF</b>	2	●							
	<b>120405 RS</b>	2	●							
	<b>120405 GF</b>	2	●							
	<b>130408 RS</b>	2	●							
	<b>130408 GF</b>	2	●							
<b>140510 RS</b>	2	●								



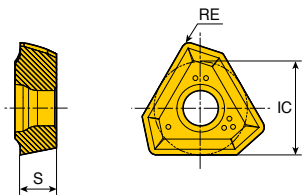
▶ RS: First choice for general purpose  
 ▶ GF: Exotic materials

●: Standard items

# TPMX...LG



Inserts for TBTA-R



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

Insert	Designation	Pocket			Coated						Uncoated			
		Center	Inner	Outer	TT9030	TT9130	TT8125	TT7200	TT6130	TT6020	TT5100	TT5030	K10	
	<b>TPMX 140308 LG</b>			•	•						•			
	<b>170408 LG</b>			•	•	•				•	•			
	<b>240512 LG</b>			•	•	•				•	•			

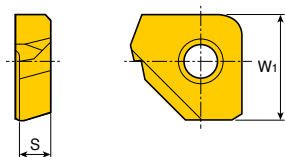


•: Standard items

# XPMT...-45



Inserts for TBTA-R



Size	Dimension (mm)		
	W1	S	
<b>16</b>	9.5	2.70	

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

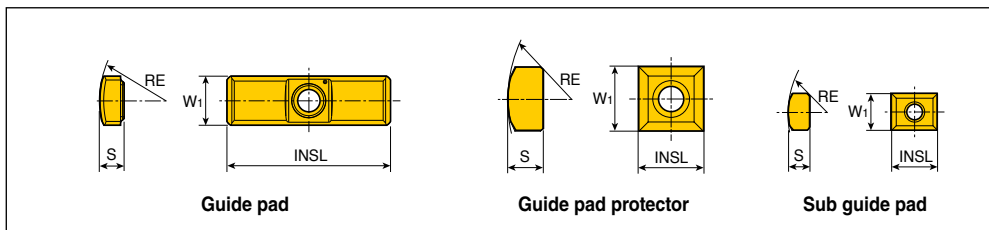


•: Standard items

D156-D161



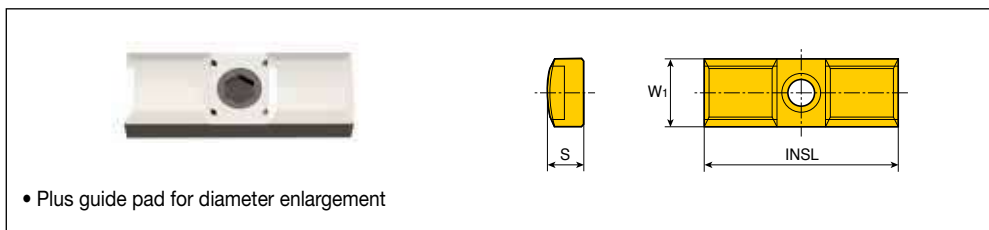
# Pad for TBTA 3.../5.../7.../9...



Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	<b>PAD - GP08-25-155-DC-SB</b>	8	4.5	25	15.5	CSTB3S
	<b>GP08-25-155-DC-SC</b>	8	4.5	25	15.5	CSTB3S
	<b>GP10-35-200-DC-SB</b>	10	6.0	35	20.0	CSTB4S
	<b>GP10-35-200-DC-SC</b>	10	6.0	35	20.0	CSTB4S
	<b>GP14-40-250-DC-SB/SC</b>	14	7.5	40	25.0	CSTA5S
	<b>GP18-40-300-DC-SB/SC</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
	<b>PAD - S08</b>	8	4.5	10	17.5	CSTB3S
Sub guide pad	<b>S10</b>	10	5.0	10	29.0	CSTB3S
	<b>S14</b>	14	7.0	20	45.0	CCSTA5S



# Plus Guide Pad for TBTA 3.../5.../7.../9...

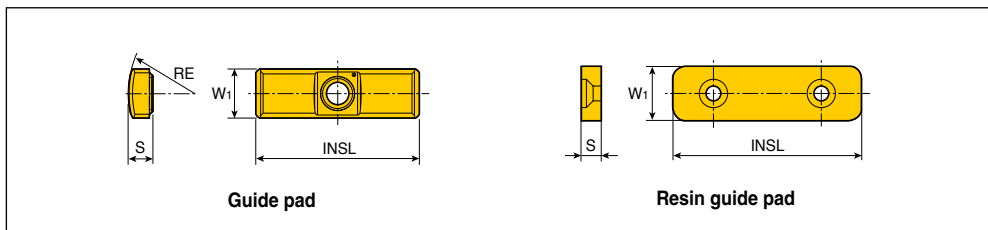


Designation								
DC	PAD-GC08	S	PAD-GC10	S	PAD-GC14	S	PAD-GC18	S
DC+1mm	PAD-GC08-DC+1	5.0	PAD-GC10-DC+1	6.5	PAD-GC14-DC+1	8.0	PAD-GC18-DC+1	9.5
DC+2mm	PAD-GC08-DC+2	5.5	PAD-GC10-DC+2	7.0	PAD-GC14-DC+2	8.5	PAD-GC18-DC+2	10.0
DC+3mm	PAD-GC08-DC+3	6.0	PAD-GC10-DC+3	7.5	PAD-GC14-DC+3	9.0	PAD-GC18-DC+3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





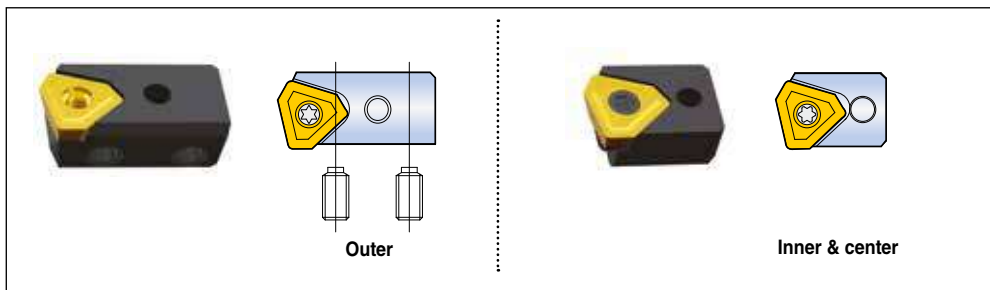




Designation		Dimension (mm)				Screw
		W1	S	INSL	RE	
Guide pad	<b>PAD - GP08-25-155-DC-SB</b>	8	4.5	25	15.5	CSTB3S
	<b>GP08-25-155-DC-SC</b>	8	4.5	25	15.5	CSTB3S
	<b>GP10-35-200-DC-SB</b>	10	6.0	35	20.0	CSTB4S
	<b>GP10-35-200-DC-SC</b>	10	6.0	35	20.0	CSTB4S
	<b>GP14-40-250-DC-SB</b>	14	7.5	40	25.0	CSTA5S
	<b>GP14-40-250-DC-SC</b>	14	7.5	40	25.0	CSTA5S
	<b>GP18-40-300-DC-SB</b>	18	9.0	40	30.0	LS1206S
	<b>GP18-40-300-DC-SC</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



	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..



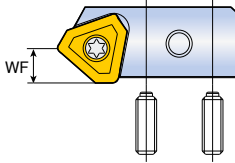
# Plus Cartridge for TBTA 3.../5.../7.../9



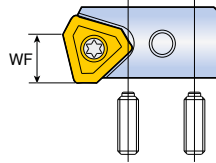
Designation					
DC	DC+1mm	DC+2mm	DC+3mm	DC+4mm	DC+5mm
<b>PERC 05R</b>	<b>PERC 05R+1</b>	<b>PERC 05R+2</b>	-	-	-
<b>PERC 402-04</b>	<b>PERC 402-04+1</b>	<b>PERC 402-04+2</b>	<b>PERC 402-04+3</b>	-	-
<b>PERC 402-32</b>	<b>PERC 402-32+1</b>	<b>PERC 402-32+2</b>	<b>PERC 402-32+3</b>	<b>PERC 402-32+4</b>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



# Cartridge for TBTA-R



Accurate tolerance applications



Open tolerance applications

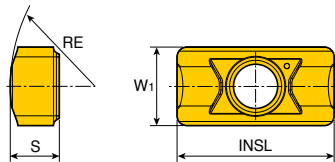
Designation		WF (mm)	Adjust screw	Wrench	Lock screw	Wrench	Insert
Accurate tolerance applications	<b>PERC P04R</b>	5	AS0004-8	H2	LS1803.5RH	H2.5	TPMX1403..LG
	<b>P32R</b>	6	AS0005-10	H2.5	LS1805RH	H3	TPMX1704..LG
	<b>P43R</b>	8	AS0005-15	H2.5	LS1806RH	H4	TPMX2405..LG
Open tolerance applications	<b>PERC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



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

D156-D161

# Guide pad for TNDH-TP



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



► Guide pad is sold separately from drill heads

●: Standard items

D75-D76

# Recommended Cutting Conditions



## Machining data for TOP-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	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)	Quenched and tempered	Annealed	600	200	6	140-240
			930	275	7	100-180	
			1000	300	8	100-180	
			1200	350	9	100-180	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-200	
		Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	150-250	
		Martensitic	820	240	13	150-250	
		Austenitic	600	180	14	150-250	
K	Gray cast iron (GG)	Ferritic		160	15	160-260	
		Pearlitic		250	16	160-260	
	Cast iron nodular (GGG)	Ferritic		180	17	160-260	
		Pearlitic		260	18	160-260	
	Malleable cast iron	Ferritic		130	19	120-220	
Pearlitic			230	20	120-220		
N	Aluminum - Wrought alloy	Not cureable		60	21	200-350	
		Cured		100	22	200-350	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	200-350
			Cured		90	24	200-350
		>12% Si	High temp.		130	25	200-350
	Copper alloys	>1% Pb	Free cutting		110	26	150-250
		Brass			90	27	150-250
			Electrolytic copper		100	28	150-250
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-250
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	50-80	
Alpha+beta alloys cured		Rm 1050	310	37	50-80		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



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

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



# Recommended Cutting Conditions



## Machining data for TOP-DRILL 5xD

ISO	Material	Condition	Tensile strength (N/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)	Quenched and tempered	Annealed	600	200	6	140-240
			930	275	7	100-180	
			1000	300	8	100-180	
			1200	350	9	100-180	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-200	
		Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	150-250	
		Martensitic	820	240	13	150-250	
		Austenitic	600	180	14	150-250	
K	Gray cast iron (GG)	Ferritic		160	15	160-260	
		Pearlitic		250	16	160-260	
	Cast iron nodular (GGG)	Ferritic		180	17	160-260	
		Pearlitic		260	18	160-260	
	Malleable cast iron	Ferritic		130	19	120-220	
Pearlitic			230	20	120-220		
N	Aluminum - Wrought alloy	Not cureable		60	21	200-350	
		Cured		100	22	200-350	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	200-350
			Cured		90	24	200-350
		>12% Si	High temp.		130	25	200-350
	Copper alloys	>1% Pb	Free cutting		110	26	150-250
		Brass			90	27	150-250
			Electrolytic copper		100	28	150-250
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-250
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	50-80	
Alpha+beta alloys cured		Rm 1050	310	37	50-80		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



## Machining data for TOP-DRILL 5xD

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

# Recommended Cutting Conditions



## Machining data for TOP-DRILL cartridge

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	160-250
		<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)	Quenched and tempered	Annealed	600	200	6	140-240
			930	275	7	100-180	
			1000	300	8	100-180	
			1200	350	9	100-180	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-200	
		Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	150-250	
		Martensitic	820	240	13	150-250	
		Austenitic	600	180	14	150-250	
K	Gray cast iron (GG)	Ferritic		160	15	160-260	
		Pearlitic		250	16	160-260	
	Cast iron nodular (GGG)	Ferritic		180	17	160-260	
		Pearlitic		260	18	160-260	
	Malleable cast iron	Ferritic		130	19	120-220	
Pearlitic			230	20	120-220		
N	Aluminum - Wrought alloy	Not cureable		60	21	200-350	
		Cured		100	22	200-350	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	200-350
			Cured		90	24	200-350
		>12% Si	High temp.		130	25	200-350
	Copper alloys	>1% Pb	Free cutting		110	26	150-250
			Brass		90	27	150-250
		Electrolitic copper		100	28	150-250	
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-250
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	50-80	
Alpha+beta alloys cured		Rm 1050	310	37	50-80		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



## Machining data for TOP-DRILL cartridge

Feed (mm/rev) vs. drill diameter Drill length 2,3,4xD					
SOMT 09 Ø51 - Ø55	SOMT 11 Ø56 - Ø60	SOMT 11 Ø61 - Ø65	SOMT 11 Ø66 - Ø70	SOMT 13 Ø71 - Ø75	SOMT 13 Ø76 - Ø80
0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12
0.06-0.16	0.06-0.16	0.06-0.16	0.06-0.16	0.06-0.16	0.06-0.16
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20
0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20
0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20
0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20
0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20	0.08-0.20
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22
0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22
0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22
0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22	0.10-0.22
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	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)	Quenched and tempered	Annealed	600	200	6	150-220
			930	275	7	120-160	
			1000	300	8	120-160	
			1200	350	9	120-160	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-180	
		Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240	
		Martensitic	820	240	13	170-240	
		Austenitic	600	180	14	170-240	
K	Gray cast iron (GG)	Ferritic		160	15	180-250	
		Pearlitic		250	16	180-250	
	Cast iron nodular (GGG)	Ferritic		180	17	180-250	
		Pearlitic		260	18	180-250	
	Malleable cast iron	Ferritic		130	19	130-200	
Pearlitic			230	20	130-200		
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380	
		Cured		100	22	330-380	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380
			Cured		90	24	330-380
		>12% Si	High temp.		130	25	330-380
	Copper alloys	>1% Pb	Free cutting		110	26	150-230
		Brass			90	27	150-230
			Electrolytic copper		100	28	150-230
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-230
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	30-60	
Alpha+beta alloys cured		Rm 1050	310	37	30-60		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



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

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

# Recommended Cutting Conditions



## Machining data for T-DRILL 5xD

ISO	Material	Condition	Tensile strength (N/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)	Quenched and tempered	Annealed	600	200	6	150-220
			930	275	7	120-160	
			1000	300	8	120-160	
			1200	350	9	120-160	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-180	
		Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240	
		Martensitic	820	240	13	170-240	
		Austenitic	600	180	14	170-240	
K	Gray cast iron (GG)	Ferritic		160	15	180-250	
		Pearlitic		250	16	180-250	
	Cast iron nodular (GGG)	Ferritic		180	17	180-250	
		Pearlitic		260	18	180-250	
	Malleable cast iron	Ferritic		130	19	130-200	
Pearlitic			230	20	130-200		
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380	
		Cured		100	22	330-380	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380
			Cured		90	24	330-380
		>12% Si	High temp.		130	25	330-380
	Copper alloys	>1% Pb	Free cutting		110	26	150-230
		Brass			90	27	150-230
			Electrolytic copper		100	28	150-230
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-230
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	30-60	
Alpha+beta alloys cured		Rm 1050	310	37	30-60		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



## Machining data for T-DRILL 5xD

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



## Machining data for T-DRILL cartridge

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)	Quenched and tempered	Annealed	600	200	6	150-220
			930	275	7	120-160	
			1000	300	8	120-160	
			1200	350	9	120-160	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	140-180	
		Quenched and tempered	1100	325	11	130-180	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	170-240	
		Martensitic	820	240	13	170-240	
		Austenitic	600	180	14	170-240	
K	Gray cast iron (GG)	Ferritic		160	15	180-250	
		Pearlitic		250	16	180-250	
	Cast iron nodular (GGG)	Ferritic		180	17	180-250	
		Pearlitic		260	18	180-250	
	Malleable cast iron	Ferritic		130	19	130-200	
Pearlitic			230	20	130-200		
N	Aluminum - Wrought alloy	Not cureable		60	21	330-380	
		Cured		100	22	330-380	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	330-380
			Cured		90	24	330-380
		>12% Si	High temp.		130	25	330-380
	Copper alloys	>1% Pb	Free cutting		110	26	150-230
		Brass			90	27	150-230
			Electrolitic copper		100	28	150-230
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	150-230
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	30-60	
Alpha+beta alloys cured		Rm 1050	310	37	30-60		
H	Hardened steel	Hardened		55HRC	38	30-60	
		Hardened		60HRC	39	30-60	
	Chilled cast iron	Cast		400	40	30-60	
	Cast iron nodular	Hardened		55HRC	41	30-60	

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

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

# Recommended Cutting Conditions



## Machining data for T-DRILL cartridge

Feed (mm/rev) vs. drill diameter Drill length 5xD					
SPMG 07 Ø51 - Ø53	SPMG 07 Ø54 - Ø56	SPMG 09 Ø57 - Ø62	SPMG 09 Ø63- Ø66	SPMG 11 Ø67 - Ø73	SPMG 12 Ø74 - Ø80
0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12	0.06-0.12
0.06-0.16	0.06-0.12	0.06-0.16	0.06-0.16	0.06-0.16	0.06-0.16
0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18
0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18
0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18	0.08-0.18
0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16	0.08-0.16
0.06-0.12	0.06-0.12	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.12	0.06-0.12	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.06-0.12	0.06-0.12	0.08-0.15	0.08-0.15	0.08-0.15	0.08-0.15
0.12-0.20	0.12-0.20	0.12-0.20	0.12-0.20	0.15-0.22	0.15-0.22
0.12-0.20	0.12-0.20	0.12-0.20	0.12-0.20	0.15-0.22	0.15-0.22
0.12-0.20	0.12-0.20	0.12-0.20	0.12-0.20	0.15-0.22	0.15-0.22
0.12-0.20	0.12-0.20	0.12-0.20	0.12-0.20	0.15-0.22	0.15-0.22
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.12-0.20	0.12-0.20
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.12-0.20	0.12-0.20
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18	0.06-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18	0.10-0.18
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10	0.06-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10
0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.10

# Recommended Cutting Conditions



## Machining data for TOP-CAP

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		70 Shore D	29
Hard rubber				55 Shore D	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		Pure	Rm 400	190	36
Alpha+beta alloys cured			Rm 1050	310	37	
H	Hardened steel	Hardened		55HRC	38	
		Hardened		60HRC	39	
	Chilled cast iron	Cast		400	40	
	Cast iron nodular	Hardened		55HRC	41	

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

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

# Recommended Cutting Conditions



## Machining data for TOP-CAP

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

# Recommended Cutting Conditions

## Machining data for DRILL-SFEED 3,5,8xD

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		70 Shore D	29	
		Hard rubber		55 Shore D	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		Pure	Rm 400	190	36
Alpha+beta alloys cured			Rm 1050	310	37	
H	Hardened steel	Hardened		55HRC	38	
		Hardened		60HRC	39	
	Chilled cast iron	Cast		400	40	
Cast iron nodular	Hardened		55HRC	41		

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

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



# Recommended Cutting Conditions



## Machining data for DRILL-RUSH

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)	Quenched and tempered	Annealed	600	200	6	70-120
			930	275	7	70-110	
			1000	300	8	50-90	
			1200	350	9	40-70	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	50-90	
		Quenched and tempered	1100	325	11	40-80	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-70	
		Martensitic	820	240	13	40-70	
		Austenitic	600	180	14	30-70	
K	Gray cast iron (GG)	Ferritic		160	15	90-160	
		Pearlitic		250	16	80-140	
	Cast iron nodular (GGG)	Ferritic		180	17	90-180	
		Pearlitic		260	18	80-140	
	Malleable cast iron	Ferritic		130	19	90-160	
Pearlitic			230	20	80-140		
N	Aluminum - Wrought alloy	Not cureable		60	21	90-220	
		Cured		100	22	90-220	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	90-220
			Cured		90	24	90-220
		>12% Si	High temp.		130	25	80-160
	Copper alloys	>1% Pb	Free cutting		110	26	90-220
		Brass			90	27	90-220
			Electrolytic copper		100	28	90-220
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	
Hard rubber				55 Shore D	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	Pure	Rm 400	190	36	20-50	
Alpha+beta alloys cured		Rm 1050	310	37	20-50		
H	Hardened steel	Hardened		55HRC	38	20-50	
		Hardened		60HRC	39	20-50	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

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





# Recommended Cutting Conditions



## Machining data for MODU-R-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	120-200
		>=0.25%C	Annealed	650	190	2	120-200
		<0.55%C	Quenched and tempered	850	250	3	130-190
		>=0.55%C	Annealed	750	220	4	130-190
			Quenched and tempered	1000	300	5	130-190
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	Annealed	600	200	6	100-200
			930	275	7	100-200	
			1000	300	8	100-200	
			1200	350	9	100-200	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	100-160	
		Quenched and tempered	1100	325	11	100-160	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	80-140	
		Martensitic	820	240	13	80-140	
		Austenitic	600	180	14	80-140	
K	Gray cast iron (GG)	Ferritic		160	15	100-250	
		Pearlitic		250	16	100-250	
	Cast iron nodular (GGG)	Ferritic		180	17	100-250	
		Pearlitic		260	18	100-250	
	Malleable cast iron	Ferritic		130	19	100-250	
Pearlitic			230	20	100-250		
N	Aluminum - Wrought alloy	Not cureable		60	21	160-260	
		Cured		100	22	160-260	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	160-260
			Cured		90	24	160-260
		>12% Si	High temp.		130	25	160-260
	Copper alloys	>1% Pb	Free cutting		110	26	160-260
		Brass			90	27	160-260
			Electrolytic copper		100	28	160-260
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	
			Hard rubber		55 Shore D	30	
S	High temp. alloys	Fe based	Annealed		200	31	30-60
			Cured		280	32	30-80
		Ni or Co based	Annealed		250	33	30-80
			Cured		350	34	30-80
			Cast		320	35	30-80
	Titanium, Ti alloys	Pure	Rm 400	190	36	30-80	
		Alpha+beta alloys cured	Rm 1050	310	37	30-80	
H	Hardened steel	Hardened		55HRC	38	20-50	
		Hardened		60HRC	39	20-50	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

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

# Recommended Cutting Conditions



## Machining data for MODU-R-DRILL

Feed (mm/rev) vs. drill diameter

SPGX 06 Ø26 - Ø28	SPGX 07 Ø29 - Ø32	SPGX 09 Ø33 - Ø36	SPGX 11 Ø37 - Ø43	SPGX 11 Ø44 - Ø45	SPGX 14 Ø46 - Ø50
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.35	0.25-0.35	0.2-0.4	0.25-0.4	0.28-0.45	0.28-0.45
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.20-0.33	0.25-0.33	0.25-0.36	0.25-0.36	0.25-0.40	0.25-0.40
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.12-0.24	0.15-0.24	0.16-0.25	0.18-0.28	0.18-0.30	0.18-0.30
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.25-0.45	0.25-0.45	0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.3-0.5	0.3-0.5	0.35-0.55	0.35-0.55	0.4-0.6	0.4-0.6
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.10-0.18	0.15-0.20	0.15-0.22	0.16-0.24	0.16-0.24
0.1-0.16	0.12-0.18	0.14-0.20	0.14-0.20	0.16-0.22	0.16-0.22
0.1-0.16	0.12-0.18	0.14-0.20	0.14-0.20	0.16-0.22	0.16-0.22

# Recommended Cutting Conditions



## Machining data for SPADE-RUSH

ISO	Material	Condition	Tensile strength (N/mm <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	80-120
					930	275	7	70-110
			Quenched and tempered		1000	300	8	50-90
					1200	350	9	40-70
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	50-90	
			Quenched and tempered	1100	325	11	40-80	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-70		
		Martensitic	820	240	13	40-70		
		Austenitic	600	180	14	30-70		
K	Gray cast iron (GG)	Ferritic		160	15	90-180		
		Pearlitic		250	16	80-140		
	Cast iron nodular (GGG)	Ferritic		180	17	90-165		
		Pearlitic		260	18	80-140		
	Malleable cast iron	Ferritic		130	19	90-160		
Pearlitic			230	20	80-140			
N	Aluminum - Wrought alloy	Not cureable		60	21	90-220		
		Cured		100	22	90-220		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	90-220	
			Cured		90	24	90-220	
		>12% Si	High temp.		130	25	80-160	
	Copper alloys	>1% Pb	Free cutting		110	26	90-220	
			Brass		90	27	90-220	
			Electrolitic copper		100	28	90-220	
Non-metallic		Duroplastics, fiber plastics		70 Shore D	29			
		Hard rubber		55 Shore D	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	Pure	Rm 400	190	36	20-50		
Alpha+beta alloys cured		Rm 1050	310	37	20-50			
H	Hardened steel	Hardened		55HRC	38	20-50		
		Hardened		60HRC	39	20-50		
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

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

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

# Recommended Cutting Conditions



## Machining data for SPADE-RUSH

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

# Recommended Cutting Conditions



## Machining data for SOLID-3-DRILL

ISO	Material	Condition	Tensile strength (N/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)	Quenched and tempered	Annealed	600	200	6	80-120
			930	275	7	70-110	
			1000	300	8	50-90	
			1200	350	9	40-70	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	50-90	
		Quenched and tempered	1100	325	11	40-80	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12		
		Martensitic	820	240	13		
		Austenitic	600	180	14		
K	Gray cast iron (GG)	Ferritic		160	15	80-140	
		Pearlitic		250	16	70-120	
	Cast iron nodular (GGG)	Ferritic		180	17	80-120	
		Pearlitic		260	18	70-110	
	Malleable cast iron	Ferritic		130	19	80-120	
Pearlitic			230	20	70-110		
N	Aluminum - Wrought alloy	Not cureable		60	21		
		Cured		100	22		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	
			Cured		90	24	
		>12% Si	High temp.		130	25	
	Copper alloys	>1% Pb	Free cutting		110	26	
		Brass			90	27	
			Electrolitic copper		100	28	
Non-metallic		Duroplastics, fiber plastics		70 Shore D	29		
		Hard rubber		55 Shore D	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	Pure	Rm 400	190	36		
Alpha+beta alloys cured		Rm 1050	310	37			
H	Hardened steel	Hardened		55HRC	38		
		Hardened		60HRC	39		
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

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



# Recommended Cutting Conditions



## Machining data for 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)	Quenched and tempered	Annealed	600	200	6	70-90
			930	275	7	70-90	
			1000	300	8	50-80	
			1200	350	9	40-70	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	50-80	
		Quenched and tempered	1100	325	11	40-70	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	30-60	
		Martensitic	820	240	13	30-60	
		Austenitic	600	180	14	30-60	
K	Gray cast iron (GG)	Ferritic		160	15	65-80	
		Pearlitic		250	16	65-80	
	Cast iron nodular (GGG)	Ferritic		180	17	85-105	
		Pearlitic		260	18	75-90	
	Malleable cast iron	Ferritic		130	19	65-80	
Pearlitic			230	20	65-80		
N	Aluminum - Wrought alloy	Not cureable		60	21	70-200	
		Cured		100	22	70-200	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	70-200
			Cured		90	24	70-200
		>12% Si	High temp.		130	25	70-150
	Copper alloys	>1% Pb	Free cutting		110	26	70-200
		Brass			90	27	70-200
			Electrolytic copper		100	28	70-200
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	
Hard rubber				55 Shore D	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	Pure	Rm 400	190	36		
Alpha+beta alloys cured		Rm 1050	310	37			
H	Hardened steel	Hardened		55HRC	38	10-40	
		Hardened		60HRC	39	10-40	
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

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

# Recommended Cutting Conditions



## Machining data for H-DRILL

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



# Recommended Cutting Conditions



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

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	60-120
		>=0.25%C	Annealed	650	190	2	60-120
		<0.55%C	Quenched and tempered	850	250	3	60-120
		>=0.55%C	Annealed	750	220	4	60-120
			Quenched and tempered	1000	300	5	50-100
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed	600	200	6	50-100
			Quenched and tempered	930	275	7	50-100
				1000	300	8	50-100
				1200	350	9	50-100
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	60-120
			Quenched and tempered	1100	325	11	60-120
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	60-110	
		Martensitic	820	240	13	60-110	
		Austenitic	600	180	14	60-110	
K	Gray cast iron (GG)	Ferritic		160	15	60-100	
		Pearlitic		250	16	60-100	
	Cast iron nodular (GGG)	Ferritic		180	17	60-100	
		Pearlitic		260	18	60-100	
	Malleable cast iron	Ferritic		130	19	60-100	
Pearlitic			230	20	60-100		
N	Aluminum - Wrought alloy	Not cureable		60	21	60-130	
		Cured		100	22	60-130	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	60-130
			Cured		90	24	60-130
		>12% Si	High temp.		130	25	60-130
	Copper alloys	>1% Pb	Free cutting		110	26	60-130
			Brass		90	27	60-130
			Electrolitic copper		100	28	60-130
	Non-metallic		Duroplastics, fiber plastics		70 Shore D	29	
Hard rubber				55 Shore D	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		Pure	Rm 400	190	36	30-100
			Alpha+beta alloys cured	Rm 1050	310	37	30-100
H	Hardened steel	Hardened		55HRC	38		
		Hardened		60HRC	39		
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

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



# Recommended Cutting Conditions



## Machining data for TBTA-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	<0.25%C	Annealed	420	125	1	70-130	
		>=0.25%C	Annealed	650	190	2	70-130	
		<0.55%C	Quenched and tempered	850	250	3	70-130	
		>=0.55%C	Annealed	750	220	4	70-130	
			Quenched and tempered	1000	300	5	70-130	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed		600	200	6	70-120
					930	275	7	60-120
			Quenched and tempered		1000	300	8	60-120
					1200	350	9	60-120
	High alloy steel, cast steel and tool steel		Annealed	680	200	10	70-130	
			Quenched and tempered	1100	325	11	70-130	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	70-130		
		Martensitic	820	240	13	70-130		
		Austenitic	600	180	14	70-130		
K	Gray cast iron (GG)	Ferritic		160	15	60-110		
		Pearlitic		250	16	60-110		
	Cast iron nodular (GGG)	Ferritic		180	17	50-110		
		Pearlitic		260	18	50-110		
	Malleable cast iron	Ferritic		130	19	70-110		
Pearlitic			230	20	70-110			
N	Aluminum - Wrought alloy	Not cureable		60	21	65-130		
		Cured		100	22	65-130		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	65-130	
			Cured		90	24	65-130	
		>12% Si	High temp.		130	25	65-130	
	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		70 Shore D	29		
			Hard rubber		55 Shore D	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		Pure	Rm 400	190	36	30-60	
			Alpha+beta alloys cured	Rm 1050	310	37	30-60	
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

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

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



# Recommended Cutting Conditions



## Machining data for 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	<0.25%C	Annealed	420	125	1	70-120	
		>=0.25%C	Annealed	650	190	2	70-120	
		<0.55%C	Quenched and tempered	850	250	3	40-70	
		>=0.55%C	Annealed	750	220	4	70-120	
			Quenched and tempered	1000	300	5	55-100	
	Low alloy steel and cast steel (Less than 5% of alloying elements)		Annealed		600	200	6	70-100
					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		70 Shore D	29		
			Hard rubber		55 Shore D	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		Pure	Rm 400	190	36	30-50	
Alpha+beta alloys cured			Rm 1050	310	37	30-50		
H	Hardened steel	Hardened		55HRC	38			
		Hardened		60HRC	39			
	Chilled cast iron	Cast		400	40			
	Cast iron nodular	Hardened		55HRC	41			

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

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



# Recommended Cutting Conditions



## Machining data for WIN-GUN

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	80-110-140
		>=0.25%C	Annealed	650	190	2	80-105-130
		<0.55%C	Quenched and tempered	850	250	3	80-100-120
		>=0.55%C	Annealed	750	220	4	70-90-110
			Quenched and tempered	1000	300	5	50-70-90
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	Annealed	600	200	6	80-100-120
			930	275	7	70-90-110	
			1000	300	8	50-70-90	
			1200	350	9	40-55-70	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	50-70-90	
		Quenched and tempered	1100	325	11	40-60-80	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	40-55-70	
		Martensitic	820	240	13		
K	Gray cast iron (GG)	Ferritic		160	15	90-125-160	
		Pearlitic		250	16	80-110-140	
	Cast iron nodular (GGG)	Ferritic		180	17	90-135-180	
		Pearlitic		260	18	80-110-140	
	Malleable cast iron	Ferritic		130	19	90-125-160	
		Pearlitic		230	20	80-110-140	
N	Aluminum - Wrought alloy	Not cureable		60	21	90-155-220	
		Cured		100	22		
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75		23
			Cured		90		24
		>12% Si	High temp.		130		25

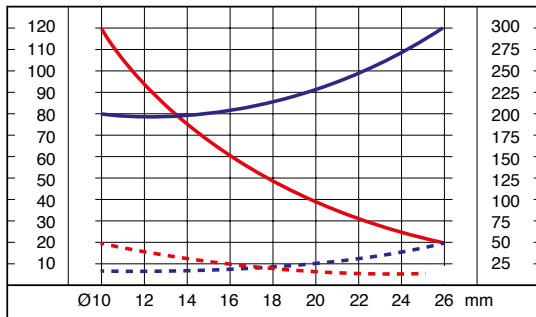
► For more information of material groups, see the materials & grades "material conversion table"

■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous

## Pressure and Coolant Flow Rate for WIN-GUN

Pressure (Bar)

Coolant Flow Rate (l/min)



Drilling Diameter (mm)

**Q (l/min)**    **P (bar)**  
— — GUN-DRILL Machines  
- - - - - - Milling and Turning Machines

# Recommended Cutting Conditions



## Machining data for WIN-GUN

Feed (mm/rev) vs. drill diameter				
Ø10 - Ø11.9	Ø12 - Ø13.9	Ø14 - Ø15.9	Ø16 - Ø19.9	Ø20 - Ø25.9
0.15 <b>0.18</b> 0.21	0.18 <b>0.21</b> 0.24	0.20 <b>0.23</b> 0.27	0.25 <b>0.30</b> 0.35	0.25 <b>0.30</b> 0.35
0.14 <b>0.17</b> 0.21	0.16 <b>0.20</b> 0.24	0.18 <b>0.22</b> 0.26	0.23 <b>0.27</b> 0.31	0.25 <b>0.30</b> 0.35
0.12 <b>0.14</b> 0.17	0.15 <b>0.17</b> 0.20	0.18 <b>0.20</b> 0.23	0.20 <b>0.22</b> 0.25	0.22 <b>0.24</b> 0.27
0.12 <b>0.13</b> 0.15	0.14 <b>0.15</b> 0.17	0.16 <b>0.18</b> 0.20	0.16 <b>0.19</b> 0.21	0.18 <b>0.21</b> 0.24
0.20 <b>0.23</b> 0.27	0.25 <b>0.28</b> 0.32	0.30 <b>0.33</b> 0.37	0.35 <b>0.40</b> 0.45	0.35 <b>0.42</b> 0.47
0.25 <b>0.28</b> 0.32	0.30 <b>0.33</b> 0.37	0.35 <b>0.38</b> 0.42	0.40 <b>0.45</b> 0.50	0.45 <b>0.50</b> 0.57

- ▶ **Red text:** Recommended cutting data
- ▶ Mandatory use of emulsion or oil when drilling
- ▶ For the 400 mm long tools, please reduce the cutting speed by 20%



# Recommended Cutting Conditions



Machining data for TRGD / TRGD3 / TRGDL / TBTA-TR

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		70 Shore D	29		
		Hard rubber		55 Shore D	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		Pure	Rm 400	190	36
Alpha+beta alloys cured	Rm 1050			310	37		
H	Hardened steel	Hardened		55 HRC	38		
		Hardened		60 HRC	39		
	Chilled cast iron	Cast		400	40		
Cast iron nodular	Hardened		55 HRC	41			

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

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

# Recommended Cutting Conditions



## Machining data for TRGD / TRGD3 / TRGD L / TBTA-TR

Feed (mm/rev) vs. drill diameter							
Cutting speed Vc (m/min)	TRGD / TRGD3 / TRGD L					TBTA-TR	
	Ø10.00-Ø11.80	Ø12.00-Ø13.99	Ø14.00-Ø15.99	Ø16.00-Ø28.00	Ø28.01-Ø40.00	Cutting speed Vc (m/min)	Ø16.00-Ø28.00
80-140	0.05-0.08	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.15	90-130	0.15-0.20
80-140	0.05-0.14	0.05-0.16	0.05-0.10	0.05-0.10	0.05-0.15	90-130	0.15-0.20
80-140	0.05-0.14	0.05-0.16	0.05-0.16	0.05-0.20	0.05-0.20	90-130	0.15-0.20
80-140	0.05-0.14	0.05-0.16	0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
80-140	0.05-0.14	0.05-0.16	0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
80-140	0.05-0.14	0.05-0.16	0.05-0.10	0.05-0.10	0.05-0.15	70-120	0.10-0.25
80-120	0.05-0.14	0.05-0.16	0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-120			0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-120			0.05-0.16	0.05-0.20	0.05-0.20	60-120	0.10-0.25
80-140			0.05-0.10	0.05-0.10	0.05-0.15	70-130	0.10-0.25
80-120			0.05-0.16	0.05-0.20	0.05-0.20	70-130	0.10-0.25
60-100	0.05-0.08	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
60-100	0.05-0.08	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
60-100	0.05-0.08	0.05-0.10	0.05-0.10	0.05-0.10	0.05-0.15	80-130	0.06-0.10
80-140	0.05-0.20	0.05-0.25	0.05-0.25	0.05-0.30	0.05-0.30	50-110	0.10-0.20
80-140	0.05-0.20	0.05-0.25	0.05-0.25	0.05-0.30	0.05-0.30	50-110	0.10-0.20
80-140	0.05-0.20	0.05-0.25	0.05-0.25	0.05-0.30	0.05-0.30	60-110	0.10-0.20
80-140	0.05-0.20	0.05-0.25	0.05-0.25	0.05-0.30	0.05-0.30	60-110	0.10-0.20
80-140			0.05-0.25	0.05-0.30	0.05-0.30	70-110	0.10-0.20
80-140			0.05-0.25	0.05-0.30	0.05-0.30	70-110	0.10-0.20
100-200	0.05-0.18	0.05-0.20	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
100-200	0.05-0.18	0.05-0.20	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
100-200	0.05-0.18	0.05-0.20	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
100-200	0.05-0.18	0.05-0.20	0.05-0.20	0.05-0.20	0.05-0.25	65-130	0.08-0.18
						65-130	0.08-0.18
						65-130	0.08-0.18
						65-130	0.08-0.18
						65-130	0.08-0.18
						65-130	0.08-0.18
						65-130	0.08-0.18
20-50	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
20-50	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13	20-50	0.08-0.18
30-60	0.04-0.10	0.05-0.13	0.05-0.13	0.05-0.15	0.05-0.18	30-60	0.08-0.18
30-60	0.04-0.10	0.05-0.13	0.05-0.13	0.05-0.15	0.05-0.18	30-60	0.08-0.18
50-100	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13		
50-100	0.04-0.06	0.04-0.08	0.04-0.08	0.04-0.10	0.04-0.13		



# Recommended Cutting Conditions



## Machining data for XM-REAM

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc (m/min)	Feed (mm/rev) vs. reamer diameter			
							Ø8-9.99	Ø10-11.99	Ø12-12.99	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	50-150	0.25-0.50	0.30-0.60	0.35-0.80
		>=0.25%C	Annealed	650	190	2	50-150	0.25-0.50	0.30-0.60	0.35-0.80
		<0.55%C	Quenched and tempered	850	250	3	50-150	0.25-0.50	0.30-0.60	0.35-0.80
		>=0.55%C	Annealed	750	220	4	50-150	0.25-0.50	0.30-0.60	0.35-0.80
			Quenched and tempered	1000	300	5	50-150	0.25-0.50	0.30-0.60	0.35-0.80
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	600	200	6	50-150	0.25-0.50	0.30-0.60	0.35-0.80	
			930	275	7	50-150	0.25-0.50	0.30-0.60	0.35-0.80	
		Quenched and tempered	1000	300	8	50-150	0.25-0.50	0.30-0.60	0.35-0.80	
			1200	350	9	50-150	0.25-0.50	0.30-0.60	0.35-0.80	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	20-60	0.20-0.30	0.25-0.40	0.30-0.50	
		Quenched and tempered	1100	325	11	20-60	0.20-0.30	0.25-0.40	0.30-0.50	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	20-40	0.20-0.30	0.25-0.40	0.30-0.50	
		Martensitic	820	240	13	20-40	0.20-0.30	0.25-0.40	0.30-0.50	
		Austenitic	600	180	14	20-40	0.20-0.30	0.25-0.40	0.30-0.50	
K	Gray cast iron (GG)	Ferritic		160	15	50-200	0.30-0.60	0.35-0.80	0.40-1.00	
		Pearlitic		250	16	50-200	0.30-0.60	0.35-0.80	0.40-1.00	
	Cast iron nodular (GGG)	Ferritic		180	17	50-200	0.30-0.60	0.35-0.80	0.40-1.00	
		Pearlitic		260	18	50-200	0.30-0.60	0.35-0.80	0.40-1.00	
	Malleable cast iron	Ferritic		130	19	50-200	0.30-0.60	0.35-0.80	0.40-1.00	
Pearlitic			230	20	50-200	0.30-0.60	0.35-0.80	0.40-1.00		
N	Aluminum - Wrought alloy	Not cureable		60	21	100-250	0.30-0.60	0.35-0.80	0.40-1.00	
		Cured		100	22	100-250	0.30-0.60	0.35-0.80	0.40-1.00	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	100-250	0.30-0.60	0.35-0.80	0.40-1.00
		Cured		90	24	100-250	0.30-0.60	0.35-0.80	0.40-1.00	
	>12% Si	High temp.		130	25	100-250	0.30-0.60	0.35-0.80	0.40-1.00	
	Copper alloys	>1% Pb	Free cutting		110	26	100-250	0.30-0.60	0.35-0.80	0.40-1.00
		Brass		90	27	100-250	0.30-0.60	0.35-0.80	0.40-1.00	
	Non-metallic	Electrolitic copper			100	28	100-250	0.30-0.60	0.35-0.80	0.40-1.00
		Duroplastics, fiber plastics			70 Shore D	29				
			Hard rubber		55 Shore D	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	Pure	Rm 400	190	36					
Alpha+beta alloys cured		Rm 1050	310	37						
H	Hardened steel	Hardened		55 HRC	38					
		Hardened		60 HRC	39					
	Chilled cast iron	Cast		400	40					
	Cast iron nodular	Hardened		55 HRC	41					

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

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

# Recommended Cutting Conditions



## Machining data for 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				
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered		5	B7 - B9	fz = 0.12 - 0.27	B7 - B9	fz = 0.09 - 0.21
		Annealed		6	TT9030	BL	TT9030	BL
		Quenched and tempered		7	Vc = 80 - 200		Vc = 60 - 120	
	High alloy steel, cast steel and tool steel	Quenched and tempered		8	B4 - B6	fz = 0.08 - 0.21	B4 - B6	fz = 0.08 - 0.21
		Quenched and tempered		9	B7 - B9	fz = 0.12 - 0.27	B7 - B9	fz = 0.09 - 0.21
		Annealed		10	TT9030	BL	TT9030	BL
		Quenched and tempered		11	Vc = 20 - 60		Vc = 20 - 60	
M	Stainless steel and cast steel	Ferritic / martensitic		12	TT9030	BL	TT9030	BL
		Martensitic		13	Vc = 20 - 40		Vc = 20 - 40	
		Austenitic		14	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11
K	Gray cast iron (GG)	Ferritic		15	B7 - B9	fz = 0.07 - 0.17	B7 - B9	fz = 0.05 - 0.14
		Pearlitic		16	TT9030	BL	TT9030	BL
	Cast iron nodular (GGG)	Ferritic		17	Vc = 120 - 220		Vc = 80 - 200	
		Pearlitic		18	B4 - B6	fz = 0.08 - 0.18	B4 - B6	fz = 0.05 - 0.13
	Malleable cast iron	Ferritic		19	B7 - B9	fz = 0.10 - 0.24	B7 - B9	fz = 0.07 - 0.17
		Pearlitic		20	TT9030	AS or BL	TT9030	BL
		Ferritic		19	Vc = 160 - 280		Vc = 150 - 250	
		Pearlitic		18	B4 - B6	fz = 0.11 - 0.20	B4 - B6	fz = 0.06 - 0.15
Malleable cast iron	Pearlitic		20	B7 - B9	fz = 0.11 - 0.24	B7 - B9	fz = 0.08 - 0.19	
	Ferritic		19	TT9030	AS or BL	TT9030	BL	
Malleable cast iron	Pearlitic		20	Vc = 100 - 220		Vc = 100 - 220		
	Ferritic		19	B4 - B6	fz = 0.11 - 0.20	B4 - B6	fz = 0.06 - 0.15	
Malleable cast iron	Pearlitic		20	B7 - B9	fz = 0.11 - 0.24	B7 - B9	fz = 0.08 - 0.20	

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

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

# Recommended Cutting Conditions



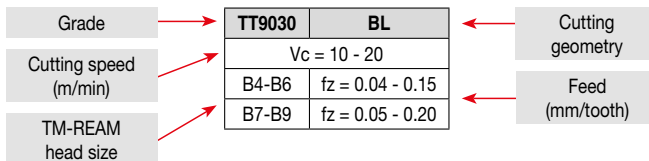
## Machining data for TM-REAM - Through hole

ISO	Material	Condition	Material No.	Through hole		Interrupted through Hole		
N	Aluminum - Wrought alloy	Not cureable	21	B7 - B9	BL or GS	UF10	BL	
		Cured	22	Vc = 150 - 400		Vc = 150 - 400		
	Aluminum-cast, alloyed	<=12% Si	Not cureable	23	B4 - B6	fz = 0.08 - 0.16	B4 - B6	fz = 0.08 - 0.16
			Cured	24				
		>12% Si	High temp.	25	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20
	Copper alloys	>1% Pb	Free cutting	26	TT9030	BL	TT9030	BL
					Vc = 50 - 200		Vc = 50 - 200	
		Brass	27	B4 - B6	fz = 0.08 - 0.18	B4 - B6	fz = 0.05 - 0.13	
	Electrolytic copper		28	B7 - B9	fz = 0.10 - 0.23	B7 - B9	fz = 0.07 - 0.16	
	Non-metallic	Duroplastics, fiber plastics	29	TT9030	AS	TT9030	AS	
Vc = 25 - 80				Vc = 25 - 80				
Hard rubber			30	B4 - B6	fz = 0.05 - 0.10	B4 - B6	fz = 0.05 - 0.10	
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *
			Cured	32	Vc = 15 - 50		Vc = 15 - 50	
		Ni or Co based	Annealed	33	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08
	Cured		34					
	Cast		35					
	Titanium, Ti alloys	Pure	36	B7 - B9	fz = 0.05 - 0.13	B4 - B6	fz = 0.04 - 0.11	
Alpha+beta alloys cured		37						
H	Hardened steel	Hardened	38	TT9030	BL	TT9030	BL	
		Hardened	39	Vc = 25 - 50		Vc = 25 - 50		
	Chilled cast iron	Cast	40	B4 - B6	fz = 0.06 - 0.15	B4 - B6	fz = 0.06 - 0.15	
Cast iron nodular	Hardened	41	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		

\* Standard edge geometries are not suitable for reaming titanium and high temperature alloys. In order to choose a proper geometry, please ask for our recommendations.

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

### Legend:



# Recommended Cutting Conditions



## Machining data for TM-REAM - Blind hole

ISO	Material	Condition	Material No.	Blind hole		Interrupted blind hole		
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	1	TT9030	AS	TT9030	AS
		>=0.25%C	Annealed	2	Vc = 60-160		Vc = 60 - 120	
		<0.55%C	Quenched and tempered	3	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15
		>=0.55%C	Annealed	4				
			Quenched and tempered	5	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Annealed	6	TT9030	AS	TT9030	AS	
		Quenched and tempered	7	Vc = 60-160		Vc = 60 - 120		
			8	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15	
			9	B7 - B9	fz = 0.08 - 0.20	B7 - B9	fz = 0.07 - 0.16	
	High alloy steel, cast steel and tool steel	Annealed	10	TT9030	AS	TT9030	AS	
		Quenched and tempered	11	Vc = 20 - 60		Vc = 20 - 60		
			B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08		
M	Stainless steel and cast steel	Ferritic / martensitic	12	TT9030	AS	TT9030	AS	
				Vc = 20 - 40		Vc = 20 - 40		
		Martensitic	13	B4 - B6	fz = 0.04 - 0.10	B4 - B6	fz = 0.03 - 0.08	
		Austenitic	14	B7 - B9	fz = 0.05 - 0.13	B7 - B9	fz = 0.05 - 0.10	
K	Gray cast iron (GG)	Ferritic	15	TT9030	AS	TT9030	AS	
			Vc = 80 - 200		Vc = 60 - 120			
	Pearlitic	16	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.13		
			B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18		
	Cast iron nodular (GGG)	Ferritic	17	TT9030	AS	TT9030	AS	
			Vc = 160 - 280		Vc = 160 - 240			
	Pearlitic	18	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.06 - 0.16		
			B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.18		
Malleable cast iron	Ferritic	19	TT9030	AS	TT9030	AS		
		Vc = 100 - 220		Vc = 100 - 220				
	Pearlitic	20	B4 - B6	fz = 0.06 - 0.18	B4 - B6	fz = 0.05 - 0.15		
		B7 - B9	fz = 0.08 - 0.23	B7 - B9	fz = 0.08 - 0.20			

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

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

# Recommended Cutting Conditions



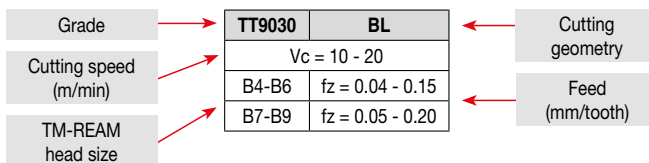
## Machining data for TM-REAM - Blind hole

ISO	Material	Condition	Material No.	Blind hole		Interrupted blind hole		
N	Aluminum - Wrought alloy	Not cureable	21	UF10	GS or AS	UF10	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	
	Electrolytic copper		28	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20	
	Non-metallic	Duroplastics, fiber plastics	29	TT9030	AS	TT9030	AS	
				Vc = 25 - 80		Vc = 25 - 80		
			Hard rubber	30	B4 - B6	fz = 0.05 - 0.10	B4 - B6	fz = 0.05 - 0.10
S	High temp. alloys	Fe based	Annealed	31	TT9030	L *	TT9030	L *
			Cured	32	Vc = 15 - 50		Vc = 15 - 50	
		Ni or Co based	Annealed	33	B4 - B6	fz = 0.03 - 0.08	B4 - B6	fz = 0.03 - 0.08
	Cured	34						
	Cast	35						
	Titanium, Ti alloys	Pure	36	B7 - B9	fz = 0.04 - 0.11	B7 - B9	fz = 0.04 - 0.11	
Alpha+beta alloys cured		37						
H	Hardened steel	Hardened	38	TT9030	AS	TT9030	AS	
		Hardened	39	Vc = 25 - 50		Vc = 25 - 50		
	Chilled cast iron	Cast	40	B4 - B6	fz = 0.05 - 0.13	B4 - B6	fz = 0.05 - 0.13	
Cast iron nodular	Hardened	41	B7 - B9	fz = 0.10 - 0.20	B7 - B9	fz = 0.10 - 0.20		

\* Standard edge geometries are not suitable for reaming titanium and high temperature alloys. In order to choose a proper geometry, please ask for our recommendations.

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

### Legend:





# Recommended Cutting Conditions



## Machining data for TB-REAM

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

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

■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous

# Recommended Cutting Conditions



## Machining data for TB-REAM

			Lead B (30°/3°) (Reaming allowance: 0.1 ~ 0.3)						
			Feed (mm/rev)	Rake (°)	Cutting speed Vc (m/min)				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							

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

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

■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous

# Recommended Cutting Conditions



## Machining data for TS-REAM

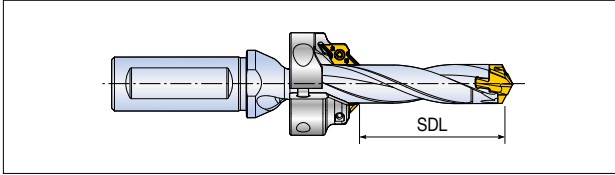
ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc (m/min)	
P	Non-alloy steel, cast steel, free cutting steel	<0.25%C	Annealed	420	125	1	120-250
		>=0.25%C	Annealed	650	190	2	120-250
		<0.55%C	Quenched and tempered	850	250	3	120-250
		>=0.55%C	Annealed	750	220	4	
			Quenched and tempered	1000	300	5	
	Low alloy steel and cast steel (Less than 5% of alloying elements)	Quenched and tempered	Annealed	600	200	6	120-250
			930	275	7	120-250	
			1000	300	8	120-250	
			1200	350	9	120-250	
	High alloy steel, cast steel and tool steel	Annealed	680	200	10	120-250	
		Quenched and tempered	1100	325	11	120-250	
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12	60-120	
		Martensitic	820	240	13	60-120	
		Austenitic	600	180	14	60-120	
K	Gray cast iron (GG)	Ferritic		160	15	60-120	
		Pearlitic		250	16	60-120	
	Cast iron nodular (GGG)	Ferritic		180	17	60-120	
		Pearlitic		260	18	60-120	
	Malleable cast iron	Ferritic		130	19	60-120	
Pearlitic			230	20	60-120		
N	Aluminum - Wrought alloy	Not cureable		60	21	250-500	
		Cured		100	22	250-500	
	Aluminum-cast, alloyed	<=12% Si	Not cureable		75	23	250-500
			Cured		90	24	250-500
		>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		70 Shore D	29		
		Hard rubber		55 Shore D	30		
S	High temp. alloys	Fe based	Annealed		200	31	
			Cured		280	32	
		Ni or Co based	Annealed		250	33	25-50
			Cured		350	34	25-50
			Cast		320	35	
	Titanium, Ti alloys	Pure	Rm 400	190	36	30-80	
Alpha+beta alloys cured		Rm 1050	310	37	30-80		
H	Hardened steel	Hardened		55HRC	38	25-60	
		Hardened		60HRC	39		
	Chilled cast iron	Cast		400	40		
	Cast iron nodular	Hardened		55HRC	41		

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

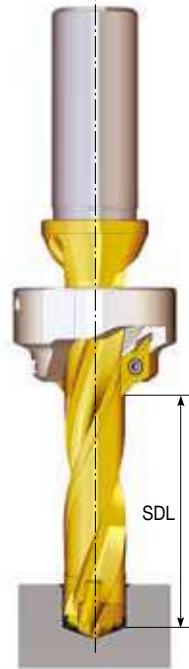
■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous   
 ■ High temp. alloys   
 ■ Hardened steel



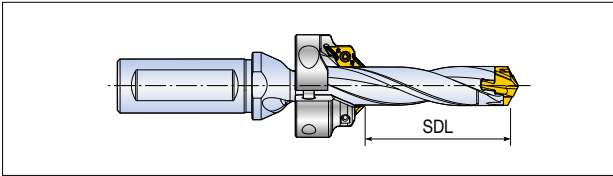
## ► Chamfering ring design - DRILL-RUSH



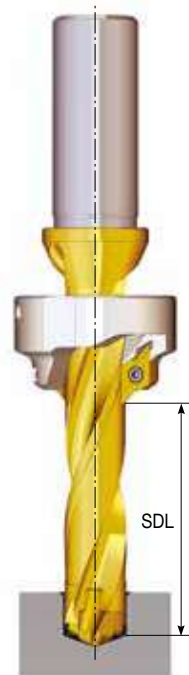
	Designation	CFR designation	SDL	
			min	max
3D	TCD 130-134-16T3/S0-3D	CFR D130-A45	19	19
	135-139-16T3/S0-3D	CFR D135-A45	19	20
	140-144-16T3/S0-3D	CFR D140-A45	21	22
	145-149-16T3/S0-3D	CFR D145-A45	22	23
	150-159-20T3/S0-3D	CFR D150-A45	23	23
	160-169-20T3/S0-3D	CFR D160-A45	24	25
	170-179-20T3/S0-3D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



## ► Chamfering ring designation - DRILL-RUSH



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



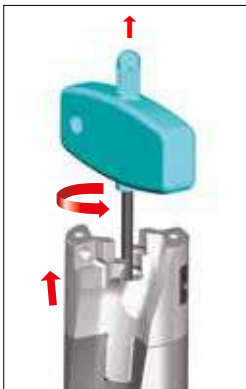




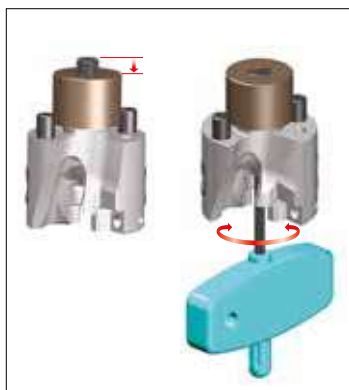


## ► Modular head replacement instructions

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



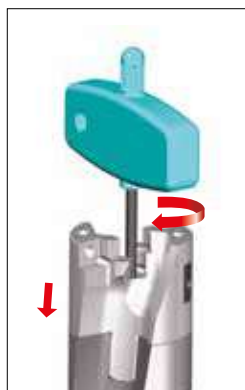
4. Rotate the screw to adjust to the same height with the setting gauge.



Setting gauge

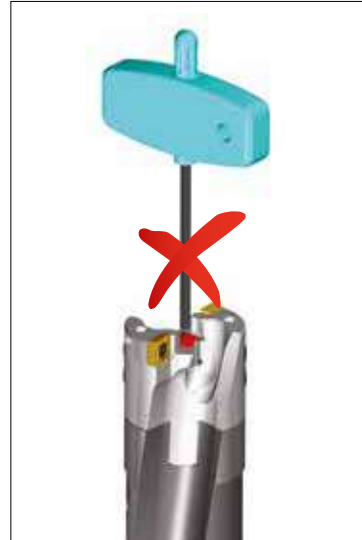
Drill dia.	Designation
D26-D29	SG TNDH D26-29-TP
D30-D35	SG TNDH D30-35-TP
D36-D39	SG TNDH D36-39-TP
D40-D43	SG TNDH D40-43-TP
D44-D50	SG TNDH D44-50-TP

5. Remove the height adjusted modular head from the setting gauge and attach it to the holder.



## ► Modular head disassembly in the event of center drill damage

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



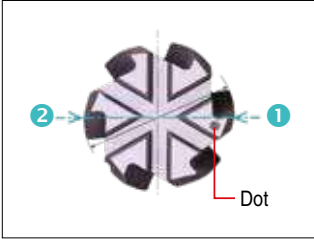
Damaged center drill



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

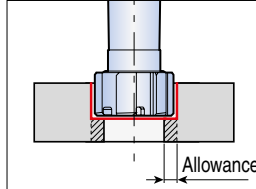
## ► XM-REAM user guide and notice

### How to check reamer diameter



Measure the dot side edge **1** and opposite side edge **2**.

### Reaming allowance



Material	Diameter	
	< Ø10	Ø10-12
Steel & Cast iron	0.07-0.10	0.07-0.15
Aluminum & brass	0.07-0.10	0.10-0.15

\* Based on diameter

Ex) Ø9.85-9.93 mm pre-hole is recommended for Ø10H7 reaming in cast iron.

### Caution

- To ensure smooth coolant flow, the dot and slot orientation of the head must be aligned as illustrated.

**O**

Dot orientation match between head and holder

Coolant hole slightly visible through flutes

Smooth coolant flow

**X**

Dot orientation mismatch between head and holder

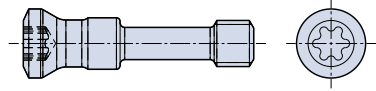
Coolant hole is hidden by the flute

Reduced coolant flow

## ► Screw torque

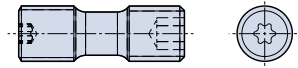
### For SPADE-RUSH

Designation	Thread	Length	Torx	Tightening Torque
<b>TS 30138D33</b>	M3	13.8	Torx 10	2.0 Nm
<b>TS 40178D25</b>	M4	17.8	Torx 20	4.5 Nm
<b>TS 40198D28</b>	M4	19.8	Torx 20	4.5 Nm
<b>TS 40210D3</b>	M4	21	Torx 20	5.0 Nm
<b>TS 50230D3</b>	M5	23	Torx 20	5.0 Nm
<b>TS 50250D35</b>	M5	25	Torx 25	5.5 Nm
<b>TS 60265D4</b>	M6	26.5	Torx 25	6.0 Nm
<b>TS 60285D42</b>	M6	28.5	Torx 25	6.0 Nm
<b>TS 60320D5</b>	M6	31	Torx 25	6.0 Nm
<b>TS 80340D6</b>	M8	34	Torx 25	7.0 Nm



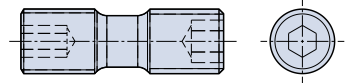
### For MODU-R-DRILL

Designation	Thread	Length	Torx	Tightening Torque
<b>TDPS 0512-T7</b>	M5	12	Torx 7	1.0 Nm
<b>TDPS 0618-T8</b>	M6	18	Torx 8	2.0 Nm



### For MODU-R-DRILL

Designation	Thread	Length	Torx	Tightening Torque
<b>TDPS 0722-W3.0</b>	M7	22	Hexa 3.0 mm	5.0 Nm



# Technical Data

## ► Hole tolerance

Diameter D(mm)		Tolerance (µm)															
>D	≤D	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7
-	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0
3	6	+180 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0
14	18																
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0
24	30																
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0
40	50	+280 +180	+192 +130	+230 +130													
50	65	+310 +190	+214 +140	+260 +140	+146 +100	+174 +100	+220 +146	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0
65	80	+320 +200	+224 +150	+270 +150													

# Technical Data

## ► Hole tolerance

Tolerance (µm)																		
H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7	R7	S7	T7	U7	X7	
+14 0	+25 0	+40 0	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-6 -12	-6 -16	-10 -20	-14 -24	-	-18 -28	-20 -30	
+18 0	+30 0	+48 0	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-9 -17	-8 -20	-11 -23	-15 -27	-	-19 -31	-24 -36	
+22 0	+36 0	+58 0	±4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-12 -21	-9 -24	-13 -28	-17 -32	-	-22 -37	-28 -43	
+27 0	+43 0	+70 0	±5.5	±9	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-15 -26	-11 -29	-16 -34	-21 -39	-	-26 -44	-33 -51 -38 -56	
+33 0	+52 0	+84 0	±6.5	±10.5	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-18 -31	-14 -35	-20 -41	-27 -48	-	-33 -54 -40 -61	-46 -67 -56 -77	
+39 0	+62 0	+100 0	±8	±12.5	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-21 -37	-17 -42	-25 -50	-34 -59	-39 -64 -45 -70	-51 -76 -61 -86	-	
+46 0	+74 0	+120 0	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-26 -45	-21 -51	-30 -60 -32 -62	-42 -72 -48 -78	-55 -85 -64 -94	-76 -106 -91 -121	-	

## ► Specific dimensions

	Through <input type="checkbox"/> Blind <input type="checkbox"/> ØD1 _____    L1 _____ α1 _____    S _____ •Hole tolerance _____	

	Through <input type="checkbox"/> Blind <input type="checkbox"/> ØD1 _____    ØD2 _____ L1 _____    L2 _____ α1 _____ •Hole tolerance _____	

	Through <input type="checkbox"/> Blind <input type="checkbox"/> ØD1 _____    ØD2 _____ L1 _____    L2 _____ α1 _____    α2 _____ S _____ •Hole tolerance _____	

Comment

### Drill type

- TOPDRILL \_\_\_\_\_
- T-DRILL \_\_\_\_\_

### Technical data

- Machine type  
 MCT     Lathe   
 Vertical     Horizontal   
 Machine name \_\_\_\_\_  
 Power \_\_\_\_\_ kW

- Coolant supply  
 Internal     External   
 Coolant pressure \_\_\_\_\_ bar  
 Coolant type \_\_\_\_\_

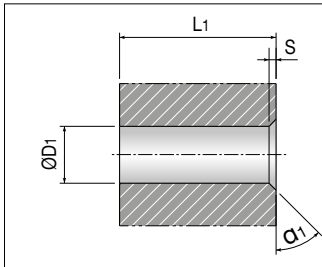
### Workpiece

- Part \_\_\_\_\_
- Material \_\_\_\_\_
- Hardness \_\_\_\_\_

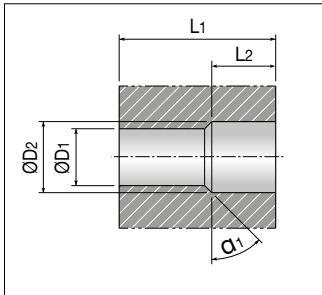
### Shank type

- Cylindrical shank (ISO 9766)
- Whistle notch shank
- Cylindrical with flat type
- Weldon shank

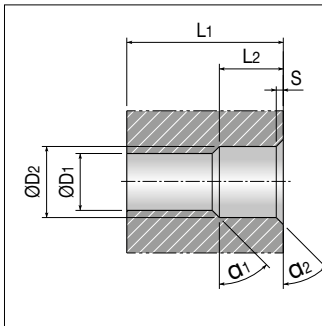
## ► Specific dimensions



Through  Blind   
 ØD1 \_\_\_\_\_ L1 \_\_\_\_\_  
 Q1 \_\_\_\_\_ S \_\_\_\_\_  
 •Hole tolerance \_\_\_\_\_



Through  Blind   
 ØD1 \_\_\_\_\_ ØD2 \_\_\_\_\_  
 L1 \_\_\_\_\_ L2 \_\_\_\_\_  
 Q1 \_\_\_\_\_  
 •Hole tolerance \_\_\_\_\_



Through  Blind   
 ØD1 \_\_\_\_\_ ØD2 \_\_\_\_\_  
 L1 \_\_\_\_\_ L2 \_\_\_\_\_  
 Q1 \_\_\_\_\_ Q2 \_\_\_\_\_  
 S \_\_\_\_\_  
 •Hole tolerance \_\_\_\_\_

Comment

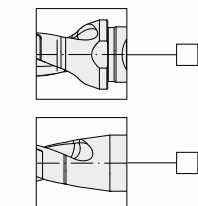
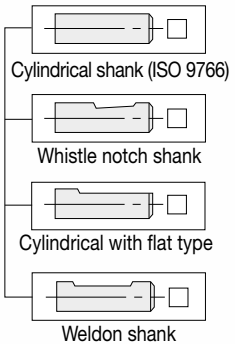
### Technical data

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

### Workpiece

- Part \_\_\_\_\_
- Material \_\_\_\_\_
- Hardness \_\_\_\_\_

### Shank type



- Shank dia: \_\_\_\_\_
- Shank length: \_\_\_\_\_



## ► Specific dimensions

• DC, DC\_2 would be hole dimensions and please note hole tolerance if possible

### Technical data

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

### Workpiece

- Part \_\_\_\_\_
- Material \_\_\_\_\_
- Hardness \_\_\_\_\_

### Hole type

- Blind hole
- Through hole

### Coating

- TiAlN
- Non-coated

### Shank type

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

**Comment**

# Tailor-made Order Form



## ► Deep hole drilling order form

★: Mandatory data field

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

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

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

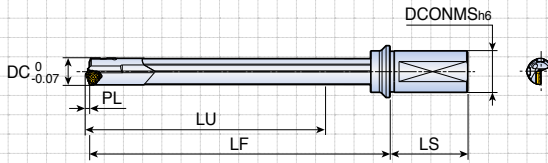
Type of coolant	
Coolant supplier name	
Water based	<input type="checkbox"/> Soluble <input type="checkbox"/> Emulsion            %
Oil based	<input type="checkbox"/>
Coolant pressure	(bar)
Coolant volume	(L/min)



# Tailor-made Order Form



## ► Deep hole drilling order form



Sketch of drilling application

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

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

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

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

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

## ► Standard gundrill drivers for machining centers and lathes

### Drivers

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

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

## ► Standard drivers for gundrill machines










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

## ► Reamer order form

★: Mandatory data field

Date:	Subsidiary:
Company★ :	Enquiry dead line:
Contact person:	
Address:	

Request reason	
New tool <input type="checkbox"/>	Problem <input type="checkbox"/>
Quality	
Cycle time	
Alternative supplier	
Other	

Workpiece	
Description★	
Hardness★	
Pre-hole size★	(Tolerance : )
Depth★	
Bore type	
<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> 	
<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> 	
Clamping information	

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

Machine	
Model	
Type★	vertical <input type="checkbox"/>
	horizontal <input type="checkbox"/>
	multi-spindle <input type="checkbox"/>
Adaption★	
Max RPM	
Power	
Spindle accuracy	
Coolant	

Lubricant	
Oil	<input type="checkbox"/>
MQL	<input type="checkbox"/>
Emulsion	<input type="checkbox"/>
Ratio of mixture	
Coolant pressure	

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

Tool	
Type★	TM(Index multi-edge) <input type="checkbox"/> TB(Single blade) <input type="checkbox"/> TS(Solid) <input type="checkbox"/> Other <input type="checkbox"/> ( )
Diameter★	
Depth of cut★	
Coolant★	Internal <input type="checkbox"/> External <input type="checkbox"/>
Shank type★	
Holder type	Collet <input type="checkbox"/> Hydraulic <input type="checkbox"/> Other <input type="checkbox"/>
Adjustable adaptor	Yes <input type="checkbox"/> No <input type="checkbox"/>

# MILLING





# MILLING



## contents

### Tool Selection Guide

Face Mills	E4
End Mills & Modular Heads	E13
High Feed End Mills & Modular Heads	E19
Extended Flute Cutters	E21
Slotting Cutters	E24
Milling Inserts	E27
Slotting Inserts	E37
Tailor-made Inserts	E38

### Grades

E39
















### Milling Cutters

Face Mills	E44
High Feed Face Mills	E102
End Mills & Modular Heads	E113
High Feed End Mills & Modular Heads	E181
Extended Flute Cutters	E201
Slotting Cutters	E219
MAXI-SFEED	E238



# Tool Selection Guide

## Face mills

Series		TANGSPEED	BILLRUSH	BILL2RUSH	BILL2RUSH	WINMILL
		4T-TF90	3P TF90	6N TF90	SCRM90TN	TFM90AV
						
<b>Pages</b>		E44	E45-E47	E48-E50	E51-E52	E53
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		8.3-12.5	4.7-15	4.1-9.2	13-15	10
<b>Diameter range(mm)</b>		Ø40-Ø200	Ø32-Ø250	Ø40-Ø250	Ø50-Ø250	Ø40-Ø63
<b>Insert</b>		LPK(H)U 0904 LPKU 1407	3PK(H)T 0603 3PK(H)T 1004 3PK(H)T 1505 3PK(H)T 1906	6NKU 0403 6NGU 0604 6NGU 0905	TNMX 1806 TNM(G)X 2207	AVKT 1004 AVCT 1004-AL
<b>Application</b>	Facing 	●	●	●	●	●
	High feed milling 					○
	Shouldering 	●	●	●	●	●
	Slotting 	●	●	●	●	●
	Straight ramping 	●	●			●
	Helical ramping 	●	●			●
	Side slotting 					
	Profiling 					○
	Step down 					●
	Counter boring 					

# Tool Selection Guide


## Face mills

					
TFM90AX 2S-TFM90AP TFM90AP	TFM90AN	4N TF90	8D-TF90	TFM90XEV	For Finishing 4W-TF90
					
E54 -E57	E58-E59	E60-E61	E62-E64	E65	E66
90°	90°	90°	90°	90°	-
5.5-17.9	11-15	3.5-13.8	5.0-8.5	16-21	0.5
Ø32-Ø200	Ø40-Ø200	Ø32-Ø100	Ø32-Ø160	Ø40-Ø200	Ø50-Ø160
AXM(C)T 0602 APK(C)T 09T3 APK(C)T 1204 APK(C)T 1705 APKT1907	ANM(H)X 1106 ANM(H)X 1607	4NK(H)T 0402 4NK(H)T 0603 4NK(H)T 0904 4NKT 1106 4NKT 1407	SQKU 0703 SQK(H)U 1004 SQK(H)U 1206	XEVT 1605 XEVT 2206	4WHU 1207
●	●	●	●	●	●
○		○			
●	●	●	●	●	
●	●	●	●	●	
●	●	●		●	
●	●	●		●	
○		○			
		●		●	

● Recommended, ○ Suitable

# Tool Selection Guide





















## Face mills

Series		CHASE2QUAD	CHASE2QUAD	LIONMILL	LIONMILL	CHASE2QUAD
		For Finishing	For Finishing			
		TFM90SNS	TQ90SNS	LM90TP	LM90SE	TFM90SN TFM88SN
						
<b>Pages</b>		E67	E68	E69	E70	E71-E72
<b>Approach angle</b>		90°	90°	90°	90°	90°, 88°
<b>Max. depth of cut(mm)</b>		1.0	1.0	17.6	17.0	12.0
<b>Diameter range(mm)</b>		Ø50-Ø250	Ø250-Ø400	Ø80-Ø315	Ø125-Ø315	Ø50-Ø200
<b>Insert</b>		SNEX 1204 SNET 1205	SNEX 1204 SNET 1205	TPKN 2204	SEKX 2107	SNGX 1306 SNGX 1306 ZN
<b>Application</b>	Facing		●	●	●	●
	High feed milling					
	Shouldering				●	●
	Slotting					
	Straight ramping					
	Helical ramping					
	Side slotting					
	Profiling					
	Step down					
	Counter boring					



# Tool Selection Guide

## Face mills











						
Series		12D-TF45	14D-F45XN	14D-F45XNH	14D-F45XNW	7S-F45
						
Pages		E81-E82	E83-E84	E85	E86	E87
Approach angle		45°	45°	45°	45°	45°
Max. depth of cut(mm)		3.0-5.0	3.5-5.0	3.5-5.0	5.0	3.2
Diameter range(mm)		Ø50-Ø250	Ø50-Ø250	Ø63-Ø125	Ø80-Ø315	Ø32-Ø125
Insert		HXK(H)U 0605 HXK(H)U 1007	XNM(H)U 0605 XNM(H)U 0906	XNM(H)U 0605 XNM(H)U 0906	XNHU 0906	7EMT 0604
Application	Facing		●	●	●	●
	High feed milling					
	Shouldering					
	Slotting					
	Straight ramping					●
	Helical ramping					●
	Side slotting					
	Profiling					
	Step down					
	Counter boring					











# Tool Selection Guide

## Face mills

Series		LIONMILL	CHASE2MOLD	CHASEMOLD	CHASESPEED	CHASESPEED	
		LM45SE	TFMRNS	TFMRY	TFMRN	TFMRP	
Pages		E94	E95-E96	E97-E99	E100	E101	
Approach angle		45°	-	-	-	-	
Max. depth of cut(mm)		6.5-8.7	5.0-8.0	4.0-10.0	6.3	6.3	
Diameter range(mm)		Ø80-Ø250	Ø32-Ø200	Ø32-Ø250	Ø50-Ø80	Ø50	
Insert		SEKN 1203 SEKN 1504	RNMU 1004 RNMU 1205 RNMU 1606	RYM(H)X 0803 RYM(H)X 1004 RYM(H)X 1205 RYM(H)X 1606 RYMX 2007	RNGN 1207 FL	RPGN 1204 FL	
Application	Facing		●	●	●	●	●
	High feed milling						
	Shouldering						
	Slotting						
	Straight ramping			●	●	●	●
	Helical ramping			●	●	●	●
	Side slotting						
	Profiling			●	●	●	●
	Step down						
	Counter boring						

# Tool Selection Guide















## Face mills

<b>CERAMIC SPEED</b>	<b>CERAMIC SPEED</b>	<b>CHASE 10 MILL</b>	<b>CHASE &amp; SPEED</b>	<b>WIN 4 SPEED</b>	<b>CHASE 4 SPEED</b>
<b>TFMBN-09CH</b>	<b>TFMBN-12</b>	<b>TFMPT</b>	<b>8D-TF20</b>	<b>TFMBLV</b>	<b>TFMBL</b>
					
E102	E103	E104	E105	E106	E107-E108
-	-	25°	20°	-	-
1.5	2.5	1.5-3.0	1.8-2.5	1.0	1.0-2.0
Ø40-Ø50	Ø50-Ø80	Ø40-Ø200	Ø50-Ø125	Ø32-Ø63	Ø32-Ø200
BNGX 0904	BNGX 1207	PTKU 0503 PTKU 1006	SQKU 1105	BLMV 0603	BLMP 0603 BLMP 0904 BLMP 1105
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●		●	●
●	●	●		●	●
●	●	●		●	●
				●	

● Recommended, ○ Suitable










# Tool Selection Guide

## Face mills

Series						
		<b>TFMBL-13</b>	<b>TFMSB</b>			
						
<b>Pages</b>		E109-E110	E111-E112			
<b>Approach angle</b>		-	-			
<b>Max. depth of cut(mm)</b>		2.0	1.0-2.0			
<b>Diameter range(mm)</b>		Ø40-Ø250	Ø32-Ø250			
<b>Insert</b>		BLMP 1306	SBMT 0603 SBMT 0904 SBMT 1306			
<b>Application</b>	Facing		●	●		
	High feed milling		●	●		
	Shouldering					
	Slotting					
	Straight ramping		●	●		
	Helical ramping		●	●		
	Side slotting					
	Profiling		●	●		
	Step down					
	Counter boring					

# Tool Selection Guide



## End mills & modular heads

		<i>WINMILL</i>	<i>TANGSPEED</i>	<i>TANGSPEED</i>	<i>BILLRUSH</i>	<i>BELL2RUSH</i>
		2S-TE90CV	4T-MTE90	4T-TE90	3P-TE90	6N TE90
<b>Series</b>						
<b>Pages</b>		E113-E114	E115-E116	E117-E118	E119-E124	E125-E126
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		5.0	4.6	4.6-8.3	3.5-15.0	4.1-9.2
<b>Diameter range(mm)</b>		Ø6-Ø20	Ø10-Ø30	Ø10-Ø40	Ø8-Ø50	Ø20-Ø40
<b>Insert</b>		CVK(H)T 0502	LPHU 05	LPK(H)U 0502 LPK(H)U 0904	3PKT 0402 3PK(H)T 0603 3PK(H)T 1004 3PK(H)T 1505 3PK(H)T 1906	6NKU 0403 6NGU 0604 6NGU 0905
<b>Application</b>	Facing		●	●	●	●
	High feed milling		○			
	Shouldering		●	●	●	●
	Slotting		●	●	●	●
	Straight ramping		●	●	●	●
	Helical ramping		●	●	●	●
	Chamfer & serration					
	Profiling		○			
	Plunging					
	Step down					
	Counter boring					

● Recommended, ○ Suitable






# Tool Selection Guide

## End mills & modular heads

						
<b>Series</b>		<b>SCRM90TN</b> 	<b>TE90AV</b> 	<b>MTE90AX-06-L</b> 	<b>TE90AX 2S-TE90AP TE90AP</b> 	<b>TE90AN</b> 
<b>Pages</b>		E127	E128-E129	E130	E131-E139	E140-E141
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		13.0	10.0	5.5	5.5-17.9	11.0-15.0
<b>Diameter range(mm)</b>		Ø35-Ø40	Ø16-Ø32	Ø8-Ø30	Ø8-Ø42	Ø25-Ø50
<b>Insert</b>		TNMX 1806	AVKT 1004 AVCT 1004-AL	AXCT 06-L	AXM(C)T 0602 APK(C)T 09T3 APK(C)T 1204 APK(C)T 1705 APKT 1907	ANM(H)X 1106 ANM(H)X 1607
<b>Application</b>	Facing 	●	●	●	●	●
	High feed milling 		○		○	
	Shouldering 	●	●	●	●	●
	Slotting 	●	●	●	●	●
	Straight ramping 		●		●	●
	Helical ramping 		●		●	●
	Chamfer & serration 					
	Profiling 			○		○
	Plunging 			●		
	Step down 			●		
	Counter boring 					
	Drill mill 					

# Tool Selection Guide

## End mills & modular heads

<i>CHASE4MILL</i>	<i>CHASE8MILL</i>	<i>CHASEALU</i>	<i>CHASEALU</i>	<i>MILLRUSH</i>	<i>CHASEQDND</i>
<b>4N TE90</b>	<b>8D-TE90</b>	<b>TE90XEV-HSK63A</b>	<b>TE90XEV</b>	<b>3P-TCF</b>	<b>TSF</b>
					
E142-E147	E148-E151	E152	E153	E154-E155	E156
90°	90°	90°	90°	30°-60°	90°
3.5-13.8	5.0	16	16-21	-	5.6-13.4
Ø8-Ø40	Ø16-Ø40	Ø25-Ø50	Ø25-Ø40	Ø3.3-Ø31	Ø12-Ø50
4NKT 0402 4NK(H)T 0603 4NK(H)T 0904 4NKT 1106 4NKT 1407	SQKU 0703 SQK(H)U 1004	XEVT 1605	XEVT 1605 XEVT 2206	3PKT 0402 3PK(H)T 0603 3PK(H)T 1004	XOMT 0602 SPMG(T) 0904 SPMG(T) 1104 SPMG(T) 1405
●	●	●	●		●
○					
●	●	●	●		●
●	●	●	●		●
●		●	●		
●		●	●		
				●	
○					
					●
●		●	●		
					●

● Recommended, ○ Suitable


# Tool Selection Guide

## End mills & modular heads

Series						
		TDM	TCF	7S-E45	TBR	TERNS
						
<b>Pages</b>		E157	E158	E159	E160-E162	E163-E164
<b>Approach angle</b>		90°	45°-75°	45°	37°-90°	-
<b>Max. depth of cut(mm)</b>		12-40	-	3.2	6.3-12.0	5.0-8.0
<b>Diameter range(mm)</b>		Ø12-Ø50	Ø8.3-Ø38.9	Ø32-Ø50	Ø12-Ø32	Ø25-Ø50
<b>Insert</b>		XOMT 0602 SPMG(T) 0904 SPMG(T) 1104 SPMG(T) 1405	SPMG(T) 1104	7EMT 0604	BRHU 06R2 BRHU 12R3	RNMU 1004 RNMU 1205 RNMU 1606
<b>Application</b>	Facing		●	●		●
	High feed milling					
	Shouldering		●			
	Slotting		●			
	Straight ramping		●		●	●
	Helical ramping		●		●	●
	Chamfer & serration			●	●	
	Profiling					●
	Plunging		●			
	Step down		●			
	Counter boring		●			
	Drill mill		●			

# Tool Selection Guide

## End mills & modular heads
















<b>CHASEMOLD</b>	<b>FINEBALL</b>	<b>FINEBALL</b>	<b>CHASESPEED</b>	<b>DUSTBALL</b>	<b>TRIOBALL</b>
<b>TERY</b>	<b>TNF</b>	<b>TNFR</b>	<b>TERP</b>	<b>2F</b>	<b>3F</b>
					
E165-E167	E168-E170	E171-E173	E174-E175	E176-E177	E178
-	-	-	-	-	-
4.0-10.0	-	-	4.7-6.3	11.8-55.3	39-94
Ø16-Ø50	Ø6-Ø32	Ø6-Ø32	Ø20-Ø40	Ø16-Ø32	Ø32-Ø50
RYM(H)X 0803 RYM(H)X 1004 RYM(H)X 1205 RYM(H)X 1606 RYM(H)X 2007	NFB (NFR) NFLB NFCB	NFR	RPGN 0903 FL RPGN 1204 FL	2FB APKT 09T3 APKT 1204	3FB CNHX 1311 CNHX 1606
●		●	●		
		●			
		●			
●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
	○	○			
	○	○			

● Recommended, ○ Suitable



# Tool Selection Guide

## End mills & modular heads

Series						
		TDB50X	TDB50X-WT			
						
<b>Pages</b>		E179	E180			
<b>Approach angle</b>		-	-			
<b>Max. depth of cut(mm)</b>		59-69	59-69			
<b>Diameter range(mm)</b>		Ø50	Ø50			
<b>Insert</b>		6RBE 50-M	6RBE 50-M			
<b>Application</b>	Facing					
	High feed milling					
	Shouldering					
	Slotting					
	Straight ramping		•	•		
	Helical ramping		•	•		
	Profiling		•	•		
	Plunging					
	Step down					
	Counter boring					
	Drill mill					

# Tool Selection Guide
















## High feed end mills & modular heads

						
		THFN	TEBN	TEPT	TEBLV	TEBL
<b>Series</b>						
<b>Pages</b>		E181-E182	E183-E184	E185	E186-E188	E189-E196
<b>Approach angle</b>		20°	-	25°	-	-
<b>Max. depth of cut(mm)</b>		0.3-0.5	1.0-1.5	1.5-3.0	0.7-1.0	0.5-2.0
<b>Diameter range(mm)</b>		Ø6-Ø8	Ø16-Ø40	Ø20-Ø40	Ø16-Ø40	Ø8-Ø42
<b>Insert</b>		HFN 060 HFN 080	BNGX 0603 BNGX 0904	PTKU 0503 PTKU 1006	BLMV 0603	BLMP 0402 BLMP 0603 BLMP 0904 BLMP 1105
<b>Application</b>	Facing		●	●	●	●
	High feed milling		●	●	●	●
	Shouldering		○	○	○	○
	Slotting					
	Straight ramping		●	●	●	●
	Helical ramping		●	●	●	●
	Profiling		●	●	●	●
	Plunging					●
	Step down					●
	Counter boring					
	Drill mill					

● Recommended, ○ Suitable

# Tool Selection Guide

## High feed end mills & modular heads

Series						
		<u>TEBL-13</u>	<u>TESB</u>			
						
<b>Pages</b>		E197	E198-E200			
<b>Approach angle</b>		-	-			
<b>Max. depth of cut(mm)</b>		2.0	1.0-2.0			
<b>Diameter range(mm)</b>		Ø32-Ø42	Ø16-Ø42			
<b>Insert</b>		BLMP 1306	SBMT 0603 SBMT 0904 SBMT 1306			
<b>Application</b>	Facing		●	●		
	High feed milling		●	●		
	Shouldering		○	○		
	Slotting					
	Straight ramping		●	●		
	Helical ramping		●	●		
	Profiling		●	●		
	Plunging					
	Step down					
	Counter boring					
	Drill mill					

# Tool Selection Guide






















## Extended flute cutters

<b>Series</b>		4T-TEF 	4T-TES 	4S-TEF 4S-TES 	4S-TFP 4S-TEF-B 4S-TES-B 	3P TEF 3P TES 
<b>Pages</b>		E201	E202	E203-E204	E205-E207	E208-E209
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		15-51	34-56	52-77.9	34-76	20-83
<b>Diameter range(mm)</b>		Ø16-Ø40	Ø50-Ø100	Ø32-Ø80	Ø40-Ø80	Ø20-Ø100
<b>Insert</b>		LPK(H)U 0502 LPK(H)U 0904	LPKU 1407	SVKT 0938 SVK(H)T 1145	SVKT 0938 SVK(H)T 1145	3PK(H)T 0603 3PK(H)T 1004 3PK(H)T 1505 3PK(H)T 1906
<b>Application</b>	Facing 					
	High feed milling 					
	Shouldering 	●	●	●	●	●
	Slotting 					
	Trochoidal milling 	●	●	●	●	
	Straight ramping 					
	Helical ramping 					
	Profiling 					
	Plunging 					
	Step down 					
	Counter boring 					

● Recommended, ○ Suitable

# Tool Selection Guide

## Extended flute cutters

						
<b>Series</b>		TEF-TN TES-TN 	TEF-AN TES-AN 	TEF-AV10 TES-AV10 	TEF-AX 2S-TEF-AP TEF-AP 	TES-AP 
<b>Pages</b>		E210-E211	E212-E213	E214-E215	E216	E217
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		48-71	40-69	27-44	16-45	45-88
<b>Diameter range(mm)</b>		Ø50-Ø100	Ø32-Ø100	Ø25-Ø50	Ø16-Ø40	Ø50-Ø100
<b>Insert</b>		TNMX 1806	ANM(H)X 1106 ANM(H)X 1607	AVKT 1004 AVCT 1004-AL	AXM(C)T 0602 APK(C)T 09T3 APK(C)T 1204 APK(C)T 1705	APK(C)T 1204 APK(C)T 1705
<b>Application</b>	Facing 					
	High feed milling 					
	Shouldering 	•	•	•	•	•
	Slotting 					
	Trochoidal milling 				•	•
	Straight ramping 					
	Helical ramping 					
	Profiling 					
	Plunging 					
	Step down 					
	Counter boring 					

**TEF  
TES**



E218

90°

23.8-48.4

Ø32-Ø80

SPMG(T) 0904  
SPMG(T) 1104  
SPMG(T) 1405

●

# Tool Selection Guide

## Slotting cutters

Series		TOPSLOT	TOPSLOT	TOPSLOT	TOPSLOT	TOPSLOT	
		TSM-TS16	TSM-SL	TSM-FD-Z	TSM-FD-ZN	TSM-FD-S/W-ZN	
							
<b>Pages</b>		E219-E220	E221-E222	E223-E224	E225	E226-E228	
<b>Approach angle</b>		-	-	-	-	-	
<b>Max. width of cut(mm)</b>		1.2-6.0	3-6	3-10	10-20	10-26	
<b>Diameter range(mm)</b>		Ø32.2-Ø80	Ø25-Ø63	Ø63-Ø250	Ø80-Ø125	Ø100-Ø315	
<b>Insert</b>		TS16	SLOT	ZNHT	ZNHU 080 ZNHU 110	ZNHU 080 ZNHU 110 ZNHU 140	
<b>Application</b>	Facing		●				
	Shouldering						
	Slotting						
	T slotting		●	●			
	Side slotting		●	●	●	●	
	Internal groove milling		●	●			
	Bottom shouldering		●	●	●	●	
	Slitting				●	●	●

# Tool Selection Guide

## Slotting cutters















<i>TOPSLOT</i>	<i>TOPSLOT</i>	<i>TOPSLOT</i>	TSC Slotting Cutter	<i>TANGSPEED</i>	<i>MAXITANG</i>
<u>TSM-FF-Z</u>	<u>TSM-FF-ZN</u>	<u>TSM-FF-S/W-ZN</u>	<u>TSC</u>	<u>4T-TSM-W</u>	<u>4T-TSM-TR</u>
					
E229	E230	E231-E233	E234	E235	E236
-	-	-	-	-	-
3-10	10-20	10-26	1.6-4.52	7	7
Ø80-Ø160	Ø63-Ø125	Ø100-Ø315	Ø75-Ø160	Ø16-Ø40	Ø23-Ø40
ZNHT	ZNHU 080 ZNHU 110	ZNHU 080 ZNHU 110 ZNHU 140	TIMC TIMJ TIPV	LXHU 0502	LXHU 0502
●	●	●		●	●
●	●	●	●	●	●
●	●	●		●	●
			●		

● Recommended, ○ Suitable



















# Tool Selection Guide

## Slotting cutters

		<i>MAXITANG</i>	<i>MAXISPEED</i>	<i>MAXISPEED</i>	<i>MAXISPEED</i>	
<b>Series</b>		4T-TE90-TR 	TR-S 	TR-F 	TR-T-W55 TR-T-M60 	
<b>Pages</b>		E237	E238	E239	E240	
<b>Approach angle</b>		-	-	-	-	
<b>Max. width of cut(mm)</b>		4.6	3-10	8-10	7.7-9.5	
<b>Diameter range(mm)</b>		Ø25-Ø40	Ø24.7-Ø39.7	Ø24.25-Ø39.25	Ø24.7-Ø39.7	
<b>Insert</b>		LPK(H)U 0502	-	-	-	
<b>Application</b>	Facing 	●		●		
	Shouldering 	●		●		
	Slotting 					
	T slotting 		●			
	Side slotting 		●			
	Internal groove milling 					
	Bottom shouldering 		●			
	Slitting 					
	External threading 				●	
	Internal threading 				●	

# Tool Selection Guide

## Milling inserts

















		WINMILL	MAXITANG	TANGSPEED	MILLRUSH	MILL2RUSH
		CVK(H)T 0502	LXHU 05-04	LPK(H)U 0502 LPK(H)U 0904 LPKU 1407	3PKT 0402 3PK(H)T 0603 3PK(H)T 1004 3PK(H)T 1505 3PK(H)T 1906	6NKU 0403 6NGU 0604 6NGU 0905
<b>Series</b>						
<b>Material</b>		P M N S	P M K S H	P M K S H	P M K N S H	P M K N S H
<b>Pages</b>		E273	E277	E276	E250-E251	E254-E255
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		0.5-5	*	4.6-12.5	3.5-15	4.1-9.2
<b>Application</b>	Facing		●	●	●	●
	High feed milling		○			
	Shouldering		●	●	●	●
	Slotting		●	●	●	●
	Straight ramping		●	●	●	
	Helical ramping		●	●	●	
	Step down					
	Profiling		○			
	T slotting			●		
	Side slotting			●		
	Bottom shouldering			●		

▶ \*' Marked: For CDX, refer to the cutter page

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

		<b>BELL2RUSH</b>	<b>WINMILL</b>	<b>CHASEMILL</b>	<b>CHASEMILL</b>	<b>CHASEMILL</b>
<b>Series</b>		TNMX 1806 TNM(G)X 2207 	AVK(C)T 1004 	AXCT 0602-L 	AXM(C)T 0602 APK(C)T 09T3 APK(C)T 1204 APK(C)T 1705 APKT 1907 	APCT 12-PCD35 
<b>Material</b>		P M K S H	P M K N S H	P M S	P M K N S H	N
<b>Pages</b>		E302	E267	E266	E259-E267	E260
<b>Approach angle</b>		90°	90°	90°	90°	90°
<b>Max. depth of cut(mm)</b>		13-15	1.0-10	5.5	0.5-17.9	3.5
<b>Application</b>	Facing 	●	●	●	●	●
	High feed milling 		○		○	
	Shouldering 	●	●	●	●	●
	Slotting 	●	●	●	●	●
	Straight ramping 		●		●	
	Helical ramping 			●	●	
	Chamfer & serration 					
	Profiling 		○		○	
	Plunging 					
	Step down 					
	Counter boring 					

# Tool Selection Guide

















## Milling inserts

<i>CHASE</i> 2MILL	<i>CHASE</i> 4MILL	<i>CHASE</i> 3MILL	<i>CHASE</i> 3SPEED	<i>CHASE</i> ALU	<i>CHASE</i> 4FINISH
ANM(H)X 1106 ANM(H)X 1607	4NKT 0402 4NK(H)T 0603 4NK(H)T 0904 4NKT 1106 4NKT 1407	SQKU 0703 SQK(H)U 1004 SQK(H)U 1206	SQKU 1105 SQKU 1406	XEVT 1605 XEVT 2206	4WHU 1207
					
<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>	<b>N</b>	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b>
E258	E252-E253	E297	E298	E305	E254
90°	90°	90°	20°,45°	90°	90°
11-15	0.5-13.8	5.0-8.5	1.8-6.0	14-21	0.5
●	●	●	●	●	●
	○				
●	●	●		●	
●	●	●		●	
●	●			●	
●	●			●	
			●		
	○				
	●			●	

● Recommended, ○ Suitable







# Tool Selection Guide

## Milling inserts

Series		CHASE <sup>2</sup> QUAD	LION <sup>MILL</sup>	LION <sup>MILL</sup>	CHASE <sup>V</sup> QUAD	CHASE <sup>2</sup> QUAD
		SNEX 1204 SNET 1205	TPKN 2204	SEKX 2107	SVK(H)T 1145	SNGX 1306... SNGX 1306 ZN
						
Material		P K	P M K	P K	P M K S H P M K	
Pages		E291	E303	E289	E299	E291
Approach angle		75°	75°	65°	60°	45°
Max. depth of cut(mm)		9.5-12.5	3.9	3.3-6.5	13-18	3.0-5.0
Application	Facing		●	●	●	●
	High feed milling					
	Shouldering			●	●	●
	Slotting			●		●
	Straight ramping					
	Helical ramping					
	Chamfer & serration					
	Profiling					
	Plunging					
	Step down					
	Counter boring					

# Tool Selection Guide






















## Milling inserts

<i>CHASE2QUAD</i>	<i>LIONMILL</i>	<i>CHASEMILL</i>	<i>CHASE10MILL</i>	<i>LIONMILL</i>	<i>CHASE2MILL</i>
SNM(G)X 1306 EN... SNMX 1306 XTN	SPKN 1203 SPKN 1504	APKT 1705	PTKU 0503 PTKU 1006	SCKN 2107 SCKN 2708	HXX(H)U 0605 HXX(H)U 1007
					
<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>K</b>	<b>P</b> <b>K</b>
E292	E296	E262	E282	E288	E275
75°	75°	75°	65°	60°	45°
9.5	9.5-12.5	3.9	3.3-6.5	13-18	3.0-5.0
●	●	●	●	●	●
●	●		●	●	●

● Recommended, ○ Suitable

# Tool Selection Guide

## Milling inserts

						
<b>Series</b>		XNM(H)U 0605 XNM(H)U 0906	7EMT 0604	SNM(G)X 1306 AN... SNMX 1306 XTN	SNMX 1607 SNHX 1606	ANHX 1607
						
<b>Material</b>		<b>P M K</b>	<b>P M K</b>	<b>P M K N</b>	<b>P M K</b>	<b>P M K N S</b>
<b>Pages</b>		E306-E307	E257	E292	E294	E258
<b>Approach angle</b>		45°	45°	45°	45°	45°
<b>Max. depth of cut(mm)</b>		1.0-5.0	3.2	6-7	8.8	8.4
<b>Application</b>	Facing		●	●	●	●
	High feed milling					
	Shouldering					
	Slotting					
	Straight ramping			●		
	Helical ramping			●		
	Chamfer & serration		●	●	●	●
	Profiling					
	Plunging					
	Step down					
	Counter boring					

# Tool Selection Guide

## Milling inserts

<b>LIONMILL</b>	<b>SPEEDBARREL</b>	<b>CHASE2MOLD</b>	<b>CHASEMOLD</b>	<b>CHASESPEED</b>	<b>CERAMICSPEED</b>
SDKN 1203 SDKN 1504 SEKN 1203 SEKN 1504	BRHU 06R2 BRHU 12R3	RNMU 1004 RNMU 1205 RNMU 1606	RYM(H)X 0803 RYM(H)X 1004 RYM(H)X 1205 RYM(H)X 1606 RYMX 2007	RNGN 1207 FL RPGN 0903 FL RPGN 1204 FL	BNGX 0603 BNGX 0904
					
<b>P</b>	<b>P M K S H</b>	<b>P M K S H</b>	<b>P M K S H</b>	<b>S</b>	<b>S</b>
E288-E289	E272	E284	E285-E286	E283	E271
45°	90°,75°,45°	-	-	-	-
6.5-8.7	4.2-12.0	5-8	4-10	4.7-6.3	1.5
●		●	●	●	●
					●
					○
		●	●	●	●
		●	●	●	●
●					
	●	●	●	●	●

● Recommended, ○ Suitable









# Tool Selection Guide

## Milling inserts

Series		BNGX 1207 	PTKU 0503 PTKU 1006 	BLMV 0603 	BLMP 0402 BLMP 0603 BLMP 0904 BLMP 1105 	BLMP 1306 
Material		S	P M K	P M K S H	P M K S H	P M K S H
Pages		E271	E282	E270	E268	E269
Approach angle		-	25°	-	-	-
Max. depth of cut(mm)		2.5	1.5-3.0	0.7-1.0	0.5-2.0	2.0
Application	Facing 	●	●	●	●	●
	High feed milling 	●	●	●	●	●
	Shouldering 	○	○	○	○	○
	Slotting 					
	Straight ramping 	●	●	●	●	●
	Helical ramping 	●	●	●	●	●
	Chamfer & serration 					
	Profiling 	●	●	●	●	●
	Plunging 			●		
	Step down 			●		
	Counter boring 					
	Drill mill 					

# Tool Selection Guide













## Milling inserts

<i>CHASEFEED</i>	<i>MILLRUSH</i>	<i>CHASEQUAD</i>	<i>NANRUSH</i>	<i>FINEBARREL</i>	<i>FINEBARREL</i>
SBMT 0603 SBMT 0904 SBMT 1306	3PKT 0402 3PK(H)T 0603 3PK(H)T 1004	SPMG(T) 0904 SPMG(T) 1104 SPMG(T) 1405 XOMT 0602	HFN 060 HFN 080	NFLB	NFCB
					
<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>	<b>P</b> <b>M</b> <b>K</b> <b>S</b> <b>H</b>
E287	E250	E295	E274	E279	E279
-	30°-60°	15°-45°, 90°	20°	-	-
1.0-2.0	-	-	0.3-0.5	-	-
●		●	●		
●			●		
○		●	○		
		●			
●		●	●		
●		●	●		
	●	●			
●			●	●	●
		●			
		●			
		●			
		●			

● Recommended, ○ Suitable













# Tool Selection Guide

## Milling inserts

Series	FINEBALL	FINEBALL	DUETBALL	TRIOBALL	CHASEBALL
	NFB	NFR	2FB	3FB	6RBE
Material	P M K S H	P M K S H	P M K S H	P M K S H	P M K S H
Pages	E278	E280-E281	E248/	E249	E256
Approach angle	-	-	-	-	-
Max. depth of cut(mm)	-	-	11.8-44.7	39-94	59-69
Application	Facing 	●			
	High feed milling 		●		
	Shouldering 		●		
	Slotting 		●	●	●
	Straight ramping 	●	●	●	●
	Helical ramping 	●			
	Chamfer & serration 		○	●	●
	Profiling 	●	●		
	Plunging 	○	○		
	Step down 				
	Counter boring 	○	○		
	Drill mill 				

# Tool Selection Guide

## Slotting inserts










		<b>TOP SLOT</b>	<b>TOP SLOT</b>	<b>TOP SLOT</b>	<b>TOP SLOT</b>	<b>TSC slotting cutter</b>
<b>Series</b>		<b>TS16</b>	<b>SLOT</b>	<b>ZNHT</b>	<b>ZNHU</b>	<b>TIMC TIMJ TIPV</b>
						
<b>Material</b>		<b>P M K S H</b>	<b>P M K</b>	<b>P M K N</b>	<b>P M K</b>	<b>P M K N</b>
<b>Pages</b>		E304	E290	E308	E309	E300-E301
<b>Approach angle</b>		-	-	-	-	-
<b>Max. depth of cut(mm)</b>		4.8	*	*	*	
<b>Application</b>	Facing 	●				
	Shouldering 					
	Slotting 					
	T slotting 					
	Side slotting 	●	●	●	●	●
	Internal groove milling 					
	Bottom shouldering 					
	Slitting 			●	●	●

▶ \*: For CDX, refer to the cutter page

● Recommended, ○ Suitable

# Tool Selection Guide

## Tailor-made inserts

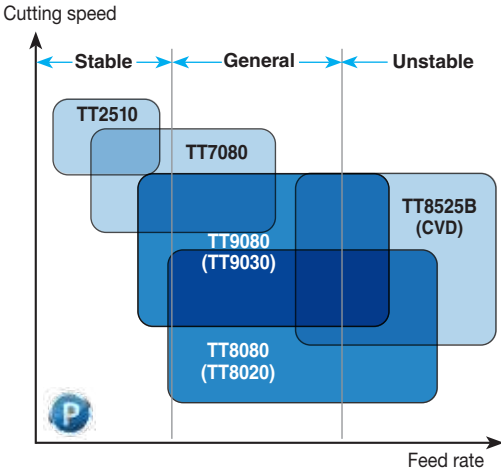
Series		Tailor-made Insert									
		LNC	PMIN	SNA	SNB						
											
<b>Material</b>		P	M	K	N	S	H				
<b>Pages</b>		E310-E311									
<b>Approach angle</b>		-									
<b>Max. depth of cut(mm)</b>		-									
<b>Application</b>	Facing		●								
	Shouldering		●								
	Slotting		●								
	T slotting										
	Side slotting		●								
	Internal groove milling										
	Bottom shouldering										
	Slitting										

● Recommended, ○ Suitable

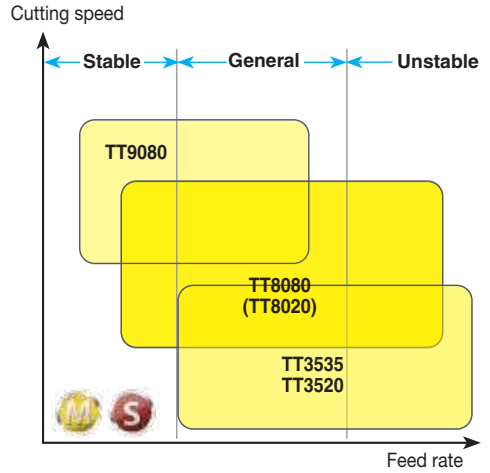
# Grades

## Selection guide for milling grades

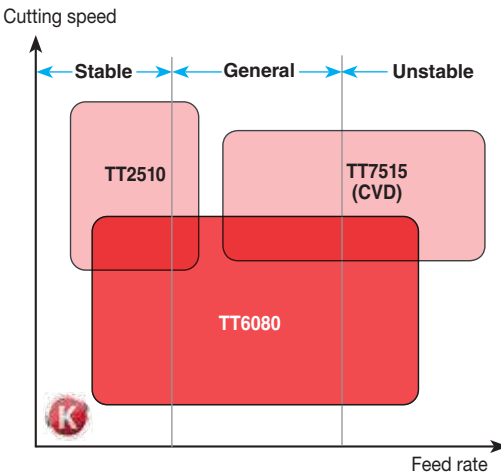
### For steel



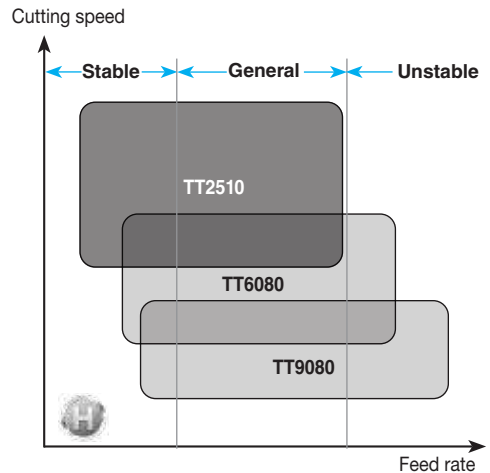
### For stainless steel & super alloy



### For cast iron



### For hardened material



# Grades

## Carbide grades

Grades	ISO	Characteristics & applications
<b>K10</b> Carbide	<b>K05 – K15</b> <b>N05 – N15</b> <b>S05 – S15</b>	<ul style="list-style-type: none"> <li>• General machining of cast iron, aluminum alloys and non-ferrous materials</li> </ul>
<b>TT2510</b> PVD coated	<b>P05 – P25</b> <b>H05 – H25</b>	<ul style="list-style-type: none"> <li>• High speed milling of pre-hardened steel and hardened steel</li> </ul>
<b>TT3535</b> PVD coated	<b>M30 – M50</b> <b>S30 – S50</b>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of stainless steel</li> <li>• Low speed and interrupted machining of Ti-Alloy and heat-resistant alloy</li> </ul>
<b>TT3520</b> CVD coated	<b>M30 – M50</b> <b>S30 – S50</b>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of stainless steel</li> <li>• Low speed and interrupted machining of Ti-Alloy and heat-resistant alloy</li> </ul>
<b>TT6080</b> PVD coated	<b>K05 – K25</b> <b>H05 – 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>TT7080</b> PVD coated	<b>P05 – P25</b> <b>K05 – K25</b>	<ul style="list-style-type: none"> <li>• General milling of steel</li> <li>• Heavy interrupted cutting of cast iron</li> </ul>
<b>TT9080</b> PVD coated	<b>P20 – P40</b> <b>M20 – M40</b> <b>S20 – S40</b>	<ul style="list-style-type: none"> <li>• General machining of steel, stainless steel and heat-resistant alloy</li> </ul>
<b>TT9030</b> PVD coated	<b>P20 – P40</b> <b>M20 – M40</b> <b>S20 – S40</b>	<ul style="list-style-type: none"> <li>• General machining of steel, stainless steel and heat-resistant alloy</li> </ul>
<b>TT8080</b> PVD coated	<b>P30 – P50</b> <b>M30 – M50</b> <b>S30 – S50</b>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of steel and stainless steel</li> <li>• Low speed and interrupted machining of heat-resistant alloy</li> </ul>
<b>TT8020</b> PVD coated	<b>P30 – P50</b> <b>M30 – M50</b> <b>S30 – S50</b>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of steel and stainless steel</li> <li>• Low speed and interrupted machining of heat-resistant alloy</li> </ul>
<b>TT5515</b> PVD coated	<b>P10 – P30</b> <b>M10 – M30</b> <b>K10 – K30</b> <b>S10 – S30</b> <b>H10 – H30</b>	<ul style="list-style-type: none"> <li>• High speed milling of steel and hardened steel</li> <li>• General milling of stainless steel, cast iron and heat-resistant alloy</li> </ul>
<b>TT5525</b> PVD coated	<b>P20 – P40</b> <b>M20 – M40</b> <b>S20 – S40</b>	<ul style="list-style-type: none"> <li>• General machining of steel, stainless steel and heat-resistant alloy</li> </ul>
<b>TT7515</b> CVD coated	<b>K05 – K25</b> <b>H05 – 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>TT8525B</b> CVD coated	<b>P30 – P45</b> <b>M30 – M45</b>	<ul style="list-style-type: none"> <li>• Rough milling &amp; high speed drilling of carbon &amp; alloy steel</li> <li>• Medium speed milling of stainless steel</li> </ul>

# Grades

## Cermet, ceramic and CBN grades

Grades	ISO	Characteristics & applications
<b>CT7000</b> cermet	<b>P15 – P25</b> <b>M15 – M25</b>	<ul style="list-style-type: none"> <li>• Finish milling of steel and stainless steel</li> </ul>
<b>AS10</b> Ceramic	<b>K20 – K30</b>	<ul style="list-style-type: none"> <li>• General milling of cast iron</li> </ul>
<b>TC3030</b> Ceramic	<b>S25 – S35</b>	<ul style="list-style-type: none"> <li>• High feed milling of super alloy</li> <li>• SiAlON ceramic grade</li> </ul>
<b>TB7015</b> CBN	<b>H25 – H35</b> <b>K10 – K20</b>	<ul style="list-style-type: none"> <li>• Machining of hardened steel</li> <li>• High speed machining of cast iron</li> </ul>

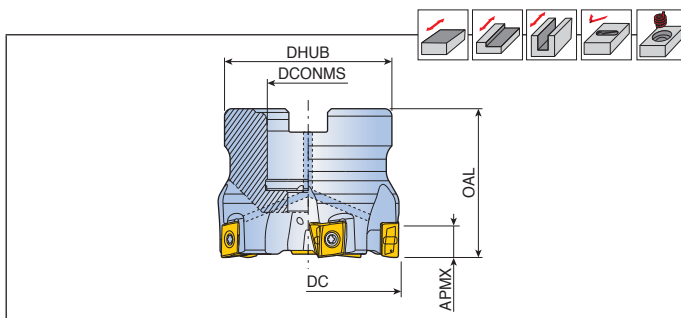




# Milling Cutters



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style		Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>4T-TF90-640-16R-09</b>	6	40	16	38	40	8.3	●	A	0.3	SH M8x30	LPK(H)U 0904... 
<b>550-22R-09</b>	5	50	22	45	40	8.3	●	A	0.4	SH M10x30	
<b>750-22R-09</b>	7	50	22	45	40	8.3	●	A	0.4	SH M10x30	
<b>663-22R-09</b>	6	63	22	47	40	8.3	●	A	0.5	SH M10x30	
<b>1063-22R-09</b>	10	63	22	47	40	8.3	●	A	0.5	SH M10x30	
<b>4T-TF90-440-16R-14</b>	4	40	16	38	40	12.5	●	A	0.3	SH M8x30	LPKU 1407... 
<b>450-22R-14</b>	4	50	22	45	40	12.5	●	A	0.3	SH M10x30	
<b>650-22R-14</b>	6	50	22	45	40	12.5	●	A	0.3	SH M10x30	
<b>563-22R-14</b>	5	63	22	47	40	12.5	●	A	0.5	SH M10x30	
<b>863-22R-14</b>	8	63	22	47	40	12.5	●	A	0.5	SH M10x30	
<b>780-27R-14</b>	7	80	27	58	50	12.5	●	A	1.0	SH M12x35	
<b>1080-27R-14</b>	10	80	27	58	50	12.5	●	A	1.2	SH M12x35	
<b>8100-32R-14</b>	8	100	32	85	50	12.5	●	A	2.0	SH M16x35	
<b>12100-32R-14</b>	12	100	32	85	50	12.5	●	A	2.1	SH M16x35	
<b>10125-40R-14</b>	10	125	40	85	63	12.5	●	A	3.1	SH M20x40	
<b>14125-40R-14</b>	14	125	40	85	63	12.5	●	A	3.3	SH M20x40	
<b>12160-40R-14</b>	12	160	40	110	63	12.5	x	C	4.1	-	
<b>16160-40R-14</b>	16	160	40	110	63	12.5	x	C	4.3	-	
<b>14200-60R-14</b>	14	200	60	130	63	12.5	x	C	5.7	-	
<b>18200-60R-14</b>	18	200	60	130	63	12.5	x	C	5.8	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

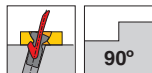
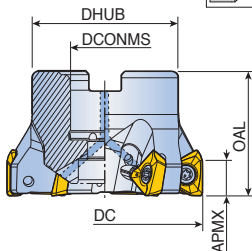
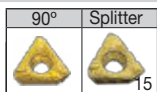
Designation	Screw	Wrench	Wrench handle	
<b>4T-TF90-09</b>	TS 30D082-P	TBLD T08P-W4	THND 4W	-
<b>4T-TF90-14</b>	TS 40G110I	TBLD T15-W6	-	SW6-T

 E312-E315	 E316-E317	 E318	 E333-E334
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# 3P TF90-06/10/15



## Face mills



Designation	⊙	Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>3P TF90-632-16R-06</b>	6	32	16	30	32	4.7	●	A	0.1	SH M8x30	3PK(H)T 0603... E250
<b>732-16R-06</b>	7	32	16	30	32	4.7	●	A	0.1	SH M8x30	
<b>735-16R-06</b>	7	35	16	30	35	4.7	●	A	0.1	SH M8x30	
<b>840-16R-06</b>	8	40	16	38	40	4.7	●	A	0.2	SH M8x30	
<b>840-22R-06</b>	8	40	22	38	40	4.7	●	A	0.2	SH M10x30	
<b>3P TF90-540-16R-10</b>	5	40	16	38	40	7	●	A	0.3	SH M8x30	3PK(H)T 1004... E250
<b>640-16R-10</b>	6	40	16	38	40	7	●	A	0.3	SH M8x30	
<b>650-22R-10</b>	6	50	22	45	40	7	●	A	0.4	SH M10x30	
<b>750-22R-10</b>	7	50	22	45	40	7	●	A	0.4	SH M10x30	
<b>663-22R-10</b>	6	63	22	45	40	7	●	A	0.5	SH M10x30	
<b>863-22R-10</b>	8	63	22	47	40	7	●	A	0.5	SH M10x30	
<b>963-22R-10</b>	9	63	22	47	40	7	●	A	0.5	SH M10x30	3PK(H)T 1505... E250-251
<b>3P TF90-450-22R-15</b>	4	50	22	45	40	11	●	A	0.3	SH M10x30	
<b>550-22R-15</b>	5	50	22	45	40	11	●	A	0.3	SH M10x30	
<b>463-22R-15-B</b>	4	63	22	47	40	11	●	A	0.5	SH M10x30	
<b>463-27R-15-B</b>	4	63	27	47	50	11	●	A	0.5	SH M12x35	
<b>663-22R-15</b>	6	63	22	47	40	11	●	A	0.5	SH M10x30	
<b>480-27R-15-B</b>	4	80	27	58	50	11	●	A	1.0	SH M12x35	
<b>780-27R-15</b>	7	80	27	58	50	11	●	A	1.0	SH M12x35	
<b>880-27R-15</b>	8	80	27	58	50	11	●	A	1.0	SH M12x35	
<b>6100-32R-15-B</b>	6	100	32	85	50	11	●	A	1.8	LH M16x35	
<b>8100-32R-15</b>	8	100	32	85	50	11	●	A	1.9	LH M16x35	
<b>10100-32R-15</b>	10	100	32	85	50	11	●	A	1.9	LH M16x35	
<b>7125-40R-15-B</b>	7	125	40	85	63	11	●	A	3.0	SH M20x40	
<b>8125-40R-15</b>	8	125	40	85	63	11	●	A	3.0	SH M20x40	
<b>10125-40R-15</b>	10	125	40	85	63	11	●	A	3.1	SH M20x40	
<b>12125-40R-15</b>	12	125	40	85	63	11	●	A	3.1	SH M20x40	
<b>8160-40R-15</b>	8	160	40	85	63	11	x	C	4.4	-	
<b>12160-40R-15</b>	12	160	40	110	63	11	x	C	4.4	-	
<b>15160-40R-15</b>	15	160	40	110	63	11	x	C	4.4	-	
<b>15200-60R-15</b>	15	200	60	130	63	11	x	C	6.0	-	
<b>18200-60R-15</b>	18	200	60	130	63	11	x	C	5.8	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

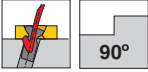
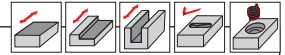
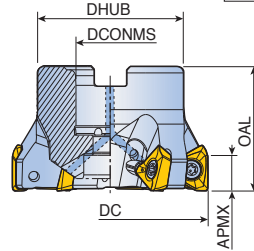
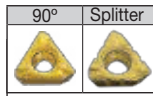




# 3P TF90-15/19



## Face mills (Inch bore)



Designation	Z	Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>3P TF90-480-25.4R-15-B</b>	4	80	25.4	70	50	11	●	A	1.2	SH M12x35	3PK(H)T 1505... E250-251
<b>780-25.4R-15</b>	7	80	25.4	70	50	11	●	A	1.0	SH M12x35	
<b>880-25.4R-15</b>	8	80	25.4	70	50	11	●	A	1.0	SH M12x35	
<b>6100-31.75R-15-B</b>	6	100	31.75	80	50	11	●	B	1.5	-	
<b>8100-31.75R-15</b>	8	100	31.75	80	50	11	x	B	1.9	-	
<b>10100-31.75R-15</b>	10	100	31.75	80	50	11	x	B	1.9	-	
<b>7125-38.1R-15-B</b>	7	125	38.1	80	63	11	x	B	2.4	-	
<b>10125-38.1R-15</b>	10	125	38.1	80	63	11	x	B	3.1	-	
<b>12125-38.1R-15</b>	12	125	38.1	80	63	11	x	B	3.1	-	
<b>8160-50.8R-15</b>	8	160	50.8	100	63	11	x	B	2.6	-	
<b>12160-50.8R-15</b>	12	160	50.8	100	63	11	x	B	4.4	-	
<b>15160-50.8R-15</b>	15	160	50.8	100	63	11	x	B	4.4	-	
<b>15200-47.625R-15</b>	15	200	47.625	130	63	11	x	C	6.0	-	
<b>3P TF90-480-25.4R-19</b>	4	80	25.4	70	50	15	●	A	0.9	SH M12x35	3PK(H)T 1906... E250-251
<b>780-25.4R-19</b>	7	80	25.4	70	50	15	●	A	1.0	SH M12x35	
<b>6100-31.75R-19</b>	6	100	31.75	80	50	15	x	B	1.8	-	
<b>8100-31.75R-19</b>	8	100	31.75	80	50	15	x	B	2.6	-	
<b>6125-38.1R-19</b>	6	125	38.1	80	63	15	x	B	4.4	-	
<b>8125-38.1R-19</b>	8	125	38.1	80	63	15	x	B	3.0	-	
<b>10125-38.1R-19</b>	10	125	38.1	80	63	15	x	B	3.1	-	
<b>8160-50.8R-19</b>	8	160	50.8	100	63	15	x	B	4.2	-	
<b>12160-50.8R-19</b>	12	160	50.8	100	63	15	x	B	4.3	-	
<b>10200-47.625R-19</b>	10	200	47.625	130	63	15	x	C	6.0	-	
<b>14200-47.625R-19</b>	14	200	47.625	130	63	15	x	C	6.0	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>3P TF90-15</b>	TS 40B100I	TD 15	-		
<b>3P TF90-19</b>	TS 45120I	-	T-T20		

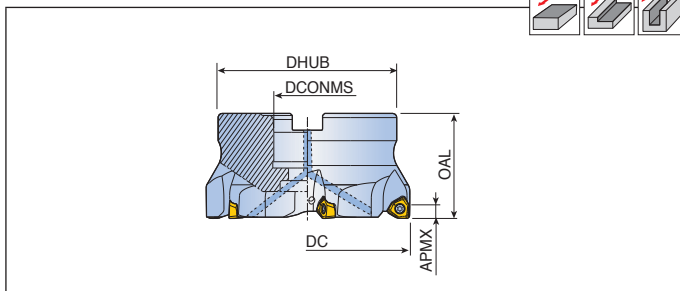




# 6N TF90-06/09



## Face mills



Designation	Z	Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>6N TF90-440-16R-06</b>	4	40	16	38	40	6.2	●	A	0.3	SH M8x30	6NGU 0604... E254
<b>450-22R-06</b>	4	50	22	45	40	6.2	●	A	0.4	LH M10x25	
<b>650-22R-06</b>	6	50	22	45	40	6.2	●	A	0.4	LH M10x25	
<b>463-22R-06</b>	4	63	22	47	40	6.2	●	A	0.5	LH M10x25	
<b>663-22R-06</b>	6	63	22	47	40	6.2	●	A	0.5	LH M10x25	
<b>763-22R-06</b>	7	63	22	47	40	6.2	●	A	0.5	LH M10x25	
<b>580-27R-06</b>	5	80	27	58	50	6.2	●	A	1.0	SH M12x35	
<b>680-27R-06</b>	6	80	27	58	50	6.2	●	A	1.0	SH M12x35	
<b>780-27R-06</b>	7	80	27	58	50	6.2	●	A	1.0	SH M12x35	
<b>980-27R-06</b>	9	80	27	58	50	6.2	●	A	1.0	SH M12x35	
<b>6100-32R-06</b>	6	100	32	85	50	6.2	●	A	1.9	SH M16x35	
<b>8100-32R-06</b>	8	100	32	85	50	6.2	●	A	1.9	SH M16x35	
<b>11100-32R-06</b>	11	100	32	85	50	6.2	●	A	1.9	SH M16x35	
<b>7125-40R-06</b>	7	125	40	85	63	6.2	●	A	3.2	SH M20x40	
<b>11125-40R-06</b>	11	125	40	85	63	6.2	●	A	3.2	SH M20x40	
<b>6N TF90-450-22R-09</b>	4	50	22	45	40	9.2	●	A	0.3	LH M10x25	6NGU 0905... E254
<b>550-22R-09</b>	5	50	22	45	40	9.2	●	A	0.4	LH M10x25	
<b>463-22R-09</b>	4	63	22	47	40	9.2	●	A	0.5	LH M10x25	
<b>663-22R-09</b>	6	63	22	47	40	9.2	●	A	0.5	LH M10x25	
<b>763-22R-09</b>	7	63	22	47	40	9.2	●	A	0.5	LH M10x25	
<b>580-27R-09</b>	5	80	27	58	50	9.2	●	A	1.0	SH M12x35	
<b>780-27R-09</b>	7	80	27	58	50	9.2	●	A	1.1	SH M12x35	
<b>880-27R-09</b>	8	80	27	58	50	9.2	●	A	1.1	SH M12x35	
<b>980-27R-09</b>	9	80	27	58	50	9.2	●	A	1.1	SH M12x35	
<b>6100-32R-09</b>	6	100	32	85	50	9.2	●	A	1.9	LH M16x35	
<b>8100-32R-09</b>	8	100	32	85	50	9.2	●	A	1.8	LH M16x35	
<b>11100-32R-09</b>	11	100	32	85	50	9.2	●	A	1.9	LH M16x35	
<b>7125-40R-09</b>	7	125	40	85	63	9.2	●	A	3.1	SH M20x40	
<b>8125-40R-09</b>	8	125	40	85	63	9.2	●	A	3.1	SH M20x40	
<b>11125-40R-09</b>	11	125	40	85	63	9.2	●	A	3.1	SH M20x40	
<b>14125-40R-09</b>	14	125	40	85	63	9.2	●	A	3.2	SH M20x40	
<b>12160-40R-09</b>	12	160	40	110	63	9.2	x	C	4.3	-	
<b>16160-40R-09</b>	16	160	40	110	63	9.2	x	C	4.3	-	
<b>14200-60R-09</b>	14	200	60	130	63	9.2	x	C	5.9	-	
<b>18200-60R-09</b>	18	200	60	130	63	9.2	x	C	5.9	-	
<b>18250-60R-09</b>	18	250	60	160	63	9.2	x	C	10.7	-	
<b>22250-60R-09</b>	22	250	60	160	63	9.2	x	C	10.8	-	



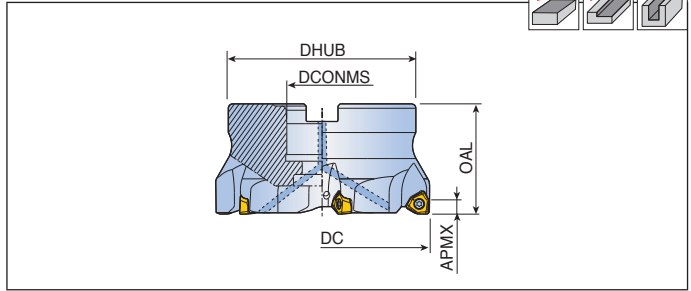
▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)



# 6N TF90-06/09



Face mills (Inch bore)



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>6N TF90-580-25.4R-06</b>	5	80	25.4	70	50	6.2	●	A	1.0	SH M12x35	6NGU 0604...
<b>780-25.4R-06</b>	7	80	25.4	70	50	6.2	●	A	1.0	SH M12x35	E254
<b>980-25.4R-06</b>	9	80	25.4	70	50	6.2	●	A	1.0	SH M12x35	
<b>6100-31.75R-06</b>	6	100	31.75	80	50	6.2	x	B	1.9	-	
<b>8100-31.75R-06</b>	8	100	31.75	80	50	6.2	x	B	1.9	-	
<b>11100-31.75R-06</b>	11	100	31.75	80	50	6.2	x	B	1.9	-	
<b>7125-38.1R-06</b>	7	125	38.1	80	63	6.2	x	B	3.2	-	
<b>6N TF90-580-25.4R-09</b>	5	80	25.4	58	50	9.2	●	A	1.0	SH M12x35	6NGU 0905...
<b>780-25.4R-09</b>	7	80	25.4	58	50	9.2	●	A	1.1	SH M12x35	E254
<b>980-25.4R-09</b>	9	80	25.4	58	50	9.2	●	A	1.1	SH M12x35	
<b>6100-31.75R-09</b>	6	100	31.75	80	50	9.2	x	B	1.9	-	
<b>8100-31.75R-09</b>	8	100	31.75	80	50	9.2	x	B	1.8	-	
<b>11100-31.75R-09</b>	11	100	31.75	80	50	9.2	x	B	1.9	-	
<b>7125-38.1R-09</b>	7	125	38.1	80	63	9.2	x	B	3.1	-	
<b>11125-38.1R-09</b>	11	125	38.1	80	63	9.2	x	B	3.1	-	
<b>14125-38.1R-09</b>	14	125	38.1	80	63	9.2	x	B	3.2	-	
<b>12160-50.8R-09</b>	12	160	50.8	100	63	9.2	x	B	4.3	-	
<b>16160-50.8R-09</b>	16	160	50.8	100	63	9.2	x	B	4.3	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

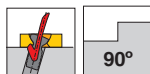
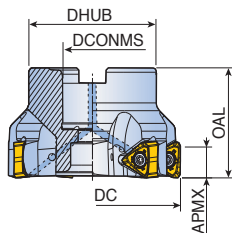
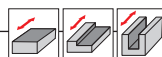
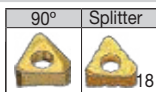
Designation	Screw	Wrench			
<b>6N TF90-06</b>	TS 300851/HG	TD 9	-		
<b>6N TF90-09</b>	TS 40B100I	-	T-T15		

 E312-E315	 E316-E317	 E318
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# SCRM90TN-18/22



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>SCRM90TN 450-16R-18</b>	4	50	16	38	40	13	●	A	0.3 SH M8x30	TNMX 1806... E302	
<b>563-22R-18</b>	5	63	22	47	40	13	●	A	0.5 SH M10x30		
<b>580-27R-18</b>	5	80	27	58	50	13	●	A	1.1 SH M12x35		
<b>780-27R-18</b>	7	80	27	58	50	13	●	A	1.1 SH M12x35		
<b>6100-32R-18-B</b>	6	100	32	85	50	13	●	A	2.0 SH M16x35		
<b>8100-32R-18</b>	8	100	32	85	50	13	●	A	2.0 SH M16x35		
<b>7125-40R-18-B</b>	7	125	40	85	63	13	●	A	3.4 SH M20x40		
<b>10125-40R-18</b>	10	125	40	85	63	13	●	A	3.3 SH M20x40		
<b>10160-40R-18</b>	10	160	40	110	63	13	x	C	4.5 -		
<b>14160-40R-18</b>	14	160	40	110	63	13	x	C	4.5 -		
<b>16200-60R-18</b>	16	200	60	130	63	13	x	C	6.2 -		
<b>SCRM90TN 350-16R-22</b>	3	50	16	38	40	15	●	A	0.3 SH M8x30	TNM(G)X 2207... E302	
<b>463-22R-22</b>	4	63	22	47	40	15	●	A	0.4 SH M10x30		
<b>580-27R-22</b>	5	80	27	58	50	15	●	A	0.9 SH M12x35		
<b>6100-32R-22</b>	6	100	32	85	50	15	●	A	1.8 SH M16x35		
<b>8125-40R-22</b>	8	125	40	85	63	15	●	A	3.0 SH M20x40		
<b>10160-40R-22</b>	10	160	40	110	63	15	x	C	4.2 -		
<b>12200-60R-22</b>	12	200	60	130	63	15	x	C	6 -		
<b>14250-60R-22</b>	14	250	60	160	63	15	x	C	10.6 -		

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

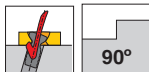
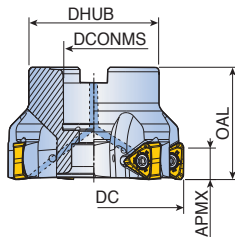
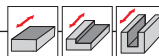
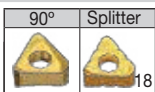
Designation	Screw	Wrench			
<b>SCRM90TN-18</b>	TS 40B100I	T-T15			
<b>SCRM90TN-22</b>	TS 45I20I	T-T20			



# SCRM90TN



Face mills (Inch bore)



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>SCRM90TN 580-25.4R-18</b>	5	80	25.4	70	50	13	●	A	1.1 SH M12x35	TNMX 1806...	
<b>780-25.4R-18</b>	7	80	25.4	70	50	13	●	A	1.1 SH M12x35	E302	
<b>6100-31.75R-18-B</b>	6	100	31.75	80	50	13	x	B	2.0 -		
<b>8100-31.75R-18</b>	8	100	31.75	80	50	13	x	B	2.0 -		
<b>7125-38.1R-18-B</b>	7	125	38.1	80	63	13	x	B	3.4 -		
<b>10125-38.1R-18</b>	10	125	38.1	80	63	13	x	B	3.3 -		
<b>10160-50.8R-18</b>	10	160	50.8	100	63	13	x	B	4.5 -		
<b>14160-50.8R-18</b>	14	160	50.8	100	63	13	x	B	4.5 -		
<b>16200-47.625R-18</b>	16	200	47.625	130	63	13	x	C	6.2 -		
<b>SCRM90TN 580-25.4R-22</b>	5	80	25.4	70	50	15	●	A	0.9 SH M12x35	TNM(G)X 2207...	
<b>6100-31.75R-22</b>	6	100	31.75	80	50	15	x	B	1.8 -	E302	
<b>8125-38.1R-22</b>	8	125	38.1	80	63	15	x	B	3.0 -		
<b>10160-50.8R-22</b>	10	160	50.8	100	63	15	x	B	4.3 -		
<b>12200-47.625R-22</b>	12	200	47.625	130	63	15	x	C	6.0 -		

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>SCRM90TN-18</b>	TS 40B100I	T-T15			
<b>SCRM90TN-22</b>	TS 45I20I	T-T20			

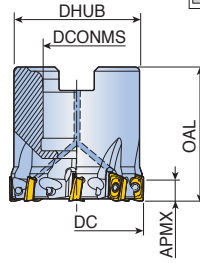
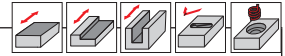
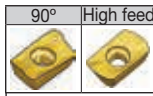




# TFM90AX-06/2S-TFM90AP-09



## Face mills



Designation	⚙️	Dimension (mm)						Coolant hole	Arbor style	⚖️ kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX						
<b>TFM90AX</b>	<b>832-16R-06</b>	8	32	16	30	32	5.5	●	A	0.1	SH M8x25	AXM(C)T 0602...
	<b>1040-16R-06</b>	10	40	16	38	40	5.5	●	A	0.2	SH M8x25	E264-E266
	<b>1040-22R-06</b>	10	40	22	38	40	5.5	●	A	0.2	SH M10x30	
<b>2S-TFM90AP</b>	<b>540-16R-09</b>	5	40	16	38	40	8.8	●	A	0.3	SH M8x30	APK(C)T 09T3...
	<b>640-16R-09</b>	6	40	16	38	40	8.8	●	A	0.2	SH M8x30	E259, E264
	<b>550-22R-09-B</b>	5	50	22	45	40	8.8	●	A	0.3	SH M10x30	
	<b>650-22R-09</b>	6	50	22	45	40	8.8	●	A	0.3	SH M10x30	
	<b>750-22R-09</b>	7	50	22	45	40	8.8	●	A	0.3	SH M10x30	
	<b>863-22R-09</b>	8	63	22	47	40	8.8	●	A	0.5	SH M10x30	
	<b>1080-27R-09</b>	10	80	27	58	50	8.8	●	A	1.1	SH M12x35	

- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body "RE"=Insert "RE"-0.1mm
- ▶ Cutter body for 'APKT09' insert with corner radius more than 2.4mm should be modified accordingly body "RE"=Insert "RE"-0.2mm

## Spare parts

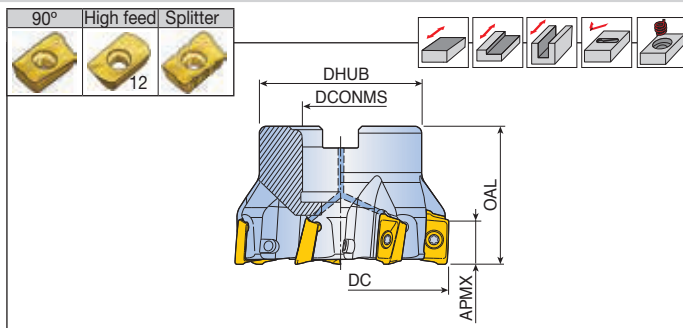
Designation	Screw	Wrench			
<b>TFM90AX</b>	TS 18041/HG	TD 6P			
<b>2S-TFM90AP</b>	TS 25075/HG	TD 8			

 E312-E315	 E316-E317	 E318	 E360-E366
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# TFM90AP-12/17



## Face mills



Designation	Z	Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>TFM90AP 440-16R-12</b>	4	40	16	38	40	12	●	A	0.2 SH M8x25	APK(C)T 1204... E260, E264	
<b>540-16R-12</b>	5	40	16	38	40	12	●	A	0.2 SH M8x25		
<b>550-22R-12</b>	5	50	22	45	40	12	●	A	0.3 SH M10x30		
<b>650-22R-12</b>	6	50	22	45	40	12	●	A	0.3 SH M10x30		
<b>563-22R-12</b>	5	63	22	47	40	12	●	A	0.5 SH M10x30		
<b>663-22R-12</b>	6	63	22	47	40	12	●	A	0.5 SH M10x30		
<b>763-22R-12</b>	7	63	22	47	40	12	●	A	0.5 SH M10x30		
<b>680-27R-12</b>	6	80	27	58	50	12	●	A	1.0 SH M10x25		
<b>880-27R-12</b>	8	80	27	58	50	12	●	A	1.0 SH M10x25		
<b>TFM90AP 440-16R-17</b>	4	40	16	38	40	16.1	●	A	0.3 SH M8x30		APK(C)T 1705... E261-E262
<b>350-22R-17-B</b>	3	50	22	45	40	16.1	●	A	0.4 SH M10x30		
<b>450-22R-17-B</b>	4	50	22	45	40	16.1	●	A	0.3 SH M10x30		
<b>550-22R-17</b>	5	50	22	45	40	16.1	●	A	0.4 SH M10x30		
<b>463-22R-17-B</b>	4	63	22	47	40	16.1	●	A	0.5 SH M10x30		
<b>663-22R-17</b>	6	63	22	47	50	16.1	●	A	0.5 SH M10x30		
<b>480-27R-17-B</b>	4	80	27	58	50	16.1	●	A	0.8 SH M12x35		
<b>680-27R-17</b>	6	80	27	58	50	16.1	●	A	0.9 SH M12x35		
<b>780-27R-17</b>	7	80	27	58	50	16.1	●	A	0.9 SH M12x35		
<b>6100-32R-17-B</b>	6	100	32	85	50	16.1	●	A	1.3 LH M16x35		
<b>8100-32R-17</b>	8	100	32	85	50	16.1	●	A	1.5 LH M16x35		
<b>7125-40R-17-B</b>	7	125	40	85	63	16.1	●	A	2.9 SH M20x40		
<b>8125-40R-17</b>	8	125	40	85	63	16.1	●	A	3.0 SH M20x40		
<b>9125-40R-17</b>	9	125	40	85	63	16.1	●	A	3.1 SH M20x40		
<b>8160-40R-17-B</b>	8	160	40	110	63	16.1	x	C	4.1 -		
<b>10160-40R-17</b>	10	160	40	110	63	16.1	x	C	4.2 -		
<b>12200-60R-17</b>	12	200	60	130	63	16.1	x	C	6.1 -		

- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ Cutter body for 'APKT 12' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.5mm
- ▶ Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly body "RE"=Insert "RE"-0.8mm

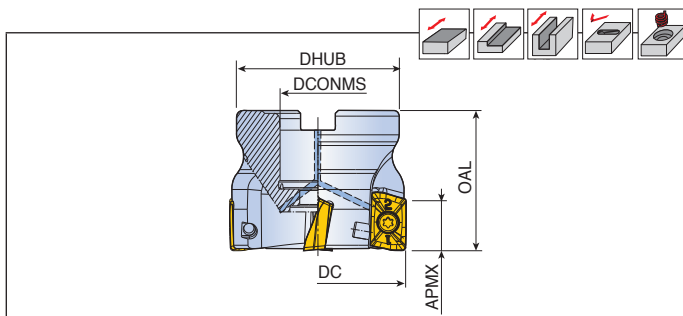
Cutting Condition E312-E315	Arbor Style E316-E317	Torque E318	Ramping Data E360-E366
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# 2S-TFM90AP-19



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	SDHUB	OAL	APMX					
<b>2S-TFM90AP350-22R-19</b>	3	50	22	45	45	17.9	●	A	0.3	LH M10x35	APKT 1907... E263
<b>463-22R-19</b>	4	63	22	47	40	17.9	●	A	0.7	SH M10x30	
<b>463-27R-19</b>	4	63	27	58	50	17.9	●	A	0.7	SH M12x35	
<b>680-27R-19</b>	6	80	27	58	50	17.9	●	A	1.1	SH M12x35	
<b>7100-32R-19</b>	7	100	32	85	50	17.9	●	A	1.9	SH M16x35	
<b>6125-40R-19</b>	6	125	40	85	63	17.9	●	A	3.0	SH M20x40	
<b>8125-40R-19</b>	8	125	40	85	63	17.9	●	A	3.0	SH M20x40	
<b>10160-40R-19</b>	10	160	40	110	63	17.9	x	C	4.2	-	
<b>12200-60R-19</b>	12	200	60	130	63	17.9	x	C	6.0	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

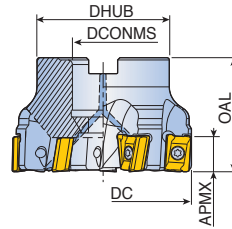
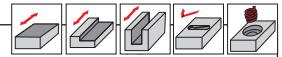
## Spare parts

Designation	Screw	Wrench			
<b>2S-TFM90AP-19</b>	TS 50115I	T-T20			

E312-E315	E316-E317	E318	E360-E366
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## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert	
		DC	DCONMS	DHUB	OAL	APMX						
<b>TFM90AN 440-16R-11</b>	4	40	16	38	40	11	●	A	0.2	SH M8x30	ANM(H)X 1106... 	
<b>450-22R-11</b>	4	50	22	45	40	11	●	A	0.3	SH M10x30		
<b>650-22R-11</b>	6	50	22	45	40	11	●	A	0.3	SH M10x30		
<b>563-22R-11</b>	5	63	22	47	40	11	●	A	0.6	SH M10x30		
<b>763-22R-11</b>	7	63	22	47	40	11	●	A	0.6	SH M10x30		
<b>880-27R-11</b>	8	80	27	58	50	11	●	A	1.1	SH M12x35		
<b>1080-27R-11</b>	10	80	27	58	50	11	●	A	1.1	SH M12x35		
<b>9100-32R-11</b>	9	100	32	85	50	11	●	A	2.0	SH M16x35		
<b>12100-32R-11</b>	12	100	32	85	50	11	●	A	2.0	SH M16x35		
<b>10125-40R-11</b>	10	125	40	85	63	11	●	A	3.3	SH M20x40		
<b>14125-40R-11</b>	14	125	40	85	63	11	●	A	3.4	SH M20x40		
<b>TFM90AN 350-22R-16</b>	3	50	22	45	40	15	●	A	0.4	SH M10x30		ANM(H)X 1607... 
<b>450-22R-16</b>	4	50	22	45	40	15	●	A	0.4	SH M10x30		
<b>463-22R-16</b>	4	63	22	47	40	15	●	A	0.5	SH M10x30		
<b>663-22R-16</b>	6	63	22	47	40	15	●	A	0.5	SH M10x30		
<b>580-27R-16</b>	5	80	27	58	50	15	●	A	0.8	SH M12x35		
<b>680-27R-16</b>	6	80	27	58	50	15	●	A	1.2	SH M12x35		
<b>780-27R-16</b>	7	80	27	58	50	15	●	A	0.9	SH M12x35		
<b>5100-32R-16</b>	5	100	32	85	50	15	●	A	1.3	SH M16x35		
<b>8100-32R-16</b>	8	100	32	85	50	15	●	A	1.5	SH M16x35		
<b>7125-40R-16</b>	7	125	40	85	63	15	●	A	3.9	SH M20x40		
<b>10125-40R-16</b>	10	125	40	85	63	15	●	A	3.7	SH M20x40		
<b>8160-40R-16</b>	8	160	40	110	63	15	x	C	5.0	-		
<b>12160-40R-16</b>	12	160	40	110	63	15	x	C	5.3	-		
<b>14200-60R-16</b>	14	200	60	130	63	15	x	C	7.0	-		

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

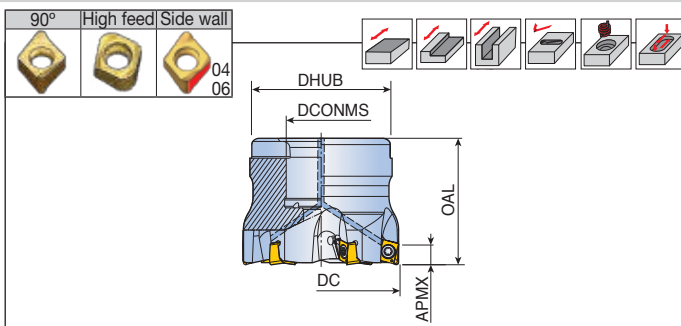
## Spare parts

Designation	Screw	Wrench			
<b>TFM90AN-11</b>	TS 35A088I/HG	TD 10P	-		
<b>TFM90AN-16</b>	TS 40120I	-	T-T15		





## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style		Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>4N TF90- 832-16R-04</b>	8	32	16	30	32	3.5	●	A	0.1	SH M8x25	4NK(H)T 0402... E252-E253
<b>1040-16R-04</b>	10	40	16	38	40	3.5	●	A	0.2	SH M8x25	
<b>4N TF90- 432-16R-06</b>	4	32	16	30	32	6.0	●	A	0.1	SH M8x25	4NK(H)T 0603... E252-E253
<b>532-16R-06</b>	5	32	16	30	32	6.0	●	A	0.1	SH M8x25	
<b>540-16R-06</b>	5	40	16	38	40	6.0	●	A	0.3	SH M8x25	
<b>640-16R-06</b>	6	40	16	38	40	6.0	●	A	0.3	SH M8x25	
<b>650-22R-06</b>	6	50	22	45	40	6.0	●	A	0.4	SH M10x30	
<b>750-22R-06</b>	7	50	22	47	40	6.0	●	A	0.4	SH M10x30	
<b>752-22R-06</b>	7	52	22	47	40	6.0	●	A	0.4	SH M10x30	
<b>763-22R-06</b>	7	63	22	47	40	6.0	●	A	0.6	SH M10x30	
<b>863-22R-06</b>	8	63	22	47	40	6.0	●	A	0.6	SH M10x30	
<b>866-27R-06</b>	8	66	27	58	50	6.0	●	A	0.8	SH M10x30	
<b>4N TF90- 540-16R-09</b>	5	40	16	38	40	8.0	●	A	0.3	SH M8x25	4NK(H)T 0904... E252-E253
<b>650-22R-09</b>	6	50	22	45	40	8.0	●	A	0.3	LH M10x25	
<b>563-22R-09</b>	5	63	22	47	40	8.0	●	A	0.5	LH M10x25	
<b>763-22R-09</b>	7	63	22	47	40	8.0	●	A	0.5	LH M10x25	
<b>780-27R-09</b>	7	80	27	58	50	8.0	●	A	1.0	SH M12x35	
<b>980-27R-09</b>	9	80	27	58	50	8.0	●	A	1.1	SH M12x35	

- ▶ Cutter body for '4NKT 040212R-HF' insert should be modified with body corner radius 1.2 mm
- ▶ Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm
- ▶ Cutter body for '4NKT 090432R-HF' insert should be modified with body corner radius 3.2 mm
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

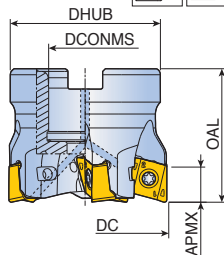
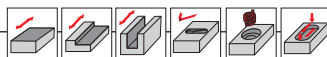
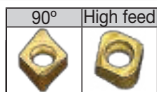
Designation	Screw	Wrench		Wrench handle
<b>4N TF90-04</b>	TS 180411/HG	TD 6P	-	-
<b>4N TF90-06</b>	TS 30B0681/HG	TD 8	-	-
<b>4N TF90-09</b>	TS 35A0881/HG	-	TBLD T10P-W6	THND 6W

 E312-E315	 E316-E317	 E318	 E338-E359
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# 4N TF90-11/14



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>4N TF90- 440-16R-11</b>	4	40	16	38	40	10.5	●	A	0.2	SH M8x30	4NKT 1106...
<b>450-22R-11</b>	4	50	22	45	40	10.5	●	A	0.3	LH M10x25	E252-E253
<b>550-22R-11</b>	5	50	22	45	40	10.5	●	A	0.3	LH M10x25	
<b>463-22R-11</b>	4	63	22	47	40	10.5	●	A	0.6	LH M10x25	
<b>663-22R-11</b>	6	63	22	47	40	10.5	●	A	0.5	LH M10x25	
<b>480-27R-11</b>	4	80	27	58	50	10.5	●	A	1.1	SH M12x35	
<b>480-25.4R-11</b>	4	80	25.4	70	50	10.5	●	A	1.3	SH M12x35	
<b>680-27R-11</b>	6	80	27	58	50	10.5	●	A	1.0	SH M12x35	
<b>880-27R-11</b>	8	80	27	58	50	10.5	●	A	1.0	SH M12x35	
<b>9100-32R-11</b>	9	100	32	85	50	10.5	●	A	1.9	SH M16x35	
<b>4N TF90- 450-22R-14</b>	4	50	22	45	45	13.8	●	A	0.4	SH M10x25	4NKT 1407...
<b>463-22R-14</b>	4	63	22	47	45	13.8	●	A	0.6	SH M10x25	E252-E253
<b>663-22R-14</b>	6	63	22	47	45	13.8	●	A	0.6	SH M10x25	
<b>580-27R-14</b>	5	80	27	58	50	13.8	●	A	1.0	SH M12x35	
<b>580-25.4R-14</b>	5	80	25.4	70	50	13.8	●	A	1.2	SH M12x35	
<b>780-27R-14</b>	7	80	27	58	50	13.8	●	A	1.0	SH M12x35	
<b>8100-32R-14</b>	8	100	32	85	50	13.8	●	A	1.9	SH M16x35	
<b>8100-31.75R-14</b>	8	100	31.75	80	50	13.8	●	B	1.7	-	

- ▶ Cutter body for '4NKT 110640R-HF' insert should be modified with body corner radius 4.0 mm
- ▶ Cutter body for '4NKT 140750R-HF' insert should be modified with body corner radius 5.0 mm
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

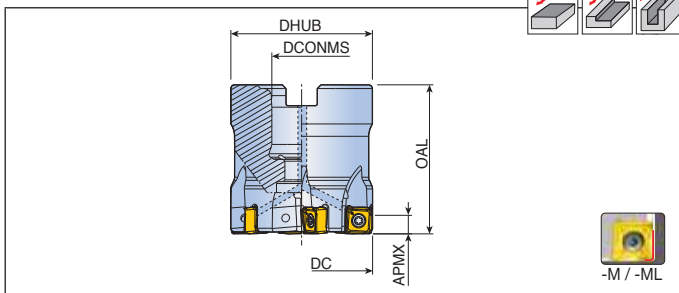
Designation	Screw	Wrench	Wrench handle		
<b>4N TF90-11</b>	TS 400931/HG	TBLD T15-W6	SW6-T		
<b>4N TF90-14</b>	TS 50A1211/HG	TBLD T20-W6	SW6-T		

 E312-E315	 E316-E317	 E318	 E338-E359
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# 8D-TF90-07



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>8D-TF90-432-16R-07</b>	4	32	16	30	32	5.0	●	A	0.1	SH M8x25	SQKU 0703... E297
<b>640-16R-07</b>	6	40	16	38	40	5.0	●	A	0.3	SH M8x25	
<b>650-22R-07</b>	6	50	22	45	40	5.0	●	A	0.4	SH M10x30	
<b>850-22R-07</b>	8	50	22	45	40	5.0	●	A	0.4	SH M10x30	
<b>763-22R-07</b>	7	63	22	47	40	5.0	●	A	0.5	SH M10x30	
<b>963-22R-07</b>	9	63	22	47	40	5.0	●	A	0.6	SH M10x30	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

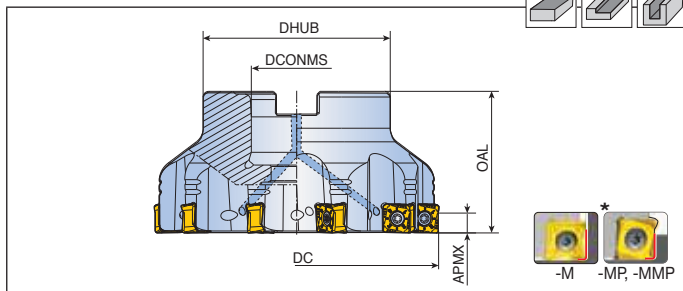
## Spare parts

Designation	Screw	Wrench			
<b>8D-TF90-07</b>	TS 25D060/HG-P	TD 7P			

 E312-E315	 E316-E317	 E318
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# 8D-TF90-10

## Face mills



Designation	Z	Dimension (mm)					Coolant hole	Arbor type	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>8D-TF90-440-16R-10</b>	4	40	16	38	40	7.0**	●	A	0.2	SH M8x25	SQK(H)U 1004... E297
<b>550-22R-10</b>	5	50	22	45	40	7.0**	●	A	0.3	SH M10x30	
<b>663-22R-10</b>	6	63	22	47	40	7.0**	●	A	0.5	SH M10x30	
<b>863-22R-10</b>	8	63	22	47	40	7.0**	●	A	0.5	SH M10x30	
<b>880-27R-10</b>	8	80	27	58	50	7.0**	●	A	1.1	SH M12x35	
<b>1080-27R-10</b>	10	80	27	58	50	7.0**	●	A	1.1	SH M12x35	
<b>10100-32R-10</b>	10	100	32	66	50	7.0**	●	A	1.6	SH M16x35	
<b>14100-32R-10</b>	14	100	32	66	50	7.0**	●	A	1.7	SH M16x35	
<b>12125-40R-10</b>	12	125	40	85	63	7.0**	●	A	3.4	SH M20x40	
<b>16125-40R-10</b>	16	125	40	85	63	7.0**	●	A	3.5	SH M20x40	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)  
 ► \*:Multi-Step milling is not recommended over the APMX ► \*\*:When applying SQHU insert, APMX is 6.5 mm.

## Spare parts

Designation	Screw	Wrench			
	<b>8D-TF90-10</b>	TS 35A0881/HG	TD 10P		

E312-E315

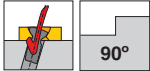
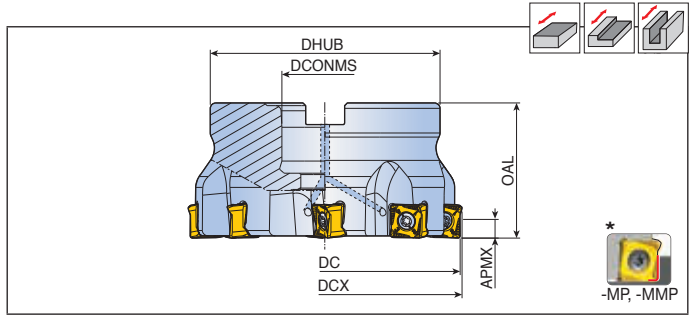
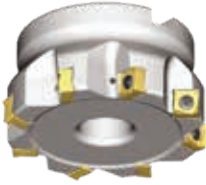
E316-E317

E318

# 8D-TF90-12



## Face mills



Designation	Z	Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>8D-TF90-340-16R-12</b>	3	40	41.3	16	38	40	8.5**	●	E	0.3	KTB 32B	SQK(H)U 1206... E297
<b>440-16R-12</b>	4	40	41.3	16	38	40	8.5**	●	E	0.3	KTB 32B	
<b>450-22R-12</b>	4	50	51.3	22	45	40	8.5**	●	A	0.3	SH M10x30	
<b>650-22R-12</b>	6	50	51.3	22	45	40	8.5**	●	A	0.4	SH M10x30	
<b>563-22R-12</b>	5	63	64.3	22	47	40	8.5**	●	A	0.5	SH M10x30	
<b>863-22R-12</b>	8	63	64.3	22	47	40	8.5**	●	A	0.6	SH M10x30	
<b>680-27R-12</b>	6	80	81.3	27	58	50	8.5**	●	A	1.1	SH M12x35	
<b>680-25.4R-12</b>	6	80	81.3	25.4	70	50	8.5**	●	A	1.3	SH M12x35	
<b>980-27R-12</b>	9	80	81.3	27	58	50	8.5**	●	A	1.2	SH M12x35	
<b>1180-27R-12</b>	11	80	81.3	27	58	50	8.5**	●	A	1.2	SH M12x35	
<b>8100-32R-12</b>	8	100	101.3	32	66	50	8.5**	●	A	1.6	SH M16x35	
<b>8100-31.75R-12</b>	8	100	101.3	31.75	80	50	8.5**	x	B	1.8	-	
<b>11100-32R-12</b>	11	100	101.3	32	66	50	8.5**	●	A	1.7	SH M16x35	
<b>14100-32R-12</b>	14	100	101.3	32	66	50	8.5**	●	A	1.7	SH M16x35	
<b>10125-40R-12</b>	10	125	126.3	40	85	63	8.5**	●	A	3.4	SH M20x40	
<b>10125-38.1R-12</b>	10	125	126.3	38.1	80	63	8.5**	x	B	3.0	-	
<b>18125-40R-12</b>	18	125	126.3	40	85	63	8.5**	●	A	3.5	SH M20x40	
<b>12160-40R-12</b>	12	160	161.3	40	110	63	8.5**	x	C	4.7	-	
<b>12160-50.8R-12</b>	12	160	161.3	50.8	100	63	8.5**	x	B	4.9	-	
<b>22160-40R-12</b>	22	160	161.3	40	110	63	8.5**	x	C	4.9	-	

- ▶ DC: Cutting diameter ▶ DCX: Cutting diameter maximum
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ \*:Multi-Step milling is not recommended over the APMX ▶ \*\*:When applying SQHU insert, APMX is 8.0mm.

## Spare parts

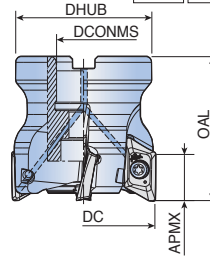
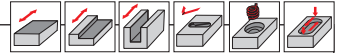
Designation	Screw	Wrench	Wrench handle		
	<b>8D-TF90-12</b>	TS 40M100/HG	TBLD T15-W6	SW6-T	



# TFM90XEV-16/22



## Face mills



Designation		Dimension (mm)					Coolant hole	Arbor style	Max RPM	Kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX						
<b>TFM90XEV 340-16R-16</b>	3	40	16	38	50	16	●	A	41,200	0.2	SH M8x35-C	XEVT 1605... E305
<b>350-22R-16</b>	3	50	22	47	50	16	●	A	41,200	0.3	SH M8x35-C	
<b>363-22R-16</b>	3	63	22	47	50	16	●	A	41,200	0.5	SH M8x35-C	
<b>450-22R-16</b>	4	50	22	45	50	16	●	A	36,800	0.3	SH M10x30-C	
<b>563-22R-16</b>	5	63	22	47	50	16	●	A	32,700	0.5	SH M10x30-C	
<b>480-27R-16</b>	4	80	27	58	50	16	●	A	29,000	0.9	LH M12x30-C	
<b>580-27R-16</b>	5	80	27	58	50	16	●	A	29,000	0.9	LH M12x30-C	
<b>680-27R-16</b>	6	80	27	58	50	16	●	A	29,000	0.8	LH M12x30-C	
<b>6100-32R-16</b>	6	100	32	66	63	16	●	A	26,000	1.6	SH M16x35-C	
<b>7125-40R-16</b>	7	125	40	85	63	16	●	A	23,200	2.5	SH M20x40-C	
<b>8160-40R-16</b>	8	160	40	110	63	16	x	C	20,000	3.8	-	
<b>TFM90XEV 350-22R-22</b>	3	50	22	45	55	21	●	A	31,400	0.4	SH M10x30-C	XEVT 2206... E305
<b>463-22R-22</b>	4	63	22	47	55	21	●	A	28,000	0.6	SH M10x30-C	
<b>580-27R-22</b>	5	80	27	58	55	21	●	A	24,800	1.0	LH M12x30-C	
<b>6100-32R-22</b>	6	100	32	85	63	21	●	A	22,200	2.1	SH M16x35-C	
<b>7125-40R-22</b>	7	125	40	85	63	21	●	A	19,900	2.8	SH M20x40-C	

► Cutter body for inserts with corner radii more than 3.2mm (XEVT 16) and 3.0mm (XEVT 22) should be modified as follows: body "RE"=insert "RE"-0.3mm

## Spare parts

Designation	Screw	Wrench			
<b>TFM90XEV-16</b>	TS 400931/HG	T-T15			
<b>TFM90XEV-22</b>	TS 501151	T-T20			



E312-E315

E316-E317

E318

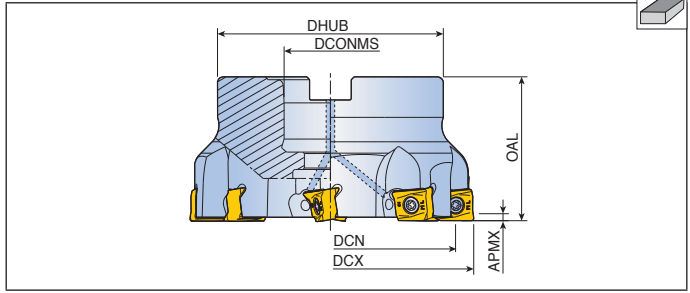
E368-E372



# 4W-TF90-12



## Face mills for finishing



Designation	⊕	Dimension (mm)						Coolant hole	Arbor style	Ⓚ kg	Mounting bolt	Insert
		DCX	DCN	DCONMS	DHUB	OAL	APMX					
<b>4W-TF90-550-22R-12</b>	5	50	38.9	22	45	40	0.5	●	A	0.4	SH M10x30-C	4WHU 1207... E254
<b>663-22R-12</b>	6	63	50.9	22	47	40	0.5	●	A	0.5	SH M10x30-C	
<b>880-27R-12</b>	8	80	66.9	27	58	50	0.5	●	A	1.1	SH M12x35-C	
<b>8100-32R-12</b>	8	100	86.9	32	66	50	0.5	●	A	1.6	SH M16x35-C	
<b>10125-40R-12</b>	10	125	110.9	40	85	63	0.5	●	A	3.1	SH M20x40-C	
<b>10160-40R-12</b>	10	160	145.9	40	110	63	0.5	x	C	4.1	-	

- ▶ DCN: Cutting diameter minimum
- ▶ DCX: Cutting diameter maximum

## Spare parts

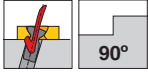
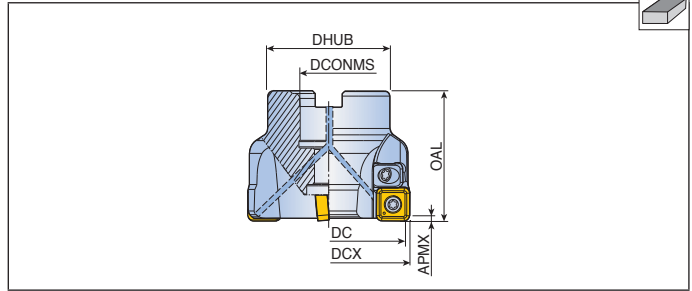
Designation	Screw	Wrench	Wrench handle		
<b>4W-TF90-12</b>	TS 40A115I	TBLD T15-W6	SW6-T		

 Cutting Condition E312-E315	 Arbor Style E316-E317	 Torque E318
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# TFM90SNS-12



## Face mills for finishing



Designation	Z	Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFM90SNS 350-22R-12</b>	3	50	43.35	22	45	50	1.0	●	A	0.5	SH M10x40	SNEX 1204... SNET 1205... E291
<b>463-22R-12</b>	4	63	56.35	22	47	50	1.0	●	A	0.7	SH M10x40	
<b>680-27R-12</b>	6	80	73.35	27	58	50	1.0	●	A	1.0	SH M12x35	
<b>8100-32R-12</b>	8	100	93.35	32	66	63	1.0	●	A	2.0	SH M16x30	
<b>12100-32R-12</b>	12	100	93.35	32	66	63	1.0	●	A	2.0	SH M16x30	
<b>10125-40R-12</b>	10	125	118.35	40	85	63	1.0	x	B	2.9	-	
<b>16125-40R-12</b>	16	125	118.35	40	85	63	1.0	x	B	2.9	-	
<b>12160-40R-12</b>	12	160	153.35	40	110	63	1.0	x	C	4.4	-	
<b>20160-40R-12</b>	20	160	153.35	40	110	63	1.0	x	C	4.4	-	
<b>16200-60R-12</b>	16	200	193.35	60	130	63	1.0	x	C	6.0	-	
<b>24200-60R-12</b>	24	200	193.35	60	130	63	1.0	x	C	6.0	-	
<b>30250-60R-12</b>	30	250	243.35	60	160	63	1.0	x	C	10.8	-	

- ▶ Recommend to very stable machining condition at cast iron & steel
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Adj. wedge	Adj. screw	Wrench	
<b>TFM90SNS-12</b>	TS 35C110I	AJS 1010R	AWS 0620	T-T15	

E312-E315

E316-E317

E318

E322-E323

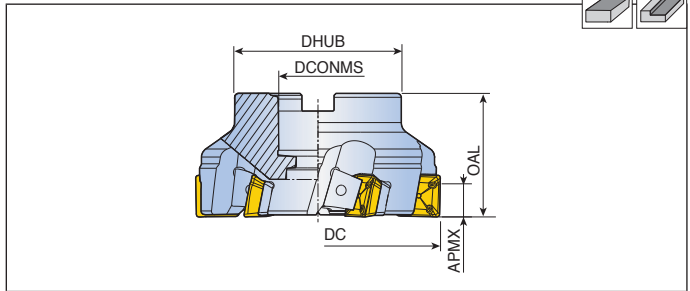




# LM90SE-21



Face mills



Designation		Dimension (mm)					Arbor style		Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX				
<b>LM90SE6125-40R-21</b>	6	125	40	85	63	17.0	A	3.4	SH M20x40	SEKX 2107... E289
<b>8160-40R-21</b>	8	160	40	110	63	17.0	C	5.3	-	
<b>10200-60R-21</b>	10	200	60	130	80	17.0	C	9.6	-	
<b>12200-60R-21</b>	12	200	60	130	80	17.0	C	9.5	-	
<b>12250-60R-21</b>	12	250	60	160	80	17.0	C	16.4	-	
<b>14250-60R-21</b>	14	250	60	160	80	17.0	C	16.4	-	
<b>12315-60R-21</b>	12	315	60	220	80	17.0	D	21.0	-	
<b>LM90SE6125-38.1R-21</b>	6	125	38.1	85	63	17.0	B	3.4	-	
<b>8160-50.8R-21</b>	8	160	50.8	110	63	17.0	B	5.3	-	
<b>10200-47.625R-21</b>	10	200	47.625	130	80	17.0	C	9.6	-	

## Spare parts

Designation	Shim	Shim screw	Wedge	Wedge screw	Wedge screw wrench	Shim screw wrench
<b>LM90SE-21 (-Ø200)</b>	TSSE 21N-ST	TS 50C130I/HG	WPA 8-SE16	TS 80160W	T-W 4	T-T20
<b>LM90SE-21 (Ø250-)</b>	TSSE 21N-ST	TS 50C130I/HG	WPA 8-SE16	TS 80200W	T-W 4	T-T20

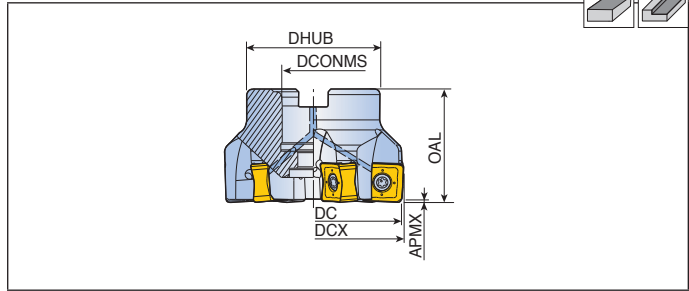
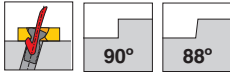
► The shim screw wrench<sup>(1)</sup> shall be ordered separately



# TFM90SN/TFM88SN-13



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>TFM90SN 550-22R-13</b>	5	50	50.7	22	45	40	12.0	●	A	0.3	SH M10x30	SNGX 1306 ... E293
<b>663-22R-13</b>	6	63	63.7	22	47	40	12.0	●	A	0.5	SH M10x30	
<b>780-27R-13</b>	7	80	80.7	27	70	50	12.0	●	A	1.2	SH M12x35	
<b>980-27R-13*</b>	9	80	80.7	27	70	50	12.0	●	A	1.2	SH M12x35	
<b>8100-32R-13</b>	8	100	100.8	32	85	50	12.0	●	A	1.9	SH M16x30	
<b>13100-32R-13*</b>	13	100	100.8	32	85	50	12.0	●	A	1.9	SH M16x30	
<b>10125-40R-13</b>	10	125	125.8	40	85	63	12.0	x	B	2.8	-	
<b>16125-40R-13*</b>	16	125	125.8	40	85	63	12.0	x	B	2.8	-	
<b>TFM88SN 550-22R-13</b>	5	50	51.2	22	45	40	12.0	●	A	0.3	SH M10x30	SNGX 1306 ZN... E293
<b>663-22R-13</b>	6	63	64.2	22	47	40	12.0	●	A	0.5	SH M10x30	
<b>780-27R-13</b>	7	80	81.2	27	70	50	12.0	●	A	1.2	SH M12x35	
<b>980-27R-13*</b>	9	80	81.2	27	70	50	12.0	●	A	1.2	SH M12x35	
<b>8100-32R-13</b>	8	100	101.2	32	85	50	12.0	●	A	1.9	SH M16x30	
<b>11100-32R-13*</b>	11	100	101.2	32	85	50	12.0	●	A	1.9	SH M16x30	
<b>10125-40R-13</b>	10	125	126.1	40	85	63	12.0	x	B	2.8	-	
<b>14125-40R-13*</b>	14	125	126.1	40	85	63	12.0	x	B	2.8	-	
<b>12160-40R-13</b>	12	160	161.1	40	110	63	12.0	x	C	4.2	-	
<b>18160-40R-13*</b>	18	160	161.1	40	110	63	12.0	x	C	4.2	-	
<b>14200-60R-13</b>	14	200	201.1	60	130	63	12.0	x	C	6.0	-	
<b>22200-60R-13*</b>	22	200	201.1	60	130	63	12.0	x	C	6.0	-	

- ▶ \*: Fine pitch cutter for cast iron
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

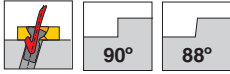
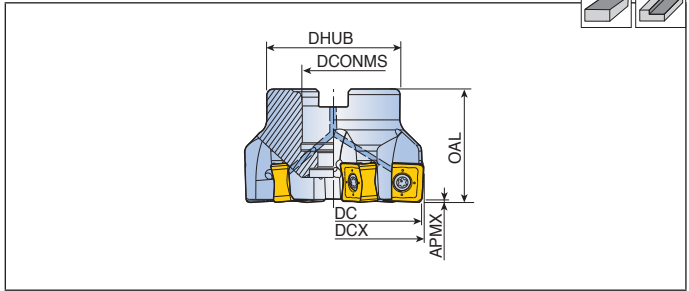
Designation	Screw	Wrench			
<b>TFM90SN</b>	TS 40B100I	T-T15			
<b>TFM88SN</b>	TS 40B100I	T-T15			



# TFM90SN/TFM88SN-13



Face mills (Inch bore)



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>TFM90SN 780-25.4R-13</b>	7	80	80.7	25.4	70	50	12.0	●	A	1.2	SH M12x35	SNGX
<b>8100-31.75R-13</b>	8	100	100.8	31.75	80	50	12.0	x	B	1.9	-	1306 ...
<b>10125-38.1R-13</b>	10	125	125.8	38.1	80	63	12.0	x	B	2.8	-	E293
<b>TFM88SN 780-25.4R-13</b>	7	80	81.2	25.4	70	50	12.0	●	A	1.2	SH M12x35	SNGX
<b>980-25.4R-13*</b>	9	80	81.2	25.4	70	50	12.0	●	A	1.2	SH M12x35	1306 ZN...
<b>8100-31.75R-13</b>	8	100	101.2	31.75	80	50	12.0	x	B	1.9	-	E293
<b>11100-31.75R-13*</b>	11	100	101.2	31.75	80	50	12.0	x	B	1.9	-	
<b>10125-38.1R-13</b>	10	125	126.1	38.1	80	63	12.0	x	B	2.8	-	
<b>12160-50.8R-13</b>	12	160	161.1	50.8	100	63	12.0	x	B	4.2	-	

- ▶ \*: Fine pitch cutter for cast iron
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

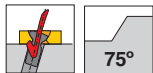
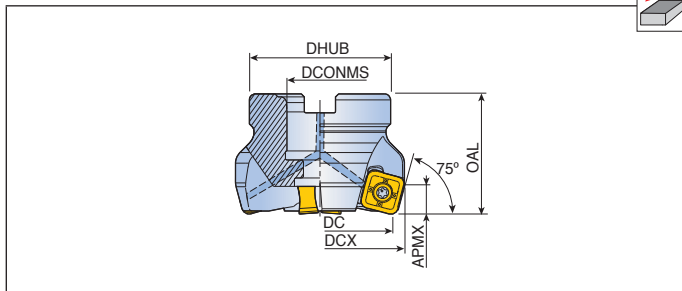
Designation	Screw	Wrench			
<b>TFM90SN</b>	TS 40B100I	T-T15			
<b>TFM88SN</b>	TS 40B100I	T-T15			

 E312-E315	 E316-E317	 E318
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# TFM75SN-13



## Face mills



Designation		Dimension (mm)							Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX						
<b>TFM75SN 450-22R-13</b>	4	50	55.4	22	45	40	9.5	●	A	0.4	LH M10x25	SNM(G)X 1306 EN... SNMX 1306 XTN... E292	
<b>650-22R-13</b>	6	50	55.4	22	45	40	9.5	●	A	0.4	LH M10x25		
<b>663-22R-13</b>	6	63	68.4	22	47	40	9.5	●	A	0.6	LH M10x25		
<b>863-22R-13</b>	8	63	68.4	22	47	40	9.5	●	A	0.6	LH M10x25		
<b>780-27R-13</b>	7	80	85.4	27	70	50	9.5	●	A	1.3	LH M12x30		
<b>1080-27R-13</b>	10	80	85.4	27	70	50	9.5	●	A	1.3	LH M12x30		
<b>8100-32R-13</b>	8	100	105.4	32	85	50	9.5	●	A	1.9	LH M16x35		
<b>12100-32R-13</b>	12	100	105.4	32	85	50	9.5	●	A	2.0	LH M16x35		
<b>10125-40R-13</b>	10	125	130.3	40	85	63	9.5	●	A	3.2	SH M20x40		
<b>16125-40R-13</b>	16	125	130.4	40	85	63	9.5	●	A	3.3	SH M20x40		
<b>12160-40R-13</b>	12	160	165.3	40	110	63	9.5	x	C	4.7	-		
<b>20160-40R-13</b>	20	160	165.4	40	110	63	9.5	x	C	4.8	-		
<b>16200-60R-13</b>	16	200	205.3	60	130	63	9.5	x	C	6.4	-		
<b>22200-60R-13</b>	22	200	205.4	60	130	63	9.5	x	C	6.4	-		
<b>20250-60R-13</b>	20	250	255.3	60	160	63	9.5	x	C	11.7	-		
<b>TFM75SN 580-25.4R-13B</b>	5	80	85.4	25.4	70	50	9.5	●	A	1.3	LH M12x30		
<b>1080-25.4R-13</b>	10	80	85.4	25.4	70	50	9.5	●	A	1.5	LH M12x30		
<b>6100-31.75R-13B</b>	6	100	105.4	31.75	80	50	9.5	x	B	1.9	-		
<b>8125-38.1R-13B</b>	8	125	130.3	38.1	80	63	9.5	x	B	3.2	-		
<b>12160-50.8R-13B</b>	12	160	165.3	50.8	100	63	9.5	x	B	4.7	-		

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
	<b>TFM75SN</b>	TS 40B100I	T-T15		



E312-E315

E316-E317

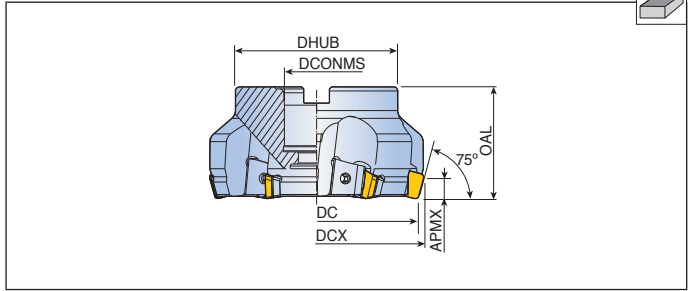
E318



# LM75SP-12/15



## Face mills



Designation		Dimension (mm)						Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>LM75SP580-25.4 R-12</b>	5	80	85.4	25.4	70	50	9.5	A	1.5	SH M12x35	SPKN 1203...
<b>6100-31.75R-12</b>	6	100	105.4	31.75	80	55	9.5	A	2.4	LH M16x35	E296
<b>8125-38.1R-12</b>	8	125	130.4	38.1	80	63	9.5	B	3.2	-	-
<b>10160-50.8R-12</b>	10	160	165.4	50.8	100	63	9.5	B	5.0	-	-
<b>12200-47.625R-12</b>	12	200	205.4	47.625	130	63	9.5	C	7.4	-	-
<b>16250-47.625R-12</b>	16	250	255.4	47.625	160	63	9.5	C	10.8	-	-
<b>LM75SP580-25.4R-15</b>	5	80	86.97	25.4	70	55	12.5	A	1.5	SH M12x35	SPKN 1504...
<b>5100-31.75R-15</b>	5	100	106.96	31.75	80	55	12.5	A	2.4	LH M16x35	E296
<b>8125-38.1R-15</b>	8	125	131.95	38.1	80	63	12.5	B	3.1	-	-
<b>10160-50.8R-15</b>	10	160	166.94	50.8	100	63	12.5	B	5.0	-	-
<b>12200-47.625R-15</b>	12	200	206.94	47.625	130	63	12.5	C	6.9	-	-
<b>16250-47.625R-15</b>	16	250	256.93	47.625	160	63	12.5	C	10.8	-	-
<b>20315-47.625R-15</b>	20	315	321.93	47.625	220	63	12.5	D	17.4	-	-

▶ Metric bore cutter is available upon request

## Spare parts

Designation	Carbide shim	Wedge	Shim screw	Wedge screw	Wrench	
<b>LM75SP-12 (Ø80)</b>	TSSP 12N	WPA 8	TS 40B100I	TS 80160W	T-W 4	T-T15
<b>LM75SP-12 (Ø100-)</b>	TSSP 12N	WPA 8	TS 40B100I	TS 80200W	T-W 4	T-T15
<b>LM75SP-15</b>	TSSP 15N	WPA 8	TS 40B100I	TS 80200W	T-W 4	T-T15

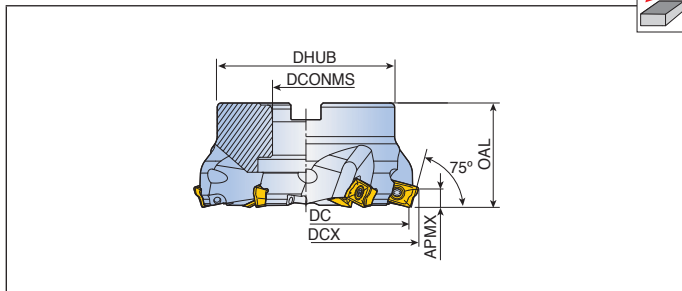
▶ The shim screw wrench T-T15<sup>(1)</sup> shall be ordered separately

 E312-E315	 E316-E317	 E318
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# TFM75AP-17



Face mills



Designation		Dimension (mm)						Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>TFM75AP 580-27R-17</b>	5	80	87.82	27	58	50	3.9	A	0.8	SH M12x35	APKT 1705
<b>6100-32R-17</b>	6	100	107.82	32	85	50	3.9	B	1.3	-	PER-M
<b>7125-40R-17</b>	7	125	132.82	40	85	63	3.9	B	3.5	-	APKT 1705
<b>TFM75AP 580-25.4R-17</b>	5	80	87.82	25.4	70	50	3.9	A	0.8	SH M12x35	PER-EM
<b>6100-31.75R-17</b>	6	100	107.82	31.75	80	50	3.9	B	1.3	-	E262
<b>7125-38.1R-17</b>	7	125	132.82	38.1	80	63	3.9	B	3.5	-	

► Cutter for the other corner of APKT inserts

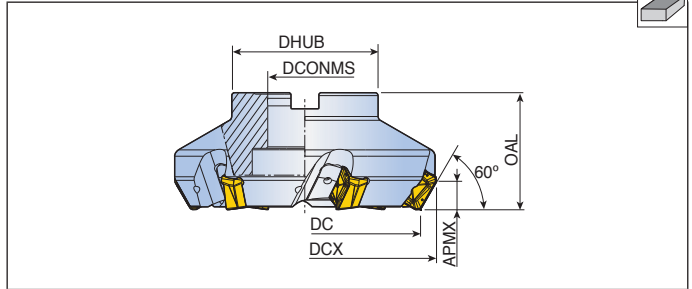
## Spare parts

Designation	Screw	Wrench			
	<b>TFM75AP-17</b>	TS 40120/HG	T-T15		

E312-E315	E316-E317	E318
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## Face mills



Designation		Dimension (mm)							Arbor style	Kg	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>LM60SC 5125-40R-21</b>	5	125	141.2	40	85	63	13.0	B	4.1	SCKN 2107... E288	
<b>8160-40R-21</b>	8	160	176.1	40	110	63	13.0	C	6.5		
<b>10160-40R-21</b>	10	160	176.1	40	110	63	13.0	C	6.4		
<b>10200-60R-21</b>	10	200	216.1	60	130	80	13.0	C	11.8		
<b>12200-60R-21</b>	12	200	216.1	60	130	80	13.0	C	11.8		
<b>12250-60R-21</b>	12	250	266	60	160	80	13.0	C	19.2		
<b>14250-60R-21</b>	14	250	266	60	160	80	13.0	C	19.1		
<b>16250-60R-21</b>	16	250	266	60	160	80	13.0	C	19.1		
<b>12315-60R-21</b>	12	315	331	60	220	80	13.0	D	25.0		
<b>16315-60R-21</b>	16	315	331	60	220	80	13.0	D	25.0		
<b>LM60SC 5125-38.1R-21</b>	5	125	141.2	38.1	80	63	13.0	B	4.1		
<b>10160-50.8R-21</b>	10	160	176.1	50.8	100	63	13.0	B	6.4		
<b>10200-47.625R-21</b>	10	200	216.1	47.625	130	80	13.0	C	11.8		
<b>12250-47.625R-21</b>	12	250	266	47.625	160	80	13.0	C	19.2		
<b>16250-47.625R-21</b>	16	250	266	47.625	160	80	13.0	C	19.1		

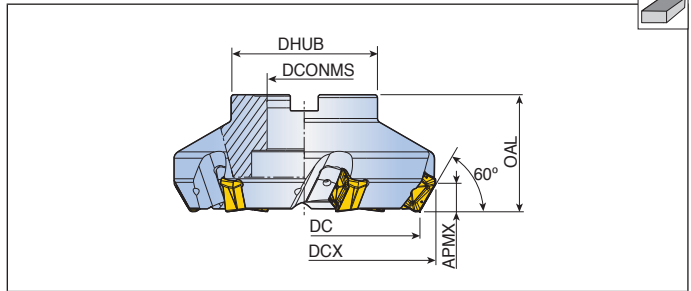
## Spare parts

Designation	Shim	Shim screw	Wedge	Wedge screw	Wrench	
<b>LM60SC-21</b>	TSSC 21R-ST	TS 50C130I/HG	WSC 8R-21	TS 80200W	T-W 4	T-T20



► The shim screw wrench<sup>(1)</sup> shall be ordered separately

## Face mills



Designation		Dimension (mm)						Arbor style	Kg	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX			
<b>LM60SC 5125-40R-27</b>	5	125	146	40	85	63	18.0	B	4.6	SCKN 2708... E288
<b>6160-40R-27</b>	6	160	181	40	110	80	18.0	C	8.7	
<b>8160-40R-27</b>	8	160	181	40	110	80	18.0	C	8.4	
<b>8200-60R-27</b>	8	200	220.9	60	130	80	18.0	C	12.4	
<b>10200-60R-27</b>	10	200	220.9	60	130	80	18.0	C	12.3	
<b>10250-60R-27</b>	10	250	270.8	60	160	80	18.0	C	19.9	
<b>12250-60R-27</b>	12	250	270.8	60	160	80	18.0	C	19.8	
<b>12315-60R-27</b>	12	315	335.8	60	220	80	18.0	D	26.0	
<b>15315-60R-27</b>	15	315	335.8	60	220	80	18.0	D	25.9	
<b>LM60SC 12250-47.625R-27</b>	12	250	270.8	47.625	160	80	18.0	C	19.8	
<b>12315-47.625R-27</b>	12	315	335.8	47.625	220	80	18.0	D	26.0	

## Spare parts

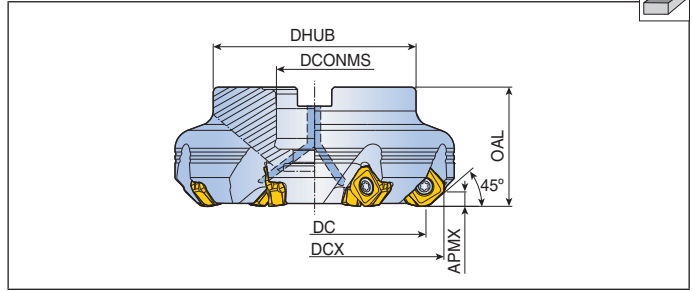
Designation	Shim	Shim screw	Wedge	Wedge screw	Wrench		Wrench handle
<b>LM60SC-27</b>	TSSC 27R-TS	TS 60A130I	WSC 8R	TS 80200W	T-W 4	BLD T25	SW6-T



► The wrench<sup>(1)</sup> & wrench handle<sup>(2)</sup> shall be ordered separately

# 8D-TF45-11

## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor type	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>8D-TF45-440-16R-11</b>	4	40	51	16	38	40	4.2	●	A	0.4	SH M8x25	SQKU
<b>640-16R-11</b>	6	40	51	16	38	40	4.2	●	A	0.4	SH M8x25	1105
<b>650-22R-11</b>	6	50	61	22	45	40	4.2	●	A	0.5	LH M10x25	 E298
<b>850-22R-11</b>	8	50	61	22	45	40	4.2	●	A	0.5	LH M10x25	
<b>763-22R-11</b>	7	63	74	22	47	50	4.2	●	A	1.0	SH M10x30	
<b>1063-22R-11</b>	10	63	74	22	47	50	4.2	●	A	1.0	SH M10x30	
<b>880-27R-11</b>	8	80	91	27	70	50	4.2	●	A	1.6	LH M12x30	
<b>1280-27R-11</b>	12	80	91	27	70	50	4.2	●	A	1.6	LH M12x30	
<b>9100-32R-11</b>	9	100	111	32	85	50	4.2	●	A	2.4	LH M16x35	
<b>14100-32R-11</b>	14	100	111	32	85	50	4.2	●	A	2.5	LH M16x35	
<b>8125-40R-11</b>	8	125	136	40	85	63	4.2	●	A	4.1	SH M20x40	
<b>12125-40R-11</b>	12	125	136	40	85	63	4.2	●	A	4.0	SH M20x40	
<b>18125-40R-11</b>	18	125	136	40	85	63	4.2	●	A	4.1	SH M20x40	
<b>10160-40R-11</b>	10	160	171	40	110	63	4.2	x	C	5.7	-	
<b>16160-40R-11</b>	16	160	171	40	110	63	4.2	x	C	5.6	-	
<b>24160-40R-11</b>	24	160	171	40	110	63	4.2	x	C	5.6	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

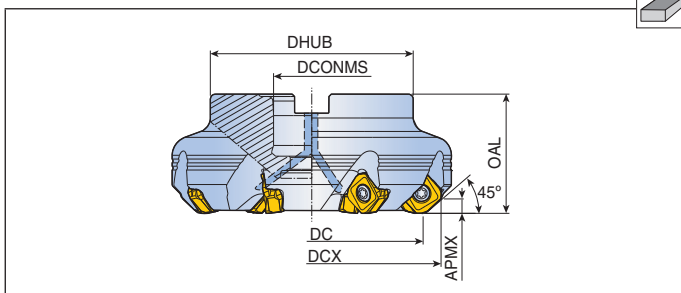
## Spare parts

Designation	Screw	Wrench	Wrench handle		
<b>8D-TF45-11</b>	TS 40A1151	TBLD T15-W6	SW6-T		



# 8D-TF45-14

## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor type	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>8D-TF45-450-22R-14</b>	4	50	65.5	22	45	40	6	●	A	0.6	LH M10x25	SQKU 1406
<b>650-22R-14</b>	6	50	65.5	22	45	40	6	●	A	0.6	LH M10x25	
<b>663-22R-14</b>	6	63	78.5	22	47	50	6	●	A	1.1	SH M10x30	E298
<b>863-22R-14</b>	8	63	78.5	22	47	50	6	●	A	1.0	SH M10x30	
<b>780-27R-14</b>	7	80	95.5	27	70	50	6	●	A	1.7	LH M12x30	
<b>1080-27R-14</b>	10	80	95.5	27	70	50	6	●	A	1.7	LH M12x30	
<b>8100-32R-14</b>	8	100	115.5	32	85	50	6	●	A	2.6	LH M16x35	
<b>12100-32R-14</b>	12	100	115.5	32	85	50	6	●	A	2.5	LH M16x35	
<b>6125-40R-14</b>	6	125	140.5	40	85	63	6	●	A	4.1	SH M20x40	
<b>10125-40R-14</b>	10	125	140.5	40	85	63	6	●	A	4.4	SH M20x40	
<b>16125-40R-14</b>	16	125	140.5	40	85	63	6	●	A	4.3	SH M20x40	
<b>7160-40R-14</b>	7	160	175.5	40	110	63	6	x	C	5.6	-	
<b>12160-40R-14</b>	12	160	175.5	40	110	63	6	x	C	5.9	-	
<b>20160-40R-14</b>	20	160	175.5	40	110	63	6	x	C	5.9	-	
<b>8200-60R-14</b>	8	200	215.5	60	130	63	6	x	C	8.0	-	
<b>18200-60R-14</b>	18	200	215.5	60	130	63	6	x	C	8.4	-	
<b>26200-60R-14</b>	26	200	215.5	60	130	63	6	x	C	8.3	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

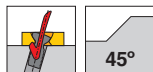
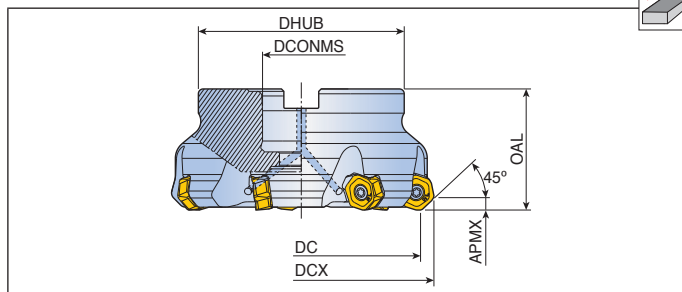
## Spare parts

Designation	Screw	Wrench	Wrench handle		
	<b>8D-TF45-14</b>	TS 50C130I/HG	TBLD T20-W6	SW6-T	



# 12D-TF45-06

## Face mills



Designation	Z	Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>12D-TF45-450-22R-06</b>	4	50	60.8	22	45	40	3.0	●	A	0.5	LH M10x25	HXK(H)U 0605... E275
<b>650-22R-06</b>	6	50	60.8	22	45	40	3.0	●	A	0.5	LH M10x25	
<b>563-22R-06</b>	5	63	73.8	22	47	40	3.0	●	A	0.7	LH M10x25	
<b>763-22R-06</b>	7	63	73.8	22	47	40	3.0	●	A	0.7	LH M10x25	
<b>680-27R-06</b>	6	80	90.8	27	70	50	3.0	●	A	1.5	SH M12x35	
<b>1080-27R-06</b>	10	80	90.8	27	70	50	3.0	●	A	1.5	SH M12x35	
<b>7100-32R-06</b>	7	100	110.8	32	85	50	3.0	●	A	2.2	LH M16x35	
<b>12100-32R-06</b>	12	100	110.8	32	85	50	3.0	●	A	2.2	LH M16x35	
<b>10125-40R-06</b>	10	125	135.8	40	85	63	3.0	●	A	3.6	SH M20x40	
<b>16125-40R-06</b>	16	125	135.8	40	85	63	3.0	●	A	3.6	SH M20x40	
<b>12160-40R-06</b>	12	160	170.8	40	110	63	3.0	x	C	4.9	-	
<b>20160-40R-06</b>	20	160	170.8	40	110	63	3.0	x	C	4.9	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench	Wrench handle		
<b>12D-TF45-06</b>	TS 40B100I	TBLD T15-W6	SW6-T		

E312-E315

E316-E317

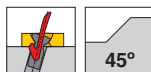
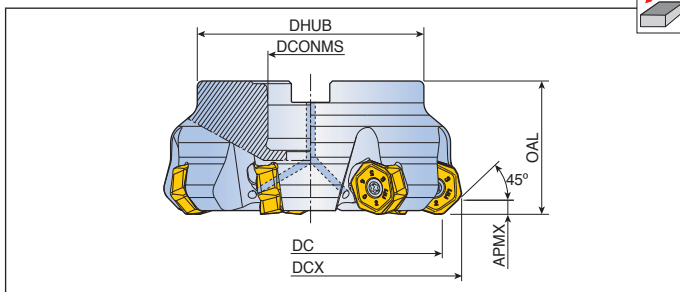
E318



# 12D-TF45-10



## Face mills



Designation	⊕	Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>12D-TF45-563-22R-10</b>	5	63	77.5	22	47	50	5.0	●	A	0.9	SH M10x30	HXK(H)U 1007...
<b>763-22R-10</b>	7	63	77.5	22	47	50	5.0	●	A	0.9	SH M10x30	
<b>680-27R-10</b>	6	80	94.5	27	70	50	5.0	●	A	1.6	SH M12x35	E275
<b>980-27R-10</b>	9	80	94.5	27	70	50	5.0	●	A	1.6	SH M12x35	
<b>7100-32R-10</b>	7	100	114.5	32	85	50	5.0	●	A	2.4	LH M16x35	
<b>11100-32R-10</b>	11	100	114.5	32	85	50	5.0	●	A	2.4	LH M16x35	
<b>8125-40R-10</b>	8	125	139.5	40	85	63	5.0	●	A	4.1	SH M20x40	
<b>10125-40R-10</b>	10	125	139.5	40	85	63	5.0	●	A	4.0	SH M20x40	
<b>14125-40R-10</b>	14	125	139.5	40	85	63	5.0	●	A	4.0	SH M20x40	
<b>10160-40R-10</b>	10	160	174.5	40	110	63	5.0	x	C	5.6	-	
<b>16160-40R-10</b>	16	160	174.5	40	110	63	5.0	x	C	5.6	-	
<b>14200-60R-10</b>	14	200	214.5	60	130	63	5.0	x	C	7.9	-	
<b>21200-60R-10</b>	21	200	214.5	60	130	63	5.0	x	C	7.9	-	
<b>16250-60R-10</b>	16	250	264.5	60	160	63	5.0	x	C	12.4	-	
<b>26250-60R-10</b>	26	250	264.5	60	160	63	5.0	x	C	12.4	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

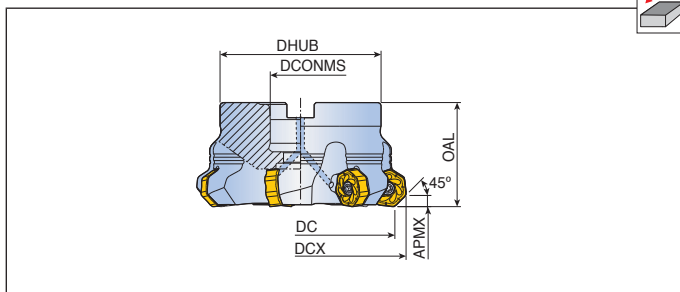
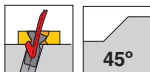
Designation	Screw	Wrench	Wrench handle		
<b>12D-TF45-10</b>	TS 50C130/HG	TBLD T20-W6	SW6-T		

 E312-E315	 E316-E317	 E318
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# 14D-F45XN-06



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>14D-F45XN 550-22R-06</b>	5	50	59.1	22	45	40	3.5	●	A	0.4	LH M10x25	XNM(H)U 0605... E306
<b>563-22R-06</b>	5	63	72.1	22	47	50	3.5	●	A	0.8	SH M10x35	
<b>763-22R-06</b>	7	63	72.1	22	47	50	3.5	●	A	0.8	SH M10x35	
<b>680-27R-06</b>	6	80	89.1	27	70	50	3.5	●	A	1.4	SH M12x35	
<b>980-27R-06</b>	9	80	89.1	27	70	50	3.5	●	A	1.4	SH M12x35	
<b>7100-32R-06</b>	7	100	109.1	32	85	50	3.5	●	A	2.1	SH M16x35	
<b>11100-32R-06</b>	11	100	109.1	32	85	50	3.5	●	A	2.1	SH M16x35	
<b>10125-40R-06</b>	10	125	134.1	40	85	63	3.5	●	A	3.6	SH M20x40	
<b>14125-40R-06</b>	14	125	134.1	40	85	63	3.5	●	A	3.6	SH M20x40	
<b>12160-40R-06</b>	12	160	169.1	40	110	63	3.5	x	C	4.7	-	
<b>16160-40R-06</b>	16	160	169.1	40	110	63	3.5	x	C	4.9	-	
<b>18160-40R-06</b>	18	160	169.1	40	110	63	3.5	x	C	5.0	-	
<b>14D-F45XN 763-25.4R-06</b>	7	63	72.1	25.4	47	50	3.5	●	A	0.8	SH M12x30	
<b>980-25.4R-06</b>	9	80	89.1	25.4	70	50	3.5	●	A	1.4	SH M12x35	
<b>11100-31.75R-06</b>	11	100	109.1	31.75	80	50	3.5	●	A	1.9	LH M16x35	
<b>14125-38.1R-06</b>	14	125	134.1	38.1	80	63	3.5	x	B	3.9	-	

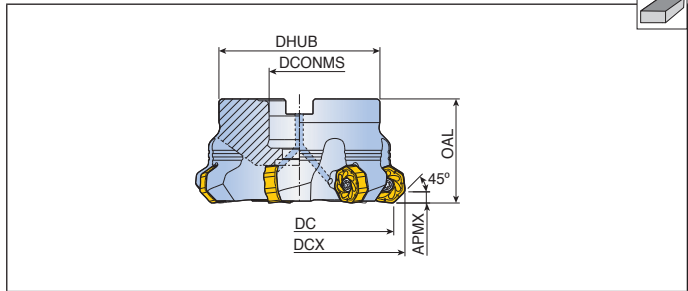
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
	<b>14D-F45XN-06</b>	TS 40B100I	T-T15		



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>14D-F45XN 563-22R-09</b>	5	63	74.9	22	47	50	5.0	●	A	0.9	SH M10x35	XNM(H)U 0906... E307
<b>663-22R-09</b>	6	63	74.9	22	47	50	5.0	●	A	0.9	SH M10x35	
<b>680-27R-09</b>	6	80	91.9	27	70	50	5.0	●	A	1.4	SH M12x35	
<b>780-27R-09</b>	7	80	91.9	27	70	50	5.0	●	A	1.5	SH M12x35	
<b>7100-32R-09</b>	7	100	112	32	85	55	5.0	●	A	2.4	SH M16x35	
<b>9100-32R-09</b>	9	100	112	32	85	55	5.0	●	A	2.5	SH M16x35	
<b>8125-40R-09</b>	8	125	137	40	85	63	5.0	●	A	3.5	SH M20x40	
<b>10125-40R-09</b>	10	125	137	40	85	63	5.0	●	A	3.6	SH M20x40	
<b>12125-40R-09</b>	12	125	137	40	85	63	5.0	●	A	3.4	SH M20x40	
<b>10160-40R-09</b>	10	160	172	40	110	63	5.0	x	C	4.8	-	
<b>12160-40R-09</b>	12	160	172	40	110	63	5.0	x	C	4.8	-	
<b>14160-40R-09</b>	14	160	172	40	110	63	5.0	x	C	4.8	-	
<b>12200-60R-09</b>	12	200	212	60	130	63	5.0	x	C	6.8	-	
<b>16200-60R-09</b>	16	200	212	60	130	63	5.0	x	C	6.9	-	
<b>16250-60R-09</b>	16	250	262	60	160	63	5.0	x	C	11.5	-	
<b>20250-60R-09</b>	20	250	262	60	160	63	5.0	x	C	11.5	-	
<b>14D-F45XN 680-25.4R-09</b>	6	80	91.9	25.4	70	50	5.0	●	A	1.4	SH M12x35	
<b>7100-31.75R-09</b>	7	100	112	31.75	80	55	5.0	●	A	2.4	SH M16x35	
<b>8125-38.1R-09</b>	8	125	137	38.1	80	63	5.0	x	B	3.5	-	
<b>10160-50.8R-09</b>	10	160	172	50.8	100	63	5.0	x	B	4.8	-	
<b>12200-47.625R-09</b>	12	200	212	47.625	130	63	5.0	x	C	6.8	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>14D-F45XN-09</b>	TS 50C130/HG	T-T20			



E312-E315

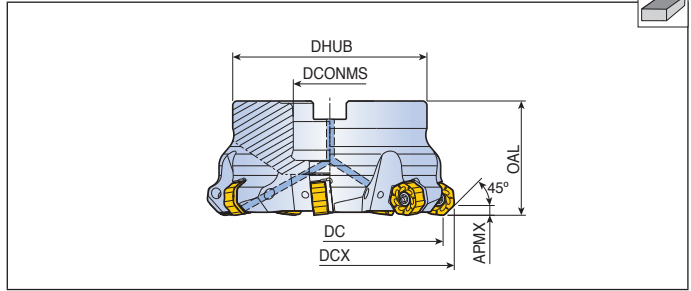
E316-E317

E318

# 14D-F45XNH-06/09



## Shim type face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>14D-F45XNH 763-22R-06</b>	7	63	72.2	22	47	40	3.5	●	A	0.7	SH M10x25	XNM(H)U 0605... E306
<b>780-27R-06</b>	7	80	89.2	27	70	50	3.5	●	A	1.5	SH M12x35	
<b>880-27R-06</b>	8	80	89.2	27	70	50	3.5	●	A	1.5	SH M12x35	
<b>7100-32R-06</b>	7	100	109.2	32	85	50	3.5	●	A	2.2	SH M16x35	
<b>8100-32R-06</b>	8	100	109.2	32	85	50	3.5	●	A	2.2	SH M16x35	
<b>11125-40R-06</b>	11	125	134.2	40	85	63	3.5	●	A	3.5	SH M20x40	
<b>14D-F45XNH 563-22R-09</b>	5	63	75.1	22	47	40	5.0	●	A	0.6	SH M10x35	XNM(H)U 0906... E307
<b>680-27R-09</b>	6	80	92.1	27	70	50	5.0	●	A	1.5	SH M12x35	
<b>7100-32R-09</b>	7	100	112.1	32	85	50	5.0	●	A	2.2	SH M16x35	
<b>9125-40R-09</b>	9	125	137.0	40	85	63	5.0	●	A	3.6	SH M20x40	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

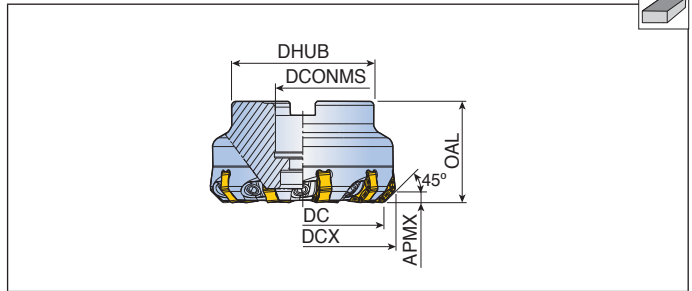
Designation	Screw	Shim	Shim screw	Wrench	Wrench handle
<b>14D-F45XNH-06</b>	TS 35C110I	TSXN 06N	TS 5035062S-B	TBLD T15-W6	SW6-T
<b>14D-F45XNH-09</b>	TS 50C130I/HG	TSXN 09N	TS 8050110S	TBLD T20-W6	SW6-T



# 14D-F45XNW-09



Face mill



Designation		Dimension (mm)						Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>14D-F45XNW 1080-27R-09</b>	10	80	91.9	27	70	50	5.0	A	1.5	SH M12x35	XNHU 0906... E307
<b>14100-32R-09</b>	14	100	112	32	85	55	5.0	A	2.9	SH M16x35	
<b>18125-40R-09</b>	18	125	137	40	85	63	5.0	B	3.8	-	
<b>18160-40R-09</b>	18	160	172	40	110	63	5.0	C	5.6	-	
<b>22160-40R-09</b>	22	160	172	40	110	63	5.0	C	5.6	-	
<b>28200-60R-09</b>	28	200	212	60	130	63	5.0	C	7.9	-	
<b>36250-60R-09</b>	36	250	262	60	160	63	5.0	C	12.7	-	
<b>44315-60R-09</b>	44	315	327	60	220	63	5.0	D	19.9	-	

▶ Recommend to very stable machining condition at cast iron & steel

## Spare parts

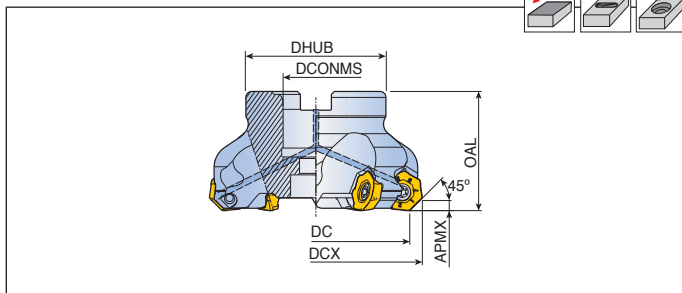
Designation	Wedge	Wedge screw	Wrench		
<b>14D-F45XNW-09</b>	WFZ 8H	WS 8	T-W 4		

 E312-E315	 E316-E317	 E318
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# 7S-F45-06



## Face mills



Designation	⚙️	Dimension (mm)						Coolant hole	Arbor style	⚖️ Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>7S-F45 332-16R-06</b>	3	32	40.4	16	38	40	3.2	●	E	0.2	KTB 32B	7EMT 0604... E257
<b>440-16R-06</b>	4	40	48.5	16	38	40	3.2	●	A	0.3	SH M8x30	
<b>550-22R-06</b>	5	50	58.5	22	45	40	3.2	●	A	0.4	LH M10x25	
<b>663-22R-06</b>	6	63	71.5	22	47	40	3.2	●	A	0.5	LH M10x25	
<b>780-27R-06</b>	7	80	88.5	27	70	50	3.2	●	A	1.3	LH M12x30	
<b>8100-32R-06</b>	8	100	108.5	32	85	50	3.2	●	A	1.9	LH M16x35	
<b>9125-40R-06</b>	9	125	133.5	40	85	63	3.2	●	A	3.3	SH M20x40	
<b>7S-F45 780-25.4R-06</b>	7	80	88.5	25.4	70	50	3.2	●	A	1.3	LH M12x30	
<b>8100-31.75R-06</b>	8	100	108.5	31.75	80	50	3.2	●	A	1.8	LH M16x35	
<b>9125-38.1R-06</b>	9	125	133.5	38.1	80	63	3.2	x	B	2.8	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M8x1.25x30-C)

## Spare parts

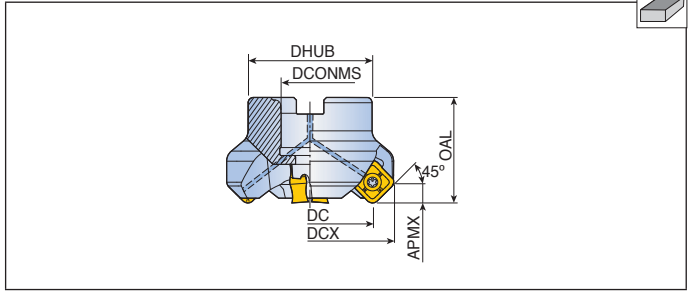
Designation	Screw	Wrench			
	<b>7S-F45-06</b>	TS 400931/HG	T-T15		

E312-E315	E316-E317	E373	E318
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# TFM45SN-13



## Face mills

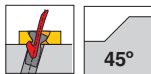
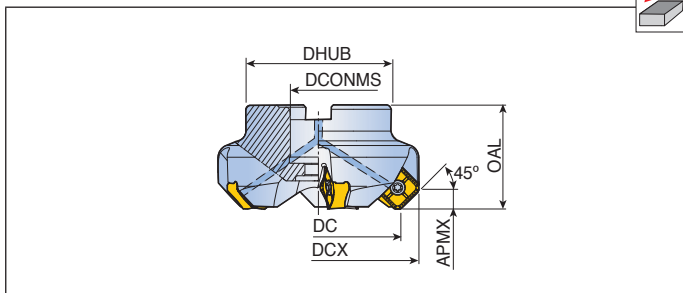


Designation	⊕	Dimension (mm)							Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX						
<b>TFM45SN 440-16R-13</b>	4	40	54.7	16	38	40	7.0	●	A	0.3	LH M10x25	SNM(G)X 1306 AN... SNMX 1306 XTN E292	
<b>450-22R-13</b>	4	50	64.7	22	45	40	7.0	●	A	0.5	LH M10x25		
<b>650-22R-13</b>	6	50	64.7	22	45	40	7.0	●	A	0.5	LH M10x25		
<b>663-22R-13</b>	6	63	77.7	22	47	40	7.0	●	A	0.7	LH M10x25		
<b>863-22R-13</b>	8	63	77.7	22	47	40	7.0	●	A	0.7	LH M10x25		
<b>480-27R-13B</b>	4	80	94.8	27	70	50	7.0	●	A	1.4	LH M12x30		
<b>780-27R-13</b>	7	80	94.8	27	70	50	7.0	●	A	1.5	LH M12x30		
<b>1080-27R-13</b>	10	80	94.8	27	70	50	7.0	●	A	1.5	LH M12x30		
<b>5100-32R-13B</b>	5	100	114.8	32	85	50	7.0	●	A	2.1	LH M16x35		
<b>8100-32R-13</b>	8	100	114.8	32	85	50	7.0	●	A	2.2	LH M16x35		
<b>12100-32R-13</b>	12	100	114.8	32	85	50	7.0	●	A	2.2	LH M16x35		
<b>6125-40R-13B</b>	6	125	139.8	40	85	63	7.0	●	A	3.8	SH M20x40		
<b>10125-40R-13</b>	10	125	139.8	40	85	63	7.0	●	A	3.8	SH M20x40		
<b>16125-40R-13</b>	16	125	139.6	40	85	63	7.0	●	A	3.8	SH M20x40		
<b>8160-40R-13B</b>	8	160	174.8	40	110	63	7.0	x	C	4.9	-		
<b>12160-40R-13</b>	12	160	174.8	40	110	63	7.0	x	C	4.9	-		
<b>20160-40R-13</b>	20	160	174.5	40	110	63	7.0	x	C	5.0	-		
<b>10200-60R-13B</b>	10	200	214.8	60	130	63	7.0	x	C	6.5	-		
<b>18200-60R-13</b>	18	200	214.8	60	130	63	7.0	x	C	6.6	-		
<b>26200-60R-13</b>	26	200	214.3	60	130	63	7.0	x	C	7.0	-		
<b>20250-60R-13</b>	20	250	264.8	60	160	63	7.0	x	C	12.9	-		
<b>TFM45SN 480-25.4R-13B</b>	4	80	94.8	25.4	70	50	7.0	●	A	1.4	LH M12x30		
<b>5100-31.75R-13B</b>	5	100	114.8	31.75	80	50	7.0	x	B	2.1	-		
<b>6125-38.1R-13B</b>	6	125	139.8	38.1	80	63	7.0	x	B	3.8	-		
<b>10125-38.1R-13</b>	10	125	139.8	38.1	80	63	7.0	x	B	3.4	-		
<b>8160-50.8R-13B</b>	8	160	174.8	50.8	100	63	7.0	x	B	4.9	-		
<b>12160-50.8R-13</b>	12	160	174.8	50.8	100	63	7.0	x	B	5.0	-		
<b>10200-47.625R-13B</b>	10	200	214.8	47.625	130	63	7.0	x	C	6.5	-		
<b>12250-47.625R-13B</b>	12	250	264.8	47.625	160	63	7.0	x	C	12.9	-		

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

 Cutting Condition E312-E315	 Arbor Style E316-E317	 Torque E318
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## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>TFM45SNS 463-22R-16</b>	4	63	81.1	22	47	50	8.8	●	A	1.0	LH M10x25	SNMX 1607... SNHX 1606... E294
<b>580-27R-16</b>	5	80	98.2	27	70	50	8.8	●	A	1.5	LH M12x30	
<b>7100-32R-16</b>	7	100	118.2	32	85	50	8.8	●	A	2.3	LH M16x35	
<b>8125-40R-16</b>	8	125	143.2	40	85	63	8.8	●	A	4.0	SH M20x40	
<b>10125-40R-16</b>	10	125	143.2	40	85	63	8.8	●	A	4.0	SH M20x40	
<b>10160-40R-16</b>	10	160	178.2	40	110	63	8.8	x	C	5.4	-	
<b>12160-40R-16</b>	12	160	178.2	40	110	63	8.8	x	C	5.4	-	
<b>12200-60R-16</b>	12	200	218.2	60	130	63	8.8	x	C	7.5	-	
<b>14250-60R-16</b>	14	250	268.2	60	160	63	8.8	x	C	13	-	
<b>TFM45SNS 580-25.4R-16</b>	5	80	98.2	25.4	70	50	8.8	●	A	1.5	LH M12x30	
<b>7100-31.75R-16</b>	7	100	118.2	31.75	80	50	8.8	x	B	2.3	-	
<b>8125-38.1R-16</b>	8	125	143.2	38.1	80	63	8.8	x	B	4.0	-	
<b>10160-50.8R-16</b>	10	160	178.2	50.8	100	63	8.8	x	B	5.4	-	
<b>12200-47.625R-16</b>	12	200	218.2	47.625	130	63	8.8	x	C	7.5	-	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>TFM45SN-13</b>	TS 40B100I	T-T15			
<b>TFM45SNS-16</b>	TS 45120I	T-T20			



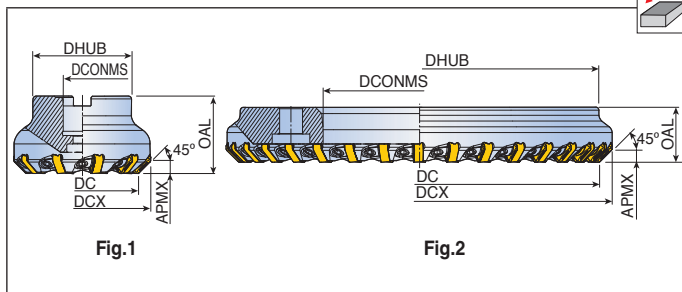




# TFM45SNW-16/TQ45SNW-16



## Face mills



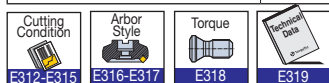
Designation		Dimension (mm)						Fig.	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>TFM45SNW 1080-27R-16</b>	10	80	98.2	27	70	55	8.8	1	A	1.9	LH M12x30	SNHX 1606...
<b>14100-32R-16</b>	14	100	118.2	32	85	63	8.8	1	A	3.2	SH M16x35	E294
<b>18125-40R-16</b>	18	125	143.2	40	85	63	8.8	1	B	3.9	-	-
<b>22160-40R-16</b>	22	160	178.2	40	110	63	8.8	1	C	5.7	-	-
<b>26200-60R-16</b>	26	200	218.2	60	130	63	8.8	1	C	7.8	-	-
<b>32250-60R-16</b>	32	250	268.2	60	160	63	8.8	1	C	13.5	-	-

Designation		Dimension (mm)						Fig.	Kg	Adapter	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>TQ45SNW 26200R-16</b>	26	200	218.2	63.5	200	38	8.8	2	6.3	QA 08 K/M	SNHX 1606...
<b>34250R-16</b>	34	250	268.2	133.35	248	38	8.8	2	7.9	QA 10 K/M	E294
<b>44315R-16</b>	44	315	333.2	146.05	313	38	8.8	2	13.2	QA 12 K/M	-
<b>50355R-16</b>	50	355	373.2	215.90	353	38	8.8	2	13.0	QA 14 K/M	-

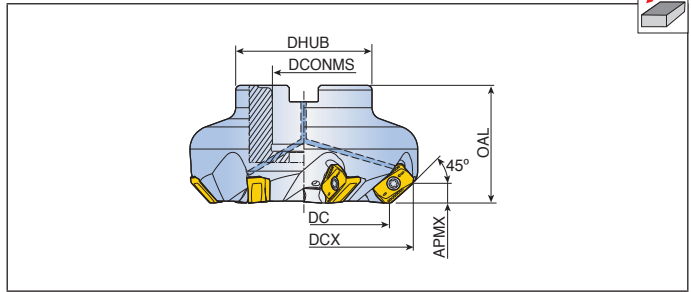
► Recommend to very stable machining condition at cast iron & steel

## Spare parts

Designation	Wedge 	Wedge screw 	Wrench 		
<b>TFM45SNW</b>	WFZ 8H-SN	WS 8	T-W 4		
<b>TQ45SNW</b>	WFZ 8H-SN	WS 8	T-W 4		



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX					
<b>TFM45AN 450-22R-16</b>	4	50	67.8	22	45	40	8.4	●	A	0.6	LH M10x25	ANHX 1607 ANR-M E257
<b>663-22R-16</b>	6	63	80.6	22	47	40	8.4	●	A	0.9	LH M10x25	
<b>780-27R-16</b>	7	80	97.5	27	58	50	8.4	●	A	1.6	SH M12x35	
<b>8100-32R-16</b>	8	100	117.5	32	85	50	8.4	●	A	2.5	LH M16x35	
<b>9125-40R-16</b>	9	125	142.6	40	85	63	8.4	●	A	4.3	SH M20x40	
<b>10160-40R-16</b>	10	160	177.7	40	110	63	8.4	x	C	5.8	-	

- ▶ 90° Inserts can not be mounted
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>TFM45AN</b>	TS 40120I	T-T15			

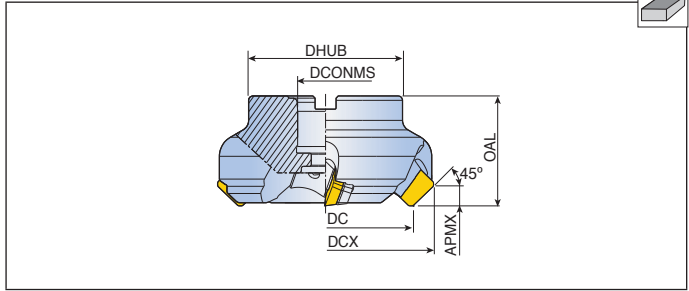
 E312-E315	 E316-E317	 E318
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# LM45SE-12/15



Face mills (Inch bore)



Designation		Dimension (mm)						Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
<b>LM45SE 480-25.4R-12</b>	4	80	93.7	25.4	70	55	6.5	A	1.8	LH M12x30	SEKN 1203...
<b>5100-31.75R-12</b>	5	100	113.6	31.75	80	60	6.5	A	2.8	LH M16x35	E289
<b>6125-38.1R-12</b>	6	125	138.6	38.1	80	63	6.5	B	3.4	-	-
<b>8160-50.8R-12</b>	8	160	173.6	50.8	100	63	6.5	B	5.0	-	-
<b>10200-47.625R-12</b>	10	200	213.6	47.625	130	63	6.5	C	7.5	-	-
<b>12250-47.625R-12</b>	12	250	263.6	47.625	160	63	6.5	C	12.2	-	-
<b>LM45SE 480-25.4R-15</b>	4	80	97.8	25.4	70	55	8.7	A	1.8	LH M12x30	SEKN 1504...
<b>5100-31.75R-15</b>	5	100	118	31.75	80	60	8.7	A	2.8	LH M16x35	E289
<b>6125-38.1R-15</b>	6	125	143	38.1	80	63	8.7	B	3.5	-	-
<b>8160-50.8R-15</b>	8	160	178	50.8	100	63	8.7	B	5.7	-	-
<b>10200-47.625R-15</b>	10	200	218	47.625	130	63	8.7	C	7.8	-	-
<b>12250-47.625R-15</b>	12	250	268	47.625	160	63	8.7	C	12.8	-	-

► Metric bore cutter is available upon request

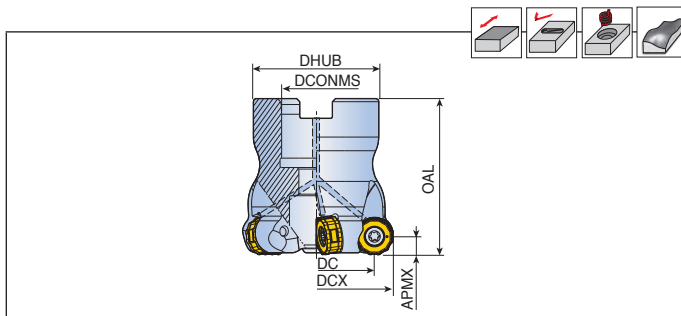
## Spare parts

Designation	Carbide shim	Wedge	Shim screw	Wedge screw	Wrench	
<b>LM45SE-12</b>	TSSDSE 12N	WPA 8	TS 40B100I	TS 80200W	T-W 4	T-T15
<b>LM45SE-15</b>	TSSDSE 15N	WPA 8	TS 40B100I	TS 80160W <sup>(1)</sup>	T-W 4	T-T15

 E312-E315	 E316-E317	 E318
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► <sup>(1)</sup> TS 80160W is for D80 cutter  
 ► The shim screw wrench T-T15<sup>(2)</sup> shall be ordered separately

## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMRNS 432-16R-10</b>	4	32	22	16	30	40	5.0	●	E	0.1	KTB 32B	RNMU 1004...
<b>433-16R-10</b>	4	33	23	16	30	40	5.0	●	E	0.1	KTB 32B	E284
<b>540-16R-10</b>	5	40	30	16	38	40	5.0	●	A	0.2	SH M8x30	
<b>650-22R-10</b>	6	50	40	22	45	50	5.0	●	A	0.4	SH M10x30	
<b>652-22R-10</b>	6	52	42	22	45	50	5.0	●	A	0.4	SH M10x30	
<b>TFMRNS 440-16R-12</b>	4	40	28	16	38	40	6.0	●	A	0.2	SH M8x30	RNMU 1205...
<b>450-22R-12</b>	4	50	38	22	45	50	6.0	●	A	0.3	SH M10x30	E284
<b>550-22R-12</b>	5	50	40	22	45	50	6.0	●	A	0.3	SH M10x30	
<b>552-22R-12</b>	5	52	40	22	45	50	6.0	●	A	0.4	SH M10x30	
<b>563-22R-12</b>	5	63	51	22	47	50	6.0	●	A	0.6	SH M10x30	
<b>663-22R-12</b>	6	63	51	22	47	50	6.0	●	A	0.6	SH M10x30	
<b>666-27R-12</b>	6	66	54	27	58	50	6.0	●	A	0.6	SH M12x35	
<b>680-27R-12</b>	6	80	68	27	58	50	6.0	●	A	1.1	SH M12x35	
<b>780-27R-12</b>	7	80	68	27	58	50	6.0	●	A	1.0	SH M12x35	
<b>7100-32R-12</b>	7	100	88	32	66	50	6.0	●	A	1.5	LH M16x35	
<b>8100-32R-12</b>	8	100	88	32	66	50	6.0	●	A	1.5	LH M16x35	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

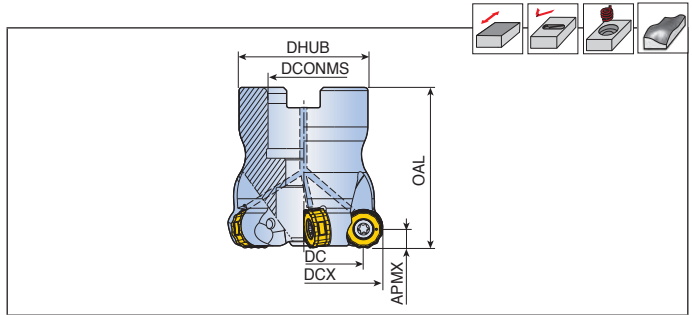
Designation	Screw	Wrench			
<b>TFMRNS-10</b>	TS 35085I/HG	T-T15			
<b>TFMRNS-12</b>	TS 40G110I	T-T15			

 E312-E315	 E316-E317	 E318	 E386-E387
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# TFMRNS-16



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMRNS 350-16R-16</b>	3	50	34	16	38	50	8.0	●	A	0.2	SH M8x30	RNMU
<b>450-16R-16</b>	4	50	34	16	38	50	8.0	●	A	0.2	SH M8x30	1606...
<b>452-22R-16</b>	4	52	36	22	45	50	8.0	●	A	0.3	SH M10x30	E284
<b>463-22R-16</b>	4	63	47	22	47	50	8.0	●	A	0.5	SH M10x30	
<b>566-27R-16</b>	5	66	50	27	58	50	8.0	●	A	0.6	LH M12x30	
<b>580-27R-16</b>	5	80	64	27	58	50	8.0	●	A	0.9	LH M12x30	
<b>680-27R-16</b>	6	80	64	27	58	50	8.0	●	A	0.8	LH M12x30	
<b>6100-32R-16</b>	6	100	84	32	66	50	8.0	●	A	1.7	LH M16x35	
<b>7125-40R-16</b>	7	125	109	40	85	63	8.0	●	A	3.0	SH M20x40	
<b>8125-40R-16</b>	8	125	109	40	85	63	8.0	●	A	2.9	SH M20x40	
<b>9160-40R-16</b>	9	160	144	40	110	63	8.0	x	C	3.8	-	
<b>10200-60R-16</b>	10	200	184	60	130	63	8.0	x	C	5.6	-	

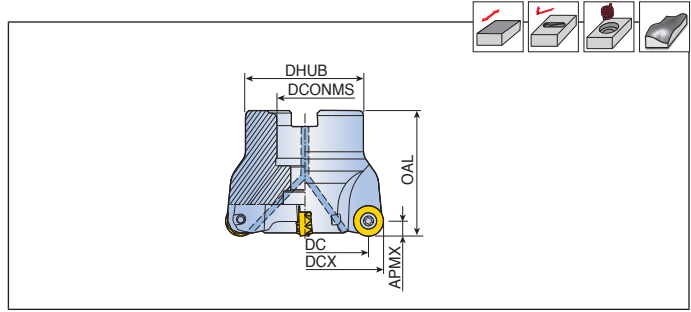
▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>TFMRNS-16</b>	TS 50A1211/HG	T-T20			

 E312-E315	 E316-E317	 E318	 E386-E387
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## Face mills



Designation		Dimension (mm)							Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX						
<b>TFMRY 532-16R-08</b>	5	32	24	16	30	40	4.0	●	A	0.12	SH M8x30	RYM(H)X 0803...	
<b>640-16R-08</b>	6	40	32	16	38	40	4.0	●	A	0.22	SH M8x30	E285-E286	
<b>TFMRY 432-16R-10</b>	4	32	22	16	30	40	5.0	●	A	0.12	SH M8x30	RYM(H)X 1004...	
<b>540-16R-10</b>	5	40	30	16	38	40	5.0	●	A	0.22	SH M8x30	E285-E286	
<b>640-16R-10</b>	6	40	30	16	38	40	5.0	●	A	0.23	SH M8x30		
<b>650-22R-10</b>	6	50	40	22	45	50	5.0	●	A	0.33	SH M10x30		
<b>652-22R-10</b>	6	52	42	22	45	50	5.0	●	A	0.36	SH M10x30		
<b>763-22R-10</b>	7	63	53	22	47	50	5.0	●	A	0.57	SH M10x30		
<b>766-27R-10</b>	7	66	56	27	58	50	5.0	●	A	0.68	LH M12x30		
<b>TFMRY 332-16R-12</b>	3	32	20	16	30	50	6.0	●	E	0.12	KTB 32B	RYM(H)X 1205...	
<b>440-16R-12</b>	4	40	28	16	38	40	6.0	●	A	0.15	SH M8x30	E285-E286	
<b>442-16R-12</b>	4	42	30	16	38	40	6.0	●	A	0.21	SH M8x30		
<b>450-22R-12</b>	4	50	38	22	45	50	6.0	●	A	0.33	SH M10x30		
<b>550-22R-12</b>	5	50	38	22	45	50	6.0	●	A	0.33	SH M10x30		
<b>552-22R-12</b>	5	52	40	22	45	50	6.0	●	A	0.34	SH M10x30		
<b>463-22R-12</b>	4	63	51	22	47	50	6.0	●	A	0.57	SH M10x30		
<b>563-22R-12</b>	5	63	51	22	47	50	6.0	●	A	0.58	SH M10x30		
<b>663-22R-12</b>	6	63	51	22	47	50	6.0	●	A	0.58	SH M10x30		
<b>763-22R-12</b>	7	63	51	22	47	50	6.0	●	A	0.71	SH M10x30		
<b>666-27R-12</b>	6	66	54	27	58	50	6.0	●	A	0.62	LH M12x30		
<b>766-27R-12</b>	7	66	54	27	58	50	6.0	●	A	0.62	LH M12x30		
<b>680-27R-12</b>	6	80	68	27	58	50	6.0	●	A	0.90	LH M12x30		
<b>780-27R-12</b>	7	80	68	27	58	50	6.0	●	A	0.92	LH M12x30		
<b>880-27R-12</b>	8	80	68	27	58	50	6.0	●	A	0.98	LH M12x30		
<b>7100-32R-12</b>	7	100	88	32	66	50	6.0	●	A	1.29	LH M16x35		
<b>8100-32R-12</b>	8	100	88	32	66	50	6.0	●	A	1.37	LH M16x35		
<b>8125-40R-12</b>	8	125	113	40	85	63	6.0	●	A	3.00	SH M20x40		
<b>9125-40R-12</b>	9	125	113	40	85	63	6.0	●	A	2.99	SH M20x40		

Cutting Condition E312-E315	Arbor Style E316-E317	Torque E318	Ramping Data E388-E390
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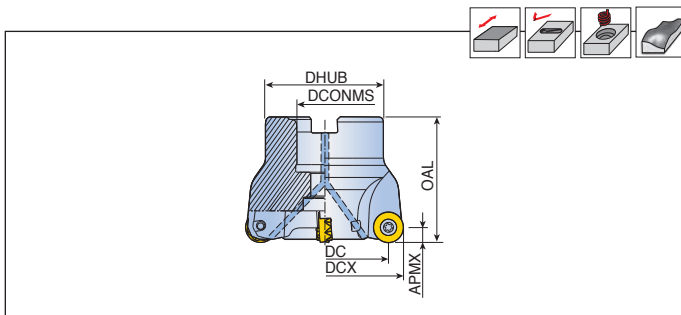
► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)



# TFMRY-16



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMRY 350-16R-16</b>	3	50	34	16	38	50	8.0	●	A	0.3	SH M8x35	RYM(H)X 1606...  E285-E286
<b>450-16R-16</b>	4	50	34	16	38	50	8.0	●	A	0.3	SH M8x35	
<b>450-22R-16</b>	4	50	34	22	45	50	8.0	●	A	0.3	SH M10x30	
<b>452-22R-16</b>	4	52	36	22	45	50	8.0	●	A	0.3	SH M10x30	
<b>463-22R-16</b>	4	63	47	22	47	50	8.0	●	A	0.5	SH M10x30	
<b>463H-22R-16*</b>	4	63	47	22	47	50	8.0	●	A	0.5	SH M10x30	
<b>566-27R-16</b>	5	66	50	27	58	50	8.0	●	A	0.6	LH M12x30	
<b>580-27R-16</b>	5	80	64	27	58	50	8.0	●	A	0.8	LH M12x30	
<b>580H-27R-16*</b>	5	80	64	27	58	50	8.0	●	A	0.8	LH M12x30	
<b>680-27R-16</b>	6	80	64	27	58	50	8.0	●	A	0.8	LH M12x30	
<b>6100-32R-16</b>	6	100	84	32	66	50	8.0	●	A	1.2	LH M16x35	
<b>6100H-32R-16*</b>	6	100	84	32	66	50	8.0	●	A	1.2	LH M16x35	
<b>7125-40R-16</b>	7	125	109	40	85	63	8.0	●	A	2.7	SH M20x40	
<b>7125H-40R-16*</b>	7	125	109	40	85	63	8.0	●	A	2.6	SH M20x40	
<b>8125-40R-16</b>	8	125	109	40	85	63	8.0	●	A	2.7	SH M20x40	
<b>8160H-40R-16*</b>	8	160	144	40	110	63	8.0	x	C	3.3	-	
<b>TFMRY 580-25.4R-16</b>	5	80	64	25.4	70	50	8.0	●	A	1.0	SH M12x35	

► \*: Carbide shim type

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

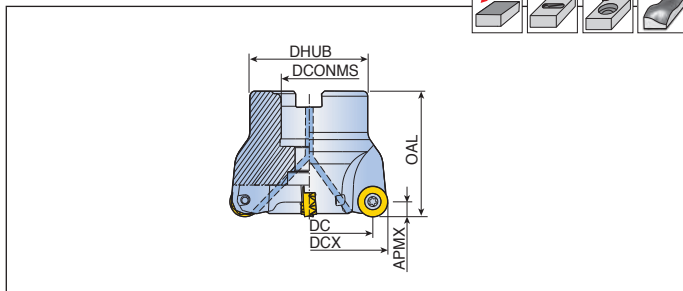
Designation	Shim	Shim screw	Screw	Wrench	
<b>TFMRY-08</b>	-	-	TS 30A60I/HG	TD 9	-
<b>TFMRY-10</b>	-	-	TS 35085/HG	-	T-T15
<b>TFMRY-12</b>	-	-	TS 40093I	-	T-T15
<b>TFMRY-16</b>	-	-	TS 50115I	-	T-T20
<b>TFMRY...H-16</b>	TSRY 16NS	TS 8050088S	TS 50A140I	-	T-T20



# TFMRY-20



## Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMRY 463-22R-20</b>	4	63	43	22	47	50	10.0	●	A	0.5	SH M10x30	RVMX 2007...
<b>580-27R-20</b>	5	80	60	27	58	50	10.0	●	A	0.8	LH M12x30	
<b>5100H-32R-20*</b>	5	100	80	32	66	50	10.0	●	A	1.1	LH M16x35	E285-E286
<b>6100-32R-20</b>	6	100	80	32	66	50	10.0	●	A	1.2	LH M16x35	
<b>5125H-40R-20*</b>	5	125	105	40	85	63	10.0	●	A	2.7	SH M20x40	
<b>7125-40R-20</b>	7	125	105	40	85	63	10.0	●	A	2.5	SH M20x40	
<b>6160H-40R-20*</b>	6	160	140	40	110	63	10.0	x	C	2.7	-	
<b>8160-40R-20</b>	8	160	140	40	110	63	10.0	x	C	3.8	-	
<b>8200H-60R-20*</b>	8	200	180	60	130	63	10.0	x	C	5.3	-	
<b>9250H-60R-20*</b>	9	250	230	60	160	63	10.0	x	C	9.3	-	

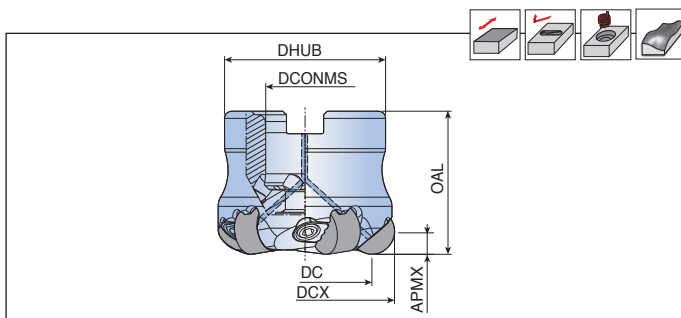
- ▶ \*: Carbide shim type
- ▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Shim	Shim screw	Screw	Wrench	Wrench handle
	<b>TFMRY-20</b>	-	-	TS 60A130I	BLD T25/M7
<b>TFMRY...H-20</b>	TSTRY 20NS	TS 9060011S	TS 60A165I	BLD T25/M7	SW6-T

E312-E315	E316-E317	E318	E388-E390
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## Face mills



Designation		Dimension (mm)						Air hole <sup>(1)</sup>	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMRN 450-22R-1207</b>	4	50	37.3	22	45	40	6.3	●	A	0.4	SH M10x30	RNGN 1207
<b>550-22R-1207</b>	5	50	37.3	22	45	40	6.3	●	A	0.4	SH M10x30	FL...
<b>463-22R-1207</b>	4	63	50.3	22	47	40	6.3	●	A	0.6	SH M10x30	E283
<b>663-22R-1207</b>	6	63	50.3	22	47	40	6.3	●	A	0.6	SH M10x30	
<b>763-22R-1207</b>	7	63	50.3	22	47	40	6.3	●	A	0.6	SH M10x30	
<b>580-27R-1207</b>	5	80	67.3	27	58	50	6.3	●	A	1.1	SH M12x35	
<b>780-27R-1207</b>	7	80	67.3	27	58	50	6.3	●	A	1.1	SH M12x35	
<b>880-27R-1207</b>	8	80	67.3	27	58	50	6.3	●	A	1.1	SH M12x35	

- ▶ Mounting bolt with air through hole is available on request (ordering example: SH M10x1.5x30-C)
- ▶ <sup>(1)</sup> Use only air (Coolant is prohibited)

## Spare parts

Designation	Wedge 	Screw 	Wrench 		
<b>TFMRN-12</b>	WFZ 6-C	WS 6	T-W 3		

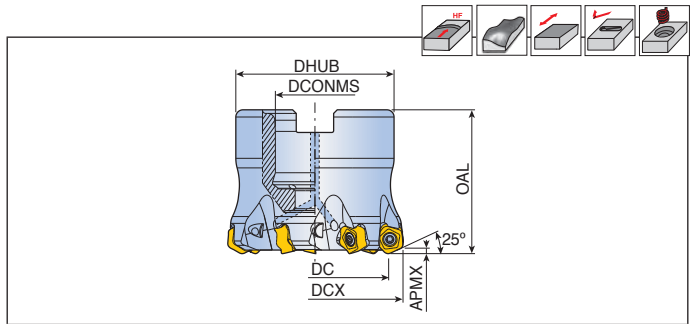
 Cutting Condition E312-E315	 Arbor Style E316-E317	 Torque E318
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## High feed face mills



Designation	Z	Dimension (mm)						Coolant hole	Arbor style	K <sub>g</sub>	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMPT 640-16R-05</b>	6	40	31.8	16	38	40	1.5	●	A	0.3	SH M8x25	PTKU 0503... E282
<b>750-22R-05</b>	7	50	41.8	22	45	40	1.5	●	A	0.4	LH M10x25	
<b>752-22R-05</b>	7	52	43.8	22	45	40	1.5	●	A	0.3	LH M10x25	
<b>863-22R-05</b>	8	63	54.8	22	58	50	1.5	●	A	0.8	SH M10x30	
<b>866-27R-05</b>	8	66	57.8	27	58	50	1.5	●	A	0.7	SH M12x35	
<b>TFMPT 450-22R-10</b>	4	50	33.4	22	45	40	3.0	●	E	0.3	TCS10-40	PTKU 1006... E282
<b>563-22R-10</b>	5	63	46.4	22	58	50	3.0	●	A	0.8	SH M10x30	
<b>566-22R-10</b>	5	66	49.4	22	58	50	3.0	●	A	0.8	SH M10x30	
<b>680-27R-10</b>	6	80	63.4	27	70	60	3.0	●	A	1.4	SH M12x30	
<b>8100-32R-10</b>	8	100	83.4	32	85	60	3.0	●	A	2.3	SH M16x35	
<b>9125-32R-10</b>	9	125	108.4	32	85	60	3.0	●	A	3.1	SH M16x35	
<b>10160-40R-10</b>	10	160	143.4	40	110	60	3.0	x	C	4.1	-	
<b>12200-60R-10</b>	12	200	183.4	60	130	60	3.0	x	C	5.7	-	
<b>TFMPT 680-25.4R-10</b>	6	80	63.4	25.4	70	60	3.0	●	A	1.5	SH M12x35	
<b>8100-31.75R-10</b>	8	100	83.4	31.75	80	60	3.0	x	B	2.0	-	
<b>9125-38.1R-10</b>	9	125	108.4	38.1	80	60	3.0	x	B	2.6	-	
<b>10160-50.8R-10</b>	10	160	143.4	50.8	100	60	3.0	x	B	4.2	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench		Wrench handle	
<b>TFMPT-05</b>	TS 25D060/HG-P	TD7P	-	-	
<b>TFMPT-10</b>	TS 50D130/HG-P	-	TBLD T20P-W6	SW6-T	

 E312-E315	 E316-E317	 E318	 E374-E375
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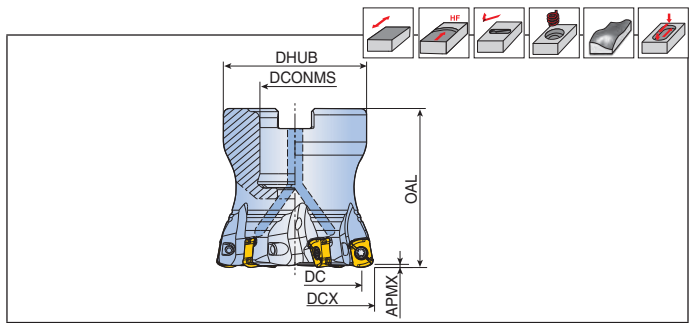




# TFMBLV-06



High feed face mills



Designation		Dimension (mm)						Coolant hole	Arbor type		Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMBLV 432-16R-06</b>	4	32	24	16	30	40	1.0	●	A	0.1	SH M8x25	BLMV 0603... E270
<b>532-16R-06</b>	5	32	24	16	30	40	1.0	●	A	0.1	SH M8x26	
<b>640-16R-06</b>	6	40	32	16	38	40	1.0	●	A	0.2	SH M8x25	
<b>640-22R-06</b>	6	40	32	22	38	40	1.0	●	A	0.2	SH M10x30	
<b>650-22R-06</b>	6	50	42	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>750-22R-06</b>	7	50	42	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>850-22R-06</b>	8	50	42	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>752-22R-06</b>	7	52	44	22	45	40	1.0	●	A	0.4	SH M10x30	
<b>852-22R-06</b>	8	52	44	22	45	40	1.0	●	A	0.4	SH M10x30	
<b>763-22R-06</b>	7	63	55	22	48	50	1.0	●	A	0.6	SH M10x30	
<b>863-22R-06</b>	8	63	55	22	48	50	1.0	●	A	0.6	SH M10x30	
<b>963-22R-06</b>	9	63	55	22	48	50	1.0	●	A	0.6	SH M10x30	
<b>966-27R-06</b>	9	66	58	27	58	50	1.0	●	A	0.7	SH M12x30	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

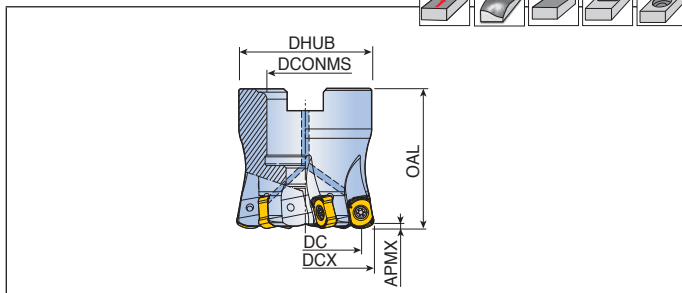
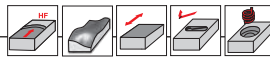
Designation	Screw	Wrench			
	<b>TEBLV/TFMBLV-06</b>	 TS 25064/HG-P	 TD 8P		

 E312-E315	 E316-E317	 E318	 E377
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# TFMBL-06/09



## High feed face mills



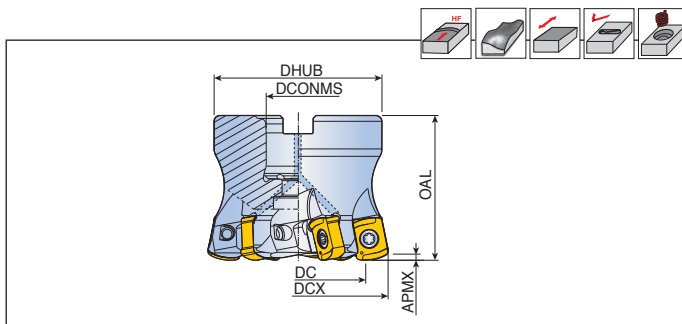
Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMBL 432-16R-06</b>	4	32	24.3	16	30	40	1.0	●	A	0.1	SH M8x25	BLMP 0603... 
<b>532-16R-06</b>	5	32	24.3	16	30	40	1.0	●	A	0.1	SH M8x25	
<b>640-16R-06</b>	6	40	32.2	16	38	40	1.0	●	A	0.2	SH M8x25	
<b>640-22R-06</b>	6	40	32.2	22	38	40	1.0	●	A	0.2	SH M10x30	
<b>650-22R-06</b>	6	50	42.2	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>750-22R-06</b>	7	50	42.2	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>850-22R-06</b>	8	50	42.2	22	45	50	1.0	●	A	0.4	SH M10x30	
<b>752-22R-06</b>	7	52	44.2	22	45	40	1.0	●	A	0.4	SH M10x30	
<b>852-22R-06</b>	8	52	44.2	22	45	40	1.0	●	A	0.4	SH M10x30	
<b>763-22R-06</b>	7	63	55.5	22	47	50	1.0	●	A	0.6	SH M10x30	
<b>863-22R-06</b>	8	63	55.5	22	47	50	1.0	●	A	0.6	SH M10x30	
<b>963-22R-06</b>	9	63	55.5	22	47	50	1.0	●	A	0.6	SH M10x30	
<b>966-27R-06</b>	9	66	58.5	27	58	50	1.0	●	A	0.7	SH M12x35	
<b>TFMBL 432-16R-09</b>	4	32	21.6	16	30	40	1.5	●	E	0.1	KTB 32B	BLMP 0904... 
<b>440-16R-09</b>	4	40	29.6	16	38	40	1.5	●	A	0.2	SH M8x25	
<b>540-16R-09</b>	5	40	29.6	16	38	40	1.5	●	A	0.2	SH M8x25	
<b>550-22R-09</b>	5	50	39.6	22	45	50	1.5	●	A	0.4	SH M10x30	
<b>650-22R-09</b>	6	50	39.6	22	45	50	1.5	●	A	0.4	SH M10x30	
<b>750-22R-09</b>	7	50	39.6	22	45	50	1.5	●	A	0.4	SH M10x30	
<b>652-22R-09</b>	6	52	41.6	22	45	40	1.5	●	A	0.4	SH M10x30	
<b>752-22R-09</b>	7	52	41.6	22	45	40	1.5	●	A	0.4	SH M10x30	
<b>663-22R-09</b>	6	63	52.6	22	47	50	1.5	●	A	0.6	SH M10x30	
<b>763-22R-09</b>	7	63	52.6	22	47	50	1.5	●	A	0.6	SH M10x30	
<b>863-22R-09</b>	8	63	52.6	22	47	50	1.5	●	A	0.6	SH M10x30	
<b>766-27R-09</b>	7	66	55.6	27	58	50	1.5	●	A	0.7	SH M12x35	
<b>866-27R-09</b>	8	66	55.6	27	58	50	1.5	●	A	0.8	SH M12x35	
<b>780-27R-09</b>	7	80	69.6	27	70	50	1.5	●	A	1.2	SH M12x35	
<b>880-27R-09</b>	8	80	69.6	27	70	50	1.5	●	A	1.2	SH M12x35	
<b>980-27R-09</b>	9	80	69.6	27	70	50	1.5	●	A	1.2	SH M12x35	
<b>1080-27R-09</b>	10	80	69.6	27	70	50	1.5	●	A	1.2	SH M12x35	
<b>8100-32R-09</b>	8	100	89.6	32	85	60	1.5	●	A	2.3	SH M16x35	
<b>9100-32R-09</b>	9	100	89.6	32	85	60	1.5	●	A	2.3	SH M16x35	
<b>10100-32R-09</b>	10	100	89.6	32	85	60	1.5	●	A	2.3	SH M16x35	
<b>11100-32R-09</b>	11	100	89.6	32	85	60	1.5	●	A	2.3	SH M16x35	
<b>12100-32R-09</b>	12	100	89.6	32	85	60	1.5	●	A	2.3	SH M16x35	
<b>12125-40R-09</b>	12	125	114.6	40	85	60	1.5	●	A	2.7	SH M20x40	
<b>14125-40R-09</b>	14	125	114.6	40	85	60	1.5	●	A	2.7	SH M20x40	

Cutting Condition E312-E315	Arbor Style E316-E317	Torque E318	Ramping Data E379-E381
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# TFMBL-11



## High feed face mills



Designation	⚙️	Dimension (mm)						Coolant hole	Arbor style	⚖️ Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMBL 440-16R-11</b>	4	40	24.4	16	30	40	2.0	●	E	0.2	KTB 32B	BLMP 1105... E268
<b>450-22R-11</b>	4	50	34.4	22	45	40	2.0	●	A	0.3	LH M10x25	
<b>550-22R-11</b>	5	50	34.4	22	45	40	2.0	●	A	0.3	LH M10x25	
<b>552-22R-11</b>	5	52	36.4	22	45	40	2.0	●	A	0.3	LH M10x25	
<b>563-22R-11</b>	5	63	48.4	22	58	50	2.0	●	A	0.7	SH M10x30	
<b>663-22R-11</b>	6	63	48.4	22	58	50	2.0	●	A	0.7	SH M10x30	
<b>666-22R-11</b>	6	66	50.3	22	58	50	2.0	●	A	0.8	SH M10x30	
<b>666-27R-11</b>	6	66	50.3	27	58	50	2.0	●	A	0.7	SH M12x35	
<b>680-27R-11</b>	6	80	64.3	27	70	60	2.0	●	A	1.4	SH M12x30	
<b>780-27R-11</b>	7	80	64.3	27	70	60	2.0	●	A	1.4	SH M12x30	
<b>6100-32R-11</b>	6	100	84.3	32	85	60	2.0	●	A	2.2	SH M16x35	
<b>7100-32R-11</b>	7	100	84.3	32	85	60	2.0	●	A	2.2	SH M16x35	
<b>8125-32R-11</b>	8	125	109.3	32	85	60	2.0	●	A	2.5	SH M20x40	
<b>10125-40R-11</b>	10	125	109.3	40	85	60	2.0	●	A	2.7	SH M20x40	
<b>10160-40R-11</b>	10	160	144.3	40	110	60	2.0	x	C	3.9	-	
<b>12200-60R-11</b>	12	200	184.3	60	130	60	2.0	x	C	5.8	-	
<b>TFMBL 680-25.4R-11</b>	6	80	64.3	25.4	70	60	2.0	●	A	1.4	SH M12x35	
<b>6100-31.75R-11</b>	6	100	84.3	31.75	80	60	2.0	x	B	1.8	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench		Wrench handle
<b>TFMBL-06</b>	TS 250641/HG-P	TD 8P	-	-
<b>TFMBL-09</b>	TS 35A0881/HG	TD 10P	-	-
<b>TFMBL-11</b>	TS 50A1211/HG	-	TBLD T20-W6	SW6-T

 E312-E315	 E316-E317	 E318	 E379-E381
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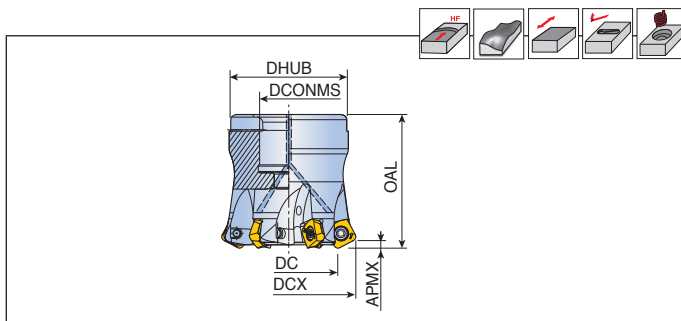




# TFMSB-06/09



## High feed face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMSB 532-16R-06</b>	5	32	21.7	16	30	40	1.0	●	A	0.1	SH M8x25	SBMT 0603...
<b>640-16R-06</b>	6	40	29.7	16	38	40	1.0	●	A	0.2	SH M8x25	E287
<b>750-22R-06</b>	7	50	39.7	22	45	50	1.0	●	A	0.4	SH M10x35	
<b>863-22R-06</b>	8	63	52.7	22	47	50	1.0	●	A	0.6	SH M10x35	
<b>TFMSB 432-16R-09</b>	4	32	17.4	16	30	40	1.2	●	E	0.1	KTB 32B	SBMT 0904...
<b>440-16R-09</b>	4	40	25.5	16	38	40	1.2	●	A	0.2	SH M8x25	E287
<b>540-16R-09</b>	5	40	25.5	16	38	40	1.2	●	A	0.2	SH M8x25	
<b>450-22R-09</b>	4	50	35.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>550-22R-09</b>	5	50	35.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>650-22R-09</b>	6	50	35.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>750-22R-09</b>	7	50	35.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>652-22R-09</b>	6	52	37.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>752-22R-09</b>	7	52	37.5	22	45	50	1.2	●	A	0.4	SH M10x30	
<b>663-22R-09</b>	6	63	48.4	22	58	50	1.2	●	A	0.8	SH M10x30	
<b>763-22R-09</b>	7	63	48.4	22	58	50	1.2	●	A	0.8	SH M10x30	
<b>763-27R-09</b>	7	63	48.4	27	58	50	1.2	●	A	0.7	SH M12x35	
<b>863-22R-09</b>	8	63	48.4	22	58	50	1.2	●	A	0.8	SH M10x30	
<b>866-22R-09</b>	8	66	51.5	22	58	50	1.2	●	A	0.8	SH M10x30	
<b>780-27R-09</b>	7	80	65.8	27	70	60	1.2	●	A	1.4	SH M12x35	
<b>880-27R-09</b>	8	80	65.8	27	70	60	1.2	●	A	1.4	SH M12x35	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M8x1.25x25-C)

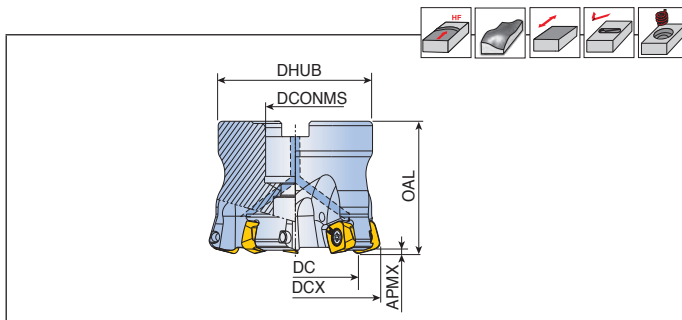
## Spare parts

Designation	Screw	Wrench			
<b>TFMSB-06</b>	TS 25064I/HG-P	TD 8P			
<b>TFMSB-09</b>	TS 35A088I/HG	TD 10P			
<b>TFMSB 750-22R-09</b>	TS 35A070I/HG	TD 10P			
<b>TFMSB 752-22R-09</b>	TS 35A070I/HG	TD 10P			



# TFMSB-13

High feed face mills



Designation		Dimension (mm)						Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
<b>TFMSB 350-22R-13</b>	3	50	29.3	22	45	40	2.0	●	A	0.3	LH M10x25	SBMT 1306... E287
<b>450-22R-13</b>	4	50	29.3	22	45	40	2.0	●	A	0.2	LH M10x25	
<b>452-22R-13</b>	4	52	31.3	22	45	40	2.0	●	A	0.3	LH M10x25	
<b>552-22R-13</b>	5	52	31.3	22	45	40	2.0	●	A	0.2	LH M10x25	
<b>463-22R-13</b>	4	63	42.4	22	58	50	2.0	●	A	0.6	SH M10x30	
<b>563-22R-13</b>	5	63	42.4	22	58	50	2.0	●	A	0.5	SH M10x30	
<b>463-27R-13</b>	4	63	42.4	27	58	50	2.0	●	A	0.5	SH M12x35	
<b>566-27R-13</b>	5	66	45.3	27	58	50	2.0	●	A	0.6	SH M12x35	
<b>580-27R-13</b>	5	80	59.4	27	70	60	2.0	●	A	1.3	SH M12x35	
<b>680-27R-13</b>	6	80	59.4	27	70	60	2.0	●	A	1.3	SH M12x35	
<b>580-32R-13</b>	5	80	59.4	32	76	60	2.0	●	A	1.3	SH M16x35	
<b>6100-32R-13</b>	6	100	79.4	32	76	60	2.0	●	A	1.9	SH M16x35	
<b>7125-40R-13</b>	7	125	104.7	40	85	60	2.0	●	A	2.5	SH M20x40	
<b>8160-40R-13</b>	8	160	139.4	40	110	60	2.0	x	C	3.5	-	
<b>9200-60R-13</b>	9	200	179.4	60	130	60	2.0	x	C	5.1	-	
<b>10250-60R-13</b>	10	250	229.4	60	160	60	2.0	x	C	9.1	-	
<b>TFMSB 463-25.4R-13</b>	4	63	42.4	25.4	58	50	2.0	●	A	0.5	SH M12x35	
<b>580-25.4R-13</b>	5	80	59.4	25.4	70	60	2.0	●	A	1.3	SH M12x35	
<b>580-31.75R-13</b>	5	80	59.4	31.75	76	60	2.0	●	A	1.3	SH M16x35	
<b>7125-38.1R-13</b>	7	125	104.7	38.1	80	60	2.0	x	B	2.2	-	

▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

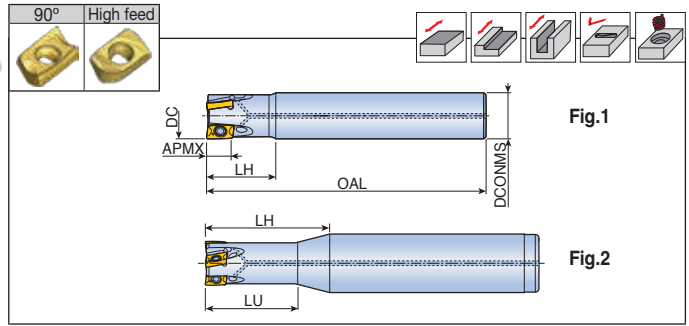
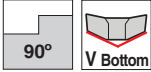
Designation	Screw	Wrench			
	<b>TFMSB-13</b>	TS 50115I	T-T20		

Cutting Condition E312-E315	Arbor Style E316-E317	Torque E318	Ramping Data E383-E385
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# 2S-TE90CV-05



## End mills

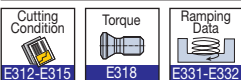


Designation		Dimension (mm)						Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	LU	APMX			
<b>2S-TE90CV-106-06-05</b>	1	6	6	60	12	-	5.0	●	1	CVK(H)T 0502... E273
<b>106-06-05-L50</b>	1	6	6	50	10	-	5.0	●	1	
<b>208-07-05</b>	2	8	7	80	12	-	5.0	●	1	
<b>208-08-05</b>	2	8	8	80	12	-	5.0	●	1	
<b>208-08-05-L50</b>	2	8	8	50	10	-	5.0	●	1	
<b>208-12-05</b>	2	8	12	80	25	18	5.0	●	2	
<b>209-08-05</b>	2	9	8	80	12	-	5.0	●	1	
<b>210-10-05</b>	2	10	10	80	15	-	5.0	●	1	
<b>212-12-05</b>	2	12	12	80	15	-	5.0	●	1	
<b>310-09-05</b>	3	10	9	80	12	-	5.0	●	1	
<b>310-10-05</b>	3	10	10	80	15	-	5.0	●	1	
<b>310-10-05-L55</b>	3	10	10	55	12	-	5.0	●	1	
<b>310-16-05-L90</b>	3	10	16	90	34	22	5.0	●	2	
<b>311-10-05</b>	3	11	10	80	12	-	5.0	●	1	
<b>312-12-05</b>	3	12	12	80	15	-	5.0	●	1	
<b>412-11-05</b>	4	12	11	80	12	-	5.0	●	1	
<b>412-12-05</b>	4	12	12	80	15	-	5.0	●	1	
<b>412-12-05-L60</b>	4	12	12	60	14	-	5.0	●	1	
<b>412-16-05-L100</b>	4	12	16	100	34	26	5.0	●	2	
<b>413-12-05</b>	4	13	12	80	12	-	5.0	●	1	
<b>414-12-05</b>	4	14	12	80	10	-	5.0	●	1	
<b>514-14-05-L90</b>	5	14	14	90	15	-	5.0	●	1	

► Cutter body for '-HF' insert should be modified with body corner radius 1.8 mm

## Spare parts

Designation	Screw	Wrench			
<b>2S-TE90CV-05</b>	TS 18033/HG-P	TD 6P			

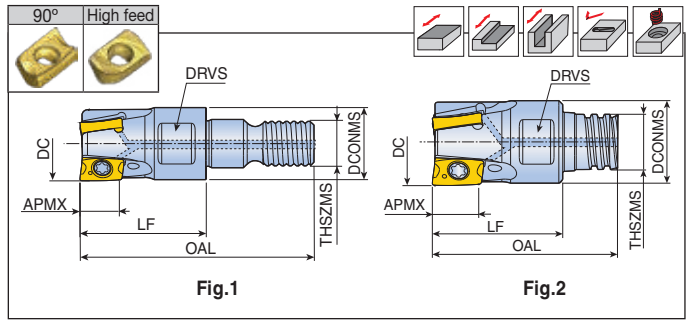
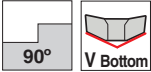




# 2S-TE90CV-M(S)-05



## Modular heads



Designation	Recycle	Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>2S-TE90CV- 208-M04-05</b>	2	8	7.8	10	21.5	M04	5.0	6	●	1	CVK(H)T 0502... E273
<b>310-M06-05</b>	3	10	9.7	17	31.5	M06	5.0	8	●	1	
<b>412-M06-05</b>	4	12	11	17	31.5	M06	5.0	8	●	1	
<b>516-M08-05</b>	5	16	13	23	40.5	M08	5.0	10	●	1	
<b>620-M10-05</b>	6	20	18	23	43.0	M10	5.0	15	●	1	
<b>720-M10-05</b>	7	20	18	23	43.0	M10	5.0	15	●	1	
<b>2S-TE90CV- 208-S05-05</b>	2	8	7.6	10	16.7	S05	5.0	5.5	●	2	
<b>310-S06-05</b>	3	10	9.6	15	21.3	S06	5.0	8	●	2	
<b>412-S08-05</b>	4	12	11.5	16	23.5	S08	5.0	10	●	2	

- ▶ Cutter body for '-HF' insert should be modified with body corner radius 1.8 mm
- ▶ Matched with T-FLEXTEC holder (Fig.1) & MAXI-RUSH holder (Fig.2)

## Spare parts

Designation	Screw	Wrench			
	<b>2S-TE90CV-05</b>	TS 18033/HG-P	TD 6P		

Cutting Condition E312-E315	Torque E318	Ramping Data E331-E332
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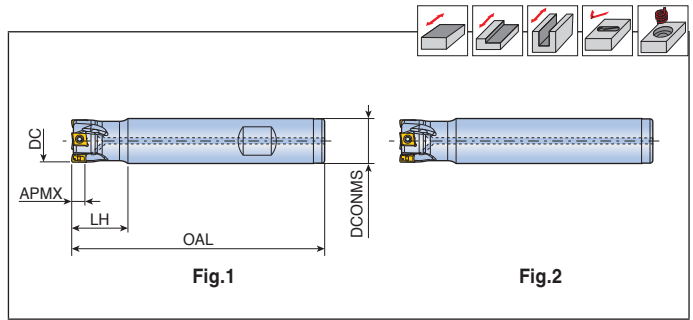




# 4T-TE90-05/09



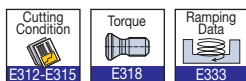
## End mills



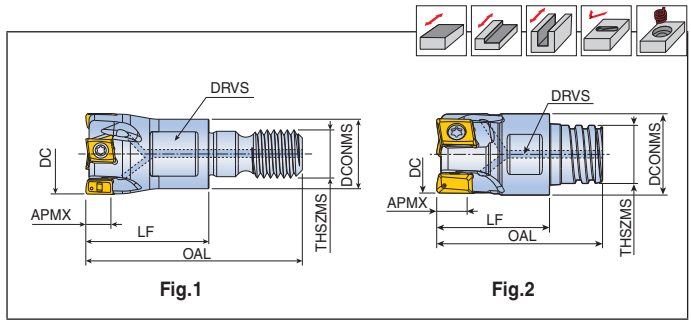
Designation		Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>4T-TE90-210-10-05</b>	2	10	10	80	15	4.6	●	2	LPK(H)U 0502... E276
<b>211-10-05</b>	2	11	10	80	15	4.6	●	2	
<b>212-12-05</b>	2	12	12	80	15	4.6	●	2	
<b>312-12-05</b>	3	12	12	80	15	4.6	●	2	
<b>313-12-05</b>	3	13	12	80	15	4.6	●	2	
<b>316-W16-05</b>	3	16	16	90	20	4.6	●	1	
<b>416-W16-05</b>	4	16	16	90	20	4.6	●	1	
<b>420-W20-05</b>	4	20	20	100	25	4.6	●	1	
<b>520-W20-05</b>	5	20	20	100	25	4.6	●	1	
<b>625-W25-05</b>	6	25	25	110	30	4.6	●	1	
<b>832-W25-05</b>	8	32	25	110	20	4.6	●	1	LPK(H)U 0904... E276
<b>4T-TE90-220-W20-09</b>	2	20	20	100	30	8.3	●	1	
<b>220-20-09-L170</b>	2	20	20	170	30	8.3	●	2	
<b>320-W20-09</b>	3	20	20	100	30	8.3	●	1	
<b>325-W25-09</b>	3	25	25	100	30	8.3	●	1	
<b>325-25-09-L200</b>	3	25	25	200	30	8.3	●	2	
<b>425-W25-09</b>	4	25	25	100	30	8.3	●	1	
<b>425-25-09-L120</b>	4	25	25	120	30	8.3	●	2	
<b>332-W32-09</b>	3	32	32	110	35	8.3	●	1	
<b>332-32-09-L210</b>	3	32	32	210	35	8.3	●	2	
<b>532-W32-09</b>	5	32	32	110	35	8.3	●	1	
<b>532-32-09-L130</b>	5	32	32	130	35	8.3	●	2	
<b>440-W32-09</b>	4	40	32	115	30	8.3	●	1	
<b>440-32-09-L150</b>	4	40	32	150	30	8.3	●	2	
<b>640-W32-09</b>	6	40	32	115	30	8.3	●	1	

## Spare parts

Designation	Screw	Wrench		Wrench handle	
<b>4T-TE90-05</b> (Ø10,Ø11)	TS 18041/SG-P	TD 6P	-	-	
<b>4T-TE90-05</b> (Ø12-)	TS 18049/HG-P	TD 6P	-	-	
<b>4T-TE90-09</b>	TS 30D082-P	-	TBLD T08P-W4	THND 4W	



## Modular heads

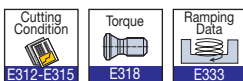


Designation	♻️	Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>4T-TE90-210-M06-05</b>	2	10	9.7	17	31.5	M06	4.6	8	●	1	LPK(H)U 0502... E276
<b>312-M06-05</b>	3	12	11	17	31.5	M06	4.6	8	●	1	
<b>416-M08-05</b>	4	16	13	23	40.5	M08	4.6	10	●	1	
<b>520-M10-05</b>	5	20	18	23	43	M10	4.6	15	●	1	
<b>625-M12-05</b>	6	25	21	27	49	M12	4.6	17	●	1	
<b>832-M16-05</b>	8	32	29	27	52	M16	4.6	25	●	1	
<b>4T-TE90-210-S06-05</b>	2	10	9.6	15	21.3	S06	4.6	8	●	2	LPK(H)U 0904... E276
<b>312-S08-05</b>	3	12	11.5	16	23.5	S08	4.6	10	●	2	
<b>416-S10-05</b>	4	16	15.2	20	31.3	S10	4.6	13	●	2	
<b>4T-TE90-220-M10-09</b>	2	20	18	30	50	M10	8.3	15	●	1	LPK(H)U 0904... E276
<b>320-M10-09</b>	3	20	18	30	50	M10	8.3	15	●	1	
<b>425-M12-09</b>	4	25	21	35	57	M12	8.3	17	●	1	
<b>532-M16-09</b>	5	32	29	43	68	M16	8.3	25	●	1	
<b>640-M16-09</b>	6	40	29	43	68	M16	8.3	25	●	1	

▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

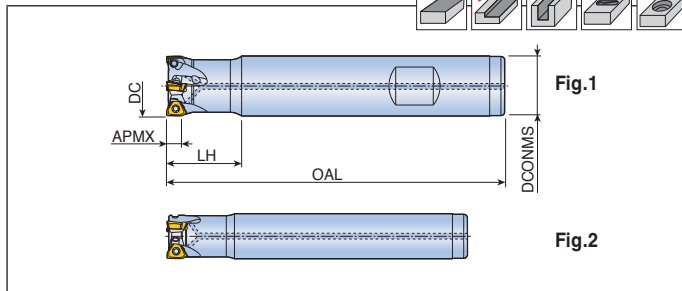
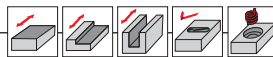
## Spare parts

Designation	Screw	Wrench		Wrench handle	
<b>4T-TE90-05 (Ø10,Ø11)</b>	TS 18041/SG-P	TD 6P	-	-	
<b>4T-TE90-05 (Ø12-)</b>	TS 18049/HG-P	TD 6P	-	-	
<b>4T-TE90-09</b>	TS 30D082-P	-	TBLD T08P-W4	THND 4W	



# 3P-TE90-04

End mills



Designation	✂	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>3P-TE90-108-08-04</b>	1	8	8	80	17	3.5	●	2	3PKT 0402...
<b>210-10-04</b>	2	10	10	80	17	3.5	●	2	E250
<b>210-09-04-L</b>	2	10	9	120	10	3.5	●	2	
<b>211-10-04</b>	2	11	10	80	11	3.5	●	2	
<b>212-11-04-L</b>	2	12	11	120	11	3.5	●	2	
<b>212-12-04</b>	2	12	12	80	18	3.5	●	2	
<b>212-12-04-L</b>	2	12	12	120	18	3.5	●	2	
<b>312-12-04</b>	3	12	12	80	18	3.5	●	2	
<b>313-12-04</b>	3	13	12	90	11	3.5	●	2	
<b>314-12-04</b>	3	14	12	90	12	3.5	●	2	
<b>316-16-04</b>	3	16	16	110	20	3.5	●	2	
<b>416-W16-04</b>	4	16	16	90	20	3.5	●	1	

## Spare parts

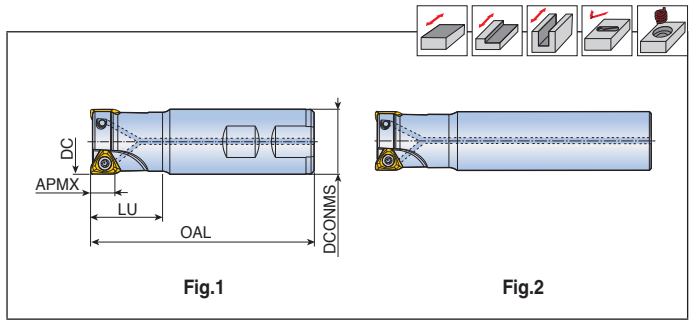
Designation	Screw	Wrench			
<b>3P-TE90-04 (Ø8)</b>	TS 18033/HG-P	TD 6P			
<b>3P-TE90-04 (Ø10-)</b>	TS 18041I/HG	TD 6P			

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E335-E337
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# 3P TE90-06



## End mills



Designation		Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LU	APMX			
<b>3P TE90-112-12-06-L80</b>	1	12	12	80	20	4.7	●	2	3PK(H)T 0603... E250
<b>114-12-06-L80</b>	1	14	12	80	20	4.7	●	2	
<b>216-W16-06</b>	2	16	16	90	25	4.7	●	1	
<b>216-16-06-L110</b>	2	16	16	110	25	4.7	●	2	
<b>216-16-06-L150</b>	2	16	16	150	25	4.7	●	2	
<b>316-16-06-L110</b>	3	16	16	110	25	4.7	●	2	
<b>217-16-06-L200</b>	2	17	16	200	25	4.7	●	2	
<b>317-16-06-L110</b>	3	17	16	110	25	4.7	●	2	
<b>318-W16-06</b>	3	18	16	90	25	4.7	●	1	
<b>318-16-06-L150</b>	3	18	16	150	25	4.7	●	2	
<b>319-16-06-L150</b>	3	19	16	150	25	4.7	●	2	
<b>320-W20-06</b>	3	20	20	105	25	4.7	●	1	
<b>320-20-06-L160</b>	3	20	20	160	25	4.7	●	2	
<b>420-W20-06</b>	4	20	20	105	25	4.7	●	1	
<b>420-19-06-L160</b>	4	20	19	160	25	4.7	●	2	
<b>421-20-06-L160</b>	4	21	20	160	25	4.7	●	2	
<b>422-W20-06</b>	4	22	20	110	25	4.7	●	1	
<b>425-W20-06</b>	4	25	20	115	25	4.7	●	1	
<b>525-W20-06</b>	5	25	20	115	25	4.7	●	1	
<b>525-W25-06</b>	5	25	25	115	25	4.7	●	1	
<b>630-W25-06</b>	6	30	25	130	30	4.7	●	1	
<b>632-W25-06</b>	6	32	25	130	30	4.7	●	1	
<b>732-W25-06</b>	7	32	25	130	30	4.7	●	1	
<b>840-W32-06</b>	8	40	32	130	30	4.7	●	1	

## Spare parts

Designation	Screw	Wrench			
	<b>3P TE90-06</b>	 TS 20043I/HG-P	 TD 6P		

Cutting Condition  
 E312-E315

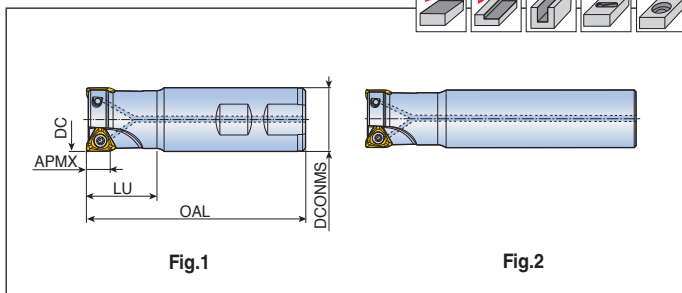
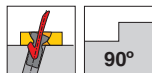
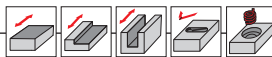
Torque  
 E318

Ramping Data  
 E335-E337

# 3P TE90-10



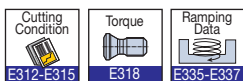
## End mills



Designation	⊕	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LU	APMX			
<b>3P TE90-116-16-10-L150</b>	1	16	16	150	25	7.0	●	2	3PK(H)T 1004... E250
<b>116-W16-10</b>	1	16	16	90	20	7.0	●	1	
<b>220-W20-10</b>	2	20	20	90	25	7.0	●	1	
<b>220-19-10-L170</b>	2	20	19	170	30	7.0	●	2	
<b>220-20-10-L170</b>	2	20	20	170	40	7.0	●	2	
<b>221-20-10-L200</b>	2	21	20	200	30	7.0	●	2	
<b>221-20-10-L250-C</b>	2	21	20	250	40	7.0	●	2	
<b>222-W20-10</b>	2	22	20	100	25	7.0	●	1	
<b>225-25-10-L210</b>	2	25	25	210	40	7.0	●	2	
<b>325-W20-10</b>	3	25	20	100	30	7.0	●	1	
<b>325-W25-10</b>	3	25	25	100	30	7.0	●	1	
<b>325-24-10-L210</b>	3	25	24	210	35	7.0	●	2	
<b>325-25-10-L210</b>	3	25	25	210	40	7.0	●	2	
<b>226-25-10-L250</b>	2	26	25	250	30	7.0	●	2	
<b>330-W25-10</b>	3	30	25	110	35	7.0	●	1	
<b>232-W25-10</b>	2	32	25	110	35	7.0	●	1	
<b>332-W25-10</b>	3	32	25	110	35	7.0	●	1	
<b>333-32-10-L250</b>	3	33	32	250	35	7.0	●	2	
<b>333-32-10-L300-C</b>	3	33	32	300	60	7.0	●	2	
<b>432-W32-10</b>	4	32	32	110	40	7.0	●	1	
<b>440-32-10-L200</b>	4	40	32	200	40	7.0	●	2	
<b>532-W32-10</b>	5	32	32	110	40	7.0	●	1	
<b>540-W32-10</b>	5	40	32	115	40	7.0	●	1	
<b>640-W32-10</b>	6	40	32	115	40	7.0	●	1	

## Spare parts

Designation	Screw	Wrench			
	<b>3P TE90-10</b>	TS 25C065I/HG	TD 8		





# 3P TE90-15/19



## End mills

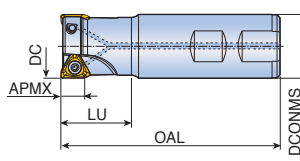
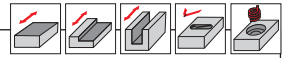
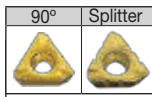


Fig.1



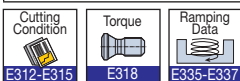
Fig.2



Designation	Flutes	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LU	APMX			
<b>3P TE90-232-W32-15</b>	2	32	32	110	40	11.0	●	1	3PK(H)T 1505...
<b>232-32-15-L250</b>	2	32	32	250	60	11.0	●	2	E250-E251
<b>332-W25-15</b>	3	32	25	100	40	11.0	●	1	
<b>332-W25-15-L155</b>	3	32	25	155	35	11.0	●	2	
<b>332-W32-15</b>	3	32	32	110	40	11.0	●	1	
<b>332-32-15-L150</b>	3	32	32	150	40	11.0	●	2	
<b>332-32-15-L250</b>	3	32	32	250	60	11.0	●	2	
<b>233-32-15-L200</b>	2	33	32	200	40	11.0	●	2	
<b>233-32-15-L250</b>	2	33	32	250	40	11.0	●	2	
<b>335-W32-15</b>	3	35	32	110	40	11.0	●	1	
<b>340-W32-15</b>	3	40	32	110	40	11.0	●	1	
<b>340-32-15-L200</b>	3	40	32	200	40	11.0	●	2	
<b>440-W32-15</b>	4	40	32	110	40	11.0	●	1	
<b>3P TE90-240-32-19-L250</b>	2	40	32	250	45	15.0	●	2	3PK(H)T 1906...
<b>340-W32-19</b>	3	40	32	115	45	15.0	●	1	E250-E251
<b>340-32-19-L200</b>	3	40	32	200	45	15.0	●	2	
<b>450-W32-19</b>	4	50	32	115	45	15.0	●	1	

## Spare parts

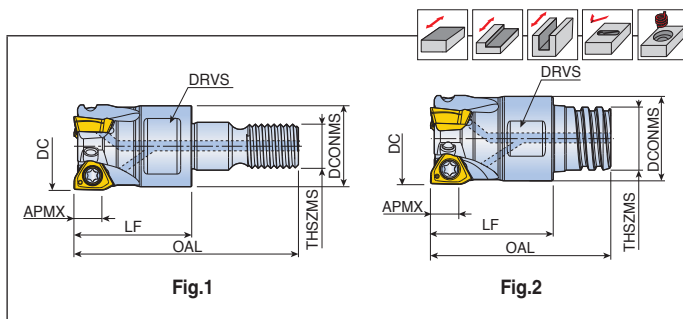
Designation	Screw	Wrench			
<b>3P TE90-15</b>	TS 40B100I	TD 15	-		
<b>3P TE90-19</b>	TS 45120I	-	T-T20		



# 3P-TE90-M(S)-04/06



## Modular heads



Designation	⊙	Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>3P-TE90-210-M06-04</b>	2	10	9.7	17	31.5	M06	3.5	8	●	1	3PKT 0402...
<b>312-M06-04</b>	3	12	11	17	31.5	M06	3.5	8	●	1	E250
<b>416-M06-04</b>	4	16	13	23	40.5	M08	3.5	10	●	1	
<b>3P-TE90-210-S06-04</b>	2	10	9.6	15	21.3	S06	3.5	8	●	2	
<b>312-S08-04</b>	3	12	11.5	16	23.5	S08	3.5	10	●	2	
<b>416-S10-04</b>	4	16	15.2	20	31.3	S10	3.5	13	●	2	
<b>3P TE90-216-M08-06</b>	2	16	13	23	40.5	M08	4.7	10	●	1	3PK(H)T 0603...
<b>217-M08-06</b>	2	17	13	23	40.5	M08	4.7	10	●	1	E250
<b>320-M10-06</b>	3	20	18	35	55	M10	4.7	15	●	1	
<b>420-M10-06</b>	4	20	18	35	55	M10	4.7	15	●	1	
<b>425-M12-06</b>	4	25	21	35	57	M12	4.7	17	●	1	
<b>525-M12-06</b>	5	25	21	35	57	M12	4.7	17	●	1	
<b>632-M16-06</b>	6	32	29	43	68	M16	4.7	25	●	1	
<b>732-M16-06</b>	7	32	29	43	68	M16	4.7	25	●	1	
<b>735-M16-06</b>	7	35	29	43	68	M16	4.7	25	●	1	

► Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

## Spare parts

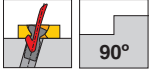
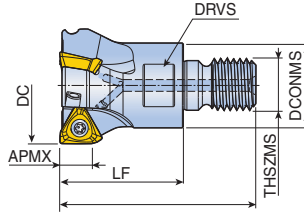
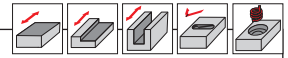
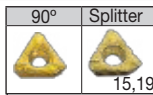
Designation	Screw	Wrench			
<b>3P-TE90-04 (Ø8)</b>	TS 18033/HG-P	TD 6P			
<b>3P-TE90-04 (Ø10-)</b>	TS 18041/HG	TD 6P			
<b>3P TE90-06</b>	TS 20043/HG-P	TD 6P			

 E312-E315	 E318	 E335-E337
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# 3P TE90-M-10/15/19



## Modular heads

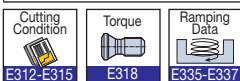


Designation	⌀	Dimension (mm)							Coolant hole	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS		
<b>3P TE90-220-M10-10</b>	2	20	18	35	55	M10	7.0	15	●	3PK(H)T 1004...
<b>221-M10-10</b>	2	21	18	35	55	M10	7.0	15	●	🔊 E250
<b>325-M12-10</b>	3	25	21	35	57	M12	7.0	17	●	
<b>326-M12-10</b>	3	26	21	35	57	M12	7.0	17	●	
<b>432-M16-10</b>	4	32	29	43	68	M16	7.0	25	●	
<b>532-M16-10</b>	5	32	29	43	68	M16	7.0	25	●	
<b>535-M16-10</b>	5	35	29	43	68	M16	7.0	25	●	
<b>540-M16-10</b>	5	40	29	43	68	M16	7.0	25	●	
<b>640-M16-10</b>	6	40	29	43	68	M16	7.0	25	●	
<b>642-M16-10</b>	6	42	29	43	68	M16	7.0	25	●	
<b>3P TE90-232-M16-15</b>	2	32	29	43	68	M16	11.0	25	●	3PK(H)T 1505...
<b>233-M16-15</b>	2	33	29	43	68	M16	11.0	25	●	🔊 E250-E251
<b>332-M16-15</b>	3	32	29	43	68	M16	11.0	25	●	
<b>340-M16-15</b>	3	40	29	43	68	M16	11.0	25	●	
<b>440-M16-15</b>	4	40	29	43	68	M16	11.0	25	●	
<b>3P TE90-340-M16-19</b>	3	40	29	43	68	M16	15.0	25	●	3PK(H)T 1906...
										🔊 E250-E251

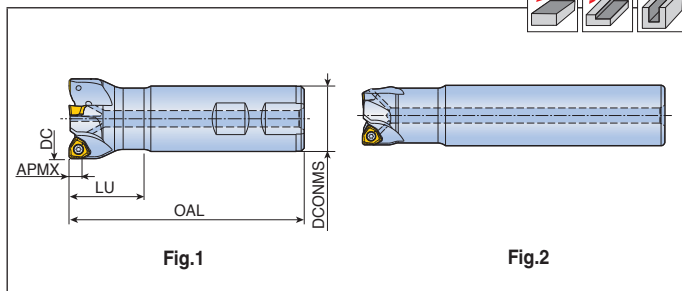
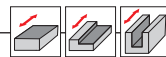
► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>3P TE90-10</b>	TS 25C065I/HG	TD 8	-		
<b>3P TE90-15</b>	TS 40B100I	TD 15	-		
<b>3P TE90-19</b>	TS 45120I	-	T-T20		



## End Mills



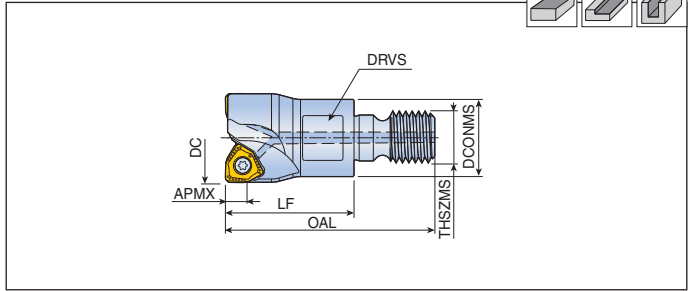
Designation		Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LU	APMX			
<b>6N TE90-320-W20-04</b>	3	20	20	90	30	4.1	●	1	6N KU 0403... 
<b>320-20-04-L160</b>	3	20	20	160	30	4.1	●	2	
<b>425-25-04-L170</b>	4	25	25	170	30	4.1	●	2	
<b>525-W25-04</b>	5	25	25	100	35	4.1	●	1	
<b>332-W32-04</b>	3	32	32	110	43	4.1	●	1	
<b>532-32-04-L200</b>	5	32	32	200	40	4.1	●	2	
<b>632-W32-04</b>	6	32	32	110	40	4.1	●	1	
<b>440-W32-04</b>	4	40	32	110	43	4.1	●	1	
<b>6N TE90-225-W25-06</b>	2	25	25	100	30	6.2	●	1	6N GU 0604... 
<b>225-25-06-L150</b>	2	25	25	150	30	6.2	●	2	
<b>232-W32-06</b>	2	32	32	110	40	6.2	●	1	
<b>232-32-06-L160</b>	2	32	32	160	40	6.2	●	2	
<b>332-W32-06</b>	3	32	32	110	40	6.2	●	1	
<b>332-32-06-L160</b>	3	32	32	160	40	6.2	●	2	
<b>332-32-06-L200</b>	3	32	32	200	44	6.2	●	2	
<b>340-W32-06</b>	3	40	32	115	40	6.2	●	1	
<b>340-32-06-L200</b>	3	40	32	200	40	6.2	●	2	
<b>440-W32-06</b>	4	40	32	115	40	6.2	●	1	
<b>6N TE90-232-W32-09</b>	2	32	32	110	40	9.2	●	1	6N GU 0905... 
<b>232-32-09-L160</b>	2	32	32	160	60	9.2	●	2	
<b>340-W32-09</b>	3	40	32	120	40	9.2	●	1	
<b>340-32-09-L200</b>	3	40	32	200	40	9.2	●	2	
<b>440-W32-09</b>	4	40	32	120	40	9.2	●	1	

## Spare parts

Designation	Screw	Wrench			
<b>6N TE90-04</b>	TS 25064I	TD 8			
<b>6N TE90-06</b>	TS 30085I/HG	TD 9			
<b>6N TE90-09</b>	TS 40B100I	TD15			



## Modular heads

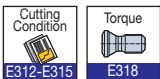


Designation		Dimension (mm)							Coolant hole	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS		
<b>6N TE90-320-M10-04</b>	3	20	18	35	55	M10	4.1	15	●	6NKU 0403...
<b>525-M12-04</b>	5	25	21	35	57	M12	4.1	17	●	E256
<b>632-M16-04</b>	6	32	29	43	68	M16	4.1	25	●	
<b>6N TE90-225-M12-06</b>	2	25	21	35	57	M12	6.2	17	●	6NGU 0604...
<b>332-M16-06</b>	3	32	29	43	68	M16	6.2	25	●	E255
<b>440-M16-06</b>	4	40	29	43	68	M16	6.2	25	●	
<b>6N TE90-232-M16-09</b>	2	32	29	43	68	M16	9.2	25	●	6NGU 0905...
<b>340-M16-09</b>	3	40	29	43	68	M16	9.2	25	●	E255
<b>440-M16-09</b>	4	40	29	43	68	M16	9.2	25	●	

► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>6N TE90-04</b>	TS 25064I	TD 8			
<b>6N TE90-06</b>	TS 30085I/HG	TD 9			
<b>6N TE90-09</b>	TS 40B100I	TD15			







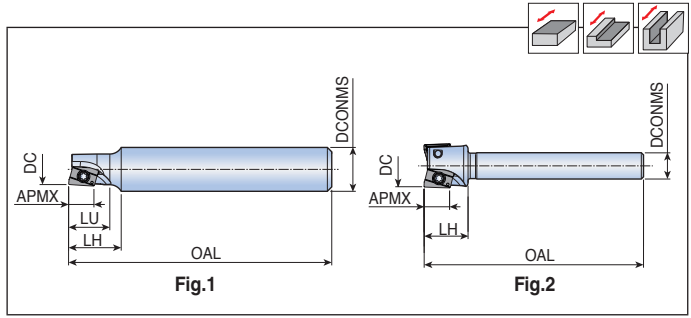




# MTE90AX-06-L



## End mills

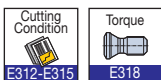


Designation	⌀	Dimension (mm)						Fig.	Insert
		DC	DCONMS	OAL	LU	LH	APMX		
<b>MTE90AX 108-10-06-L60</b>	1	8	10	60	9	12	5.5	1	AXCT 06-L... E265
<b>210-05-06-L40</b>	2	10	5	40	-	10	5.5	2	
<b>210-06-06-L50</b>	2	10	6	50	-	10	5.5	2	
<b>210-07-06-L50</b>	2	10	7	50	-	10	5.5	2	
<b>210-10-06-L50</b>	2	10	10	50	10	12	5.5	1	
<b>212-10-06-L50</b>	2	12	10	50	-	10	5.5	2	
<b>214-10-06-L50</b>	2	14	10	50	-	10	5.5	2	
<b>315-05-06-L40</b>	3	15	5	40	-	10	5.5	2	
<b>316-07-06-L50</b>	3	16	7	50	-	10	5.5	2	
<b>316-10-06-L50</b>	3	16	10	50	-	10	5.5	2	
<b>320-07-06-L50</b>	3	20	7	50	-	10	5.5	2	
<b>320-10-06-L50</b>	3	20	10	50	-	10	5.5	2	
<b>530-10-06-L50</b>	5	30	10	50	-	10	5.5	2	

▶ Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body "RE"=Insert "RE"-0.1mm

## Spare parts

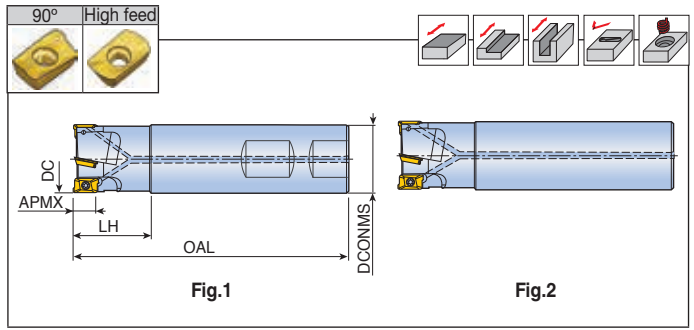
Designation	Screw	Wrench			
	<b>MTE90AX-06-L</b>	TS 18041/HG	TD 6P		



# TE90AX-06



## End mills



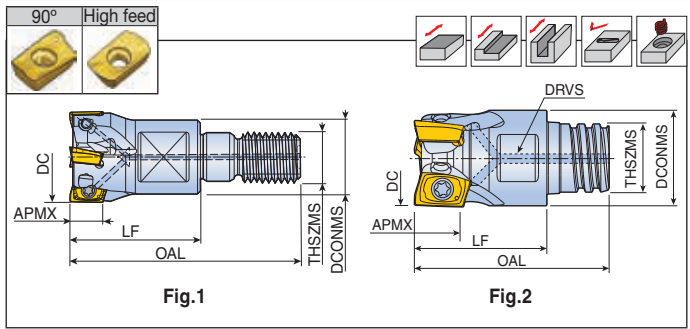
Designation	⌀	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>TE90AX 108-08-06-C</b>	1	8	8	80	17	5.5	●	2	AXM(C)T 0602 ... E264-E266
<b>210-09-06-L120</b>	2	10	9	120	17	5.5	x	2	
<b>210-10-06-C</b>	2	10	10	80	17	5.5	●	2	
<b>211-10-06</b>	2	11	10	80	17	5.5	x	2	
<b>212-12-06-C</b>	2	12	12	80	18	5.5	●	2	
<b>212-12-06-L</b>	2	12	12	130	18	5.5	x	2	
<b>212-11-06-L120</b>	2	12	11	120	20	5.5	x	2	
<b>312-12-06-C</b>	3	12	12	80	18	5.5	●	2	
<b>313-12-06-C</b>	3	13	12	90	20	5.5	●	2	
<b>314-12-06</b>	3	14	12	80	18	5.5	x	2	
<b>415-12-06</b>	4	15	12	80	18	5.5	x	2	
<b>316-16-06-C</b>	3	16	16	110	20	5.5	●	2	
<b>316-16-06-L</b>	3	16	16	150	20	5.5	x	2	
<b>416-W16-06-C</b>	4	16	16	90	20	5.5	●	1	
<b>417-16-06</b>	4	17	16	90	20	5.5	x	2	
<b>418-W16-06-C</b>	4	18	16	90	20	5.5	●	1	
<b>418-16-06-L</b>	4	18	16	150	20	5.5	x	2	
<b>419-W16-06</b>	4	19	16	90	20	5.5	x	1	
<b>420-20-06</b>	4	20	20	160	25	5.5	x	2	
<b>420-W20-06-C</b>	4	20	20	160	25	5.5	●	1	
<b>520-19-06-L</b>	5	20	19	160	25	5.5	x	1	
<b>520-W20-06-C</b>	5	20	20	105	25	5.5	●	1	
<b>521-20-06</b>	5	21	20	105	25	5.5	x	2	
<b>725-W20-06-C</b>	7	25	20	115	25	5.5	●	1	
<b>725-W25-06</b>	7	25	25	120	30	5.5	x	1	
<b>832-W25-06-C</b>	8	32	25	130	32	5.5	●	1	
<b>1040-W32-06-C</b>	10	40	32	140	40	5.5	●	1	

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E360-E366
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# TE90AX-M(S)-06



## Modular heads



Designation		Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>TE90AX 210-M06-06</b>	2	10	9.7	17	31.5	M06	5.5	8	●	1	AXM(C)T 0602...
<b>312-M06-06</b>	3	12	11	17	31.5	M06	5.5	8	●	1	E264-E266
<b>416-M08-06</b>	4	16	13	23	40.5	M08	5.5	10	●	1	
<b>520-M10-06</b>	5	20	18	23	43	M10	5.5	15	●	1	
<b>725-M12-06</b>	7	25	21	27	49	M12	5.5	17	●	1	
<b>832-M16-06</b>	8	32	29	27	52	M16	5.5	25	●	1	
<b>1040-M16-06</b>	10	40	29	27	52	M16	5.5	25	●	1	
<b>TE90AX 210-S06-06</b>	2	10	9.6	15	21.3	S06	5.5	8	●	2	
<b>312-S08-06</b>	3	12	11.5	16	23.5	S08	5.5	10	●	2	
<b>416-S10-06</b>	4	16	15.2	20	31.3	S10	5.5	13	●	2	

- ▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)
- ▶ Cutter body for 'AXMT 06' insert with corner radius more than 1.0mm should be modified accordingly body "RE"=Insert "RE"-0.1mm

## Spare parts

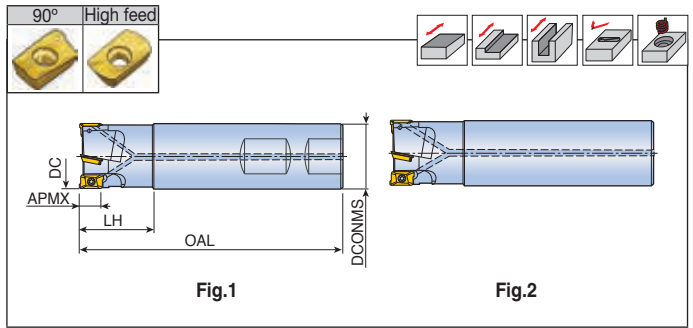
Designation	Screw	Wrench			
	<b>TE90AX-06</b>	TS 180411/HG	TD 6P		

Cutting Condition E312-E315	Torque E318	Ramping Data E360-E366
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# 2S-TE90AP-09



End mills



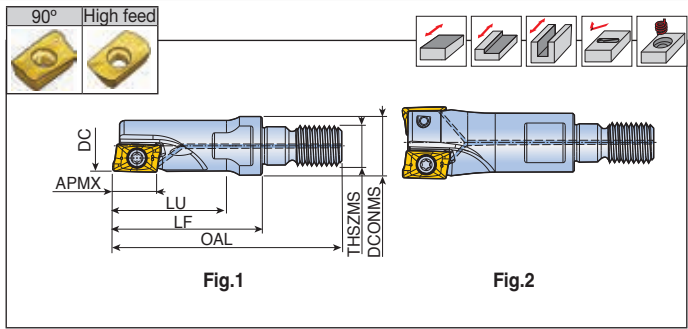
Designation		Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>2S-TE90AP 110-W10-09-C</b>	1	10	10	80	25	8.8	●	1	APK(C)T 09T3... E259, E264
<b>112-W12-09</b>	1	12	12	80	25	8.8	x	1	
<b>112-W16-09-C</b>	1	12	16	80	26	8.8	●	1	
<b>114-W12-09</b>	1	14	12	80	25	8.8	x	1	
<b>216-15-09-L</b>	2	16	15	170	30	8.8	x	2	
<b>216-W16-09-C</b>	2	16	16	90	25	8.8	●	1	
<b>216-16-09-L</b>	2	16	16	145	30	8.8	x	2	
<b>217-16-09-L</b>	2	17	16	180	25	8.8	x	2	
<b>218-W16-09-C</b>	2	18	16	90	25	8.8	●	1	
<b>220-19-09-L</b>	2	20	19	170	25	8.8	x	2	
<b>220-20-09-L</b>	2	20	20	170	40	8.8	x	2	
<b>320-W20-09-C</b>	3	20	20	110	30	8.8	●	1	
<b>221-20-09-L</b>	2	21	20	200	25	8.8	x	2	
<b>322-W20-09-C</b>	3	22	20	110	30	8.8	●	1	
<b>225-24-09-L</b>	2	25	24	210	28	8.8	x	2	
<b>225-25-09-L</b>	2	25	25	210	40	8.8	x	2	
<b>325-W20-09-C</b>	3	25	20	110	30	8.8	●	1	
<b>325-W25-09</b>	3	25	25	110	30	8.8	x	1	
<b>425-W20-09-C</b>	4	25	20	110	30	8.8	●	1	
<b>226-25-09-L</b>	2	26	25	250	40	8.8	x	2	
<b>430-W25-09-C</b>	4	30	25	130	32	8.8	●	1	
<b>232-32-09-L</b>	2	32	32	250	65	8.8	x	2	
<b>432-W25-09-C</b>	4	32	25	130	32	8.8	●	1	
<b>532-W25-09-C</b>	5	32	25	130	32	8.8	●	1	
<b>333-32-09-L</b>	3	33	32	250	40	8.8	x	2	
<b>240-32-09-L</b>	2	40	32	250	32	8.8	x	2	
<b>540-W32-09-C</b>	5	40	32	130	32	8.8	●	1	
<b>640-W32-09</b>	6	40	32	130	32	8.8	x	1	

Cutting Condition E312-E315	Torque E318	Ramping Data E360-E366
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# 2S-TE90AP-M-09



## Modular heads



Designation	⌀	Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	LU	THSZMS	APMX			
<b>2S-TE90AP 110-M06-09</b>	1	10	9.7	33	47.5	19	M06	8.8	●	1	APK(C)T 09T3... E259, E264
<b>112-M08-09</b>	1	12	13	33	50.5	25	M08	8.8	●	1	
<b>216-M08-09</b>	2	16	13	38	50.5	-	M08	8.8	●	2	
<b>320-M10-09</b>	3	20	18	38	58	-	M10	8.8	●	2	
<b>325-M12-09</b>	3	25	21	38	60	-	M12	8.8	●	2	
<b>425-M12-09</b>	4	25	21	38	60	-	M12	8.8	●	2	
<b>432-M16-09</b>	4	32	29	38	63	-	M16	8.8	●	2	
<b>532-M16-09</b>	5	32	29	38	63	-	M16	8.8	●	2	
<b>540-M16-09</b>	5	40	29	43	68	-	M16	8.8	●	2	
<b>640-M16-09</b>	6	40	29	43	68	-	M16	8.8	●	2	

- ▶ Matched with T-FLEXTEC holder
- ▶ Cutter body for 'APKT09' insert with corner radius more than 2.4mm should be modified accordingly  
body "RE"=Insert "RE"-0.2mm

## Spare parts

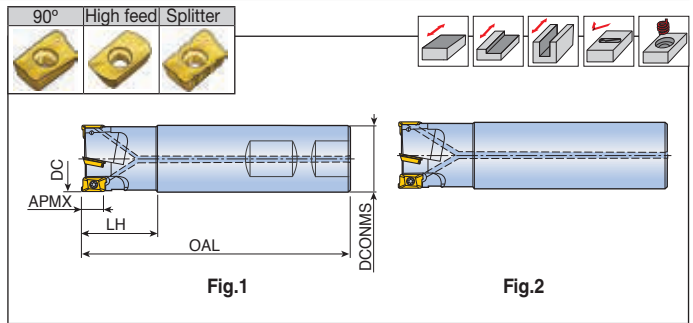
Designation	Screw	Wrench			
	<b>2S-TE90AP-09</b>	TS 25055I/HG	TD 8		

Cutting Condition E312-E315	Torque E318	Ramping Data E360-E366
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# TE90AP-12



End mills



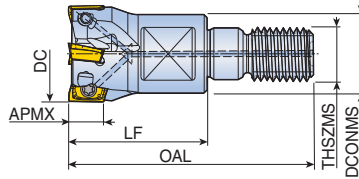
Designation	🌀	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>TE90AP 116-W16-12-C</b>	1	16	16	85	26	12.0	●	1	APK(C)T 1204....
<b>218-W20-12-C</b>	2	18	20	85	26	12.0	●	1	🔧 E260,E264
<b>220-19-12-L</b>	2	20	19	170	30	12.0	●	2	
<b>220-W20-12-C</b>	2	20	20	90	30	12.0	●	1	
<b>220-W20-12-L-C</b>	2	20	20	125	30	12.0	●	1	
<b>220-20-12-L</b>	2	20	20	170	30	12.0	●	2	
<b>220-20-12-L200</b>	2	20	20	200	30	12.0	●	2	
<b>221-20-12-L200</b>	2	21	20	200	30	12.0	●	2	
<b>221-20-12-L250</b>	2	21	20	250	30	12.0	●	2	
<b>225-24-12-L</b>	2	25	24	200	40	12.0	●	2	
<b>225-W25-12-L-C</b>	2	25	25	145	40	12.0	●	1	
<b>225-25-12-L</b>	2	25	25	210	40	12.0	●	2	
<b>225-25-12-L200</b>	2	25	25	200	40	12.0	●	2	
<b>325-W25-12-C</b>	3	25	25	100	40	12.0	●	1	
<b>226-25-12-L200</b>	2	26	25	200	40	12.0	●	2	
<b>226-25-12-L250</b>	2	26	25	250	40	12.0	●	2	
<b>232-25-12-L</b>	2	32	25	250	40	12.0	●	2	
<b>332-W25-12-L-C</b>	3	32	25	155	35	12.0	●	1	
<b>332-W32-12-C</b>	3	32	32	110	40	12.0	●	1	
<b>332-32-12-L</b>	3	32	32	250	40	12.0	●	2	
<b>332-32-12-L150</b>	3	32	32	150	40	12.0	●	2	
<b>432-W25-12-C</b>	4	32	25	100	40	12.0	●	1	
<b>233-32-12-L200</b>	2	33	32	200	40	12.0	●	2	
<b>233-32-12-L250</b>	2	33	32	250	40	12.0	●	2	
<b>333-32-12-L200</b>	3	33	32	200	40	12.0	●	2	
<b>333-32-12-L250</b>	3	33	32	250	40	12.0	●	2	
<b>435-W25-12</b>	4	35	25	100	40	12.0	●	1	
<b>440-W32-12-C</b>	4	40	32	115	45	12.0	●	1	
<b>440-32-12-L</b>	4	40	32	250	40	12.0	●	2	
<b>540-W32-12-C</b>	5	40	32	115	45	12.0	●	1	

Cutting Condition E312-E315	Torque E318	Ramping Data E360-E366
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# TE90AP-M-12



## Modular heads



Designation	⊕	Dimension (mm)						Coolant hole	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX		
<b>TE90AP 116-M08-12</b>	1	16	13	35	52.5	M08	12.0	●	APK(C)T 1204...
<b>220-M10-12</b>	2	20	18	35	55	M10	12.0	●	⊕ E260, E264
<b>325-M12-12</b>	3	25	21	35	57	M12	12.0	●	
<b>432-M16-12</b>	4	32	29	43	68	M16	12.0	●	
<b>540-M16-12</b>	5	40	29	43	68	M16	12.0	●	
<b>542-M16-12</b>	5	42	29	43	68	M16	12.0	●	

- ▶ Matched with T-FLEXTEC holder
- ▶ Cutter body for 'APKT 12' insert with corner radius more than 1.6mm should be modified accordingly  
body "RE"=Insert "RE"-0.5mm

## Spare parts

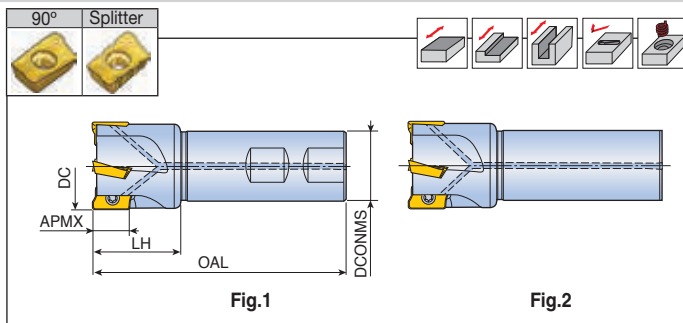
Designation	Screw	Wrench			
<b>TE90AP-12 (Ø16-Ø26)</b>	TS 35A070I/HG	TD 10P			
<b>TE90AP-12 (Ø32-)</b>	TS 35A088I/HG	TD 10P			

 E312-E315	 E318	 E360-E366
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# TE90AP-17



End mills

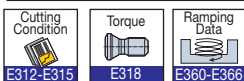


Designation	⊕	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>TE90AP 120-W20-17-C</b>	1	20	20	90	32	16.1	●	1	APK(C)T 1705... E261-E262
<b>225-24-17-L</b>	2	25	24	210	40	16.1	x	2	
<b>225-W25-17-C</b>	2	25	25	100	39	16.1	●	1	
<b>225-25-17-L</b>	2	25	25	210	40	16.1	x	2	
<b>226-25-17-L200</b>	2	26	25	200	40	16.1	●	2	
<b>226-25-17-L250</b>	2	26	25	250	40	16.1	●	2	
<b>232-32-17-L</b>	2	32	32	250	65	16.1	x	2	
<b>233-32-17-L250</b>	2	33	32	250	40	16.1	●	2	
<b>233-32-17-L300</b>	2	33	32	300	40	16.1	●	2	
<b>332-W32-17-C</b>	3	32	32	110	40	16.1	●	1	
<b>332-32-17-L</b>	3	32	32	200	65	16.1	x	2	
<b>333-32-17-L200</b>	3	33	32	200	55	16.1	●	2	
<b>333-32-17-L250</b>	3	33	32	250	55	16.1	●	2	
<b>240-32-17-L</b>	2	40	32	250	57	16.1	x	2	
<b>340-W32-17</b>	3	40	32	110	40	16.1	x	1	
<b>340-32-17-L</b>	3	40	32	200	54	16.1	x	2	
<b>440-W32-17-C</b>	4	40	32	115	45	16.1	●	1	
<b>440-32-17-L</b>	4	40	32	200	57	16.1	x	2	

► Cutter body for 'APKT 17' insert with corner radius more than 1.6mm should be modified accordingly  
body "RE"=Insert "RE"-0.8mm

## Spare parts

Designation	Screw	Wrench			
	<b>TE90AP-17 (Ø20-Ø25)</b>	TS 40085I/HG	TD 15		
<b>TE90AP-17 (Ø26-Ø63)</b>	TS 40093I/HG	TD 15			









# TE90AN-11/16



## End mills

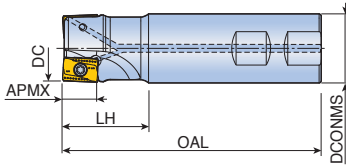
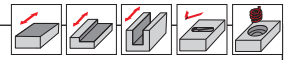


Fig.1

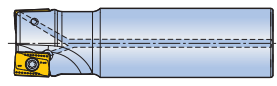


Fig.2



Designation		Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>TE90AN 225-24-11-L</b>	2	25	24	200	40	11.0	●	2	ANM(H)X 1106... E258
<b>225-W25-11</b>	2	25	25	100	40	11.0	●	1	
<b>225-25-11-L</b>	2	25	25	200	40	11.0	●	2	
<b>226-25-11-L</b>	2	26	25	200	40	11.0	●	2	
<b>332-W32-11</b>	3	32	32	110	40	11.0	●	1	
<b>332-32-11-L</b>	3	32	32	200	40	11.0	●	2	
<b>233-32-11-L</b>	2	33	32	250	40	11.0	●	2	
<b>333-32-11-L</b>	3	33	32	200	40	11.0	●	2	
<b>340-32-11-L</b>	3	40	32	250	40	11.0	●	2	
<b>440-W32-11</b>	4	40	32	115	40	11.0	●	1	
<b>440-32-11-L</b>	4	40	32	200	40	11.0	●	2	
<b>TE90AN 232-W32-16</b>	2	32	32	110	30	15.0	●	1	ANM(H)X 1607... E258
<b>232-32-16</b>	2	32	32	150	45	15.0	●	2	
<b>232-32-16-L250</b>	2	32	32	250	40	15.0	●	2	
<b>233-32-16-L200</b>	2	33	32	200	55	15.0	●	2	
<b>340-W32-16</b>	3	40	32	115	35	15.0	●	1	
<b>340-32-16</b>	3	40	32	150	45	15.0	●	2	
<b>340-32-16-L250</b>	3	40	32	250	45	15.0	●	2	
<b>450-32-16</b>	4	50	32	150	50	15.0	●	2	

## Spare parts

Designation	Screw	Wrench			
<b>TE90AN-11</b>	TS 35A088I/HG	TD 10P			
<b>TE90AN-16</b>	TS 40120I	TD 15			

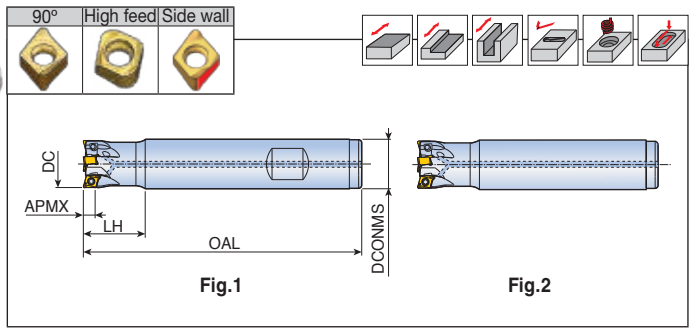
 E312-E315	 E318	 E367
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# 4N TE90-04



End mills



Designation	Flutes	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>4N TE90-108-08-04</b>	1	8	8	80	17	3.5	●	2	4NKT 0402... E252-E253
<b>210-10-04</b>	2	10	10	80	17	3.5	●	2	
<b>210-10-04-L55</b>	2	10	10	55	12	3.5	●	2	
<b>211-10-04</b>	2	11	10	80	17	3.5	●	2	
<b>212-12-04</b>	2	12	12	80	18	3.5	●	2	
<b>312-12-04</b>	3	12	12	80	18	3.5	●	2	
<b>312-12-04-L60</b>	3	12	12	60	14	3.5	●	2	
<b>313-12-04</b>	3	13	12	90	20	3.5	●	2	
<b>316-16-04</b>	3	16	16	90	20	3.5	●	2	
<b>416-W16-04</b>	4	16	16	90	20	3.5	●	1	
<b>416-W16-04-L68</b>	4	16	16	68	18	3.5	●	1	
<b>417-16-04</b>	4	17	16	90	20	3.5	●	2	
<b>420-20-04-L</b>	4	20	20	160	25	3.5	●	2	
<b>520-W20-04</b>	5	20	20	105	25	3.5	●	1	
<b>520-W20-04-L75</b>	5	20	20	75	22	3.5	●	1	
<b>725-W25-04</b>	7	25	25	120	30	3.5	●	1	
<b>832-W25-04</b>	8	32	25	130	35	3.5	●	1	
<b>1040-W32-04</b>	10	40	32	140	40	3.5	●	1	

▶ Cutter body for '4NKT 040212R-HF' insert should be modified with body corner radius 1.2 mm

## Spare parts

Designation	Screw	Wrench			
	<b>4N TE90-04</b>	TS 18041I/HG	TD 6P		

Cutting Condition E312-E315	Torque E318	Ramping Data E338-E359
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# 4N TE90-M(S)-04



## Modular heads

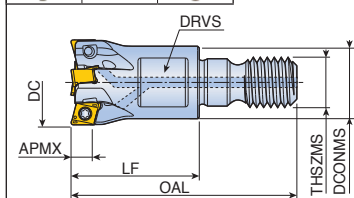
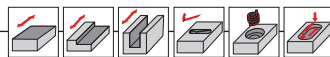


Fig.1

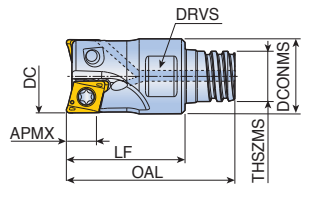


Fig.2



Designation	Z	Dimension (mm)							Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>4N TE90- 210-M06-04</b>	2	10	9.7	17	31.5	M06	3.5	8	●	1	4NKT 0402... E252-E253
<b>211-M06-04</b>	2	11	9.7	17	31.5	M06	3.5	8	●	1	
<b>312-M06-04</b>	3	12	11	17	31.5	M06	3.5	8	●	1	
<b>313-M06-04</b>	3	13	11	17	31.5	M06	3.5	8	●	1	
<b>416-M08-04</b>	4	16	13	23	40.5	M08	3.5	10	●	1	
<b>417-M08-04</b>	4	17	13	23	40.5	M08	3.5	10	●	1	
<b>520-M10-04</b>	5	20	18	23	43	M10	3.5	15	●	1	
<b>725-M12-04</b>	7	25	21	27	49	M12	3.5	17	●	1	
<b>4N TE90- 210-S06-04</b>	2	10	9.6	15	21.3	S06	3.5	8	●	2	
<b>312-S08-04</b>	3	12	11.5	16	23.5	S08	3.5	10	●	2	
<b>416-S10-04</b>	4	16	15.2	20	31.3	S10	3.5	13	●	2	

- ▶ Cutter body for '4NKT 040212R-HF' insert should be modified with body corner radius 1.2 mm
- ▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

## Spare parts

Designation	Screw	Wrench			
	<b>4N TE90-04</b>	TS 180411/HG	TD 6P		

Cutting Condition  
E312-E315

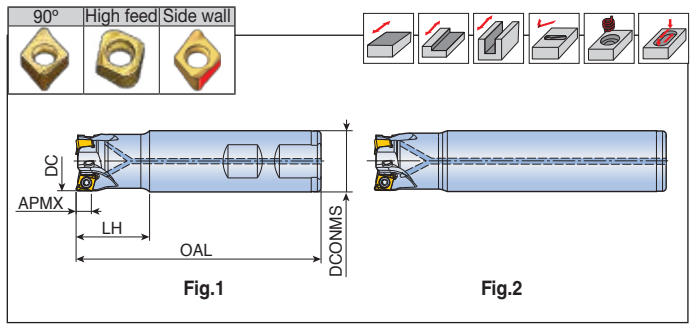
Torque  
E318

Ramping Data  
E338-E359

# 4N TE90-06



## End mills



Designation	Flutes	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>4N TE90-216-15-06-L150</b>	2	16	15	150	25	6.0	●	2	4NK(H)T 0603.....
<b>216-W16-06</b>	2	16	16	90	25	6.0	●	1	E252-E253
<b>216-16-06-L100</b>	2	16	16	100	25	6.0	●	2	
<b>216-16-06-L150</b>	2	16	16	150	25	6.0	●	2	
<b>217-16-06</b>	2	17	16	90	25	6.0	●	2	
<b>217-16-06-L200</b>	2	17	16	200	25	6.0	●	2	
<b>218-W16-06</b>	2	18	16	90	25	6.0	●	1	
<b>218-16-06-L150</b>	2	18	16	150	25	6.0	●	2	
<b>220-19-06-L160</b>	2	20	19	160	25	6.0	●	2	
<b>220-W20-06</b>	2	20	20	90	25	6.0	●	1	
<b>220-20-06-L110</b>	2	20	20	110	25	6.0	●	2	
<b>220-20-06-L160</b>	2	20	20	160	25	6.0	●	2	
<b>320-W20-06</b>	3	20	20	90	25	6.0	●	1	
<b>320-20-06-L110</b>	3	20	20	110	25	6.0	●	2	
<b>221-20-06-L200</b>	2	21	20	200	25	6.0	●	2	
<b>325-W25-06</b>	3	25	25	100	30	6.0	●	1	
<b>325-25-06-L120</b>	3	25	25	120	30	6.0	●	2	
<b>325-25-06-L200</b>	3	25	25	200	30	6.0	●	2	
<b>326-25-06-L200</b>	3	26	25	200	30	6.0	●	2	
<b>425-W25-06</b>	4	25	25	100	30	6.0	●	1	
<b>425-25-06-L120</b>	4	25	25	120	30	6.0	●	2	
<b>432-W32-06</b>	4	32	32	110	35	6.0	●	1	
<b>432-32-06-L130</b>	4	32	32	130	35	6.0	●	2	
<b>432-32-06-L210</b>	4	32	32	210	35	6.0	●	2	
<b>433-32-06-L220</b>	4	33	32	220	35	6.0	●	2	
<b>532-W32-06</b>	5	32	32	110	35	6.0	●	1	
<b>532-32-06-L130</b>	5	32	32	130	35	6.0	●	2	
<b>540-W32-06</b>	5	40	32	110	40	6.0	●	1	
<b>540-32-06-L150</b>	5	40	32	150	40	6.0	●	2	
<b>540-32-06-L250</b>	5	40	32	250	40	6.0	●	2	
<b>640-W32-06</b>	6	40	32	110	35	6.0	●	1	
<b>640-32-06-L150</b>	6	40	32	150	35	6.0	●	2	

Cutting Condition  
E312-E315

Torque  
E318

Ramping Data  
E338-E359

▶ Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm

# 4N TE90-M(S)-06



## Modular heads

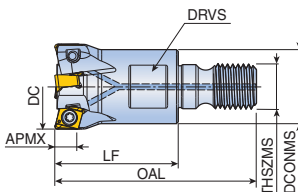
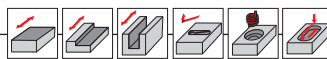


Fig.1

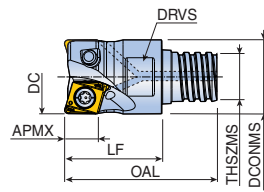


Fig.2



Designation		Dimension (mm)								Coolant hole	Fig.	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS				
<b>4N TE90- 216-M08-06</b>	2	16	13	23	40.5	M08	6.0	10	●	1	4NK(H)T 0603... E252-E253	
<b>217-M08-06</b>	2	17	13	23	40.5	M08	6.0	10	●	1		
<b>220-M10-06</b>	2	20	18	35	55	M10	6.0	15	●	1		
<b>320-M10-06</b>	3	20	18	35	55	M10	6.0	15	●	1		
<b>321-M10-06</b>	3	21	18	35	55	M10	6.0	15	●	1		
<b>325-M12-06</b>	3	25	21	35	57	M12	6.0	17	●	1		
<b>425-M12-06</b>	4	25	21	35	57	M12	6.0	17	●	1		
<b>426-M12-06</b>	4	26	21	35	57	M12	6.0	17	●	1		
<b>432-M16-06</b>	4	32	29	43	68	M16	6.0	25	●	1		
<b>532-M16-06</b>	5	32	29	43	68	M16	6.0	25	●	1		
<b>533-M16-06</b>	5	33	29	43	68	M16	6.0	25	●	1		
<b>535-M16-06</b>	5	35	29	43	68	M16	6.0	25	●	1		
<b>540-M16-06</b>	5	40	29	43	68	M16	6.0	25	●	1		
<b>640-M16-06</b>	6	40	29	43	68	M16	6.0	25	●	1		
<b>642-M16-06</b>	6	42	29	43	68	M16	6.0	25	●	1		
<b>4N TE90- 216-S10-06</b>	2	16	15.2	20	31.3	S10	6.0	8	●	2		

- ▶ Cutter body for '4NKT 060320R-HF' and '4NHT 060320R-F' inserts should be modified with body corner radius 2.0 mm
- ▶ Matched with T-FLEXTEC holder(Fig.1) & MAXI-RUSH holder(Fig.2)

## Spare parts

Designation	Screw	Wrench			
	<b>4N TE90-06</b>	TS 30B068/HG	TD 8		

Cutting Condition  
E312-E315

Torque  
E318

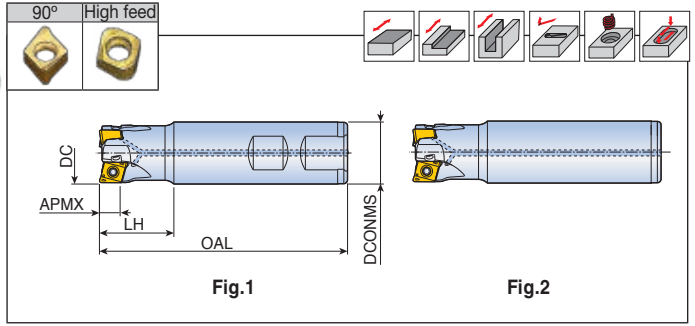
Ramping Data  
E338-E359



# 4N TE90-09/11/14



## End mills



Designation	Flutes	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	OAL	LH	APMX			
<b>4N TE90-220-W20-09</b>	2	20	20	100	30	8.0	●	1	4NK(H)T 0904.. E252-E253
<b>220-20-09-L170</b>	2	20	20	170	30	8.0	●	2	
<b>225-W25-09</b>	2	25	25	100	30	8.0	●	1	
<b>225-25-09-L200</b>	2	25	25	200	40	8.0	●	2	
<b>325-W25-09</b>	3	25	25	100	30	8.0	●	1	
<b>325-25-09-L210</b>	3	25	25	210	30	8.0	●	2	
<b>226-25-09-L200</b>	2	26	25	200	40	8.0	●	2	
<b>332-W32-09</b>	3	32	32	110	40	8.0	●	1	
<b>332-32-09-L250</b>	3	32	32	250	40	8.0	●	2	
<b>333-32-09-L250</b>	3	33	32	250	40	8.0	●	2	
<b>432-W25-09</b>	4	32	25	130	35	8.0	●	1	
<b>432-25-09-L200</b>	4	32	25	200	40	8.0	●	2	
<b>432-W32-09</b>	4	32	32	110	40	8.0	●	1	
<b>440-W32-09</b>	4	40	32	115	40	8.0	●	1	
<b>440-32-09-L250</b>	4	40	32	250	40	8.0	●	2	
<b>540-W32-09</b>	5	40	32	115	40	8.0	●	1	
<b>4N TE90-225-W25-11</b>	2	25	25	100	30	10.5	●	1	4NKT 1106.. E252-E253
<b>225-25-11-L200</b>	2	25	25	200	40	10.5	●	2	
<b>332-W32-11</b>	3	32	32	110	40	10.5	●	1	
<b>440-W32-11</b>	4	40	32	115	40	10.5	●	1	
<b>440-32-11-L200</b>	4	40	32	200	40	10.5	●	2	
<b>4N TE90-232-W32-14</b>	2	32	32	110	40	13.8	●	1	4NKT 1407.. E252-E253
<b>232-32-14</b>	2	32	32	150	45	13.8	●	2	
<b>232-32-14-L250</b>	2	32	32	250	40	13.8	●	2	
<b>340-W32-14</b>	3	40	32	115	40	13.8	●	1	
<b>340-32-14</b>	3	40	32	115	40	13.8	●	2	

Cutting Condition  
E312-E315

Torque  
E318

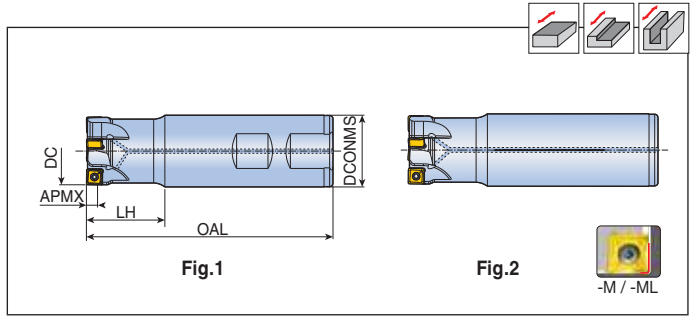
Ramping Data  
E338-E359

- ▶ Cutter body for '4NKT 090432R-HF' insert should be modified with body corner radius 3.2mm
- ▶ Cutter body for '4NKT 110640R-HF' insert should be modified with body corner radius 4.0 mm
- ▶ Cutter body for '4NKT 140750R-HF' insert should be modified with body corner radius 5.0 mm



# 8D-TE90-07

## End mills



Designation	Z	Dimension (mm)					Coolant hole	Fig.	Insert
		DC	DCONMS	LH	OAL	APMX			
<b>8D-TE90- 216-W16-07</b>	2	16	16	20	90	5.0	●	1	SQKU 0703... E297
<b>216-16-07-L110</b>	2	16	16	20	110	5.0	●	2	
<b>217-16-07-L110</b>	2	17	16	20	110	5.0	●	2	
<b>220-W20-07</b>	2	20	20	25	90	5.0	●	1	
<b>220-20-07-L160</b>	2	20	20	25	160	5.0	●	2	
<b>320-W20-07</b>	3	20	20	25	90	5.0	●	1	
<b>221-20-07-L160</b>	2	21	20	25	160	5.0	●	2	
<b>325-W25-07</b>	3	25	25	30	100	5.0	●	1	
<b>325-25-07-L160</b>	3	25	25	30	160	5.0	●	2	
<b>425-W25-07</b>	4	25	25	30	100	5.0	●	1	
<b>326-25-07-L160</b>	3	26	25	30	160	5.0	●	2	
<b>432-W32-07</b>	4	32	32	35	110	5.0	●	1	
<b>432-32-07-L200</b>	4	32	32	35	200	5.0	●	2	
<b>632-W32-07</b>	6	32	32	35	110	5.0	●	1	
<b>433-32-07-L200</b>	4	33	32	35	200	5.0	●	2	
<b>540-W32-07</b>	5	40	32	40	110	5.0	●	1	
<b>840-W32-07</b>	8	40	32	40	110	5.0	●	1	

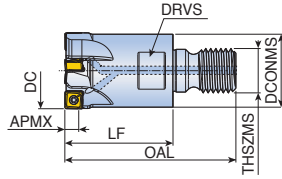
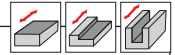
## Spare parts

Designation	Screw	Wrench			
	<b>8D-TE90-07</b>	TS 25D060/HG-P	TD 7P		



# 8D-TE90-M-07

## Modular heads



Designation		Dimension (mm)							Coolant hole	Insert
		DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS		
<b>8D-TE90-216-M08-07</b>	2	16	14	23	40.5	M08	5.0	10	●	SQKU 0703...
<b>320-M10-07</b>	3	20	18	30	50	M10	5.0	15	●	E297
<b>325-M12-07</b>	3	25	22	35	57	M12	5.0	17	●	
<b>432-M16-07</b>	4	32	29	43	68	M16	5.0	25	●	
<b>540-M16-07</b>	5	40	29	43	68	M16	5.0	25	●	

► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
	<b>8D-TE90-M-07</b>	TS 25D060/HG-P	TD 7P		





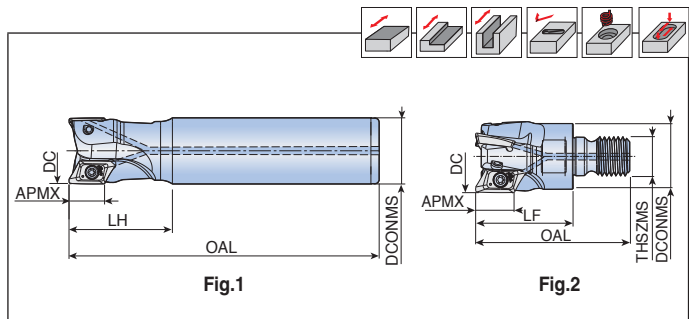




# TE90XEV-16/22



## End mills & Modular heads



Designation		Dimension (mm)							Coolant hole	Fig.	Max RPM	Insert
		DC	DCONMS	OAL	THSZMS	LF	LH	APMX				
<b>TE90XEV 225-25-16</b>	2	25	25	125	-	-	55	16	●	1	52,000	XEVT 1605... 305
<b>225-25-16-L170</b>	2	25	25	170	-	-	70	16	●	1	52,000	
<b>232-32-16</b>	2	32	32	150	-	-	50	16	●	1	46,000	
<b>232-32-16-L200</b>	2	32	32	200	-	-	80	16	●	1	46,000	
<b>332-32-16</b>	3	32	32	150	-	-	50	16	●	1	46,000	
<b>332-32-16-L200</b>	3	32	32	200	-	-	80	16	●	1	46,000	
<b>340-32-16</b>	3	40	32	170	-	-	55	16	●	1	41,200	
<b>340-32-16-L250</b>	3	40	32	250	-	-	55	16	●	1	41,200	
<b>TE90XEV 225-M12-16</b>	2	25	21	65	M12	43	-	16	●	2	52,000	XEVT 2206... E305
<b>232-M16-16</b>	2	32	29	68	M16	43	-	16	●	2	46,000	
<b>332-M16-16</b>	3	32	29	68	M16	43	-	16	●	2	46,000	
<b>340-M16-16</b>	3	40	29	68	M16	43	-	16	●	2	41,200	
<b>TE90XEV 232-32-22</b>	2	32	32	160	-	-	100	21	●	1	37,500	
<b>340-40-22</b>	3	40	40	160	-	-	80	21	●	1	35,100	

- ▶ Matched with T-FLEXTEC holder(Fig.2)
- ▶ Cutter body for inserts with corner radii more than 3.2mm (XEVT 16) and 3.0mm (XEVT 22) should be modified as follows: body "RE"=insert "RE"-0.3mm

## Spare parts

Designation	Screw	Wrench			
<b>TE90XEV-16 (Ø25)</b>	TS 40085I/HG	T-T 15			
<b>TE90XEV-16 (Ø32)</b>	TS 40093I/HG	T-T 15			
<b>TE90XEV-22 (Ø32)</b>	TS 50105I	T-T 20			
<b>TE90XEV-22 (Ø40)</b>	TS 50115I	T-T 20			

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E368-E372
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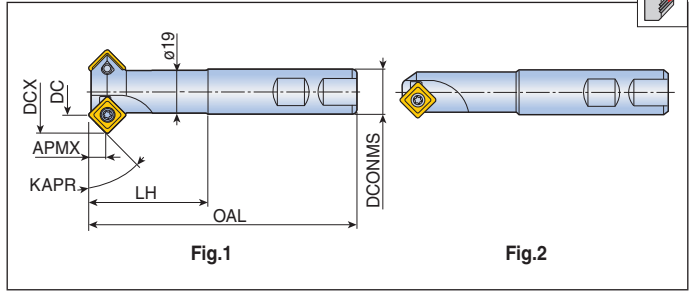




# TCF-11



## End mills



Designation	Flutes	Dimension (mm)							Fig.	Application range(mm)	Insert
		KAPR	DCX	DC	DCONMS	OAL	LH	APMX			
<b>TCF 15 D25-11</b>	2	75°	30.5	25	20	120	40	10.1	1	Ø26.3-Ø30.0	SPMT(G) 1104...EM E295
<b>30 D25-11</b>	2	60°	35.5	25	20	120	40	8.9	1	Ø26.3-Ø34.0	
<b>45 D07-11</b>	1	45°	21.5	7	20	120	40	7.2	2	Ø8.3-Ø20.9	
<b>45 D19-11</b>	2	45°	33.4	19	20	120	40	7.2	1	Ø20.3-Ø32.9	
<b>45 D25-11</b>	3	45°	39.4	25	20	120	40	7.2	1	Ø26.3-Ø38.9	

## Spare parts

Designation	Screw	Wrench			
	<b>TCF-11</b>	TS 40093I	TD 15		

Cutting Condition E312-E315	Torque E318
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## End mills

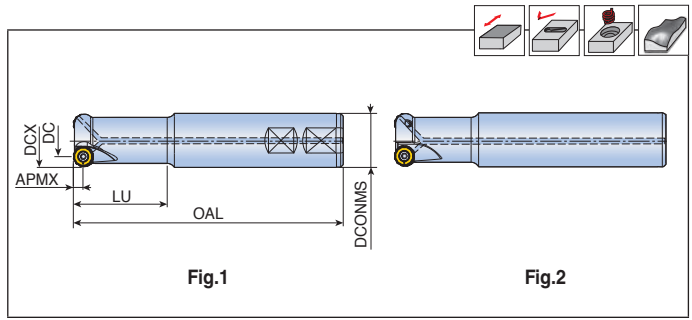
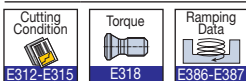


Fig.1

Fig.2

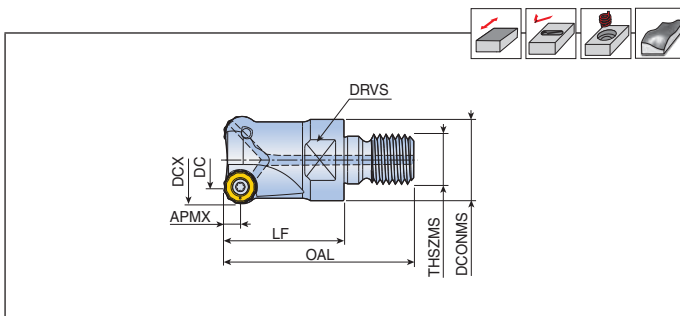
Designation		Dimension (mm)							Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	LU	APMX				
<b>TERNS 225-25-10-L160</b>	2	25	15	25	160	60	5.0	●	2	RNMU 1004... E284	
<b>225-32-10-L250</b>	2	25	15	32	250	40	5.0	●	2		
<b>325-25-10-L160</b>	3	25	15	25	160	60	5.0	●	2		
<b>226-25-10-L200</b>	2	26	16	25	200	80	5.0	●	2		
<b>332-32-10-L180</b>	3	32	22	32	180	70	5.0	●	2		
<b>332-32-10-L250</b>	3	32	22	32	250	100	5.0	●	2		
<b>432-32-10-L180</b>	4	32	22	32	180	70	5.0	●	2		
<b>432-32-10-L250</b>	4	32	22	32	250	100	5.0	●	2		
<b>433-32-10-L200</b>	4	33	23	32	200	80	5.0	●	2		
<b>433-32-10-L250</b>	4	33	23	32	250	100	5.0	●	2		
<b>TERNS 232-32-12-L150</b>	2	32	20	32	150	50	6.0	●	2	RNMU 1205... E284	
<b>232-32-12-L200</b>	2	32	20	32	200	60	6.0	●	2		
<b>232-32-12-L</b>	2	32	20	32	250	50	6.0	●	2		
<b>332-W32-12</b>	3	32	20	32	160	60	6.0	●	1		
<b>332-32-12-L200</b>	3	32	20	32	200	70	6.0	●	2		
<b>332-32-12-L250</b>	3	32	20	32	250	60	6.0	●	2		
<b>233-32-12-L200</b>	2	33	21	32	200	50	6.0	●	2		
<b>233-32-12-L250</b>	2	33	21	32	250	50	6.0	●	2		
<b>333-32-12-L200</b>	3	33	21	32	200	70	6.0	●	2		
<b>333-32-12-L250</b>	3	33	21	32	250	60	6.0	●	2		
<b>340-W32-12</b>	3	40	28	32	160	50	6.0	●	1		
<b>340-32-12-L250</b>	3	40	28	32	250	50	6.0	●	2		
<b>440-W32-12</b>	4	40	28	32	160	50	6.0	●	1		
<b>440-32-12-L250</b>	4	40	28	32	250	60	6.0	●	2		
<b>450-32-12-L200</b>	4	50	38	32	200	70	6.0	●	2		
<b>550-32-12-L250</b>	5	50	38	32	250	60	6.0	●	2		
<b>TERNS 240-W32-16-L160</b>	2	40	24	32	160	50	6.0	●	1	RNMU 1606... E284	
<b>240-32-16-L180</b>	2	40	24	32	180	70	8.0	●	2		
<b>240-32-16-L250</b>	2	40	24	32	250	100	8.0	●	2		
<b>340-32-16-L180</b>	3	40	24	32	180	70	8.0	●	2		
<b>340-32-16-L250</b>	3	40	24	32	250	100	8.0	●	2		



# TERNS-M



## Modular heads



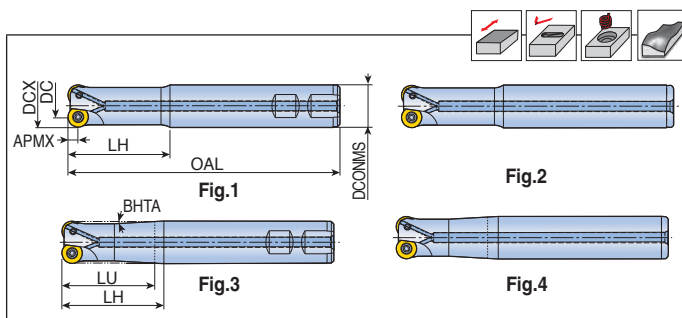
Designation		Dimension (mm)									Coolant hole	Insert
		DCGX	DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>TERNS 225-M12-10</b>	2	25	15	21	35	57	M12	5.0	17	●	RNMU 1004...	
<b>325-M12-10</b>	3	25	15	21	35	57	M12	5.0	17	●	E284	
<b>432-M16-10</b>	4	32	22	29	43	68	M16	5.0	25	●		
<b>542-M16-10</b>	5	42	32	29	43	68	M16	5.0	25	●		
<b>TERNS 232-M16-12</b>	2	32	20	29	43	68	M16	6.0	25	●	RNMU 1205...	
<b>332-M16-12</b>	3	32	20	29	43	68	M16	6.0	25	●	E284	
<b>233-M16-12</b>	2	33	21	29	43	68	M16	6.0	25	●		
<b>333-M16-12</b>	3	33	21	29	43	68	M16	6.0	25	●		
<b>340-M16-12</b>	3	40	28	29	43	68	M16	6.0	25	●		
<b>440-M16-12</b>	4	40	28	29	43	68	M16	6.0	25	●		
<b>TERNS 240-M16-16</b>	2	40	24	29	43	68	M16	8.0	25	●	RNMU 1606...	
<b>340-M16-16</b>	3	40	24	29	43	68	M16	8.0	25	●	E284	

▶ Matched with T-FLEXTEC holder

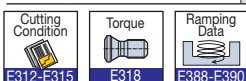
## Spare parts

Designation	Screw	Wrench			
<b>TERNS-10</b>	TS 35085I/HG	TD 15	-		
<b>TERNS-12</b>	TS 40G110I	-	T-T15		
<b>TERNS-16</b>	TS 50A121I/HG	TD 20	-		

 E312-E315	 E318	 E386-E387
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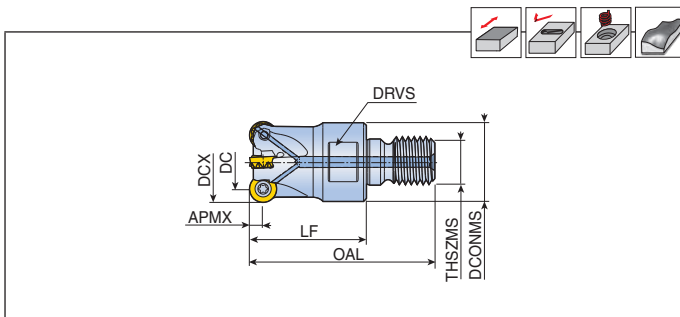
Designation	Z	Dimension (mm)								Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	LU	LH	BHTA	APMX			
<b>TERY 216-W20-08-L</b>	2	16	8	20	110	45	55	4.1°	4.0	●	3	RYM(H)X 0803...
<b>217-16-08-L130</b>	2	17	9	16	130	-	30	-	4.0	●	2	E285-E286
<b>218-16-08-L150</b>	2	18	10	16	150	-	30	-	4.0	●	2	
<b>320-W20-08</b>	3	20	12	20	150	-	43	-	4.0	●	1	
<b>320-20-08-L110</b>	3	20	12	20	110	-	60	-	4.0	●	2	
<b>321-20-08-L150</b>	3	21	13	20	150	-	40	-	4.0	●	2	
<b>425-W25-08</b>	4	25	17	25	150	-	43	-	4.0	●	1	
<b>426-25-08-L150</b>	4	26	18	25	150	-	40	-	4.0	●	2	
<b>532-W32-08</b>	5	32	24	32	160	-	60	-	4.0	●	1	
<b>TERY 220-W20-10</b>	2	20	10	20	160	-	60	-	5.0	●	1	RYM(H)X 1004...
<b>220-25-10-L</b>	2	20	10	25	250	60	80	3.5°	5.0	●	4	E285-E286
<b>221-20-10-L200</b>	2	21	11	20	200	-	30	-	5.0	●	2	
<b>225-32-10-L</b>	2	25	15	32	250	53	80	5.0°	5.0	●	4	
<b>225-W25-10</b>	2	25	15	25	160	-	60	-	5.0	●	1	
<b>325-W25-10</b>	3	25	15	25	160	-	60	-	5.0	●	1	
<b>226-25-10-L200</b>	2	26	16	25	200	-	30	-	5.0	●	2	
<b>326-25-10-L200</b>	3	26	16	25	200	-	60	-	5.0	●	2	
<b>432-W32-10</b>	4	32	22	32	160	-	60	-	5.0	●	1	
<b>TERY 225-W25-12</b>	2	25	13	25	160	-	60	-	6.0	●	1	RYM(H)X 1205...
<b>226-25-12-L200</b>	2	26	14	25	200	-	60	-	6.0	●	2	E285-E286
<b>232-32-12-L</b>	2	32	20	32	250	-	50	-	6.0	●	2	
<b>332-W32-12</b>	3	32	20	32	160	-	64	-	6.0	●	1	
<b>332-W32-12-S</b>	3	32	20	32	105	-	35	-	6.0	●	1	
<b>233-32-12-L250</b>	2	33	21	32	250	-	40	-	6.0	●	2	
<b>333-32-12-L200</b>	3	33	21	32	200	-	60	-	6.0	●	2	
<b>340-W32-12</b>	3	40	28	32	160	-	50	-	6.0	●	1	
<b>340-W32-12-S</b>	3	40	28	32	105	-	35	-	6.0	●	1	
<b>340-32-12-L250</b>	3	40	28	32	250	-	50	-	6.0	●	2	
<b>440-W32-12</b>	4	40	28	32	150	-	35	-	6.0	●	1	
<b>440-W32-12-S</b>	4	40	28	32	105	-	35	-	6.0	●	1	
<b>TERY 240-W32-16</b>	2	40	24	32	160	-	50	-	8.0	●	1	RYM(H)X 1606...
<b>340-32-16-L250</b>	3	40	24	32	250	-	50	-	8.0	●	2	E285-E286
<b>TERY 350-32-20</b>	3	50	30	32	160	-	50	-	10.0	●	2	RYM(H)X 2007...
<b>350-40-20</b>	3	50	30	40	200	-	60	-	10.0	●	2	E285-E286



# TERY-M-08/10



## Modular heads



Designation	⊕	Dimension (mm)								Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS		
<b>TERY 216-M08-08</b>	2	16	8	13	23	40.5	M08	4.0	10	●	RYM(H)X 0803... E285-E286
<b>218-M08-08</b>	2	18	10	13	23	40.5	M08	4.0	10	●	
<b>220-M10-08</b>	2	20	12	18	30	50	M10	4.0	15	●	
<b>320-M10-08</b>	3	20	12	18	30	50	M10	4.0	15	●	
<b>425-M12-08</b>	4	25	17	21	35	57	M12	4.0	17	●	
<b>530-M16-08</b>	5	30	22	29	43	68	M16	4.0	25	●	
<b>532-M16-08</b>	5	32	24	29	43	68	M16	4.0	25	●	
<b>540-M16-08</b>	5	40	32	29	43	68	M16	4.0	25	●	
<b>640-M16-08</b>	6	40	32	29	43	68	M16	4.0	25	●	
<b>TERY 220-M10-10</b>	2	20	10	18	30	50	M10	5.0	15	●	RYM(H)X 1004... E285-E286
<b>225-M12-10</b>	2	25	15	21	35	57	M12	5.0	17	●	
<b>325-M12-10</b>	3	25	15	21	35	57	M12	5.0	17	●	
<b>430-M16-10</b>	4	30	20	29	43	68	M16	5.0	25	●	
<b>432-M16-10</b>	4	32	22	29	43	68	M16	5.0	25	●	
<b>435-M16-10</b>	4	35	25	29	43	68	M16	5.0	25	●	
<b>542-M16-10</b>	5	42	32	29	43	68	M16	5.0	25	●	
<b>642-M16-10</b>	6	42	32	29	43	68	M16	5.0	25	●	

▶ Matched with T-FLEXTEC holder

## Spare parts

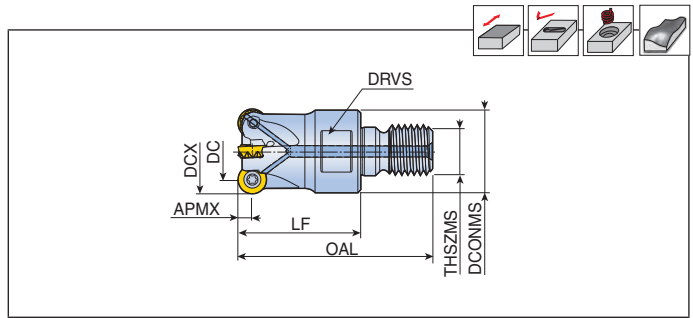
Designation	Screw	Wrench			
	<b>TERY-08</b>	TS 30A060I/HG	TD 9		
<b>TERY-10</b>	TS 35070I/HG(UnderØ21), TS 35085I/HG	TD 15			
<b>TERY-12</b>	TS 40093I	TD 15			
<b>TERY-16</b>	TS 50115I	TD 20			

Cutting Condition E312-E315	Torque E318	Ramping Data E388-E390
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# TERY-M-12/16



## Modular heads



Designation		Dimension (mm)									Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>TERY 225-M12-12</b>	2	25	13	21	35	57	M12	6.0	17	●	RYM(H)X 1205... E285-E286	
<b>232-M16-12</b>	2	32	20	29	43	68	M16	6.0	25	●		
<b>332-M16-12</b>	3	32	20	29	43	68	M16	6.0	25	●		
<b>335-M16-12</b>	3	35	23	29	43	68	M16	6.0	25	●		
<b>340-M16-12</b>	3	40	28	29	43	68	M16	6.0	25	●		
<b>440-M16-12</b>	4	40	28	29	43	68	M16	6.0	25	●		
<b>442-M16-12</b>	4	42	30	29	43	68	M16	6.0	25	●		
<b>TERY 232-M16-16</b>	2	32	16	29	43	68	M16	8.0	25	●	RYM(H)X 1606... E285-E286	
<b>240-M16-16</b>	2	40	24	29	43	68	M16	8.0	25	●		
<b>342-M16-16</b>	3	42	26	29	43	68	M16	8.0	25	●		

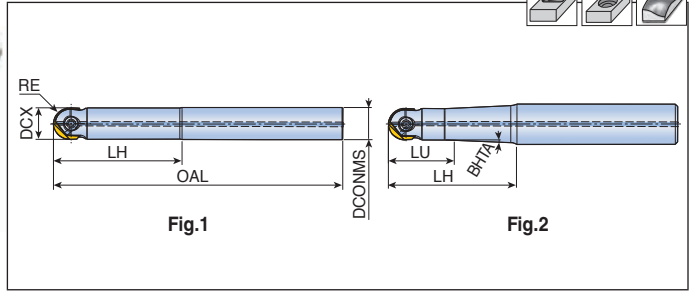
► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>TERY-12</b>	TS 40093I	TD 15			
<b>TERY-16</b>	TS 50115I	TD 20			

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E388-E390
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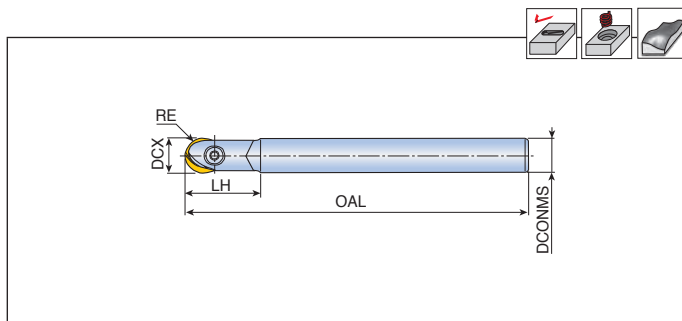
## End mills



Designation	Dimension (mm)							Coolant hole	Fig.	Insert
	DCX	RE	DCONMS	OAL	LH	LU	BHTA			
<b>TNF 060-10M</b>	6	3	10	80	30	15	7.5°	●	2	NFB 060... NFR 060A...
<b>060-30-L80</b>	6	3	10	80	30	-	-	●	1	NFR 060A...
<b>080-08S</b>	8	4	8	90	20	-	-	●	1	NFB 080...
<b>080-12S</b>	8	4	12	100	20	10	9.5°	●	2	NFR 080A...
<b>080-12M</b>	8	4	12	130	50	10	3°	●	2	NFCB 080...
<b>100-10S</b>	10	5	10	90	30	-	-	●	1	NFB 100...
<b>100-12S</b>	10	5	12	110	25	15	5°	●	2	NFR 100A... NFR 110A...
<b>100-16M</b>	10	5	16	130	60	15	3.5°	●	2	NFCB 100...
<b>120-12S</b>	12	6	12	110	30	-	-	●	1	NFB 120...
<b>120-12M</b>	12	6	12	180	60	-	-	●	1	NFR 120A...
<b>120-16M</b>	12	6	16	140	60	25	2.4°	●	2	NFR 130A... NFL(C)B 120...
<b>120-20L</b>	12	6	20	180	80	40	5°	●	2	NFL(C)B 120...
<b>160-16M</b>	16	8	16	130	40	-	-	●	1	NFB 160...
<b>160-16L</b>	16	8	16	200	100	-	-	●	1	NFR 160A...
<b>160-20M</b>	16	8	20	160	60	25	2.5°	●	2	NFR 170A...
<b>160-25L</b>	16	8	25	220	100	55	5°	●	2	NFL(C)B 160...
<b>200-20S</b>	20	10	20	110	40	-	-	●	1	NFB 200...
<b>200-20M</b>	20	10	20	150	50	-	-	●	1	NFR 200A...
<b>200-20L</b>	20	10	20	220	70	-	-	●	1	NFR 210A... NFL(C)B 210...
<b>200-25M</b>	20	10	25	180	80	40	2.5°	●	2	NFL(C)B 210...
<b>200-25L</b>	20	10	25	220	110	45	1.5°	●	2	NFL(C)B 210...
<b>250-25S</b>	25	12.5	25	125	40	-	-	●	1	NFB 250...
<b>250-25M</b>	25	12.5	25	170	70	-	-	●	1	NFR 250A...
<b>250-32M</b>	25	12.5	32	200	90	32	3°	●	2	NFR 260A... NFL(C)B 250...
<b>250-32L</b>	25	12.5	32	250	130	40	1.5°	●	2	NFL(C)B 250...
<b>300-32S</b>	30	15	32	140	55	-	-	●	1	NFB 300...
<b>300-32M</b>	30	15	32	190	75	-	-	●	1	NFB 320...
<b>300-32L</b>	30	15	32	250	100	65	1°	●	2	NFR 300A...
<b>300-32XL</b>	30	15	32	300	150	-	-	●	1	NFR 320A... NFL(C)B 300...
<b>300-32-L220</b>	30	15	32	220	100	55	1°	●	2	NFL(C)B 300...
<b>320-32L</b>	32	16	32	250	60	-	-	●	1	NFB 320... NFR 320A...
										E278-E281



## End mills-carbide shank

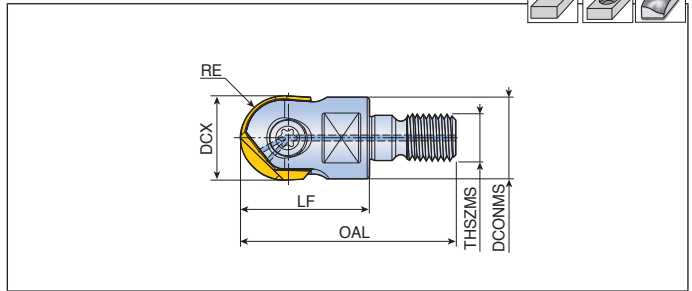


Designation	Dimension (mm)					Insert
	DCX	RE	DCONMS	OAL	LH	
<b>TNF 060-06-CT-L60</b>	6	3	6	60	15	NFB 060...
<b>060-06-CT-L80</b>	6	3	6	80	20	NFR 060A...
<b>060-06-CT-L92</b>	6	3	6	92	35	
<b>060-06-CT-L120</b>	6	3	6	120	65	
<b>060-06-CT-L140</b>	6	3	6	140	25	
<b>080-08-CT-L100</b>	8	4	8	100	30	NFB 080...
<b>080-10-CT-L140</b>	8	4	10	140	75	NFR 080A...
<b>080-08-CT-L160</b>	8	4	8	160	80	NFCB 080...
<b>100-10-CT-L100</b>	10	5	10	100	35	NFB 100...
<b>100-10-CT-L140</b>	10	5	10	140	75	NFR 100A...
<b>100-10-CT-L200</b>	10	5	10	200	70	NFR 110A...
<b>100-10-CT-L220</b>	10	5	10	220	140	NFCB 110...
<b>120-12-CT-L120</b>	12	6	12	120	50	NFB 120...
<b>120-12-CT-L160-S</b>	12	6	12	160	30	NFR 120A...
<b>120-12-CT-L160</b>	12	6	12	160	90	NFR 130A...
<b>120-12-CT-L200</b>	12	6	12	200	70	NFL(C)B 120...
<b>120-12-CT-L220</b>	12	6	12	220	150	
<b>160-16-CT-L120</b>	16	8	16	120	60	NFB 160...
<b>160-16-CT-L160-S</b>	16	8	16	160	70	NFR 160A...
<b>160-16-CT-L160</b>	16	8	16	160	80	NFR 170A...
<b>160-16-CT-L200</b>	16	8	16	200	70	NFL(C)B 160...
<b>160-16-CT-L220</b>	16	8	16	220	150	
<b>200-20-CT-L200</b>	20	10	20	200	70	NFB 200...
<b>200-20-CT-L110</b>	20	10	20	110	40	NFR 200A...
<b>200-20-CT-L220</b>	20	10	20	220	120	NFR 210A...
<b>200-20-CT-L300</b>	20	10	20	300	220	NFL(C)B 200...
<b>250-25-CT-L200</b>	25	12.5	25	200	70	NFB 250...
<b>250-25-CT-L220-S</b>	25	12.5	25	220	80	NFR 250A...
<b>250-25-CT-L220</b>	25	12.5	25	220	120	NFR 260A...
<b>250-25-CT-L300</b>	25	12.5	25	300	220	NFL(C)B 250...
<b>300-32-CT-L200</b>	30	15	32	200	70	NFB 300...
<b>300-32-CT-L250-S</b>	30	15	32	250	80	NFB 320...
<b>300-32-CT-L250</b>	30	15	32	250	150	NFR 300A...
<b>300-32-CT-L350-S</b>	30	15	32	350	80	NFR 320A...
<b>300-32-CT-L350</b>	30	15	32	350	230	NFL(C)B 300...
<b>320-32-CT-L300</b>	32	16	32	300	220	E278-E281
						NFB 320...
						NFR 320A...





## Modular heads

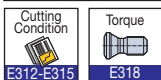


Designation	Dimension (mm)						Coolant hole	Insert
	DCX	RE	DCONMS	OAL	LF	THSZMS		
<b>TNF 100-M06</b>	10	5	9.7	34.5	20	M06	●	NFB 100... NFR 100A... NFR 110A... NFCB 100...
<b>120-M06</b>	12	6	11.5	37.5	23	M06	●	NFB 120... NFR 120A...
<b>120-M08</b>	12	6	13	40.5	23	M08	●	NFR 130A... NFL(C)B 120...
<b>160-M08</b>	16	8	13	47.5	30	M08	●	NFB 160... NFR 160A... NFR 170A... NFL(C)B 160...
<b>200-M10</b>	20	10	19	50	30	M10	●	NFB 200... NFR 200A... NFR 210A... NFL(C)B 200...
<b>250-M12</b>	25	12.5	24	57	35	M12	●	NFB 250...
<b>250-M16</b>	25	12.5	29	68	43	M16	●	NFR 250A... NFR 260A... NFL(C)B 250...
<b>300-M16</b>	30	15	29	68	43	M16	●	NFB 300... NFB 320... NFR 300A...NFR 320A... NFL(C)B 300...
<b>320-M16</b>	32	16	29.5	68	43	M16	●	NFB 320... NFR 320A... E278-E281

► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			Wrench handle
<b>TNF 060</b>	TS 20F060A	TD 6	-	-	-
<b>TNF 080</b>	TS 25F080A	TD 8	-	-	-
<b>TNF 100</b>	TS 30F100A	TD 10	-	-	-
<b>TNF 120</b>	TS 40F120A	TD 15	-	-	-
<b>TNF 160</b>	TS 50F160A	-	T-T20	-	-
<b>TNF 200</b>	TS 60F200A	-	-	BLD T25/M7	SW6-T
<b>TNF 250</b>	TS 70F250A	-	-	BLD T25/M7	SW6-T
<b>TNF 300, TNF 320</b>	TS 80F300A	-	T-T30	-	-



## End mills

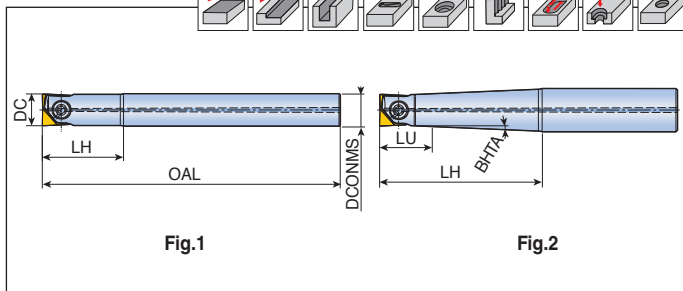
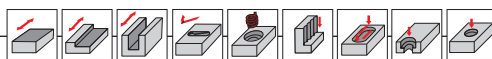


Fig.1

Fig.2

Designation	Dimension (mm)						Coolant hole	Fig.	Insert
	DC	DCONMS	OAL	LH	LU	BHTA			
<b>TNFR 060-10M</b>	6	10	80	30	15	9°	●	2	NFR 060A...
<b>080-12S</b>	8	12	100	22	10	9°	●	2	NFR 080A...
<b>080-12M</b>	8	12	130	50	10	2.8°	●	2	
<b>100-12S</b>	10	12	110	25	15	5°	●	2	NFR 100A...
<b>100-16M</b>	10	16	150	50	15	3.5°	●	2	NFR 110A...
<b>120-12S</b>	12	12	110	30	-	-	●	1	NFR 120A...
<b>120-16M</b>	12	16	160	60	18	2.5°	●	2	NFR 130A...
<b>160-16S</b>	16	16	130	50	-	-	●	1	NFR 160A...
<b>160-16M</b>	16	16	170	70	-	-	●	1	NFR 170A...
<b>160-16L</b>	16	16	200	100	-	-	●	1	
<b>200-20S</b>	20	20	140	60	-	-	●	1	NFR 200A...
<b>200-20M</b>	20	20	180	80	-	-	●	1	NFR 210A...
<b>200-20L</b>	20	20	250	120	-	-	●	1	
<b>250-25S</b>	25	25	150	70	-	-	●	1	NFR 250A...
<b>250-25M</b>	25	25	200	100	-	-	●	1	NFR 260A...
<b>250-25L</b>	25	25	250	120	-	-	●	1	
<b>300-32S</b>	30	32	140	55	-	-	●	1	NFR 300A
<b>300-32M</b>	30	32	190	75	-	-	●	1	NFR 320A
<b>300-32L</b>	30	32	250	100	65	1°	●	2	
<b>320-32L</b>	32	32	250	60	-	-	●	1	NFR 320A
									E280-E281

## Spare parts

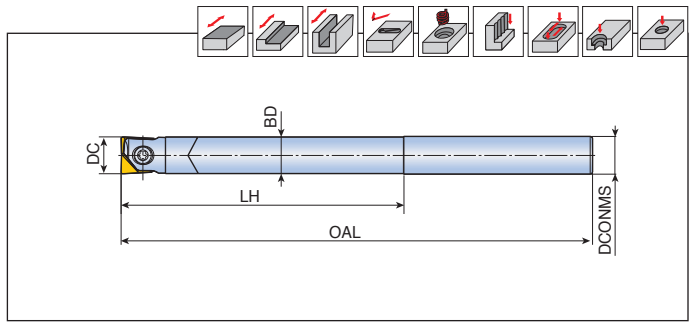
Designation	Screw	Wrench			Wrench handle
<b>TNFR 060</b>	TS 20F060A	TD 6	-	-	-
<b>TNFR 080</b>	TS 25F080A	TD 8	-	-	-
<b>TNFR 100</b>	TS 30F100A	TD 10	-	-	-
<b>TNFR 120</b>	TS 40F120A	TD 15	-	-	-
<b>TNFR 160</b>	TS 50F160A	-	T-T20	-	-
<b>TNFR 200</b>	TS 60F200A	-	-	BLD T25/M7	SW6-T
<b>TNFR 250</b>	TS 70F250A	-	-	BLD T25/M7	SW6-T
<b>TNFR 300, TNFR 320</b>	TS 80F300A	-	T-T30	-	-



# TNFR-CT-L



End mills-carbide shank



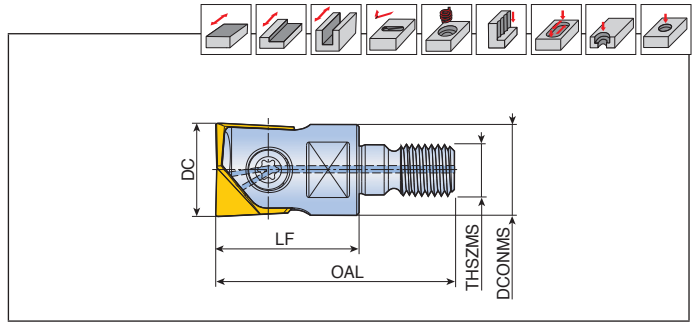
Designation	Dimension (mm)					Insert
	DC	DCONMS	BD	OAL	LH	
<b>TNFR 060-06-CT-L60</b>	6	6	5.8	60	15	NFR 060A...
<b>060-06-CT-L80</b>	6	6	5.8	80	20	
<b>080-08-CT-L140</b>	8	8	7.8	140	75	NFR 080A...
<b>100-10-CT-L140</b>	10	10	9.7	140	75	NFR 100A... NFR 110A...
<b>120-12-CT-L160</b>	12	12	11.7	160	95	NFR 120A... NFR 130A...
<b>160-16-CT-L200</b>	16	16	15.5	200	120	NFR 160A... NFR 170A...
<b>200-20-CT-L250</b>	20	20	19.5	250	160	NFR 200A... NFR 210A...
<b>250-25-CT-L300</b>	25	25	24.5	300	200	NFR 250A... NFR 260A...
<b>300-32-CT-L350</b>	30	32	29.5	350	230	NFR 300A... NFR 320A...
<b>320-32-CT-L350</b>	32	32	31.5	350	230	NFR 320A... E280-E281

## Spare parts

Designation	Screw	Wrench			Wrench handle	
<b>TNFR 060</b>	TS 20F060A	TD 6	-	-	-	
<b>TNFR 080</b>	TS 25F080A	TD 8	-	-	-	
<b>TNFR 100</b>	TS 30F100A	TD 10	-	-	-	
<b>TNFR 120</b>	TS 40F120A	TD 15	-	-	-	
<b>TNFR 160</b>	TS 50F160A	-	T-T20	-	-	
<b>TNFR 200</b>	TS 60F200A	-	-	BLD T25/M7	SW6-T	
<b>TNFR 250</b>	TS 70F250A	-	-	BLD T25/M7	SW6-T	
<b>TNFR 300, TNFR 320</b>	TS 80F300A	-	T-T30	-	-	



## Modular heads



Designation	Dimension (mm)						Coolant hole	Insert
	DC	DCONMS	LF	OAL	THSZMS	DRVS		
<b>TNFR 100-M06</b>	10	9.7	20	34.5	M06	8	●	NFR 100A... NFR 110A...
<b>120-M06</b>	12	11.5	23	37.5	M06	8	●	NFR 120A...
<b>120-M08</b>	12	13	23	40.5	M08	10	●	NFR 130A...
<b>160-M08</b>	16	13	30	47.5	M08	10	●	NFR 160A... NFR 170A...
<b>200-M10</b>	20	19	30	50	M10	15	●	NFR 200A... NFR 210A...
<b>250-M12</b>	25	24	35	57	M12	17	●	NFR 250A... NFR 260A...
<b>300-M16</b>	30	29	43	68	M16	25	●	NFR 300A NFR 320A
<b>320-M16</b>	32	29.5	43	68	M16	25	●	NFR 320A E280-E281

► Matched with T-FLEXTEC holder

## Spare parts

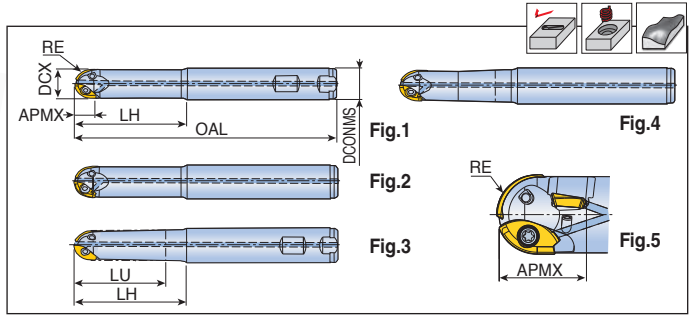
Designation	Screw	Wrench			Wrench handle
<b>TNFR 060</b>	TS 20F060A	TD 6	-	-	-
<b>TNFR 080</b>	TS 25F080A	TD 8	-	-	-
<b>TNFR 100</b>	TS 30F100A	TD 10	-	-	-
<b>TNFR 120</b>	TS 40F120A	TD 15	-	-	-
<b>TNFR 160</b>	TS 50F160A	-	T-T20	-	-
<b>TNFR 200</b>	TS 60F200A	-	-	BLD T25/M7	SW6-T
<b>TNFR 250</b>	TS 70F250A	-	-	BLD T25/M7	SW6-T
<b>TNFR 300, TNFR 320</b>	TS 80F300A	-	T-T30	-	-



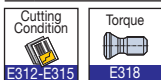




## End mills



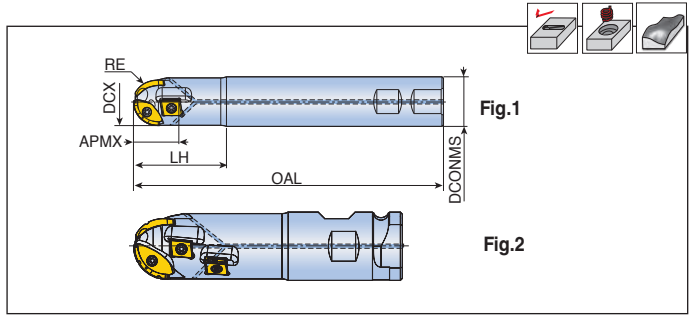
Designation	Dimension (mm)							Coolant hole	Fig.	Insert			
	DCX	RE	DCONMS	OAL	LU	LH	APMX			Ball	Periphery	Periphery	Periphery
<b>2F 16-11-W20-L120</b>	16	8	20	120	35.5	60	11.8	●	3	2FB160 E248	2	-	-
<b>16-11-20-L130</b>	16	8	20	130	45.9	60	11.8	●	4		2	-	-
<b>16-11-20-L200</b>	16	8	20	200	45.9	60	11.8	●	4		2	-	-
<b>16-20-W20-L120-P</b>	16	8	20	120	41.8	60	20.5	X	5		2	APKT 09T3	1
<b>16-20-25-L200-P</b>	16	8	25	200	43.4	65	20.5	X	5	2	E259	1	
<b>20-13-W25-L105</b>	20	10	25	105	-	45	13.6	●	1	2FB200 E248	2	-	-
<b>20-13-W25-L150</b>	20	10	25	150	45.7	65	13.6	●	3		2	-	-
<b>20-13-20-L220</b>	20	10	20	220	-	70	13.6	●	2		2	-	-
<b>20-13-25-L160</b>	20	10	25	160	58.4	75	13.6	●	4		2	-	-
<b>20-13-25-L220</b>	20	10	25	220	65.7	85	13.6	●	4	2FB250 E248	2	-	-
<b>20-22-25-L125-P</b>	20	10	25	125	45.7	65	22.3	●	5		2	APKT 09T3	1
<b>20-22-25-L200-P</b>	20	10	25	200	74.3	90	22.3	●	5		2	E259	1
<b>20-22-32-L250-P</b>	20	10	32	250	72.3	100	22.3	●	5		2	E259	1
<b>25-17-W25-L150</b>	25	12.5	25	150	-	60	17.7	●	1	2FB250 E248	2	-	-
<b>25-17-32-L150</b>	25	12.5	32	150	55.7	75	17.7	●	4		2	-	-
<b>25-17-32-L200</b>	25	12.5	32	200	61.6	85	17.7	●	4		2	-	-
<b>25-17-32-L300</b>	25	12.5	32	300	80	120	17.7	●	4		2	-	-
<b>25-35-25-L200-P</b>	25	12.5	25	200	-	87.5	35.1	●	5	2FB300 E248	2	-	-
<b>25-35-32-L200-P</b>	25	12.5	32	200	-	100	35.1	●	5		2	APKT 09T3	2
<b>25-35-32-L250-P</b>	25	12.5	32	250	-	110	35.1	●	5		2	E259	2
<b>25-43-32-L300-P</b>	25	12.5	32	300	-	120	43.7	●	5		2	-	3
<b>30-20-W32-L180</b>	30	15	32	180	-	86.1	20.0	●	1	2FB300 E248	2	-	-
<b>30-20-30-L250</b>	30	15	30	250	-	104.6	20.0	●	2		2	-	-
<b>30-20-32-L200</b>	30	15	32	200	-	86.1	20.0	●	2		2	-	-
<b>30-20-32-L300</b>	30	15	32	300	-	126.1	20.0	●	2		2	-	-
<b>30-43-32-L160-P</b>	30	15	32	160	-	66	43.7	●	5	2FB320 E248	2	-	-
<b>30-43-32-L200-P</b>	30	15	32	200	-	85.6	43.7	●	5		2	APKT 1204	2
<b>30-43-32-L250-P</b>	30	15	32	250	-	125.6	43.7	●	5		2	E260	2
<b>30-51-32-L300-P</b>	30	15	32	300	-	146	55.3	●	5		2	-	3
<b>32-21-W32-L200</b>	32	16	32	200	-	100	21.4	●	1	2FB320 E248	2	-	-
<b>32-21-32-L180</b>	32	16	32	180	-	100	21.4	●	2		2	-	-
<b>32-21-32-L300</b>	32	16	32	300	-	130	21.4	●	2		2	-	-
<b>32-44-32-L160-P</b>	32	16	32	160	-	66.4	44.7	●	5		2	-	2
<b>32-44-32-L200-P</b>	32	16	32	200	-	83.7	44.7	●	5	2FB320 E248	2	APKT 1204	2
<b>32-44-32-L250-P</b>	32	16	32	250	-	123.7	44.7	●	5		2	E260	2
<b>32-44-32-L300-P</b>	32	16	32	300	-	143.7	44.7	●	5		2	-	2







## End mills



Designation	Dimension (mm)						Fig.	Insert					
	DCX	RE	DCONMS	OAL	LH	APMX		Ball1	Ball2	Periphery			
<b>3F 32-39-W32-150</b>	32	16	32	150	60	39	1	3FB320C-M	1	3FB320P-M	2	CNHX 131108T	2
<b>32-39-W32-200</b>	32	16	32	200	60	39	1	E249	1	E249	2	E272	2
<b>32-39-W32-250</b>	32	16	32	250	60	39	1		1		2		2
<b>50-54-W40-150</b>	50	25	40	150	70	54	1		1		2		2
<b>50-80-W50-200</b>	50	25	50	200	110	80	1	3FB500C-M	1		2	CNHX 160608T	4
<b>50-80-W50-250</b>	50	25	50	250	110	80	1	E249	1	3FB500P-M	2	E272	4
<b>3F 50-68-CN50.8-200</b>	50	25	50.8	200	115	68	2		1	E249	2		3
<b>50-94-CN50.8-250</b>	50	25	50.8	250	165	94	2		1		2		5

- ▶ When machining over 'APMX', please calculate Z=1
- ▶ Coolant through type

## Spare parts

Designation	Screw	Wrench			
<b>3F 32</b>	TS 40093I	TD 15	-		
<b>3F 50</b>	TS 50115I	-	T-T20		

 Cutting Condition E312-E315	 Torque E318
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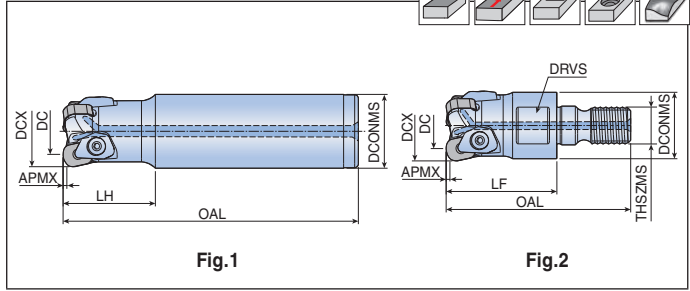
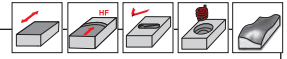




# TEBN-06CH/TEBN-M-06CH



High feed end mills & modular heads



Designation		Dimension (mm)									Air <sup>(1)</sup> hole	Fig.	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	LH	APMX	DRVS			
<b>TEBN 216-16-06CH-L80</b>	2	16	8.6	16	-	80	-	25	1.0	-	x	1	BNGX 0603... E271
<b>320-20-06CH-L80</b>	3	20	12.5	20	-	80	-	25	1.0	-	●	1	
<b>425-25-06CH-L100</b>	4	25	17.4	25	-	100	-	40	1.0	-	●	1	
<b>532-32-06CH-L120</b>	5	32	24.3	32	-	120	-	40	1.0	-	●	1	
<b>TEBN 216-M08-06CH</b>	2	16	8.6	13	25	42.5	8	-	1.0	10	x	2	
<b>320-M10-06CH</b>	3	20	12.5	18	30	50	10	-	1.0	15	●	2	
<b>425-M12-06CH</b>	4	25	17.4	21	35	57	12	-	1.0	17	●	2	
<b>532-M16-06CH</b>	5	32	24.3	29	43	68	16	-	1.0	25	●	2	

- ▶ Matched with T-FLEXTEC holder(Fig.2)
- ▶ <sup>(1)</sup> Use only air (coolant is prohibited)

## Spare parts

Designation	Clamp	Screw	Snap ring	Wrench	
<b>TEBN-06CH</b>	CCL-2S	CLS-25A080	CSR M2.5	L-W 1.5	

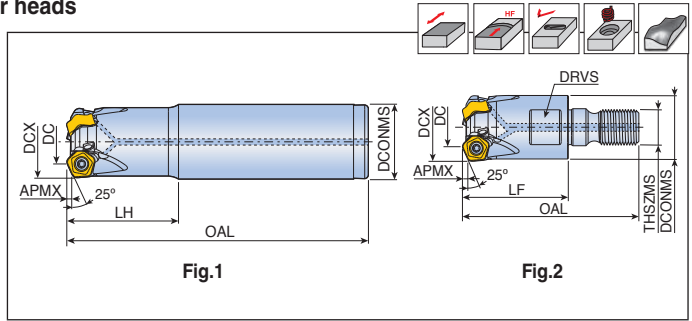
 E312-E315	 E318	 E391-E392
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# TEPT-05/10



## High feed end mills & modular heads



Designation		Dimension (mm)									Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	LH	DRVS	APMX			
<b>TEPT 320-20-05-L150</b>	3	20	11.9	20	-	150	-	50	-	1.5	●	1	PTKU 0503... E282
<b>425-25-05-L150</b>	4	25	16.8	25	-	150	-	50	-	1.5	●	1	
<b>426-25-05-L200</b>	4	26	17.8	25	-	200	-	30	-	1.5	●	1	
<b>532-32-05-L200</b>	5	32	23.8	32	-	200	-	50	-	1.5	●	1	
<b>533-32-05-L200</b>	5	33	24.8	32	-	200	-	30	-	1.5	●	1	
<b>640-32-05-L200</b>	6	40	31.8	32	-	200	-	30	-	1.5	●	1	
<b>TEPT 320-M10-05</b>	3	20	11.9	18	30	50	M10	-	15	1.5	●	2	PTKU 1006... E282
<b>425-M12-05</b>	4	25	16.8	21	35	57	M12	-	17	1.5	●	2	
<b>532-M16-05</b>	5	32	23.8	29	43	68	M16	-	25	1.5	●	2	
<b>640-M16-05</b>	6	40	31.8	29	43	68	M16	-	25	1.5	●	2	
<b>TEPT 340-32-10-L200</b>	3	40	23.5	32	-	200	-	40	-	3.0	●	1	PTKU 1006... E282
<b>TEPT 340-M16-10</b>	3	40	23.5	29	43	68	M16	-	25	3.0	●	2	

► Matched with T-FLEXTEC holder(Fig.2)

## Spare parts

Designation	Screw	Wrench		Wrench handle	
<b>TEPT-05</b>	TS 25D060/HG-P	TD 7P	-	-	
<b>TEPT-10</b>	TS 50D130/HG-P	-	TBLD T20P-W6	THND 6W	

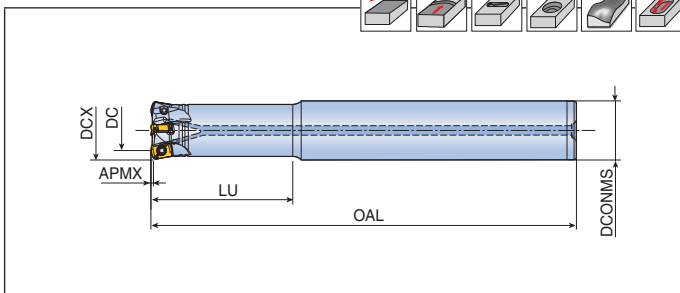
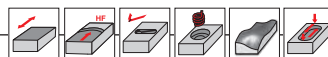
 Cutting Condition E312-E315	 Torque E318	 Ramping Data E374-E375
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# TEBLV-06



## End mills



Designation		Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LU	APMX		
<b>TEBLV 216-15-06-L150</b>	2	16	9.1	15	150	40	0.7	●	BLMV 0603... E270
<b>216-16-06-L100</b>	2	16	9.1	16	100	30	0.7	●	
<b>216-16-06-L150</b>	2	16	9.1	16	150	40	0.7	●	
<b>217-16-06-L100</b>	2	17	10.1	16	100	30	0.7	●	
<b>217-16-06-L150</b>	2	17	10.1	16	150	40	0.7	●	
<b>217-16-06-L200</b>	2	17	10.1	16	200	20	0.7	●	
<b>218-16-06-L150</b>	2	18	11.2	16	150	25	0.7	●	
<b>220-20-06-L200</b>	2	20	12	20	200	80	1.0	●	
<b>320-19-06-L180</b>	3	20	12	19	180	80	1.0	●	
<b>320-20-06-L130</b>	3	20	12	20	130	50	1.0	●	
<b>320-20-06-L160</b>	3	20	12	20	160	80	1.0	●	
<b>420-20-06-L130</b>	4	20	12	20	130	50	1.0	●	
<b>321-20-06-L150</b>	3	21	13	20	150	20	1.0	●	
<b>321-20-06-L200</b>	3	21	13	20	200	20	1.0	●	
<b>321-20-06-L250</b>	3	21	13	20	250	20	1.0	●	
<b>325-25-06-L220</b>	3	25	17	25	220	50	1.0	●	
<b>425-24-06-L180</b>	4	25	17	24	180	60	1.0	●	
<b>425-25-06-L140</b>	4	25	17	25	140	60	1.0	●	
<b>425-25-06-L180</b>	4	25	17	25	180	60	1.0	●	
<b>425-25-06-L250</b>	4	25	17	25	250	40	1.0	●	
<b>525-25-06-L140</b>	5	25	17	25	140	60	1.0	●	
<b>326-25-06-L200</b>	3	26	18	25	200	30	1.0	●	

## Spare parts

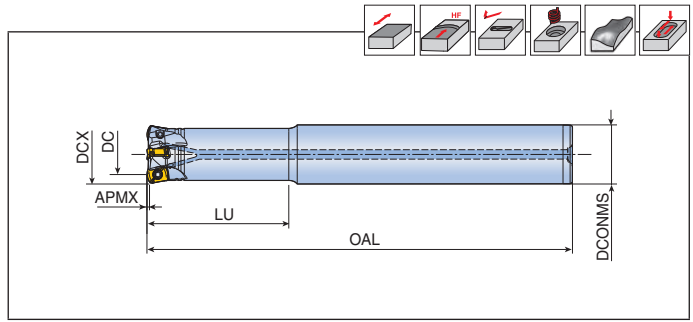
Designation	Screw	Wrench			
	<b>TEBLV-06</b>	TS 250641/HG-P	TD 8P		

Cutting Condition E312-E315	Torque E318	Ramping Data E377
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# TEBLV-06



## End mills



Designation		Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LU	APMX		
<b>TEBLV 326-25-06-L250</b>	3	26	18	25	250	30	1.0	●	BLMV 0603... E270
<b>426-25-06-L150</b>	4	26	18	25	150	30	1.0	●	
<b>426-25-06-L200</b>	4	26	18	25	200	30	1.0	●	
<b>426-25-06-L250</b>	4	26	18	25	250	30	1.0	●	
<b>530-32-06-L150</b>	5	30	22	32	150	70	1.0	●	
<b>530-32-06-L200</b>	5	30	22	32	200	120	1.0	●	
<b>432-32-06-L150</b>	4	32	24	32	150	70	1.0	●	
<b>532-32-06-L150</b>	5	32	24	32	150	70	1.0	●	
<b>532-32-06-L200</b>	5	32	24	32	200	120	1.0	●	
<b>433-32-06-L220</b>	4	33	25	32	220	40	1.0	●	
<b>433-32-06-L300</b>	4	33	25	32	300	50	1.0	●	
<b>533-32-06-L150</b>	5	33	25	32	150	30	1.0	●	
<b>533-32-06-L200</b>	5	33	25	32	200	40	1.0	●	
<b>533-32-06-L250</b>	5	33	25	32	250	40	1.0	●	
<b>435-32-06-L200</b>	4	35	27	32	200	50	1.0	●	
<b>435-32-06-L300</b>	4	35	27	32	300	50	1.0	●	
<b>535-32-06-L200</b>	5	35	27	32	200	50	1.0	●	
<b>535-32-06-L300</b>	5	35	27	32	300	50	1.0	●	
<b>540-32-06-L220</b>	5	40	32	32	220	40	1.0	●	
<b>640-32-06-L150</b>	6	40	32	32	150	40	1.0	●	
<b>640-32-06-L220</b>	6	40	32	32	220	40	1.0	●	
<b>640-32-06-L250</b>	6	40	32	32	250	40	1.0	●	

## Spare parts

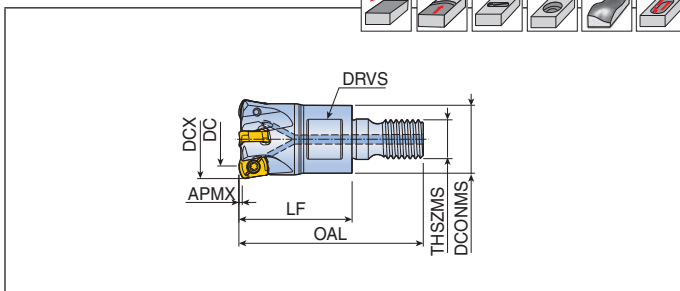
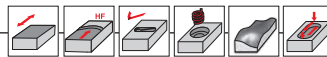
Designation	Screw	Wrench			
	<b>TEBLV-06</b>	TS 25064/HG-P	TD 8P		

Cutting Condition E312-E315	Torque E318	Ramping Data E377
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# TEBLV-M-06



## Modular heads

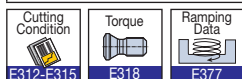


Designation	⚙️	Dimension (mm)									Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	DRVS	APMX	DCONMS		
<b>TEBLV 216-M08-06</b>	2	16	9.1	13	25	42.5	M08	10	0.7	●	BLMV 0603... E270	
<b>217-M08-06</b>	2	17	10.1	13	25	42.5	M08	10	0.7	●		
<b>218-M08-06</b>	2	18	11.2	13	25	42.5	M08	10	0.7	●		
<b>220-M10-06</b>	2	20	12	18	30	50	M10	15	1.0	●		
<b>320-M10-06</b>	3	20	12	18	30	50	M10	15	1.0	●		
<b>321-M10-06</b>	3	21	13	18	30	50	M10	15	1.0	●		
<b>322-M10-06</b>	3	22	14	18	30	50	M10	15	1.0	●		
<b>325-M12-06</b>	3	25	17	21	35	57	M12	17	1.0	●		
<b>425-M12-06</b>	4	25	17	21	35	57	M12	17	1.0	●		
<b>326-M12-06</b>	3	26	18	21	35	57	M12	17	1.0	●		
<b>426-M12-06</b>	4	26	18	21	35	57	M12	17	1.0	●		
<b>530-M16-06</b>	5	30	22	29	40	65	M16	25	1.0	●		
<b>432-M16-06</b>	4	32	24	29	40	65	M16	25	1.0	●		
<b>532-M16-06</b>	5	32	24	29	40	65	M16	25	1.0	●		
<b>433-M16-06</b>	4	33	25	29	40	65	M16	25	1.0	●		
<b>533-M16-06</b>	5	33	25	29	40	65	M16	25	1.0	●		
<b>435-M16-06</b>	4	35	27	29	43	68	M16	25	1.0	●		
<b>535-M16-06</b>	5	35	27	29	43	68	M16	25	1.0	●		
<b>640-M16-06</b>	6	40	32	29	43	68	M16	25	1.0	●		
<b>542-M16-06</b>	5	42	34	29	43	68	M16	25	1.0	●		
<b>642-M16-06</b>	6	42	34	29	43	68	M16	25	1.0	●		

▶ Matched with T-FLEXTEC holder

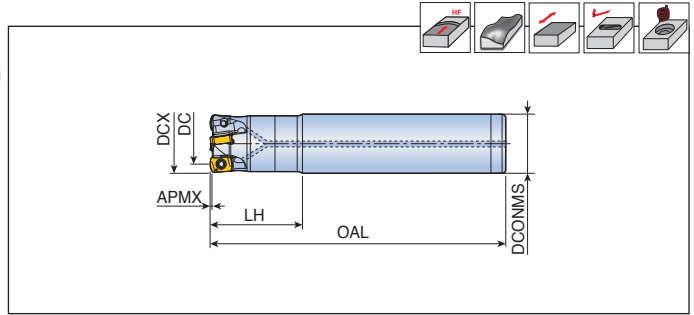
## Spare parts

Designation	Screw	Wrench			
	<b>TEBLV-M-06</b>	TS 25064I/HG-P	TD 8P		



# TEBL-04

High feed end mills



Designation	♻️	Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LH	APMX		
<b>TEBL 108-08-04-L80</b>	1	8	3.8	8	80	20	0.5	●	BLMP 0402... E268
<b>210-10-04-L100</b>	2	10	5.7	10	100	20	0.5	●	
<b>211-10-04-L100</b>	2	11	6.6	10	100	20	0.5	●	
<b>312-12-04-L110</b>	3	12	7.6	12	110	20	0.5	●	
<b>313-12-04-L110</b>	3	13	8.6	12	110	20	0.5	●	
<b>416-16-04-L150</b>	4	16	11.6	16	150	25	0.5	●	
<b>417-16-04-L200</b>	4	17	12.6	16	200	25	0.5	●	
<b>520-20-04-L200</b>	5	20	15.5	20	200	25	0.5	●	
<b>521-20-04-L200</b>	5	21	16.5	20	200	25	0.5	●	

## Spare parts

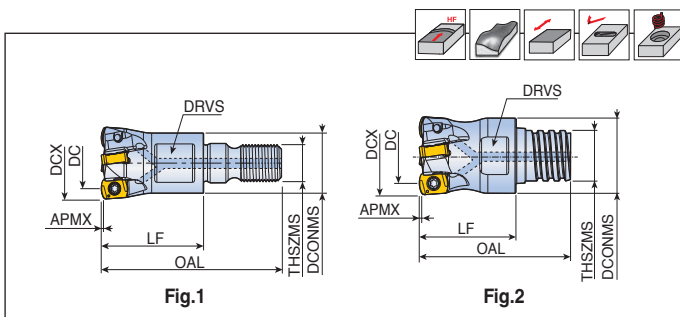
Designation	Screw	Wrench			
	<b>TEBL-04</b>	TS 180411/HG	T 6P		

Cutting Condition E312-E315	Torque E318	Ramping Data E378-E381
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# TEBL-M(S)-04



## High feed modular heads



Designation		Dimension (mm)									Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS				
<b>TEBL 210-M06-04</b>	2	10	5.7	9.7	17	31.5	M06	0.5	8	●	1	BLMP 0402... E268	
<b>211-M06-04</b>	2	11	6.6	9.7	17	31.5	M06	0.5	8	●	1		
<b>312-M06-04</b>	3	12	7.6	11	17	31.5	M06	0.5	8	●	1		
<b>313-M06-04</b>	3	13	8.6	11	17	31.5	M06	0.5	8	●	1		
<b>416-M08-04</b>	4	16	11.6	13	23	40.5	M08	0.5	10	●	1		
<b>417-M08-04</b>	4	17	12.6	13	23	40.5	M08	0.5	10	●	1		
<b>520-M10-04</b>	5	20	15.5	18	23	43	M10	0.5	15	●	1		
<b>725-M12-04</b>	7	25	20.6	21	27	49	M12	0.5	17	●	1		
<b>832-M16-04</b>	8	32	27.5	29	27	52	M16	0.5	25	●	1		
<b>TEBL 210-S06-04</b>	2	10	5.6	9.6	15	21.3	S06	0.5	8	●	2		
<b>312-S08-04</b>	3	12	7.6	11.5	16	23.5	S08	0.5	10	●	2		
<b>416-S10-04</b>	4	16	11.6	15.2	20	31.3	S10	0.5	13	●	2		

▶ Matched with T-FLEXTec holder(Fig.1) & MAXI-RUSH holder(Fig.2)

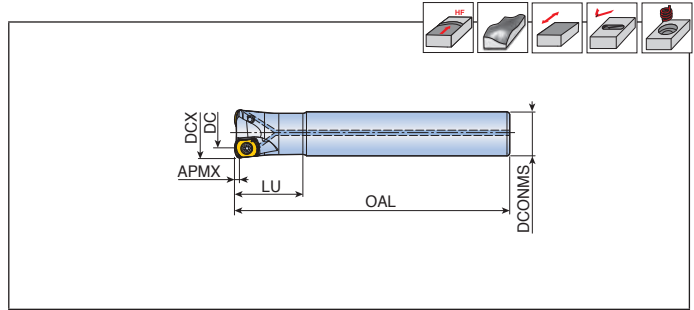
## Spare parts

Designation	Screw	Wrench			
	<b>TEBL-04</b>	TS 18041/HG	T 6P		

Cutting Condition E312-E315	Torque E318	Ramping Data E378-E381
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# TEBL-06

High feed end mills



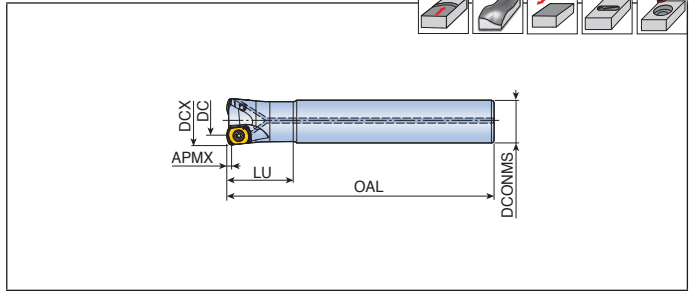
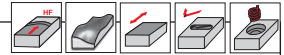
Designation	Flutes	Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LU	APMX		
<b>TEBL 216-15-06-L150</b>	2	16	9.4	15	150	40	0.7	●	BLMP 0603... E268
<b>216-16-06</b>	2	16	9.4	16	150	40	0.7	●	
<b>216-16-06-S</b>	2	16	9.4	16	100	30	0.7	●	
<b>217-16-06</b>	2	17	10.1	16	150	40	0.7	●	
<b>217-16-06-S</b>	2	17	10.1	16	100	30	0.7	●	
<b>217-16-06-L200</b>	2	17	10.1	16	200	20	0.7	●	
<b>218-16-06</b>	2	18	11.1	16	150	25	0.7	●	
<b>220-20-06-L200</b>	2	20	12.4	20	200	80	1.0	●	
<b>320-19-06-L180</b>	3	20	12.4	19	180	80	1.0	●	
<b>320-20-06</b>	3	20	12.4	20	160	80	1.0	●	
<b>320-20-06-S</b>	3	20	12.4	20	130	50	1.0	●	
<b>420-20-06-S</b>	4	20	12.4	20	130	50	1.0	●	
<b>321-20-06-S</b>	3	21	13.4	20	150	20	1.0	●	
<b>321-20-06-L200</b>	3	21	13.4	20	200	20	1.0	●	
<b>325-25-06-L220</b>	3	25	17.3	25	220	50	1.0	●	
<b>425-24-06-L180</b>	4	25	17.3	24	180	60	1.0	●	
<b>425-25-06</b>	4	25	17.3	25	180	60	1.0	●	
<b>425-25-06-S</b>	4	25	17.3	25	140	60	1.0	●	
<b>525-25-06-S</b>	5	25	17.3	25	140	60	1.0	●	
<b>425-25-06-L250</b>	4	25	17.3	25	250	40	1.0	●	
<b>326-25-06-L200</b>	3	26	18.3	25	200	30	1.0	●	
<b>326-25-06-L250</b>	3	26	18.3	25	250	30	1.0	●	
<b>426-25-06-S</b>	4	26	18.3	25	150	30	1.0	●	
<b>426-25-06-L200</b>	4	26	18.3	25	200	30	1.0	●	
<b>426-25-06-L250</b>	4	26	18.3	25	250	30	1.0	●	
<b>530-32-06-S</b>	5	30	22.3	32	150	70	1.0	●	
<b>530-32-06-L200</b>	5	30	22.3	32	200	120	1.0	●	
<b>432-32-06-S</b>	4	32	24.3	32	150	70	1.0	●	
<b>532-32-06-S</b>	5	32	24.3	32	150	70	1.0	●	
<b>532-32-06-L200</b>	5	32	24.3	32	200	120	1.0	●	
<b>433-32-06-L220</b>	4	33	25.3	32	220	40	1.0	●	
<b>433-32-06-L300</b>	4	33	25.3	32	300	50	1.0	●	
<b>533-32-06-S</b>	5	33	25.3	32	150	30	1.0	●	
<b>533-32-06-L200</b>	5	33	25.3	32	200	40	1.0	●	
<b>533-32-06-L250</b>	5	33	25.3	32	250	40	1.0	●	

<p>Cutting Condition</p> <p>E312-E315</p>	<p>Torque</p> <p>E318</p>	<p>Ramping Data</p> <p>E378-E381</p>
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# TEBL-06



High feed end mills



Designation		Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LU	APMX		
<b>TEBL 435-32-06-L200</b>	4	35	27.3	32	200	50	1.0	●	BLMP 0603... E268
<b>435-32-06-L300</b>	4	35	27.3	32	300	50	1.0	●	
<b>535-32-06-L200</b>	5	35	27.3	32	200	50	1.0	●	
<b>535-32-06-L300</b>	5	35	27.3	32	300	50	1.0	●	
<b>540-32-06-L220</b>	5	40	32.2	32	220	40	1.0	●	
<b>640-32-06-S</b>	6	40	32.2	32	150	40	1.0	●	
<b>640-32-06-L220</b>	6	40	32.2	32	220	40	1.0	●	

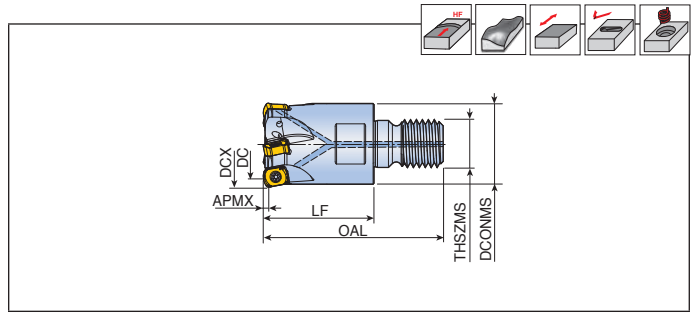
## Spare parts

Designation	Screw	Wrench			
	<b>TEBL-06</b>	TS 25064I/HG-P	TD 8P		

Cutting Condition E312-E315	Torque E318	Ramping Data E378-E381
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# TEBL-M-06

High feed modular heads

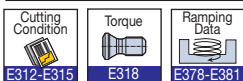


Designation		Dimension (mm)								Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX			
<b>TEBL 216-M08-06</b>	2	16	9.4	13	25	42.5	M08	0.7	●	BLMP 0603... E268	
<b>217-M08-06</b>	2	17	10.1	13	25	42.5	M08	0.7	●		
<b>218-M08-06</b>	2	18	11.1	13	25	42.5	M08	0.7	●		
<b>220-M10-06</b>	2	20	12.4	18	30	50	M10	1.0	●		
<b>320-M10-06</b>	3	20	12.4	18	30	50	M10	1.0	●		
<b>321-M10-06</b>	3	21	13.4	18	30	50	M10	1.0	●		
<b>322-M10-06</b>	3	22	14.4	18	30	50	M10	1.0	●		
<b>325-M12-06</b>	3	25	17.3	21	35	57	M12	1.0	●		
<b>425-M12-06</b>	4	25	17.3	21	35	57	M12	1.0	●		
<b>326-M12-06</b>	3	26	18.3	21	35	57	M12	1.0	●		
<b>426-M12-06</b>	4	26	18.3	21	35	57	M12	1.0	●		
<b>530-M16-06</b>	5	30	22.3	29	40	65	M16	1.0	●		
<b>432-M16-06</b>	4	32	24.3	29	40	65	M16	1.0	●		
<b>532-M16-06</b>	5	32	24.3	29	40	65	M16	1.0	●		
<b>433-M16-06</b>	4	33	25.3	29	40	65	M16	1.0	●		
<b>533-M16-06</b>	5	33	25.3	29	40	65	M16	1.0	●		
<b>435-M16-06</b>	4	35	27.3	29	43	68	M16	1.0	●		
<b>535-M16-06</b>	5	35	27.3	29	43	68	M16	1.0	●		
<b>640-M16-06</b>	6	40	32.2	29	43	68	M16	1.0	●		
<b>542-M16-06</b>	5	42	34.2	29	43	68	M16	1.0	●		
<b>642-M16-06</b>	6	42	34.2	29	43	68	M16	1.0	●		

► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>TEBL-06</b>	TS 250641/HG-P	TD 8P			

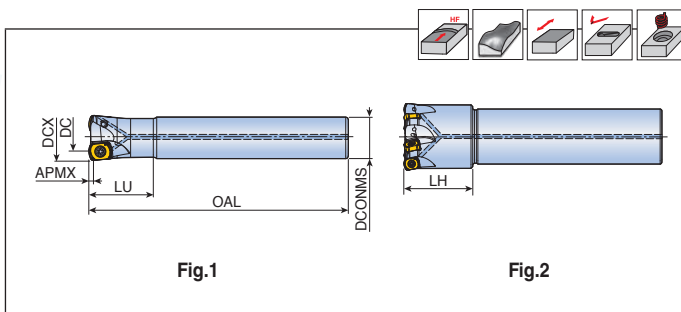




# TEBL-09



## High feed end mills



Designation	Z	Dimension (mm)							Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	LU	LH	APMX			
<b>TEBL 225-25-09-L150</b>	2	25	14.7	25	150	70	-	1.5	●	1	BLMP 0904... E268
<b>225-25-09-L200</b>	2	25	14.7	25	200	100	-	1.5	●	1	
<b>325-25-09-L150</b>	3	25	14.7	25	150	70	-	1.5	●	1	
<b>325-25-09-L200</b>	3	25	14.7	25	200	110	-	1.5	●	1	
<b>326-25-09-L150</b>	3	26	15.7	25	150	30	-	1.5	●	1	
<b>326-25-09-L220</b>	3	26	15.7	25	220	30	-	1.5	●	1	
<b>330-32-09-L160</b>	3	30	19.6	32	160	70	-	1.5	●	1	
<b>330-32-09-L220</b>	3	30	19.6	32	220	120	-	1.5	●	1	
<b>332-32-09-L160</b>	3	32	21.6	32	160	70	-	1.5	●	1	
<b>332-32-09-L220</b>	3	32	21.6	32	220	120	-	1.5	●	1	
<b>432-32-09-L160</b>	4	32	21.6	32	160	70	-	1.5	●	1	
<b>432-32-09-L220</b>	4	32	21.6	32	220	120	-	1.5	●	1	
<b>433-32-09-L180</b>	4	33	22.6	32	180	30	-	1.5	●	1	
<b>433-32-09-L250</b>	4	33	22.6	32	250	30	-	1.5	●	1	
<b>440-32-09-L180</b>	4	40	29.6	32	180	-	40	1.5	●	2	
<b>440-32-09-L250</b>	4	40	29.6	32	250	-	40	1.5	●	2	
<b>540-32-09-L180</b>	5	40	29.6	32	180	-	40	1.5	●	2	
<b>540-32-09-L250</b>	5	40	29.6	32	250	-	40	1.5	●	2	

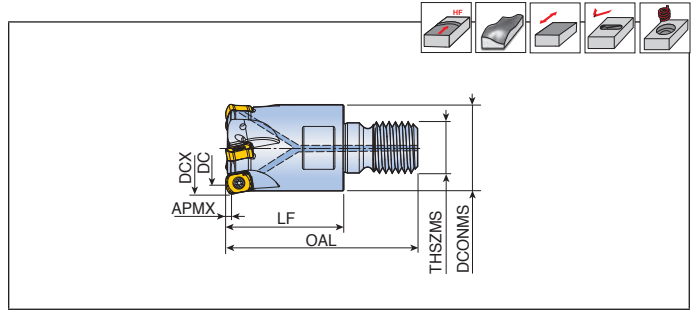
## Spare parts

Designation	Screw	Wrench			
	<b>TEBL-09</b>	TS 35A088/HG	TD 10P		

Cutting Condition E312-E315	Torque E318	Ramping Data E378-E381
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# TEBL-M-09

High feed modular heads



Designation		Dimension (mm)							Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX		
<b>TEBL 225-M12-09</b>	2	25	14.7	21	35	57	M12	1.5	●	BLMP 0904... E268
<b>325-M12-09</b>	3	25	14.7	21	35	57	M12	1.5	●	
<b>326-M12-09</b>	3	26	15.7	21	35	57	M12	1.5	●	
<b>330-M16-09</b>	3	30	19.6	29	43	68	M16	1.5	●	
<b>332-M16-09</b>	3	32	21.6	29	43	68	M16	1.5	●	
<b>432-M16-09</b>	4	32	21.6	29	43	68	M16	1.5	●	
<b>433-M16-09</b>	4	33	22.6	29	43	68	M16	1.5	●	
<b>335-M16-09</b>	3	35	24.6	29	43	68	M16	1.5	●	
<b>435-M16-09</b>	4	35	24.6	29	43	68	M16	1.5	●	
<b>440-M16-09</b>	4	40	29.6	29	43	68	M16	1.5	●	
<b>540-M16-09</b>	5	40	29.6	29	43	68	M16	1.5	●	
<b>542-M16-09</b>	5	42	31.6	29	43	68	M16	1.5	●	

► Matched with T-FLEXTEC holder

## Spare parts

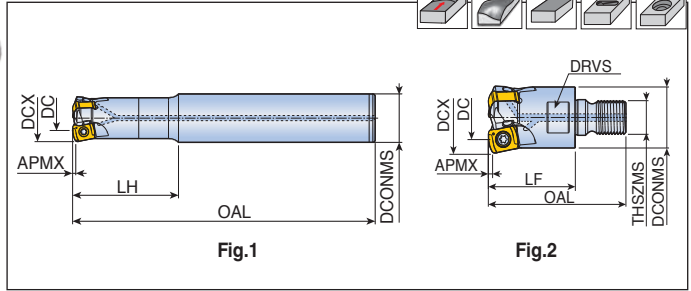
Designation	Screw	Wrench			
<b>TEBL-09</b>	TS 35A088I/HG	TD 10P			

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E378-E381
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# TEBL-11



High feed end mills & modular heads



Designation	Flutes	Dimension (mm)									Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	THSZMS	LH	LF	APMX	DRVS			
<b>TEBL 230-32-11-L150</b>	2	30	14.7	32	150	-	70	-	2.0	-	●	1	BLMP 1105... E268
<b>232-32-11-L150</b>	2	32	16.6	32	150	-	70	-	2.0	-	●	1	
<b>232-32-11-L200</b>	2	32	16.6	32	200	-	70	-	2.0	-	●	1	
<b>332-32-11-L200</b>	3	32	16.6	32	200	-	70	-	2.0	-	●	1	
<b>233-32-11-L200</b>	2	33	17.6	32	200	-	40	-	2.0	-	●	1	
<b>233-32-11-L250</b>	2	33	17.6	32	250	-	50	-	2.0	-	●	1	
<b>333-32-11-L250</b>	3	33	17.6	32	250	-	50	-	2.0	-	●	1	
<b>335-32-11-L200</b>	3	35	19.5	32	200	-	40	-	2.0	-	●	1	
<b>340-32-11-L150</b>	3	40	24.4	32	150	-	40	-	2.0	-	●	1	
<b>340-32-11-L200</b>	3	40	24.4	32	200	-	40	-	2.0	-	●	1	
<b>440-32-11-L200</b>	4	40	24.4	32	200	-	40	-	2.0	-	●	1	
<b>TEBL 230-M16-11</b>	2	30	14.7	29	68	M16	-	43	2.0	25	●	2	
<b>232-M16-11</b>	2	32	16.6	29	68	M16	-	43	2.0	25	●	2	
<b>233-M16-11</b>	2	33	17.6	29	68	M16	-	43	2.0	25	●	2	
<b>335-M16-11</b>	3	35	19.5	29	68	M16	-	43	2.0	25	●	2	
<b>340-M16-11</b>	3	40	24.4	29	68	M16	-	43	2.0	25	●	2	
<b>342-M16-11</b>	3	42	26.4	29	68	M16	-	43	2.0	25	●	2	

► Matched with T-FLEXTEC holder(Fig.2)

## Spare parts

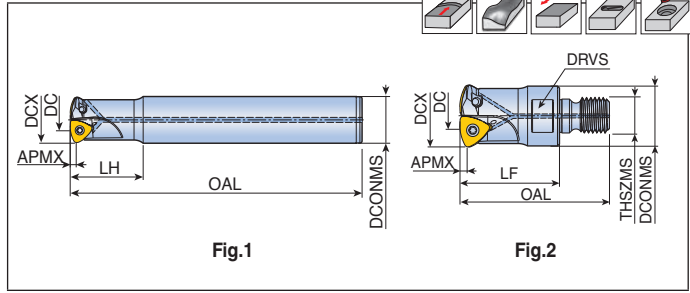
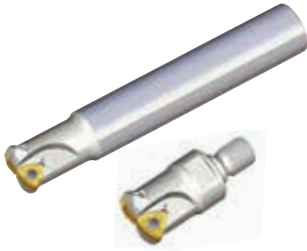
Designation	Screw	Wrench	Wrench handle		
	<b>TEBL-11</b>	TS 50A1211/HG	TBLD T20-W6	THND 6W	

Cutting Condition E312-E315	Torque E318	Ramping Data E378-E381
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# TEBL-13



## High feed end mills & Modular heads

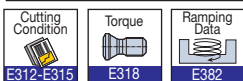


Designation		Dimension (mm)										Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	THSZMS	LH	LF	APMX	DRVS				
<b>TEBL 232-32-13-L150</b>	2	32	12.9	32	150	-	50	-	2.0	-	●	1	BLMP 1306... E269	
<b>232-32-13-L200</b>	2	32	12.9	32	200	-	80	-	2.0	-	●	1		
<b>232-32-13-L</b>	2	32	12.9	32	200	-	120	-	2.0	-	●	1		
<b>233-32-13-L200</b>	2	33	14.3	32	200	-	50	-	2.0	-	●	1		
<b>233-32-13-L250</b>	2	33	14.3	32	250	-	50	-	2.0	-	●	1		
<b>235-32-13-L200</b>	2	35	16.1	32	200	-	30	-	2.0	-	●	1		
<b>240-42-13-XL</b>	2	40	20.7	42	300	-	120	-	2.0	-	●	1		
<b>340-32-13-L150</b>	3	40	20.7	32	150	-	40	-	2.0	-	●	1		
<b>340-32-13-L200</b>	3	40	20.7	32	200	-	70	-	2.0	-	●	1		
<b>340-42-13-S</b>	3	40	20.7	42	150	-	70	-	2.0	-	●	1		
<b>TEBL 232-M16-13</b>	2	32	12.9	30	75	M16	-	50	2.0	25	●	2		
<b>233-M16-13</b>	2	33	14.3	30	75	M16	-	50	2.0	25	●	2		
<b>235-M16-13</b>	2	35	16.1	30	75	M16	-	50	2.0	25	●	2		
<b>340-M16-13</b>	3	40	20.7	30	75	M16	-	50	2.0	25	●	2		
<b>342-M16-13</b>	3	42	22.6	30	75	M16	-	50	2.0	25	●	2		

► Matched with T-FLEXTEC holder(Fig.2)

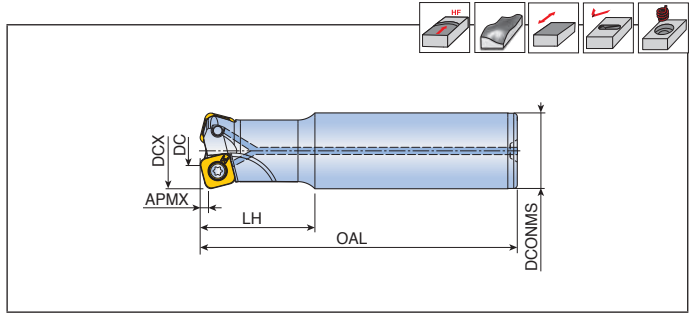
## Spare parts

Designation	Screw	Wrench			
	<b>TEBL-13</b>	TS50B106I/HG	T-T20		



# TESB-06/09

High feed end mills

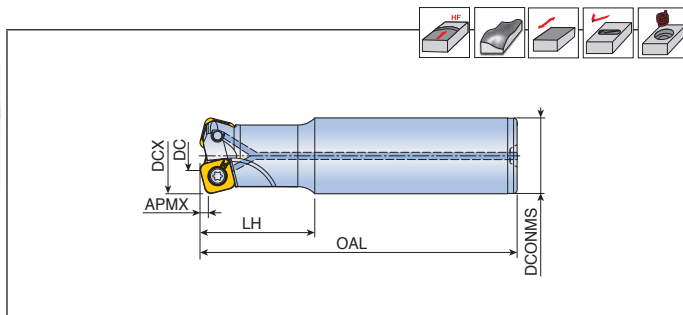
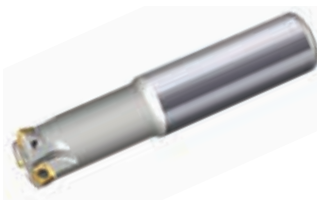


Designation	Flutes	Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LH	APMX		
<b>TESB 216-16-06-L150</b>	2	16	5.9	16	150	40	1.0	●	SBMT 0603... E287
<b>217-16-06-L200</b>	2	17	6.8	16	200	20	1.0	●	
<b>320-20-06-L160</b>	3	20	9.8	20	160	50	1.0	●	
<b>420-20-06-L130</b>	4	20	9.8	20	130	50	1.0	●	
<b>321-20-06-L200</b>	3	21	10.7	20	200	20	1.0	●	
<b>425-25-06-L180</b>	4	25	14.8	25	180	60	1.0	●	
<b>525-25-06-L140</b>	5	25	14.8	25	140	60	1.0	●	
<b>532-32-06-L200</b>	5	32	21.8	32	200	80	1.0	●	
<b>TESB 225-25-09-L150</b>	2	25	10.8	25	150	70	1.2	●	SBMT 0904... E287
<b>225-25-09-L200</b>	2	25	10.8	25	200	70	1.2	●	
<b>325-25-09-L150</b>	3	25	10.8	25	150	70	1.2	●	
<b>325-25-09-L200</b>	3	25	10.8	25	200	70	1.2	●	
<b>226-25-09-L200</b>	2	26	11.7	25	200	30	1.2	●	
<b>226-25-09-L250</b>	2	26	11.7	25	250	30	1.2	●	
<b>326-25-09-L150</b>	3	26	11.7	25	150	30	1.2	●	
<b>326-25-09-L200</b>	3	26	11.7	25	200	30	1.2	●	
<b>326-25-09-L250</b>	3	26	11.7	25	250	30	1.2	●	
<b>330-32-09-L200</b>	3	30	15.5	32	200	70	1.2	●	
<b>332-32-09-L160</b>	3	32	17.4	32	160	70	1.2	●	
<b>332-32-09-L200</b>	3	32	17.4	32	200	70	1.2	●	
<b>332-32-09-L300</b>	3	32	17.4	32	300	70	1.2	●	
<b>432-32-09-L160</b>	4	32	17.4	32	160	70	1.2	●	
<b>432-32-09-L220</b>	4	32	17.4	32	220	70	1.2	●	
<b>233-32-09-L250</b>	2	33	18.4	32	250	30	1.2	●	
<b>333-32-09-L250</b>	3	33	18.4	32	250	30	1.2	●	
<b>333-32-09-L300</b>	3	33	18.4	32	300	30	1.2	●	
<b>433-32-09-L180</b>	4	33	18.4	32	180	30	1.2	●	
<b>433-32-09-L250</b>	4	33	18.4	32	250	30	1.2	●	
<b>335-32-09-L250</b>	3	35	20.4	32	250	30	1.2	●	
<b>440-32-09-L250</b>	4	40	25.4	32	250	40	1.2	●	
<b>440-32-09-L300</b>	4	40	25.4	32	300	40	1.2	●	
<b>540-32-09-L180</b>	5	40	25.4	32	180	40	1.2	●	
<b>540-32-09-L250</b>	5	40	25.4	32	250	40	1.2	●	

Cutting Condition E312-E315	Torque E318	Ramping Data E383-E385
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# TESB-13

High feed end mills



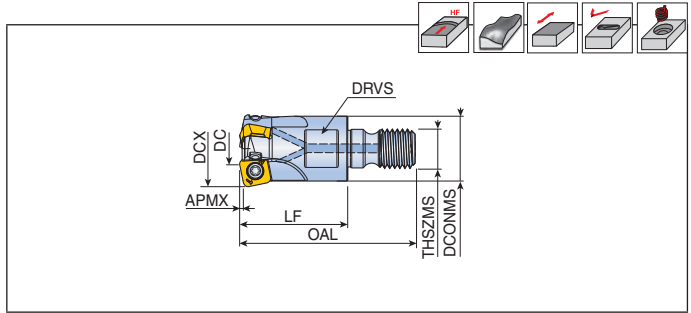
Designation		Dimension (mm)						Coolant hole	Insert
		DCX	DC	DCONMS	OAL	LH	APMX		
<b>TESB 232-32-13-L150</b>	2	32	11.6	32	150	50	2.0	●	SBMT 1306... E287
<b>232-32-13-L200</b>	2	32	11.6	32	200	80	2.0	●	
<b>233-32-13-L200</b>	2	33	12.6	32	200	30	2.0	●	
<b>233-32-13-L250</b>	2	33	12.6	32	250	50	2.0	●	
<b>235-32-13-L200</b>	2	35	14.6	32	200	30	2.0	●	
<b>340-32-13-L150</b>	3	40	19.5	32	150	30	2.0	●	
<b>340-32-13-L200</b>	3	40	19.5	32	200	30	2.0	●	
<b>342-32-13-L200</b>	3	42	21.5	32	200	30	2.0	●	

## Spare parts

Designation	Screw	Wrench			
<b>TESB-06</b>	TS 250648I/HG-P	TD 8P	-		
<b>TESB-09</b>	TS 35A088I/HG	TD 10P	-		
<b>TESB-13</b>	TS 50115I	-	T-T20		

 Cutting Condition E312-E315	 Torque E318	 Ramping Data E383-E385
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## High feed modular heads

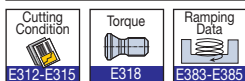


Designation		Dimension (mm)									Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX	DRVS			
<b>TESB 216-M08-06</b>	2	16	5.9	13	25	42.5	M08	1.0	10	●	SBMT 0603...	
<b>320-M10-06</b>	3	20	9.8	18	30	50	M10	1.0	15	●	E287	
<b>425-M12-06</b>	4	25	14.8	21	35	57	M12	1.0	17	●		
<b>532-M16-06</b>	5	32	21.8	29	40	65	M16	1.0	25	●		
<b>TESB 225-M12-09</b>	2	25	10.8	21	35	57	M12	1.2	17	●	SBMT 0904...	
<b>325-M12-09</b>	3	25	10.8	21	35	57	M12	1.2	17	●	E287	
<b>332-M16-09</b>	3	32	17.4	29	43	68	M16	1.2	25	●		
<b>432-M16-09</b>	4	32	17.4	29	43	68	M16	1.2	25	●		
<b>435-M16-09</b>	4	35	20.4	29	43	68	M16	1.2	25	●		
<b>440-M16-09</b>	4	40	25.4	29	43	68	M16	1.2	25	●		
<b>540-M16-09</b>	5	40	25.4	29	43	68	M16	1.2	25	●		
<b>542-M16-09</b>	5	42	27.4	29	43	68	M16	1.2	25	●		
<b>TESB 232-M16-13</b>	2	32	11.6	29	50	75	M16	2.0	25	●	SBMT 1306...	
<b>233-M16-13</b>	2	33	12.6	29	50	75	M16	2.0	25	●	E287	
<b>340-M16-13</b>	3	40	19.5	29	50	75	M16	2.0	25	●		
<b>342-M16-13</b>	3	42	21.5	29	50	75	M16	2.0	25	●		

► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>TESB-06</b>	TS 250648I/HG-P	TD 8P	-		
<b>TESB-09</b>	TS 35A088I/HG	TD 10P	-		
<b>TESB-13</b>	TS 50115I	-	T-T20		



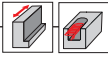
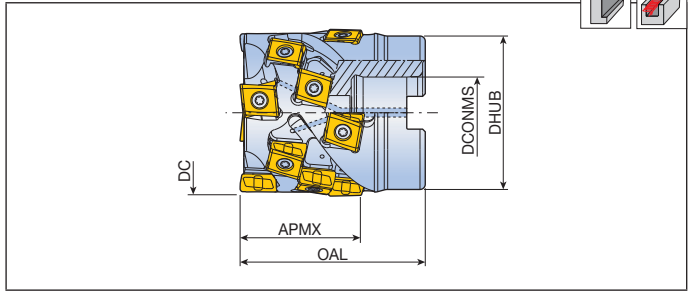




# 4T-TES-14



## Extended flute cutters

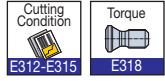


Designation		No. of insert	Dimension (mm)					Coolant hole	Kg	Mounting bolt	Insert	
			DC	DCONMS	DHUB	OAL	APMX					
<b>4T-TES D50-34-22R-14</b>		3	9	50	22	45	55	34	●	0.5	SH M10x40	LPKU 1407... E276
<b>D50-45-22R-14</b>		3	12	50	22	45	65	45	●	0.6	SH M10x50	
<b>D63-45-27R-14</b>		4	16	63	27	58	70	45	●	1.1	SH M12x50	
<b>D63-56-27R-14</b>		4	20	63	27	58	80	56	●	1.3	SH M12x60	
<b>D80-56-32R-14</b>		5	25	80	32	74	85	56	●	2.3	SH M16x60	
<b>D100-56-40R-14</b>		6	30	100	40	94	90	56	●	4.1	SH M20x60	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench	Wrench handle		
<b>4T-TES-14</b>	TS 40G110I	TBLD T15-W6	SW6-T		

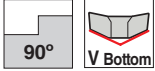
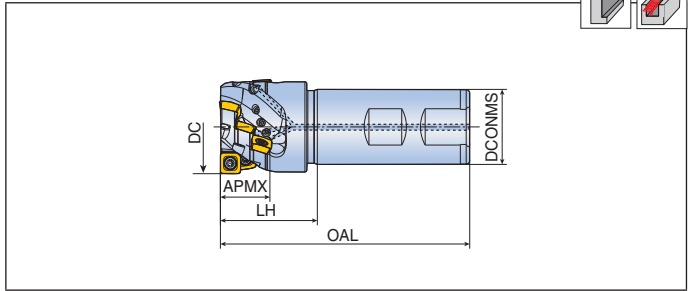
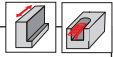








## Base unit extended flute cutter



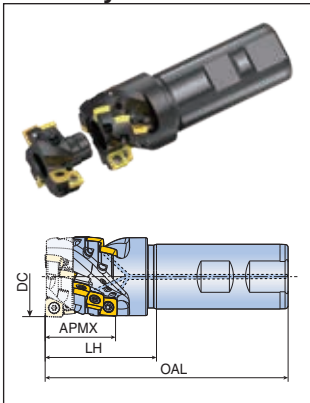
Designation	No. of inserts	Dimension (mm)				Coolant hole	Kg	Mounting bolt	Insert
		DC	DCONMS	OAL	LH				
<b>4S-TEF-D40B-21-W32-09V-3F</b>	3	9	40	32	106.4	41.4	21	● 0.6 SH M8X45-C	SVKT 0938... E299

- ▶ Front head ordered separately
- ▶ Note: For bottom facing, both the front head and base unit must be connected.

## Spare parts

Designation	Screw	Wrench	Wrench handle	Coolant Nozzle
<b>4S-TEF-09V</b>	TS 35A070I/HG	TBLD T10P-W6	SW6-T	SS 3003-06C

## Assembly

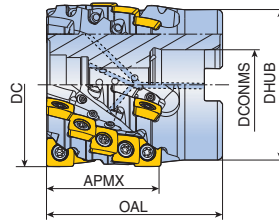
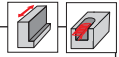


Designation	No. of inserts	Dimension (mm)				
		DC	OAL	LH	APMX	
Head <b>4S-TFP-D40-14-09V-3F</b>	3	15	40	120	55	34
Base <b>4S-TEF-D40B-21-W32-09V-3F</b>						



# 4S-TES-B-09V/11V

## Base units for extended flute cutter



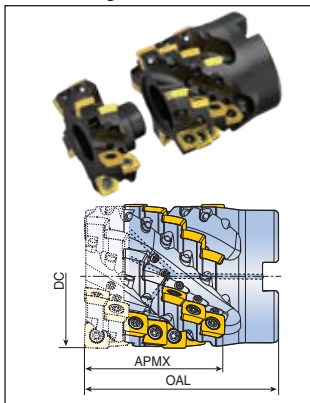
Designation	No. of inserts	Dimension (mm)					Coolant hole	Arbor style	kg	Mounting bolt	Insert
		DC	DCONMS	DHUB	OAL	APMX					
<b>4S-TES-D40B-20-16R-09V-3F</b>	3	9	40	16	38	41.4	20	●	A	0.2 SH M8X45-C	SVKT 0938...
<b>D50B-27-22R-09V-5F</b>	5	20	50	22	45	49.4	27	●	A	0.4 LH M10X60-C	E299
<b>D63B-34-27R-09V-6F</b>	6	30	63	27	58	56.4	34	●	A	0.7 LH M12X70-C	SVK(H)T 1145...
<b>4S-TES-D50B-34-22R-11V-4F</b>	4	16	50	22	45	57.8	34	●	A	0.5 SH M10X60-C	E299
<b>D63B-43-27R-11V-5F</b>	5	25	63	27	58	67.8	43	●	A	1.0 SH M12X70-C	
<b>D80B-59-32R-11V-6F</b>	6	42	80	32	76	82.8	59	●	A	2.0 LH M16X80-C	

- ▶ Front head ordered separately
- ▶ Note: For bottom facing, both the front head and base unit must be connected.

## Spare parts

Designation	Screw	Wrench	Wrench handle	Coolant Nozzle
<b>4S-TES-B-09V</b>	TS 35A070I/HG	TBLD T10P-W6	SW6-T	SS 3003-06C
<b>4S-TES-B-11V</b>	TS 40093I/HG	TBLD T15-W6	SW6-T	SS 3003-06C

## Assembly



Designation	No. of inserts	Dimension (mm)			
		DC	OAL	APMX	
Head <b>4S-TFP-D40-14-09V-3F</b>	3	15	40	55	34
Base <b>4S-TES-D40B-20-16R-09V-3F</b>					
Head <b>4S-TFP-D50-14-09V-5F</b>	5	30	50	63	41
Base <b>4S-TES-D50B-27-22R-09V-5F</b>					
Head <b>4S-TFP-D63-14-09V-6F</b>	6	42	63	70	48
Base <b>4S-TES-D63B-34-27R-09V-6F</b>					
Head <b>4S-TFP-D50-18-11V-4F</b>	4	24	50	75	52
Base <b>4S-TES-D50B-34-22R-11V-4F</b>					
Head <b>4S-TFP-D63-18-11V-5F</b>	5	35	63	85	60
Base <b>4S-TES-D63B-43-27R-11V-5F</b>					
Head <b>4S-TFP-D80-18-11V-6F</b>	6	54	80	100	76
Base <b>4S-TES-D80B-59-32R-11V-6F</b>					











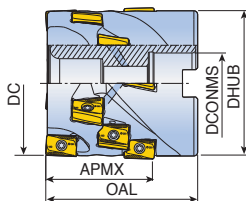
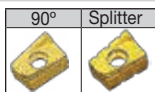




# TES-AN11/16



## Extended flute cutters



Designation		No. of insert	Dimension (mm)					Coolant hole	Kg	Mounting bolt	Insert	
			DC	DCONMS	DHUB	OAL	APMX					
<b>TES D50-40-22R-AN11</b>		3	12	50	22	45	60	40	●	0.6	SH M10x40	ANM(H)X 1106... E258
<b>D50-40-22R-AN11-4F</b>		4	16	50	22	45	60	40	●	0.6	SH M10x40	
<b>D63-60-27R-AN11</b>		4	24	63	27	60	80	60	●	1.3	SH M12x60	
<b>D80-60-32R-AN11-4F</b>		4	24	80	32	76	80	60	●	2.2	SH M16x60	
<b>D80-60-32R-AN11</b>		5	30	80	32	76	80	60	●	2.3	SH M16x60	
<b>D80-60-32R-AN11-6F</b>		6	36	80	32	76	80	60	●	2.4	SH M16x60	
<b>TES D50-42-22R-AN16</b>		2	6	50	22	47	65	42	●	0.7	SH M10x40	ANM(H)X 1607... E258
<b>D63-42-27R-AN16</b>		3	9	63	27	60.5	70	42	●	1.1	SH M12x50	
<b>D63-42-27R-AN16-4F</b>		4	12	63	27	60.5	70	42	●	1.0	SH M12x50	
<b>D63-56-27R-AN16-2F</b>		2	8	63	27	60.5	80	56	●	1.2	SH M12x50	
<b>D63-56-27R-AN16</b>		3	12	63	27	60.5	80	56	●	1.3	SH M12x50	
<b>D63-56-27R-AN16-4F</b>		4	16	63	27	60.5	80	56	●	1.2	SH M12x50	
<b>D80-56-32R-AN16</b>		4	16	80	32	76.5	80	56	●	2.2	SH M16x50	
<b>D100-69-40R-AN16-4F</b>		4	20	100	40	96.4	100	69	●	4.1	SH M20x60	
<b>D100-69-40R-AN16</b>		5	25	100	40	96.4	100	69	●	4.5	SH M20x60	
<b>D100-69-40R-AN16-6F</b>		6	30	100	40	96.4	100	69	●	4.0	SH M20x60	

► Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

## Spare parts

Designation	Screw	Wrench			
<b>TES-AN11</b>	TS 35A088I/HG	TD 10P	-		
<b>TES-AN16</b>	TS 40120I/HG	-	T-T15		











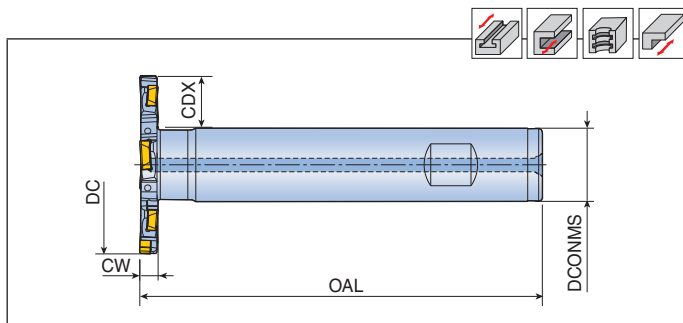








## Slotting cutters: End mills



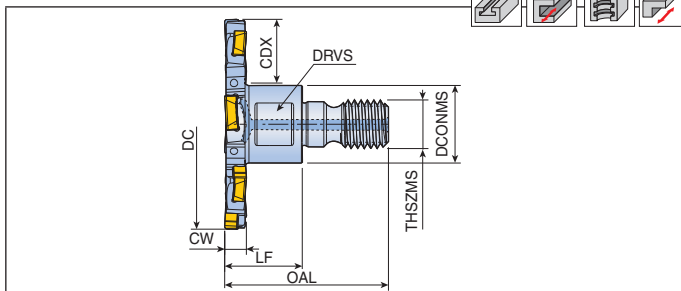
Designation	CW (mm)		Dimension (mm)				Coolant hole	Insert
			DC	DCONMS	OAL	CDX		
<b>TSM D25-03-W12-SL18</b>	3	1+1	25	12	90	6.5	●	SLOT 018...
<b>D32-03-W16-SL18</b>	3	2+2	32	16	90	8.0	●	E290
<b>D40-03-W16-SL18</b>	3	3+3	40	16	105	12.0	●	
<b>D50-03-W20-SL18</b>	3	4+4	50	20	110	15.0	●	
<b>D63-03-W20-SL18</b>	3	5+5	63	20	110	21.5	●	
<b>TSM D25-04-W12-SL23</b>	4	1+1	25	12	90	6.5	●	SLOT 023...
<b>D32-04-W16-SL23</b>	4	2+2	32	16	90	8.0	●	E290
<b>D40-04-W16-SL23</b>	4	3+3	40	16	105	12.0	●	
<b>D50-04-W20-SL23</b>	4	4+4	50	20	110	15.0	●	
<b>D63-04-W20-SL23</b>	4	5+5	63	20	110	21.5	●	
<b>TSM D25-05-W12-SL28</b>	5	1+1	25	12	90	6.5	●	SLOT 028...
<b>D32-05-W16-SL28</b>	5	2+2	32	16	90	8.0	●	E290
<b>D40-05-W16-SL28</b>	5	3+3	40	16	105	12.0	●	
<b>D50-05-W20-SL28</b>	5	4+4	50	20	110	15.0	●	
<b>D63-05-W20-SL28</b>	5	5+5	63	20	110	21.5	●	
<b>TSM D25-06-W12-SL33</b>	6	1+1	25	12	90	6.5	●	SLOT 033...
<b>D32-06-W16-SL33</b>	6	2+2	32	16	90	8.0	●	E290
<b>D40-06-W16-SL33</b>	6	3+3	40	16	105	12.0	●	
<b>D50-06-W20-SL33</b>	6	4+4	50	20	110	15.0	●	
<b>D63-06-W20-SL33</b>	6	5+5	63	20	110	21.5	●	

## Spare parts

Designation	Screw	Wrench			
<b>TSM-03-SL18</b>	TS 25B024I/HG	TD 7P	L-T7P		
<b>TSM-04-SL23</b>	TS 25B031I/HG	TD 7P	L-T7P		
<b>TSM-05-SL28</b>	TS 25B042I/HG	TD 7P	L-T7P		
<b>TSM-06-SL33</b>	TS 25B053I/HG	TD 7P	L-T7P		



## Slotting cutters: modular heads



Designation	CW (mm)		Dimension (mm)								Coolant hole	Insert
			DC	DCONMS	LF	OAL	THSZMS	CDX	DRVS			
<b>TSM D25-03-M08-SL18</b>	3	1+1	25	13	18	35.5	M08	6	10	●	SLOT 018...	
<b>D32-03-M08-SL18</b>	3	2+2	32	13	18	35.5	M08	9	10	●	E290	
<b>D40-03-M08-SL18</b>	3	3+3	40	13	18	35.5	M08	13	10	●		
<b>D50-03-M10-SL18</b>	3	4+4	50	18	18	38	M10	15	15	●		
<b>D63-03-M10-SL18</b>	3	5+5	63	18	18	38	M10	22	15	●		
<b>TSM D25-04-M08-SL23</b>	4	1+1	25	13	18	35.5	M08	6	10	●	SLOT 023...	
<b>D32-04-M08-SL23</b>	4	2+2	32	13	18	35.5	M08	9	10	●	E290	
<b>D40-04-M08-SL23</b>	4	3+3	40	13	18	35.5	M08	13	10	●		
<b>D50-04-M10-SL23</b>	4	4+4	50	18	18	38	M10	15	15	●		
<b>D63-04-M10-SL23</b>	4	5+5	63	18	18	38	M10	22	15	●		
<b>TSM D25-05-M08-SL28</b>	5	1+1	25	13	18	35.5	M08	6	10	●	SLOT 028...	
<b>D32-05-M08-SL28</b>	5	2+2	32	13	18	35.5	M08	9	10	●	E290	
<b>D40-05-M08-SL28</b>	5	3+3	40	13	18	35.5	M08	13	10	●		
<b>D50-05-M10-SL28</b>	5	4+4	50	18	18	38	M10	15	15	●		
<b>D63-05-M10-SL28</b>	5	5+5	63	18	18	38	M10	22	15	●		
<b>TSM D25-06-M08-SL33</b>	6	1+1	25	13	18	35.5	M08	6	10	●	SLOT 033...	
<b>D32-06-M08-SL33</b>	6	2+2	32	13	18	35.5	M08	9	10	●	E290	
<b>D40-06-M08-SL33</b>	6	3+3	40	13	18	35.5	M08	13	10	●		
<b>D50-06-M10-SL33</b>	6	4+4	50	18	18	38	M10	15	15	●		
<b>D63-06-M10-SL33</b>	6	5+5	63	18	18	38	M10	22	15	●		

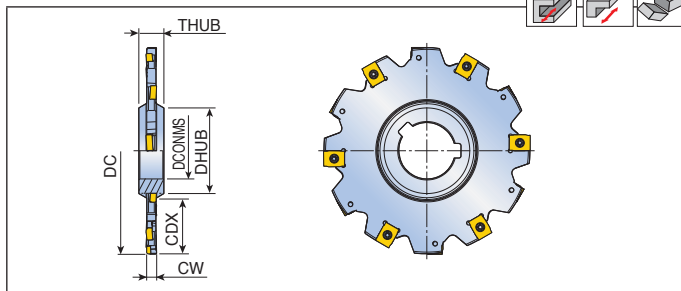
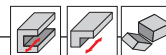
► Matched with T-FLEXTEC holder

## Spare parts

Designation	Screw	Wrench			
<b>TSM-03-SL18</b>	TS 25B0241/HG	TD 7P	L-T7P		
<b>TSM-04-SL23</b>	TS 25B0311/HG	TD 7P	L-T7P		
<b>TSM-05-SL28</b>	TS 25B0421/HG	TD 7P	L-T7P		
<b>TSM-06-SL33</b>	TS 25B0531/HG	TD 7P	L-T7P		



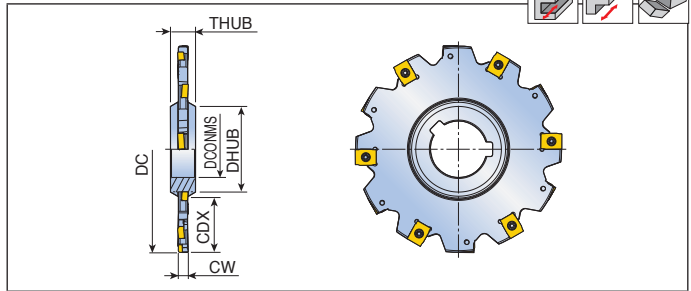
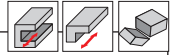
## Slotting cutters: Fixed pocket disk type



Designation	CW (mm)		Dimension (mm)					Kg	Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 063FD-03-22N-Z018</b>	3	4+4	63	22	34	8	12.0	0.1	ZNHT 018...
<b>080FD-03-22N-Z018</b>	3	5+5	80	22	34	8	20.5	0.1	E308
<b>100FD-03-27N-Z018</b>	3	6+6	100	27	41	12	26.0	0.2	
<b>125FD-03-40N-Z018</b>	3	7+7	125	40	55	12	31.5	0.3	
<b>160FD-03-40N-Z018</b>	3	9+9	160	40	55	12	49.0	0.4	
<b>TSM 063FD-04-22N-Z023</b>	4	4+4	63	22	34	8	12.0	0.1	ZNHT 023...
<b>080FD-04-22N-Z023</b>	4	5+5	80	22	34	8	21.0	0.1	E308
<b>100FD-04-27N-Z023</b>	4	6+6	100	27	41	12	27.0	0.2	
<b>125FD-04-40N-Z023</b>	4	7+7	125	40	55	12	32.0	0.4	
<b>160FD-04-40N-Z023</b>	4	9+9	160	40	55	12	50.0	0.6	
<b>TSM 063FD-05-22N-Z028</b>	5	4+4	63	22	34	8	13.0	0.1	ZNHT 028...
<b>080FD-05-22N-Z028</b>	5	5+5	80	22	34	8	21.0	0.2	E308
<b>100FD-05-27N-Z028</b>	5	6+6	100	27	41	12	27.0	0.3	
<b>125FD-05-40N-Z028</b>	5	7+7	125	40	55	12	33.0	0.4	
<b>160FD-05-40N-Z028</b>	5	9+9	160	40	55	12	50.0	0.7	
<b>TSM 063FD-06-22N-Z033</b>	6	4+4	63	22	34	8	13.0	0.1	ZNHT 033...
<b>080FD-06-22N-Z033</b>	6	5+5	80	22	34	8	21.5	0.2	E308
<b>100FD-06-27N-Z033</b>	6	6+6	100	27	41	12	27.0	0.3	
<b>125FD-06-40N-Z033</b>	6	7+7	125	40	55	12	33.0	0.5	
<b>160FD-06-40N-Z033</b>	6	9+9	160	40	55	12	50.0	0.8	
<b>200FD-06-50N-Z033</b>	6	10+10	200	50	69	12	63.0	1.2	
<b>250FD-06-50N-Z033</b>	6	12+12	250	50	69	12	88.0	2.0	
<b>TSM 080FD-07-22N-Z038</b>	7	4+4	80	22	34	12	20.0	0.2	ZNHT 038...
<b>100FD-07-27N-Z038</b>	7	5+5	100	27	41	12	26.5	0.3	E308
<b>125FD-07-40N-Z038</b>	7	6+6	125	40	55	12	32.0	0.5	
<b>160FD-07-40N-Z038</b>	7	8+8	160	40	55	12	49.5	0.8	
<b>200FD-07-50N-Z038</b>	7	9+9	200	50	69	12	62.5	1.3	
<b>250FD-07-50N-Z038</b>	7	12+12	250	50	69	12	87.5	1.9	



## Slotting cutters: Fixed pocket disk type

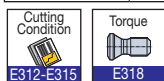


Designation	CW (mm)		Dimension (mm)					Kg	Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 080FD-08-22N-Z043</b>	8	4+4	80	22	34	12	20.5	0.2	ZNHT 043...
<b>100FD-08-27N-Z043</b>	8	5+5	100	27	41	12	27.0	0.3	E308
<b>125FD-08-40N-Z043</b>	8	6+6	125	40	55	12	32.5	0.5	
<b>160FD-08-40N-Z043</b>	8	8+8	160	40	55	12	50.0	0.9	
<b>200FD-08-50N-Z043</b>	8	9+9	200	50	69	12	63.0	1.4	
<b>250FD-08-50N-Z043</b>	8	12+12	250	50	69	12	88.0	2.3	
<b>TSM 100FD-09-27N-Z048</b>	9	5+5	100	27	41	12	27.5	0.4	ZNHT 048...
<b>125FD-09-40N-Z048</b>	9	6+6	125	40	55	12	33.0	0.6	E308
<b>160FD-09-40N-Z048</b>	9	8+8	160	40	55	12	50.5	1.0	
<b>200FD-09-50N-Z048</b>	9	9+9	200	50	69	12	63.5	1.6	
<b>250FD-09-50N-Z048</b>	9	12+12	250	50	69	12	88.5	2.6	
<b>TSM 100FD-10-27N-Z053</b>	10	5+5	100	27	41	12	28.0	0.4	ZNHT 053...
<b>125FD-10-40N-Z053</b>	10	6+6	125	40	55	12	33.5	0.6	E308
<b>160FD-10-40N-Z053</b>	10	8+8	160	40	55	12	51.0	1.3	
<b>200FD-10-50N-Z053</b>	10	9+9	200	50	69	12	64.0	2.0	
<b>250FD-10-50N-Z053</b>	10	12+12	250	50	69	12	89.0	3.2	

► Arbor: SCA, SEMC

## Spare parts

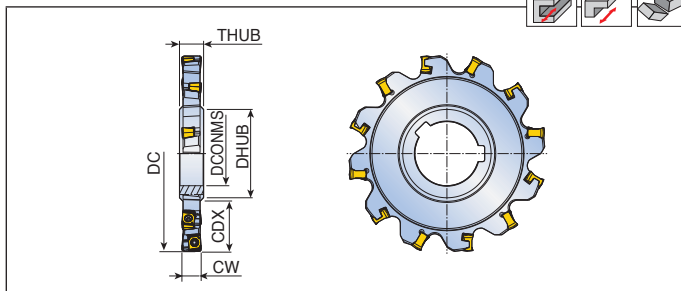
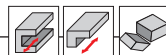
Designation	Screw	Wrench		Designation	Screw	Wrench	
<b>TSM-Z018</b>	TS 25B024I/HG	TD 7P	L-T7P	<b>TSM-Z038</b>	TS 40K0535I	T-T15	L-T15
<b>TSM-Z023</b>	TS 25B031I/HG	TD 7P	L-T7P	<b>TSM-Z043</b>	TS 40K065I	T-T15	L-T15
<b>TSM-Z028</b>	TS 25B042I/HG	TD 7P	L-T7P	<b>TSM-Z048</b>	TS 40K075I	T-T15	L-T15
<b>TSM-Z033</b>	TS 25B053I/HG	TD 7P	L-T7P	<b>TSM-Z053</b>	TS 40K085I	T-T15	L-T15



# TSM FD-N-ZN08/11



Slotting cutters: Fixed pocket disk type

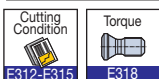


Designation	CW (mm)		Dimension (mm)						Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 080FD-10-27N-ZN08</b>	10.0	4+4	80	27	41	15	15.5	0.3	ZNHU 080...
<b>100FD-10-27N-ZN08</b>	10.0	5+5	100	27	41	15	25.5	0.5	E309
<b>125FD-10-40N-ZN08</b>	10.0	6+6	125	40	55	15	31.0	0.7	
<b>080FD-12-27N-ZN08</b>	12.0	4+4	80	27	41	15	16.5	0.3	
<b>100FD-12-27N-ZN08</b>	12.0	5+5	100	27	41	15	26.5	0.5	
<b>125FD-12-40N-ZN08</b>	12.0	6+6	125	40	55	15	32.0	0.8	
<b>TSM 125FD-14-40N-ZN11</b>	14.0	6+6	125	40	55	15	34.5	0.9	ZNHU 110...
<b>125FD-17-40N-ZN11</b>	17.0	6+6	125	40	55	18	34.5	1.1	E309
<b>125FD-20-40N-ZN11</b>	20.0	6+6	125	40	55	20	34.5	1.3	

▶ Arbor: SCA, SEMC

## Spare parts

Designation	Screw	Wrench			
<b>TSM FD-ZN08</b>	TS 300851/HG	TD 9	-		
<b>TSM FD-ZN11</b>	TS 401201/HG	-	T-T15		

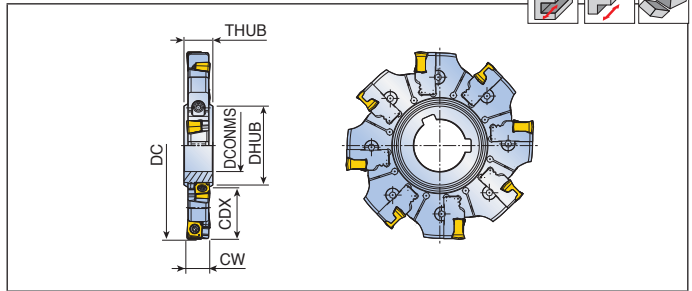
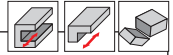




# TSM FD-S/W-ZN08



Slotting cutters: Adjustable disk type

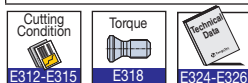


Designation	CW (mm)		Dimension (mm)						Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 100FD-S-27N-ZN08</b>	10-12	4+4	100	27	41	15	26.5	0.4	ZNHU 080... E309
<b>125FD-S-40N-ZN08</b>	10-12	5+5	125	40	55	15	31.5	0.7	
<b>160FD-S-40N-ZN08</b>	10-12	6+6	160	40	55	15	48.5	1.1	
<b>200FD-S-50N-ZN08</b>	10-12	8+8	200	50	69	15	61.5	1.8	
<b>250FD-S-50N-ZN08</b>	10-12	9+9	250	50	69	15	87.5	2.8	
<b>100FD-W-27N-ZN08</b>	12-14	4+4	100	27	41	15	27.0	0.5	
<b>125FD-W-40N-ZN08</b>	12-14	5+5	125	40	55	15	31.5	0.8	
<b>160FD-W-40N-ZN08</b>	12-14	6+6	160	40	55	15	49.5	1.3	
<b>200FD-W-50N-ZN08</b>	12-14	8+8	200	50	69	15	62.5	2.1	
<b>250FD-W-50N-ZN08</b>	12-14	9+9	250	50	69	15	87.5	3.4	

- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

## Spare parts

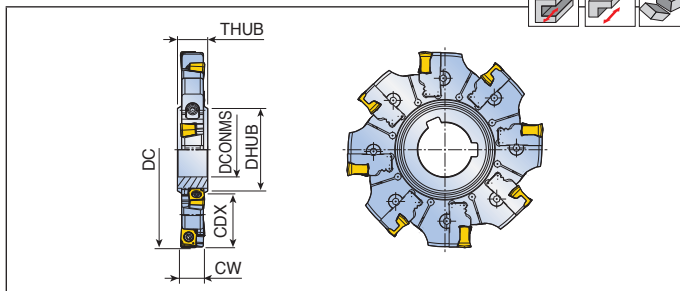
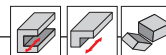
Designation	Right cartridge	Left cartridge	Wedge	Adjust screw	Insert screw
<b>TSM FD-S/W-ZN08</b>					
	TCT-SR-ZN08 TCT-WR-ZN08	TCT-SL-ZN08 TCT-WL-ZN08	WFZ 5	SA M8-6.0	TS 30085I/HG
	Wedge screw	Wrench	L-Wrench	Wedge Wrench	
	WS 5	TD 9	L-W 3	F-W 2.5	



# TSM FD-S/W-ZN11



Slotting cutters: Adjustable disk type

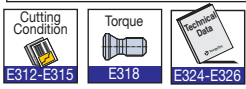


Designation	CW (mm)		Dimension (mm)					Kg	Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 100FD-S-27N-ZN11</b>	14-17	3+3	100	27	41	18	28.0	0.6	ZNHU 110... E309
<b>125FD-S-40N-ZN11</b>	14-17	4+4	125	40	55	18	31.0	1.0	
<b>160FD-S-40N-ZN11</b>	14-17	6+6	160	40	55	18	48.5	1.6	
<b>200FD-S-50N-ZN11</b>	14-17	7+7	200	50	69	18	61.5	2.6	
<b>250FD-S-50N-ZN11</b>	14-17	9+9	250	50	69	18	86.5	4.2	
<b>100FD-W-27N-ZN11</b>	17-20	3+3	100	27	41	22	28.0	0.8	
<b>125FD-W-40N-ZN11</b>	17-20	4+4	125	40	55	22	31.0	1.2	
<b>160FD-W-40N-ZN11</b>	17-20	6+6	160	40	55	22	48.5	2.0	
<b>200FD-W-50N-ZN11</b>	17-20	7+7	200	50	69	22	61.5	3.2	
<b>250FD-W-50N-ZN11</b>	17-20	9+9	250	50	69	22	86.5	5.2	
<b>315FD-W-60N-ZN11</b>	17-20	12+12	315	60	85	22	110.0	8.5	

- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

## Spare parts

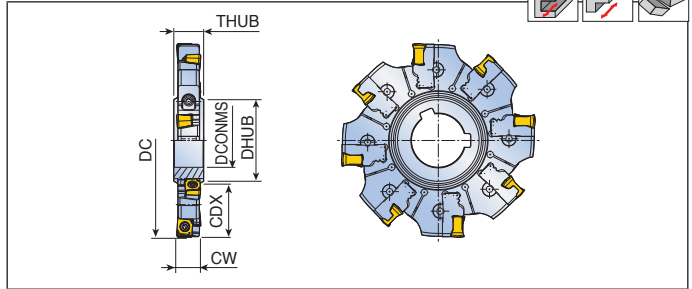
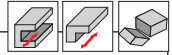
Designation	Right cartridge	Left cartridge	Wedge	Adjust screw	Insert screw
<b>TSM FD-S/W-ZN11</b>					
	TCT-SR-ZN11 TCT-WR-ZN11	TCT-SL-ZN11 TCT-WL-ZN11	WFZ 6	SA M8-9.0	TS 40120I/HG
	Wedge screw	Wrench	L-Wrench	Wedge Wrench	
	 WS 6	 T-T15	 L-W 4	 T-W 3	



# TSM FD-S/W-ZN14



Slotting cutters: Adjustable disk type

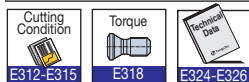


Designation	CW (mm)		Dimension (mm)						Insert
			DC	DCONMS	DHUB	OAL	CDX		
<b>TSM 125FD-S-40N-ZN14</b>	20-23	3+3	125	40	55	24.5	32.0	1.4	ZNHU 140... E309
<b>160FD-S-40N-ZN14</b>	20-23	5+5	160	40	55	24.5	49.0	2.4	
<b>200FD-S-50N-ZN14</b>	20-23	6+6	200	50	69	24.5	62.5	3.9	
<b>250FD-S-50N-ZN14</b>	20-23	8+8	250	50	69	24.5	87.0	6.3	
<b>315FD-S-60N-ZN14</b>	20-23	10+10	315	60	85	24.5	111.5	10.2	
<b>125FD-W-40N-ZN14</b>	23-26	3+3	125	40	55	27.5	32.0	1.6	
<b>160FD-W-40N-ZN14</b>	23-26	5+5	160	40	55	27.5	49.0	2.7	
<b>200FD-W-50N-ZN14</b>	23-26	6+6	200	50	69	27.5	62.5	4.3	
<b>250FD-W-50N-ZN14</b>	23-26	8+8	250	50	69	27.5	87.0	7.1	
<b>315FD-W-60N-ZN14</b>	23-26	10+10	315	60	85	27.5	111.5	11.6	

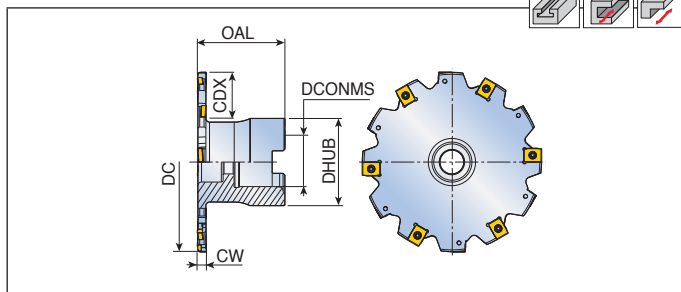
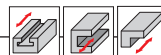
- ▶ Width of cut is set at the smallest unless a specific width is requested
- ▶ Arbor: SCA, SEMC

## Spare parts

Designation	Right cartridge	Left cartridge	Wedge	Adjust screw	Insert screw
<b>TSM FD-S/W-ZN14</b>					
	TCT-SR-ZN14	TCT-SL-ZN14	WFZ 6	SA M8-9.0	TS 40120I/HG
	Wedge screw	Wrench	L-Wrench	Wedge Wrench	
	WS 6	T-T15	L-W 4	T-W 3	



## Slotting cutters: Fixed pocket flange type



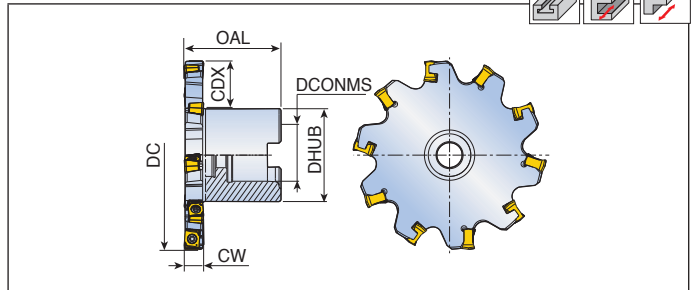
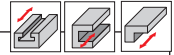
Designation	CW (mm)		Dimension (mm)					Arbor style	Kg	Mounting bolt	Insert
			DC	DCONMS	DHUB	OAL	CDX				
<b>TSM 080FF-03-22R-Z018</b>	3	5+5	80	22	40	50	20.0	A	0.4	SH M10x35	ZNHT 018...
<b>100FF-03-27R-Z018</b>	3	6+6	100	27	48	50	26.0	A	0.6	SH M12x35	ZNHT 023...
<b>080FF-04-22R-Z023</b>	4	5+5	80	22	40	50	20.0	A	0.4	SH M10x35	
<b>100FF-04-27R-Z023</b>	4	6+6	100	27	48	50	26.0	A	0.6	SH M12x35	ZNHT 028...
<b>080FF-05-22R-Z028</b>	5	5+5	80	22	40	50	20.0	A	0.5	SH M10x35	
<b>100FF-05-27R-Z028</b>	5	6+6	100	27	48	50	26.0	A	0.7	SH M12x35	ZNHT 033...
<b>080FF-06-22R-Z033</b>	6	5+5	80	22	40	50	20.0	A	0.5	SH M10x35	
<b>100FF-06-27R-Z033</b>	6	6+6	100	27	48	50	26.0	A	0.7	SH M12x35	E308
<b>125FF-06-40R-Z033</b>	6	7+7	125	40	70	50	25.0	B	1.1	-	
<b>160FF-06-40R-Z033</b>	6	9+9	160	40	70	50	43.0	B	1.4	-	ZNHT 038...
<b>080FF-07-22R-Z038</b>	7	4+4	80	22	40	50	20.0	A	0.5	SH M10x40	
<b>100FF-07-27R-Z038</b>	7	5+5	100	27	48	50	25.5	A	0.7	SH M12x35	E308
<b>125FF-07-40R-Z038</b>	7	6+6	125	40	70	50	24.5	B	1.1	-	
<b>160FF-07-40R-Z038</b>	7	8+8	160	40	70	50	42.0	B	1.4	-	ZNHT 043...
<b>080FF-08-22R-Z043</b>	8	4+4	80	22	40	50	20.0	A	0.5	SH M10x35	
<b>100FF-08-27R-Z043</b>	8	5+5	100	27	48	50	25.5	A	0.8	SH M12x35	E308
<b>125FF-08-40R-Z043</b>	8	6+6	125	40	70	50	24.5	B	1.2	-	
<b>160FF-08-40R-Z043</b>	8	8+8	160	40	70	50	42.0	B	1.5	-	ZNHT 048...
<b>100FF-09-27R-Z048</b>	9	5+5	100	27	48	50	26.0	A	0.7	SH M12x35	
<b>125FF-09-40R-Z048</b>	9	6+6	125	40	70	50	24.5	B	1.2	-	E308
<b>160FF-09-40R-Z048</b>	9	8+8	160	40	70	50	42.0	B	1.6	-	
<b>100FF-10-27R-Z053</b>	10	5+5	100	27	48	50	26.0	A	0.8	SH M12x35	ZNHT 053...
<b>125FF-10-40R-Z053</b>	10	6+6	125	40	70	50	24.5	B	1.4	-	
<b>160FF-10-40R-Z053</b>	10	8+8	160	40	70	50	42.0	B	1.7	-	E308

## Spare parts

Designation	Screw			Wrench			Designation	Screw			Wrench		
<b>TSM-Z018</b>	TS 25B0241/HG			TD 7P		L-T7P	<b>TSM-Z038</b>	TS 40K0535I			T-T15		L-T15
<b>TSM-Z023</b>	TS 25B0311/HG			TD 7P		L-T7P	<b>TSM-Z043</b>	TS 40K065I			T-T15		L-T15
<b>TSM-Z028</b>	TS 25B0421/HG			TD 7P		L-T7P	<b>TSM-Z048</b>	TS 40K075I			T-T15		L-T15
<b>TSM-Z033</b>	TS 25B0531/HG			TD 7P		L-T7P	<b>TSM-Z053</b>	TS 40K085I			T-T15		L-T15



## Slotting cutters: Fixed pocket flange type



Designation	CW (mm)		Dimension (mm)					Arbor style	Kg	Mounting bolt	Insert
			DC	DCONMS	DHUB	OAL	CDX				
<b>TSM 063FF-10-22R-ZN08</b>	10.0	3+3	63	22	40	50	15	A	0.4	SH M10x35	ZNHU 080... E309
<b>080FF-10-22R-ZN08</b>	10.0	4+4	80	22	40	50	24	A	0.5	SH M10x35	
<b>100FF-10-27R-ZN08</b>	10.0	5+5	100	27	48	50	26	A	0.8	SH M12x35	
<b>125FF-10-32R-ZN08</b>	10.0	6+6	125	32	58	50	34	B	1.1	-	
<b>063FF-12-22R-ZN08</b>	12.0	3+3	63	22	40	50	15	A	0.4	SH M10x35	
<b>080FF-12-22R-ZN08</b>	12.0	4+4	80	22	40	50	24	A	0.5	SH M10x35	
<b>100FF-12-27R-ZN08</b>	12.0	5+5	100	27	48	50	26	A	0.9	SH M12x35	ZNHU 110... E309
<b>125FF-12-32R-ZN08</b>	12.0	6+6	125	32	58	50	34	B	1.2	-	
<b>TSM 063FF-14-22R-ZN11</b>	14.0	3+3	63	22	40	50	15	A	0.4	SH M10x35	
<b>080FF-14-22R-ZN11</b>	14.0	4+4	80	22	40	50	24	A	0.5	SH M10x35	
<b>100FF-14-27R-ZN11</b>	14.0	5+5	100	27	48	50	26	A	1.0	SH M12x35	
<b>125FF-14-32R-ZN11</b>	14.0	6+6	125	32	58	50	34	B	1.3	-	
<b>160FF-14-40R-ZN11</b>	14.0	6+6	160	40	70	50	43	B	2.5	-	
<b>080FF-17-22R-ZN11</b>	17.0	4+4	80	22	40	50	24	A	0.6	SH M10x35	
<b>100FF-17-27R-ZN11</b>	17.0	5+5	100	27	48	50	26	A	1.0	SH M12x35	
<b>125FF-17-32R-ZN11</b>	17.0	6+6	125	32	58	50	34	B	1.5	-	
<b>080FF-20-22R-ZN11</b>	20.0	4+4	80	22	40	50	24	A	0.7	SH M10x35	
<b>100FF-20-27R-ZN11</b>	20.0	5+5	100	27	48	50	26	A	1.1	SH M12x35	
<b>125FF-20-32R-ZN11</b>	20.0	6+6	125	32	58	50	34	B	1.6	-	

## Spare parts

Designation	Screw	Wrench			
<b>TSM FF-ZN08</b>	TS 30085I/HG	TD 9	-		
<b>TSM FF-ZN11</b>	TS 40120I/HG	-	T-T15		

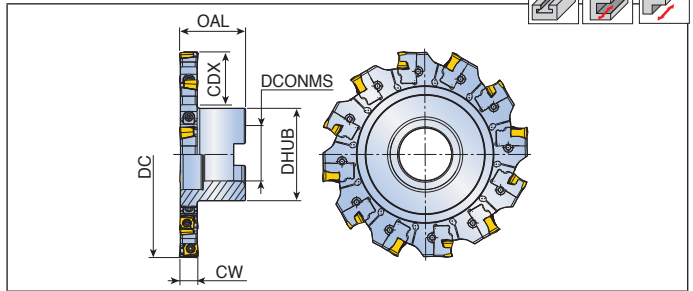
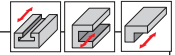
 E312-E315	 E316-E317	 E318
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# TSM FF-S/W-ZN11



Slotting cutters: Adjustable flange type



Designation	CW (mm)		Dimension (mm)					Arbor style	Kg	Mounting bolt	Insert
			DC	DCONMS	DHUB	OAL	CDX				
<b>TSM 100FF-S-27R-ZN11</b>	14-17	3+3	100	27	48	50	25.0	A	0.9	SH M12x35	ZNHU 110... E309
<b>125FF-S-32R-ZN11</b>	14-17	4+4	125	32	58	50	31.5	B	1.3	-	
<b>160FF-S-40R-ZN11</b>	14-17	6+6	160	40	70	50	43.0	B	2.2	-	
<b>200FF-S-40R-ZN11</b>	14-17	7+7	200	40	90	50	53.0	C	3.9	-	
<b>250FF-S-60R-ZN11</b>	14-17	9+9	250	60	130	50	55.0	C	6.2	-	
<b>315FF-S-60R-ZN11</b>	14-17	12+12	315	60	130	50	90.0	C	8.9	-	
<b>100FF-W-27R-ZN11</b>	17-20	3+3	100	27	48	50	25.0	A	1.0	SH M12x35	
<b>125FF-W-32R-ZN11</b>	17-20	4+4	125	32	58	50	31.5	B	1.5	-	
<b>160FF-W-40R-ZN11</b>	17-20	6+6	160	40	70	50	43.0	B	2.2	-	
<b>200FF-W-40R-ZN11</b>	17-20	7+7	200	40	90	50	53.0	C	4.1	-	
<b>250FF-W-60R-ZN11</b>	17-20	9+9	250	60	130	50	55.0	C	6.9	-	
<b>315FF-W-60R-ZN11</b>	17-20	12+12	315	60	130	50	90.0	C	10.2	-	

► Width of cut is set at the smallest unless a specific width is requested

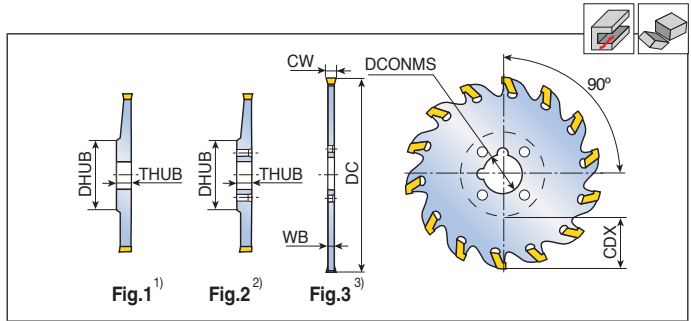
## Spare parts

Designation	Right cartridge	Left cartridge	Wedge	Adjust screw	Insert screw
<b>TSM FD-S/W-ZN11</b>					
	TCT-SR-ZN11	TCT-SL-ZN11	WFZ 6	SA M8-9.0	TS 40120/HG
	TCT-WR-ZN11	TCT-WL-ZN11			
	Wedge screw	Wrench	L-Wrench	Wedge Wrench	
WS 6	T-T15	L-W 4	T-W 3		

 E312-E315	 E316-E317	 E318	 E324-E326
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Designation	CW (mm)		Dimension (mm)						Fig.	Insert seat size	Insert
			DC	DCONMS	DHUB	WB	THUB	CDX			
<b>TSC 75 1.6 22A</b>	1.6	8	75	22.0	39	1.24	2.4	17	1	1	TIMC TIMJ TIPV E300-E301
<b>100 1.6 22A</b>	1.6	10	100	22.0	39	1.24	2.4	30	1	1	
<b>125 1.6 27A</b>	1.6	12	125	27.0	64	1.24	2.4	30	1	1	
<b>75 2 22A</b>	2.0-2.3	8	75	22.0	39	1.6	2.4	17	1	2	
<b>100 2 22A</b>	2.0-2.3	10	100	22.0	39	1.6	2.4	30	1	2	
<b>125 2 27A</b>	2.0-2.3	12	125	27.0	64	1.6	2.4	30	1	2	
<b>100 2.4 22K</b>	2.3-2.5	10	100	22.0	46	1.9	2.4	26	2	2	
<b>125 2.4 32K</b>	2.3-2.5	12	125	32.0	55	1.9	2.4	34	2	2	
<b>160 2.4 32K</b>	2.3-2.5	16	160	32.0	55	1.9	2.4	52	2	2	
<b>100 3 22K</b>	2.8-3.58	6	100	22.0	-	2.4	-	26	3	4	
<b>125 3 32K</b>	2.8-3.53	8	125	32.0	-	2.4	-	34	3	4	
<b>160 3 40K</b>	2.8-3.53	10	160	40.0	-	2.4	-	39	3	4	
<b>100 4 22K</b>	3.54-4.52	6	100	22.0	-	3.2	-	27	3	4	
<b>125 4 32K</b>	3.54-4.52	8	125	32.0	-	3.2	-	34	3	4	
<b>160 4 40K</b>	3.54-4.52	10	160	40.0	-	3.2	-	39	3	4	

- ▶ <sup>1)</sup> Arbor type, <sup>2)</sup> Drive shank, <sup>3)</sup> Drive flange+Drive shank
- ▶ Extractor(ESG 0.5 or ESG 1) supplied with each cutter
- ▶ Flange set and shank should be ordered separately

## Spare parts

Designation	Drive flange set	Drive shank			
<b>TSC-2.4-22K</b>	-	TW32-40			
<b>TSC-2.4-32K</b>	-	T32-55			
<b>TSC-22K</b>	TR22-46	TW32-40			
<b>TSC-32K</b>	TR32-55	T32-55			
<b>TSC-40K</b>	TR40-80	T40-80			









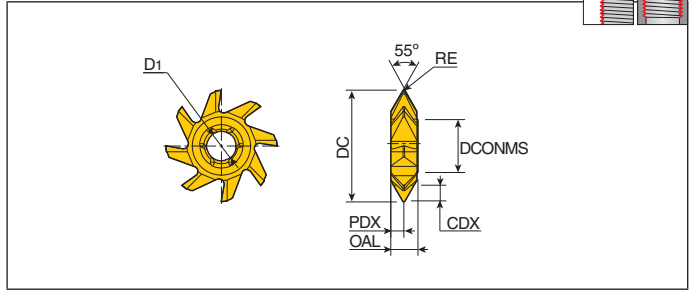




# TR-T-W55



Interchangeable solid carbide threading heads - 55° partial profile



Designation	TPI	Dimension (mm)									Grade
		DC	DMIN	PDX	RE	D1	CDX	OAL	ZEFP	DCONMS	
<b>TR13-T-24.7-W55-3T</b>	5-3	24.7	36	2.2	0.5	7.5	3.5	7.7	6	13	●
<b>15-T-31.7-W55-4T</b>	6-4	31.7	46	3.7	0.5	8.4	4.7	7.7	8	15	●
<b>17-T-39.7-W55-3T</b>	4-3	39.7	57	4.5	0.8	9.8	6.2	9.5	10	17	●

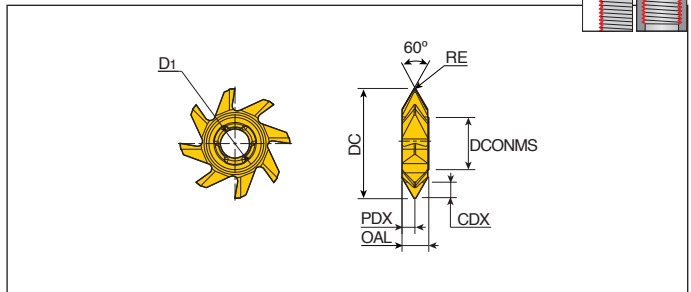
- ▶ TPI: Threads per inch
- ▶ ZEFP: Peripheral effective cutting edge count

●: Standard items

# TR-T-M60



Interchangeable solid carbide threading heads - 60° partial profile



Designation	TP (mm)	TPI	Dimension (mm)									Grade
			DC	DMIN	PDX	RE	D1	CDX	OAL	ZEFP	DCONMS	
<b>TR13-T-24.7-M60-5P</b>	3-5	5-3	24.7	36	2.2	0.2	7.5	3.5	7.7	6	13	●
<b>15-T-31.7-M60-6P</b>	4-6	6-4	31.7	46	3.7	0.3	8.4	4.7	7.7	8	15	●
<b>17-T-39.7-M60-8P</b>	6-8	4-3	39.7	57	4.5	0.4	9.8	6.2	9.5	10	17	●

- ▶ TP: Threads pitch, TPI: Threads per inch
- ▶ ZEFP: Peripheral effective cutting edge count

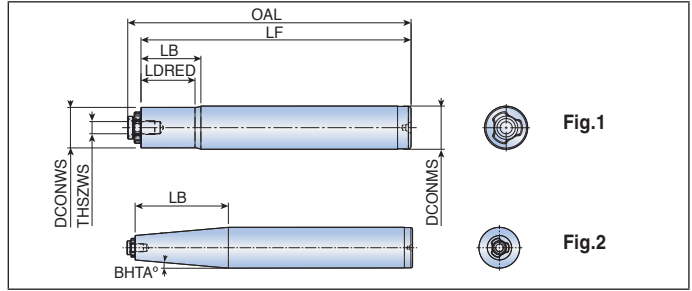
●: Standard items



E312-E315 E241, E243



## Slotting & threading holders



Designation	Dimension (mm)								Coolant hole	Fig.	Carbide head
	DCONMS	DCONWS	LB	LF	OAL	THSZWS	LDRED	BHTA°			
<b>TR13-16-L100</b>	16	13	16.6	100	104.35	M4x0.5	13.0	-	x	1	TR-S, TR-T, 4T-TSM-TR E236-E240
<b>15-16-L100</b>	16	15	18.2	100	104.90	M5x0.5	16.0	-	x	1	
<b>15-16-L130</b>	16	15	18.2	130	134.90	M5x0.5	16.0	-	x	1	
<b>17-20-L140</b>	20	17	23.8	140	146.00	M6x0.5	20.2	-	x	1	
<b>15-25-TC170</b>	25	15	57.2	170	174.90	M5x0.5	-	5	x	2	

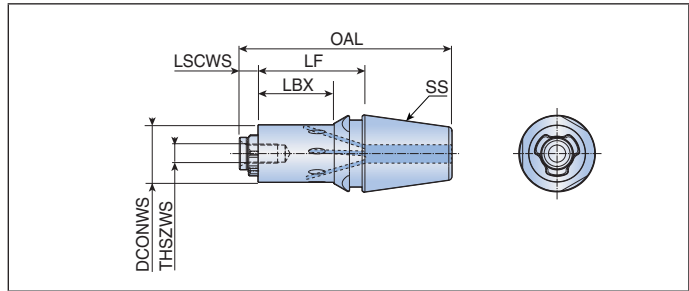
## Spare parts

Designation	Screw	Wrench	Wrench handle		
<b>TR13</b>	TS 40T098/HG-P	BLD IP15/S7	SW6-T		
<b>TR15</b>	TS 50T110/HG-P	BLD IP20/S7	SW6-T		
<b>TR17</b>	SR M6x0.5-SP1719-IP25-H	BLD IP25/S7	SW6-T		





## ER Collet adapter



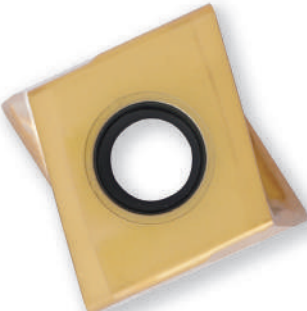
Designation	Dimension (mm)							Kg	Coolant hole	Head
	SS	DCONWS	LBX	LF	OAL	THSZWS	LSCWS			
<b>TR 13 ER20-H20-C</b>	ER20	13	20	28.6	55.4	M4x0.5	4.4	0.07	●	TR-S/F/T, 4T-TSM, 4T-TE90-TR E236-E240
<b>15 ER20-H20-C</b>	ER20	15	20	28.6	55.9	M5x0.5	4.9	0.08	●	
<b>13 ER25-H20-C</b>	ER25	13	20	29.1	58.4	M4x0.5	4.4	0.10	●	
<b>15 ER25-H20-C</b>	ER25	15	20	29.1	58.9	M5x0.5	4.9	0.11	●	
<b>17 ER25-H20-C</b>	ER25	17	20	29.1	60.0	M6x0.5	6.0	0.12	●	
<b>13 ER32-H20-C</b>	ER32	13	20	30.1	64.4	M4x0.5	4.4	0.16	●	
<b>15 ER32-H20-C</b>	ER32	15	20	30.1	64.9	M5x0.5	4.9	0.16	●	
<b>17 ER32-H20-C</b>	ER32	17	20	30.1	66.0	M6x0.5	6.0	0.17	●	
<b>17 ER40-H20-C</b>	ER40	17	20	32.2	72.0	M6x0.5	6.0	0.29	●	

## Spare parts

Designation	Screw	Wrench	Wrench handle		
<b>TR13</b>	TS 40T098/HG-P	BLD IP15/S7	SW6-T		
<b>TR15</b>	TS 50T110/HG-P	BLD IP20/S7	SW6-T		
<b>TR17</b>	SR M6x0.5- SP1719-IP25-H	BLD IP25/S7	SW6-T		



# Milling Inserts



# Insert Designation System



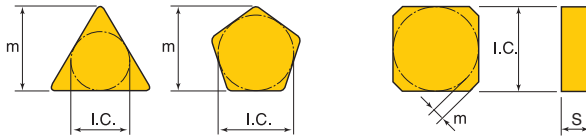
## 1 Shape

											<b>Special</b>
A	B	C	H	L	O	P	R	S	T	W	X

## 2 Clearance angle

B	C	D	E	F	G	N	P
5°	7°	15°	20°	25°	30°	0°	11°

## 3 Tolerance



Class	Tolerance (mm)			I.C. Dimension (mm)					
	m	S	I.C.	6.35	9.52	12.70	15.87	19.05	25.40
A	±0.005	±0.025	±0.025	•	•	•	•	•	•
E	±0.025	±0.025	±0.025	•	•	•	•	•	•
F	±0.005	±0.025	±0.013	•	•	•	•	•	•
G	±0.025	±0.130	±0.025	•	•	•	•	•	•
H	±0.013	±0.025	±0.013	•	•	•	•	•	•
K	±0.013	±0.025	±0.05	•	•				
			±0.08			•			
			±0.10				•	•	
			±0.13						•
M	±0.130	±0.130	±0.05	•	•				
			±0.08			•			
			±0.10				•	•	
			±0.13						•

## 4 Chipformer and clamp type

								<b>Special</b>
A	F	G	M	N	R	T	W	X

# Insert Designation System



## 5 Cutting edge length(mm)

I.C(mm)	C	R,S	T	H	O
	5.56				
6.35	06	06	11		
7.94	08		13		
9.52	09	09	16		
12.70	12	12	22	05	05
15.87	16	15	27	09	
25.40	25	25			

## 6 Thickness(mm)

	s
	s
01	1.59
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52

## 7 Corner radius(mm)

	RE
02R	0.2
04R	0.4
05R	0.5
08R	0.8
10R	1.0
12R	1.2
15R	1.5
16R	1.6
24R	2.4
32R	3.2
40R	4.0

## 7 Parallel land

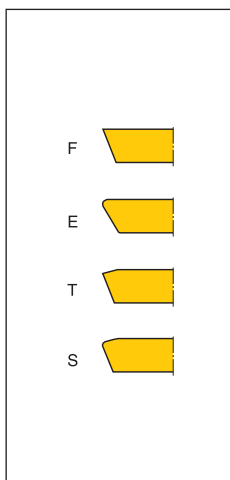
A=45° D=60°  
E=75° F=85°  
P=90° Z=Special

Entering angle

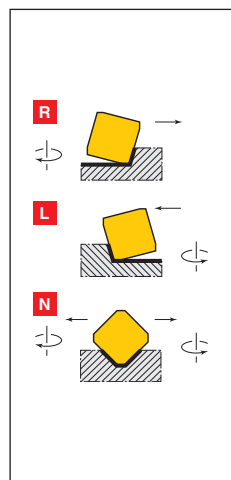
B= 5° F=25°  
C= 7° G=30°  
D=15° N= 0°  
E=20° P=11°  
Z=Special

Clearance angle of wiper

## 8 Edge condition



## 9 Hand of tool



## 10 Manufacturer's option

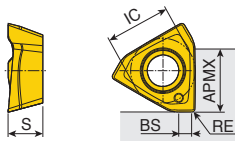
AL	Aluminum
WC	Wiper crown
MR	Medium rough
M	Medium
L	Light
ML	Medium light
E□□	Economical



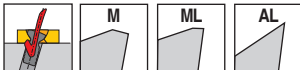




## Inserts



Size	Dimension (mm)				
	IC	S	APMX	BS	RE
<b>04</b>	3.9	2.1	3.5	0.5-0.7	0.2-0.4
<b>06</b>	5.3	2.8	4.7	0.6-1.2	0.2-0.8
<b>10</b>	6.9	4.0	7.0	0.5-1.3	0.4-1.6
<b>15</b>	10.7	5.0	11.0	0.5-2.0	0.4-2.4
<b>19</b>	13.5	6.0	15.0	0.5-2.0	0.4-3.2



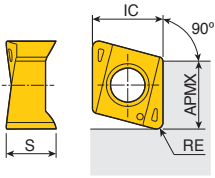
Insert	Designation	Recommended machining conditions		Cermert		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	CT7000	TT9080	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT3535	TT3520	TT2510	K10
	<b>3PKT 040202R-M</b>	0.5-3.0	0.08-0.04		●	●									
	<b>040204R-M</b>	0.5-3.0	0.08-0.04		●	●									
	<b>060302R-M</b>	1.0-4.0	0.10-0.04		●	●	●							●	
	<b>060304R-M</b>	1.0-4.0	0.10-0.04		●	●	●			●				●	
	<b>060308R-M</b>	1.0-4.0	0.10-0.04		●	●	●			●				●	
	<b>100404R-M</b>	2.0-6.0	0.12-0.05		●	●	●		●	●	●			●	
	<b>100408R-M</b>	2.0-6.0	0.12-0.05		●	●	●		●	●	●			●	
	<b>100416R-M</b>	2.0-6.0	0.12-0.05		●									●	
	<b>150508R-M</b>	3.0-9.0	0.17-0.07		●	●	●	●	●	●	●			●	
	<b>150516R-M</b>	3.0-9.0	0.17-0.07		●				●					●	
	<b>150524R-M</b>	3.0-12.0	0.17-0.07		●									●	
	<b>190608R-M</b>	4.5-12.0	0.22-0.09		●	●	●	●	●	●	●			●	
	<b>190616R-M</b>	4.5-12.0	0.22-0.09		●	●	●		●					●	
<b>190624R-M</b>	4.5-12.0	0.22-0.09		●									●		
<b>190632R-M</b>	4.5-12.0	0.22-0.09		●									●		
	<b>3PHT 100404R-M</b>	2.0-6.0	0.12-0.05	●	●										
	<b>100408R-M</b>	2.0-6.0	0.12-0.05	●	●										
	<b>150504R-M</b>	3.0-9.0	0.17-0.07		●										
	<b>150508R-M</b>	3.0-9.0	0.17-0.07	●	●						●				
	<b>150516R-M</b>	3.0-9.0	0.17-0.07	●	●										
	<b>190608R-M</b>	4.5-12.0	0.22-0.09	●	●										
	<b>3PKT 100404R-ML</b>	2.0-6.0	0.10-0.04		●	●	●			●	●				
	<b>100408R-ML</b>	2.0-6.0	0.10-0.04		●	●	●			●					
	<b>150508R-ML</b>	3.0-9.0	0.12-0.05		●	●	●			●	●	●			
	<b>190608R-ML</b>	4.5-12.0	0.14-0.06		●	●	●			●					
	<b>3PHT 100408R-ML</b>	2.0-6.0	0.10-0.04		●	●									
	<b>150508R-ML</b>	3.0-9.0	0.12-0.05		●	●									
	<b>3PHT 060304R-AL</b>	1.0-4.0	0.22-0.07											●	
	<b>100404R-AL</b>	2.0-6.0	0.40-0.10											●	
	<b>100408R-AL</b>	2.0-6.0	0.40-0.10											●	
	<b>150504R-AL</b>	3.0-9.0	0.50-0.10											●	
	<b>150508R-AL</b>	3.0-9.0	0.50-0.10											●	
	<b>190604R-AL</b>	4.5-12.0	0.50-0.15											●	
	<b>190608R-AL</b>	4.5-12.0	0.50-0.15											●	

●: Standard items

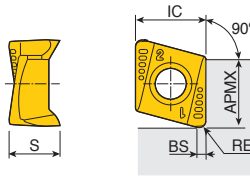




## Inserts



4NKT M/ML



PNR-M

4NHT ML / AL

Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>04</b>	4.0	3.1	3.5	-	0.2-0.8	
<b>06</b>	6.6	4.2-5.0	5.8-6.2	0.6-1.0	0.4-2.0	
<b>09</b>	8.6	5.7-6.3	8.0	0.8-1.2	0.4-1.6	
<b>11</b>	10.7	8.1	9.9-10.5	1.0	0.8	
<b>14</b>	14.0	9.2-9.4	13.5-13.8	1.25	0.8	



Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT3535	TT2510	K10	
	<b>4NKT 040202R-M</b>	0.5-3.0	0.08-0.04	●	●									
	<b>040204R-M</b>	1.0-3.0	0.12-0.06	●	●				●					
	<b>040208R-M</b>	1.0-3.0	0.12-0.06	●	●				●					
	<b>060304R-M</b>	0.5-5.0	0.15-0.07	●	●				●					
	<b>060308R-M</b>	1.0-5.0	0.15-0.07	●	●		●		●			●		
	<b>060312R-M</b>	1.0-5.0	0.15-0.07	●	●				●			●		
	<b>060316R-M</b>	2.0-4.5	0.15-0.07	●	●				●			●		
	<b>060320R-M</b>	2.0-4.5	0.15-0.07	●	●				●					
	<b>090408R-M</b>	2.5-7.0	0.15-0.07	●	●		●		●			●		
	<b>090416R-M</b>	2.5-7.0	0.15-0.07	●	●				●					
	<b>110608R-M</b>	3.5-10.0	0.18-0.09	●	●		●		●					
	<b>110616R-M</b>	2.5-9.5	0.18-0.09	●										
	<b>110624R-M</b>	2.5-9.5	0.18-0.09	●										
<b>140708R-M</b>	4.0-12.0	0.18-0.09	●	●		●	●		●					
	<b>4NKT 110608 PNR-M</b>	3.5-10.0	0.18-0.09	●	●		●							
	<b>140708 PNR-M</b>	4.0-12.0	0.18-0.09	●	●		●							
	<b>4NKT 060304R-ML</b>	0.5-5.0	0.12-0.05	●	●				●					
	<b>060308R-ML</b>	1.0-5.0	0.12-0.05	●	●				●	●				
	<b>060312R-ML</b>	1.0-5.0	0.12-0.05	●	●				●					
	<b>060316R-ML</b>	2.0-4.5	0.12-0.05	●	●				●					
	<b>060320R-ML</b>	2.0-4.5	0.12-0.05	●	●				●					
	<b>090408R-ML</b>	2.5-7.0	0.10-0.05	●	●									
	<b>4NHT 060304R-ML</b>	0.5-5.0	0.13-0.05	●	●				●					
	<b>060308R-ML</b>	1.0-5.0	0.13-0.05	●	●				●					
	<b>090404R-ML</b>	2.5-7.0	0.12-0.05	●										
	<b>090408R-ML</b>	2.5-7.0	0.12-0.05	●	●									
	<b>4NHT 060304R-AL</b>	1.0-5.0	0.40-0.10										●	
	<b>060308R-AL</b>	1.0-5.0	0.40-0.10										●	
	<b>090404R-AL</b>	2.5-7.0	0.50-0.10										●	
	<b>090408R-AL</b>	2.5-7.0	0.50-0.10										●	
	<b>110608R-AL</b>	3.5-10.0	0.50-0.10										●	
<b>140708R-AL</b>	4.0-12.0	0.50-0.10										●		

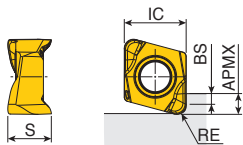
●: Standard items



# 4NHT-F



## Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>04-05R</b>	4.0	3.1	2.2	1.7	0.5	
<b>04-10R</b>	4.0	3.0	2.0	1.0	1.0	
<b>06-05R</b>	6.6	4.9	2.3	1.8	0.5	
<b>06-10R</b>	6.6	4.7	2.1	1.1	1.0	
<b>06-15R</b>	6.6	4.5	3.3	1.8	1.5	
<b>06-20R</b>	6.6	4.3	3.0	1.1	2.0	



Insert	Designation	Recommended machining conditions		Coated						Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>4NHT 040205R-F</b>	0.2-2.0	0.30-0.07										
	<b>040210R-F</b>	0.2-1.8	0.30-0.07							●			
	<b>060305R-F</b>	0.2-2.0	0.30-0.07	●							●		
	<b>060310R-F</b>	0.2-1.8	0.30-0.07	●							●		
	<b>060315R-F</b>	0.2-3.0	0.30-0.07	●							●		
	<b>060320R-F</b>	0.2-2.7	0.30-0.07	●							●		

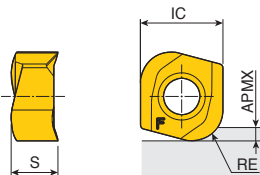
●: Standard items



# 4NKT-HF



## High feed inserts



Size	Dimension (mm)					
	IC	S	APMX	RE		
<b>04-HF</b>	4.0	2.65	0.5	1.2		
<b>06-HF</b>	6.6	3.85	1.0	2.0		
<b>09-HF</b>	8.6	4.76	1.5	3.2		
<b>11-HF</b>	10.7	6.56	2.0	4.0		
<b>14-HF</b>	14.0	7.34	3.0	5.0		

Insert	Designation	Recommended machining conditions		Coated						Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8525B	TT7515	TT7080	TT6080	TT2510	K10	
	<b>4NKT 040212R-HF</b>	0.2-0.4	0.60-0.10	●								
	<b>060320R-HF</b>	0.2-0.6	0.80-0.20	●	●	●				●		
	<b>090432R-HF</b>	0.3-0.8	1.00-0.20	●		●				●		
	<b>110640R-HF</b>	0.3-1.2	1.20-0.30	●		●						
	<b>140750R-HF</b>	0.3-1.5	1.50-0.30	●		●						

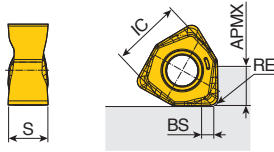
●: Standard items







## Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>04</b>	7	3.9	4.1	0.85-1.25	0.4-0.8	



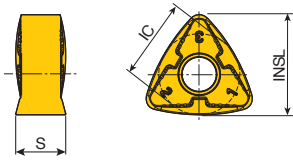
Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510		K10
	<b>6NKU 040304R-M</b>	1.0-3.0	0.10-0.05	●	●					●	●		
	<b>040308R-M</b>	1.0-3.0	0.10-0.05	●	●					●	●		



●: Standard items

# 6RBE

## Inserts



Size	Dimension (mm)					
	IC	S	INSL			
<b>6RBE 50</b>	13	8	16			

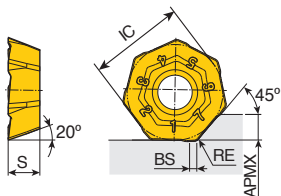


Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10
	<b>6RBE 50-M</b>	1.0-5.0	0.80-0.10	●		●	●	●			●	●	



●: Standard items

## Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>06</b>	12.8	4.2	3.2	1.0	0.8	



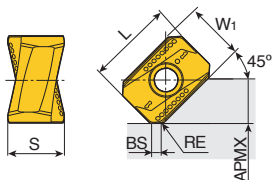
Insert	Designation	Recommended machining conditions		Coated							Uncoated	
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10
	<b>7EMT 0604 AETR-M</b>	1.0-2.5	0.15-0.06	●	●			●		●		
	<b>7EMT 0604 AETR-ML</b>	1.0-2.5	0.15-0.06	●	●					●		



●: Standard items

# ANHX 1607 ANR-M

## Inserts



Size	Dimension (mm)					
	L	W1	S	APMX	BS	RE
<b>16</b>	16	11	10.4	8.4	1.6	1.0



Insert	Designation	Recommended machining conditions		Coated							Uncoated	
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10
	<b>ANHX 1607 ANR-M</b>	2.5-7.0	0.30-0.15	●		●		●	●	●		

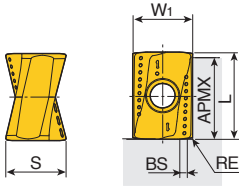


▶ Use only for 45° cutter

●: Standard items



## Inserts



Size	Dimension (mm)					
	L	W <sub>1</sub>	S	APMX	BS	RE
<b>11</b>	12	9.2	8.5	11	0.7-1.5	0.4-1.6
<b>16</b>	16	11.0	10.4-10.9	15	0.6-1.7	0.4-2.4

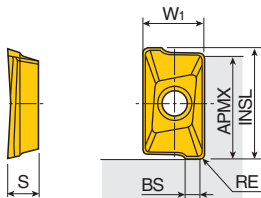


Insert	Designation	Recommended machining conditions		Coated								Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>ANMX 110608R-M</b>	3.0-9.0	0.20-0.10	●		●								
	<b>160708R-M</b>	4.5-12.0	0.20-0.10	●		●								
	<b>ANHX 110604R-M</b>	3.0-9.0	0.15-0.08	●		●				●	●			
	<b>110608R-M</b>	3.0-9.0	0.15-0.08	●		●	●		●	●	●	●		
	<b>110616R-M</b>	3.0-9.0	0.15-0.08	●		●								
	<b>160704R-M</b>	4.5-12.0	0.20-0.10	●	●				●		●	●		
	<b>160708R-M</b>	4.5-12.0	0.20-0.10	●	●	●	●	●	●	●	●	●		
	<b>160716R-M</b>	4.5-12.0	0.20-0.10	●		●			●		●	●		
	<b>160720R-M</b>	4.5-12.0	0.20-0.10						●					
<b>160724R-M</b>	4.5-12.0	0.20-0.10						●		●	●			
	<b>ANHX 110608R-ML</b>	3.0-9.0	0.15-0.08	●		●								
	<b>160708R-ML</b>	4.5-12.0	0.12-0.06			●	●							
	<b>ANHX 160708R-MR</b>	4.5-12.0	0.25-0.13			●								
	<b>ANHX 110604R-AL</b>	3.0-9.0	0.40-0.10										●	
	<b>110608R-AL</b>	3.0-9.0	0.40-0.10										●	
	<b>160704R-AL</b>	4.5-12.0	0.40-0.10										●	
	<b>160708R-AL</b>	4.5-12.0	0.40-0.10										●	
	<b>ANHX 110608R-SM</b>	3.0-9.0	0.15-0.08	●		●	●			●				
	<b>160708R-SM</b>	4.5-12.0	0.20-0.10	●		●				●				

●: Standard items



## Inserts



Size	Dimension (mm)					
	INSL	W1	S	APMX	BS	RE
<b>09</b>	9.7-10.6	6.20	3.8	8.8	0.5-1.79	0.4-3.2
<b>09T3 PER</b>	9.8-9.9	6.20	3.8	8.8	0-1.14	0.4



Insert	Designation	Recommended machining conditions		Material											
		ap (mm)	Feed (mm/tooth)	Cermert		Coated								Uncoated	
				CT7000	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>APKT 09T3 PER-EM</b>	2.5-7.5	0.10-0.05	●	●	●	●	●	●	●		●	●	●	
	<b>09T305R-EM</b>	2.5-7.5	0.10-0.05					●							
	<b>09T308R-EM</b>	2.5-7.5	0.10-0.05		●	●	●	●		●		●	●		
	<b>09T316R-EM</b>	2.5-7.5	0.10-0.05		●	●	●	●		●		●	●		
	<b>09T320R-EM</b>	2.5-7.5	0.10-0.05		●		●							●	
	<b>09T332R-EM</b>	2.5-7.5	0.10-0.05		●		●							●	
	<b>09T3 PER-M</b>	2.5-7.5	0.10-0.05					●		●			●	●	
	<b>APCT 09T3 PER-ML</b>	3.0-7.5	0.10-0.05		●		●	●		●		●			
	<b>APCT 09T3 PER-AL</b>	2.5-7.5	0.35-0.05											●	

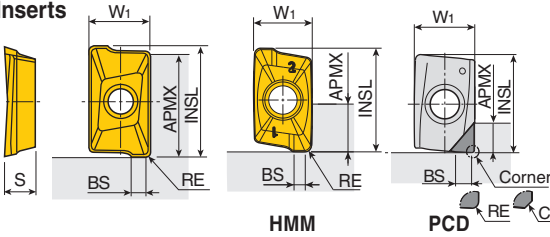
●: Standard items



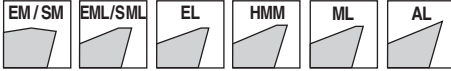
# APK(C)T 12



## Inserts



Size	Dimension (mm)					
	INSL	W1	S	APMX	BS	RE(ch)
<b>12</b>	13.0-14.6	8.3	4.5-4.9	11.8-12.5	0.9-2.1	0.4-4.0
<b>1204 PER</b>	13.4-14.6	8.3	4.5-4.9	11.8-12.5	0.9-2.1	0.8
<b>1204-HMM</b>	14.6	8.3	4.7	6.5	16	0.8
<b>12...R-PCD</b>	13.3	8.2	4.5	3.5	2	0.4
<b>12...C-PCD</b>	13.3	8.2	4.5	3.5	2.1	(0.25)



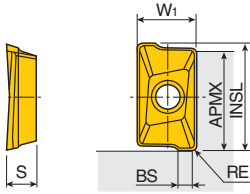
Insert	Designation	Recommended machining conditions		PCD	Coated								Uncoated		
		ap (mm)	Feed (mm/tooth)		TD1030	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10
	<b>APKT 1204 PER-EM</b>	3.5-10.0	0.14-0.07		●	●	●	●	●	●	●	●	●		
	<b>120404R-EM</b>	3.5-10.0	0.14-0.07			●		●		●		●	●		
	<b>120416R-EM</b>	3.5-10.0	0.14-0.07		●	●	●	●	●	●		●	●		
	<b>120424R-EM</b>	3.5-10.0	0.14-0.07			●	●	●					●		
	<b>120430R-EM</b>	3.5-10.0	0.14-0.07		●	●	●	●	●			●	●		
	<b>120432R-EM</b>	3.5-10.0	0.14-0.07			●		●				●	●		
	<b>120440R-EM</b>	3.5-10.0	0.14-0.07		●		●						●		
	<b>APKT 1204 PER-SM</b>	3.5-10.0	0.14-0.07		●		●		●		●				
	<b>APKT 1204 PER-SML</b>	3.5-10.5	0.14-0.06		●		●								
	<b>APKT 1204 PER-EML</b>	3.5-10.0	0.08-0.04		●		●								
	<b>APKT 1204 PER-EL</b>	3.5-10.0	0.05-0.03		●	●	●	●							
	<b>APKT 1204 PER-HMM</b>	3.5-6.5	0.12-0.05		●										
	<b>APCT 120430R-ML</b>	3.5-10.0	0.08-0.04		●		●								
	<b>120432R-ML</b>	3.5-10.0	0.08-0.04		●		●								
	<b>120440R-ML</b>	3.5-9.5	0.08-0.04		●		●								
	<b>APCT 1204 PER-AL</b>	3.5-10.0	0.50-0.10											●	
	<b>120404R-AL</b>	3.5-10.0	0.50-0.10											●	
	<b>120416R-AL</b>	3.5-10.0	0.50-0.10											●	
	<b>APCT 120404R-PCD35</b>	0.2-3.0	0.30-0.05	●											
	<b>1204C025-PCD35</b>	0.2-3.0	0.30-0.05	●											



●: Standard items



## Inserts



Size	Dimension (mm)					
	INSL	W1	S	APMX	BS	RE
<b>17</b>	16.8-18.5	10.7	5.56	15-16	0.9-3.17	0.4-6.4
<b>17 PER</b>	18.5-18.9	10.7	5.56-6.5	16	0.9-3.17	0.8



Insert	Designation	Recommended machining conditions		Coated								Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>APKT 1705 PER-EM</b>	4.5-13.0	0.18-0.09	●	●	●	●	●	●	●	●	●	●	●
	<b>170504R-EM</b>	4.5-13.0	0.18-0.09	●		●	●		●		●	●		●
	<b>170510R-EM</b>	4.5-13.0	0.17-0.09	●	●	●		●	●		●	●		
	<b>170516R-EM</b>	4.5-13.0	0.17-0.09	●	●	●	●	●		●	●			
	<b>170524R-EM</b>	4.5-13.0	0.17-0.09	●	●	●	●	●		●	●			
	<b>170530R-EM</b>	4.5-13.0	0.17-0.09	●	●	●	●	●		●	●			
	<b>170532R-EM</b>	4.5-13.0	0.17-0.09	●	●	●	●	●		●	●			
	<b>170535R-EM</b>	4.5-13.0	0.17-0.09	●	●					●	●			
	<b>170540R-EM</b>	4.5-13.0	0.20-0.10	●	●		●				●			
	<b>170548R-EM</b>	4.5-13.0	0.17-0.09	●	●	●	●	●	●	●	●			
	<b>170550R-EM</b>	4.5-13.0	0.20-0.10		●		●				●			
<b>170564R-EM</b>	4.5-13.0	0.18-0.09	●	●	●	●	●		●	●				
	<b>APKT 1705 PER-M</b>	4.5-13.0	0.18-0.09				●		●	●	●		●	
	<b>170516R-M</b>	4.5-13.0	0.20-0.10				●							
	<b>170532R-M</b>	4.5-13.0	0.20-0.10				●		●	●	●			
	<b>170548R-M</b>	4.5-13.0	0.20-0.10				●							
	<b>APKT 1705 PER-SM</b>	4.5-13.0	0.17-0.09	●		●		●		●				
	<b>APKT 1705 PER-SML</b>	4.5-14.5	0.17-0.06	●		●								
	<b>APKT 1705 PER-EML</b>	4.5-13.0	0.14-0.07	●		●		●						
	<b>APKT 1705 PER-EL</b>	4.5-13.0	0.10-0.05	●	●	●	●	●						

●: Standard items















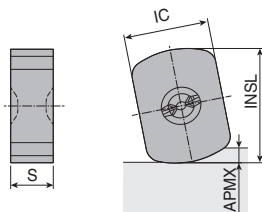






# BNGX 06/09

## High feed inserts



Size	Dimension (mm)					
	INSL	IC	S	APMX		
<b>06</b>	8	6	3	1.0		
<b>09</b>	12	9	5	1.5		

Insert	Designation	Recommended machining conditions		Ceramic							Coated							Uncoated	
		ap (mm)	Feed (mm/tooth)	TC3030	TC3020	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10					
	<b>BNGX 0603 CH-E04</b>	0.4-0.8	0.30-0.10	●															
	<b>0904 CH-E04</b>	0.5-1.0	0.35-0.15	●															

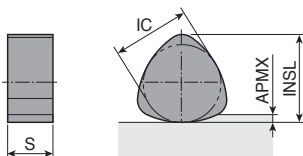


▶ E04: Honing 0.04-0.05mm

●: Standard items

# BNGX 12

## High feed inserts



Size	Dimension (mm)					
	INSL	IC	S	APMX		
<b>12</b>	13.6	12	7	2.5		

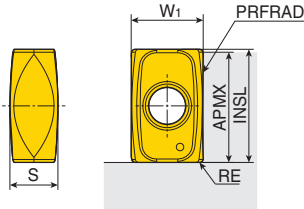
Insert	Designation	Recommended machining conditions		Ceramic		Coated							Uncoated				
		ap (mm)	Feed (mm/tooth)	TC3030	TC3020	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10			
	<b>BNGX 1207-E04</b>	1.0-2.0	0.35-0.15	●													



▶ E04: Honing 0.04-0.05mm

●: Standard items

## Inserts



Size	Dimension (mm)					
	W1	S	APMX	INSL	RE	PRFRAD
<b>06</b>	4.2	2.8	6.4	6.6	0.2	20
<b>12</b>	7	4.56	12.2	12.4	0.2	30

Insert	Designation	Recommended machining conditions		Coated						Uncoated				
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT5515	TT2510	K10	
	<b>BRHU 06R2002-L</b>	-	0.15-0.08											
	<b>12R3002-L</b>	-	0.20-0.08											

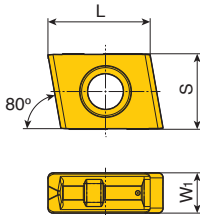


• Standard items

## CNHX



### Inserts



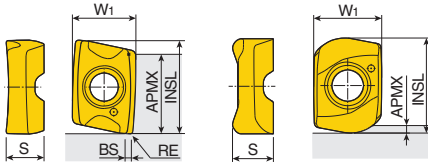
Size	Dimension (mm)			
	L	S	W1	
<b>13</b>	12.7	11	5.4	
<b>16</b>	16.0	12	6.4	

Insert	Designation	Recommended machining conditions		Coated						Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	<b>CNHX 131108T</b>	1.2-5.5	0.55-0.17										
	<b>160608T</b>	1.2-5.5	0.60-0.20										



• Standard items

## Inserts



M / L / AL

HF (High Feed)

Size	Dimension (mm)					
	INSL	W1	S	APMX	BS	RE
<b>05-M</b>	6.2-6.3	4.2	2.6	5.0	0.3	0.2-0.4
<b>05-L/AL</b>	6.3	4.1	2.6	5.0	0.3	0.2
<b>05-HF</b>	5.6	4.1	2.5	0.5	-	-



Insert	Designation	Recommended machining conditions		Coated								Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525	TT7080	TT7515	TT6080	TT5525	TT2510	UF10
	<b>CVKT 0502PNR-M</b>	0.5-4.0	0.08-0.04	●		●						●		
	<b>050204R-M</b>	0.5-4.0	0.08-0.04	●		●								
	<b>CVHT 0502PNR-L</b>	0.5-4.0	0.07-0.03	●		●					●			
	<b>CVHT 0502PNR-AL</b>	0.5-4.0	0.20-0.07										●	
	<b>CVKT 0502R-HF</b>	0.2-0.4	0.70-0.30	●		●						●		

●: Standard items





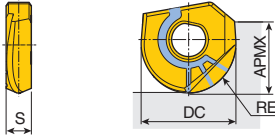








## Inserts



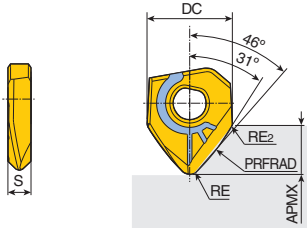
Size	Dimension (mm)					
	DC	S	APMX	RE		
<b>060</b>	6	2.0	4.5-4.8	3.0		
<b>080</b>	8	2.2	6.6-6.9	4.0		
<b>100</b>	10	2.7	8.0-8.2	5.0		
<b>120</b>	12	3.2	9.6-9.7	6.0		
<b>160</b>	16	4.2	12.3-12.7	8.0		
<b>200</b>	20	5.2	14.4-14.7	10.0		
<b>250</b>	25	6.2	16.8-17.4	12.5		
<b>300</b>	30	7.2	18.6-19.2	15.0		
<b>320</b>	32	7.2	18.4-19.2	16.0		

Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8525B	TT7080	TT7515	TT6080	TT5525	TT5515	TT2510	K10	
 Straight cutting edge	<b>NFB 060-FM</b>	0.05-0.2	0.15-0.05											
	<b>080-FM</b>	0.05-0.3	0.20-0.05							●				
	<b>100-FM</b>	0.05-0.3	0.20-0.05							●	●			
	<b>120-FM</b>	0.05-0.5	0.30-0.08							●	●			
	<b>160-FM</b>	0.05-0.5	0.30-0.08							●	●			
	<b>200-FM</b>	0.10-1.0	0.30-0.08							●	●			
	<b>250-FM</b>	0.15-1.0	0.40-0.08							●	●			
	<b>300-FM</b>	0.15-1.0	0.40-0.08							●	●			
 Helical cutting edge	<b>NFB 060-SM</b>	0.80-2.5	0.20-0.05								●	●		
	<b>080-SM</b>	1.20-3.2	0.25-0.05							●	●	●		
	<b>100-SM</b>	1.50-4.0	0.25-0.05							●	●	●		
	<b>120-SM</b>	1.80-4.8	0.35-0.08							●	●	●		
	<b>160-SM</b>	2.40-6.4	0.35-0.08							●	●	●		
	<b>200-SM</b>	3.00-8.0	0.35-0.08							●	●	●		
	<b>250-SM</b>	3.75-10.0	0.45-0.08							●	●	●		
	<b>300-SM</b>	4.50-12.0	0.45-0.08							●	●	●		
	<b>320-SM</b>	4.80-12.8	0.45-0.08							●	●	●		

●: Standard items



## Inserts



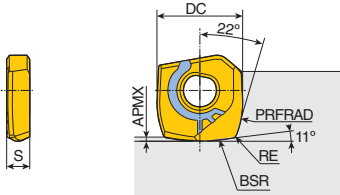
Size	Dimension (mm)					
	DC	S	APMX	RE	PRFRAD	RE <sub>2</sub>
<b>080</b>	8	2.2	4.3	1.0	20	0.6
<b>100</b>	10	2.7	5.4	1.2	25	0.8
<b>120</b>	12	3.2	6.4	1.5	30	1.0
<b>160</b>	16	4.2	8.5	2.0	40	1.3
<b>200</b>	20	5.2	10.7	2.5	50	1.6
<b>250</b>	25	6.2	13.5	3.0	62.5	2.0
<b>300</b>	30	7.2	16.3	3.5	75	2.4

Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT5515	K10
	<b>NFCB 080-R20</b>	-	0.12-0.05								●		
	<b>100-R25</b>	-	0.12-0.05								●		
	<b>120-R30</b>	-	0.15-0.08								●		
	<b>160-R40</b>	-	0.15-0.08								●		
	<b>200-R50</b>	-	0.15-0.08								●		
	<b>250-R62.5</b>	-	0.15-0.08								●		
	<b>300-R75</b>	-	0.20-0.08							●			

●: Standard items

# NFLB

## Inserts



Size	Dimension (mm)					
	DC	S	APMX	RE	BSR	PRFRAD
<b>120</b>	12	3.2	0.4	0.7	24	12
<b>160</b>	16	4.2	0.6	0.8	32	16
<b>200</b>	20	5.2	0.7	1	40	20
<b>250</b>	25	6.2	0.9	1.3	50	25
<b>300</b>	30	7.2	1.1	1.5	60	30

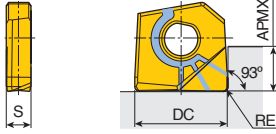
Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT5515	K10
	<b>NFLB 120-L24-B12</b>	-	0.15-0.08								●		
	<b>160-L32-B16</b>	-	0.15-0.08								●		
	<b>200-L40-B20</b>	-	0.15-0.08								●		
	<b>250-L50-B25</b>	-	0.15-0.08								●		
	<b>300-L60-B30</b>	-	0.20-0.08								●		

●: Standard items



E168-E170

## Inserts



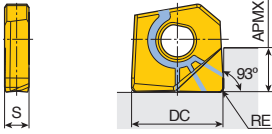
Size	Dimension (mm)				
	DC	S	APMX	RE	
<b>060</b>	6	2.0	2.5	0.3-1.0	
<b>080</b>	8	2.2	3.4	0.3-1.0	
<b>100</b>	10	2.7	4.0	0.3-2.0	
<b>110</b>	11	2.7	4.4	0.3-2.0	
<b>120</b>	12	3.2	5.0	0.3-2.0	
<b>130</b>	13	3.2	5.4	0.3-2.0	
<b>160</b>	16	4.2	6.9	0.3-3.0	
<b>170</b>	17	4.2	7.4	1.0-2.0	

Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8525B	TT7080	TT7515	TT6080	TT5525	TT5515	TT2510	K10	
	<b>NFR 060A-R03</b>	0.05-0.15	0.10-0.05											
	<b>060A-R05</b>	0.10-0.15	0.10-0.05											
	<b>060A-R10</b>	0.10-0.15	0.10-0.05											
	<b>080A-R03</b>	0.05-0.2	0.12-0.05											
	<b>080A-R05</b>	0.05-0.2	0.12-0.05											
	<b>080A-R06</b>	0.05-0.2	0.12-0.05											
	<b>080A-R10</b>	0.05-0.2	0.12-0.05											
	<b>100A-R03</b>	0.05-0.3	0.12-0.05											
	<b>100A-R05</b>	0.05-0.3	0.12-0.05											
	<b>100A-R08</b>	0.05-0.3	0.12-0.05											
	<b>100A-R10</b>	0.05-0.3	0.12-0.05											
	<b>100A-R15</b>	0.05-0.3	0.12-0.05											
	<b>100A-R20</b>	0.05-0.3	0.12-0.05											
	<b>110A-R10</b>	0.05-0.3	0.12-0.05											
	<b>110A-R20</b>	0.05-0.3	0.12-0.05											
	<b>120A-R03</b>	0.07-0.3	0.15-0.08											
	<b>120A-R05</b>	0.07-0.3	0.15-0.08											
	<b>120A-R10</b>	0.07-0.3	0.15-0.08											
	<b>120A-R15</b>	0.07-0.3	0.15-0.08											
	<b>120A-R20</b>	0.07-0.3	0.15-0.08											
	<b>130A-R10</b>	0.07-0.3	0.15-0.08											
	<b>130A-R20</b>	0.07-0.3	0.15-0.08											
	<b>160A-R03</b>	0.08-0.5	0.15-0.08											
	<b>160A-R05</b>	0.08-0.5	0.15-0.08											
	<b>160A-R10</b>	0.08-0.5	0.15-0.08											
	<b>160A-R13</b>	0.08-0.5	0.15-0.08											
	<b>160A-R15</b>	0.08-0.5	0.15-0.08											
	<b>160A-R20</b>	0.08-0.5	0.15-0.08											
<b>160A-R30</b>	0.08-0.5	0.15-0.08												
<b>170A-R10</b>	0.08-0.5	0.15-0.08												
<b>170A-R20</b>	0.08-0.5	0.15-0.08												

●: Standard items



## Inserts



Size	Dimension (mm)				
	DC	S	APMX	RE	
<b>200</b>	20	5.2	8.79.2	0.3-3.0	
<b>210</b>	21	5.2	9.2	1.0-2.0	
<b>250</b>	25	6.2	10.6	0.3-3.0	
<b>260</b>	26	6.2	11	1.0-2.0	
<b>300</b>	30	7.1	12.7	1.0-2.0	
<b>320</b>	32	7.1	13.6	1.0-2.0	

Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT8080	TT8525B	TT7080	TT7515	TT6080	TT5525	TT5515	TT2510	K10	
	<b>NFR 200A-R03</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R05</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R10</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R15</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R16</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R20</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>200A-R30</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>210A-R10</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>210A-R20</b>	0.1-0.7	0.15-0.08							●	●	●		
	<b>250A-R03</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>250A-R05</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>250A-R10</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>250A-R15</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>250A-R20</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>250A-R30</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>260A-R10</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>260A-R20</b>	0.1-1.0	0.15-0.08							●	●	●		
	<b>300A-R05</b>	0.1-1.0	0.20-0.08							●	●	●		
	<b>300A-R10</b>	0.1-1.0	0.20-0.08								●	●		
	<b>300A-R20</b>	0.1-1.0	0.20-0.08								●	●		
<b>320A-R10</b>	0.1-1.0	0.20-0.08							●	●	●			
<b>320A-R20</b>	0.1-1.0	0.20-0.08								●	●			

●: Standard items



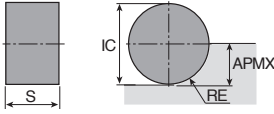




# RNGN 12-FL



## Inserts



Size	Dimension (mm)				
	RE	IC	S	APMX	
<b>12</b>	6.35	12.7	7.94	6.3	

Insert	Designation	Recommended machining conditions		Ceramic		Coated						Uncoated		
		ap (mm)	Feed (mm/tooth)	TC3020	TC3030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>RNGN 1207 FL-E</b>	0.5-3.0	0.25-0.10	●	●									
	<b>1207 FL-E04</b>	0.5-3.0	0.25-0.10	●	●									
	<b>1207 FL-T6</b>	0.5-3.0	0.25-0.10	●	●									

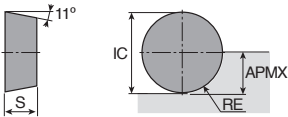


●: Standard items

# RPGN 09/12-FL



## Inserts



Size	Dimension (mm)				
	RE	IC	S	APMX	
<b>09</b>	4.76	9.52	3.18	4.7	
<b>12</b>	6.35	12.7	4.76	6.3	

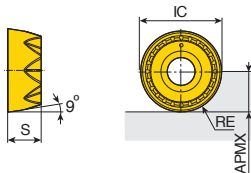
Insert	Designation	Recommended machining conditions		Ceramic		Coated						Uncoated		
		ap (mm)	Feed (mm/tooth)	TC3020	TC3030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>RPGN 0903 FL-E04</b>	0.5-1.5	0.15-0.07	●	●									
	<b>1204 FL-E</b>	0.5-2.0	0.20-0.07	●	●									
	<b>1204 FL-E04</b>	0.5-2.0	0.20-0.07	●	●									
	<b>1204 FL-T6</b>	0.5-2.0	0.20-0.07	●	●									



●: Standard items



## Inserts



Size	Dimension (mm)			
	RE	IC	S	APMX
<b>08</b>	4	8	3.2	4.0
<b>10</b>	5	10	4.0	5.0
<b>12</b>	6	12	4.8	6.0
<b>16</b>	8	16	6.1	8.0
<b>20</b>	10	20	7.0	10.0



Insert	Designation	Recommended machining conditions		Coated								Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10		
	<b>RYMX 0803-M</b>	1.0-3.5	0.25-0.05	●		●		●	●		●	●			
	<b>1004-M</b>	1.5-4.0	0.30-0.10	●		●	●	●	●		●	●			
	<b>1205-M</b>	1.5-5.0	0.50-0.10	●		●	●	●	●		●	●			
	<b>1205-6M</b>	1.5-5.0	0.50-0.10	●								●			
	<b>1606-M</b>	2.0-6.5	0.50-0.10	●		●	●	●	●		●	●			
	<b>1606-7M</b>	2.0-6.5	0.50-0.10	●					●			●			
	<b>2007-M</b>	3.0-8.0	0.50-0.10	●		●	●	●	●		●	●			
	<b>RYMX 0803-MM</b>	1.0-3.5	0.30-0.07	●		●	●								
	<b>1004-MM</b>	1.5-4.0	0.35-0.07	●		●	●								
	<b>1205-MM</b>	1.5-5.0	0.40-0.10	●		●	●	●							
	<b>1205-6MM</b>	1.5-5.0	0.40-0.10	●								●			
	<b>1606-MM</b>	2.0-6.5	0.45-0.10	●		●	●					●			
	<b>1606-7MM</b>	2.0-6.5	0.45-0.10	●		●	●					●			
	<b>RYHX 1205-MM</b>	3.0-8.0	0.40-0.10	●			●								
	<b>RYMX 0803-ML</b>	1.0-3.5	0.25-0.05	●		●	●	●							
	<b>1004-ML</b>	1.5-4.0	0.30-0.05	●		●	●	●							
	<b>1205-ML</b>	1.5-5.0	0.35-0.05	●		●	●	●							
	<b>1205-6ML</b>	1.5-5.0	0.35-0.05	●		●									
	<b>1606-ML</b>	2.0-6.5	0.40-0.05	●		●	●	●							
	<b>1606-7ML</b>	2.0-6.5	0.40-0.05	●											
	<b>2007-ML</b>	3.0-8.0	0.50-0.10	●		●	●	●	●						
	<b>RYHX 0803-ML</b>	1.0-3.5	0.25-0.05	●		●	●								
	<b>1004-ML</b>	1.5-4.0	0.30-0.05	●		●	●								
	<b>RYMX 0803-MLL</b>	1.0-3.5	0.25-0.05			●	●								
	<b>1004-MLL</b>	1.5-4.0	0.30-0.05	●		●	●								
	<b>1205-MLL</b>	1.5-5.0	0.35-0.05	●		●	●								
	<b>RYHX 0803-MLL</b>	1.0-3.5	0.25-0.05			●	●								
	<b>1004-MLL</b>	1.5-4.0	0.30-0.05			●									
	<b>1205-MLL</b>	1.5-5.0	0.35-0.05	●		●	●								

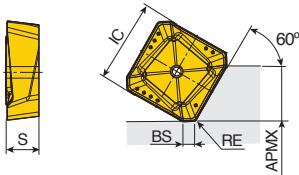
●: Standard items







## Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>21-HE</b>	20.8	7	13	2	1.5	
<b>27-HE</b>	26.8	8.95	18	2	2	



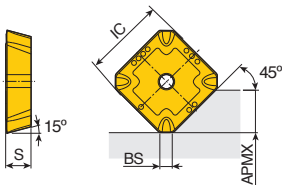
Insert	Designation	Recommended machining conditions		Coated						Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	<b>SCKN 2107 DDTR-HE</b>	3.5-10.5	0.25-0.13					●	●	●			
	<b>2708 DDTR-HE</b>	5.0-14.5	0.30-0.15					●					



●: Standard items

# SDKN 12/15

## Inserts



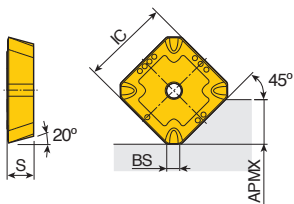
Size	Dimension (mm)			
	IC	S	APMX	BS
<b>12</b>	12.7	3.18	6.5	2.00
<b>15</b>	15.875	4.76	8.7	1.89

Insert	Designation	Recommended machining conditions		Coated						Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	<b>SDKN 1203 MT-HPN</b>	1.5-6.0	0.25-0.10						●				
	<b>1504 MT-HPN</b>	1.5-8.0	0.25-0.10						●				



●: Standard items

## Inserts



Size	Dimension (mm)				
	IC	S	APMX	BS	
<b>12</b>	12.7	3.18	6.5	2.08	
<b>15</b>	15.875	4.76	8.7	2.06	

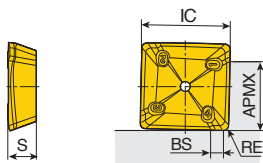
Insert	Designation	Recommended machining conditions		Coated							Uncoated	
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10
	<b>SEKN 1203 AFTN-HPN</b>	1.5-6.0	0.25-0.10					●				
	<b>1504 AFTN-HPN</b>	1.5-8.0	0.25-0.10					●				



●: Standard items

# SEKX 21

## Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
<b>21</b>	21.85	7	17	2	1.2	

Insert	Designation	Recommended machining conditions		Coated							Uncoated	
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10
	<b>SEKX 2107 PETR-M</b>	5.5-13.0	0.22-0.10					●		●		



●: Standard items



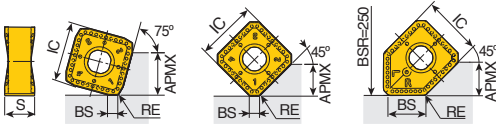




# SNG(M)X 13



## Inserts



ENTN / XTN

AN(T)N / XTN

W

Size	Dimension (mm)				
	IC	S	APMX	BS	RE
<b>13 ENTN-M</b>	13.5	7.0	9.5	2.2	0.4
<b>13 ANTN-M/ML/AL</b>	13.5	6.8	7.0	2.2	0.4
<b>13 ANTR-MP</b>	13.5	6.8	6.0	2.2	0.4
<b>13 ANTN-W</b>	13.5	6.8	7.0	7.5	1.2
<b>13 XTN(75°)</b>	13.5	6.8	9.6	1.4	0.4
<b>13 XTN(45°)</b>	13.5	6.8	6.35	1.4	0.4



Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	<b>SNGX 1306 ENTN-M</b>	2.5-8.0	0.20-0.10	●		●		●		●				
	<b>SNMX 1306 ENTN-M</b>	2.5-8.0	0.20-0.10	●		●		●		●	●			
	<b>SNGX 1306 ANTN-M</b>	2.0-6.0	0.20-0.10	●		●		●	●					
	<b>1306 ANTN-ML</b>	2.0-6.0	0.25-0.13	●		●				●				
	<b>SNMX 1306 ANTN-M</b>	2.0-6.0	0.20-0.10	●		●		●	●	●	●			
	<b>SNGX 1306 ANN-AL</b>	2.0-6.0	0.35-0.10										●	
	<b>SNMX 1306 ANTR-MP</b>	2.0-6.0	0.20-0.10	●		●		●		●				
	<b>SNMX 1306 XTN</b>	2.5-6.5	0.20-0.10	●	●			●	●	●	●			
	<b>SNGX 1306 ANTN-W</b>	0.2-1.0	0.20-0.10	●						●				

●: Standard items













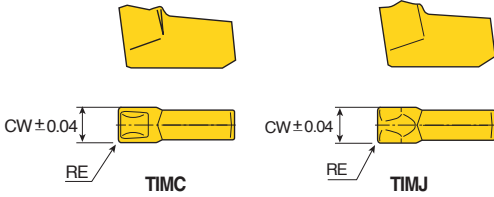






# TIMC/J

## Slotting inserts



Size	Dimension (mm)			
	Seat size	CW	RE	
<b>1.6</b>	1	1.6	0.16	
<b>2</b>	2	2.2	0.20	
<b>2.4</b>	2	2.4	0.20	
<b>3</b>	4	3.1	0.20	
<b>4</b>	4	4.1	0.25	
<b>4.8</b>	4	4.8	0.28	

Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT7220	TT7080	TT6030	TT5100	K10	
	<b>TIMC 1.6</b>	-	0.12-0.04	●									●
	<b>2</b>	-	0.13-0.05	●									●
	<b>2.4</b>	-	0.15-0.06	●									
	<b>3</b>	-	0.18-0.06	●						●	●		
	<b>4</b>	-	0.20-0.08	●				●	●				
	<b>4.8</b>	-	0.20-0.08					●			●		
	<b>TIMJ 2</b>	-	0.12-0.04										
	<b>2.4</b>	-	0.13-0.05							●			●
	<b>3</b>	-	0.15-0.05								●		●
	<b>4</b>	-	0.18-0.05							●			●
	<b>4.8</b>	-	0.18-0.05							●			●

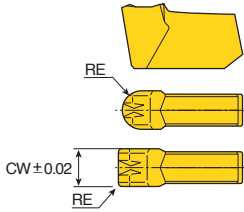
●: Standard items



E234

# TIPV

## Slotting inserts



Size	Dimension (mm)			
	Seat size	CW	RE	
<b>TIPV...E ...</b>	3, 4	3.0-4.5	0.4-2.0	
<b>TIPV 1.85-2.15</b>	2	1.85-2.15	0.1-0.2	
<b>TIPV 2.65-4.15</b>	3, 4	2.65-4.15	0.15-0.20	

Insert	Designation	Recommended machining conditions		Coated							Uncoated			
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT7220	TT7080	TT6030	TT5100			K10
	<b>TIPV 3.00E 0.40</b>	-	0.18-0.06							●	●			
	<b>4.00E 0.40</b>	-	0.20-0.08								●			
	<b>4.50E 0.40</b>	-	0.20-0.08											
	<b>3.00E 1.50</b>	-	0.18-0.06							●	●			
	<b>4.00E 2.00</b>	-	0.20-0.08							●	●		●	
	<b>1.85 0.10</b>	-	0.13-0.05							●	●			
	<b>2.00 0.20</b>	-	0.13-0.05							●	●			
	<b>2.15 0.15</b>	-	0.13-0.05							●	●		●	
	<b>2.65 0.15</b>	-	0.18-0.06								●			
	<b>3.00 0.20</b>	-	0.18-0.06								●		●	
	<b>3.18 0.20</b>	-	0.18-0.06									●	●	
	<b>4.00 0.20</b>	-	0.20-0.08									●		
	<b>4.15 0.15</b>	-	0.20-0.08									●		

●: Standard items





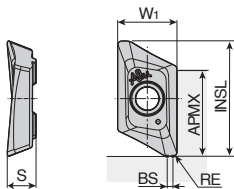




# XEVT 16/22-AL



## Inserts



Size	Dimension (mm)					
	INSL	W1	S	APMX	BS	RE
<b>16</b>	18.3-22.2	11.2	5.1-5.5	14-16	0.6-1.5	0.4-5.0
<b>22</b>	22.4-28	13.6	6.8-7.4	18.5-21	1.2-1.7	0.5-6.4

Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	<b>XEVT 160504R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160508R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160512R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160516R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160520R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160524R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160530R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160532R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160540R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>160550R-AL</b>	3.5-12.0	0.4-0.1									●	
	<b>220605R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220608R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220616R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220620R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220630R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220632R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220640R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220650R-AL</b>	3.5-18.0	0.6-0.1									●	
	<b>220664R-AL</b>	3.5-18.0	0.6-0.1									●	

●: Standard items

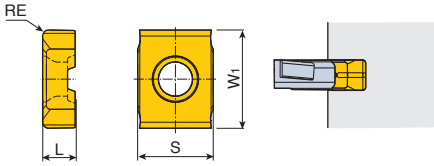








## Inserts



Size	Dimension (mm)				
	W <sub>1</sub>	S	L	RE	
<b>018</b>	10	7.5	1.8	0.2-0.8	
<b>023</b>	10	7.5	2.3	0.2-0.8	
<b>028</b>	10	7.5	2.8	0.2-0.8	
<b>033</b>	10	7.5	3.3	0.2-0.8	
<b>038</b>	13	10	3.8	0.4-0.8	
<b>043</b>	13	10	4.3	0.4-0.8	
<b>048</b>	13	10	4.8	0.4-0.8	
<b>053</b>	13	10	5.3	0.4-0.8	



Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	<b>ZNHT 018-04</b>	-	0.08-0.05	●		●					●		
	<b>018-08</b>	-	0.08-0.05	●	●								
	<b>023-04</b>	-	0.08-0.05	●	●						●		
	<b>023-08</b>	-	0.08-0.05	●	●								
	<b>028-04</b>	-	0.10-0.15	●	●						●		
	<b>028-08</b>	-	0.10-0.15	●	●								
	<b>033-04</b>	-	0.12-0.05	●	●						●		
	<b>033-08</b>	-	0.12-0.05	●	●								
	<b>038-04</b>	-	0.12-0.05	●	●						●		
	<b>038-08</b>	-	0.12-0.05	●	●								
	<b>043-04</b>	-	0.15-0.05	●	●						●		
	<b>043-08</b>	-	0.15-0.05	●	●						●		
	<b>048-04</b>	-	0.15-0.05	●	●						●		
	<b>048-08</b>	-	0.15-0.05	●	●						●		
	<b>053-04</b>	-	0.15-0.05	●	●						●		
<b>053-08</b>	-	0.15-0.05	●	●						●			
	<b>ZNHT 018-04-ML</b>	-	0.08-0.05		●						●		
	<b>023-04-ML</b>	-	0.08-0.05		●						●		
	<b>028-04-ML</b>	-	0.08-0.05			●					●		
	<b>033-04-ML</b>	-	0.12-0.05			●					●		
	<b>038-04-ML</b>	-	0.12-0.05			●					●		
	<b>043-04-ML</b>	-	0.12-0.05			●					●		
	<b>048-04-ML</b>	-	0.12-0.05			●					●		
	<b>053-04-ML</b>	-	0.12-0.05			●					●		
	<b>ZNHT 018-02-AL</b>	-	0.35-0.10									●	
	<b>023-02-AL</b>	-	0.35-0.10									●	
	<b>028-02-AL</b>	-	0.35-0.10									●	
	<b>033-02-AL</b>	-	0.35-0.10									●	
	<b>038-04-AL</b>	-	0.35-0.10									●	
	<b>043-04-AL</b>	-	0.35-0.10									●	
	<b>048-04-AL</b>	-	0.35-0.10									●	
	<b>053-04-AL</b>	-	0.35-0.10									●	

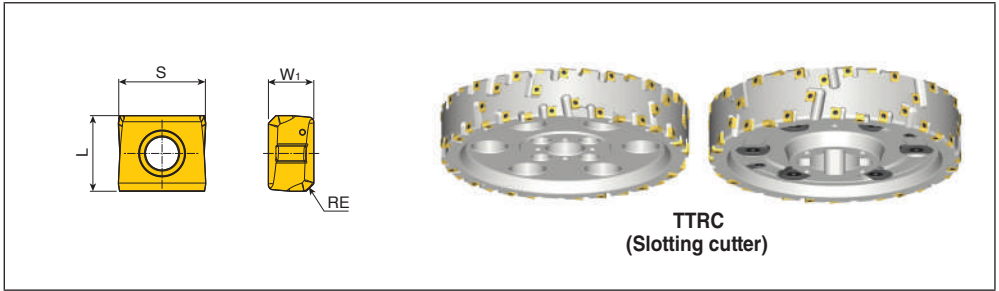
●: Standard items









# Tailor-made Insert

## Tangential inserts



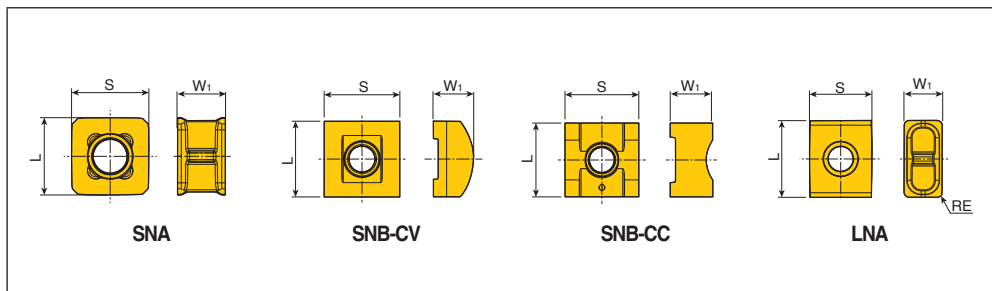
Insert	Designation	Dimension (mm)			
		L	S	W <sub>1</sub>	RE
	<b>LNC 1060-C</b>	10.0	11.5	6.0	chamfer
	<b>LNC 137020-L</b>	13.6	11.6	6.7	2.0
	<b>LNCX 136508 PNR-ML</b>	13.0	10.6	6.5	0.8



Insert	Designation	Dimension (mm)			
		L	S	W <sub>1</sub>	RE
	<b>PMIN 120905-M</b>	12.0	9.7	5.4	2.0
	<b>PMIN 130907-M</b>	13.5	9.7	7.0	2.0
	<b>PMIN 150907-M</b>	15.0	9.9	7.0	2.0
	<b>PMIN 180907-M</b>	18.0	9.7	7.0	2.0

# Tailor-made Insert

## Tangential inserts



Insert	Designation	Dimension (mm)			
		L	S	W <sub>1</sub>	RE
	<b>SNA 1065-M</b>	10.5	10.5	6.5	-
	<b>SNA 1370-M</b>	13.0	13.0	7.0	-
	<b>SNA 1680-M</b>	16.0	16.0	8.0	-
	<b>SNB 1375-CV</b>	13.0	13.0	7.5	-
	<b>SNB 1685-CV</b>	16.0	16.0	8.5	-
	<b>SNB 1375-CC</b>	13.0	13.0	7.5	-
	<b>SNB 1685-CC</b>	16.0	16.0	8.5	-
	<b>LNA 137008-M</b>	13.5	10.0	6.7	0.8
	<b>LNA 168008-M</b>	16.5	14.0	8.0	0.8

▶ CV: Convex, CC: Concave

▶ Various corner radii are available for SNB insert



**TRMT**  
(Form profile cutter)



# Recommended Cutting Conditions

## Machining data for MAXI-SPEED

ISO	Material		Hardness HB	Vc(m/min)	Feed (mm/tooth)		
	Material	AISI/SAE/ASTM			TR13	TR15	TR17
<b>P</b>	Non-alloy steel	1020	130-180	120-200	0.04-0.12	0.05-0.15	0.06-0.15
	Low alloy steel	4030	260-300	200-300	0.04-0.12	0.05-0.15	0.06-0.15
	Low alloy steel	3135	HRC 35-40	80-120	0.02-0.06	0.03-0.12	0.04-0.12
	High alloy steel	H13	200-220	100-150	0.03-0.07	0.04-0.12	0.04-0.12
<b>M</b>	Martensitic stainless steel	420	200	100-150	0.02-0.06	0.04-0.12	0.04-0.12
	Austenitic stainless steel	304L	200	80-120	0.02-0.06	0.03-0.10	0.03-0.12
<b>K</b>	Gray cast iron	Class 40	250	150-200	0.04-0.12	0.05-0.20	0.05-0.20
	Malleable cast iron	Class 65 45 12	200	130-180	0.04-0.10	0.05-0.18	0.05-0.18
<b>S</b>	High temp. alloys	Inconel 718	HRC 36-40	20-30	0.015-0.10	0.02-0.12	0.02-0.12
		AMS R56400	HRC40-45	30-40	0.015-0.06	0.02-0.12	0.02-0.12

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

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

# Recommended Cutting Conditions

## Machining data for CBN grade

ISO	Material	D.O.C. (mm)	Grade		
			TB7015		
			Cutting speed Vc(m/min)	Feed (mm/tooth)	Cutting edge
<b>P</b>	Bearing steel	< 2	180 - 220	0.05 - 0.25	Chamfer
	Ferrous powder metal	< 2	150 - 300	0.1 - 0.15	Chamfer
<b>K</b>	Grey cast iron HB 200 - 280	< 0.5	500 - 1500	0.1 - 0.3	Chamfer hone
		0.5 - 2.0	500 - 1100	0.1 - 0.25	Chamfer
	Compared graphite iron (CGI)	< 0.5	400 - 600	0.1 - 0.2	Hone
<b>S</b>	Co based > 35 HRC	0.5 - 2.0	150 - 200	0.05 - 0.15	Chamfer
	Ni based > 35 HRC		120 - 150	0.05 - 0.15	Chamfer
	Fe based > 35 HRC		60 - 120	0.05 - 0.15	Chamfer
	Cr based > 35 HRC		50 - 75	0.05 - 0.15	Chamfer
<b>H</b>	Hardened steels > 45 HRC	< 0.5	80 - 180	0.1 - 0.25	Chamfer
	Hardened cast iron	< 2	80 - 200	0.1 - 0.15	Chamfer

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

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



# Recommended Cutting Conditions

## Machining data

Cutting Speed: Vc(m/min)

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Uncoated					
						K10	TT9080	TT9030	TT7080	TT8525B	
P	Non-alloy steel, cast steel, free cutting steel	< 0.25%C Annealed	420	125	1		220-370	190-310	250-410	160-270	
		>= 0.25%C Annealed	650	190	2		180-310	160-260	200-380	140-210	
		< 0.55%C Quenched and tempered	850	250	3		115-195	105-185	140-230	90-160	
		>= 0.55%C Annealed	750	220	4		130-210	120-200	160-250	100-170	
		Quenched and tempered	1000	300	5		115-175	95-160	135-195	80-140	
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed	600	200	6		175-265	160-250	190-290	140-200	
			930	275	7		130-215	120-200	150-240	90-160	
		Quenched and tempered	1000	300	8		105-185	95-175	135-225	70-150	
			1200	350	9		95-160	80-150	120-190	60-110	
			High alloy steel, cast steel and tool steel	Annealed	680	200	10		85-155	75-135	100-150
Quenched and tempered	1100	325	11		75-135	65-120	90-140	50-90			
M	Stainless steel and cast steel	Ferritic / martensitic	680	200	12		115-270	100-250			
		Martensitic	820	240	13		100-230	80-200			
		Austenitic	600	180	14		120-275	110-260			
K	Gray cast iron (GG)	Ferritic		160	15		130-300				
		Pearlitic		250	16		120-280				
	Cast iron nodular (GGG)	Ferritic		180	17		110-220				
		Pearlitic		260	18		100-200				
Malleable cast iron	Ferritic		130	19		150-250					
	Pearlitic		230	20		100-250					
N	Aluminum - wrought alloy	Not cureable		60	21	550-700					
		Cured		100	22	600-750					
	Aluminum-cast, alloyed	<=12% Si Not cureable		75	23	800-900					
		Cured		90	24	650-800					
		>12% Si High temp.		130	25	250-320					
	Copper alloys	>1% Pb Free cutting		110	26	300-400					
		Brass		90	27	300-400					
	Non-metallic	Electroplastic, fiber plastics			100	28	210-280				
			Graphite								
		Hard rubber		55Shore D	30	150-250					
S	High temp. alloys	Fe based	Annealed		200	31		40-80			
			Cured		280	32		30-60			
		Ni or Co based	Annealed		250	33		35-70			
			Cured		350	34		30-60			
	Titanium, Ti alloys	Cast		320	35		35-65				
		Pure	Rm 400	190	36		90-130				
Alpha+beta alloys, hardened	Rm 1050	310	37		35-70						
H	Hardened steel	Hardened		55HRC	38		40-75	40-60			
		Hardened		60HRC	39		30-55	30-55			
	Chilled cast iron	Cast		400	40		70-105	60-100			
Cast iron nodular	Hardened		55HRC	41		50-65	40-60				

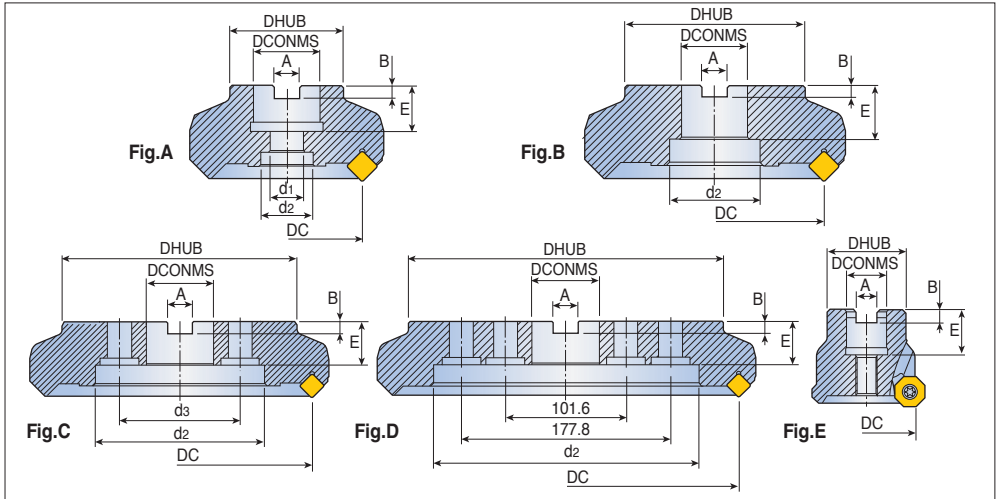
► For more information of material groups, see the materials & grades "material conversion table".

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



# Mounting Reference

## Arbor style



Dimension (mm)										Fig.	Arbor
DC	DCONMS	A	B	E	DHUB		d1	d2	d3		
					For mold & die	For general					
32	16	8.4	5.6	20	30	-	-	-	-	E	SEM16
32	16	8.4	5.6	20	30	-	9	13.5	-	A	SEM16
40	16	8.4	5.6	20	38	-	9	13.5	-	A	SEM16
40	22	10.4	6.3	22	38	-	11	17	-	A	SEM22
50	22	10.4	6.3	22	40	45	11	17	-	A	SEM22
63	22	10.4	6.3	22	47	-	11	17	-	A	SEM22
80	25.4	9.526	6	26	-	70	13	20	-	A	FMA25.4
80	27	12.4	7	28	58	70	13	22	-	A	SEM27
100	31.75	12.7	8	32	-	80	18	26	-	A	FMA31.75
100	31.75	12.7	8	32	-	80	-	46	-	B	FMA31.75
100	32	14.4	8	26	66	85	18	26	-	A	SEM32
100	32	14.4	8	26	66	85	-	46	-	B	SEM32
125	38.1	15.875	10	38	80	-	-	56	-	B	FMA38.1
125	40	16.4	9	32	85	-	22	32	-	A	SEM40
125	40	16.4	9	32	85	-	-	56	-	B	SEM40
160	40	16.4	9	32	110	-	-	90	66.7	C	FM40
160	50.8	19.05	11	38	100	-	-	72	-	B	FMA50.8
200	47.625	25.4	14	38	130	-	-	132	101.6	C	FMA47.625
200	60	25.7	14	40	130	-	-	132	101.6	C	FM60
250	47.625	25.4	14	38	160	-	-	150	101.6	C	FMA47.625
250	60	25.7	14	40	160	-	-	150	101.6	C	FM60
315	47.625	25.4	14	38	220	-	-	224	-	D	-
315	60	25.7	14	40	220	-	-	220	-	D	-

► For Face Mill arbors, please refer to TaeguTec tooling system(part G)

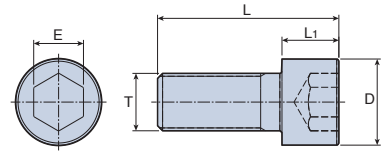
# Mounting Reference

## Mounting bolt

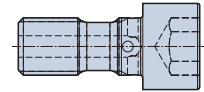
### SH type

Designation	Dimension (mm)					Cutter size
	D	L	L <sub>1</sub>	T	E	
SH M8x1.25x25(-C)	13	33	8	8	6	32,40
SH M8x1.25x30(-C)	13	38	8	8	6	32,40
SH M8x1.25x35(-C)	13	43	8	8	6	32,40
SH M10x1.5x30(-C)	16	40	10	10	8	50, 63
SH M12x1.75x35(-C)	18	47	12	12	10	80
SH M16x2x35(-C)	24	51	16	16	14	100
SH M20x2.5x40(-C)	30	60	20	20	17	125

► "-C": Bolt with hole for internal coolant



SH

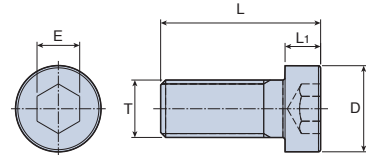


SH-C

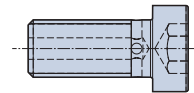
### LH type

Description	Dimension (mm)					Cutter size
	D	L	L <sub>1</sub>	T	E	
LH M10x1.5x25(-C)	16	31.5	6.5	10	8	50, 63
LH M12x1.75x30(-C)	18	36.9	6.9	12	8	80
LH M16x2x35(-C)	24	45	10	16	12	100

► "-C": Bolt with hole for internal coolant



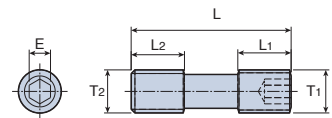
LH



LH-C

### KTB, TCS type

Description	Dimension (mm)					
	L	L <sub>1</sub>	L <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>	E
KTB 32B	30	10	10	M8X1.0	M8X1.25	4
TCS10-40	40	10	15	M10X1.25	M10X1.5	5



KTB, TSC

## ► Recommended clamping torque for each screw

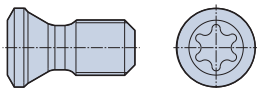


Fig.1

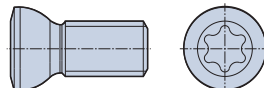
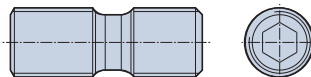
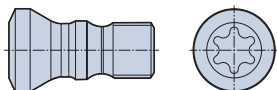


Fig.2

Designation	Thread	Length	Torx	Tightening Torque	Fig.
TS 18033/HG-P	M1.8	3.3	Torx Plus 6	0.5 Nm	1
TS 18041/HG	M1.8	4.09	Torx Plus 6	0.5 Nm	1
TS 18041/SG-P	M1.8	4.09	Torx Plus 6	0.5 Nm	1
TS 200431/HG-P	M2	4.3	Torx Plus 6	0.6 Nm	1
TS 22046I	M2.2	4.6	Torx 7	0.9 Nm	1
TS 220521/HG	M2.2	5.2	Torx 7	0.9 Nm	1
TS 250551/HG	M2.5	5.5	Torx 8	1.2 Nm	1
TS 250751/HG	M2.5	7.5	Torx 8	1.2 Nm	1
TS 25064I	M2.5	6.4	Torx 8	1.2 Nm	1
TS 250641/HG-P	M2.5	6.4	Torx Plus 8	1.2 Nm	1
TS 25B0241/HG	M2.5	2.6	Torx Plus 7	0.9 Nm	1
TS 25B0311/HG	M2.5	3.3	Torx Plus 7	0.9 Nm	1
TS 25B0421/HG	M2.5	4.35	Torx Plus 7	0.9 Nm	1
TS 25B0531/HG	M2.5	5.45	Torx Plus 7	0.9 Nm	1
TS 25C0651/HG	M2.5	6.5	Torx 8	1.2 Nm	2
TS 300851/HG	M3	8.5	Torx 9	2.0 Nm	1
TS 30A0601/HG	M3	6	Torx 9	2.0 Nm	1
TS 30B0681/HG	M3	6.8	Torx 8	1.2 Nm	1
TS 30D082-P	M3	8.2	Torx Plus 8	1.2 Nm	1
TS 350701/HG	M3.5	7	Torx 15	3.0 Nm	1
TS 350851/HG	M3.5	8.75	Torx 15	3.0 Nm	1
TS 35088I	M3.5	8.75	Torx 10	2.0 Nm	1
TS 35A0701/HG	M3.5	7	Torx Plus 10	2.0 Nm	1
TS 35A0881/HG	M3.5	8.75	Torx Plus 10	2.0 Nm	1
TS 35C110I	M3.5	11	Torx 15	3.0 Nm	2
TS 400851/HG	M4	8.5	Torx 15	3.5 Nm	1

Designation	Thread	Length	Torx	Tightening Torque	Fig.
TS 40093I	M4	9.3	Torx 15	3.5 Nm	1
TS 400931/HG	M4	9.3	Torx 15	3.5 Nm	1
TS 40097I	M4	9.7	Torx 15	3.5 Nm	1
TS 40120I	M4	12	Torx 15	3.5 Nm	1
TS 401201/HG	M4	12	Torx 15	3.5 Nm	1
TS 40A100I	M4	10	Torx 15	3.5 Nm	1
TS 40A115I	M4	11.5	Torx 15	3.5 Nm	1
TS 40B100I	M4	10	Torx 15	3.5 Nm	2
TS 40G110I	M4	11	Torx 15	3.5 Nm	1
TS 40M100/HG	M4	10	Torx 15	3.5 Nm	2
TS 40K535I	M4	5.35	Torx 15	3.5 Nm	1
TS 40K065I	M4	6.5	Torx 15	3.5 Nm	1
TS 40K075I	M4	7.5	Torx 15	3.5 Nm	1
TS 40K085I	M4	8.5	Torx 15	3.5 Nm	1
TS 45120I	M4.5	12	Torx 20	5.0 Nm	2
TS 50105I	M5	10.5	Torx 20	5.0 Nm	1
TS 50115I	M5	11.5	Torx 20	5.0 Nm	1
TS 50A140I	M5	14	Torx 20	5.0 Nm	1
TS 50A1211/HG	M5	12.1	Torx 20	5.0 Nm	1
TS 50B1061/HG	M5	10.6	Torx 20	5.0 Nm	1
TS 50C1301/HG	M5	13	Torx 20	5.0 Nm	2
TS 50D130/HG-P	M5	13	Torx Plus 20	5.0 Nm	1
TS 60A130I	M6	13.5	Torx 25	6.0 Nm	2
TS 60A165I	M6	16.5	Torx 25	6.0 Nm	2
TS 60170I	M6	17	Torx 25	6.0 Nm	1



Designation	Thread	Length	Torx	Tightening Torque
TS 20F060A	M2	5	Torx 6	0.7 Nm
TS 25F080A	M2.5	6.9	Torx 8	1.1 Nm
TS 30F100A	M3	8.3	Torx 10	2.0 Nm
TS 40F120A	M4	10.6	Torx 15	4.0 Nm
TS 50F160A	M5	13.9	Torx 20	5.0 Nm
TS 60F200A	M6	16.7	Torx 25	6.0 Nm
TS 70F250A	M7	21	Torx 25	7.0 Nm
TS 80F300A	M8	25	Torx 30	8.0 Nm

Designation	Thread	Length	Torx	Tightening Torque
WS 4	M4	12.5	Hexa 2.0mm	1.5 Nm
WS 5	M5	14	Hexa 2.5mm	3.3 Nm
WS 6	M6	15	Hexa 3mm	5 Nm
WS 8	M8	21	Hexa 4mm	7 Nm

## ► Quick change cutter adapter

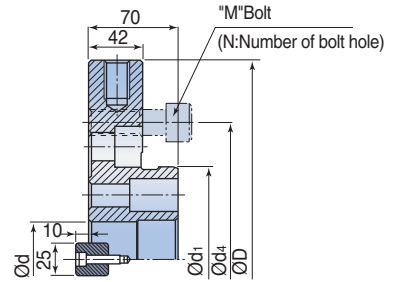
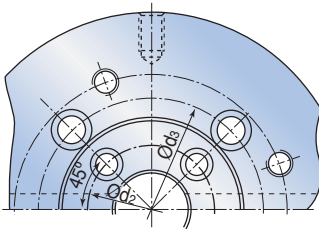
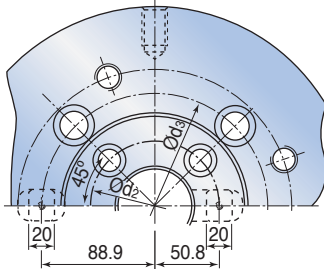


Fig.1

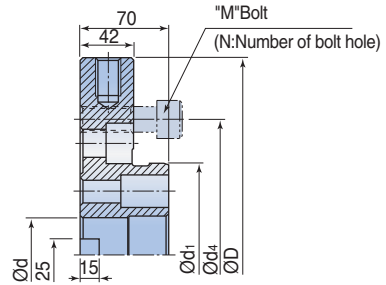


Fig.2

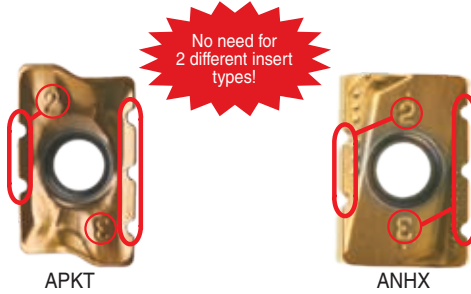
Designation	Dimension (mm)							N	Weight (Kg)
	D	d	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	d <sub>4</sub>	M		
<b>QA 08 K/M</b>	198	47.625	63.5	101.6	-	114.3	M16x40	4	10
<b>QA 10 K/M</b>	248	60	133.35	101.6	-	177.8	M16x50	4	15
<b>QA 12 K/M</b>	313	60	146.05	101.6	177.8	215.9	M20x50	4	19.7
<b>QA 14 K/M</b>	353	60	215.9	101.6	177.8	260.4	M20x50	6	24
<b>QA 16 K/M</b>	398	60	254.0	101.6	177.8	304.8	M20x50	6	29

► K: Adapter with setting key (Fig.1)

M: Adapter without setting key (Fig.2)

## ► How to use splitter

- 3 splitting grooves on one cutting edge and 2 splitting grooves on the opposite side

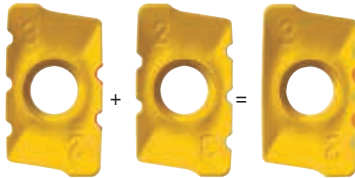


- Full proof configuration-inserts have metal color appearance only on the 3 groove side for simplified mounting

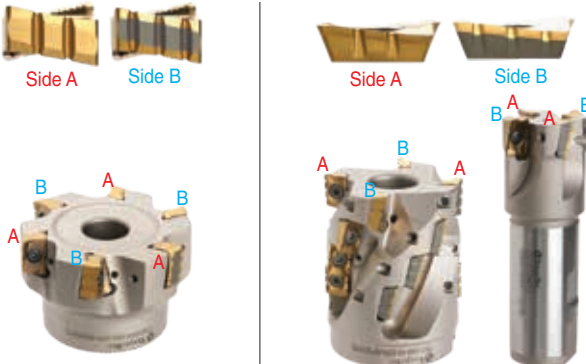


**Notice:** When insert mounting, ensure they are mounted in a staggered formation i.e. 1st tooth-2 groove side; 2nd tooth-3 groove side and repeat action for the remaining teeth

- Both cutting edges split chip to small pieces for cutting load reduction and create complete cutting edge when combined.

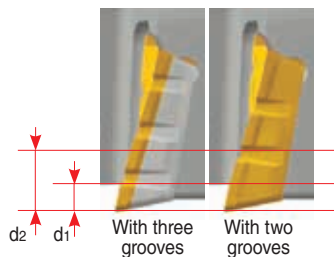


- For optimum machining efficiency, use even numbered flute type cutters

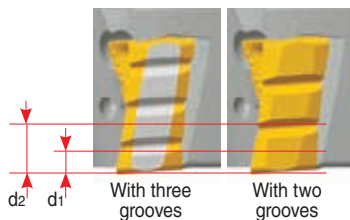


Also applicable to odd numbered flute type cutters

- The splitter inserts effective in axial depth of cuts  $\geq d_1$



Depth of cut	APKT 17	APKT 12
d <sub>1</sub>	3mm	2.4mm
d <sub>2</sub>	6.5mm	5.2mm



Depth of cut	ANHX 16
d <sub>1</sub>	2.5mm
d <sub>2</sub>	6mm



## ▶ Setting instructions

Height gauge

Insert

Insert screw

Adjust wedge

Wedge screw

T-Wrench



**1** Move the adjust wedge to its bottom-most position by rotating the wedge screw clockwise.



\*Please avoid using too much force.

**2** Mount new cutting edge of insert. Make sure that the insert pocket is thoroughly cleaned before mounting insert.



\*Please fix the insert screw completely as readjustment is not expected once it is done.

**3** Measure the Runout of the cutter when all inserts are mounted and select the highest insert as a reference.



\*Please ensure that insert edge does not get damaged during setting. Use optimum dial pressure only.

**4** Set the height of cutter, raising the reference insert by turning the wedge screw counter clockwise.



\*Increase height by 0.01mm at least from the highest insert.

**5** Adjust axial Runout of the remaining inserts with the same process as used with the reference insert.



\*Please note that max adjustment height should not exceed 0.1mm(.004")

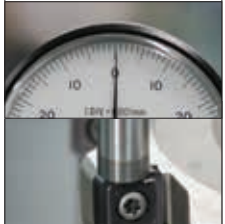
**5** Adjust Runout in the range of 0.005mm rotating the wrench gradually.



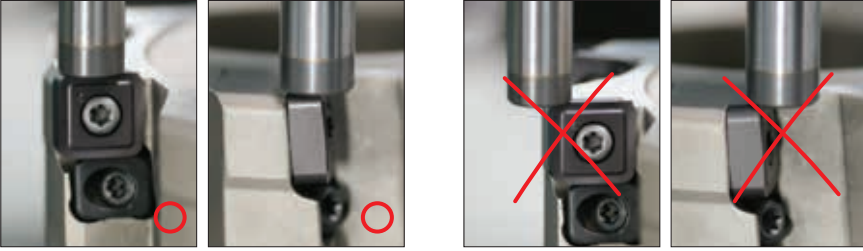
**5** If it is beyond the acceptable range, please reset it with the order of **1 - 2 - 5**



**6** Runout adjustment is completed.(you don't have to clamp the insert screw anymore once it is fixed.)

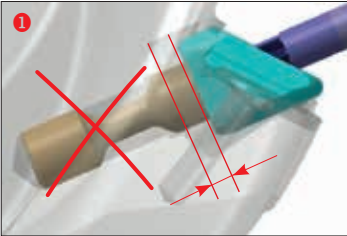


## ► Gauge user guide

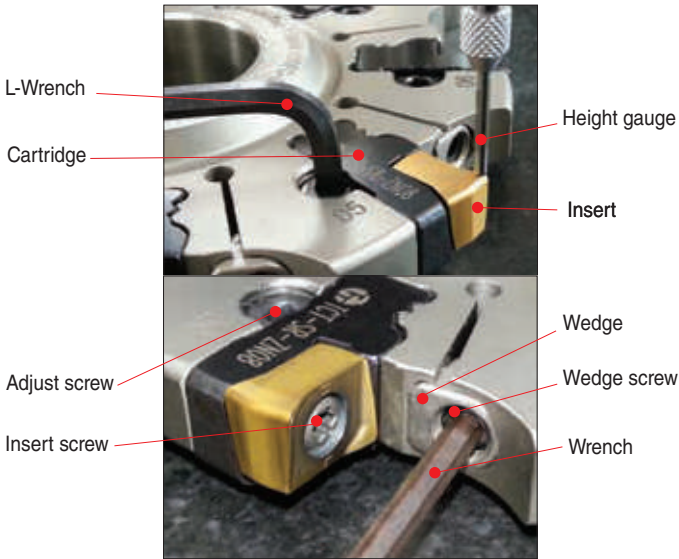


## ► Special precautions

- While loading a new insert corner, ensure that the adjust wedge is in the bottom-most position  
Bottom out the adjust wedge completely before unclamping the insert from cutter
- Clean the insert and pocket thoroughly before mounting fresh insert /corner
- While assembling adjust wedge onto cutter body, please ensure that the adjust wedge is tightened until it reaches the bottom



## ▶ TOPSLOT component names



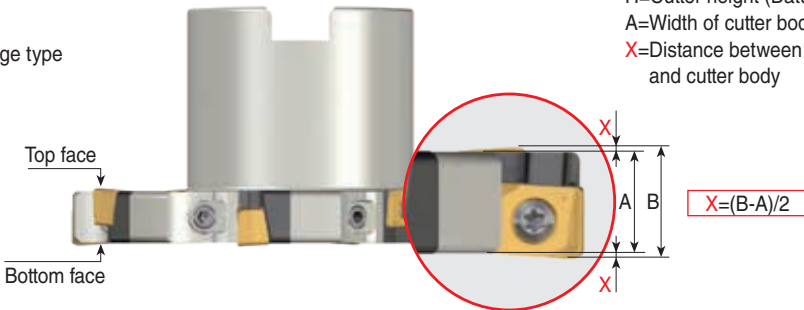
## ▶ TOPSLOT setup instructions

### ■ Disk type



B=Cutting width (Target width)  
 H=Cutter height (Datum)  
 A=Width of cutter body  
 X=Distance between insert and cutter body

### ■ Flange type



## ▶ Setting procedure

### ■ Disk type

- 1 Index unused inserts firmly onto the cartridge.



- 2 Unfasten the wedge screw 1 turn counter-clockwise.



- 3 After fastening the wedge around 80%, adjust the cartridge to the desired "X" value after setting the datum zero point.



- 4 Follow the same method about other cartridges. (the same as opposite side)

- 5 After setting all cartridges, sequentially fasten the wedge 100% over two or three times.

- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.
- Clockwise rotation : cartridge descends.
- Counter-clockwise rotation : cartridge ascends.

### ■ Flange type

- 1 For setting of bottom face, repeat disk type steps 1-4. (The datum is bottom plane of flange type cutter.)



- 2 For top face set-up, the use of setting plate is mandatory and the height gauge must be reset to '0' for each insert.



- 3 Put the cutter bottom face on the setting plate and unfasten wedge screw 1 turn counter-clockwise



- 4 After fastening the wedge around 80%, adjust the cartridge to the desired (A+X) value.



- 5 Follow the same method about other cartridges.

- 6 After setting all cartridges, sequentially fasten the wedge 100% over two or three times.

- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.
- Clockwise rotation: cartridge descends.
- Counter-clockwise rotation: cartridge ascends.

## ▶ Setting notice

### ■ Important set-up points

- All adjustments must be done on a plane, flat surface.
- For improved accuracy, remove any foreign substances from the insert and insert pocket surfaces before clamping.
- During reassembly wedges and wedge screws, you must apply lubricant of the friction surface. (Fig.1)
- "X" value must be equal for both top and bottom faces when adjusting the width of slot. (Fig.2)
- Width of cut must be adjusted within the range of the laser marked on the cutter. (Fig.3)  
Ex) WIDTH 12-13 / WIDTH 20-23
- When adjusting cartridge to the "X" value, set the location of cartridge higher than "X" value and then adjust the cartridge to the "X" value.



Fig.1 Lubricant



Fig.2 "X" setting



Fig.3 WIDTH

## ► Narrow width slotting cutters

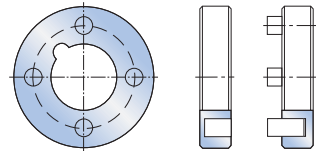
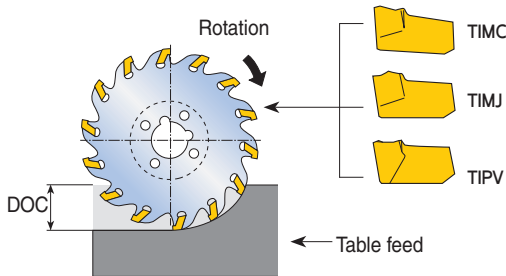


- Metric cutting diameters:  
75mm, 100mm, 125mm, 160mm, 250mm
- Cutting width ranges: 1.6mm - 6.35mm
- Geometry: Positive Rake
- Applications: Slotting and sawing
- Materials: Carbon steels, alloy steels, stainless steels, cast iron, aluminum and exotics

### ■ Features / Benefits of slotting cutters

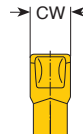
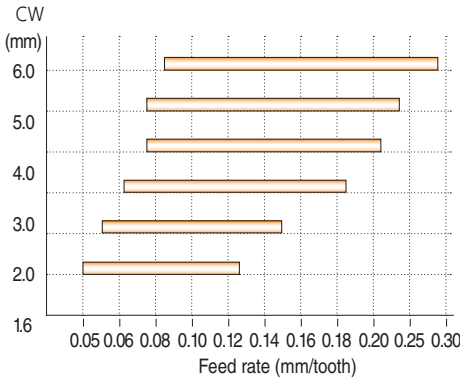
- Narrow width applications to 1.6mm
- Simple easy-to-mount inserts
- Secure insert retention self-positioning insert stopper for repeatability
- Drive flange mounting for extra stability
- Minimal radial runout
- Efficient chip evacuation
- Reduced cutting forces
- Improved tool life
- Economical

## ► Recommended feed rates for - TSC slotting cutters



Drive flange set  
recommended for  
style 2 cutters

## ► Recommended feed rates (Based on insert width)



Feed rates are for radial  
D.O.C. => 1/4 the cutter diameter  
For radial DOC < 1/4 the cutter diameter  
increase feed rates by the following %

DOC/Cutter diameter	1/4	1/6	1/8	1/10	1/20
Increase feed rate by ->	0%	15%	30%	45%	45%

### ■ Cutter entry

Climb milling enters the workpiece with a thick chip and exits with a thin chip. Honed inserts are recommended.

Conventional milling enters the workpiece with a thin chip and exits with a thick chip.

Sharp inserts are recommended. Climb milling should be used whenever possible, especially when replacing high speed steel slotting cutters. On machines with backlash eliminators, climb milling is preferred.

### ■ Cutter mounting

The use of drive flange sets are recommended to prevent denting of arbor drive keys and to provide added stability during increased metal removal rates.

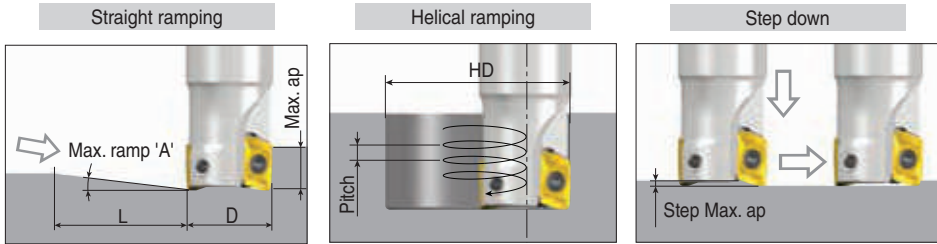
### ■ Insert mounting

Manually place insert in pocket and seat in place by using a wooden or plastic hammer.

This will ensure self positioning for insert repeatability and minimal radial runout.

Pockets must be clean and free of debris prior to installation.

# Ramping Data



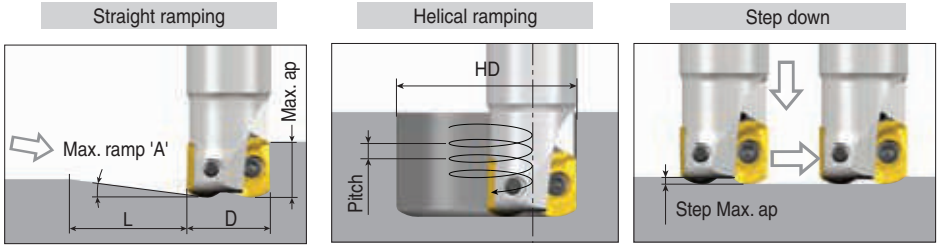
## AVKT 10

(unit: mm)

Cutter dia. (D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.	Max. ap
Ø16	10.9	10	52	20		2.4	1.7
					32	9.7	
Ø18	8.3	10	69	24		2.7	2.2
					36	8.2	
Ø20	6.5	10	88	28		2.9	2.1
					40	7.2	
Ø25	4.3	10	133	38		3.1	2.3
					50	5.9	
Ø32	2.9	10	198	52		3.2	2.0
					64	5.1	
Ø40	2.1	10	273	68		3.2	2.2
					80	4.6	
Ø50	1.6	10	358	88		3.3	2.4
					100	4.4	
Ø63	1.2	10	478	114		3.4	2.1
					126	4.1	



# Ramping Data

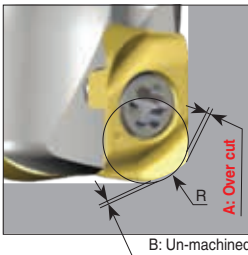


## AVKT 1004R-HF

(unit: mm)

Cutter dia. (D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.	Max. ap
Ø16	7.6	10	75	20.5		1.9	0.8
					32	6.7	
Ø18	5.5	10	104	24.5		2.0	1.0
					36	5.4	
Ø20	4.2	10	136	28.5		2.0	1.2
					40	4.6	
Ø25	2.6	10	220	38.5		1.9	1.3
					50	3.6	
Ø32	1.7	10	337	52.5		1.9	1.4
					64	3.0	
Ø40	1.2	10	478	68.5		1.9	1.4
					80	2.6	
Ø50	0.9	10	637	88.5		1.9	1.4
					100	2.5	
Ø63	0.7	10	819	114.5		2.0	1.4
					126	2.4	

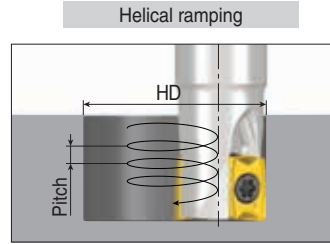
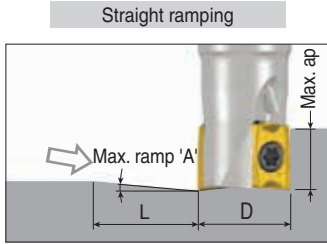
## Programming technical data



	R Program	A Over cut	B Un machined
AVKT 1004R-HF	1.7	0	0.49
	1.9	0	0.43
	2.0	0.01	0.40
	2.5	0.13	0.24
	3.0	0.30	0.11

Yellow background: Recommended program 'R'

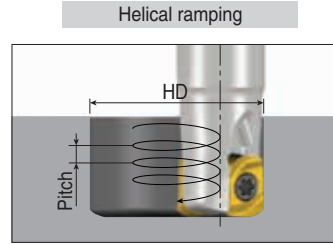
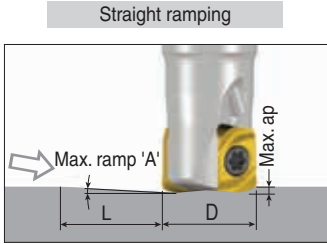
# Ramping Data



## CVK(H)T 05: R0.2

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø6	2.5	5.0	112	8		0.2
					12	0.7
Ø8	2.1	5.0	136	12		0.4
					16	0.8
Ø9	1.7	5.0	164	14		0.4
					18	0.7
Ø10	1.7	5.0	169	16		0.5
					20	0.8
Ø11	1.3	5.0	212	18		0.4
					22	0.7
Ø12	1.3	5.0	220	20		0.5
					24	0.7
Ø13	1.1	5.0	249	22		0.5
					26	0.7
Ø14	1.0	5.0	273	24		0.5
					28	0.7
Ø16	0.9	5	302	28		0.5
					32	0.7
Ø20	0.7	5	382	36		0.6
					40	0.7

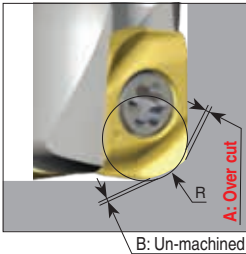


## CVKT 05-HF

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø6	0.20	0.5	143	8		0.0
					12	0.1
Ø8	0.45	0.5	64	12		0.1
					16	0.2
Ø9	0.55	0.5	52	14		0.1
					18	0.2
Ø10	0.30	0.5	96	16		0.1
					20	0.1
Ø11	0.35	0.5	82	18		0.1
					22	0.2
Ø12	0.70	0.5	41	20		0.3
					24	0.4
Ø13	0.75	0.5	38	22		0.3
					26	0.5
Ø14	0.85	0.5	34	24		0.4
					28	0.5
Ø16	0.65	0.5	44	28		0.4
					32	0.5
Ø20	0.50	0.5	57	36		0.4
					40	0.5

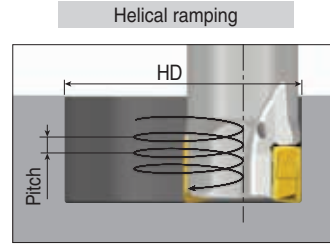
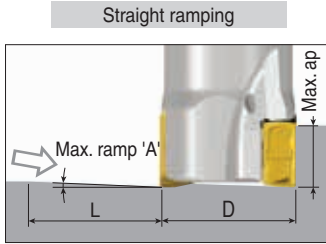
## Programming technical data



	R Program	A Over cut	B Un-machined
CVKT 05-HF	0.8	0	0.21
	0.9	0	0.18
	1.0	0.02	0.14

Yellow background: Recommended program 'R'

# Ramping Data



## LPK(H)U 05

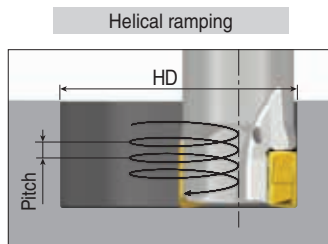
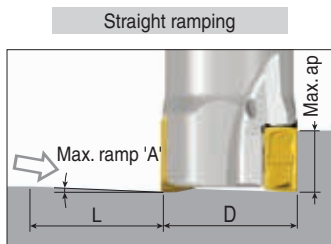
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø10	1.8	4.6	142	16.8		0.6
					20	0.9
Ø11	1.6	4.6	160	18.8		0.6
					22	0.8
Ø12	1.5	4.6	176	20.8		0.6
					24	0.8
Ø13	1.3	4.6	195	22.8		0.6
					26	0.8
Ø16	1.0	4.6	251	28.8		0.6
					32	0.8
Ø20	0.8	4.6	330	36.8		0.6
					40	0.7
Ø25	0.6	4.6	439	46.8		0.6
					50	0.7
Ø32	0.4	4.6	586	60.8		0.6
					64	0.7

## LPK(H)U 09

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø20	1.4	8.3	328	33		1.0
					40	1.5
Ø25	1.1	8.3	432	43		1.0
					50	1.5
Ø32	0.8	8.3	594	57		1.1
					64	1.4
Ø40	0.6	8.3	793	73		1.0
					80	1.3
Ø50	0.4	8.3	1057	93		1.0
					100	1.2
Ø63	0.3	8.3	1359	119		1.0
					126	1.2

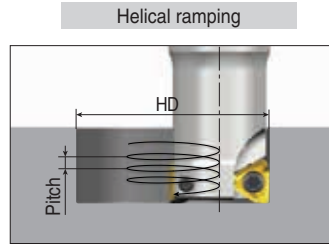
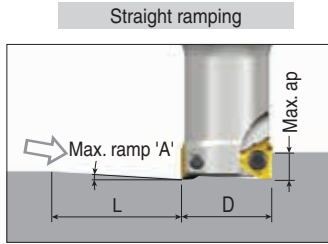


## LPKU 14

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø40	0.9	12.5	754	69		1.5
					80	2.0
Ø50	0.7	12.5	1023	89		1.5
					100	1.9
Ø63	0.5	12.5	1302	115		1.5
					126	1.9
Ø80	0.4	12.5	1790	149		1.5
					160	1.7
Ø100	0.3	12.5	2387	189		1.4
					200	1.6
Ø125	0.2	12.5	2865	239		1.5
					250	1.7
Ø160	0.2	12.5	3581	309		1.6
					320	1.7
Ø200	0.1	12.5	4775	389		1.5
					400	1.6

# Ramping Data

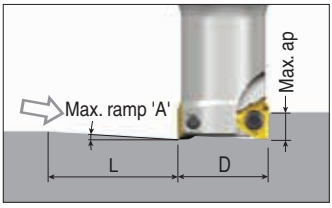


## 3PKT 04

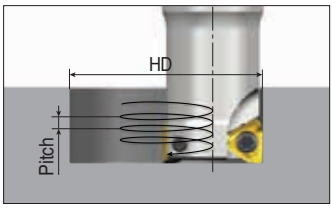
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø8	2.1	3.5	95	13.2		0.6
					16	0.9
Ø10	2.2	3.5	91	17.2		0.8
					20	1.2
Ø11	3.6	3.5	56	19.2		1.6
					22	2.1
Ø12	3.3	3.5	61	21.2		1.6
					24	2.1
Ø13	2.5	3.5	80	23.2		1.4
					26	1.7
Ø14	2.2	3.5	91	25.2		1.3
					28	1.6
Ø16	1.6	3.5	125	29.2		1.1
					32	1.4

Straight ramping



Helical ramping



### 3PK(H)T 06

(unit: mm)

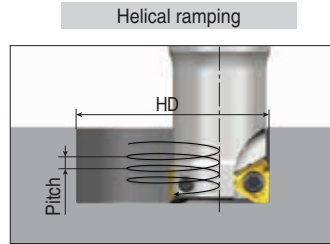
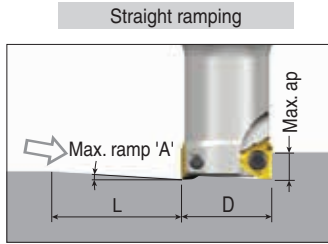
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø12	3.7	4.7	73	19.5	24	1.3
						2.1
Ø14	2.8	4.7	96	23.5	28	1.2
						1.8
Ø16	2.3	4.7	117	27.5	32	1.2
						1.7
Ø17	2.0	4.7	135	29.5	34	1.2
						1.6
Ø18	2.0	4.7	135	31.5	36	1.3
						1.7
Ø20	1.6	4.7	168	35.5	40	1.2
						1.5
Ø21	1.5	4.7	180	37.5	42	1.2
						1.5
Ø22	1.5	4.7	180	39.5	44	1.2
						1.5
Ø25	1.5	4.7	180	45.5	50	1.4
						1.7
Ø30	1.2	4.7	224	55.5	60	1.4
						1.7
Ø32	1.2	4.7	224	59.5	64	1.5
						1.8
Ø35	1.0	4.7	269	65.5	70	1.4
						1.6
Ø40	0.7	4.7	385	75.5	80	1.2
						1.3

### 3PK(H)T 10

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	7.0	7.0	57	24.7	32	2.8
						5.2
Ø20	3.3	7.0	121	33.9	40	2.1
						3.1
Ø21	3.2	7.0	125	35.9	42	2.2
						3.1
Ø22	3.2	7.0	125	37.9	44	2.4
						3.3
Ø25	2.8	7.0	143	43.5	50	2.4
						3.3
Ø26	2.6	7.0	154	45.9	52	2.4
						3.1
Ø30	2.0	7.0	201	53.9	60	2.2
						2.8
Ø32	1.8	7.0	223	57.5	64	2.1
						2.7
Ø33	1.7	7.0	236	59.9	66	2.1
						2.6
Ø40	1.3	7.0	309	73.7	80	2.0
						2.4
Ø50	1.0	7.0	401	93.7	100	2.0
						2.3
Ø63	0.8	7.0	502	119.7	126	2.1
						2.3

# Ramping Data



## 3PK(H)T 15

(unit: mm)

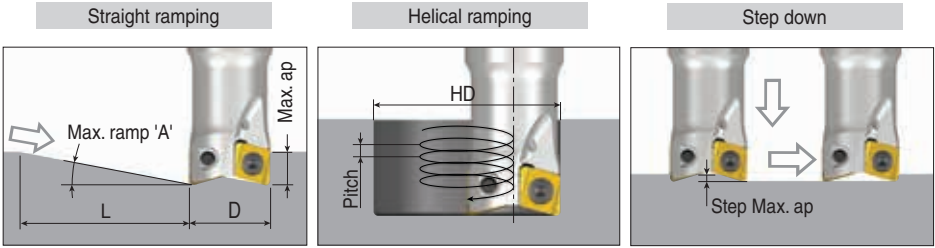
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	3.2	11.0	197	53.5	64	3.2
						4.8
Ø33	3.1	11.0	203	55.5	66	3.3
						4.8
Ø35	3.1	11.0	203	59.5	70	3.5
						5.1
Ø40	2.0	11.0	315	70.1	80	2.8
						3.7
Ø50	1.5	11.0	420	90.1	100	2.8
						3.5
Ø63	1.1	11.0	573	116.1	126	2.7
						3.2
Ø80	0.8	11.0	788	150.3	160	2.6
						3.0
Ø100	0.6	11.0	1051	190.5	200	2.5
						2.8
Ø125	0.5	11.0	1261	240.3	250	2.7
						2.9
Ø160	0.3	11.0	2102	310.3	320	2.1
						2.2
Ø200	0.2	11.0	3153	390.3	400	1.8
						1.9

## 3PK(H)T 19

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø40	3.6	15.0	239	66.7	80	4.5
						6.7
Ø50	2.2	15.0	391	87.9	100	3.9
						5.1
Ø63	1.7	15.0	506	113.9	126	4
						5
Ø80	1.3	15.0	661	147.9	160	4.1
						4.8
Ø100	1.0	15.0	860	187.9	200	4.1
						4.7
Ø125	0.8	15.0	1075	237.9	250	4.2
						4.7
Ø160	0.6	15.0	1433	307.9	320	4.1
						4.5
Ø200	0.4	15.0	2150	387.9	400	3.5
						3.7
Ø250	0.3	15.0	2866	487.9	500	3.3
						3.5





## 4NKT 04: R0.2

(unit: mm)

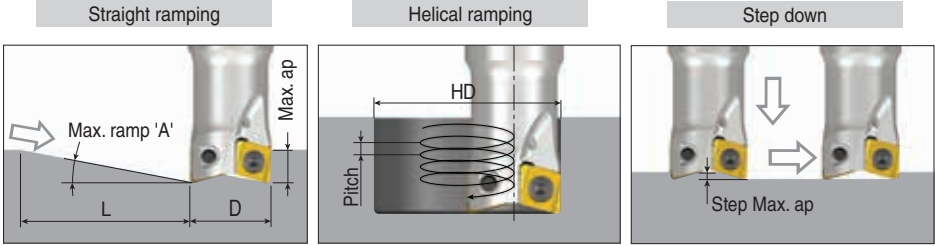
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø8	4.2	3.5	48	9.9	16	0.4	0.4
						3.1	
Ø10	4.6	3.5	44	13.9	20	0.8	0.6
						2.1	
Ø11	5.2	3.5	38	15.9	22	1.2	0.7
						2.7	
Ø12	4.8	3.5	42	17.9	24	1.3	0.8
						2.7	
Ø13	5.1	3.5	39	19.9	26	1.6	0.8
						3.1	
Ø16	4.4	3.5	46	25.9	32	2.0	1.0
						3.3	
Ø20	3.3	3.5	61	33.9	40	2.1	1.0
						3.1	
Ø25	2.5	3.5	80	43.9	50	2.2	1.0
						2.9	
Ø32	1.9	3.5	106	57.9	64	2.3	1.0
						2.8	
Ø40	1.4	3.5	138	73.9	80	2.3	1.0
						2.7	

## 4NKT 04: R0.4

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø8	3.7	3.5	54	9.9	16	0.3	0.4
						2.8	
Ø10	4.2	3.5	48	13.9	20	0.8	0.5
						2.0	
Ø11	4.8	3.5	42	15.9	22	1.1	0.6
						2.5	
Ø12	4.5	3.5	44	17.9	24	1.2	0.7
						2.5	
Ø13	4.7	3.5	43	19.9	26	1.5	0.8
						2.9	
Ø16	4.1	3.5	49	25.9	32	1.9	0.9
						3.1	
Ø20	3.1	3.5	65	33.9	40	2.0	0.9
						2.9	
Ø25	2.3	3.5	85	43.9	50	2.1	0.9
						2.7	
Ø32	1.7	3.5	115	57.9	64	2.1	0.9
						2.6	
Ø40	1.3	3.5	149	73.9	80	2.1	0.9
						2.5	

# Ramping Data



## 4NKT 04: R0.8

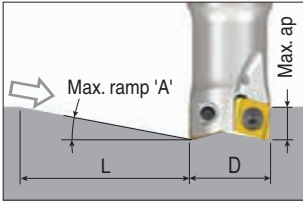
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø8	2.2	3.5	91	9.9		0.2	0.2
					16	1.6	
Ø10	3.0	3.5	67	13.9		0.5	0.4
					20	1.4	
Ø11	3.7	3.5	54	15.9		0.8	0.5
					22	1.9	
Ø12	3.5	3.5	57	17.9		1.0	0.5
					24	2.0	
Ø13	3.9	3.5	51	19.9		1.3	0.6
					26	2.4	
Ø16	3.5	3.5	57	25.9		1.6	0.7
					32	2.6	
Ø20	2.6	3.5	77	33.9		1.7	0.7
					40	2.4	
Ø25	1.9	3.5	103	43.9		1.7	0.7
					50	2.3	
Ø32	1.5	3.5	134	57.9		1.8	0.7
					64	2.2	
Ø40	1.1	3.5	174	73.9		1.8	0.7
					80	2.1	

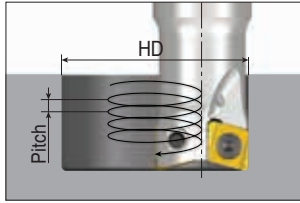
# Ramping Data



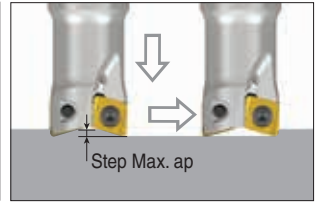
Straight ramping



Helical ramping



Step down

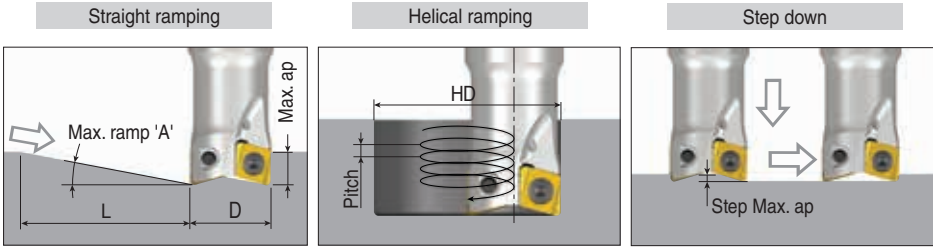


## 4NKT 06: R0.4

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	4.3	6.0	80	21.5		1.1	0.9
					32	3.2	
Ø17	4.3	6.0	80	23.5		1.3	1.0
					34	3.4	
Ø18	4.7	6.0	73	25.5		1.6	1.1
					36	3.9	
Ø20	4.9	6.0	70	29.5		2.2	1.3
					40	4.6	
Ø21	5.0	6.0	69	31.5		2.5	1.4
					42	4.9	
Ø25	4.9	6.0	70	39.5		3.3	1.6
					50	5.7	
Ø26	4.6	6.0	75	41.5		3.3	1.6
					52	5.6	
Ø32	3.5	6.0	98	53.5		3.5	1.7
					64	5.2	
Ø33	3.4	6.0	101	55.5		3.6	1.7
					66	5.2	
Ø35	3.1	6.0	111	59.5		3.5	1.7
					70	5.1	
Ø36	3.0	6.0	115	61.5		3.6	1.7
					72	5.0	
Ø38	2.8	6.0	123	65.5		3.6	1.7
					76	5.0	
Ø40	2.6	6.0	130	69.5		3.6	1.7
					80	4.9	
Ø43	2.4	6.0	143	75.5		3.6	1.7
					86	4.8	
Ø50	2.0	6.0	168	89.5		3.8	1.7
					100	4.8	
Ø63	1.6	6.0	215	115.5		3.9	1.7
					126	4.7	

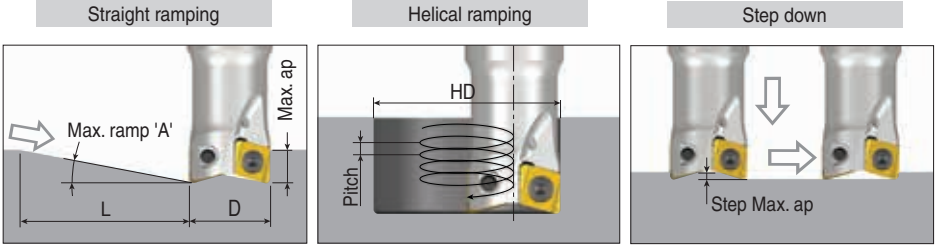
# Ramping Data



## 4NKT 06: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	3.7	6.0	93	21.5	32	0.9	0.8
						2.8	
Ø17	3.8	6.0	90	23.5	34	1.2	0.8
						3.0	
Ø18	4.2	6.0	82	25.5	36	1.5	1.0
						3.5	
Ø20	4.4	6.0	78	29.5	40	2.0	1.1
						4.1	
Ø21	4.6	6.0	75	31.5	42	2.3	1.2
						4.5	
Ø25	4.6	6.0	75	39.5	50	3.1	1.5
						5.4	
Ø26	4.3	6.0	80	41.5	52	3.1	1.5
						5.2	
Ø32	3.2	6.0	107	53.5	64	3.2	1.5
						4.8	
Ø33	3.1	6.0	111	55.5	66	3.3	1.5
						4.8	
Ø35	2.8	6.0	121	59.5	70	3.3	1.5
						4.6	
Ø36	2.7	6.0	125	61.5	72	3.3	1.5
						4.6	
Ø38	2.5	6.0	135	65.5	76	3.3	1.5
						4.5	
Ø40	2.4	6.0	140	69.5	80	3.4	1.5
						4.6	
Ø43	2.2	6.0	153	75.5	86	3.4	1.5
						4.5	
Ø50	1.9	6.0	181	89.5	100	3.5	1.5
						4.4	
Ø63	1.4	6.0	237	115.5	126	3.5	1.6
						4.3	

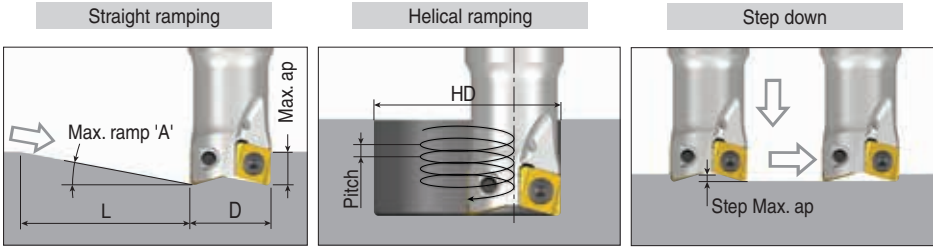


## 4NKT 06: R1.2

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	3.0	6.0	115	21.5		0.8	0.5
					32	2.2	
Ø17	3.2	6.0	107	23.5		1.0	0.7
					34	2.5	
Ø18	3.6	6.0	95	25.5		1.3	0.8
					36	3.0	
Ø20	3.9	6.0	88	29.5		1.7	1.0
					40	3.6	
Ø21	4.1	6.0	84	31.5		2.0	1.1
					42	4.0	
Ø25	4.2	6.0	82	39.5		2.8	1.3
					50	4.9	
Ø26	3.9	6.0	88	41.5		2.8	1.3
					52	4.7	
Ø32	2.9	6.0	119	53.5		2.9	1.4
					64	4.3	
Ø33	2.8	6.0	123	55.5		2.9	1.4
					66	4.3	
Ø35	2.6	6.0	132	59.5		3.0	1.4
					70	4.2	
Ø36	2.5	6.0	137	61.5		3.0	1.4
					72	4.2	
Ø38	2.3	6.0	146	65.5		3.0	1.4
					76	4.2	
Ø40	2.2	6.0	156	69.5		3.0	1.4
					80	4.1	
Ø43	2.0	6.0	168	75.5		3.1	1.4
					86	4.1	
Ø50	1.7	6.0	202	89.5		3.1	1.4
					100	4.0	
Ø63	1.3	6.0	265	115.5		3.2	1.4
					126	3.8	

# Ramping Data

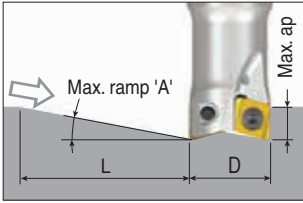


## 4NKT 06: R1.6

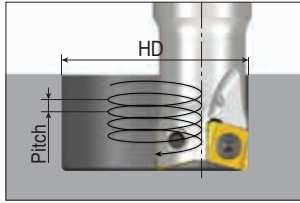
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	2.2	6.0	156	21.5		0.6	0.4
					32	1.6	
Ø17	2.4	6.0	143	23.5		0.7	0.5
					34	1.9	
Ø18	2.8	6.0	123	25.5		1.0	0.6
					36	2.3	
Ø20	3.2	6.0	107	29.5		1.4	0.8
					40	3.0	
Ø21	3.4	6.0	101	31.5		1.7	0.9
					42	3.3	
Ø25	3.7	6.0	93	39.5		2.5	1.1
					50	4.3	
Ø26	3.4	6.0	101	41.5		2.5	1.1
					52	4.1	
Ø32	2.5	6.0	135	53.5		2.6	1.2
					64	3.8	
Ø33	2.4	6.0	140	55.5		2.6	1.2
					66	3.8	
Ø35	2.3	6.0	149	59.5		2.6	1.2
					70	3.8	
Ø36	2.2	6.0	156	61.5		2.6	1.2
					72	3.7	
Ø38	2.0	6.0	168	65.5		2.6	1.2
					76	3.6	
Ø40	1.9	6.0	176	69.5		2.7	1.2
					80	3.6	
Ø43	1.8	6.0	191	75.5		2.7	1.2
					86	3.6	
Ø50	1.5	6.0	229	89.5		2.8	1.2
					100	3.5	
Ø63	1.1	6.0	299	115.5		2.8	1.2
					126	3.4	

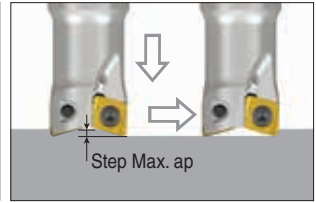
Straight ramping



Helical ramping



Step down

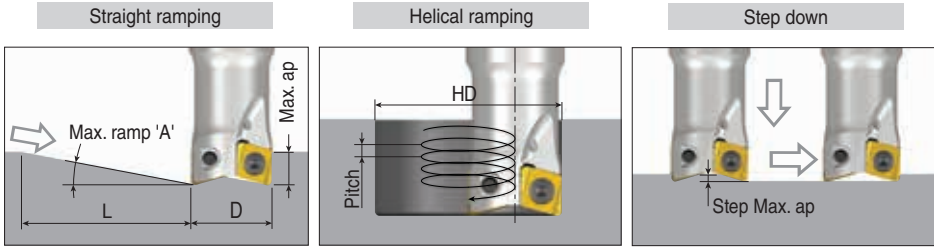


## 4NKT 06: R2.0

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	1.6	6.0	215	21.5		0.4	0.3
					32	1.2	
Ø17	1.8	6.0	191	23.5		0.5	0.3
					34	1.4	
Ø18	2.3	6.0	149	25.5		0.8	0.5
					36	1.9	
Ø20	2.7	6.0	125	29.5		1.2	0.6
					40	2.6	
Ø21	3.0	6.0	115	31.5		1.5	0.7
					42	2.9	
Ø25	3.3	6.0	104	39.5		2.2	1.0
					50	3.8	
Ø26	3.1	6.0	111	41.5		2.2	1.0
					52	3.8	
Ø32	2.3	6.0	149	53.5		2.3	1.0
					64	3.4	
Ø33	2.2	6.0	156	55.5		2.3	1.0
					66	3.4	
Ø35	2.0	6.0	168	59.5		2.3	1.0
					70	3.3	
Ø36	2.0	6.0	172	61.5		2.4	1.0
					72	3.4	
Ø38	1.8	6.0	186	65.5		2.4	1.0
					76	3.3	
Ø40	1.7	6.0	196	69.5		2.4	1.0
					80	3.3	
Ø43	1.3	6.0	265	75.5		2.0	1.0
					86	2.6	
Ø50	1.3	6.0	255	89.5		2.5	1.0
					100	3.1	
Ø63	1.0	6.0	328	115.5		2.6	1.0
					126	3.1	

# Ramping Data



## 4NHT 04: R0.5-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø8	3.4	2.2	37	9.9	16	0.3	0.3
						1.3	
Ø10	4.0	2.2	31	13.9	20	0.7	0.5
						1.9	
Ø11	4.6	2.2	27	15.9	22	1.1	0.6
						2.4	
Ø12	4.3	2.2	29	17.9	24	1.2	0.7
						2.4	
Ø13	4.6	2.2	27	19.9	26	1.5	0.8
						2.8	
Ø16	3.9	2.2	32	25.9	32	1.8	0.9
						2.9	
Ø20	2.9	2.2	43	33.9	40	1.9	0.9
						2.7	
Ø25	2.2	2.2	57	43.9	50	1.9	0.9
						2.6	
Ø32	1.6	2.2	76	57.9	64	2.0	0.9
						2.5	
Ø40	1.3	2.2	97	73.9	80	2.1	0.9
						2.4	

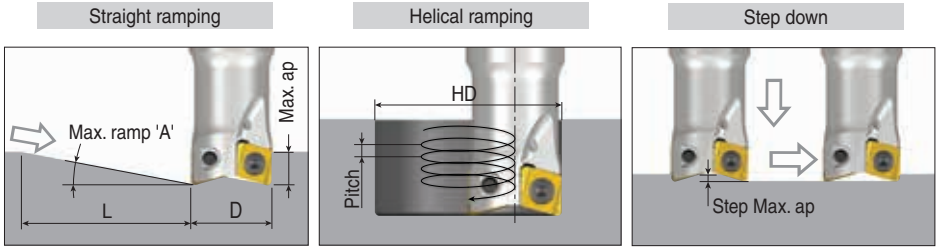
## 4NHT 04: R1.0-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø8	1.5	2.0	74	9.9	16	0.1	0.1
						0.6	
Ø10	2.5	2.0	45	13.9	20	0.5	0.3
						1.2	
Ø11	3.3	2.0	35	15.9	22	0.8	0.4
						1.7	
Ø12	3.1	2.0	37	17.9	24	0.9	0.5
						1.7	
Ø13	3.5	2.0	33	19.9	26	1.1	0.5
						2.1	
Ø16	3.0	2.0	38	25.9	32	1.4	0.6
						2.2	
Ø20	2.2	2.0	51	33.9	40	1.5	0.7
						2.1	
Ø25	1.7	2.0	65	43.9	50	1.5	0.7
						2.0	
Ø32	1.3	2.0	88	57.9	64	1.6	0.7
						1.9	
Ø40	1.0	2.0	115	73.9	80	1.6	0.7
						1.9	



# Ramping Data

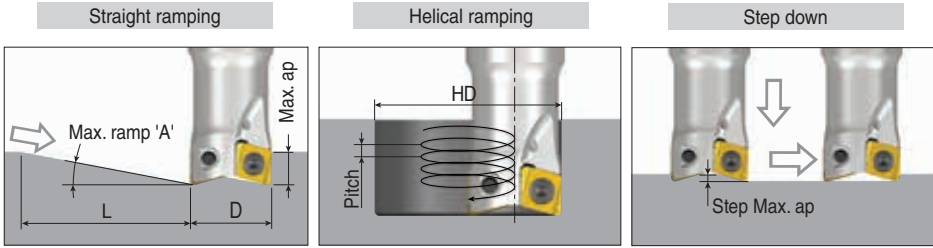


## 4NHT 06: R0.4

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	2.9	6.0	119	21.5	32	0.7	0.6
						2.2	
Ø17	3.0	6.0	115	23.5	34	0.9	0.6
						2.4	
Ø18	3.4	6.0	101	25.5	36	1.2	0.8
						2.9	
Ø20	3.8	6.0	90	29.5	40	1.7	0.9
						3.5	
Ø21	4.0	6.0	86	31.5	42	2.0	1.0
						3.9	
Ø25	4.1	6.0	84	39.5	50	2.8	1.3
						4.8	
Ø26	3.8	6.0	90	41.5	52	2.7	1.3
						4.6	
Ø32	2.8	6.0	123	53.5	64	2.8	1.3
						4.2	
Ø33	2.7	6.0	127	55.5	66	2.8	1.3
						4.2	
Ø35	2.5	6.0	135	59.5	70	2.9	1.3
						4.2	
Ø36	2.4	6.0	140	61.5	72	2.9	1.3
						4.1	
Ø38	2.3	6.0	149	65.5	76	2.9	1.3
						4.1	
Ø40	2.1	6.0	160	69.5	80	3.0	1.3
						4.0	
Ø43	1.9	6.0	176	75.5	86	3.0	1.3
						3.9	
Ø50	1.6	6.0	208	89.5	100	3.0	1.3
						3.8	
Ø63	1.2	6.0	275	115.5	126	3.1	1.3
						3.7	

# Ramping Data

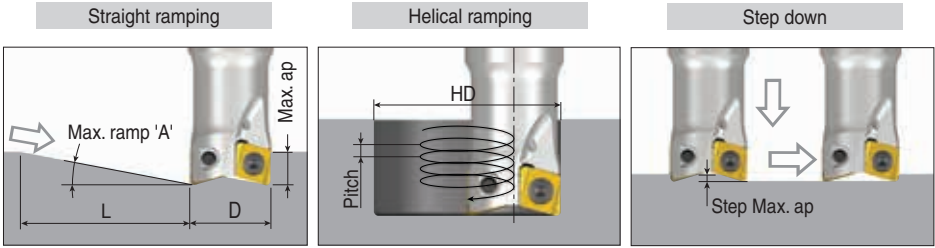


## 4NHT 06: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	2.9	6.0	119	21.5		0.7	0.6
					32	2.2	
Ø17	3.0	6.0	115	23.5		0.9	0.6
					34	2.4	
Ø18	3.5	6.0	98	25.5		1.2	0.8
					36	2.9	
Ø20	3.8	6.0	90	29.5		1.7	0.9
					40	3.5	
Ø21	4.0	6.0	86	31.5		2.0	1.0
					42	3.9	
Ø25	4.1	6.0	84	39.5		2.8	1.3
					50	4.8	
Ø26	3.8	6.0	90	41.5		2.7	1.3
					52	4.6	
Ø32	2.8	6.0	123	53.5		2.8	1.3
					64	4.2	
Ø33	2.7	6.0	127	55.5		2.8	1.3
					66	4.2	
Ø35	2.5	6.0	135	59.5		2.9	1.3
					70	4.2	
Ø36	2.4	6.0	140	61.5		2.9	1.3
					72	4.1	
Ø38	2.3	6.0	149	65.5		2.9	1.3
					76	4.1	
Ø40	2.1	6.0	160	69.5		3.0	1.3
					80	4.0	
Ø43	1.9	6.0	176	75.5		3.0	1.3
					86	3.9	
Ø50	1.6	6.0	208	89.5		3.0	1.3
					100	3.8	
Ø63	1.25	6.0	275	115.5		3.1	1.3
					126	3.7	

# Ramping Data

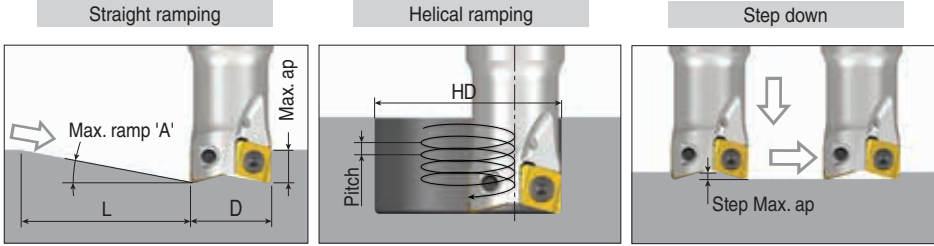


## 4NHT 06: R0.5-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	3.5	2.3	38	21.5		0.9	0.8
					32	2.6	
Ø17	3.6	2.3	37	23.5		1.1	0.8
					34	2.9	
Ø18	4.0	2.3	33	25.5		1.4	1.0
					36	3.4	
Ø20	4.3	2.3	31	29.5		1.9	1.2
					40	4.0	
Ø21	4.4	2.3	30	31.5		2.2	1.2
					42	4.3	
Ø25	4.9	2.3	27	39.5		3.3	1.6
					50	5.7	
Ø26	4.6	2.3	29	41.5		3.3	1.6
					52	5.6	
Ø32	3.5	2.3	38	53.5		3.5	1.6
					64	5.2	
Ø33	3.3	2.3	40	55.5		3.5	1.6
					66	5.1	
Ø35	3.1	2.3	42	59.5		3.5	1.6
					70	5.1	
Ø36	3.0	2.3	44	61.5		3.6	1.6
					72	5.0	
Ø38	2.8	2.3	47	65.5		3.6	1.7
					76	5.0	
Ø40	2.6	2.3	51	69.5		3.6	1.7
					80	4.8	
Ø43	2.4	2.3	55	75.5		3.6	1.7
					86	4.8	
Ø50	2.0	2.3	64	89.5		3.8	1.7
					100	4.8	
Ø63	1.7	2.3	78	115.5		4.2	1.7
					126	5.0	

# Ramping Data

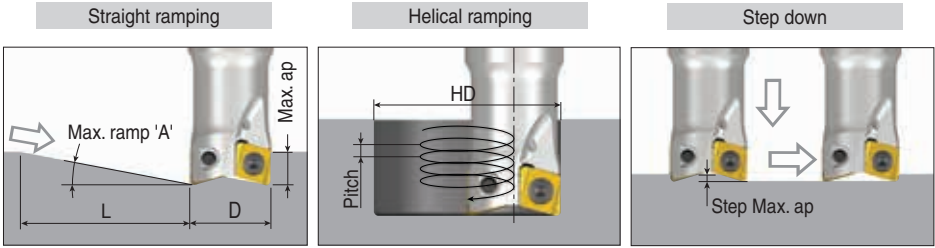


## 4NHT 06: R0.8-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	3.1	1.9	35	21.5		0.8	0.7
					32	2.3	
Ø17	3.2	1.9	34	23.5		1.0	0.7
					34	2.5	
Ø18	3.6	1.9	30	25.5		1.3	0.9
					36	3.0	
Ø20	3.9	1.9	28	29.5		1.7	1.0
					40	3.6	
Ø21	4.1	1.9	27	31.5		2.0	1.1
					42	4.0	
Ø25	4.6	1.9	24	39.5		3.1	1.5
					50	5.4	
Ø26	4.4	1.9	25	41.5		3.2	1.5
					52	5.3	
Ø32	3.3	1.9	33	53.5		3.3	1.5
					64	4.9	
Ø33	3.1	1.9	35	55.5		3.3	1.5
					66	4.8	
Ø35	2.9	1.9	38	59.5		3.3	1.5
					70	4.7	
Ø36	2.8	1.9	39	61.5		3.3	1.5
					72	4.7	
Ø38	2.6	1.9	41	65.5		3.4	1.5
					76	4.7	
Ø40	2.4	1.9	44	69.5		3.4	1.5
					80	4.6	
Ø43	2.2	1.9	48	75.5		3.4	1.5
					86	4.5	
Ø50	1.9	1.9	57	89.5		3.5	1.6
					100	4.4	
Ø63	1.4	1.9	75	115.5		3.5	1.6
					126	4.3	

# Ramping Data

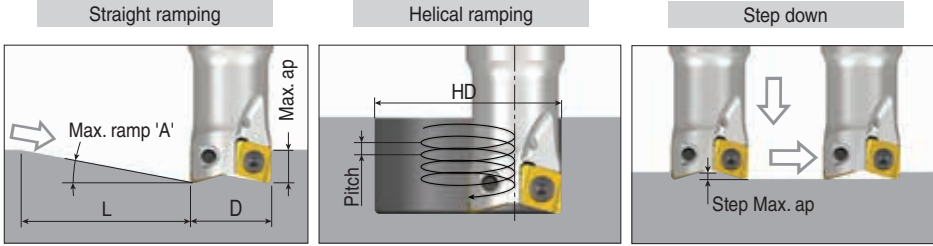


## 4NHT 06: R1.0-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	2.7	2.1	44	21.5		0.7	0.6
					32	2.1	
Ø17	2.9	2.1	41	23.5		0.9	0.7
					34	2.3	
Ø18	3.3	2.1	36	25.5		1.2	0.8
					36	2.8	
Ø20	3.6	2.1	33	29.5		1.6	1.0
					40	3.4	
Ø21	3.8	2.1	32	31.5		1.9	1.0
					42	3.7	
Ø25	4.4	2.1	27	39.5		3.0	1.4
					50	5.1	
Ø26	4.2	2.1	29	41.5		3.0	1.4
					52	5.1	
Ø32	3.1	2.1	39	53.5		3.1	1.4
					64	4.6	
Ø33	3.0	2.1	40	55.5		3.1	1.4
					66	4.6	
Ø35	2.8	2.1	43	59.5		3.2	1.4
					70	4.6	
Ø36	2.6	2.1	45	61.5		3.1	1.4
					72	4.4	
Ø38	2.5	2.1	48	65.5		3.2	1.5
					76	4.4	
Ø40	2.3	2.1	51	69.5		3.2	1.5
					80	4.4	
Ø43	2.1	2.1	56	75.5		3.3	1.5
					86	4.3	
Ø50	1.8	2.1	67	89.5		3.3	1.5
					100	4.2	
Ø63	1.4	2.1	86	115.5		3.4	1.5
					126	4.1	

# Ramping Data

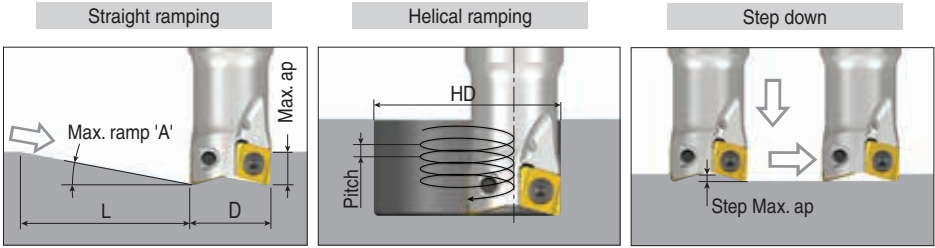


## 4NHT 06: R1.5-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	1.9	3.3	97	21.5		0.5	0.4
					32	1.5	
Ø17	2.1	3.3	88	23.5		0.7	0.5
					34	1.7	
Ø18	2.6	3.3	73	25.5		0.9	0.6
					36	2.2	
Ø20	3.0	3.3	63	29.5		1.3	0.8
					40	2.8	
Ø21	3.2	3.3	59	31.5		1.6	0.9
					42	3.1	
Ø25	3.9	3.3	48	39.5		2.6	1.2
					50	4.5	
Ø26	3.7	3.3	51	41.5		2.7	1.2
					52	4.5	
Ø32	2.7	3.3	70	53.5		2.7	1.2
					64	4.0	
Ø33	2.6	3.3	71	55.5		2.8	1.2
					66	4.1	
Ø35	2.4	3.3	77	59.5		2.8	1.3
					70	4.0	
Ø36	2.3	3.3	80	61.5		2.8	1.3
					72	3.9	
Ø38	2.2	3.3	86	65.5		2.8	1.3
					76	3.9	
Ø40	2.1	3.3	90	69.5		2.9	1.3
					80	3.9	
Ø43	1.9	3.3	100	75.5		2.9	1.3
					86	3.8	
Ø50	1.6	3.3	118	89.5		2.9	1.3
					100	3.7	
Ø63	1.2	3.3	151	115.5		3.1	1.3
					126	3.7	

# Ramping Data

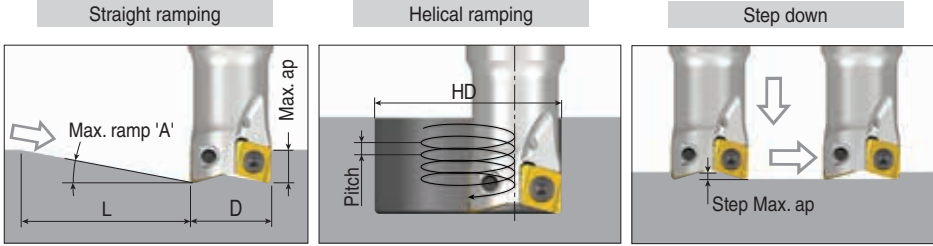


## 4NHT 06: R2.0-F

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø16	0.8	2.1	142	21.5		0.2	0.1
					32	0.6	
Ø17	1.1	2.1	109	23.5		0.3	0.2
					34	0.9	
Ø18	1.6	2.1	75	25.5		0.6	0.3
					36	1.3	
Ø20	2.1	2.1	57	29.5		0.9	0.5
					40	2.0	
Ø21	2.3	2.1	51	31.5		1.1	0.6
					42	2.3	
Ø25	3.2	2.1	38	39.5		2.2	0.9
					50	3.7	
Ø26	3.0	2.1	40	41.5		2.2	1.0
					52	3.6	
Ø32	2.2	2.1	53	53.5		2.3	1.0
					64	3.4	
Ø33	2.1	2.1	56	55.5		2.3	1.0
					66	3.3	
Ø35	2.0	2.1	60	59.5		2.3	1.0
					70	3.3	
Ø36	1.9	2.1	62	61.5		2.3	1.0
					72	3.3	
Ø38	1.8	2.1	67	65.5		2.3	1.0
					76	3.2	
Ø40	1.7	2.1	71	69.5		2.3	1.0
					80	3.2	
Ø43	1.5	2.1	78	75.5		2.3	1.0
					86	3.1	
Ø50	1.3	2.1	93	89.5		2.4	1.0
					100	3.0	
Ø63	1.0	2.1	120	115.5		2.4	1.0
					126	2.9	

# Ramping Data



## 4NKT 09: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø20	3.7	8.0	124	25.5		0.9	1.0
					40	3.5	
Ø25	4.9	8.0	93	35.5		2.4	1.6
					50	5.7	
Ø32	4.9	8.0	93	49.5		4.0	2.1
					64	7.3	
Ø40	3.6	8.0	127	65.5		4.3	2.1
					80	6.7	
Ø50	2.7	8.0	170	85.5		4.5	2.1
					100	6.3	
Ø63	2.0	8.0	224	111.5		4.6	2.1
					126	6.0	
Ø80	1.5	8.0	296	145.5		4.7	2.1
					160	5.8	

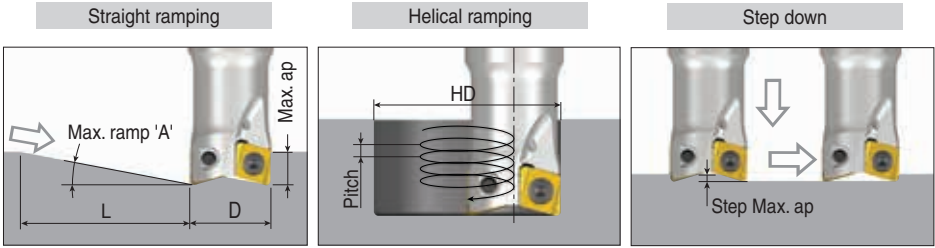
## 4NKT 09: R1.6

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø20	2.7	8.0	167	25.5		0.7	0.7
					40	2.6	
Ø25	4.1	8.0	112	35.5		2.0	1.3
					50	4.8	
Ø32	4.4	8.0	104	49.5		3.6	1.8
					64	6.6	
Ø40	3.1	8.0	148	65.5		3.7	1.8
					80	5.8	
Ø50	2.3	8.0	195	85.5		3.9	1.8
					100	5.5	
Ø63	1.8	8.0	255	111.5		4.1	1.8
					126	5.3	
Ø80	1.3	8.0	340	145.5		4.1	1.8
					160	5.0	



# Ramping Data



## 4NHT 09: R0.4

(unit: mm)

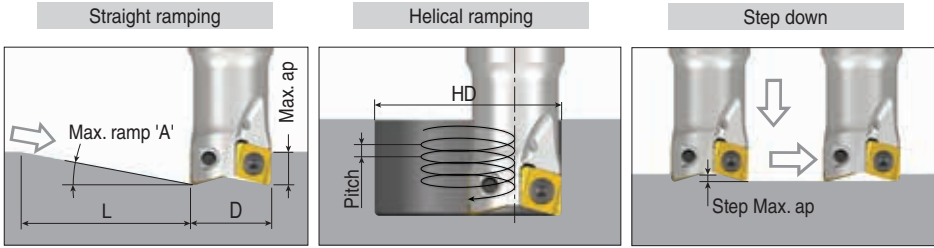
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø20	2.9	8.0	155	25.5	40	0.8	0.8
						2.7	
Ø25	4.3	8.0	106	35.5	50	2.1	1.3
						5.0	
Ø32	4.5	8.0	102	49.5	64	3.7	1.8
						6.7	
Ø40	3.2	8.0	143	65.5	80	3.8	1.8
						6.0	
Ø50	2.4	8.0	191	85.5	100	4.0	1.8
						5.6	
Ø63	1.8	8.0	255	111.5	126	4.1	1.8
						5.3	
Ø80	1.3	8.0	340	145.5	160	4.1	1.8
						5.0	

## 4NHT 09: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø20	2.9	8.0	155	25.5	40	0.8	0.8
						2.7	
Ø25	4.3	8.0	106	35.5	50	2.1	1.3
						5.0	
Ø32	4.5	8.0	102	49.5	64	3.7	1.8
						6.7	
Ø40	3.2	8.0	143	65.5	80	3.8	1.8
						6.0	
Ø50	2.4	8.0	191	85.5	100	4.0	1.8
						5.6	
Ø63	1.8	8.0	255	111.5	126	4.1	1.8
						5.3	
Ø80	1.3	8.0	340	145.5	160	4.1	1.8
						5.0	

# Ramping Data



## 4NKT 11: R0.8

(unit: mm)

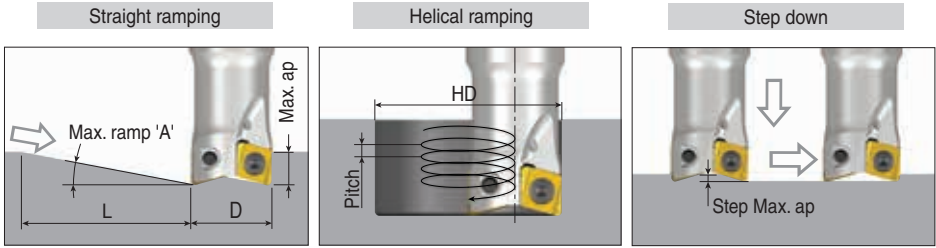
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	5.1	10.3	115	31.5	1.5	1.7	
				50	6.0		
Ø32	5.3	10.3	111	45.5	3.3	2.4	
				64	7.9		
Ø40	5.0	10.3	118	61.5	5.0	2.7	
				80	9.3		
Ø50	3.7	10.3	159	81.5	5.4	2.7	
				100	8.6		
Ø63	2.7	10.3	219	107.5	5.6	2.7	
				126	7.9		
Ø80	2.0	10.3	288	141.5	5.9	2.7	
				160	7.6		

## 4NKT 14: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	5.2	13.5	148	39.5	1.8	2.3	
				64	7.8		
Ø40	5.2	13.5	148	55.5	3.8	3.0	
				80	9.7		
Ø50	5.5	13.5	140	75.5	6.6	3.3	
				100	12.8		
Ø63	4.0	13.5	193	101.5	7.2	3.3	
				126	11.8		
Ø80	2.9	13.5	267	135.5	7.5	3.3	
				160	10.8		

# Ramping Data



## 4NKT 11 PNR: R0.8

(unit: mm)

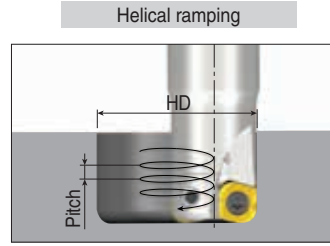
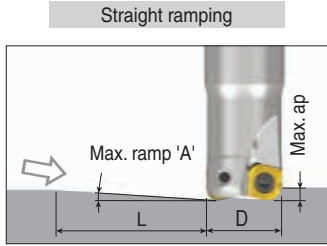
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	4.0	10.3	147	31.5		1.2	1.1
					50	4.7	
Ø32	4.3	10.3	135	45.5		2.7	1.0
					64	6.5	
Ø40	4.5	10.3	131	61.5		4.5	0.9
					80	8.4	
Ø50	3.2	10.3	184	81.5		4.7	0.9
					100	7.5	
Ø63	2.4	10.3	246	107.5		5.0	0.9
					126	7.0	
Ø80	1.8	10.3	328	141.5		5.2	0.9
					160	6.7	

## 4NKT 14 PNR: R0.8

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	4.1	13.5	188	39.5		1.4	1.1
					64	6.1	
Ø40	4.3	13.5	180	55.5		3.1	0.9
					80	8.0	
Ø50	4.7	13.5	163	75.5		5.7	0.9
					100	11.1	
Ø63	3.5	13.5	221	101.5		6.3	0.9
					126	10.3	
Ø80	2.6	13.5	297	135.5		6.7	0.9
					160	9.7	

# Ramping Data



## 4NKT 04-HF: R1.2

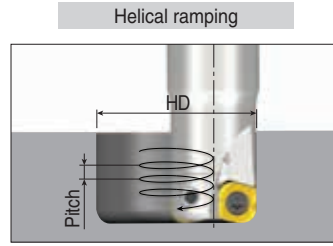
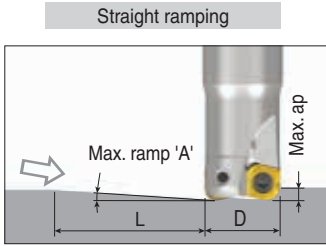
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp ( $A^{\circ}$ )	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø8	0.1	0.5	191	9.9		0.0
					16	0.1
Ø10	0.8	0.5	34	13.9		0.2
					20	0.4
Ø11	1.6	0.5	18	15.9		0.4
					22	0.5
Ø12	1.6	0.5	18	17.9		0.4
					24	0.5
Ø13	2.0	0.5	14	19.9		0.5
					26	0.5
Ø16	1.9	0.5	15	25.9		0.5
					32	0.5
Ø20	2.3	0.5	12	33.9		0.5
					40	0.5
Ø25	1.7	0.5	16	43.9		0.5
					50	0.5
Ø32	1.3	0.5	22	57.9		0.5
					64	0.5
Ø40	1.0	0.5	29	73.9		0.5
					80	0.5

## 4NKT 06-HF: R2.0

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp ( $A^{\circ}$ )	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	0.6	1.0	88	21.4		0.2
					32	0.5
Ø17	0.7	1.0	76	23.4		0.2
					34	0.6
Ø18	1.1	1.0	50	25.4		0.4
					36	1.0
Ø20	1.7	1.0	34	29.4		0.7
					40	1.0
Ø21	1.9	1.0	29	31.4		0.9
					42	1.0
Ø25	2.3	1.0	24	39.4		1.0
					50	1.0
Ø26	3.2	1.0	18	41.4		1.0
					52	1.0
Ø32	2.4	1.0	24	53.4		1.0
					64	1.0
Ø40	1.8	1.0	32	69.4		1.0
					80	1.0
Ø50	1.4	1.0	41	89.4		1.0
					100	1.0
Ø63	1.1	1.0	52	115.4		1.0
					126	1.0



## 4NKT 09-HF: R3.2

(unit: mm)

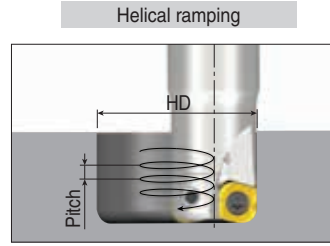
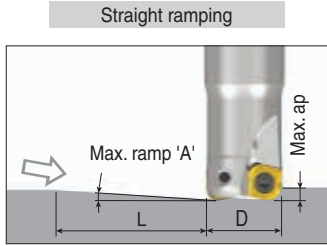
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø20	0.3	1.5	287	25		0.1
					40	0.3
Ø25	1.2	1.5	69	35		0.6
					50	1.5
Ø32	2.4	1.5	35	49		1.5
					64	1.5
Ø40	2.3	1.5	37	65		1.5
					80	1.5
Ø50	1.7	1.5	49	85		1.5
					100	1.5
Ø63	1.3	1.5	66	111		1.5
					126	1.5
Ø80	1.0	1.5	86	145		1.5
					160	1.5

## 4NKT 11-HF: R4.0

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	0.8	2.0	143	31		0.2
					50	0.9
Ø32	2.0	2.0	57	45		1.2
					64	2.0
Ø40	3.4	2.0	34	61		2.0
					80	2.0
Ø50	2.4	2.0	48	81		2.0
					100	2.0
Ø63	1.8	2.0	64	107		2.0
					126	2.0
Ø80	1.3	2.0	85	141		2.0
					160	2.0

# Ramping Data

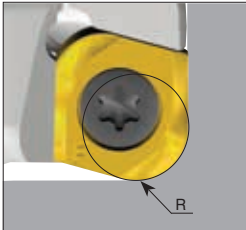


## 4NKT 14-HF: R5.0

(unit: mm)

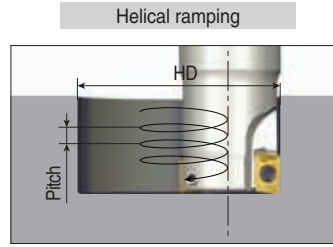
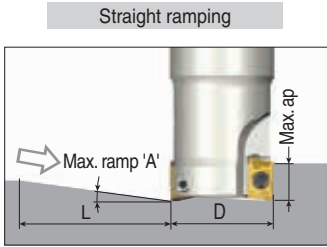
Cutter dia. (D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.
Ø32	1.0	3.0	172	39	64	0.3
						1.5
Ø40	1.8	3.0	96	55	80	1.3
						3.0
Ø50	3.9	3.0	44	75	100	3.0
						3.0
Ø63	2.7	3.0	64	101	126	3.0
						3.0
Ø80	1.9	3.0	88	135	160	3.0
						3.0

## Programming technical data



	R Program	A Over cut	B Un-machined
4NKT 040212R-HF	1.2	0	0
4NKT 060320R-HF	2.0	0	0
4NKT 090432R-HF	3.2	0	0
4NKT 110640R-HF	4.0	0	0
4NKT 140750R-HF	5.0	0	0

# Ramping Data

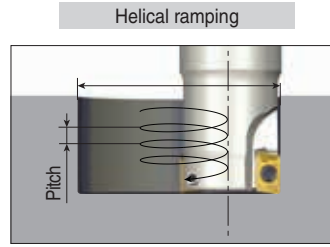
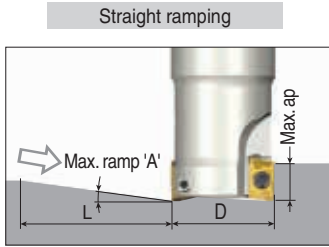


## AXMT 06

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø8	1.0	5.0	287	9	16	0.0
						0.4
Ø10	8.0	5.0	36	13	20	1.1
						3.7
Ø11	6.0	5.0	48	15	22	1.1
						3.1
Ø12	6.0	5.0	48	17	24	1.4
						3.4
Ø13	5.5	5.0	52	19	26	1.5
						3.3
Ø14	4.8	5.0	60	21	28	1.6
						3.1
Ø15	4.3	5.0	67	23	30	1.6
						3.0
Ø16	4.0	5.0	72	25	32	1.7
						3.0
Ø17	3.5	5.0	82	27	34	1.6
						2.8
Ø18	5.0	5.0	57	29	36	2.6
						4.2
Ø19	4.8	5.0	60	31	38	2.7
						4.3
Ø20	4.0	5.0	72	33	40	2.4
						3.7
Ø21	3.5	5.0	82	35	42	2.3
						3.4
Ø25	3.0	5.0	95	43	50	2.5
						3.5
Ø32	2.0	5.0	143	57	64	2.3
						3.0
Ø40	1.5	5.0	191	73	80	2.3
						2.8

# Ramping Data

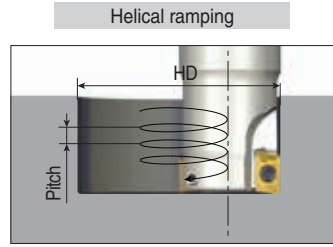
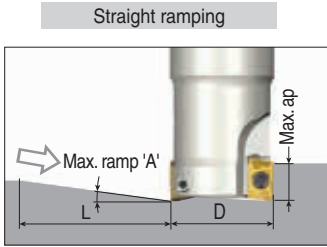


## APKT 09

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø10	7.5	9.0	68	14		1.4
					20	3.5
Ø12	7.3	9.0	70	16		1.4
					24	4.1
Ø14	6.0	9.0	86	18		1.1
					28	3.9
Ø16	4.9	9.0	105	21.08		1.2
					32	3.7
Ø17	4.4	9.0	117	23.08		1.2
					34	3.5
Ø18	4.0	9.0	129	25.08		1.3
					36	3.4
Ø20	3.4	9.0	152	29.08		1.4
					40	3.2
Ø21	3.1	9.0	166	31.08		1.5
					42	3.0
Ø22	2.8	9.0	184	33.08		1.4
					44	2.9
Ø25	1.8	9.0	287	39.08		1.2
					50	2.1
Ø26	2.0	9.0	258	41.08		1.4
					52	2.4
Ø30	2.2	9.0	234	49.08		2.0
					60	3.1
Ø32	2.0	9.0	258	53.08		2.0
					64	3.0
Ø33	1.7	9.0	303	55.08		1.7
					66	2.6
Ø40	1.5	9.0	344	69.08		2.0
					80	2.8
Ø50	1.1	9.0	469	89.08		2.0
					100	2.6
Ø63	0.8	9.0	645	115.08		1.9
					126	2.3
Ø80	0.5	9.0	1032	149.08		1.6
					160	1.9



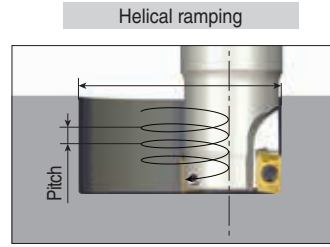
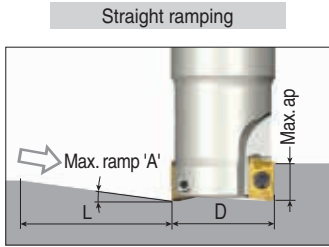


## APKT 12

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	12.5	12.0	54	17.5		0.5
					32	9.5
Ø18	9.7	12.0	70	20.9		1.3
					36	8.2
Ø20	6.8	12.0	101	24.9		1.6
					40	6.4
Ø21	6.2	12.0	111	26.9		1.7
					42	6.1
Ø25	8.0	12.0	85	34.9		3.7
					50	9.4
Ø26	7.5	12.0	91	36.9		3.8
					52	9.1
Ø32	5.0	12.0	137	48.9		3.9
					64	7.5
Ø33	4.6	12.0	149	50.9		3.8
					66	7.1
Ø40	3.5	12.0	196	64.9		4.1
					80	6.5
Ø50	2.5	12.0	275	84.9		4.8
					100	5.8
Ø63	1.7	12.0	405	110.9		4.5
					126	5.0
Ø80	1.3	12.0	529	144.9		4.6
					160	4.8

# Ramping Data



## APKT 17

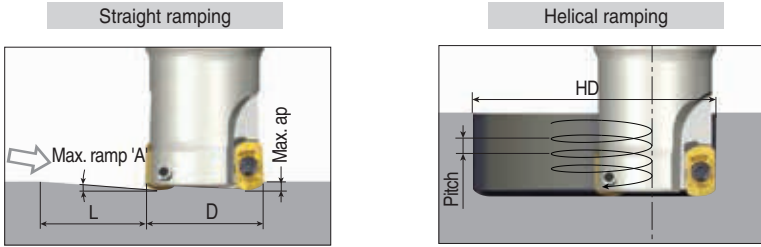
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø20	8.0	16.1	115	22	40	0.7
						7.5
Ø25	5.0	16.1	184	30.6	50	1.3
						5.8
Ø26	4.0	16.1	230	32.6	52	1.2
						4.9
Ø32	9.0	16.1	102	44.6	64	5.3
						13.5
Ø33	9.0	16.1	102	46.6	66	5.7
						13.9
Ø40	5.0	16.1	184	60.6	80	4.8
						9.3
Ø50	4.4	16.1	209	80.6	100	6.3
						10.3
Ø63	3.2	16.1	288	106.6	126	6.5
						9.4
Ø80	2.3	16.1	401	140.6	160	6.5
						8.6
Ø100	1.8	16.1	513	180.6	200	6.8
						8.4
Ø125	1.4	16.1	659	230.6	250	6.9
						8.1
Ø160	1.0	16.1	923	300.6	320	6.5
						7.5
Ø200	0.7	16.1	1318	380.6	400	5.9
						6.5

## APKT 19

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø40	6.0	17.5	167	56	80	4.5
						11.2
Ø50	4.0	17.5	250	76	100	4.9
						9.3
Ø63	2.9	17.5	346	102	126	5.3
						8.5
Ø80	2.1	17.5	477	136	160	5.5
						7.8
Ø100	1.6	17.5	627	176	200	5.7
						7.5
Ø125	1.2	17.5	736	226	250	5.6
						7.0
Ø160	0.9	17.5	1115	296	320	5.7
						6.7
Ø200	0.7	17.5	1433	376	400	5.7
						6.5

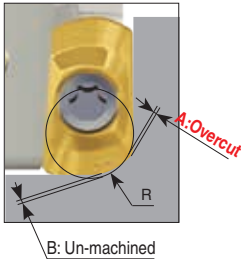


## AXMT 0602R-HF

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø8	0.3	0.5	96	14	16	0.1
						0.1
Ø10	0.5	0.5	57	14	20	0.2
						0.3
Ø11	1.0	0.5	29	18	22	0.5
						0.5
Ø12	2.3	0.5	12	18	24	0.5
						0.5
Ø13	4.5	0.5	6	18	26	0.5
						0.5
Ø14	3.5	0.5	8	18	28	0.5
						0.5
Ø15	3.0	0.5	10	26	30	0.5
						0.5
Ø16	2.8	0.5	10	26	32	0.5
						0.5
Ø17	2.5	0.5	11	26	34	0.5
						0.5
Ø18	2.3	0.5	12	26	36	0.5
						0.5
Ø19	2.2	0.5	13	26	38	0.5
						0.5
Ø20	1.9	0.5	15	34	40	0.5
						0.5
Ø21	1.7	0.5	17	34	42	0.5
						0.5
Ø25	1.4	0.5	20	44	50	0.5
						0.5
Ø32	1.0	0.5	29	58	64	0.5
						0.5
Ø40	0.7	0.5	41	74	80	0.5
						0.5

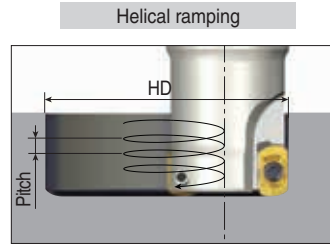
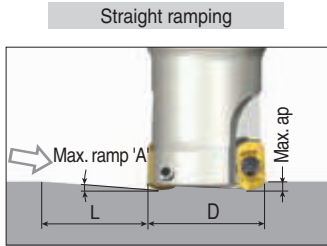
## Programming technical data



	R Program	A Over cut	B Un-machined
AXMT 0602R-HF	0.9	0	0.22
	1.0	0.01	0.19
	1.5	0.16	0.05
	2.0	0.35	0
APKT 09T3R-HF	1.5	0	0.47
	1.7	0	0.29
	2.0	0.04	0.3
	2.5	0.18	0.15
APKT 1204R-HF	3.0	0.36	0.04
	2	0	0.57
	2.5	0.07	0.42
	3	0.21	0.28
	3.5	0.39	0.15
	4	0.58	0.06

Yellow background: Recommended program 'R'

# Ramping Data

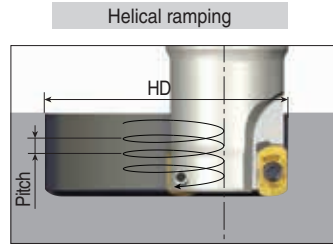
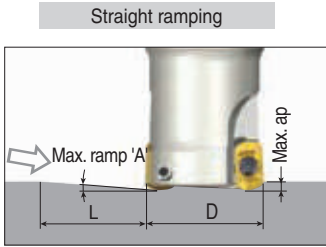


## APKT 09T3R-HF

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	3.8	1.0	15	22	32	1.0
						1.0
Ø17	3.5	1.0	16	24	34	1.0
						1.0
Ø18	3.4	1.0	17	26	36	1.0
						1.0
Ø20	3.0	1.0	19	30	40	1.0
						1.0
Ø21	2.3	1.0	25	32	42	1.0
						1.0
Ø22	2.0	1.0	29	34	44	1.0
						1.0
Ø25	2.1	1.0	27	40	50	1.0
						1.0
Ø26	2.0	1.0	29	42	52	1.0
						1.0
Ø30	1.8	1.0	32	50	60	1.0
						1.0
Ø32	1.6	1.0	36	54	64	1.0
						1.0
Ø33	1.5	1.0	38	56	66	1.0
						1.0
Ø40	1.2	1.0	48	70	80	1.0
						1.0
Ø50	0.9	1.0	64	90	100	1.0
						1.0
Ø63	0.5	1.0	115	116	126	1.0
						1.0
Ø80	0.4	1.0	143	150	160	1.0
						1.0

# Ramping Data

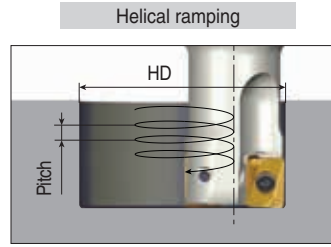
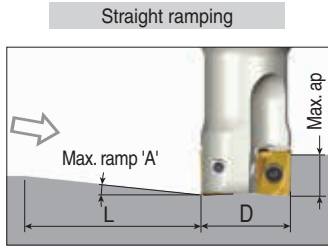


## APKT 1204R-HF

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	3.8	1.2	18	21		0.8
					32	1.2
Ø18	4.0	1.2	17	24		1.1
					36	1.2
Ø20	4.0	1.2	17	27		1.2
					40	1.2
Ø21	3.5	1.2	20	29		1.2
					42	1.2
Ø25	2.5	1.2	27	37		1.2
					50	1.2
Ø26	2.3	1.2	30	39		1.2
					52	1.2
Ø32	1.7	1.2	40	51		1.2
					64	1.2
Ø33	1.7	1.2	40	53		1.2
					66	1.2
Ø40	1.5	1.2	46	67		1.2
					80	1.2
Ø50	1.1	1.2	63	86		1.2
					100	1.2
Ø63	1.0	1.2	69	112		1.2
					126	1.2
Ø80	0.8	1.2	86	146		1.2
					160	1.2

# Ramping Data



## ANH(M)X 11

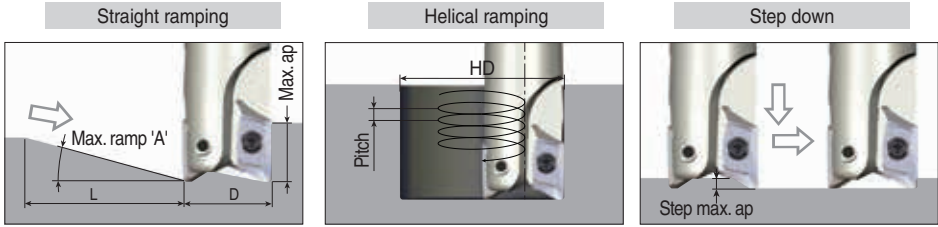
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	1.5	11.0	420	30	50	0.3
						1.7
Ø26	1.4	11.0	450	32	52	0.4
						1.7
Ø32	1.1	11.0	573	44	64	0.6
						1.6
Ø33	1.0	11.0	631	46	66	0.6
						1.5
Ø40	0.8	11.0	788	60	80	0.7
						1.5
Ø50	0.6	11.0	1051	80	100	0.8
						1.4
Ø63	0.4	11.0	1576	106	126	0.8
						1.2
Ø80	0.3	11.0	2102	140	160	0.8
						1.1
Ø100	0.2	11.0	3153	180	200	0.7
						0.9
Ø125	0.2	11.0	3153	230	250	1.0
						1.2

## ANH(M)X 16

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	1.2	15.0	716	44	64	0.7
						1.8
Ø33	1.0	15.0	560	46	66	0.6
						1.5
Ø40	0.9	15.0	955	60	80	0.8
						1.7
Ø50	0.8	15.0	1075	80	100	1.1
						1.9
Ø63	0.6	15.0	1433	106	126	1.2
						1.8
Ø80	0.45	15.0	1911	140	160	1.3
						1.7
Ø100	0.35	15.0	2457	180	200	1.3
						1.6
Ø125	0.25	15.0	3439	230	250	1.2
						1.5
Ø160	0.15	15.0	5732	300	320	1.0
						1.1
Ø200	0.1	15.0	8599	380	400	0.8
						0.9



## XEVT 16: 0.4R-1.6R

(unit: mm)

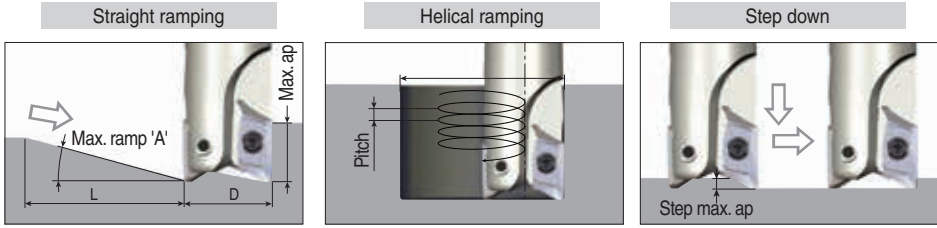
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	20.5	16	43	29.1	50	4.1	4
						13.6	4
Ø32	17.5	16	51	43.1	64	9.3	4
						13.6	4
Ø40	11.0	16	82	59.1	80	9.9	4
						13.6	4
Ø50	8.5	16	107	79.1	100	11.6	4
						13.6	4
Ø63	5.5	16	166	105.1	126	10.8	4
						13.6	4
Ø80	4.3	16	213	139.1	160	11.9	4
						13.6	4
Ø100	3.3	16	278	179.1	200	12.2	4
						13.6	4
Ø125	2.5	16	367	229.1	250	12.1	4
						13.6	4
Ø160	1.9	16	483	299.1	320	12.3	4
						13.6	4
Ø200	1.5	16	611	379.1	400	12.5	4
						13.6	4

## XEVT 16: 2.0R-2.4R

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	19.5	15.5	44	29.1	50	3.9	3.5
						13.2	3.5
Ø32	16.5	15.5	52	43.1	64	8.8	3.5
						13.2	3.5
Ø40	10.5	15.5	84	59.1	80	9.4	3.5
						13.2	3.5
Ø50	8.0	15.5	110	79.1	100	10.9	3.5
						13.2	3.5
Ø63	5.0	15.5	177	105.1	126	9.8	3.5
						13.2	3.5
Ø80	3.9	15.5	227	139.1	160	10.7	3.5
						13.2	3.5
Ø100	3.0	15.5	296	179.1	200	11.1	3.5
						13.2	3.5
Ø125	2.3	15.5	386	229.1	250	11.2	3.5
						13.2	3.5
Ø160	1.7	15.5	523	299.1	320	11.0	3.5
						12.7	3.5
Ø200	1.3	15.5	683	379.1	400	10.8	3.5
						12.1	3.5

# Ramping Data



## XEVT 16: 3.0R-3.2R

(unit: mm)

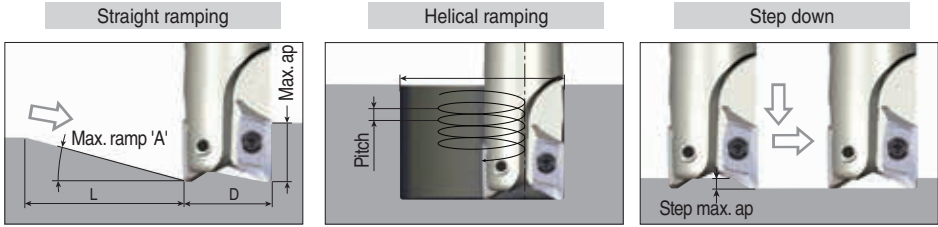
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	18.5	14.5	43	29.1	50	3.7	2.8
				43.1		12.3	2.8
Ø32	16.0	14.5	51	43.1	64	8.5	2.8
				59.1		12.3	2.8
Ø40	9.5	14.5	87	59.1	80	8.5	2.8
				79.1		12.3	2.8
Ø50	7.0	14.5	118	79.1	100	9.5	2.8
				105.1		12.3	2.8
Ø63	5.0	14.5	166	105.1	126	9.8	2.8
				139.1		12.3	2.8
Ø80	3.7	14.5	224	139.1	160	10.2	2.8
				179.1		12.3	2.8
Ø100	2.8	14.5	297	179.1	200	10.3	2.8
				229.1		12.3	2.8
Ø125	2.1	14.5	396	229.1	250	10.2	2.8
				299.1		12.2	2.8
Ø160	1.5	14.5	554	299.1	320	9.7	2.8
				379.1		11.2	2.8
Ø200	1.2	14.5	693	379.1	400	10.0	2.8
				400		11.2	2.8

## XEVT 16: 4.0R-5.0R

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø25	17.5	14.5	46	29.1	50	3.4	2.5
				43.1		12.3	2.5
Ø32	15.0	14.5	54	43.1	64	7.9	2.5
				59.1		12.3	2.5
Ø40	8.5	14.5	97	59.1	80	7.6	2.5
				79.1		12.3	2.5
Ø50	6.5	14.5	127	79.1	100	8.8	2.5
				105.1		12.3	2.5
Ø63	4.5	14.5	184	105.1	126	8.8	2.5
				139.1		12.3	2.5
Ø80	3.3	14.5	252	139.1	160	9.1	2.5
				179.1		12.3	2.5
Ø100	2.4	14.5	346	179.1	200	8.8	2.5
				229.1		11.2	2.5
Ø125	1.8	14.5	462	229.1	250	8.7	2.5
				299.1		10.5	2.5
Ø160	1.4	14.5	594	299.1	320	9.1	2.5
				379.1		10.4	2.5
Ø200	1.1	14.5	756	379.1	400	9.2	2.5
				400		10.2	2.5





## XEVT 22: 0.5R-0.8R

(unit: mm)

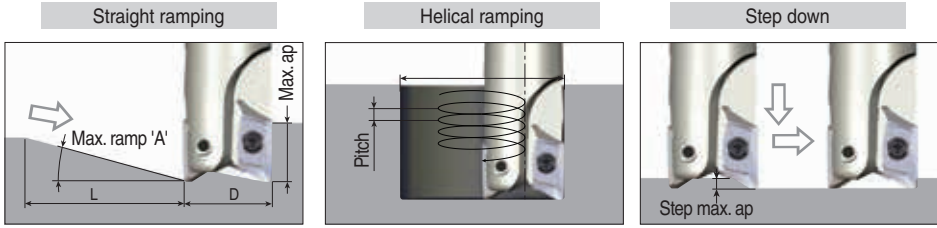
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	21.0	21.2	55	38.5	64	6.7	5.5
						18.0	5.5
Ø40	14.0	21.0	84	54.5	80	9.6	5.5
						17.9	5.5
Ø50	9.5	21.0	126	74.5	100	10.9	5.5
						17.9	5.5
Ø63	7.0	21.0	171	100.5	126	12.3	5.5
						17.9	5.5
Ø80	5.0	20.9	239	134.5	160	12.7	5.5
						17.8	5.5
Ø100	3.7	20.9	323	174.5	200	12.9	5.5
						17.3	5.5
Ø125	2.6	20.9	460	224.5	250	12.1	5.5
						15.1	5.5
Ø200	1.6	20.9	749	374.5	400	13.0	5.5
						14.9	5.5

## XEVT 22: 1.6R-2.0R

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	20.5	21.0	56	38.5	64	6.5	5.0
						17.9	5.0
Ø40	13.5	20.9	87	54.5	80	9.3	5.0
						17.8	5.0
Ø50	9.5	20.9	125	74.5	100	10.9	5.0
						17.8	5.0
Ø63	6.7	20.9	178	100.5	126	11.8	5.0
						17.8	5.0
Ø80	4.7	20.8	253	134.5	160	12.0	5.0
						17.5	5.0
Ø100	3.5	20.8	340	174.5	200	12.2	5.0
						16.3	5.0
Ø125	2.5	20.8	477	224.5	250	11.6	5.0
						14.6	5.0
Ø200	1.5	20.8	795	374.5	400	12.2	5.0
						14.0	5.0

# Ramping Data



## XEVT 22: 3.0R-4.0R

(unit: mm)

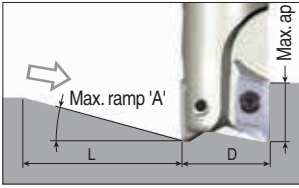
Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	20.0	20.0	55	38.5	64	6.3	4.0
				54.5		17.0	4.0
Ø40	12.3	19.9	91	74.5	80	8.4	4.0
				100.5		16.9	4.0
Ø50	8.5	19.9	133	134.5	100	9.8	4.0
				160		16.9	4.0
Ø63	5.5	19.9	207	174.5	126	9.6	4.0
				200		16.2	4.0
Ø80	4.0	19.8	283	224.5	160	10.2	4.0
				250		14.9	4.0
Ø100	3.0	19.8	378	374.5	200	10.4	4.0
				400		14.0	4.0
Ø125	2.0	19.8	567	400	250	9.3	4.0
				400		11.6	4.0
Ø200	1.0	19.8	1135	400	400	8.1	4.0
				400		9.3	4.0

## XEVT 22: 5.0R

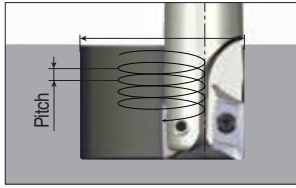
(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	19.0	19.5	57	38.5	64	6.0	3.5
				54.5		16.6	3.5
Ø40	11.4	19.4	96	74.5	80	7.8	3.5
				100.5		16.5	3.5
Ø50	7.5	19.4	147	134.5	100	8.6	3.5
				160		16.5	3.5
Ø63	5.0	19.4	222	174.5	126	8.8	3.5
				200		14.7	3.5
Ø80	3.5	19.3	316	224.5	160	8.9	3.5
				250		13.1	3.5
Ø100	2.5	19.3	442	374.5	200	8.7	3.5
				400		11.6	3.5
Ø125	1.7	19.3	651	400	250	7.9	3.5
				400		9.9	3.5
Ø200	0.8	19.3	1383	400	400	6.5	3.5
				400		7.4	3.5

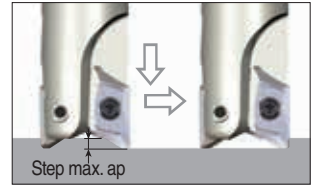
Straight ramping



Helical ramping



Step down

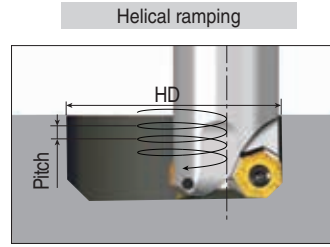
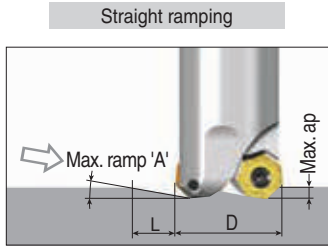


## XEVT 22: 6.4R

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down			Step down
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.	Max. ap
Ø32	18.0	18.8	58	38.5	64	5.6	3.0
						16.0	3.0
Ø40	10.0	18.7	106	54.5	80	6.8	3.0
						15.9	3.0
Ø50	6.5	18.7	164	74.5	100	7.4	3.0
						15.2	3.0
Ø63	4.5	18.7	238	100.5	126	7.9	3.0
						13.2	3.0
Ø80	3.0	18.6	355	134.5	160	7.6	3.0
						11.2	3.0
Ø100	2.0	18.6	533	174.5	200	6.9	3.0
						9.3	3.0
Ø125	1.5	18.6	711	224.5	250	7.0	3.0
						8.7	3.0
Ø200	0.7	18.6	1523	374.5	400	5.7	3.0
						6.5	3.0

# Ramping Data

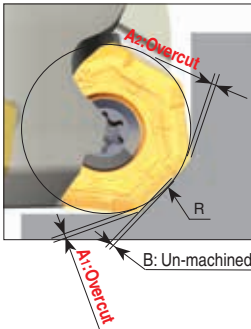


## 7EMT 06

(unit: mm)

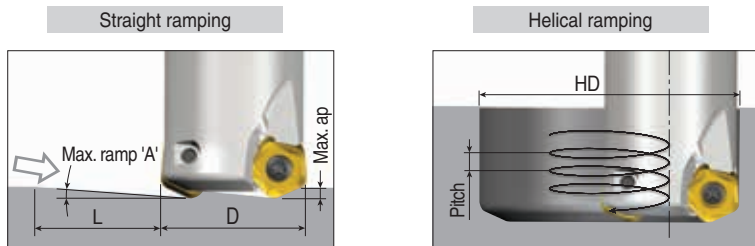
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	29	3.2	6	45.5	64	3.2
				61.5		3.2
Ø40	15.5	3.2	12	81.5	80	3.2
				107.5		3.2
Ø50	9.5	3.2	19	141.5	100	3.2
				181.5		3.2
Ø63	5.5	3.2	33	231.5	126	3.2
				250		3.2
Ø80	4.0	3.2	46	250	160	3.2
				250		3.2
Ø100	3.0	3.2	61	250	200	3.2
				250		3.2
Ø125	2.0	2.3	66	250	250	3.2
				250		3.2

## Programming technical data



	R Program	A Over cut		B Un-machined
		A1	A2	B
7EMT 06	3	0	0	1.77
	4,5	0	0	1.51
	5	0.03	0.02	0.94
	6	0.21	0.19	0.53

Yellow background: Recommended program 'R'

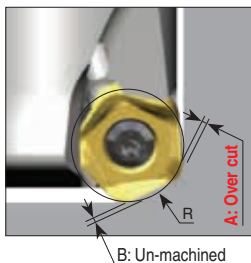


## PTKU 05

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø20	1.3	1.5	66	33		0.7
					40	0.9
Ø25	1.1	1.5	78	43		0.8
					50	1.0
Ø26	1.0	1.5	86	45		0.8
					52	0.9
Ø32	1.0	1.5	86	57		1.0
					64	1.1
Ø33	1.0	1.5	86	59		1.0
					66	1.2
Ø40	0.8	1.5	101	73		1.1
					80	1.2
Ø50	0.7	1.5	123	93		1.1
					100	1.2
Ø52	0.7	1.5	123	97		1.2
					104	1.3
Ø63	0.6	1.5	132	119		1.3
					126	1.4
Ø66	0.6	1.5	143	125		1.3
					132	1.4

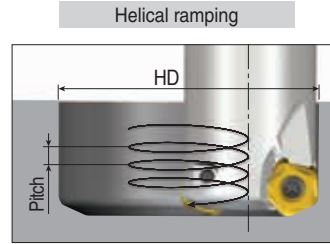
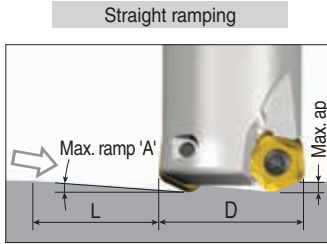
## Programming technical data



	R Program	A Over cut	B Un-machined
PTKU 05	2.5	0.00	0.83
	2.7	0.00	0.76
	3.0	0.04	0.66

Yellow background: Recommended program 'R'

# Ramping Data

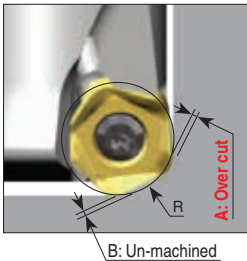


## PTKU 10

(unit: mm)

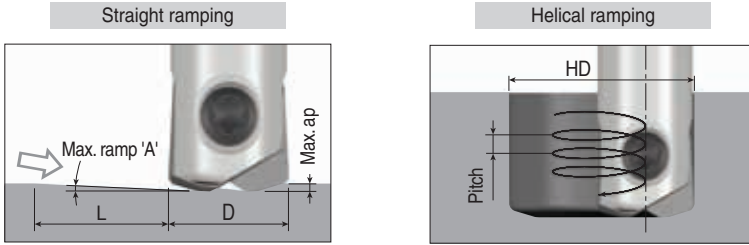
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø40	1.5	3.0	111	63		1.7
					80	2.2
Ø50	1.9	3.0	88	83		2.8
					100	3.0
Ø63	1.7	3.0	101	109		3.0
					126	3.0
Ø66	2.2	3.0	78	115		3.0
					132	3.0
Ø80	1.5	3.0	115	143		3.0
					160	3.0
Ø100	1.1	3.0	150	183		3.0
					200	3.0
Ø125	0.8	3.0	202	233		3.0
					250	3.0
Ø160	0.6	3.0	265	303		3.0
					320	3.0
Ø200	0.5	3.0	344	383		3.0
					400	3.0

## Programming technical data



	R Program	A Over cut	B Un-machined
PTKU 10	5.5	0.00	1.45
	6.0	0.09	1.28
	6.5	0.21	1.11

     : Recommended program 'R'

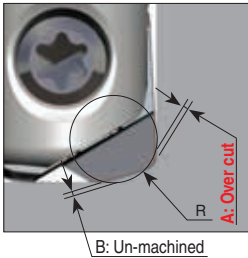


## HFN

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø6	2.0	0.3	9	9.6	11	0.3
						0.3
Ø8	2.5	0.5	11	12		0.5
					15	0.5

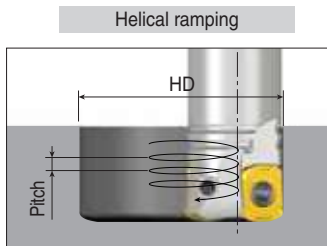
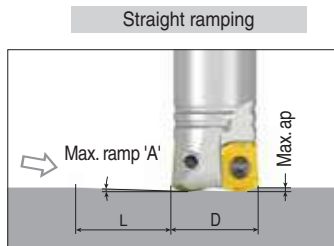
## Programming technical data



	R Program	A Over cut	B Un-machined
HFN 060	0.8	0.00	0.21
	1.0	0.03	0.16
HFN 080	0.8	0.00	0.38
	1.0	0.00	0.32
	1.2	0.02	0.27

Yellow background: Recommended program 'R'

# Ramping Data

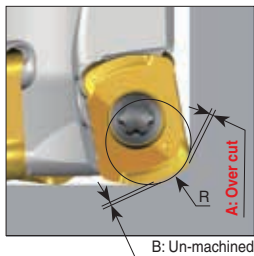


## BLMV 06

(unit: mm)

Cutter dia. (D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.
Ø16	5.1	0.7	8	27	32	0.7
Ø17	4.5	0.7	9	29	34	0.7
Ø18	4.4	0.7	10	31	36	0.7
Ø20	2.5	1.0	23	34	40	1.0
Ø21	2.3	1.0	25	35	42	1.0
Ø22	2.7	1.0	22	39	44	1.0
Ø25	2.5	1.0	23	43	50	1.0
Ø26	2.2	1.0	26	45	52	1.0
Ø30	1.6	1.0	35	55	60	1.0
Ø32	1.4	1.0	40	57	64	1.0
Ø33	1.3	1.0	43	59	66	1.0
Ø35	1.2	1.0	46	63	70	1.0
Ø40	1.0	1.0	55	73	80	1.0
Ø42	1.0	1.0	58	79	84	1.0
Ø50	0.8	1.0	72	93	100	1.0
Ø52	0.8	1.0	77	97	104	1.0
Ø63	0.6	1.0	96	119	126	1.0
Ø66	0.6	1.0	96	127	132	1.0

## Programming technical data

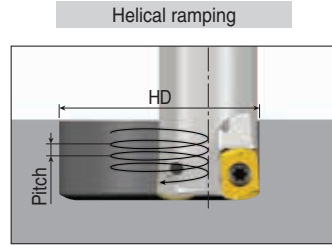
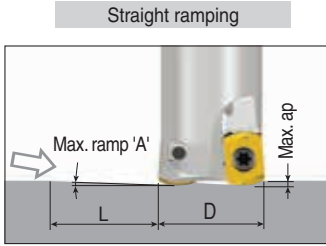


	R Program	A Over cut	B Un-machined
BLMV 06 (Ø16, Ø17)	1.5	0	0.36
	2.0	0.09	0.22
	2.5	0.27	0.10
BLMV 06 (Ø20~)	1.5	0	0.58
	2.0	0	0.41
	2.5	0.12	0.26
	3.0	0.29	0.12

**Yellow background**: Recommended program 'R'



# Ramping Data

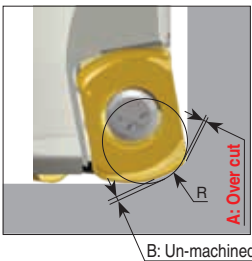


## BLMP 04

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø8	0.4	0.5	72	12.6		0.1
					16	0.1
Ø10	0.6	0.5	44	16.6		0.2
					20	0.2
Ø11	0.7	0.5	38	18.6		0.2
					22	0.3
Ø12	1.0	0.5	29	20.6		0.4
					24	0.4
Ø13	1.1	0.5	25	22.6		0.5
					26	0.5
Ø16	1.0	0.5	29	28.6		0.5
					32	0.5
Ø17	1.1	0.5	26	30.6		0.5
					34	0.5
Ø20	1.0	0.5	27	36.6		0.5
					40	0.5
Ø21	0.7	0.5	38	38.6		0.5
					42	0.5
Ø25	0.7	0.5	38	46.6		0.5
					50	0.5
Ø32	0.6	0.5	48	60.6		0.5
					64	0.5

## Programming technical data

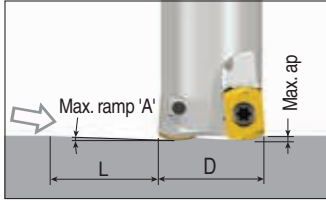


	R Program	A Over cut	B Un-machined
BLMP 04	0.8	0.00	0.28
	0.9	0.00	0.25
	1.0	0.08	0.22

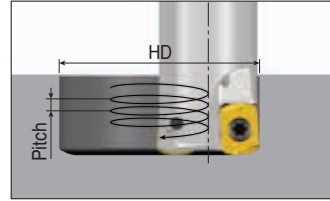
**0.9** : Recommended program 'R'

# Ramping Data

Straight ramping



Helical ramping

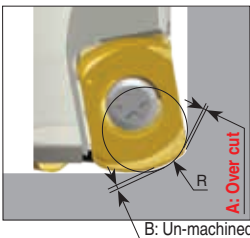


## BLMP 06

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	2.0	0.7	13	23		0.7
					32	0.7
Ø17	2.0	0.7	15	25		0.7
					34	0.7
Ø18	2.3	0.7	16	27		0.7
					36	0.7
Ø20	1.5	1.0	38	31		0.8
					40	1.0
Ø21	1.5	1.0	38	33		0.8
					42	1.0
Ø22	1.5	1.0	38	35		1.0
					44	1.0
Ø25	1.3	1.0	41	41		1.0
					50	1.0
Ø26	1.2	1.0	44	43		1.0
					52	1.0
Ø30	1.0	1.0	52	51		1.0
					60	1.0
Ø32	0.9	1.0	57	55		1.0
					64	1.0
Ø33	0.9	1.0	57	57		1.0
					66	1.0
Ø35	0.8	1.0	57	61		1.0
					70	1.0
Ø40	0.7	1.0	64	71		1.0
					80	1.0
Ø42	0.7	1.0	72	75		1.0
					84	1.0
Ø50	0.6	1.0	96	91		1.0
					100	1.0
Ø52	0.6	1.0	96	95		1.0
					104	1.0
Ø63	0.5	1.0	115	117		1.0
					126	1.0
Ø66	0.5	1.0	115	123		1.0
					132	1.0

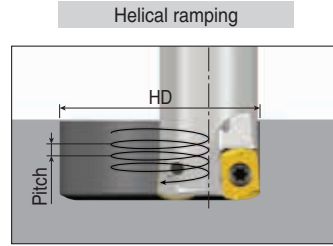
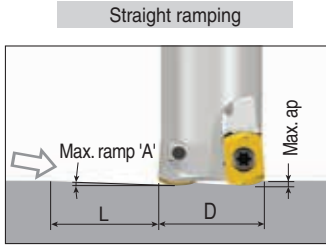
## Programming technical data



	R Program	A Over cut	B Un-machined
BLMP 06 (Ø16, Ø17, Ø18)	1.5	0	0.35
	2.0	0.1	0.22
	2.5	0.27	0.1
BLMP 06 (Ø20- )	2.0	0	0.42
	2.5	0.12	0.26
	3.0	0.29	0.17

Yellow background: Recommended program 'R'

# Ramping Data

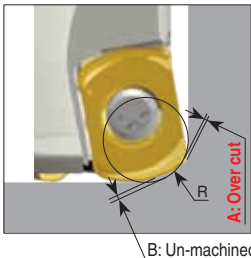


## BLMP 09

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	2.2	1.5	39	42	50	1.5
Ø26	2.2	1.5	39	44	52	1.5
Ø30	2.0	1.5	43	52	60	1.5
Ø32	2.0	1.5	43	56	64	1.5
Ø33	2.0	1.5	43	58	66	1.5
Ø35	2.0	1.5	43	60	70	1.5
Ø40	1.5	1.5	57	72	80	1.5
Ø42	1.5	1.5	57	76	84	1.5
Ø50	1.0	1.5	86	92	100	1.5
Ø52	1.0	1.5	86	96	104	1.5
Ø63	0.9	1.5	96	118	126	1.5
Ø66	0.9	1.5	96	124	132	1.5
Ø80	0.8	1.5	107	152	160	1.5
Ø100	0.7	1.5	123	192	200	1.5
Ø125	0.4	1.5	215	240	250	1.5

## Programming technical data

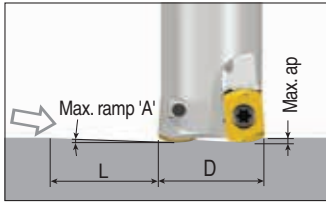


	R Program	A Over cut	B Un-machined
BLMP 09	2.5	0	0.61
	3.0	0.09	0.45
	3.5	0.24	0.30
	4.0	0.41	0.17
	3.0	0.36	0.04

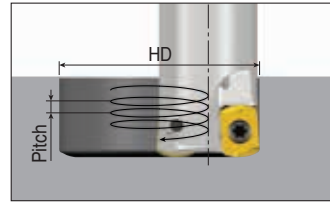
■ : Recommended program 'R'

# Ramping Data

Straight ramping



Helical ramping

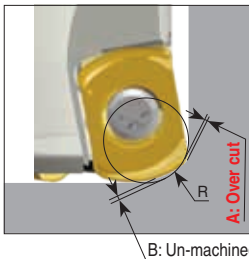


## BLMP 11

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø30	0.50	2.0	229	41	60	0.3
						0.7
Ø32	0.50	2.0	229	45	64	0.3
						0.7
Ø33	0.45	2.0	255	47	66	0.3
						0.7
Ø35	0.50	2.0	229	51	70	0.4
						0.8
Ø40	0.55	2.0	208	61	80	0.5
						1.0
Ø42	0.50	2.0	229	65	84	0.5
						1.0
Ø50	0.50	2.0	229	81	100	0.7
						1.2
Ø52	0.45	2.0	255	85	104	0.7
						1.1
Ø63	0.45	2.0	255	107	126	0.9
						1.3
Ø66	0.40	2.0	287	113	132	0.9
						1.2
Ø80	0.35	2.0	328	141	160	1.0
						1.3
Ø100	0.30	2.0	382	181	200	1.1
						1.4
Ø125	0.25	2.0	459	231	250	1.2
						1.5
Ø160	0.20	2.0	573	301	320	1.3
						1.5
Ø200	0.15	2.0	764	381	400	1.3
						1.4

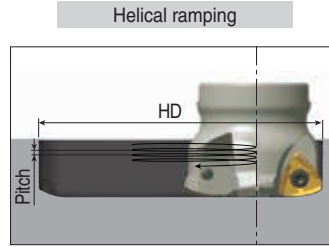
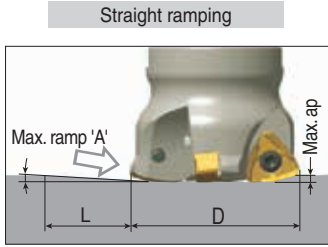
## Programming technical data



	R Program	A Over cut	B Un-machined
BLMP 11	2.4	0.00	1.09
	3.0	0.00	0.90
	3.2	0.18	0.85

■ : Recommended program 'R'

# Ramping Data

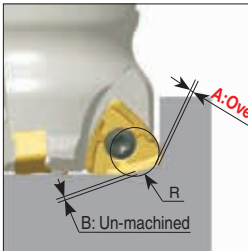


## BLMP 13

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	0.8	2.0	143	50		0.7
					64	0.9
Ø33	1.1	2.0	104	52		1.0
					66	1.3
Ø35	1.1	2.0	104	56		1.1
					70	1.3
Ø40	1.2	2.0	96	66		1.4
					80	1.7
Ø42	1.1	2.0	104	70		1.3
					84	1.6
Ø50	0.8	2.0	143	86		1.2
					100	1.4
Ø52	0.8	2.0	143	90		1.3
					104	1.5
Ø63	0.6	2.0	191	112		1.2
					126	1.3
Ø66	0.6	2.0	191	118		1.2
					132	1.4
Ø80	0.5	2.0	229	146		1.3
					160	1.4
Ø100	0.4	2.0	287	186		1.3
					200	1.4
Ø125	0.3	2.0	382	236		1.2
					250	1.3
Ø160	0.3	2.0	382	306		1.6
					320	1.7
Ø200	0.2	2.0	573	386		1.3
					400	1.4
Ø250	0.2	2.0	573	486		1.7
					500	1.7

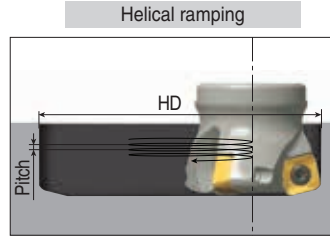
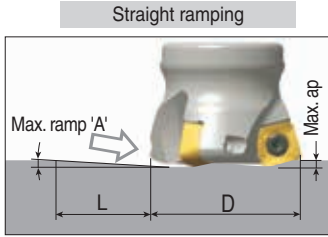
## Programming technical data



BLMP 13	R Program	A Over cut	B Un-machined
	3.0	0	1.31
3.5	0	1.17	
4.0	0.04	1.03	
4.5	0.15	0.89	
5.0	0.3	0.76	

■ : Recommended program 'R'



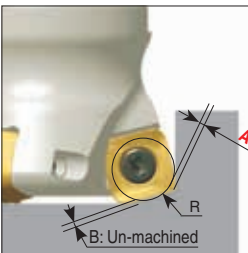


## SBMT 09

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	1.6	1.2	43	36	50	1
						1.2
Ø26	1.7	1.2	40	38	52	1.1
						1.2
Ø30	3.1	1.2	22	46	60	1.2
						1.2
Ø32	3.9	1.2	18	50	64	1.2
						1.2
Ø33	3.7	1.2	19	52	66	1.2
						1.2
Ø35	3.4	1.2	18	56	70	1.2
						1.2
Ø40	2.8	1.2	25	66	80	1.2
						1.2
Ø42	2.6	1.2	26	70	84	1.2
						1.2
Ø50	2.0	1.2	34	86	100	1.2
						1.2
Ø52	1.9	1.2	38	90	104	1.2
						1.2
Ø63	1.5	1.2	43	112	126	1.2
						1.2
Ø66	1.1	1.2	63	118	132	1.2
						1.2
Ø80	1.2	1.2	63	146	160	1.2
						1.2

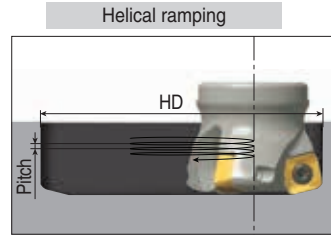
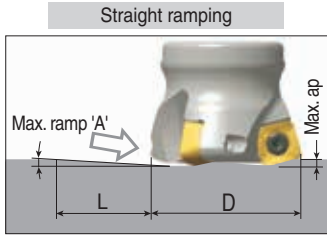
## Programming technical data



	R Program	A Over cut	B Un-machined
SBMT 09	3.5	0.1	0.81
	3	0	0.9
	2.5	0	0.98
	2	0	1.1

**Yellow background** : Recommended program 'R'

# Ramping Data

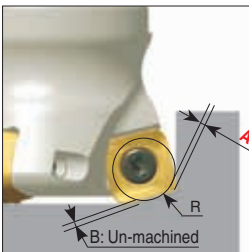


## SBMT 13

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	7.0	2.0	16	47	64	2.0
						2.0
Ø33	6.9	2.0	17	49	66	2.0
						2.0
Ø35	6.4	2.0	18	53	70	2.0
						2.0
Ø40	5.3	2.0	22	63	80	2.0
						2.0
Ø42	4.4	2.0	26	67	84	2.0
						2.0
Ø50	4.3	2.0	27	83	100	2.0
						2.0
Ø52	4.0	2.0	29	87	104	2.0
						2.0
Ø63	2.9	2.0	40	109	126	2.0
						2.0
Ø80	2.0	2.0	57	143	160	2.0
						2.0
Ø100	1.5	2.0	76	183	200	2.0
						2.0
Ø125	1.1	2.0	104	233	250	2.0
						2.0
Ø160	0.8	2.0	104	303	320	2.0
						2.0
Ø200	0.6	2.0	127	383	400	2.0
						2.0
Ø250	0.5	2.0	164	483	500	2.0
						2.0

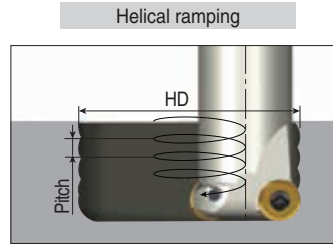
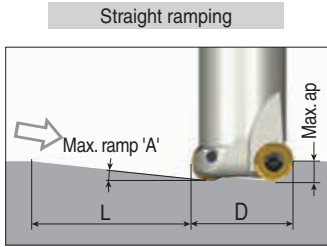
## Programming technical data



	R Program	A Over cut	B Un-machined
SBMT 13	4.0	0	1.62
	4.5	0	1.51
	5.0	0.04	1.4
	5.5	0.14	1.29
	6.0	0.28	1.18

■ :Recommended program 'R'





## RNMU 10

(unit: mm)

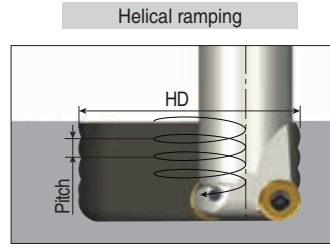
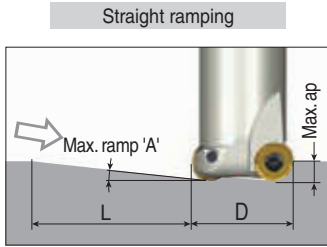
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	1.1	5.0	261	33	50	0.4
						1.3
Ø26	1.1	5.0	261	35	52	0.5
						1.3
Ø32	0.9	5.0	318	47	64	0.6
						1.3
Ø33	0.9	5.0	318	49	66	0.7
						1.4
Ø40	0.9	5.0	318	63	80	1.0
						1.7
Ø42	0.9	5.0	318	67	84	1.0
						1.8
Ø50	0.7	5.0	409	83	100	1.1
						1.6
Ø52	0.8	5.0	358	87	104	1.3
						1.9

## RNMU 12

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	1.4	6.0	246	42	64	0.7
						2.1
Ø33	1.4	6.0	246	44	66	0.7
						2.2
Ø40	1.3	6.0	265	58	80	1.1
						2.4
Ø50	1.0	6.0	344	78	100	1.3
						2.3
Ø52	1.0	6.0	344	82	104	1.4
						2.4
Ø63	1.0	6.0	344	104	126	1.9
						2.9
Ø66	1.0	6.0	344	110	132	2.0
						3.1
Ø80	0.9	6.0	382	138	160	2.4
						3.4
Ø100	0.7	6.0	491	178	200	2.5
						3.3

# Ramping Data

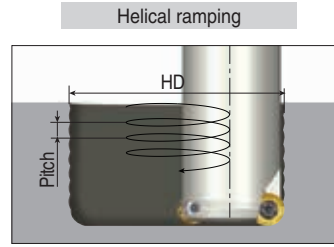
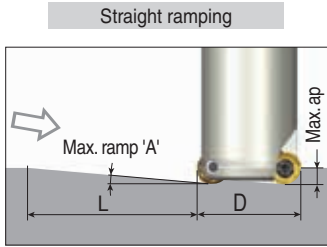


## RNMU 16

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø40	1.4	8.0	328	52	80	0.8
						2.6
Ø42	1.4	8.0	328	56	84	0.9
						2.7
Ø50	1.3	8.0	353	72	100	1.3
						3.0
Ø52	1.0	8.0	459	76	104	1.1
						2.4
Ø63	1.0	8.0	459	98	126	1.6
						2.9
Ø66	1.0	8.0	459	104	132	1.8
						3.1
Ø80	1.0	8.0	459	132	160	2.4
						3.7
Ø100	0.9	8.0	510	172	200	3.0
						4.2
Ø125	0.9	8.0	510	222	250	4.1
						5.2

# Ramping Data



## RYM(H)X-08

(unit: mm)

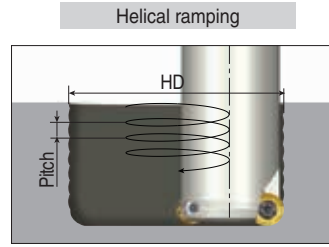
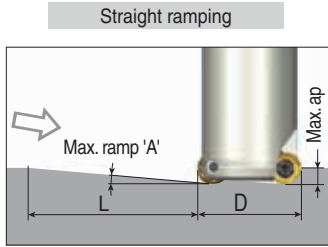
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø16	2.5	4.0	92	18	32	0.2
						1.9
Ø17	2.5	4.0	92	20	34	0.3
						2.0
Ø18	2.5	4.0	92	22	36	0.5
						2.1
Ø20	4.0	4.0	57	26	40	1.1
						3.4
Ø21	4.0	4.0	57	28	42	1.3
						3.4
Ø25	4.0	4.0	57	36	50	2.1
						3.4
Ø26	4.0	4.0	57	38	52	2.2
						3.4
Ø32	4.0	4.0	57	50	64	3.4
						3.4
Ø40	7.0	4.0	33	66	80	3.4
						3.4

## RYMX-10

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø20	4.5	5.0	64	22	40	0.4
						4.2
Ø21	4.5	5.0	64	24	42	0.6
						4.4
Ø25	5.0	5.0	57	32	50	1.6
						4.3
Ø26	5.0	5.0	57	34	52	1.9
						4.3
Ø32	5.0	5.0	57	46	64	3.3
						4.3
Ø35	5.0	5.0	57	52	70	4.0
						4.3
Ø40	5.0	5.0	57	62	80	4.3
						4.3
Ø42	5.0	5.0	57	66	84	4.3
						4.3
Ø50	6.5	5.0	44	82	100	4.3
						4.3
Ø52	6.0	5.0	48	86	104	4.3
						4.3
Ø66	4.5	5.0	64	114	132	4.3
						4.3

# Ramping Data

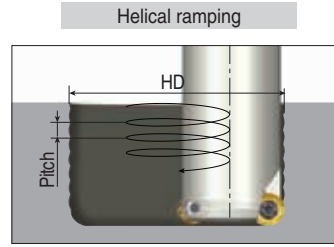
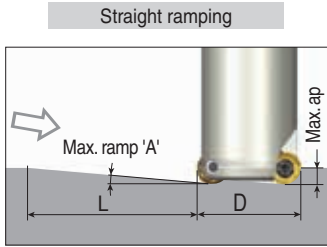


## RYMX-12

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø25	6.0	6.0	57	28	50	0.8
				5.1		
Ø26	6.0	6.0	57	30	52	1.1
				5.1		
Ø32	12.0	6.0	28	42	64	5.1
				5.1		
Ø33	12.0	6.0	28	44	66	5.1
				5.1		
Ø35	12.0	6.0	28	48	70	5.1
				5.1		
Ø40	10.0	6.0	34	58	80	5.1
				5.1		
Ø42	12.0	6.0	28	62	84	5.1
				5.1		
Ø50	9.0	6.0	38	78	100	5.1
				5.1		
Ø52	8.0	6.0	43	82	104	5.1
				5.1		
Ø55	8.0	6.0	43	88	110	5.1
				5.1		
Ø63	7.0	6.0	49	104	126	5.1
				5.1		
Ø66	6.5	6.0	53	110	132	5.1
				5.1		
Ø80	4.5	6.0	76	138	160	5.1
				5.1		
Ø100	3.5	6.0	98	178	200	5.1
				5.1		
Ø125	2.5	6.0	137	228	250	5.1
				5.1		

# Ramping Data



## RYMX-16

(unit: mm)

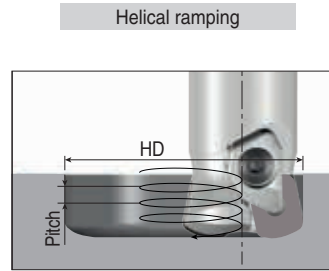
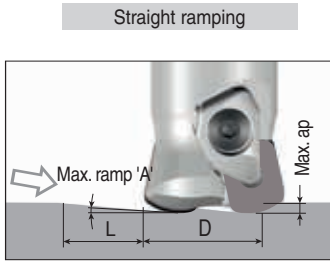
Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø32	8.0	8.0	57	34		0.7
					64	6.8
Ø40	9.5	8.0	48	50		4.5
					80	6.8
Ø42	9.0	8.0	51	54		5.1
					84	6.8
Ø50	9.0	8.0	51	70		6.8
					100	6.8
Ø52	9.0	8.0	51	74		6.8
					104	6.8
Ø63	8.5	8.0	54	96		6.8
					126	6.8
Ø66	8.5	8.0	54	102		6.8
					132	6.8
Ø80	6.0	8.0	76	130		6.8
					160	6.8
Ø100	5.0	8.0	91	170		6.8
					200	6.8
Ø125	3.5	8.0	131	220		6.8
					250	6.8
Ø160	3.5	8.0	131	290		6.8
					320	6.8

## RYMX-20

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
Ø50	8.0	10.0	71	62		4.5
					100	8.5
Ø63	12.5	10.0	45	88		8.5
					126	8.5
Ø80	8.5	10.0	67	122		8.5
					160	8.5
Ø100	6.5	10.0	88	162		8.5
					200	8.5
Ø125	4.5	10.0	127	212		8.5
					250	8.5
Ø160	4.0	10.0	143	282		8.5
					320	8.5
Ø200	2.5	10.0	229	362		8.5
					400	8.5
Ø250	2.4	10.0	239	462		8.5
					500	8.5

# Ramping Data



## BNGX 06

(unit: mm)

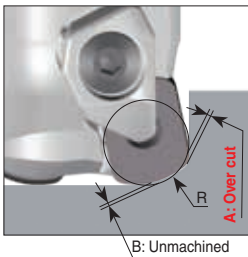
Cutter dia. (D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.
Ø16	0.5	1.0	115	25.6	32	0.2
						0.4
Ø20	0.5	1.0	115	33.4	40	0.3
						0.5
Ø25	0.4	1.0	144	43.4	50	0.4
						0.5
Ø32	0.3	1.0	191	57.3	64	0.4
						0.6

## BNGX 09

(unit: mm)

Cutter dia. (D)	Straight ramp down			Helical ramp down		
	Max. ramp (A°)	Max. ap	Min. length (L)	Min. dia. (HD)	Max. dia. (HD)	Max. pitch/rev.
Ø25	1.2	1.5	55	39	50	0.9
						1.1
Ø32	0.6	1.5	132	53	64	0.6
						0.7
Ø40	0.6	1.5	143	69	80	0.7
						0.8
Ø50	0.5	1.5	156	89	100	0.9
						1.0

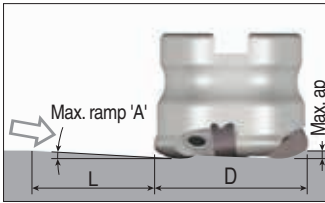
## Programming technical data



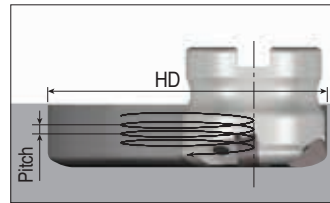
	R Program	A Over cut	B Un-machined
BNGX 06	1.5	0.00	0.60
	2.0	0.00	0.42
	2.5	0.10	0.27
BNGX 09	3.0	0.00	0.61
	3.4	0.00	0.46
	3.5	0.01	0.43
	4.0	0.12	0.26

**Yellow background:** Recommended program 'R'

Straight ramping



Helical ramping

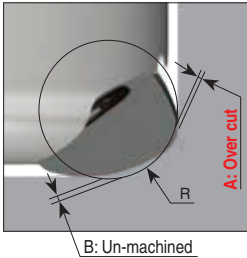


## BNGX 12

(unit: mm)

Cutter dia.(D)	Straight ramp down			Helical ramp down		
	Max. ramp ( $A^{\circ}$ )	Max. ap	Min. length (L)	Min. dia.(HD)	Max. dia.(HD)	Max. pitch/rev.
$\varnothing 50$	0.6	2.5	239	84		1.1
					100	1.0
$\varnothing 63$	0.5	2.5	287	110		1.1
					126	1.1
$\varnothing 80$	0.4	2.5	318	144		1.3
					160	1.3

## Programming technical data



	R Program	A Over cut	B Un-machined
<b>BNGX 12</b>	4.0	0.00	1.18
	4.5	0.00	1.00
	5.0	0.03	0.84

     : Recommended program 'R'

# **SOLID** END MILLS

































# Tool Selection Guide



## Modular solid carbide end mill heads

	MXEE-03	MXEE(D)-04	MXEE-03	MXEE-104	MXES-R	MXEE-R																																																																								
<b>Series</b>																																																																														
<b>Type</b>	Flat	Radius	Radius	Chamfer/Radius	Radius	Chamfer																																																																								
<b>Flute</b>																																																																														
<b>Grades</b>	TT5523	TT5523	TT5523	TT5523	TT5523	TT5523																																																																								
<b>Material</b>	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○
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<b>Diameter range (mm)</b>	Ø8-Ø12	Ø5-Ø20	Ø7.7-Ø19.7	Ø8-Ø25	Ø8-Ø25	Ø8-Ø25																																																																								
<b>Pages</b>	F17	F18	F20	F20	F21	F22																																																																								













	MXEE-R-1.5D	MXEE-C04	MXEE-A02	MXEE-A03	MXEE-RA03	MXEE(D)-06																																																																								
<b>Series</b>																																																																														
<b>Type</b>	Radius	Chamfer	Radius	Radius	Radius	Radius																																																																								
<b>Flute</b>																																																																														
<b>Grades</b>	TT5523	TT5523	UF10/TTA101	UF10/TTA101	UF10	TT5523																																																																								
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<b>Diameter range (mm)</b>	Ø8-Ø20	Ø8-Ø25	Ø10-Ø12	Ø8-Ø20	Ø8-Ø20	Ø8-Ø12																																																																								
<b>Pages</b>	F22	F23	F23	F24	F24	F25																																																																								













● Recommended, ○ Suitable

# Tool Selection Guide



## Modular solid carbide end mill heads

	<u>MXED-08/10</u>	<u>MXED-107/109-1.5D</u>	<u>MXRB-02</u>	<u>MXRD-06</u>	<u>MXFX-02</u>	<u>MXFX-04/06</u>																																																																								
<b>Series</b>																																																																														
<b>Type</b>	Radius	Radius	Radius	Radius	Ball	Radius																																																																								
<b>Flute</b>																																																																														
<b>Grades</b>	TT5523	TT5523	TT5523	TT5523	TT5523	TT5513/TT5523																																																																								
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<b>Diameter range (mm)</b>	Ø16-Ø25	Ø10-Ø20	Ø20	Ø8-Ø16	Ø10-Ø20	Ø8-Ø25																																																																								
<b>Pages</b>	F25	F26	F26	F27	F27	F28																																																																								













	<u>MXBD-BG-02</u>	<u>MXBD(E)-BG-04</u>	<u>MXBE-BH-04</u>	<u>MXBB-SG-02</u>	<u>MXBE-BGA02</u>	<u>MXCP-02</u>																																																																								
<b>Series</b>																																																																														
<b>Type</b>	Ball	Ball	Ball	Ball (Spherical)	Ball	Chamfer																																																																								
<b>Flute</b>																																																																														
<b>Grades</b>	TT5523	TT5523	TT5513	TT5523	UF10/TTA101	TT5523																																																																								
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<b>Diameter range (mm)</b>	Ø8-Ø16	Ø6-Ø25	Ø8-Ø20	Ø8-Ø25	Ø8-Ø20	Ø8-Ø16.5																																																																								
<b>Pages</b>	F28	F29	F29	F30	F30	F31																																																																								











● Recommended, ○ Suitable

# Tool Selection Guide



## Modular solid carbide end mill heads

	MXCA-04/06	MXCW-02	MXCR-02	MXCS-04	MXDP-02	MXGC-02																																																																								
Series																																																																														
Type	Chamfer	Chamfer	Concave	Chamfer	Center drill	Counter Boring																																																																								
Flute																																																																														
Grades	TT5523	TT5523	TT5523	TT5523	TT5523	TT5523																																																																								
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○
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Diameter range (mm)	Ø10-Ø20	Ø9.8-Ø15.7	Ø8-Ø20	Ø7.7	Ø1.07-Ø6.41	Ø8-Ø16																																																																								
Pages	F32	F32	F33	F34	F34	F35																																																																								









	MXDS-02	MXEG-01	MXDG-04	MXCSL	MXCSO																																																												
Series																																																																	
Type	Drill & Chamfer	Engraving	Grooving	Lens Shape	Oval Shape																																																												
Flute																																																																	
Grades	TT5523	TT5523	TT5523	TT5523	TT5523																																																												
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○
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Diameter range (mm)	Ø6-Ø16	Ø6-Ø8	Ø15.5-Ø24.5	Ø8-Ø16	Ø8-Ø16																																																												
Pages	F35	F36	F36	F37	F37																																																												

● Recommended, ○ Suitable











# Tool Selection Guide



## Modular solid carbide end mill heads

	MXFM-106	TTRD-A60	TTRD-W55	TDT-06																																																	
Series																																																					
Type	Milling	Thread	Thread	Dovetail																																																	
Flute																																																					
Grades	TT5523	TT5543	TT5543	TT5523																																																	
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	
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P	M	K	N	S	H																																																
●	○	●	○	○	○																																																
Diameter range (mm)	Ø10-Ø25	Ø15.7-Ø21.7	Ø21.7	Ø27.7																																																	
Pages	F38	F39	F39	F40																																																	

## Modular solid carbide slotting heads






	TST-3	TST-4/6	TST-A45	TTB-04	TTB-06																																																												
Series																																																																	
Type	Slot	Slot	Slot Chamfer	Slot	Slot																																																												
Flute																																																																	
Grades	TT5543	TT5523/TT5543	TT5523/TT5543	TT5523	TT5523/TT5543																																																												
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	○	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>●</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	●	○	○	○	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>	P	M	K	N	S	H	●	○	○	○	○	○
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P	M	K	N	S	H																																																												
●	○	○	○	○	○																																																												
Diameter range (mm)	Ø15.7-Ø17.7	Ø21.7-Ø27.7	Ø17.7-Ø27.7	Ø7.7	Ø10.5-Ø25																																																												
Width of cut (mm)	1.5-3.17	0.76-10	3.4-9.8	1-2	1.58-8																																																												
Pages	F41	F42	F43	F43	F44																																																												

● Recommended, ○ Suitable

# Tool Selection Guide



## Holders for MAXI-RUSH head



	<u>MXSSD</u>	<u>MXSSD-S</u>	<u>MXSSD-C</u>	<u>MXSSD-W-A</u>	<u>MXTSD-S</u>
<b>Series</b>					
<b>Shank Type</b>	Short	Step neck	Step neck	Step neck	Taper neck
<b>Shank material</b>	Steel/Carbide	Steel	Carbide	Tungsten	Steel
<b>Internal coolant</b>	X	●/X	●/X	●	X
<b>Connection size</b>	S04-S15	S05-S15	S05-S15	S06-S12	S04-S15
<b>Shank range (mm)</b>	Ø6-Ø32	Ø8-Ø25	Ø8-Ø25	Ø10-Ø20	Ø8-Ø32
<b>Pages</b>	F45	F46	F47	F48	F49

	<u>MXTSD-C</u>	<u>MXTSD-W-A</u>	<u>MXSTD-S</u>	<u>MXSC-C</u>	
<b>Series</b>					
<b>Shank Type</b>	Taper neck	Taper neck	Straight	Straight	
<b>Shank material</b>	Carbide	Tungsten	Steel	Carbide	
<b>Internal coolant</b>	X	●	X	●/X	
<b>Connection size</b>	S05-S15	S06	S04-S10	S06, S08	
<b>Shank range (mm)</b>	Ø12-Ø32	Ø12-Ø16	Ø6-Ø16	Ø10-Ø12	
<b>Pages</b>	F50	F51	F52	F52	

# Tool Selection Guide








## Adaptor for MAXI-RUSH head






	<b>MXAD-M</b>	<b>MXER</b>				
<b>Series</b>						
<b>Shank Type</b>	T-FLEXTEC	ER Collet				
<b>Shank material</b>	Steel	Steel				
<b>Internal coolant</b>	X	X				
<b>Connection size</b>	S08	S04-S08				
<b>Shank range (mm)</b>	M8 - M12	ER11 - ER25				
<b>Pages</b>	F53	F54				



# Tool Selection Guide

## Solid end mill

Series	<i>HARDMILL</i>	<i>SLIKSOLID</i>			<i>APEXMILL</i>	
	HSB 2CBN	UHP 4	UHP 4...R	SCSL	SCSO	
Type	CBN Ball	Flat	Radius	Lens Shape	Oval Shape	
Flute						
Length	Long neck	Medium	Medium	Medium	Medium	
Grades	TB7015	TT5520	TT5520	TT5515	TT5515	
Application	Finishing	General	General	Finishing	Finishing	
Material	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ●	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ●	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ●	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ●	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ●	
Range	Ø0.4-Ø4	Ø2-Ø25	Ø3-Ø20	Ø8-Ø12	Ø8-Ø12	
Pages	F60	F61	F62	F63	F63	



Series	<i>APEXMILL</i>				
	SCST	HCEM 5	HFM 2	HFM 4	CFM 4...M
Type	Oval shape	Chamfer 45°	Flat	Flat	Chamfer
Flute					
Length	Medium	Medium	Medium	Medium	Medium
Grades	TT5515	TT5525	TT5515	TT5515	TT5525
Application	Finishing	General	*H.F.M	*H.F.M	General
Material	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ●	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ○	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ● ○	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ● ○	<b>P</b> <b>M</b> <b>K</b> <b>N</b> <b>S</b> <b>H</b> ● ● ○ ●
Range	Ø8-Ø12	Ø8-Ø16	Ø4-Ø12	Ø6-Ø12	Ø6-Ø25
Pages	F64	F65	F66	F66	F67

► \*H.F.M: High Feed Machining

● Recommended, ○ Suitable

# Tool Selection Guide

## Solid end mill













Series	APEX MILL		STAR MILL																																																														
	FSM 4...M	SBT 3...U	SBT 4...U	SED 4																																																													
				SED 4...U	SED 4...UL																																																												
Type	Chamfer	Ball	Ball	Flat	Flat																																																												
Flute																																																																	
Length	Medium	Medium	Medium	Medium	Long																																																												
Grades	TT5525	TT5515	TT5515	TT5515	TT5515																																																												
Application	Roughing+Finishing	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut																																																												
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>●</td><td>○</td><td></td><td></td><td></td><td></td></tr></table>	P	M	K	N	S	H	●	○					<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●	
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P	M	K	N	S	H																																																												
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Range	Ø6-Ø25	Ø4-Ø12	Ø4-Ø12	Ø3-Ø20	Ø3-Ø12																																																												
Pages	F67	F68	F68	F69	F69																																																												

Series	STAR MILL																																																																
	SED 4		SED 7		SER																																																												
	SED 4...-R	SED 4...-C	SED 7	SED 7...N																																																													
Type	Radius	Chamfer	Radius	Radius	Splitter																																																												
Flute																																																																	
Length	Medium	Medium	Medium	Medium	Medium																																																												
Grades	TT5515	TT5515	TT5515	TT5515	TT5525																																																												
Application	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut	Difficult-to-cut																																																												
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●		<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td>○</td><td>●</td><td></td><td></td><td>●</td><td></td></tr></table>	P	M	K	N	S	H	○	●			●	
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Range	Ø2-Ø16	Ø4-Ø12	Ø6-Ø20	Ø6-Ø20	Ø3-Ø20																																																												
Pages	F70	F71	F71	F72	F73																																																												

● Recommended, ○ Suitable

# Tool Selection Guide













## Solid end mill

Series	ALUMILL			CERAMIC SPEED																																																																										
	AWE 3			CRF 4	CRF 6	CRH 4																																																																								
	AWE 3	AWE 3...ML	AWE 3...ML-R																																																																											
																																																																														
Type	Wave Flat	Wave Flat	Wave Radius	Radius	Radius	Radius																																																																								
Flute																																																																														
Length	Medium	Long	Long	Medium	Medium	Medium																																																																								
Grades	UF10	UF10	UF10	TC3030	TC3030	TC3030																																																																								
Application	Aluminum	Aluminum	Aluminum	*H.S.M	*H.S.M	*H.F.M																																																																								
Material	<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●			<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●			<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●			<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●			<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●			<table border="1"><tr><td>P</td><td>M</td><td>K</td><td>N</td><td>S</td><td>H</td></tr><tr><td></td><td></td><td></td><td>●</td><td></td><td></td></tr></table>	P	M	K	N	S	H				●		
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Range	Ø6-Ø20	Ø6-Ø20	Ø6-Ø12	Ø6-Ø16	Ø6-Ø16	Ø6-Ø16																																																																								
Pages	F74	F74	F75	F75	F76	F76																																																																								

► \*H.S.M: High Speed Machining









► \*H.F.M: High Feed Machining




● Recommended, ○ Suitable

Series	DIA MILL					
	DMB 2	DEB 2		DMR 2	DER 3	
		DEB 2...S	DEB 2...L		DER 3...S	DER 3...L
						
Type	Ball	Ball	Ball	Radius	Radius	Radius
Flute						
Length	Miniature	Short	Long	Medium	Short	Long
Grades	TTD620	TTD620	TTD620	TTD620	TTD620	TTD620
Application	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Material	Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Range	Ø0.6-Ø2	Ø3-Ø12	Ø3-Ø12	Ø0.6-Ø2	Ø3-Ø12	Ø4-Ø12
Pages	F77	F77	F78	F78	F79	F79

# Tool Selection Guide

## Solid end mill

Series					
	 RRFE	 RCFE	 RCME	 RCDE	 RCOM
Type	Flat	Flat	Flat	Chamfer	Flat
Flute					
Length					
Grades	TTD610	TTD610	TTD610	TTD610	TTD610
Application	Roughing	Roughing	Medium	Drilling + Medium	Finishing
Material	Composite material	Composite material	Composite material	Composite material	Composite material
Range	Ø4-Ø12	Ø4-Ø12	Ø4-Ø12	Ø4-Ø12	Ø6-Ø12
Pages	F80	F80	F81	F81	F82

Series					
	 RDCF				
Type	Flat				
Flute					
Length					
Grades	TTD610				
Application	Finishing				
Material	Composite material				
Range	Ø4-Ø12				
Pages	F82				

# Grades

## MAXI-RUSH grades

Grades	ISO	Characteristics & applications
<b>TT5513</b> PVD coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span>P10</span><span>P30</span></div> <div style="display: flex; justify-content: space-between;"><span>K10</span><span>K30</span></div> </div>	<ul style="list-style-type: none"> <li>• Excellent abrasion resistant with ultra-fine substrate and optimum toughness</li> <li>• Improved anti-chipping and Anti-abrasion PVD AlTiN coated layer</li> <li>• Suitable for mold steels and pre hardened steels</li> </ul>
<b>TT5523</b> PVD coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span>P20</span><span>P40</span></div> <div style="display: flex; justify-content: space-between;"><span>M20</span><span>M40</span></div> <div style="display: flex; justify-content: space-between;"><span>S20</span><span>S40</span></div> </div>	<ul style="list-style-type: none"> <li>• High speed milling of steel, stainless steel and high-temp alloy</li> </ul>
<b>TT5543</b> PVD coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span>P30</span><span>P50</span></div> <div style="display: flex; justify-content: space-between;"><span>M30</span><span>M50</span></div> <div style="display: flex; justify-content: space-between;"><span>S30</span><span>S50</span></div> </div>	<ul style="list-style-type: none"> <li>• Interrupted and rough machining of steel, stainless steel and high-temp alloy</li> </ul>
<b>UF10</b> Uncoated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span>P25</span><span>P35</span></div> <div style="display: flex; justify-content: space-between;"><span>M25</span><span>M35</span></div> <div style="display: flex; justify-content: space-between;"><span>N25</span><span>N35</span></div> </div>	<ul style="list-style-type: none"> <li>• General machining of steel, aluminum alloys, non-ferrous materials</li> <li>• Submicron substrate</li> </ul>
<b>TTA101</b> PVD coated	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; justify-content: space-between;"><span>P25</span><span>P35</span></div> <div style="display: flex; justify-content: space-between;"><span>M25</span><span>M35</span></div> <div style="display: flex; justify-content: space-between;"><span>N25</span><span>N35</span></div> </div>	<ul style="list-style-type: none"> <li>• Thin coating (less than 0.5µm)</li> <li>• Sharp edges even after coating</li> <li>• Low friction coefficient: minimizes built-up edges and promotes smooth chip evacuation</li> <li>• Hard coating (above HV 5000)</li> <li>• Oxidation resistance at high temperatures</li> </ul>

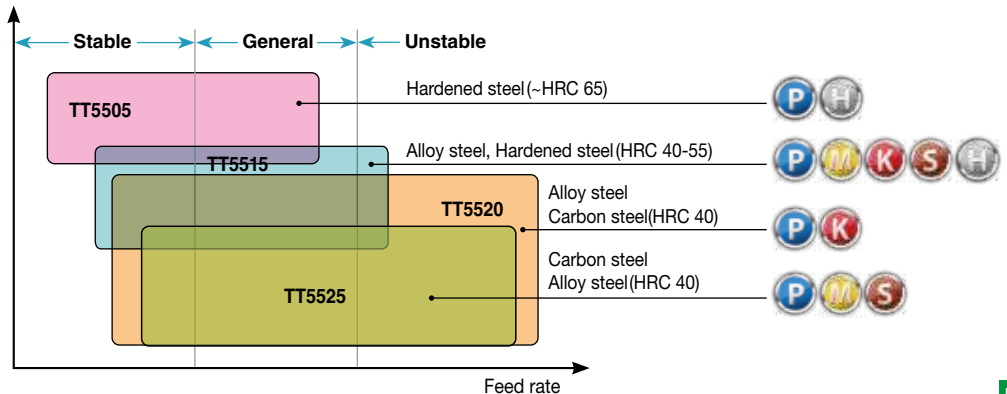
# Grades

## Solid end mill grades

Grades	ISO	Characteristics & applications
<b>TT5505</b> PVD coated	<b>P05</b> – <b>P25</b> <b>H05</b> – <b>H25</b>	<ul style="list-style-type: none"> <li>• High wear and oxidation resistance that delivers exceptional productivity levels</li> <li>• Hardened steel, pre-hardened steel (Hardness &lt; 65 HRC)</li> <li>• High speed machining</li> </ul>
<b>TT5515</b> PVD coated	<b>P10</b> – <b>P30</b> <b>M15</b> – <b>M30</b> <b>K10</b> – <b>K30</b> <b>S10</b> – <b>S30</b> <b>H10</b> – <b>H30</b>	<ul style="list-style-type: none"> <li>• An ultra wear resistant high performance grade covering all ISO ranges</li> <li>• Alloy steel, pre-hardened steel, stainless steel, high-temp alloy (45 &lt; HRC &lt; 55)</li> <li>• Medium to high speed machining</li> </ul>
<b>TT5520</b> PVD coated	<b>P10</b> – <b>P30</b> <b>K10</b> – <b>K30</b>	<ul style="list-style-type: none"> <li>• Anti-abrasion and chipping resistant PVD coated layer</li> <li>• Single direction crystal aligned AlCrN layer                             <ul style="list-style-type: none"> <li>- Excellent abrasion resistance with sub-micron substrate</li> <li>- Anti-abrasion and oxidation resistant PVD AlCrN coated layer</li> </ul> </li> </ul>
<b>TT5525</b> PVD coated	<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>• Optimally balanced with wear resistant and anti-chipping properties</li> <li>• General machining of carbon steel, alloy steel, stainless steel, high-temp alloy (&lt; 40 HRC)</li> <li>• Low to medium speed machining</li> </ul>
<b>TTD620</b> Diamond coated	<b>Graphite</b>	<ul style="list-style-type: none"> <li>• High hardness and excellent wear resistance</li> <li>• Machining of graphite</li> </ul>
<b>TTD610</b> Diamond coated	<b>Composite material</b>	<ul style="list-style-type: none"> <li>• Advanced nano diamond coating provides longer tool life and stability of machining</li> <li>• Excellent abrasive wear resistance (Hardness: more Hv 8000)</li> <li>• Machining of composite material</li> </ul>
<b>UF10N</b> <b>UF10</b> Uncoated	<b>P25</b> – <b>P35</b> <b>M25</b> – <b>M35</b> <b>N25</b> – <b>N35</b>	<ul style="list-style-type: none"> <li>• General machining of steel, aluminum alloys, non-ferrous materials</li> <li>• Submicron substrate</li> </ul>
<b>TC3030</b> Ceramic	<b>S25</b> – <b>S35</b>	<ul style="list-style-type: none"> <li>• SiAlON ceramic grade</li> <li>• High speed machining of nickel based super alloys</li> </ul>

## Selection guide for solid end mill grades

Cutting speed



# MAXI-RUSH Line



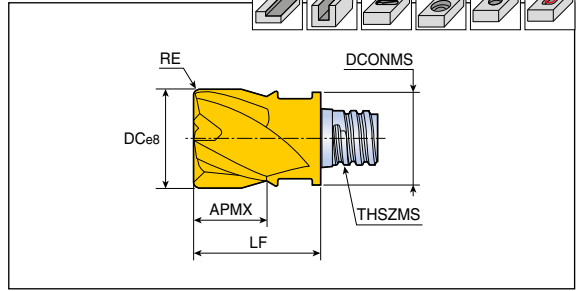
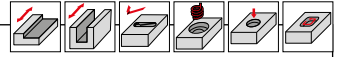




# MXEE(D)-04



4 flute, for general purpose



Designation	Feed (mm/tooth)	Dimension (mm)								Grade TT5523
		DC	RE	FHA	APMX	LF	THSZMS	DCONMS		
MXEE 050L04R05-04S04	0.02-0.06	5	0.5	45	4	8.5	S04	6.0	●	
MXEE 050L07R00-04S05	0.02-0.06	5	-	45	7	15.0	S05	8.0	●	
MXEE 060L04R05-04S04	0.02-0.04	6	0.5	45	4	8.5	S04	5.8	●	
MXEE 060L05R00-04S05	0.03-0.04	6	-	45	5	10.0	S05	8.0	●	
MXED 080L05R05-04S05	0.03-0.09	8	0.5	30	5	10.0	S05	7.7	●	
MXED 080L05R10-04S05	0.03-0.09	8	1.0	30	5	10.0	S05	7.7	●	
MXED 080L05R15-04S05	0.03-0.09	8	1.5	30	5	10.0	S05	7.7	●	
MXED 080L09R05-04S05	0.03-0.09	8	0.5	30	9	15.0	S05	7.7	●	
MXEE 080L05R00-04S05	0.03-0.09	8	-	45	5	10.0	S05	7.7	●	
MXEE 080L05R05-04S05	0.03-0.09	8	0.5	45	5	10.0	S05	7.7	●	
MXEE 080L05R10-04S05	0.03-0.09	8	1.0	45	5	10.0	S05	7.7	●	
MXEE 080L09R00-04S05	0.03-0.09	8	-	45	9	15.0	S05	7.7	●	
MXED 100L07R05-04S06	0.03-0.10	10	0.5	30	7	13.0	S06	9.6	●	
MXED 100L07R10-04S06	0.03-0.10	10	1.0	30	7	13.0	S06	9.6	●	
MXEE 100L07R00-04S06	0.03-0.10	10	-	45	7	13.0	S06	9.6	●	
MXEE 100L07R05-04S06	0.03-0.10	10	0.5	45	7	13.0	S06	9.6	●	
MXEE 100L07R10-04S06	0.03-0.10	10	1.0	45	7	13.0	S06	9.6	●	
MXEE 100L12R00-04S06	0.03-0.10	10	-	45	12	19.0	S06	9.6	●	
MXED 120L09R05-04S08	0.04-0.11	12	0.5	30	9	16.5	S08	11.7	●	
MXED 120L09R10-04S08	0.04-0.11	12	1.0	30	9	16.5	S08	11.7	●	
MXEE 120L09R00-04S08	0.04-0.11	12	-	45	9	16.5	S08	11.7	●	
MXEE 120L09R05-04S08	0.04-0.11	12	0.5	45	9	16.5	S08	11.7	●	
MXEE 120L09R10-04S08	0.04-0.11	12	1.0	45	9	16.5	S08	11.7	●	
MXEE 120L14R00-04S08	0.04-0.11	12	-	45	14	23.0	S08	11.7	●	
MXED 160L12R05-04S10	0.05-0.13	16	0.5	30	12	20.5	S10	15.3	●	
MXED 160L12R10-04S10	0.05-0.13	16	1.0	30	12	20.5	S10	15.3	●	
MXED 160L12R15-04S10	0.05-0.13	16	1.5	30	12	20.5	S10	15.3	●	
MXED 160L12R20-04S10	0.05-0.13	16	2.0	30	12	20.5	S10	15.3	●	
MXED 160L12R30-04S10	0.05-0.13	16	3.0	30	12	20.5	S10	15.3	●	
MXED 160L12R40-04S10	0.05-0.13	16	4.0	30	12	20.5	S10	15.3	●	
MXEE 160L12R00-04S10	0.05-0.13	16	-	45	12	20.5	S10	15.3	●	
MXEE 160L12R05-04S10	0.05-0.13	16	0.5	45	12	20.5	S10	15.3	●	
MXEE 160L12R10-04S10	0.05-0.13	16	1.0	45	12	20.5	S10	15.3	●	
MXEE 160L12R15-04S10	0.05-0.13	16	1.5	45	12	20.5	S10	15.3	●	
MXEE 160L12R20-04S10	0.05-0.13	16	2.0	45	12	20.5	S10	15.3	●	

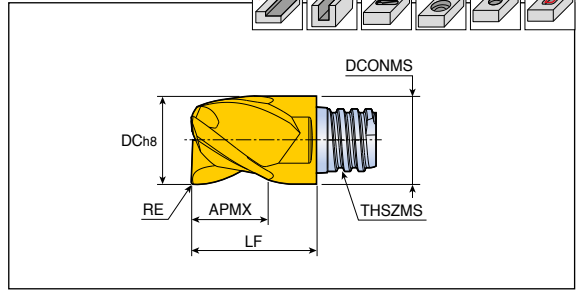
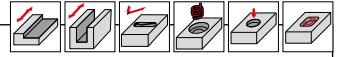
- ▶ Wrench should be ordered separately
- ▶ FHA: Flute helix angle

●: Standard items



# MXEE-03

3 flute, for keyways



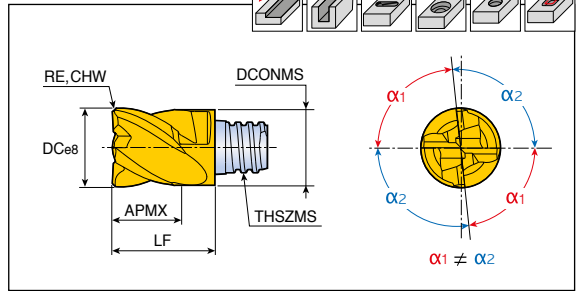
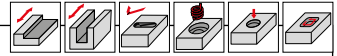
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	LF	THSZMS	DCONMS	
<b>MXEE 077L04R02-03S05</b>	0.03-0.08	7.7	0.2	4	10.0	S05	7.7	●
<b>097L05R03-03S06</b>	0.03-0.09	9.7	0.3	5	13.0	S06	9.7	●
<b>117L07R03-03S08</b>	0.03-0.10	11.7	0.3	7	16.5	S08	11.7	●
<b>157L08R03-03S10</b>	0.04-0.12	15.7	0.3	8	20.5	S10	15.3	●
<b>197L12R04-03S12</b>	0.05-0.13	19.7	0.4	12	25.5	S12	18.3	●

► Wrench should be ordered separately

●: Standard items

# MXEE-104

4 flute, unequal spacing of cutting edges (vibration free)



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	CHW	APMX	LF	THSZMS	DCONMS	
<b>MXEE 080L05C30I04S05</b>	0.03-0.09	8	-	0.3	5	10.0	S05	7.7	●
<b>100L07C40I04S06</b>	0.03-0.10	10	-	0.4	7	13.0	S06	9.7	●
<b>120L09C50I04S08</b>	0.04-0.11	12	-	0.5	9	16.5	S08	11.7	●
<b>160L12C60I04S10</b>	0.05-0.13	16	-	0.6	12	20.5	S10	15.3	●
<b>200L15C60I04S12</b>	0.05-0.17	20	-	0.6	15	25.5	S12	18.3	●
<b>250L22C60I04S15</b>	0.06-0.17	25	-	0.6	22	37.0	S15	23.9	●
<b>250L22R00I04S15</b>	0.06-0.17	25	-	-	22	37.0	S15	23.9	●
<b>250L22R05I04S15</b>	0.06-0.17	25	0.5	-	22	37.0	S15	23.9	●
<b>250L22R10I04S15</b>	0.06-0.17	25	1.0	-	22	37.0	S15	23.9	●
<b>250L22R20I04S15</b>	0.06-0.17	25	2.0	-	22	37.0	S15	23.9	●
<b>250L22R30I04S15</b>	0.06-0.17	25	3.0	-	22	37.0	S15	23.9	●

► Wrench should be ordered separately

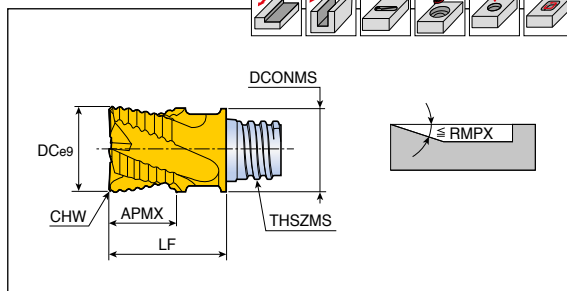
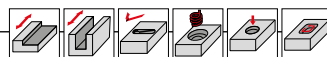
●: Standard items



# MXEE-R



4-6 flute, for roughing



Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	NOF	CHW	APMX	LF	THSZMS	DCONMS	RMPX	
<b>MXEE 080L05C25R04S05</b>	0.03-0.08	8	4	0.25	5	10.0	S05	7.7	5	●
<b>100L07C30R04S06</b>	0.03-0.09	10	4	0.30	7	13.0	S06	9.7	5	●
<b>120L09C35R04S08</b>	0.04-0.10	12	4	0.35	9	16.5	S08	11.7	5	●
<b>160L12C40R05S10</b>	0.04-0.10	16	5	0.40	12	20.5	S10	15.3	5	●
<b>200L15C40R06S12</b>	0.05-0.11	20	6	0.40	15	25.5	S12	18.3	3	●
<b>250L22C50R06S15</b>	0.05-0.11	25	6	0.50	22	37.0	S15	23.9	3	●

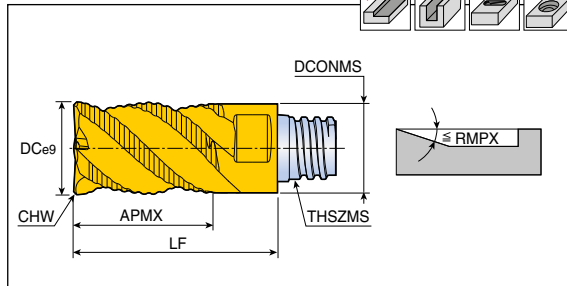
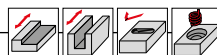
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ RMPX: Ramping angle maximum

●: Standard items

# MXEE-R-1.5D



4-6 flute, for roughing with 1.5D flute length



Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	NOF	CHW	APMX	LF	THSZMS	DCONMS	RMPX	
<b>MXEE 080L12C25R04S05</b>	0.03-0.08	8	4	0.25	12	18.0	S05	7.7	5	●
<b>100L15C30R04S06</b>	0.03-0.09	10	4	0.30	15	22.0	S06	9.6	5	●
<b>120L18C35R04S08</b>	0.04-0.10	12	4	0.35	18	27.0	S08	11.7	5	●
<b>160L24C40R05S10</b>	0.04-0.10	16	5	0.40	24	33.5	S10	15.3	5	●
<b>200L30C40R06S12</b>	0.05-0.11	20	6	0.40	30	41.0	S12	18.5	3	●

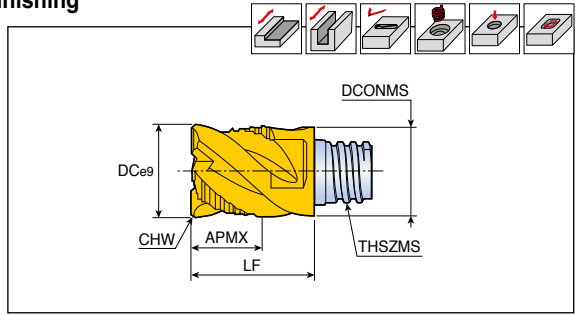
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ RMPX: Ramping angle maximum

●: Standard items

# MXEE-C04



4 flute, combined edges for roughing & finishing



Designation	Feed (mm/tooth)	Dimension (mm)						Grade	
		DC	CHW	APMX	LF	THSZMS	DCONMS	TT5523	
<b>MXEE 080L05C30C04S05</b>	0.03-0.08	8	0.3	5	10.0	S05	7.7	●	
<b>100L07C30C04S06</b>	0.03-0.09	10	0.3	7	13.0	S06	9.7	●	
<b>120L09C40C04S08</b>	0.04-0.10	12	0.4	9	16.5	S08	11.7	●	
<b>160L12C60C04S10</b>	0.05-0.11	16	0.6	12	20.5	S10	15.3	●	
<b>200L15C60C04S12</b>	0.05-0.11	20	0.6	15	25.5	S12	18.3	●	
<b>250L22C60C04S15</b>	0.05-0.11	25	0.6	22	37.0	S15	23.9	●	

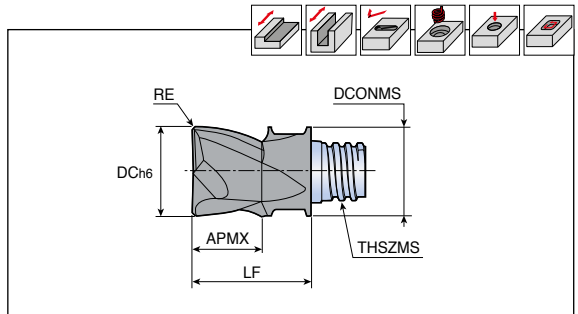
► Wrench should be ordered separately

●: Standard items

# MXEE-A02



2 flute, for aluminum machining



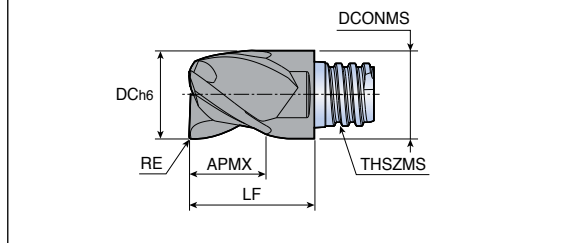
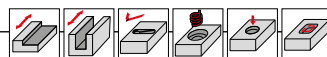
Designation	Feed (mm/tooth)	Dimension (mm)						Grade	
		DC	RE	APMX	LF	THSZMS	DCONMS	UF10	TTA101
<b>MXEE 100L07R05A02S06</b>	0.03-0.10	10	0.5	7	13.0	S06	9.7	●	●
<b>100L07R10A02S06</b>	0.03-0.10	10	1.0	7	13.0	S06	9.7	●	●
<b>120L09R05A02S08</b>	0.04-0.11	12	0.5	9	16.5	S08	11.7	●	●

► Wrench should be ordered separately

●: Standard items

# MXEE-A03

3 flute, for aluminum machining



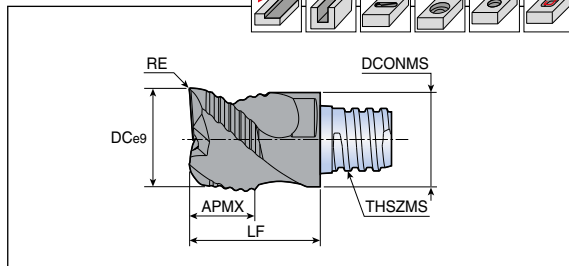
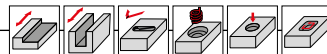
Designation	Feed (mm/tooth)	Dimension (mm)						Grade	
		DC	RE	APMX	LF	THSZMS	DCONMS	UF10	TTA101
<b>MXEE 080L05R05A03S05</b>	0.03-0.09	8	0.5	5	10.0	S05	7.7	●	●
<b>100L06R05A03S06</b>	0.03-0.10	10	0.5	6	13.0	S06	9.7	●	●
<b>100L06R10A03S06</b>	0.03-0.10	10	1.0	6	13.0	S06	9.7	●	●
<b>120L08R05A03S08</b>	0.04-0.11	12	0.5	8	16.5	S08	11.7	●	●
<b>120L08R10A03S08</b>	0.04-0.11	12	1.0	8	16.5	S08	11.7	●	●
<b>160L10R00A03S10</b>	0.05-0.13	16	-	10	20.5	S10	15.3	●	●
<b>160L10R10A03S10</b>	0.05-0.13	16	1.0	10	20.5	S10	15.3	●	●
<b>160L10R20A03S10</b>	0.05-0.13	16	2.0	10	20.5	S10	15.3	●	●
<b>200L12R05A03S12</b>	0.05-0.13	20	0.5	12	25.5	S12	18.3	●	●
<b>200L12R10A03S12</b>	0.05-0.13	20	1.0	12	25.5	S12	18.3	●	●
<b>200L12R20A03S12</b>	0.05-0.13	20	2.0	12	25.5	S12	18.3	●	●

► Wrench should be ordered separately

● Standard items

# MXEE-RA03

3 flute, for roughing with aluminum machining



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	LF	THSZMS	DCONMS	UF10
<b>MXEE 080L05R02RA03S05</b>	0.03-0.15	8	0.2	5	10.0	S05	7.7	●
<b>100L06R02RA03S06</b>	0.05-0.20	10	0.2	6	13.0	S06	9.6	●
<b>120L08R02RA03S08</b>	0.07-0.22	12	0.2	8	16.5	S08	11.7	●
<b>160L10R02RA03S10</b>	0.07-0.25	16	0.2	10	20.5	S10	15.3	●
<b>200L12R02RA03S12</b>	0.07-0.25	20	0.2	12	25.5	S12	18.5	●

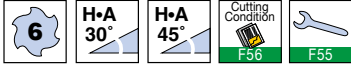
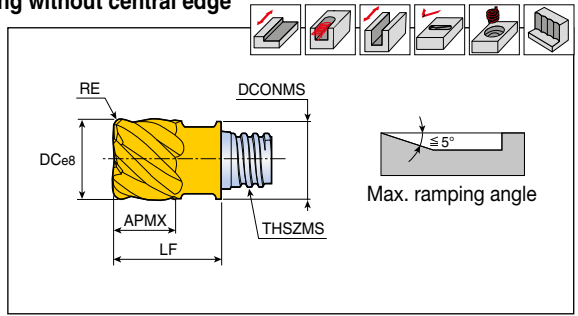
► Wrench should be ordered separately

● Standard items

# MXEE(D)-06



6 flute, for difficult-to-cut material machining without central edge



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	FHA	APMX	LF	THSZMS	DCONMS	
<b>MXEE 080L05R05-06S05</b>	0.03-0.10	8	0.5	45	5	10.0	S05	7.7	●
<b>MXEE 080L05R10-06S05</b>	0.03-0.10	8	1.0	45	5	10.0	S05	7.7	●
<b>MXED 100L07R05-06S06</b>	0.03-0.10	10	0.5	30	7	13.0	S06	9.7	●
<b>MXED 100L07R10-06S06</b>	0.03-0.10	10	1.0	30	7	13.0	S06	9.7	●
<b>MXEE 100L07R05-06S06</b>	0.04-0.10	10	0.5	45	7	13.0	S06	9.7	●
<b>MXEE 100L07R10-06S06</b>	0.04-0.10	10	1.0	45	7	13.0	S06	9.7	●
<b>MXEE 100L07R15-06S06</b>	0.03-0.10	10	1.5	45	7	13.0	S06	9.7	●
<b>MXED 120L09R05-06S08</b>	0.04-0.11	12	0.5	30	9	16.5	S08	11.7	●
<b>MXEE 120L09R00-06S08</b>	0.04-0.11	12	-	45	9	16.5	S08	11.7	●
<b>MXEE 120L09R10-06S08</b>	0.04-0.11	12	1.0	45	9	16.5	S08	11.7	●
<b>MXEE 120L09R15-06S08</b>	0.04-0.11	12	1.5	45	9	16.5	S08	11.7	●

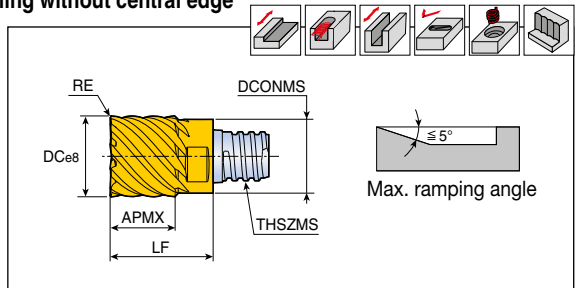
- ▶ Wrench should be ordered separately
- ▶ FHA: Flute Helix Angle

●: Standard items

# MXED-08/10



8, 10 flute, for difficult-to-cut material machining without central edge



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	NOF	RE	APMX	LF	THSZMS	DCONMS	
<b>MXED 160L12R05-08S10</b>	0.05-0.13	16	8	0.5	12	20.5	S10	15.3	●
<b>160L12R10-08S10</b>	0.05-0.13	16	8	1.0	12	20.5	S10	15.3	●
<b>160L12R20-08S10</b>	0.05-0.13	16	8	2.0	12	20.5	S10	15.3	●
<b>200L15R10-10S12</b>	0.05-0.13	20	10	1.0	15	25.5	S12	18.3	●
<b>200L15R20-10S12</b>	0.05-0.13	20	10	2.0	15	25.5	S12	18.3	●
<b>250L22R10-10S15</b>	0.05-0.13	25	10	1.0	22	37.0	S15	23.9	●
<b>250L22R20-10S15</b>	0.05-0.13	25	10	2.0	22	37.0	S15	23.9	●

- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes

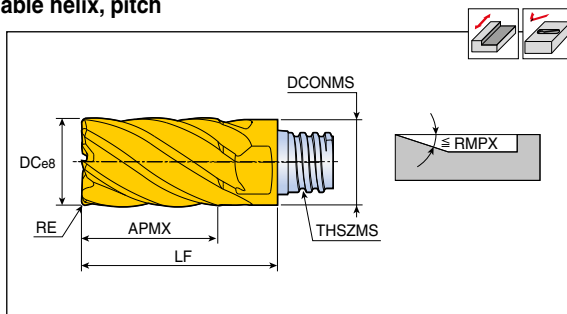
●: Standard items



# MXED-I07/I09-1.5D



Long cutting edge 1.5D & 7,9 flutes & variable helix, pitch



Designation	Feed (mm/tooth)	Dimension (mm)									Grade
		DC	NOF	RE	APMX	LF	THSZMS	DCONMS	RMPX	TT5523	
<b>MXED 100L15R05I07S06</b>	0.04-0.10	10	7	0.5	15	22.0	S06	9.6	3	●	
<b>120L18R05I07S08</b>	0.04-0.10	12	7	0.5	18	27.0	S08	11.7	3	●	
<b>160L24R08I09S10</b>	0.05-0.10	16	9	0.8	24	33.5	S10	15.3	1	●	
<b>200L30R10I09S12</b>	0.05-0.10	20	9	1.0	30	41.0	S12	18.5	1	●	

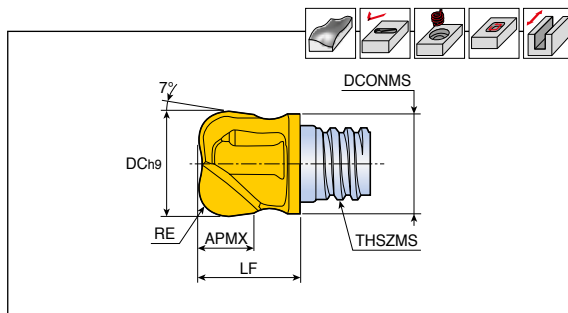
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ RMPX: Ramping angle maximum

●: Standard items

# MXRB-02



2 flute, 7° back taper flute



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	LF	THSZMS	DCONMS	
<b>MXRB 200L11R50-02S12</b>	0.05-0.15	20	5.0	11.3	17.3	S12	18.3	●

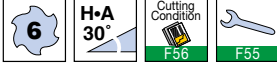
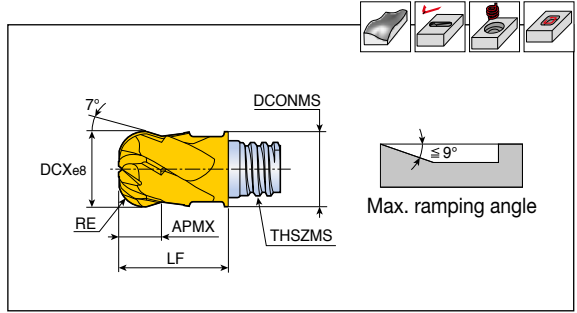
- ▶ Wrench should be ordered separately

●: Standard items

# MXRD-06



6 flute, 7° back taper sided ground flute



Designation	Dimension (mm)						Grade
	DCX	RE	APMX	LF	THSZMS	DCONMS	
<b>MXRD 080L04R20-06S05</b>	8	2.0	4	10.0	S05	7.7	●
<b>100L05R30-06S06</b>	10	3.0	5	13.0	S06	9.7	●
<b>120L07R40-06S08</b>	12	4.0	7	16.5	S08	11.7	●
<b>160L09R50-06S10</b>	16	5.0	9	20.5	S10	15.3	●

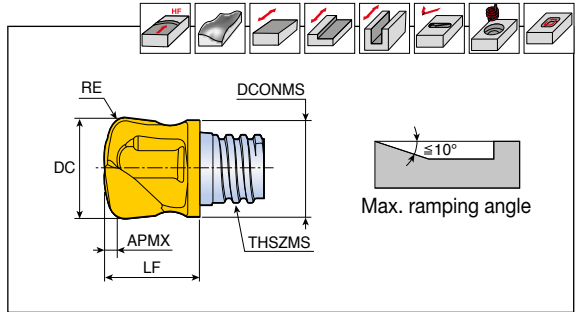
► Wrench should be ordered separately

●: Standard items

# MXFX-02



2 flute, for high feed milling



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	APMX	LF	THSZMS	DCONMS	
<b>MXFX 100L0.6R20-02S06</b>	0.30-0.60	10	2.0	0.6	12.5	S06	9.6	●
<b>120L1.0R25-02S08</b>	0.50-1.00	12	2.5	0.68	11.1	S08	11.5	●
<b>160L1.1R30-02S10</b>	0.55-1.10	16	3.0	1.1	20.0	S10	15.2	●
<b>200L1.5R34-02S12</b>	0.75-1.50	20	3.4	1.5	17.4	S12	18.3	●

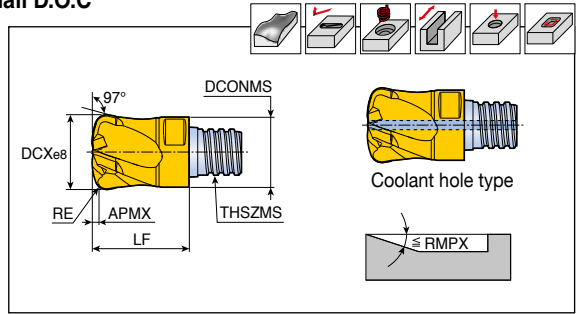
► Wrench should be ordered separately

●: Standard items

# MXFX-04/06



4,6 flute, for high feed machining and small D.O.C



Designation	Feed (mm/tooth)	Dimension (mm)									Coolant hole	Grade	
		DC	NOF	RE	APMX	LF	THSZMS	DCONMS	RMPX	TT5513		TT5523	
<b>MXFX 080L0.4R16-04S05</b>	0.12-0.48	8	4	1.62	0.4	10.0	S05	7.5	5	x	●		
<b>100L0.5R20-04S06</b>	0.16-0.57	10	4	2.01	0.5	13.0	S06	9.5	5	x	●		
<b>100L0.4R10-06S06C</b>	0.16-0.47	10	6	1.00	0.45	10.0	S06	9.5	3	●	●		
<b>120L0.6R18-04S08C</b>	0.16-0.67	12	4	1.80	0.6	16.5	S08	11.5	5	●		●	
<b>120L0.6R24-04S08</b>	0.16-0.67	12	4	2.47	0.6	16.5	S08	11.5	5	x	●		
<b>120L0.6R12-06S08C</b>	0.16-0.54	12	6	1.20	0.65	12.0	S08	11.5	3	●	●		
<b>160L0.8R22-04S10C</b>	0.20-0.75	16	4	2.20	0.8	20.5	S10	15.4	5	●		●	
<b>160L0.8R32-04S10</b>	0.20-0.75	16	4	3.25	0.8	20.5	S10	15.4	5	x	●		
<b>200L1.0R40-04S12</b>	0.20-0.90	20	4	4.02	1.0	25.5	S12	18.45	5	x	●		
<b>250L1.2R31-06S15</b>	0.25-1.00	25	6	3.10	1.2	25.0	S15	23.9	5	x	●		

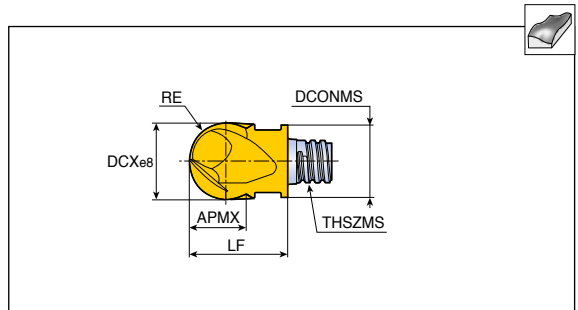
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ RMPX: Ramping angle maximum

●: Standard items

# MXBD-BG-02



2 flute, for high precision machining



Designation	Dimension (mm)						Grade
	DCX	RE	APMX	LF	THSZMS	DCONMS	TT5523
<b>MXBD 080L05-BG-02S05</b>	8	3.98 <sup>(1)</sup>	5	10.0	S05	7.7	●
<b>100L07-BG-02S06</b>	10	4.98 <sup>(1)</sup>	7	13.0	S06	9.7	●
<b>120L09-BG-02S08</b>	12	5.98 <sup>(2)</sup>	9	16.5	S08	11.7	●
<b>160L09-BG-02S10</b>	16	7.98 <sup>(2)</sup>	9	20.5	S10	15.3	●

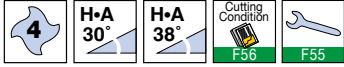
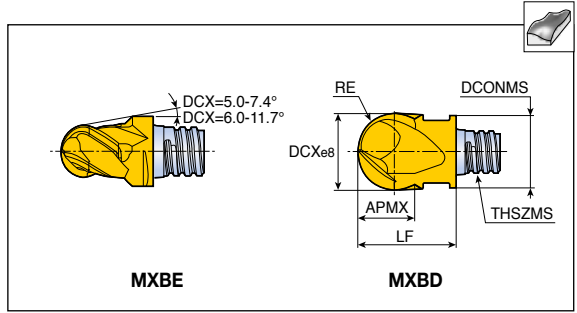
- ▶ Wrench should be ordered separately
- ▶ RE Tolerance: <sup>(1)</sup>± 0.01, <sup>(2)</sup>± 0.012

●: Standard items

# MXBD(E)-BG-04



4 flute, for high precision machining



Designation	Dimension (mm)							Grade TT5523
	DCX	RE	FHA	APMX	LF	THSZMS	DCONMS	
<b>MXBE 050L07-BG-04S05</b>	5	2.49 <sup>(1)</sup>	38	7.0	15.0	S05	8.0	●
<b>060L04-BG-04S04</b>	6	2.99 <sup>(1)</sup>	38	4.0	8.5	S04	5.8	●
<b>060L05-BG-04S05</b>	6	2.99 <sup>(1)</sup>	38	5.5	10.0	S05	8.0	●
<b>MXBD 080L05-BG-04S05</b>	8	3.98 <sup>(1)</sup>	30	5.0	10.0	S05	7.7	●
<b>100L07-BG-04S06</b>	10	4.98 <sup>(1)</sup>	30	7.0	13.0	S06	9.7	●
<b>120L09-BG-04S08</b>	12	5.98 <sup>(2)</sup>	30	9.0	16.5	S08	11.7	●
<b>160L12-BG-04S10</b>	16	7.98 <sup>(2)</sup>	30	12.0	20.5	S10	15.3	●
<b>200L15-BG-04S12</b>	20	9.97 <sup>(2)</sup>	30	15.0	25.5	S12	18.3	●
<b>250L22-BG-04S15</b>	25	12.47 <sup>(3)</sup>	30	22.0	37.0	S15	23.9	●

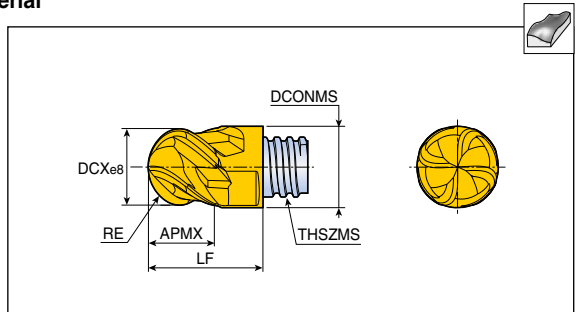
- ▶ Wrench should be ordered separately
- ▶ RE Tolerance: <sup>(1)</sup>± 0.01, <sup>(2)</sup>± 0.012, <sup>(3)</sup>± 0.02
- ▶ FHA: Flute helix angle

●: Standard items

# MXBE-BH-04



4 flute, for high productivity on hard material



Designation	Dimension (mm)						Grade TT5513
	DCX	RE	APMX	LF	THSZMS	DCONMS	
<b>MXBE 080L05-BH-04S05</b>	8	3.98 <sup>(1)</sup>	5.4	10.0	S05	7.7	●
<b>100L07-BH-04S06</b>	10	4.98 <sup>(1)</sup>	7.4	13.0	S06	9.6	●
<b>120L09-BH-04S08</b>	12	5.98 <sup>(2)</sup>	9.3	16.5	S08	11.7	●
<b>160L12-BH-04S10</b>	16	7.98 <sup>(2)</sup>	12.4	20.5	S10	15.3	●
<b>200L16-BH-04S12</b>	20	9.97 <sup>(2)</sup>	16.0	25.5	S12	18.5	●

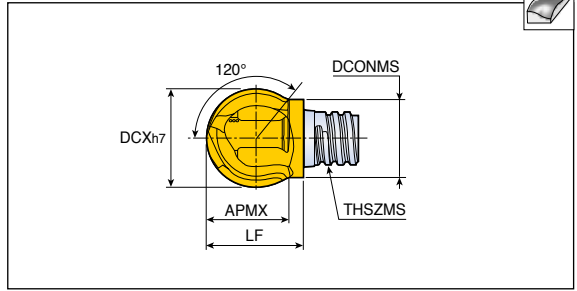
- ▶ Wrench should be ordered separately
- ▶ RE Tolerance: <sup>(1)</sup>± 0.01, <sup>(2)</sup>± 0.012

●: Standard items

# MXBB-SG-02



2 flute, spherical designed edge



Designation	Dimension (mm)					Key	Grade TT5523
	DCX	APMX	LF	THSZMS	DCONMS		
<b>MXBB 080L05-SG-02S04</b>	8	5	8.2	S04	5.8	MX KEY-S04	●
<b>100L07-SG-02S05</b>	10	7	10.0	S05	7.6	MX KEY-S05	●
<b>120L09-SG-02S06</b>	12	9	11.6	S06	9.5	MX KEY-S08	●
<b>160L12-SG-02S08</b>	16	12	15.4	S08	12.2	MX KEY-S10	●
<b>200L15-SG-02S10</b>	20	15	18.4	S10	15.2	MX KEY-S10	●
<b>250L18-SG-02S12</b>	25	18	23.2	S12	18.3	MX KEY-S12	●

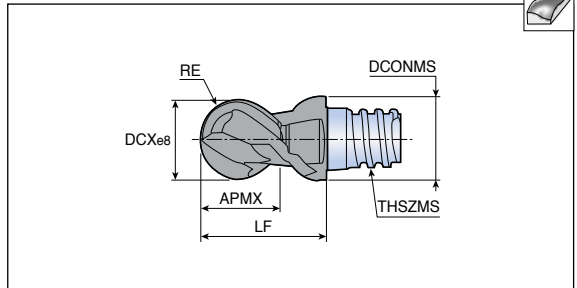
► Wrench should be ordered separately

● Standard items

# MXBE-BGA02



2 flute, for high precision aluminum machining



Designation	Dimension (mm)						Grade	
	DCX	RE	APMX	LF	THSZMS	DCONMS	UF10	TTA101
<b>MXBE 080L05-BGA02S05</b>	8	3.98 <sup>(1)</sup>	5	10.0	S05	7.7	●	●
<b>100L07-BGA02S06</b>	10	4.98 <sup>(1)</sup>	7	13.0	S06	9.7	●	●
<b>120L09-BGA02S08</b>	12	5.98 <sup>(2)</sup>	9	16.5	S08	11.7	●	●
<b>160L12-BGA02S10</b>	16	7.98 <sup>(2)</sup>	12	20.5	S10	15.3	●	●
<b>200L15-BGA02S12</b>	20	9.97 <sup>(2)</sup>	15	25.5	S12	18.3	●	●

► Wrench should be ordered separately

● Standard items

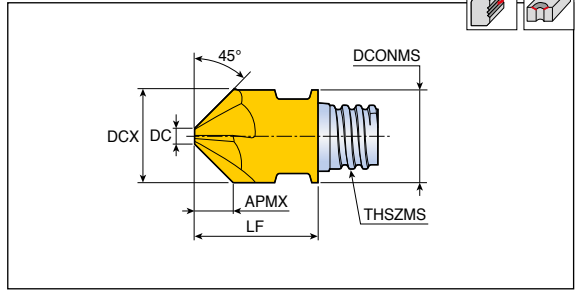
► RE Tolerance: <sup>(1)</sup>± 0.01, <sup>(2)</sup>± 0.012



# MXCA-04/06



4, 6 flute, chamfering and countersinking without central edge



Designation	Dimension (mm)							Grade
	DCX	DC	NOF	APMX	LF	THSZMS	DCONMS	TT5523
<b>MXCA 100L04A45-04S06</b>	10.0	1.95	4	4.0	13.0	S06	10.0	●
<b>120L05A45-04S08</b>	12.0	1.95	4	5.0	16.5	S08	12.0	●
<b>127L05A45-04S08</b>	12.7	1.98	4	5.3	16.5	S08	12.7	●
<b>160L06A45-06S10</b>	16.0	3.0	6	6.5	20.3	S10	16.0	●
<b>200L07A45-06S12</b>	20.0	5.0	6	7.5	25.5	S12	20.0	●

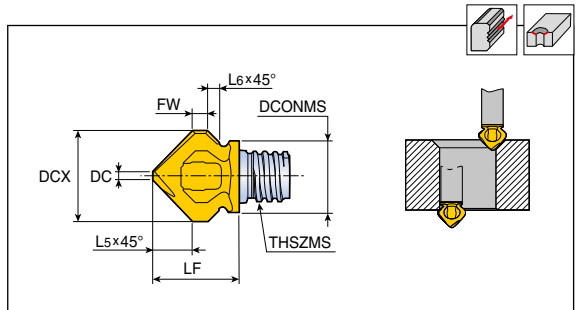
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes

●: Standard items

# MXCW-02



2 flute, for double chamfering



Designation	Dimension (mm)								Key	Grade
	DCX	DC	L5	LF	FW	L6	THSZMS	DCONMS		TT5523
<b>MXCW 098L04A45-02S05</b>	9.8	1.2	4.3	10.8	2.5	1.2	S05	7.6	MX KEY-S06	●
<b>118L05A45-02S06</b>	11.8	1.2	5.3	11.2	2.0	1.2	S06	9.3	MX KEY-S08	●
<b>157L07A45-02S08</b>	15.7	1.5	7.1	14.0	2.0	1.2	S08	11.5	MX KEY-S10	●

- ▶ Wrench should be ordered separately

●: Standard items

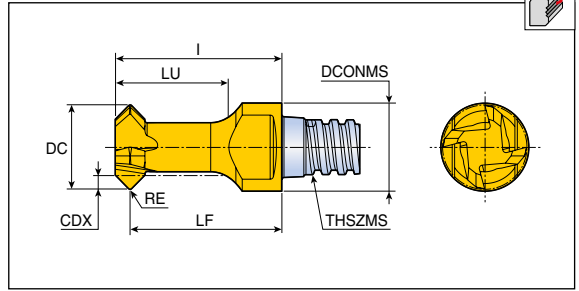




# MXCS-04



4 flute, for chamfering



Designation	Dimension (mm)								Grade
	DC	CDX	RE	LF	LU	I	THSZMS	DCONMS	TT5523
<b>MXCS 077L10A45-04S05</b>	7.7	1.2	0.2	13.9	10.2	15.2	S05	8.0	●

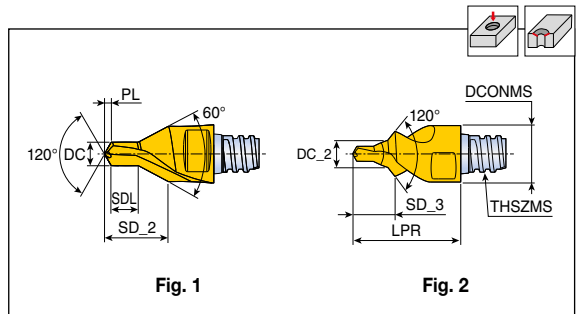
► Wrench should be ordered separately

●: Standard items

# MXDP-02



2 flute, for center drilling



Designation	Dimension (mm)										Grade
	DC	DC <sub>2</sub>	SDL	SD <sub>2</sub>	SD <sub>3</sub>	LPR	THSZMS	DCONMS	PL	Fig	TT5523
<b>MXDP 107L01A30-02S04</b>	1.07	-	1.32	4.14	-	10.0	S04	6.0	0.28	1	●
<b>165L02A30-02S04</b>	1.65	-	1.97	4.45	-	10.0	S04	6.0	0.43	1	●
<b>207L02A30-02S04</b>	2.07	-	2.36	6.37	-	10.0	S04	6.0	0.54	1	●
<b>328L04A30-02S05</b>	3.28	-	3.75	8.76	-	15.0	S05	8.0	0.85	1	●
<b>412L05A30-02S06</b>	4.12	-	4.83	11.05	-	19.0	S06	10.0	1.07	1	●
<b>513L07A30-02S08</b>	5.13	-	5.88	13.23	-	23.0	S08	12.0	1.32	1	●
<b>646L08A30-02S10</b>	6.46	-	7.25	17.18	-	28.0	S10	16.0	1.65	1	●
<b>MXDP 324L04B30-02S08</b>	3.24	6.77	3.55	7.40	8.94	23.0	S08	12.0	0.83	2	●
<b>509L06B30-02S12</b>	5.09	10.69	5.56	11.70	14.17	25.5	S12	18.5	1.33	2	●
<b>641L08B30-02S12</b>	6.41	13.29	6.95	14.50	16.58	25.5	S12	20.0	1.68	2	●

► Wrench should be ordered separately

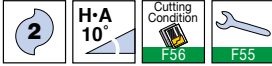
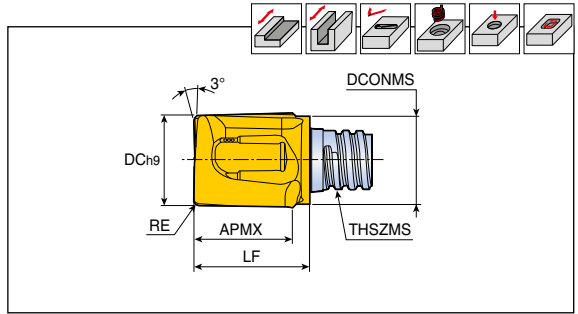
●: Standard items

► SDL: Step diameter length

# MXGC-02



2 flute, for drilling and milling



Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5523
		DC	RE	APMX	LF	THSZMS	DCONMS	
<b>MXGC 08L08R04-02S05</b>	0.03-0.09	8	0.4	7.7	10.0	S05	7.6	●
<b>08L08R10-02S05</b>	0.03-0.09	8	1.0	7.7	10.0	S05	7.6	●
<b>10L09R04-02S05</b>	0.03-0.10	10	0.4	9.0	12.4	S06	9.5	●
<b>10L09R20-02S06</b>	0.03-0.10	10	2.0	9.0	12.4	S06	9.5	●
<b>12L10R04-02S08</b>	0.04-0.11	12	0.4	10.0	14.2	S08	11.5	●
<b>12L10R10-02S08</b>	0.04-0.11	12	1.0	10.0	14.2	S08	11.5	●
<b>12L10R20-02S08</b>	0.04-0.11	12	2.0	10.0	14.2	S08	11.5	●
<b>16L15R04-02S10</b>	0.05-0.13	16	0.4	14.9	19.0	S10	15.2	●

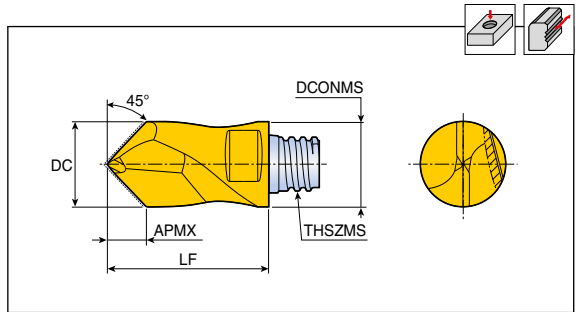
► Wrench should be ordered separately

●: Standard items

# MXDS-02



2 flute, for spot drill & chamfer



Designation	Dimension (mm)					Grade TT5523
	DC	APMX	LF	THSZMS	DCONMS	
<b>MXDS 060A45-02S04</b>	6	2.7	11.0	S04	5.7	●
<b>080A45-02S05</b>	8	3.7	15.0	S05	7.7	●
<b>100A45-02S06</b>	10	4.4	19.0	S06	9.7	●
<b>120A45-02S08</b>	12	5.4	23.0	S08	11.7	●
<b>160A45-02S10</b>	16	7.1	28.0	S10	15.3	●

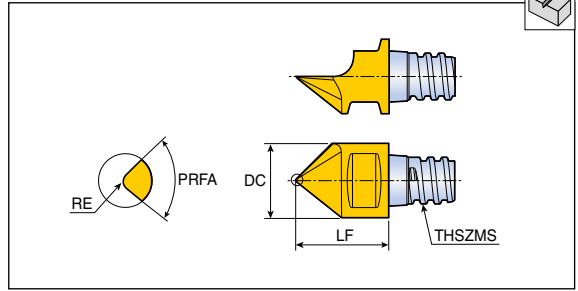
► Wrench should be ordered separately

●: Standard items

# MXEG-01



Single flute, for engraving



Designation	Dimension (mm)					Grade
	DC	RE	PRFA	LF	THSZMS	TT5523
<b>MXEG 060A60-01S04</b>	6	0.2	60	8.5	S04	●
<b>080A30-01S05</b>	8	0.2	30	10.0	S05	●
<b>080A45-01S05</b>	8	0.2	45	10.0	S05	●
<b>080A60-01S05</b>	8	0.2	60	10.0	S05	●
<b>080A90-01S05</b>	8	0.2	90	10.0	S05	●

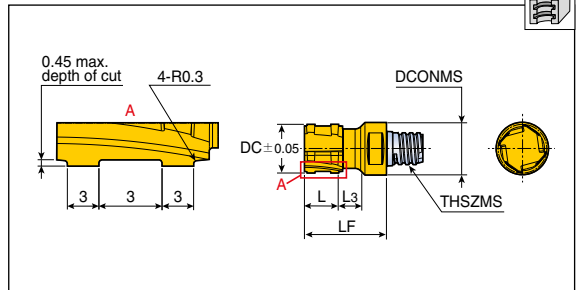
► Wrench should be ordered separately

●: Standard items

# MXDG-04



4 flute, internal grooving for heat exchanger tube sheets



Designation	Dimension (mm)							Key	Grade
	DC	L	L <sub>3</sub>	LF	THSZMS	DCONMS	D <sub>MIN</sub>		TT5523
<b>MXDG 155-04S10-8238</b>	15.5	14.2	17.8	33.7	S10	16.0	15.88	MX KEY-S08	●
<b>185-04S12-8239</b>	18.5	14.5	18.3	34.5	S12	18.5	19.05	MX KEY-S10	●
<b>245-04S15-8240</b>	24.5	14.4	11.0	37.2	S15	23.8	25.40	MX KEY-S15	●

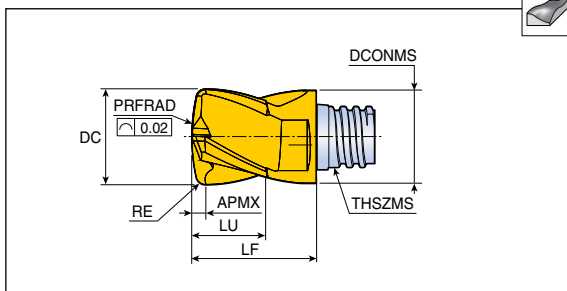
► Wrench should be ordered separately

●: Standard items

# MXCSL



## 4 flute, lens shape for 5-axis profiling



Designation	Feed (mm/tooth)	Dimension (mm)									Grade
		DC	PRFRAD	RE	APMX	LU	LF	THSZMS	DCONMS	TT5523	
<b>MXCSL 4080R016-S05</b>	0.02-0.08	8	16	0.5	0.9	5.5	10.0	S05	8	●	
<b>4100R020-S06</b>	0.03-0.09	10	20	1.0	1.4	7.5	13.0	S06	10	●	
<b>4120R024-S08</b>	0.03-0.10	12	24	1.0	1.6	9.0	16.5	S08	12	●	
<b>4160R032-S10</b>	0.04-0.12	16	32	1.0	1.8	12.0	20.5	S10	16	●	

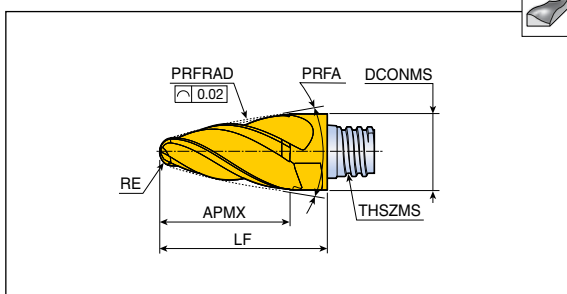
- ▶ Wrench should be ordered separately
- ▶ PRFRAD: Profile radius

●: Standard items

# MXCSO



## 4 flute, oval shape for 5-axis profiling



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		PRFRAD	RE	APMX	LF	PRFA	THSZMS	DCONMS	
<b>MXCSO 4080R080-S05</b>	0.02-0.08	80	1.5	14.2	18.0	24	S05	8	●
<b>4100R085-S06</b>	0.03-0.09	85	2.0	16.5	22.0	24	S06	10	●
<b>4120R075-S08</b>	0.03-0.10	75	2.0	21.3	27.0	24	S08	12	●
<b>4160R075-S10</b>	0.04-0.12	75	3.0	27.0	33.4	24	S10	16	●

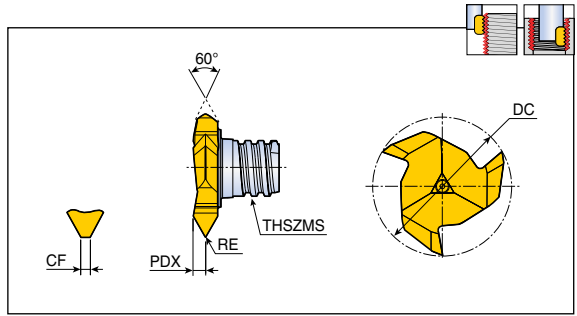
- ▶ Wrench should be ordered separately
- ▶ PRFRAD: Profile radius

●: Standard items



# TTRD-A60

3, 4 flute, ISO threading



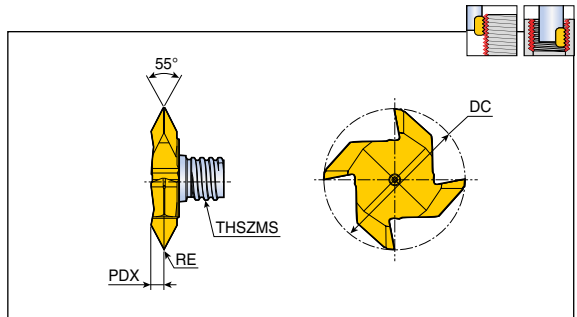
Designation	TP	Dimension (mm)								Grade
		DC	NOF	PDX	RE	CF	RANGE	THSZMS	TT5543	
<b>TTRD 16A60-0.5P-3S06</b>	0.5-2.0	15.7	3	1.4	-	0.05	M20	S06	●	
<b>16A60-1.5P-3S06</b>	1.5-2.0	15.7	3	1.4	0.05	-	M22	S06	●	
<b>22A60-3.0P-4S08</b>	3.0-4.5	21.7	4	2.4	0.20	-	M36	S08	●	

- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ TP: Threads pitch

●: Standard items

# TTRD-W55

4 flute, BSW threading



Designation	TPI	Dimension (mm)					Grade
		DC	PDX	RE	RANGE	THSZMS	
<b>TTRD 22W55-14P-4S08</b>	14-11	21.7	2.0	0.2	3/4	S08	●

- ▶ Wrench should be ordered separately
- ▶ TPI: Threads per inch

●: Standard items





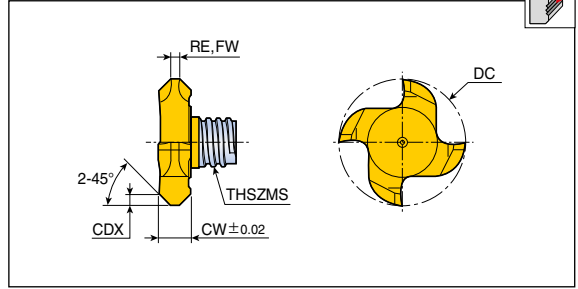




# TST-A45



3-6 flute, for chamfering



Designation	Feed (mm/tooth)	Dimension (mm)							Grade	
		DC	NOF	CW	CDX	RE	FW	THSZMS	TT5523	TT5543
<b>TST 177L01.40A45-3S06</b>	0.03-0.15	17.7	3	3.4	1.4	0.1	-	S06		●
<b>217L01.70A45-4S08</b>	0.03-0.17	21.7	4	5.5	1.7	-	1.5	S08		●
<b>277L04.00A45-6S10</b>	0.03-0.17	27.7	6	9.8	4.0	-	0.5	S10	●	

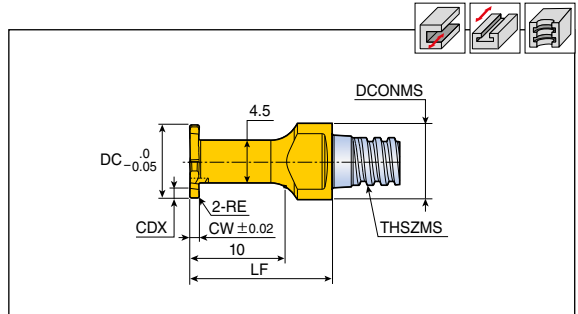
- ▶ Wrench should be ordered separately
- ▶ NOF: Number of flutes
- ▶ FW: Flat width

●: Standard items

# TTB-04



4 flute, for slotting



Designation	Feed (mm/tooth)	Dimension (mm)							Grade	
		DC	CW	CDX	RE	LF	THSZMS	DCONMS	TT5523	TT5543
<b>TTB 077W1.0R02-04S05</b>	0.02-0.08	7.7	1.0	1.2	0.2	15	S05	8.0		●
<b>077W1.5R02-04S05</b>	0.02-0.08	7.7	1.5	1.2	0.2	15	S05	8.0		●
<b>077W2.0R02-04S05</b>	0.02-0.08	7.7	2.0	1.2	0.2	15	S05	8.0		●

- ▶ Wrench should be ordered separately

●: Standard items















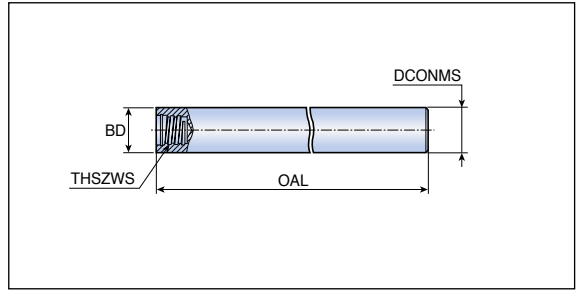




# MXSTD-S



## Straight steel shanks



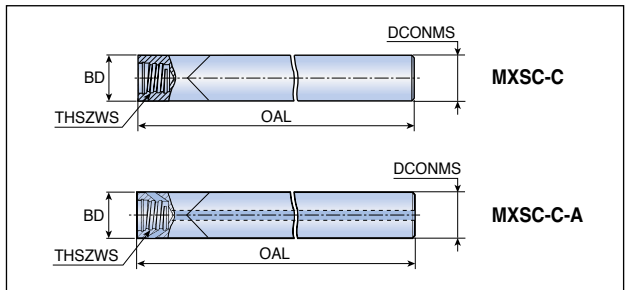
Designation	Dimension (mm)				Shank material
	THSZWS	DCONMS	BD	OAL	
<b>MXSTD 06L070S04-S</b>	S04	6	6	70	Steel
<b>08L050S05-S</b>	S05	8	8	50	Steel
<b>08L070S05-S</b>	S05	8	8	70	Steel
<b>10L050S06-S</b>	S06	10	10	50	Steel
<b>10L080S06-S</b>	S06	10	10	80	Steel
<b>12L090S08-S</b>	S08	12	12	90	Steel
<b>16L100S10-S</b>	S10	16	16	100	Steel

► THSZWS: Connection thread size

# MXSC-C



## Straight carbide shanks



Designation	Dimension (mm)				Coolant hole	Shank material
	THSZWS	DCONMS	BD	OAL		
<b>MXSC 100L100S06-C</b>	S06	10	10	100	x	Carbide
<b>120L100S08-C-A</b>	S08	12	12	100	●	Carbide

► THSZWS: Connection thread size





## Wrench

Appearance	Designation	Connection thread size	Torque (N.m)	Head
	MX KEY-S05	S04, S05	7	Square Ball Round Drilling Chamfering Counter boring
	MX KEY-S06	S06	10	
	MX KEY-S08	S08	15	
	MX KEY-S10	S10	28	
	MX KEY-S12	S12	28	
	MX KEY-S15	S15	40	
	MX SKEY-S06	S06	10	TST, TTRD
	MX SKEY-S08	S08	15	
	MX SKEY-T40L	S08	15	MXFM TDT TTB TST-6S10
		S10	28	
	MX SKEY-T20	S05	7	
		S06	10	
	MX SKEY-T25	S06	10	
	MX SKEY-T30L	S08	15	
	MX SKEY-T50L	S08	15	
S10		28		

► Wrench should be ordered separately

## Torque wrench

Appearance	Designation	Connection	Head designation	Torque (N.m)
Handle	TORQUE WRENCH 5-50Nm 9x12	-	-	-
Open wrench for cylindrical head	MX WRENCH 6-05	S04, S05	MXED, MXEE MXES, MXRD MXBE, MXDP MXCA	7
	MX WRENCH 8-06	S06		10
	MX WRENCH 10-08	S08		15
	MX WRENCH 13-10	S10		28
	MX WRENCH 16-12	S12		28
	MX WRENCH 20-15	S15		40
Open wrench for 2 flutes head	MX WRENCH 4E-05	S05	MXRB, MXFX MXBB, MXCP MXGC, MXCW MXCR	7
	MX WRENCH 5E-06	S06		10
	MX WRENCH 7E-08	S08		15
	MX WRENCH 8E-10	S10		28
	MX WRENCH 9E-12	S12		28
90° adapter for torx bit	INSERT TOOL 9x12mm	-	-	-
Torx bit socket	BIT SOCKET T20 DRIVE	S04, S05, S06	TTB TST277	7, 10
	BIT SOCKET T25 DRIVE	S06		10
	BIT SOCKET T30 DRIVE	S08		15
	BIT SOCKET T40 DRIVE	S08, S10		15, 28
	BIT SOCKET T50 DRIVE	S08, S10		15, 28

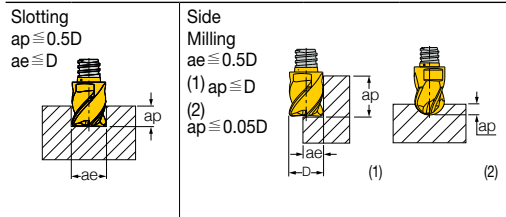
► Wrench should be ordered separately

# Recommended Cutting Conditions



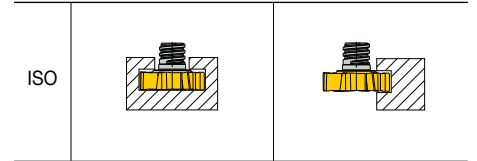
## Machining data for MAXI-RUSH

### fz for Square & Round heads (mm/tooth)



D (mm)	fz (mm/tooth)	D (mm)	fz (mm/tooth)
6	0.027-0.05	6	0.027-0.06
8	0.032-0.07	8	0.032-0.08
10	0.034-0.08	10	0.034-0.09
12	0.036-0.10	12	0.036-0.11
16	0.050-0.12	16	0.05 - 0.13
20	0.052-0.14	20	0.052-0.15
25	0.062-0.15	25	0.062-0.17

### fz for Slotting heads (mm/tooth)



ISO	fz (mm/tooth)	fz (mm/tooth)
<b>P</b>	0.025-0.12	0.035-0.15
<b>M</b>	0.025-0.10	0.025-0.12
<b>K</b>	0.025-0.15	0.035-0.17

Thread Size	Key	Clamping Torque (N.m)
S04, S05	MX KEY-S05	7
S06	MX KEY-S06	10
S08	MX KEY-S08	15
S10	MX KEY-S10	28
S12	MX KEY-S12	28
S15	MX KEY-S15	40

### Recommended Cutting Speed

ISO	Material No.	Hardness HB	Vc m/min
<b>P</b>	1	125	220-240
	2	190	170-200
	3-6	200	140-160
	7-8	300	110-130
	9-11	200	100-130
<b>M</b>	12-13	240	90-150
	14	180	70-100
<b>K</b>	15	180	70-240
	16	260	110-220
	17	170	130-250
	19	130	130-230
	20	230	100-200
<b>N</b>	21-24	90	600-700
<b>S</b>	33-35	350	10-20
	36-37	-	30-50
<b>H</b>	38	HRC55	30-40
	39	HRC60	25-30

### High feed milling - MXFX Only

ISO	Material No.	Depth of cut (ap)	Width of cut (ae)	fz (mm/tooth) vs. Tool Diameter D(mm)						
				Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	
<b>P</b>	1	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05	
	2	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05	
	3	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05	
	4	0.045xD	0.7xD	0.50	0.60	0.70	0.80	0.95	1.05	
	5	0.045xD	0.7xD	0.45	0.55	0.60	0.70	0.80	0.90	
	6	0.045xD	0.7xD	0.35	0.45	0.50	0.60	0.70	0.80	
	7	0.045xD	0.7xD	0.35	0.45	0.50	0.60	0.70	0.80	
	8	0.045xD	0.7xD	0.35	0.40	0.45	0.55	0.65	0.75	
	9	0.045xD	0.7xD	0.35	0.40	0.45	0.55	0.65	0.75	
	10	0.04xD	0.6xD	0.30	0.35	0.40	0.50	0.6	0.70	
	11	0.04xD	0.6xD	0.30	0.35	0.40	0.45	0.55	0.65	
<b>M</b>	12-14	0.04xD	0.6xD	0.35	0.40	0.45	0.55	0.65	0.75	
<b>K</b>	15-16	Apmax	0.7xD	0.50	0.55	0.65	0.75	0.85	0.95	
	17-20	Apmax	0.7xD	0.40	0.50	0.55	0.65	0.75	0.85	
<b>H</b>	38.1	0.035xD	0.45xD	0.25	0.30	0.35	0.45	0.50	0.60	
	38.2	0.03xD	0.3xD	0.20	0.25	0.35	0.40	0.50	0.55	
	39	0.02xD	0.25xD	0.15	0.20	0.20	0.25	0.25	0.30	

# Solid End Mill Line



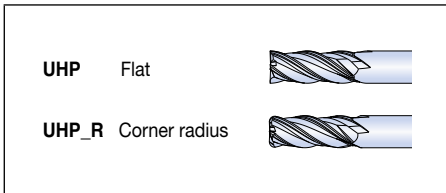


# Designation System

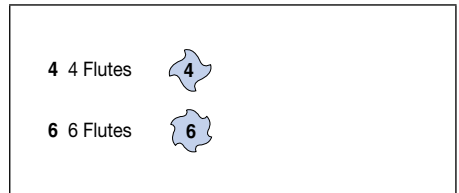
SLIKSOLID

**UHP** **4** **100** x **25** x **72** **R0.5**  
1 2 3 4 5 6

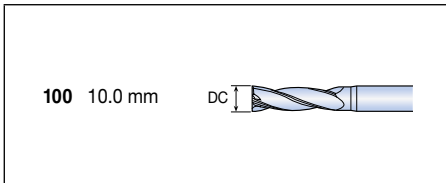
## 1 End mill type



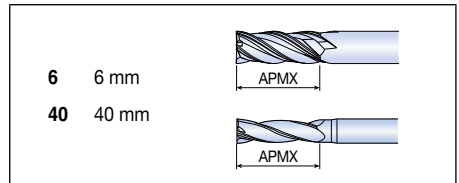
## 2 No. of flute



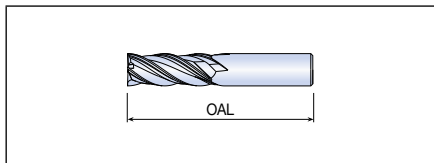
## 3 Cutting diameter



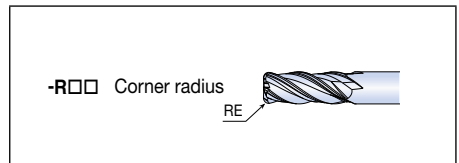
## 4 Length of cut



## 5 Tool length



## 6 Corner radius



# Designation System

HARDMILL

APEX MILL

STAR MILL

ALUMILL

DIA MILL

**SBE**

1

**2**

2

**010**

3





**S -**

4




**\*\*\***

5/5\*

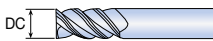
## 1 End mill type

HSB/SBT/DEB	Ball nose	
SED	Flat	
DER	Corner radius	
SCSO/SCST	Taper	





## 2 No. of flute

2 2 Flutes	
4 4 Flutes	
6 6 Flutes	

## 3 Cutting diameter

010	1.0 mm	
100	10.0 mm	

## 4 Overall length

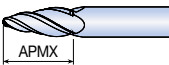
S	Short length	
M	Medium length	
L	Long length	
XL	Extra long length	

## 5 Others

-□	Shank diameter
-R□□	Corner radius

## 5\* Length of cut

SCSO / SCST type	
24	24 mm

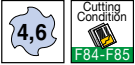
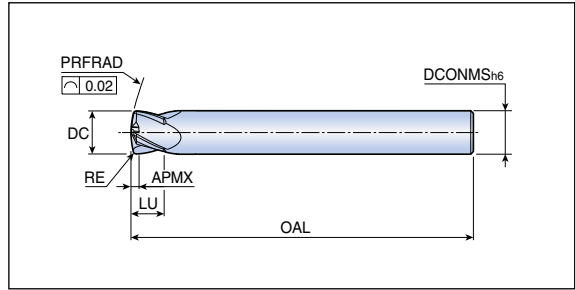








## 4, 6 flute, lens shape for 5-axis profiling



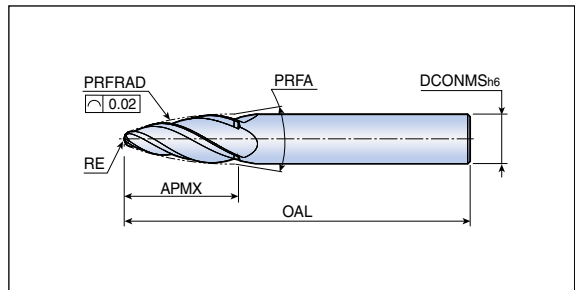
Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	NOF	PRFRAD	RE	APMX	LU	DCONMS	OAL	
<b>SCSL 4080R015X05</b>	0.02-0.08	8	4	15	0.75	1.1	5.0	8	63	●
<b>6100R020X07</b>	0.03-0.09	10	6	20	1.0	1.4	7.0	10	72	●
<b>6120R025X09</b>	0.03-0.10	12	6	25	1.0	1.5	9.0	12	83	●

► PRFRAD: Profile radius

●: Standard items

# SCSO

## 4 flute, oval shape for 5-axis profiling



Designation	Feed (mm/tooth)	Dimension (mm)					Grade	
		PRFRAD	RE	APMX	PRFA	DCONMS		
<b>SCSO 4080R090X24</b>	0.02-0.08	90	1.0	24.8	14.9	8	63	●
<b>4100R085X26</b>	0.03-0.09	85	2.0	26.6	15.5	10	72	●
<b>4120R080X27</b>	0.03-0.10	80	2.0	27.1	18.4	12	83	●

► PRFRAD: Profile radius

●: Standard items

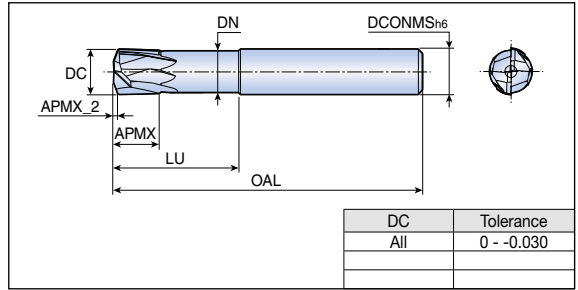




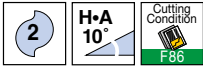


# HFM 2

## 2 flute high feed flat



• High Feed Machining (H.F.M)



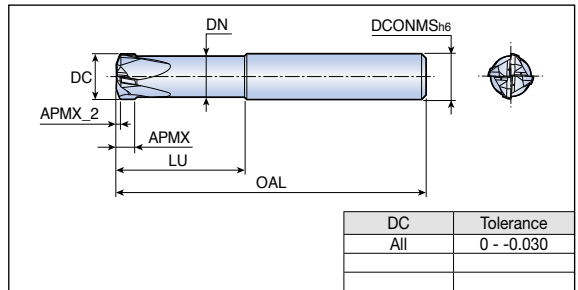
Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	OAL	APMX	APMX_2*	LU	DN	DCONMS	
<b>HFM 2040</b>	0.2-0.4	4	47	4	0.3	10	3.9	6	●
<b>2060</b>	0.3-0.6	6	52	6	0.5	16	5.5	6	●
<b>2080</b>	0.4-0.7	8	60	8	0.75	22	7.3	8	●
<b>2100</b>	0.5-0.9	10	68	10	1.0	28	9.2	10	●
<b>2120</b>	0.5-1.0	12	76	12	1.1	33	11.0	12	●

▶ \*: Maximum D.O.C for high feed milling

●: Standard items

# HFM 4

## 4 flute high feed flat



• High Feed Machining (H.F.M)



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	OAL	APMX	APMX_2*	LU	DN	DCONMS	
<b>HFM 4060</b>	0.3-0.5	6	52	2.5	0.5	16	5.4	6	●
<b>4080</b>	0.3-0.6	8	60	3.5	0.7	24	7.2	8	●
<b>4100</b>	0.4-0.8	10	68	4.0	0.75	28	9.2	10	●
<b>4120</b>	0.4-1.0	12	76	5.0	1.05	33	11.0	12	●

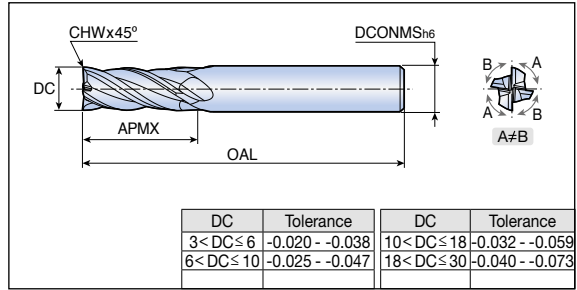
▶ \*: Maximum D.O.C for high feed milling

●: Standard items

# CFM 4...M



## 4 flute corner chamfer



- Vibration free mill



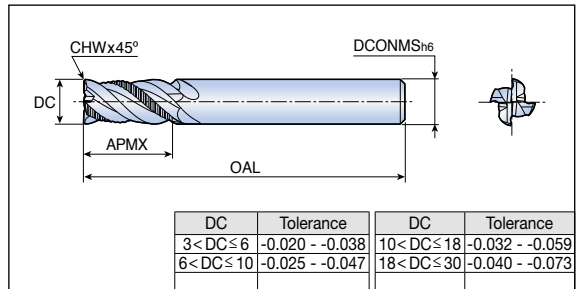
Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	CHW	OAL	APMX	DCONMS	
<b>CFM 4060M</b>	0.03-0.07	6	0.25	57	14	6	●
<b>4080M</b>	0.03-0.08	8	0.3	63	18	8	●
<b>4100M</b>	0.03-0.10	10	0.4	72	22	10	●
<b>4120M</b>	0.04-0.11	12	0.5	83	26	12	●
<b>4160M</b>	0.05-0.13	16	0.6	100	34	16	●
<b>4200M</b>	0.05-0.17	20	0.6	110	42	20	●
<b>4250M</b>	0.06-0.20	25	0.6	121	52	25	●

- : Standard items

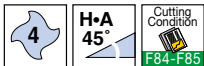
# FSM 4...M



## 4 flute medium corner chamfer



- MULTIMILL (Rough + Finish)



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	CHW	OAL	APMX	DCONMS	
<b>FSM 4060M</b>	0.03-0.06	6	0.25	57	14	6	●
<b>4080M</b>	0.03-0.08	8	0.3	63	18	8	●
<b>4100M</b>	0.03-0.09	10	0.3	72	22	10	●
<b>4120M</b>	0.04-0.11	12	0.4	83	26	12	●
<b>4140M</b>	0.04-0.11	14	0.4	83	30	14	●
<b>4160M</b>	0.05-0.11	16	0.6	92	34	16	●
<b>4200M</b>	0.05-0.11	20	0.6	104	42	20	●
<b>4250M</b>	0.06-0.11	25	0.6	121	52	25	●

- : Standard items

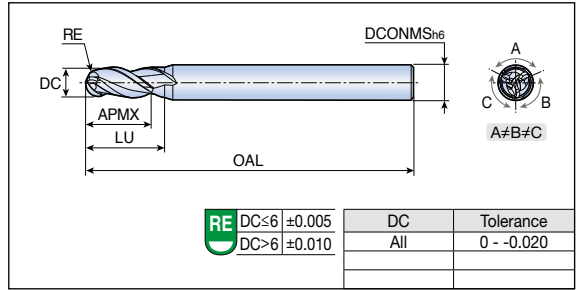
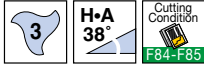
# SBT 3...U



## 3 flute medium ball



- Excellent chatter damping due to unequal spacing of cutting edges



Designation	Dimension (mm)						Grade
	DC	RE	OAL	APMX	LU	DCONMS	
<b>SBT 3040U</b>	4	2	70	8	10	6	●
<b>3060U</b>	6	3	80	12	-	6	●
<b>3080U</b>	8	4	90	16	-	8	●
<b>3100U</b>	10	5	100	20	-	10	●
<b>3120U</b>	12	6	110	25	-	12	●

● Standard items

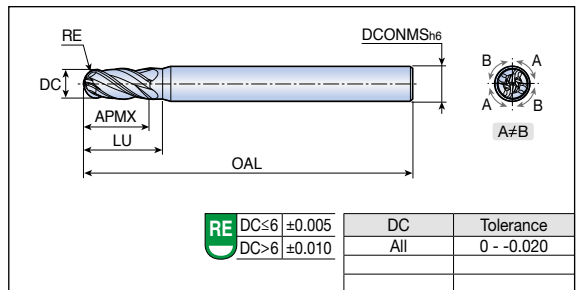
# SBT 4...U



## 4 flute medium ball



- Excellent chatter damping due to unequal spacing of cutting edges



Designation	Dimension (mm)						Grade
	DC	RE	OAL	APMX	LU	DCONMS	
<b>SBT 4040U</b>	4	2	70	8	10	6	●
<b>4060U</b>	6	3	80	12	-	6	●
<b>4080U</b>	8	4	90	16	-	8	●
<b>4100U</b>	10	5	100	20	-	10	●
<b>4120U</b>	12	6	110	25	-	12	●

● Standard items

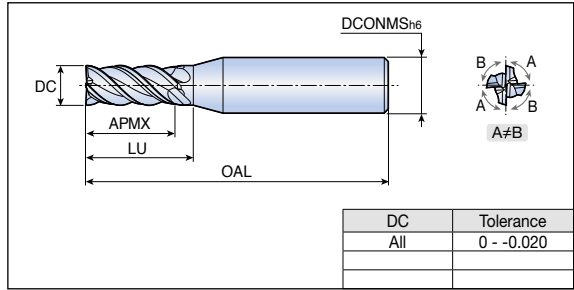
# SED 4...U



## 4 flute medium flat



- Excellent chatter damping credit to unequal spacing of cutting edges



Designation	Feed (mm/tooth)	Dimension (mm)					Grade TT5515
		DC	OAL	APMX	LU	DCONMS	
<b>SED 4030U</b>	0.015-0.030	3	57	10	12	6	●
<b>4040U</b>	0.020-0.040	4	57	12	14	6	●
<b>4050U</b>	0.020-0.040	5	57	15	16	6	●
<b>4060U</b>	0.025-0.070	6	57	15	-	6	●
<b>4080U</b>	0.030-0.090	8	70	25	-	8	●
<b>4100U</b>	0.030-0.100	10	72	25	-	10	●
<b>4120U</b>	0.035-0.110	12	83	30	-	12	●
<b>4160U</b>	0.050-0.130	16	100	42	-	16	●
<b>4200U</b>	0.050-0.170	20	104	48	-	20	●

●: Standard items

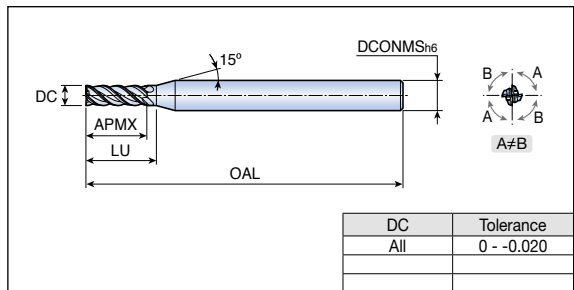
# SED 4...UL



## 4 flute long flat



- Excellent chatter damping credit to unequal spacing of cutting edges



Designation	Feed (mm/tooth)	Dimension (mm)					Grade TT5515
		DC	OAL	APMX	LU	DCONMS	
<b>SED 4030UL</b>	0.015-0.030	3	63	10	12	6	●
<b>4040UL</b>	0.020-0.040	4	63	12	14	6	●
<b>4060UL</b>	0.025-0.070	6	65	20	-	6	●
<b>4080UL</b>	0.030-0.090	8	83	30	-	8	●
<b>4100UL</b>	0.030-0.100	10	83	35	-	10	●
<b>4120UL</b>	0.035-0.110	12	92	40	-	12	●

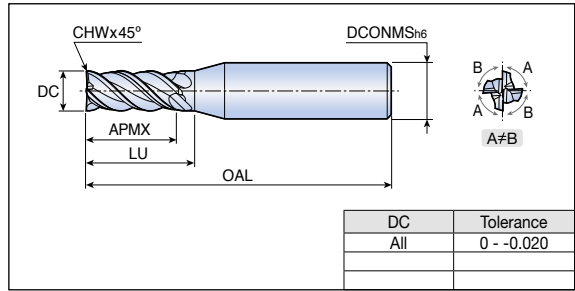
●: Standard items



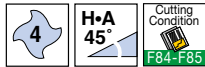
# SED 4...-C



## 4 flute medium corner chamfer



- Excellent chatter damping credit to unequal spacing of cutting edges



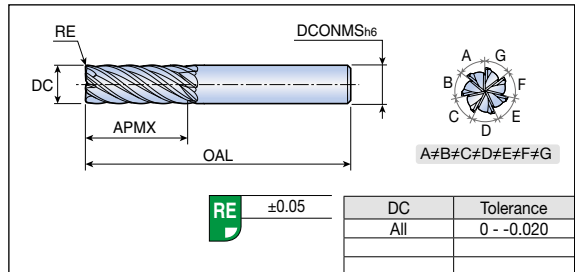
Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	CHW	OAL	APMX	LU	DCONMS	
<b>SED 4040U-C0.1</b>	0.020-0.040	4	0.1	57	12	14	6	●
<b>4060U-C0.2</b>	0.030-0.060	6	0.2	57	15	-	6	●
<b>4080U-C0.3</b>	0.030-0.090	8	0.3	70	25	-	8	●
<b>4100U-C0.3</b>	0.030-0.100	10	0.3	72	25	-	10	●
<b>4120U-C0.4</b>	0.035-0.110	12	0.4	83	30	-	12	●

- Standard items

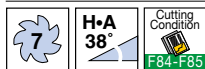
# SED 7



## 7 flute medium corner radius



- Excellent chatter damping credit to unequal spacing of cutting edges
- For trochoidal operation



Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
<b>SED 7060</b>	0.02-0.04	6	0.5	57	15	6	●
<b>7060-4D</b>	0.02-0.04	6	0.5	70	24	6	●
<b>7080</b>	0.02-0.05	8	0.5	70	25	8	●
<b>7080-4D</b>	0.02-0.05	8	0.5	90	32	8	●
<b>7100</b>	0.03-0.07	10	0.5	72	25	10	●
<b>7100-4D</b>	0.03-0.07	10	0.5	100	40	10	●
<b>7120</b>	0.03-0.09	12	0.5	83	30	12	●
<b>7120-4D</b>	0.03-0.09	12	0.5	110	48	12	●
<b>7140</b>	0.04-0.10	14	0.5	90	35	14	●
<b>7160</b>	0.04-0.11	16	0.5	100	42	16	●
<b>7160-4D</b>	0.04-0.11	16	0.5	125	64	16	●
<b>7200</b>	0.05-0.12	20	0.5	104	48	20	●
<b>7200-4D</b>	0.05-0.12	20	0.5	150	80	20	●

▶ 4D: 4xD depth of cut

- Standard items



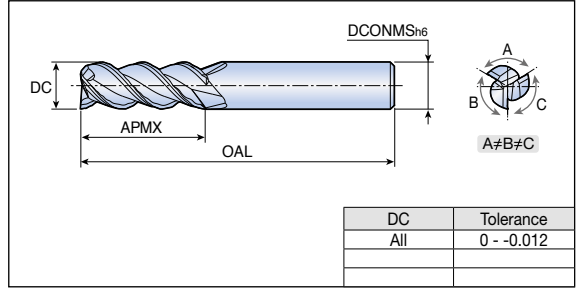




# AWE 3



## 3 flute wave flat



• Wave cutting edge



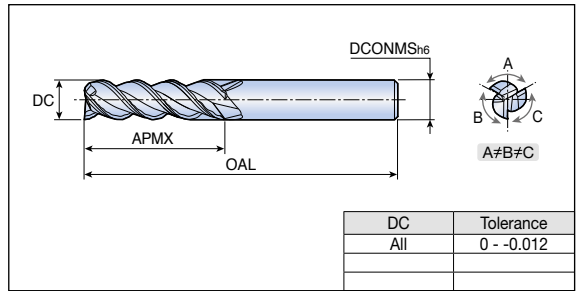
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
<b>AWE 3060</b>	0.03-0.07	6	52	14	6	●
<b>3080</b>	0.03-0.09	8	60	14	8	●
<b>3100</b>	0.03-0.10	10	68	19	10	●
<b>3120</b>	0.03-0.12	12	76	22	12	●
<b>3140</b>	0.05-0.14	14	85	24	14	●
<b>3160</b>	0.05-0.14	16	90	30	16	●
<b>3180</b>	0.05-0.15	18	110	34	18	●
<b>3200</b>	0.05-0.15	20	110	38	20	●

●: Standard items

# AWE 3...ML



## 3 flute wave long flat



• Wave cutting edge



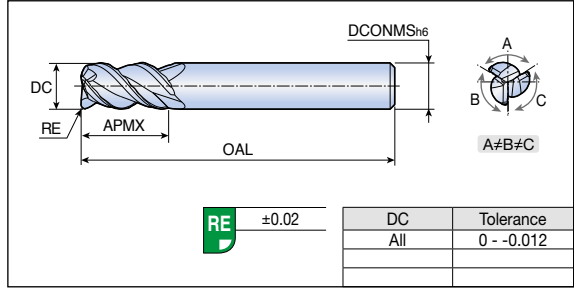
Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
<b>AWE 3060ML</b>	0.03-0.07	6	65	20	6	●
<b>3080ML</b>	0.03-0.09	8	75	20	8	●
<b>3100ML</b>	0.03-0.10	10	80	25	10	●
<b>3120ML</b>	0.03-0.12	12	95	30	12	●
<b>3140ML</b>	0.03-0.12	14	110	35	14	●
<b>3160ML</b>	0.05-0.14	16	110	40	16	●
<b>3180ML</b>	0.05-0.15	18	125	45	18	●
<b>3200ML</b>	0.05-0.15	20	125	45	20	●

●: Standard items

# AWE 3...ML-R



## 3 flute wave long corner radius



- Wave cutting edge



RE ±0.02

DC	Tolerance
All	0 - -0.012

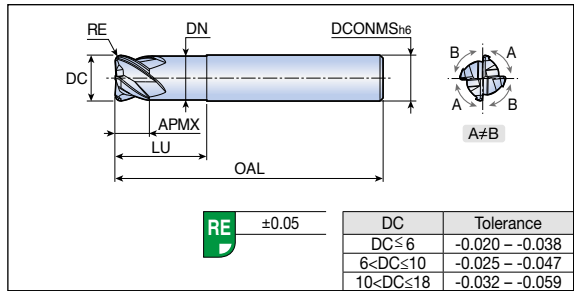
Designation	Feed (mm/tooth)	Dimension (mm)				Grade UF10
		DC	OAL	APMX	DCONMS	
<b>AWE 3060ML-R0.5</b>	0.03-0.07	6	65	20	6	●
<b>3080ML-R0.5</b>	0.03-0.09	8	75	20	8	●
<b>3100ML-R1.0</b>	0.03-0.10	10	80	25	10	●
<b>3120ML-R1.0</b>	0.03-0.12	12	95	30	12	●

- Standard items

# CRF 4



## 4 flute, Ceramic end mills



RE ±0.05

DC	Tolerance
DC ≤ 6	-0.020 - -0.038
6 < DC ≤ 10	-0.025 - -0.047
10 < DC ≤ 18	-0.032 - -0.059

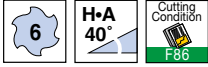
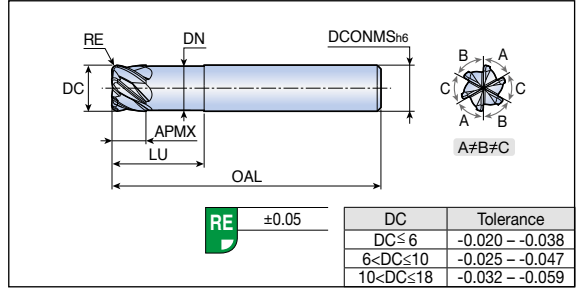


Designation	Feed (mm/tooth)	Dimension (mm)							Grade TC3030
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRF 4060 050 120</b>	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
<b>4080 100 160</b>	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
<b>4100 100 200</b>	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
<b>4120 150 240</b>	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
<b>4160 200 320</b>	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

- Standard items

# CRF 6

## 6 flute, Ceramic end mills

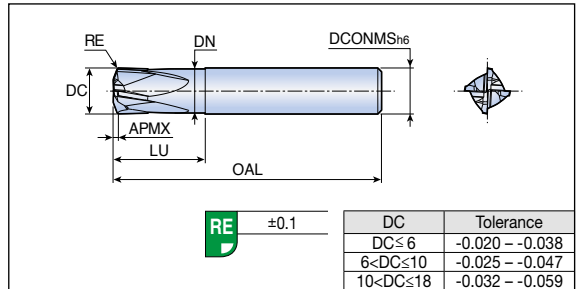


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRF 6060 050 120</b>	0.02-0.03	6	0.5	50	4.5	12	5.8	6	●
<b>6080 100 160</b>	0.02-0.03	8	1.0	57	6.0	16	7.7	8	●
<b>6100 100 200</b>	0.02-0.04	10	1.0	63	7.5	20	9.6	10	●
<b>6120 150 240</b>	0.03-0.05	12	1.5	70	9.0	24	11.5	12	●
<b>6160 200 320</b>	0.03-0.05	16	2.0	83	12.0	32	15.5	16	●

●: Standard items

# CRH 4

## 4 flute, Ceramic end mills for high feed milling



Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>CRH 4060</b>	0.1-0.15	6	0.7	50	0.55	12	5.8	6	●
<b>4080</b>	0.1-0.2	8	0.9	57	0.75	16	7.7	8	●
<b>4100</b>	0.1-0.2	10	1.0	63	0.85	20	9.6	10	●
<b>4120</b>	0.1-0.3	12	1.4	70	1.15	24	11.5	12	●
<b>4160</b>	0.1-0.3	16	1.8	83	1.55	32	15.5	16	●

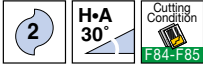
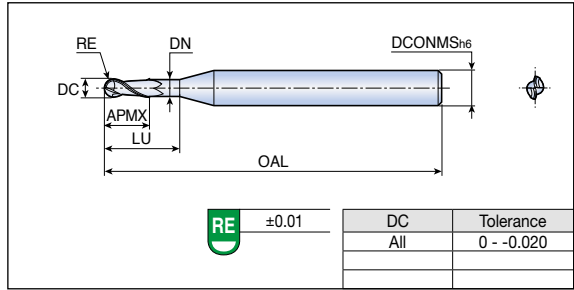
► RE: Program corner R

●: Standard items

# DMB 2



## 2 flute miniature ball



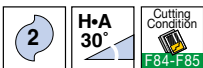
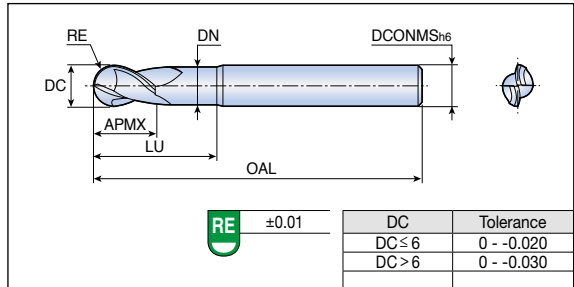
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>DMB 2006-0.6x3.0</b>	0.6	0.3	40	0.6	3.0	0.55	3	●
<b>2010-1.0x5.0</b>	1.0	0.5	40	1.0	5.0	0.95	3	●
<b>2010-1.0x8.5</b>	1.0	0.5	40	1.0	8.5	0.95	3	●
<b>2015-1.5x7.5</b>	1.5	0.75	50	1.5	7.5	1.4	3	●
<b>2015-1.5x12.0</b>	1.5	0.75	50	1.5	12.0	1.4	3	●
<b>2020-2.2x10.0</b>	2.0	1.0	60	2.2	10.0	1.9	3	●
<b>2020-2.2x16.0</b>	2.0	1.0	60	2.2	16.0	1.9	3	●

●: Standard items

# DEB 2...S



## 2 flute short ball



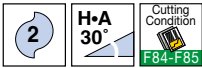
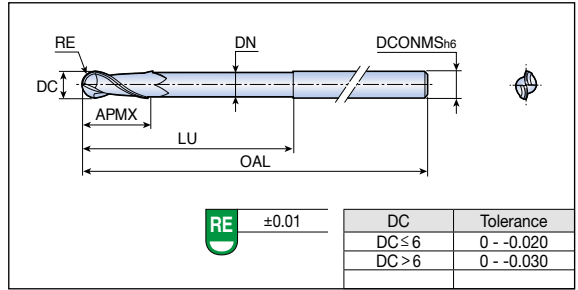
Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>DEB 2030S</b>	3	1.5	60	4.5	6.5	2.8	6	●
<b>2040S</b>	4	2.0	65	6.0	8.0	3.7	6	●
<b>2060S</b>	6	3.0	75	9.0	12.0	5.6	6	●
<b>2120S</b>	12	6.0	90	18.0	36.0	11.4	12	●

●: Standard items

# DEB 2...L



## 2 flute long neck ball



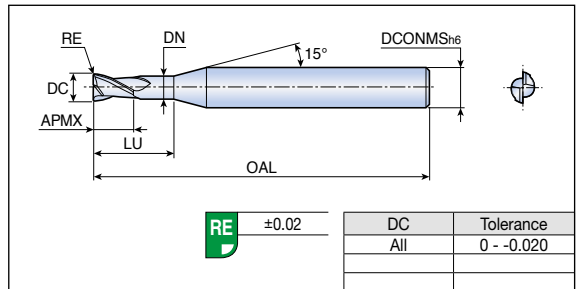
Designation	Dimension (mm)							Grade TTD620
	DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>DEB 2030L-4</b>	3	1.5	80	15	25	2.9	4	●
<b>2040L-4</b>	4	2.0	80	20	30	3.9	4	●
<b>2050L</b>	5	2.5	100	30	50	4.9	6	●
<b>2060L</b>	6	3.0	100	30	50	5.5	6	●
<b>2080L</b>	8	4.0	110	40	60	7.5	8	●
<b>2120L</b>	12	6.0	130	55	75	11.5	12	●

● Standard items

# DMR 2



## 2 flute miniature corner radius



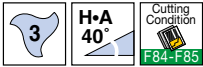
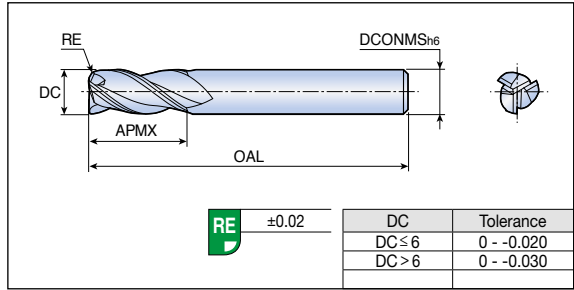
Designation	Feed (mm/tooth)	Dimension (mm)							Grade TTD620
		DC	RE	OAL	APMX	LU	DN	DCONMS	
<b>DMR 2006-0.9x3.0</b>	0.006-0.010	0.6	0.05	40	0.9	3.0	0.55	3	●
<b>2008-1.2x4.0</b>	0.008-0.015	0.8	0.05	40	1.2	4.0	0.75	3	●
<b>2010-1.5x5.0</b>	0.010-0.020	1.0	0.1	40	1.5	5.0	0.95	3	●
<b>2010-1.5x8.5</b>	0.010-0.020	1.0	0.1	40	1.5	8.5	0.95	3	●
<b>2012-1.8x6.0</b>	0.010-0.025	1.2	0.1	50	1.8	6.0	1.15	3	●
<b>2015-2.2x7.5</b>	0.015-0.035	1.5	0.15	50	2.2	7.5	1.4	3	●
<b>2015-2.2x12.0</b>	0.015-0.030	1.5	0.15	50	2.2	12.0	1.4	3	●
<b>2020-2.2x10.0</b>	0.015-0.040	2.0	0.15	60	2.2	10.0	1.9	3	●
<b>2020-2.2x16.0</b>	0.015-0.035	2.0	0.15	60	2.2	16.0	1.9	3	●

● Standard items

# DER 3...S



## 3 flute short corner radius



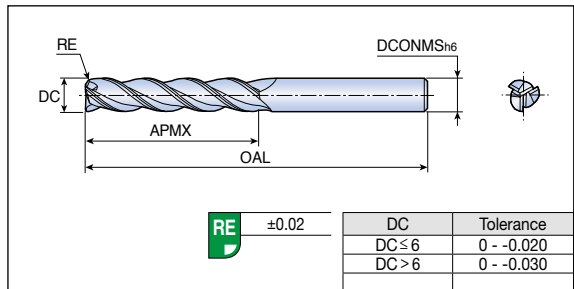
Designation	Feed (mm/tooth)	Dimension (mm)					Grade TTD620
		DC	RE	OAL	APMX	DCONMS	
<b>DER 3030S-3</b>	0.025-0.050	3	0.15	40	12	3	●
<b>3040S-4</b>	0.040-0.060	4	0.2	50	14	4	●
<b>3050S-5</b>	0.050-0.080	5	0.3	50	16	5	●
<b>3060S</b>	0.060-0.090	6	0.3	65	20	6	●
<b>3080S</b>	0.070-0.100	8	0.5	65	20	8	●
<b>3100S</b>	0.080-0.130	10	0.5	75	25	10	●
<b>3120S</b>	0.100-0.150	12	0.5	75	25	12	●

●: Standard items

# DER 3...L



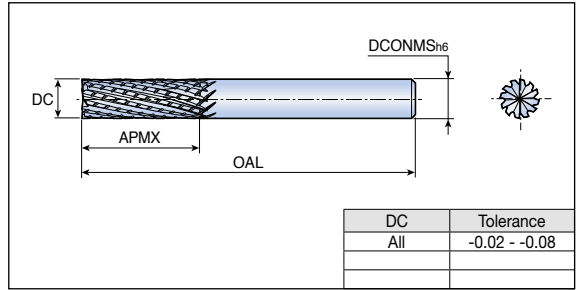
## 3 flute long corner radius



Designation	Feed (mm/tooth)	Dimension (mm)					Grade TTD620
		DC	RE	OAL	APMX	DCONMS	
<b>DER 3040L-4</b>	0.03-0.05	4	0.2	60	30	4	●
<b>3050L-5</b>	0.04-0.07	5	0.3	70	35	5	●
<b>3060L</b>	0.05-0.08	6	0.3	100	40	6	●
<b>3080L</b>	0.06-0.09	8	0.5	100	40	8	●
<b>3100L</b>	0.07-0.12	10	0.5	100	40	10	●
<b>3120L</b>	0.09-0.14	12	0.5	100	45	12	●

●: Standard items

## Roughing for composite material (Chip splitter)



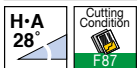
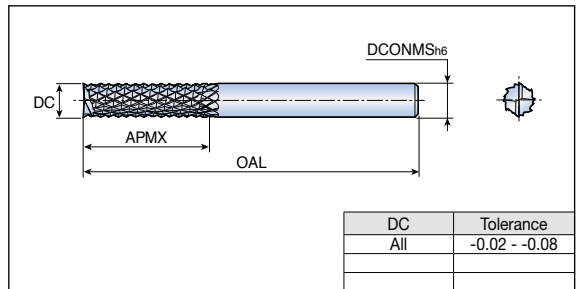
Designation	Feed (mm/tooth)	Dimension (mm)					Grade TTD610
		DC	NOF	OAL	APMX	DCONMS	
<b>RRFE 040</b>	0.01-0.02	4	6	50	12	4	●
<b>060</b>	0.01-0.02	6	8	65	18	6	●
<b>080</b>	0.01-0.03	8	10	75	24	8	●
<b>100</b>	0.02-0.04	10	12	85	30	10	●
<b>120</b>	0.02-0.05	12	12	100	36	12	●

► NOF: Number of flutes

●: Standard items

# RCFE

## Roughing for composite material (Multi-flute)



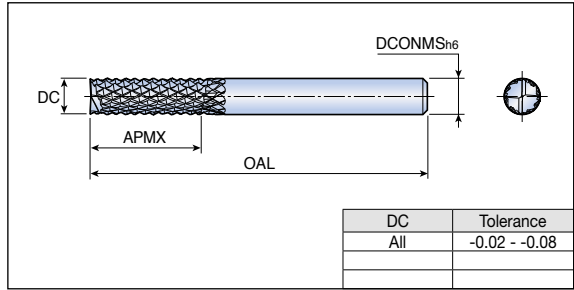
Designation	Feed (mm/rev)	Dimension (mm)				Grade TTD610
		DC	OAL	APMX	DCONMS	
<b>RCFE 040</b>	0.03-0.06	4	50	12	4	●
<b>060</b>	0.07-0.15	6	65	18	6	●
<b>080</b>	0.10-0.20	8	75	24	8	●
<b>100</b>	0.15-0.30	10	85	30	10	●
<b>120</b>	0.20-0.40	12	100	36	12	●

●: Standard items

# RCME



Medium to finishing for composite materials (Multi-flute)



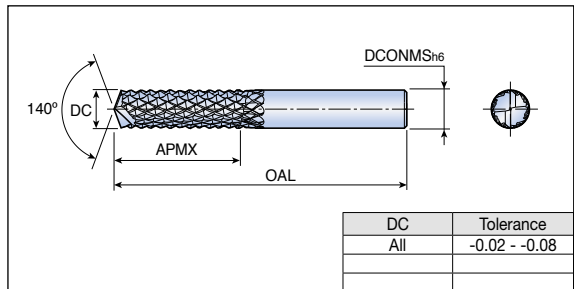
Designation	Feed (mm/rev)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TTD610
<b>RCME 040</b>	0.03-0.06	4	50	12	4	●
<b>060</b>	0.07-0.15	6	65	18	6	●
<b>080</b>	0.10-0.20	8	75	24	8	●
<b>100</b>	0.15-0.30	10	85	30	10	●
<b>120</b>	0.20-0.40	12	100	36	12	●

●: Standard items

# RCDE



Medium to finishing for composite materials (Cutting edge for drilling + multi-flute)



Designation	Feed (mm/rev)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	TTD610
<b>RCDE 040</b>	0.03-0.06	4	50	12	4	●
<b>060</b>	0.07-0.15	6	65	18	6	●
<b>080</b>	0.10-0.20	8	75	24	8	●
<b>100</b>	0.15-0.30	10	85	30	10	●
<b>120</b>	0.20-0.40	12	100	36	12	●

●: Standard items







# Recommended Cutting Conditions

## Machining data for solid end mill

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
				930	275	7
			Quenched and tempered	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
			Electrolytic copper		100	28
	Non-metallic		Duroplastics, graphite		70 Shore D	29
			Hard rubber		55 Shore D	30
S	High temp. alloys	Fe based	Annealed		200	31
			Cured		280	32
		Ni or Co based	Annealed		250	33
			Cured		350	34
	Titanium, Ti alloys		Cast		320	35
			Pure	Rm 400	190	36
		Alpha+beta alloys cured	Rm 1050	310	37	
H	Hardened steel	Hardened		55HRC	38	
		Hardened		60HRC	39	
	Chilled cast iron	Cast		400	40	
Cast iron nodular	Hardened		55HRC	41		

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

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



# Recommended Cutting Conditions



## Machining data for ceramic end mill

### CRF 4 teeth & 6 teeth

(Unit: mm)

Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering, profiling		Slotting
			ap	ae	ae
Ø6	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø8	300-1000	0.02-0.03	-0.6xD	-0.1xD	-0.05xD
Ø10	300-1000	0.02-0.04	-0.6xD	-0.1xD	-0.05xD
Ø12	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD
Ø16	300-1000	0.03-0.05	-0.6xD	-0.1xD	-0.05xD

▶ ae must not exceed a maximum 1 mm

ap: axial direction DOC    ae: radial direction DOC

▶ Apply a 30% reduction in feed during slotting, ramping (less 2.5°)

### CRH 4 teeth

(Unit: mm)

Diameter	Cutting speed (m/min)	Feed (mm/tooth)	Shouldering, profiling	
			ap	ae
Ø6	300-1000	0.1-0.15	-0.05xD	-0.6xD
Ø8	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø10	300-1000	0.1-0.2	-0.05xD	-0.6xD
Ø12	300-1000	0.1-0.3	-0.05xD	-0.6xD
Ø16	300-1000	0.1-0.3	-0.05xD	-0.6xD

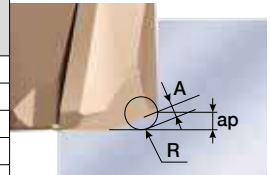
▶ ae must not exceed a maximum 1 mm

ap: axial direction DOC    ae: radial direction DOC

▶ Apply a 30% reduction in feed during ramping (less 2.5°)

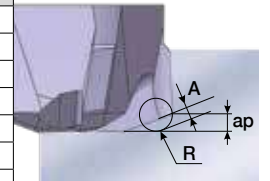
### Programming tip - CRH

Diameter (CRH 4 teeth)	R (Program)	A Un-machined material thickness
Ø6	0.7	0.35
Ø8	0.9	0.47
Ø10	1.0	0.50
Ø12	1.4	0.70
Ø16	1.8	0.95



### Programming tip - HFM 2 / HFM 4

Designation	Diameter	R (Program)	A (Un-machined)	ap (Max)
HFM 2040	Ø4	0.38	0.25	0.3
HFM 2060	Ø6	0.65	0.43	0.5
HFM 2080	Ø8	0.87	0.57	0.75
HFM 2010	Ø10	1.09	0.71	1
HFM 2012	Ø12	1.3	0.86	1.1
HFM 4060	Ø6	0.59	0.38	0.5
HFM 4080	Ø8	0.78	0.51	0.7
HFM 4010	Ø10	0.85	0.55	0.75
HFM 4012	Ø12	1.17	0.77	1.05



# Recommended Cutting Conditions



## Machining data for composite material

Grade: TTD610

Material		Cutting Speed Vc(m/min)					
		RRFE		RCFE		RCDE	
		Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting
CFRP	CFRP	100-300	50-120	100-300	50-120	80-250	50-120
	Honeycomb	150-250	100-200	150-250	100-200	120-200	100-200
GFRP	GFRP	50-150	30-70	50-150	30-70	50-130	30-70
	Honeycomb	150-250	100-200	150-250	100-200	120-200	100-200

Material		Cutting Speed Vc(m/min)					
		RCME		RCOM		RDCF	
		Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting
CFRP	CFRP	80-250	50-120	50-200	50-120	100-300	50-120
	Honeycomb	120-200	100-200	-	-	-	-
GFRP	GFRP	50-130	30-70	50-100	30-70	50-150	30-70
	Honeycomb	120-200	100-200	-	-	-	-

Material		RCDE & H-Drill					
		Drilling					
		Cutting speed Vc (m/min)	Drill diameter (mm) vs. Feed (mm/rev)				
Ø3.0-Ø6.0	Ø6.1-Ø8.0		Ø8.1-Ø10.0	Ø10.1-Ø12.7			
CFRP	50-150	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10		
GFRP	40-120	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10		



# TOOLING SYSTEM







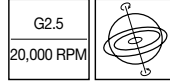
## Guide to Icons



➤ Run-out



➤ Surface Hardness



➤ Balance Grade



➤ Taper Shank Grade



➤ Surface Finish Grade



➤ Technical Data Page



➤ ER Collet Page



➤ TSK Collet Page



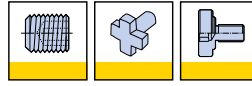
➤ Straight Collet Page



➤ Pull Stud Page



➤ Preset Screw Page



➤ Lock Screw Page



➤ ER-SRK Page



➤ Nut Page



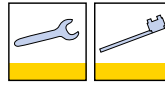
➤ Tap Adapter Page



➤ Cooling Tube Page



➤ Tube Wrench Page



➤ Wrench Page



➤ Driving Ring Page



➤ Induction Heating Unit Page



➤ Thermal Heating Unit Page



# Tool Selection Guide

## Tooling system

### Milling chuck

- DIN69871 G15
- HSK G39
- BT MAS-403 G65
- DIN2080 G91



Collet (NCSR) G156-G158



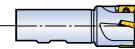
ST shank G113-G117



Collet (ER) G142-G150



GTIN collet G163-G164



### Collet chuck

- DIN69871 G10-G12
- HSK G33-G37
- BT MAS-403 G59-G62
- DIN2080 G90
- C-ADAPTER G101-G102
- ST shank G113-G117
- MT shank G128



Collet (ER) G142-G150



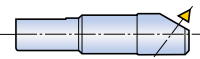
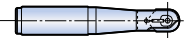
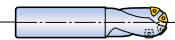
T-SHRINK Collet G159-G161



T-FLEX collet G162



GTIN collet G163-G164



### TSK collet chuck

- DIN69871 G13
- HSK G38
- BT MAS-403 G63



TSK collet G151-G153



### TSHRINK chuck

- DIN69871 G19
- HSK G42-G43
- BT MAS-403 G70-G71
- C-ADAPTER G109



- DIN69871 G20
- HSK G44-G45
- BT MAS-403 G72-G73
- ST shank G125



### THYCHUCK chuck

- DIN69871 G21
- HSK G46-G47
- BT MAS-403 G74-G75



THC collet G154-G155

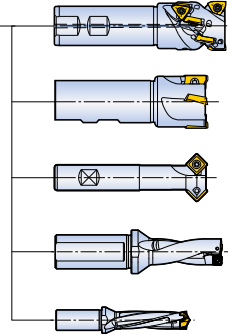


# Tool Selection Guide

## Tooling system

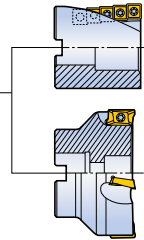
### End mill holder

- DIN69871 G16-G18
- HSK G40-G41
- BT MAS-403 G66-G69
- DIN2080 G92
- C-ADAPTER G103-G105



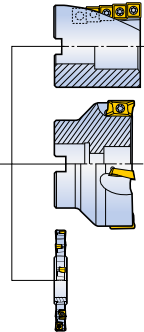
### Face mill / Shell end mill arbor

- DIN69871 G22-G23, G25
- HSK G48-G50, G52
- BT MAS-403 G77-G81, G83
- DIN2080 G93-G94
- C-ADAPTER G106, G108



### Combi face mill / Combi shell end mill arbor

- DIN69871 G24
- HSK G51
- BT MAS-403 G82
- DIN2080 G95
- C-ADAPTER G107



### Slotting cutter arbor

- DIN69871 G26
- BT MAS-403 G76



### Centering plug

- DIN2080 G98



# Tool Selection Guide

## Tooling system

### Adapter

- DIN69871 G29
- BT MAS-403 G85



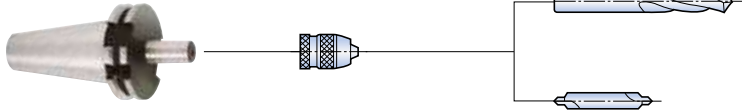
### Morse taper adapter

- DIN69871 G27-G28
- HSK G53
- BT MAS-403 G84-G85
- DIN2080 G96-G97



### Drill chuck arbor

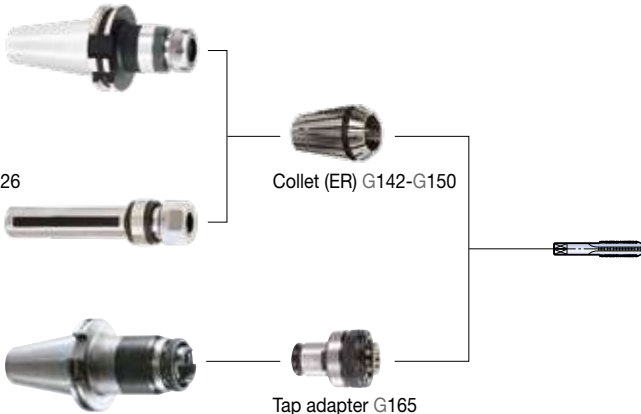
- DIN69871 G29
- BT MAS-403 G86
- DIN2080 G98



### Tap chuck (GTI)

- DIN69871 G14
- BT MAS-403 G64

- GTI ER collet chuck G126



- DIN69871 G14
- BT MAS-403 G64
- MTA G128

# Tool Selection Guide

## Tooling system

### GFI floating reamer chuck (GFI)

- ST shank G127



Collet (ER) G142-G150

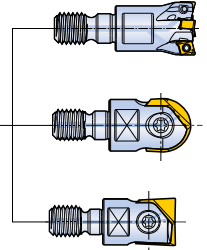


- DIN69871 G30
- HSK G54-G55
- BT MAS-403 G87
- C-ADAPTER G110
- ST shank G118-G121



ST shank G118-G121

Adapter G122-G124



### Blank

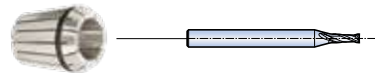
- HSK G56
- C-ADAPTER G111



- ER shank G130
- BT MAS-403 G131
- HSK G132
- C-ADAPTER G133
- ST shank G134



- ER shank G135
- BT MAS-403 G136
- HSK G137
- ST shank G138



Collet (ER11 SPR EX..AA)  
G143, 148, G150

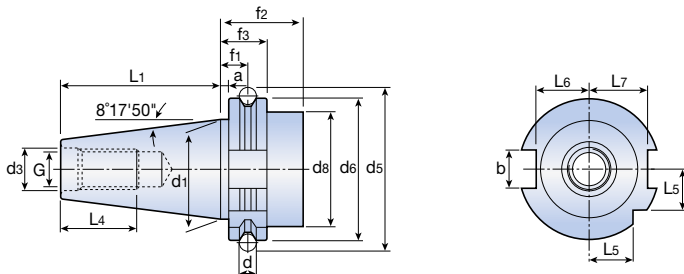
# DIN69871



# DIN69871 Form A/AD/B/ADB

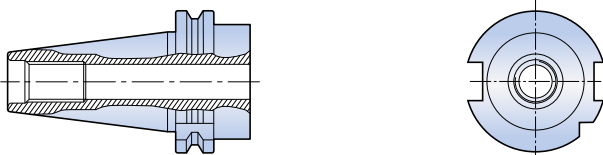
## Standard toolholder

Type "A"



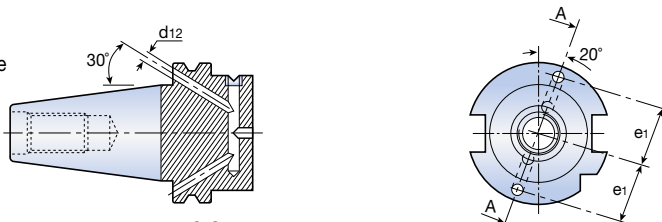
Type "AD"

Coolant hole



Type "B"

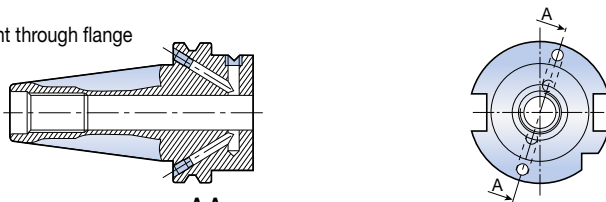
Coolant through flange



A-A

Type "ADB"

Coolant hole or coolant through flange



A-A

Shank	a ±0.1	b (H12)	d	d1	G	d3 (H7)	d5 ±0.05	d6	d8max	f1 ±0.1
<b>30</b>	3.2	16.1	7	31.75	M12	13	59.30	50.00	45	11.1
<b>40</b>	3.2	16.1	7	44.45	M16	17	72.30	63.55	50	11.1
<b>50</b>	3.2	25.7	7	69.85	M24	25	107.25	97.50	80	11.1

Shank	f2min	f3 -0.1	L1 -0.3	L4min	L5 -0.3	L6 -0.4	L7 -0.4	e1 ±0.1	d12	Taper AT3
<b>30</b>	35	19.1	47.80	24	15.0	16.4	19.0	21	4	0.002
<b>40</b>	35	19.1	68.40	32	18.5	22.8	25.0	27	4	0.003
<b>50</b>	35	19.1	101.75	47	30.0	35.5	37.7	42	6	0.004

- ▶ For non-stock items: Supply condition is subject to availability  
If not available in stock then MOQ (Minimum order qty) will be applicable





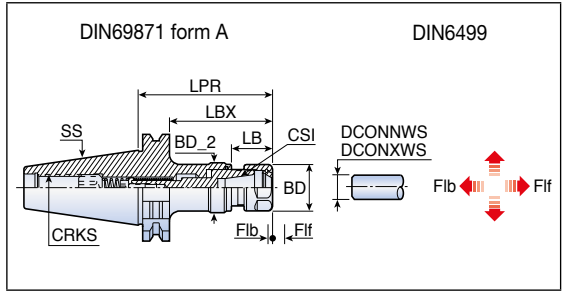
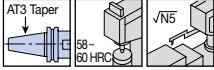






# GTI DIN69871-ER

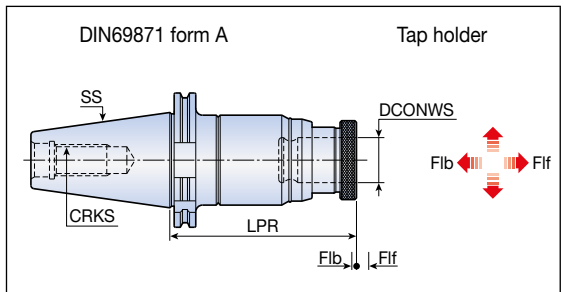
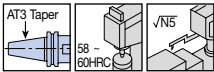
## GTI tap attachments



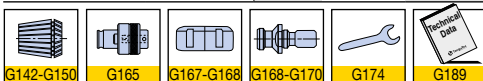
Designation	Dimension (mm)														
	SS	CSI	Tap <sub>min</sub>	Tap <sub>max</sub>	DCONNWS	DCONXWS	BD_2	BD	LPR	LBX	LB	Flb	FIF	CRKS	
<b>GTI DIN69871 40 ER 16</b>	40	ER16	M3	M10	0.5	10.0	29.5	28	81.2	62.1	24.6	3	8	M16	
	<b>ER 32</b>	40	ER32	M6	M20	2.0	20.0	56.5	50	112.6	93.5	33.0	4	9	M16
	<b>ER 40</b>	40	ER40	M6	M28	3.0	26.0	56.5	63	130.6	111.5	51.0	4	9	M16
<b>GTI DIN69871 50 ER 16</b>	50	ER16	M3	M10	0.5	10.0	29.5	28	106.8	87.7	24.6	3	8	M24	
	<b>ER 32</b>	50	ER32	M6	M20	2.0	20.0	56.5	50	115.3	96.2	33.0	4	9	M24
	<b>ER 40</b>	50	ER40	M6	M28	3.0	26.0	56.5	63	133.3	114.2	51.0	4	9	M24

# DIN69871-TC

## Tap holders



Designation	Dimension (mm)									
	SS	Tap <sub>min</sub>	Tap <sub>max</sub>	DCONWS	LPR	Flb	FIF	Tap adapter	CRKS	
<b>DIN69871 40 TC 12-90</b>	40	M3	M12	19	90	6.5	12	TA1	M16	
	<b>TC 22-142</b>	40	M6	M24	31	142	14.5	13	TA2	M16
<b>DIN69871 50 TC 12-130</b>	50	M3	M12	19	130	6.5	12	TA1	M24	
	<b>TC 22-142</b>	50	M6	M24	31	142	14.5	13	TA2	M24
	<b>TC 38-190</b>	50	M18	M38	48	190	20.0	20	TA3	M24



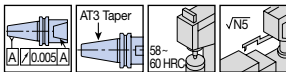
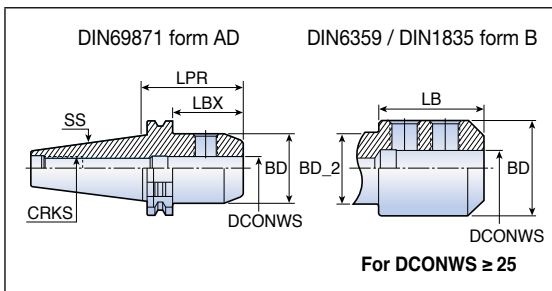
► Torque control system



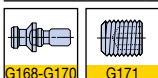


# DIN69871-EM

## End mill holders



Designation	Dimension (mm)							
	SS	DCONWS	BD	BD_2	LPR	LBX	LB	CRKS
<b>DIN69871 30 EM 6x50</b>	30	6	25	-	50	30.9	-	M12
<b>EM 8x50</b>	30	8	28	-	50	30.9	-	M12
<b>EM 10x50</b>	30	10	35	-	50	30.9	-	M12
<b>EM 14x63</b>	30	14	44	-	63	43.9	-	M12
<b>EM 16x63</b>	30	16	48	-	63	43.9	-	M12
<b>EM 18x72</b>	30	18	50	-	72	52.9	-	M12
<b>EM 20x72</b>	30	20	52	-	72	52.9	-	M12
<b>DIN69871 40 EM 6x50</b>	40	6	25	-	50	30.9	-	M16
<b>EM 8x50</b>	40	8	28	-	50	30.9	-	M16
<b>EM 10x50</b>	40	10	35	-	50	30.9	-	M16
<b>EM 12x50</b>	40	12	42	-	50	30.9	-	M16
<b>EM 14x63</b>	40	14	44	-	63	43.9	-	M16
<b>EM 16x63</b>	40	16	48	-	63	43.9	-	M16
<b>EM 18x63</b>	40	18	50	-	63	43.9	-	M16
<b>EM 20x63</b>	40	20	52	-	63	43.9	-	M16
<b>EM 25x100</b>	40	25	65	49.0	100	80.9	65	M16
<b>EM 32x100</b>	40	32	71	49.0	100	80.9	65	M16
<b>DIN69871 50 EM 6x63</b>	50	6	25	-	63	43.9	-	M24
<b>EM 8x63</b>	50	8	28	-	63	43.9	-	M24
<b>EM 10x63</b>	50	10	35	-	63	43.9	-	M24
<b>EM 12x63</b>	50	12	42	-	63	43.9	-	M24
<b>EM 14x63</b>	50	14	44	-	63	43.9	-	M24
<b>EM 16x63</b>	50	16	48	-	63	43.9	-	M24
<b>EM 18x63</b>	50	18	50	-	63	43.9	-	M24
<b>EM 20x63</b>	50	20	52	-	63	43.9	-	M24
<b>EM 25x80</b>	50	25	65	-	80	60.9	-	M24
<b>EM 32x100</b>	50	32	72	-	100	80.9	-	M24
<b>EM 40x100</b>	50	40	90	79.9	100	80.9	43	M24
<b>EM 50x125</b>	50	50	98	79.9	125	105.9	90	M24



► Add B for coolant through flange except DIN69871 30





















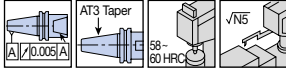
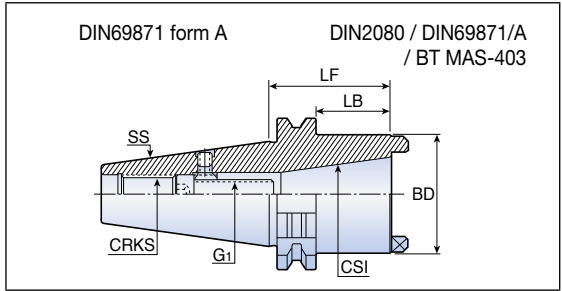






# DIN69871-AD

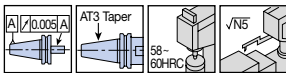
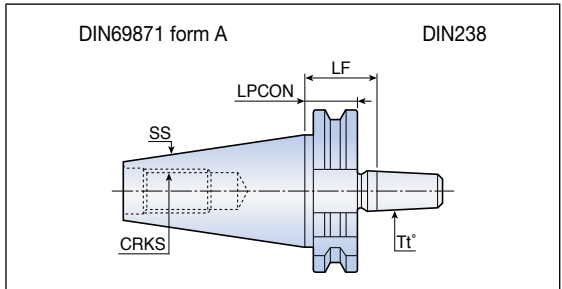
## Adapters



Designation	Dimension (mm)						
	SS	CSI	BD	LF	LB	CRKS	G1
<b>DIN69871 50 AD BT/SK 40</b>	50	BT/SK 40	66	70	50.9	M24	M16

# DIN69871-DC

## Drill chuck arbors - Jacobs taper arbors



Designation	Dimension (mm)				
	SS	Tt°	LF	LPCON	CRKS
<b>DIN69871 40 DC B12x26</b>	40	B12	26	19.1	M16
<b>DC B16x26</b>	40	B16	26	19.1	M16
<b>DC B18x26</b>	40	B18	26	19.1	M16
<b>DIN69871 50 DC B16x26</b>	50	B16	26	19.1	M24
<b>DC B18x26</b>	50	B16	26	19.1	M24



► Drill chuck not included

G168-G170

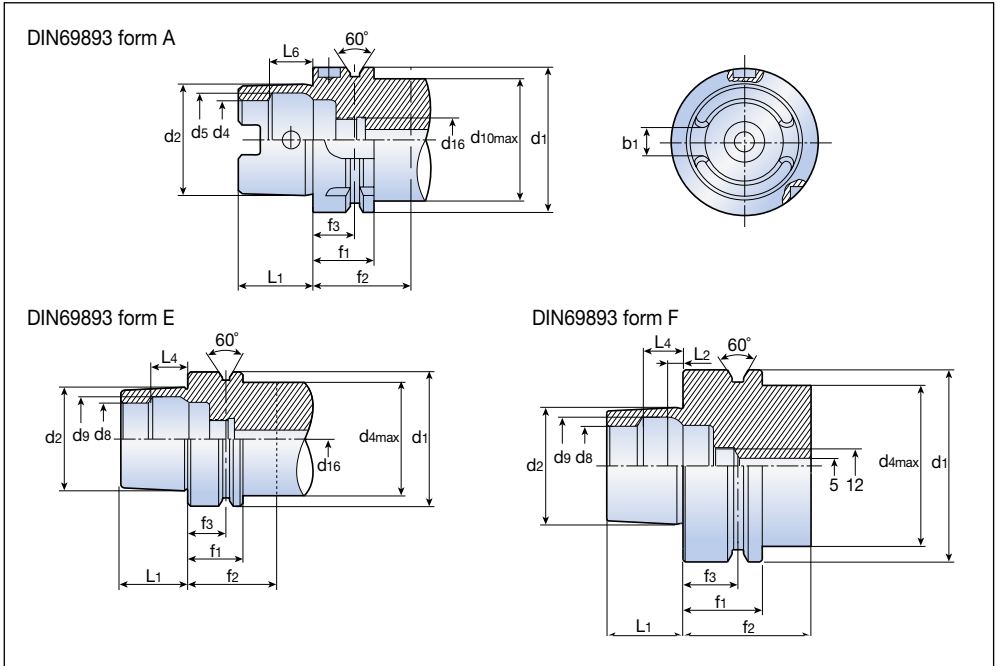


# HSK



# DIN69893 Form A/E/F

## Standard toolholder



### DIN69893 form A

HSK-A	d1 h10	d2	d4 H10	d5 H11	d10max	d16	L1 -0.2	L6 JS10	b1 ±0.04	f1 -0.1	f2min	f3 ±0.1
<b>40</b>	40	30	21	25.5	34	M12x1	20	11.42	8.05	20	35	16
<b>50</b>	50	38	26	32.0	42	M16x1	25	14.13	10.54	26	42	18
<b>63</b>	63	48	34	40.0	53	M18x1	32	18.13	12.54(12.42)	26	42	18
<b>80</b>	80	60	42	50.0	67	M20x1.5	40	22.85	16.04	26	42	18
<b>100</b>	100	75	53	63.0	85	M24x1.5	50	28.56	20.02 (19.9)	29	45	20

### DIN69893 form E

HSK-E	d1 h10	d2	d4max	d8 H10	d9 H11	d16	L1 -0.2	L4 JS10	f1 -0.1	f2min	f3 ±0.1
<b>32</b>	32	24	26	17	19.0	M10x1	16	8.92	20	35	16
<b>40</b>	40	30	34	21	25.5	M12x1	20	11.42	20	35	16
<b>50</b>	50	38	42	26	32.0	M16x1	25	14.13	26	42	18
<b>63</b>	63	48	53	34	40.0	M18x1	32	18.13	26	42	18

### DIN69893 form F

HSK-F	d1 h10	d2	d4max	d8 H10	d9 H11	L1 -0.2	L2	L4 JS10	f1 -0.1	f2min	f3 ±0.1
<b>63</b>	63	38	53	26	32	25	5.0	14.13	26	42	18

► Without crosshole

► For non-stock items: Supply condition is subject to availability

If not available in stock then MOQ (Minimum order qty) will be applicable



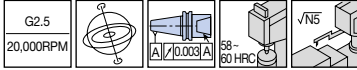
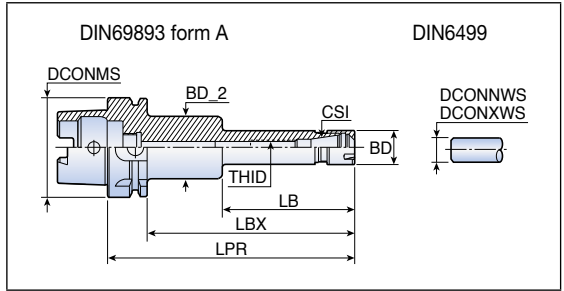




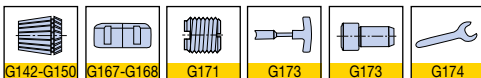


# HSK A-ER-M

## ER mini collet chucks



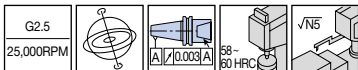
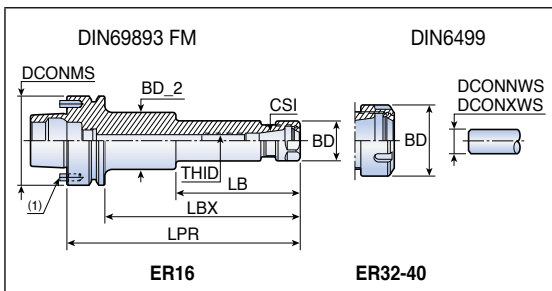
Designation	Dimension (mm)										
	DCONMS	CSI	DCONNWS	DCONXWS	BD	BD_2	LPR	LBX	LB	THID	
<b>HSK A 50</b>	<b>ER 16x100 M</b>	50	ER16	0.5	10.0	22	-	100	74	-	M10
	<b>ER 20x100 M</b>	50	ER20	1.0	13.0	28	-	100	74	-	M12
<b>HSK A 63</b>	<b>ER 16x100 M</b>	63	ER16	0.5	10.0	22	-	100	74	-	M10
	<b>ER 16x120 M</b>	63	ER16	0.5	10.0	22	40	120	94	78	M10
	<b>ER 16x160 M</b>	63	ER16	0.5	10.0	22	40	160	134	85	M10
	<b>ER 20x100 M</b>	63	ER20	1.0	13.0	28	-	100	74	-	M12
	<b>ER 20x120 M</b>	63	ER20	1.0	13.0	28	-	120	94	-	M12
	<b>ER 20x160 M</b>	63	ER20	1.0	13.0	28	45	160	134	85	M12
<b>HSK A 100</b>	<b>ER 16x100 M<sup>(1)</sup></b>	100	ER16	0.5	10.0	22	-	100	71	-	M10
	<b>ER 16x160 M<sup>(1)</sup></b>	100	ER16	0.5	10.0	22	40	160	131	85	M10
	<b>ER 20x100 M<sup>(1)</sup></b>	100	ER20	1.0	13.0	28	-	100	71	-	M12
	<b>ER 20x160 M<sup>(1)</sup></b>	100	ER20	1.0	13.0	28	45	160	131	85	M12



►<sup>(1)</sup> Balance to G6.3 at 12,000RPM

# HSK FM-ER

## ER collet chucks



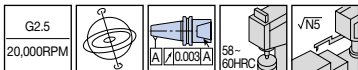
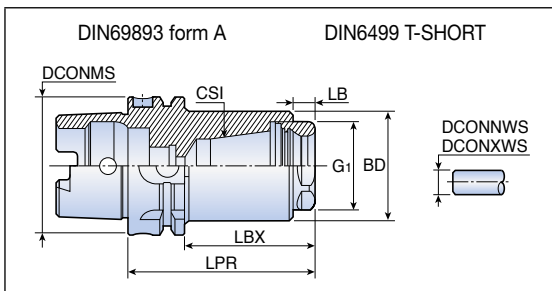
Designation	Dimension (mm)									
	DCONMS	CSI	DCONNWS	DCONXWS	BD	BD_2	LPR	LBX	LB	THID
<b>HSK FM 63 ER 16x80</b>	63	ER16	0.5	10.0	28	-	80	54	-	M10
<b>ER 16x100</b>	63	ER16	0.5	10.0	28	-	100	74	-	M10
<b>ER 16x120</b>	63	ER16	0.5	10.0	28	-	120	94	-	M10
<b>ER 16x160</b>	63	ER16	0.5	10.0	28	40	160	134	85.6	M10
<b>ER 32x80</b>	63	ER32	2.0	20.0	50	-	80	54	-	-
<b>ER 32x100</b>	63	ER32	2.0	20.0	50	-	100	74	-	M22x1.5
<b>ER 40x80</b>	63	ER40	3.0	26.0	63	50	80	54	32.0	-
<b>ER 40x100</b>	63	ER40	3.0	26.0	63	50	100	74	32.0	M28x1.5

► <sup>(1)</sup> The driving pins can be removed to turn the toolholder into a standard HSK F 63 type

# HSK A-ER-SHORT



## Short ER collet chucks



Designation	Dimension (mm)								
	DCONMS	CSI	DCONNWS	DCONXWS	BD	LPR	LBX	LB	G1
<b>HSK A 63 ER 32 SHORT</b>	63	ER32	2.0	20.0	50	81.0	55.0	9.5	M40x1.5
<b>HSK A 100 ER 32 SHORT</b>	100	ER32	2.0	20.0	50	89.5	60.5	9.5	M40x1.5
<b>ER 40 SHORT</b>	100	ER40	3.0	26.0	70	104.5	75.5	9.5	M50x1.5



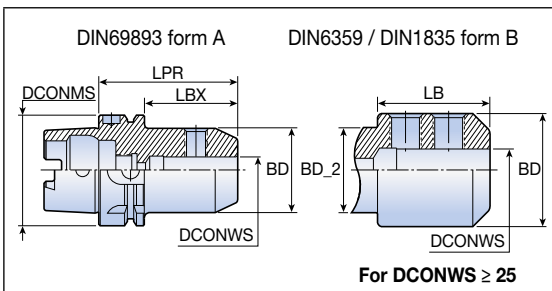
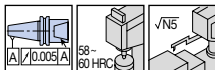
► <sup>(1)</sup> Equipped with nut ER16 MINI





# HSK A-EM

## End mill holders

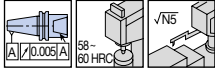
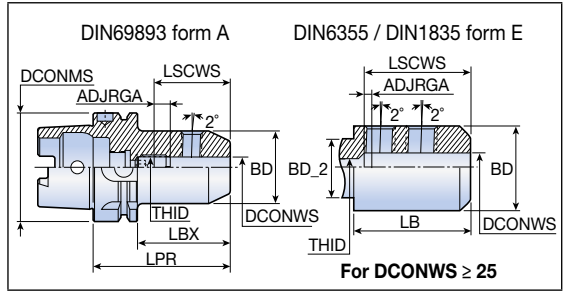


Designation	Dimension (mm)							
	DCONMS	DCONWS	BD	BD_2	LPR	LBX	LB	
<b>HSK A 50</b>	<b>EM 8x65</b>	50	8	28	-	65	39	-
	<b>EM 16x80</b>	50	16	48	-	80	54	-
	<b>EM 20x80</b>	50	20	52	-	80	54	-
<b>HSK A 63</b>	<b>EM 6x65</b>	63	6	25	-	65	39	-
	<b>EM 8x65</b>	63	8	28	-	65	39	-
	<b>EM 10x65</b>	63	10	35	-	65	39	-
	<b>EM 12x80</b>	63	12	42	-	80	54	-
	<b>EM 14x80</b>	63	14	44	-	80	54	-
	<b>EM 16x80</b>	63	16	48	-	80	54	-
	<b>EM 18x80</b>	63	18	50	-	80	54	-
	<b>EM 20x80</b>	63	20	52	-	80	54	-
	<b>EM 25x110</b>	63	25	65	52	110	84	65.5
	<b>EM 32x110</b>	63	32	72	52	110	84	65.5
	<b>HSK A 100</b>	<b>EM 8x80</b>	100	8	28	-	80	51
<b>EM 10x80</b>		100	10	35	-	80	51	-
<b>EM 12x80</b>		100	12	42	-	80	51	-
<b>EM 14x80</b>		100	14	44	-	80	51	-
<b>EM 16x100</b>		100	16	48	-	100	71	-
<b>EM 18x100</b>		100	18	50	-	100	71	-
<b>EM 20x100</b>		100	20	52	-	100	71	-
<b>EM 25x100</b>		100	25	65	-	100	71	-
<b>EM 32x100</b>		100	32	72	-	100	71	-
<b>EM 40x110</b>	100	40	85	-	110	81	-	

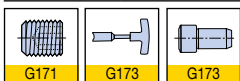


# HSK A-EM-E

End mill holders - Whistle notch



Designation	Dimension (mm)										
	DCONMS	DCONWS	BD	BD_2	LPR	LBX	LB	ADJRGA	LSCWS	THID	
<b>HSK A 63</b>	<b>EM 6x80 E</b>	63	6	25	-	80	54	-	8	40	M5
	<b>EM 8x80 E</b>	63	8	28	-	80	54	-	5	40	M6
	<b>EM 10x80 E</b>	63	10	35	-	80	54	-	5	44	M8
	<b>EM 12x90 E</b>	63	12	42	-	90	64	-	5	49	M10
	<b>EM 14x90 E</b>	63	14	44	-	90	64	-	5	49	M10
	<b>EM 16x100 E</b>	63	16	48	-	100	74	-	5	52	M12
	<b>EM 18x100 E</b>	63	18	50	-	100	74	-	8	55	M12
	<b>EM 20x100 E</b>	63	20	52	-	100	74	-	5	54	M16
	<b>EM 25x110 E</b>	63	25	65	52	110	84	65.5	7	61	M16
<b>EM 32x110 E</b>	63	32	72	52	110	84	65.5	5	63	M20x1.5	
<b>HSK A 100</b>	<b>EM 8x90 E</b>	100	8	28	-	90	61	-	5	40	M6
	<b>EM 12x100 E</b>	100	12	42	-	100	71	-	10	54	M10
	<b>EM 14x100 E</b>	100	14	44	-	100	71	-	10	54	M10
	<b>EM 16x100 E</b>	100	16	48	-	100	71	-	5	52	M12
	<b>EM 18x100 E</b>	100	18	50	-	100	71	-	5	52	M12
	<b>EM 20x110 E</b>	100	20	52	-	110	81	-	5	54	M16
	<b>EM 25x120 E</b>	100	25	65	-	120	91	-	7	61	M20x1.5
	<b>EM 32x120 E</b>	100	32	72	-	120	91	-	5	63	M20x1.5

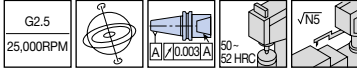
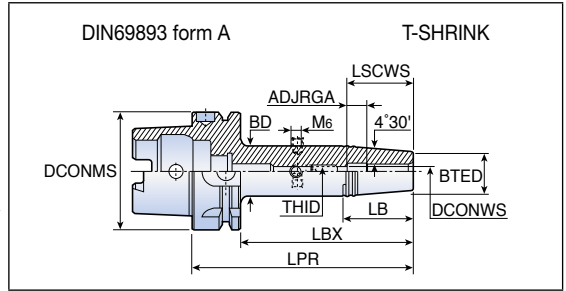




# HSK A-SRKIN

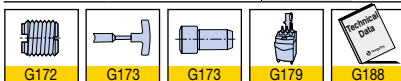


## Thermal shrinking chucks



Designation	Dimension (mm)										
	DCONMS	DCONWS	BTED	BD	LPR	LBX	LB	ADJRGA	LSCWS	THID	Hex key
<b>HSK A 50 SRKIN 6x80</b>	50	6	21	27	80	54	38	11	36	M5	2.5
<b>HSK A 63 SRKIN 6x80</b>	63	6	21	27	80	54	38	11	36	M5	2.5
<b>SRKIN 6x120</b>	63	6	21	27	120	94	38	11	36	M5	2.5
<b>SRKIN 6x160</b>	63	6	21	27	160	134	38	11	36	M5	2.5
<b>SRKIN 8x80</b>	63	8	21	27	80	54	38	11	36	M6	3.0
<b>SRKIN 8x120</b>	63	8	21	27	120	94	38	11	36	M6	3.0
<b>SRKIN 8x160</b>	63	8	21	27	160	134	38	11	36	M6	3.0
<b>SRKIN 10x85</b>	63	10	24	32	85	54	51	11	42	M8	4.0
<b>SRKIN 10x120</b>	63	10	24	32	120	94	51	11	42	M8	4.0
<b>SRKIN 10x160</b>	63	10	24	32	160	134	51	11	42	M8	4.0
<b>SRKIN 12x90</b>	63	12	24	32	90	64	51	6	42	M8	4.0
<b>SRKIN 12x120</b>	63	12	24	32	120	94	51	11	47	M10	5.0
<b>SRKIN 12x160</b>	63	12	24	32	160	134	51	11	47	M10	5.0
<b>SRKIN 14x90</b>	63	14	27	34	90	64	45	11	47	M10	5.0
<b>SRKIN 14x120</b>	63	14	27	34	120	94	45	11	47	M10	5.0
<b>SRKIN 14x160</b>	63	14	27	34	160	134	45	11	47	M10	5.0
<b>SRKIN 16x75</b>	63	16	27	34	75	49	-	11	50	-	-
<b>SRKIN 16x95</b>	63	16	27	34	95	69	44	11	50	M12	6.0
<b>SRKIN 16x120</b>	63	16	27	34	120	94	44	11	50	M12	6.0
<b>SRKIN 16x160</b>	63	16	27	34	160	134	44	11	50	M12	6.0
<b>SRKIN 18x95</b>	63	18	33	42	95	69	57	11	50	M12	6.0
<b>SRKIN 18x120</b>	63	18	33	42	120	94	57	11	50	M12	6.0
<b>SRKIN 18x160</b>	63	18	33	42	160	134	57	11	50	M12	6.0
<b>SRKIN 20x75</b>	63	20	33	41	75	49	-	9	50	-	-
<b>SRKIN 20x100</b>	63	20	33	42	100	74	57	11	52	M16	8.0
<b>SRKIN 20x120</b>	63	20	33	42	120	94	57	11	52	M16	8.0
<b>SRKIN 20x160</b>	63	20	33	42	160	134	57	11	52	M16	8.0
<b>SRKIN 25x85</b>	63	25	44	53	85	59	-	11	58	-	-

► Use only inductive heating device for T-SHRINK holders



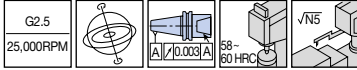
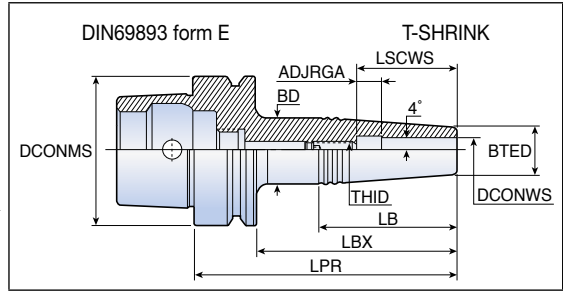




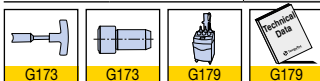
# HSK E-SRK



## Thermal shrinking chucks



Designation	Dimension (mm)										
	DCONMS	DCONWS	BTED	BD	LPR	LBX	LB	ADJRGA	LSCWS	THID	Hex key
<b>HSK E 32 SRK 3x45</b>	32	3	10	13	65	45	30.0	6	16	M4	2.0
<b>SRK 4x45</b>	32	4	10	15	65	45	35.0	6	18	M4	2.0
<b>SRK 6x45</b>	32	6	11	16	65	45	35.0	10	28	M4	2.0
<b>SRK 10x45</b>	32	12	16	22	65	45	42.0	10	40	M4	2.0
<b>HSK E 40 SRK 3x45</b>	40	3	10	13	65	45	30.0	6	16	M5	2.5
<b>SRK 3x80</b>	40	3	10	19	100	80	64.0	6	16	M5	2.5
<b>SRK 4x45</b>	40	4	10	15	65	45	35.0	6	18	M5	2.5
<b>SRK 4x80</b>	40	4	10	19	100	80	64.0	6	18	M5	2.5
<b>SRK 5x45</b>	40	5	10	15	65	45	35.0	10	25	M4	2.0
<b>SRK 5x80</b>	40	5	10	19	100	80	64.0	10	25	M4	2.0
<b>SRK 6x45</b>	40	6	11	16	65	45	35.0	10	28	M5	2.5
<b>SRK 6x80</b>	40	6	11	20	100	80	64.0	10	28	M5	2.5
<b>SRK 8x45</b>	40	8	14	20	65	45	42.0	10	35	M5	2.5
<b>SRK 8x80</b>	40	8	14	23	100	80	64.0	10	35	M6	3.0
<b>SRK 10x45</b>	40	10	16	22	65	45	42.0	10	40	M5	2.5
<b>SRK 10x80</b>	40	10	16	24	100	80	60.0	10	40	M8	4.0
<b>SRK 12x45</b>	40	12	20	26	65	45	42.0	10	42	M5	2.5
<b>SRK 12x80</b>	40	12	20	28	100	80	56.0	10	42	M10	5.0
<b>HSK E 50 SRK 3x45</b>	50	3	10	15	71	45	36.0	6	16	M5	2.5
<b>SRK 3x80</b>	50	3	10	19	106	80	64.0	6	16	M5	2.5
<b>SRK 4x45</b>	50	4	10	15	71	45	36.0	6	18	M5	2.5
<b>SRK 4x80</b>	50	4	10	19	106	80	64.0	6	18	M5	2.5
<b>SRK 6x45</b>	50	6	11	16	71	45	36.0	10	28	M5	2.5
<b>SRK 6x80</b>	50	6	11	20	106	80	64.0	10	28	M5	2.5
<b>SRK 8x45</b>	50	8	14	20	71	45	43.0	10	35	M6	3.0
<b>SRK 8x80</b>	50	8	14	23	106	80	64.0	10	35	M6	3.0
<b>SRK 10x45</b>	50	10	16	22	71	45	42.0	7	37	M6	3.0
<b>SRK 10x80</b>	50	10	16	24	106	80	60.0	10	40	M8	4.0
<b>SRK 12x45</b>	50	12	20	26	71	45	42.0	7	39	M6	3.0











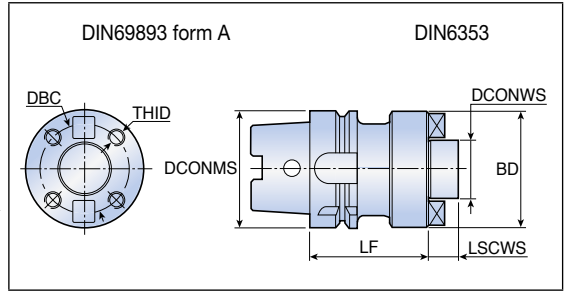
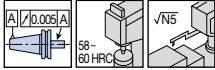






# HSK A-FM

## Face mill arbors

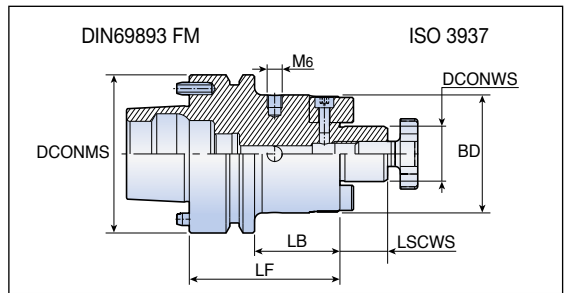
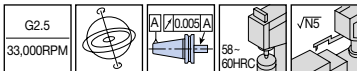


Designation	Dimension (mm)						
	DCONMS	DCONWS	BD	DBC	LF	LSCWS	THID
<b>HSK A 100 FM 60x70</b>	100	60	128	101.6	70	40	M16

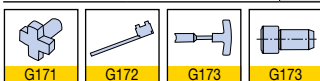
► Wrench not included

# HSK FM-SEM

## Face mill arbors - HSK high torque



Designation	Dimension (mm)					
	DCONMS	DCONWS	BD	LF	LB	LSCWS
<b>HSK FM 63 SEM 22x60</b>	63	22	47	60	34	19



► <sup>(1)</sup> The driving pins can be removed to turn the toolholder into a standard HSK F 63 type









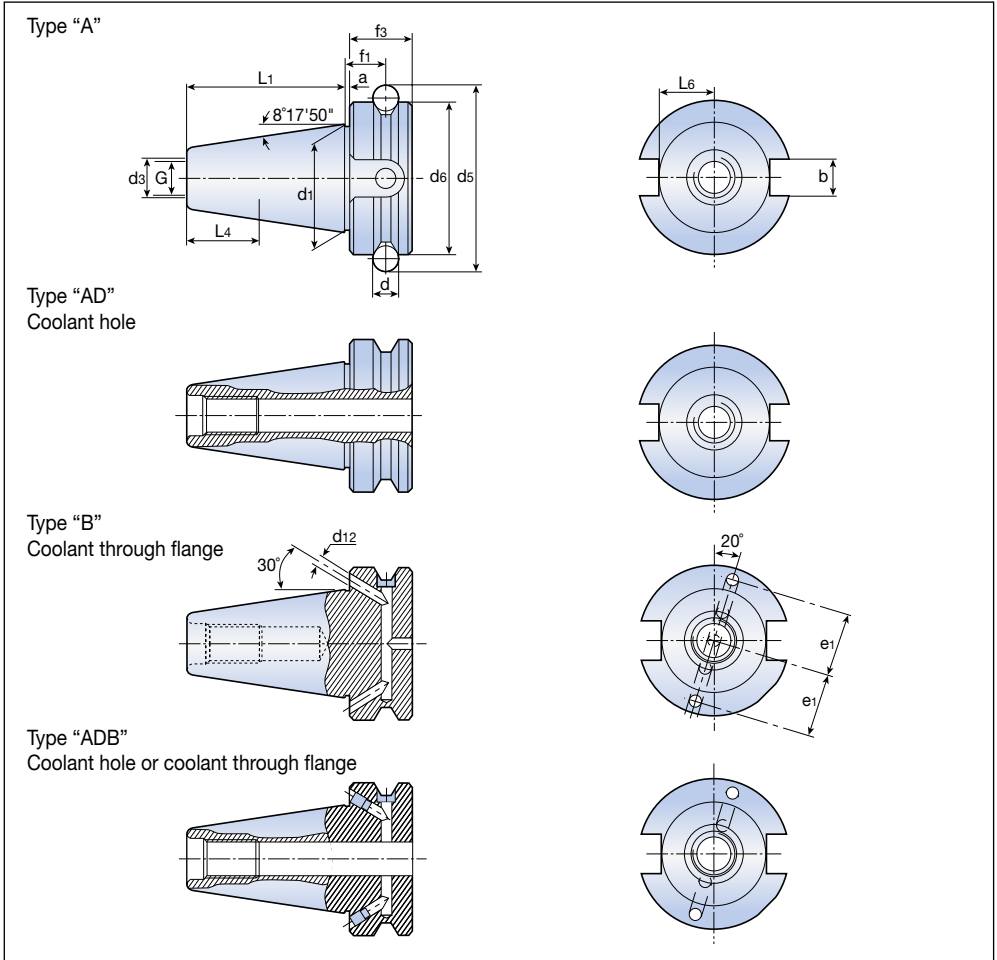
# BT MAS





# BT MAS 403 Form A/AD/B/ADB

## Standard toolholder



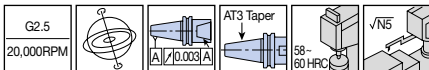
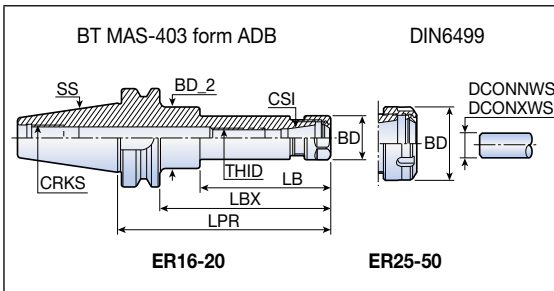
Shank	a ±0.1	b (H12)	d	d1	G	d3 (H8)	d5	d6 (H8)
<b>30</b>	2	16.1	8	31.75	M12	12.5	56.144	46
<b>40</b>	2	16.1	10	44.45	M16	17.0	75.679	63
<b>50</b>	3	25.7	15	69.85	M24	25.0	119.020	100

Shank	f1 ±0.1	f3	L1 ±0.2	L4min	L6 -0.2	e1 ±0.1	d12	Taper AT3
<b>30</b>	13.6	20	48.4	24	16.3	21	4	0.002
<b>40</b>	16.6	25	65.4	30	22.6	27	4	0.003
<b>50</b>	23.2	35	101.8	45	35.4	42	6	0.004

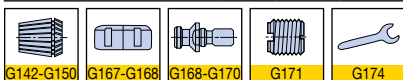
► For non-stock items: Supply condition is subject to availability  
 If not available in stock then MOQ (Minimum order qty) will be applicable

# BT-ER

## ER collet chucks



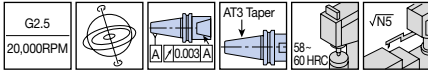
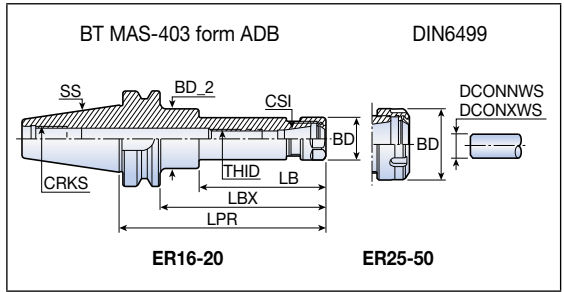
Designation	Dimension (mm)											
	SS	CSI	DCONNWS	DCONXWS	BD	BD_2	LPR	LBX	LB	CRKS	THID	
<b>BT30 ER 16x70<sup>(1)</sup></b>	30	ER16	0.5	10.0	28	-	70	48	-	M12	M10	
<b>ER 16x100<sup>(1)</sup></b>	30	ER16	0.5	10.0	28	-	100	73	-	M12	M10	
<b>ER 20x70<sup>(1)</sup></b>	30	ER20	1.0	13.0	34	-	70	48	-	M12	M12	
<b>ER 25x60<sup>(1)</sup></b>	30	ER25	1.0	16.0	42	-	60	38	-	M12	M16	
<b>ER 32x60<sup>(1)</sup></b>	30	ER32	2.0	20.0	50	-	60	38	-	M12	M18x1.5	
<b>BT40 ER 16x70</b>	40	ER16	0.5	10.0	28	-	70	43	-	M16	M12	
<b>ER 16x100</b>	40	ER16	0.5	10.0	28	-	100	73	-	M16	M12	
<b>ER 16x150<sup>(1)</sup></b>	40	ER16	0.5	10.0	28	40	150	123	85	M16	M12	
<b>ER 16x200<sup>(1)</sup></b>	40	ER16	0.5	10.0	28	40	200	173	85	M16	M10	
<b>ER 20x70</b>	40	ER20	1.0	13.0	34	-	70	43	-	M16	M12	
<b>ER 20x100</b>	40	ER20	1.0	13.0	34	-	100	73	-	M16	M12	
<b>ER 20x120</b>	40	ER20	1.0	13.0	34	-	120	93	-	M16	M12	
<b>ER 20x150<sup>(1)</sup></b>	40	ER20	1.0	13.0	34	-	150	123	-	M16	M12	
<b>ER 25x60</b>	40	ER25	1.0	13.0	42	-	60	33	-	M16	M16	
<b>ER 25x100</b>	40	ER25	1.0	16.0	42	-	100	73	-	M16	M16	
<b>ER 25x150<sup>(1)</sup></b>	40	ER25	1.0	16.0	42	-	150	123	-	M16	M16	
<b>ER 32x60</b>	40	ER32	2.0	20.0	50	-	60	33	-	M16	M22x1.5	
<b>ER 32x100</b>	40	ER32	2.0	20.0	50	-	100	73	-	M16	M22x1.5	
<b>ER 32x150<sup>(1)</sup></b>	40	ER32	2.0	20.0	50	-	150	123	-	M16	M22x1.5	
<b>ER 32x200<sup>(1)</sup></b>	40	ER32	2.0	20.0	50	-	200	162	-	M17	M22x1.6	
<b>ER 40x80</b>	40	ER40	3.0	26.0	63	-	80	53	-	M16	M28x1.5	
<b>ER 40x100</b>	40	ER40	3.0	26.0	63	-	100	73	-	M16	M28x1.5	
<b>ER 40x150<sup>(1)</sup></b>	40	ER40	3.0	26.0	63	-	150	123	-	M16	M28x1.5	
<b>ER 50x90</b>	40	ER50	10.0	34.0	78	-	90	63	-	M16	M28x1.5	
<b>BT50 ER 16x100<sup>(1)</sup></b>	50	ER16	0.5	10.0	28	-	100	62	-	M24	M12	
<b>ER 16x125<sup>(1)</sup></b>	50	ER16	0.5	10.0	28	-	125	87	-	M24	M12	
<b>ER 16x150<sup>(1)</sup></b>	50	ER16	0.5	10.0	28	-	150	112	-	M24	M12	
<b>ER 16x200<sup>(1)</sup></b>	50	ER16	0.5	10.0	28	40	200	162	85	M24	M10	
<b>ER 20x100<sup>(1)</sup></b>	50	ER20	1.0	10.0	34	-	100	62	-	M24	M12	
<b>ER 20x125<sup>(1)</sup></b>	50	ER20	1.0	13.0	34	-	125	87	-	M24	M12	
<b>ER 20x150<sup>(1)</sup></b>	50	ER20	1.0	13.0	34	-	150	112	-	M24	M12	
<b>ER 20x200<sup>(1)</sup></b>	50	ER20	1.0	13.0	34	50	200	162	85	M24	M12	



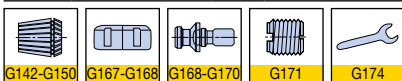
► <sup>(1)</sup> Balance to G6.3 at 12,000RPM

# BT-ER

## ER collet chucks



Designation	Dimension (mm)											
	SS	CSI	DCONNWS	DCONXWS	BD	BD_2	LPR	LBX	LB	CRKS	THID	
<b>BT50 ER 25x100</b>	50	ER25	1.0	16.0	42	-	100	62	-	M24	M16	
<b>ER 25x150</b>	50	ER25	1.0	16.0	42	-	150	112	-	M24	M16	
<b>ER 25x200<sup>(1)</sup></b>	50	ER25	1.0	16.0	42	55	200	162	87	M24	M16	
<b>ER 32x100</b>	50	ER32	2.0	20.0	50	-	100	62	-	M24	M22x1.5	
<b>ER 32x125</b>	50	ER32	2.0	20.0	50	-	125	87	-	M24	M22x1.5	
<b>ER 32x150</b>	50	ER32	2.0	20.0	50	-	150	112	-	M24	M22x1.5	
<b>ER 32x200<sup>(1)</sup></b>	50	ER32	2.0	20.0	50	63	200	162	88	M24	M22x1.5	
<b>ER 40x100</b>	50	ER40	3.0	26.0	63	-	100	62	-	M24	M28x1.5	
<b>ER 40x150</b>	50	ER40	3.0	26.0	63	-	150	112	-	M24	M28x1.5	
<b>ER 40x200<sup>(1)</sup></b>	50	ER40	3.0	26.0	63	-	200	162	-	M24	M28x1.5	
<b>ER 50x100</b>	50	ER50	3.0	26.0	78	-	100	62	-	M24	M36x1.5	
<b>ER 50x150</b>	50	ER50	10.0	34.0	78	-	150	112	-	M24	M36x1.5	



► <sup>(1)</sup> Balance to G6.3 at 12,000RPM

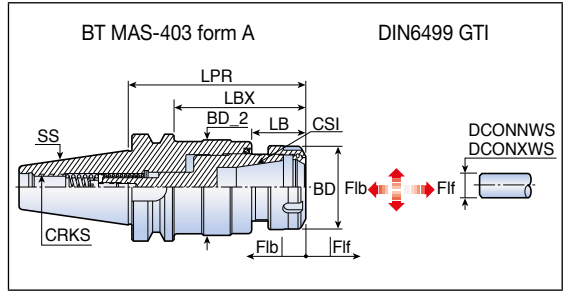
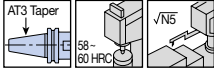






# GTI BT-ER

## GTI tap attachments

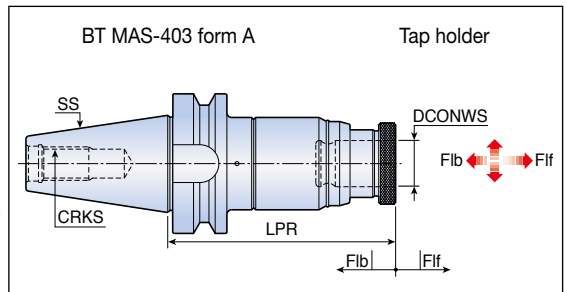
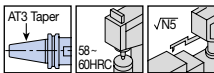


Designation	Dimension (mm)													
	SS	CSI	Tap <sub>min</sub>	Tap <sub>max</sub>	DCONNWS	DCONXWS	BD	BD_2	LPR	LBX	LB	F1f	F2b	CRKS
<b>GTI BT40 ER16</b>	40	ER16	M3	M10	0.5	10.0	28	29.5	84.2	52.7	24.6	8	3	M16
<b>ER32</b>	40	ER32	M6	M20	2.0	20.0	50	56.5	106.8	79.8	33.0	9	4	M16
<b>ER40</b>	40	ER40	M6	M28	3.0	26.0	63	56.5	124.8	97.8	51.0	9	4	M16
<b>GTI BT50 ER16</b>	50	ER16	M3	M10	0.5	10.0	28	29.5	106.8	68.8	24.6	8	3	M24
<b>ER32</b>	50	ER32	M6	M20	2.0	20.0	50	56.5	114.2	77.2	33.0	9	4	M24
<b>ER40</b>	50	ER40	M6	M28	3.0	26.0	63	56.5	133.2	95.2	51.0	9	4	M24

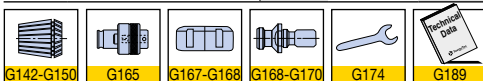
► No coolant should be induced through the tap chuck as it will cause malfunctioning of the mechanism

# BT-TC

## Tap holders



Designation	Dimension (mm)									
	SS	Tap <sub>min</sub>	Tap <sub>max</sub>	DCONWS	LPR	F1b	F1f	Tap adapter	CRKS	
<b>BT30 TC 12-105</b>	30	M3	M12	19	105	6.5	12	TA1	M12	
<b>BT40 TC 12-95</b>	40	M3	M12	19	95	6.5	12	TA1	M16	
<b>TC 12-110</b>	40	M3	M12	19	110	6.5	12	TA1	M16	
<b>TC 22-127</b>	40	M6	M24	31	127	14.5	13	TA2	M16	
<b>BT50 TC 12-125</b>	50	M6	M12	19	125	6.5	12	TA1	M24	
<b>TC 22-142</b>	50	M6	M24	31	142	14.5	13	TA2	M24	
<b>TC 38-195</b>	50	M18	M38	48	195	20.0	20	TA3	M24	



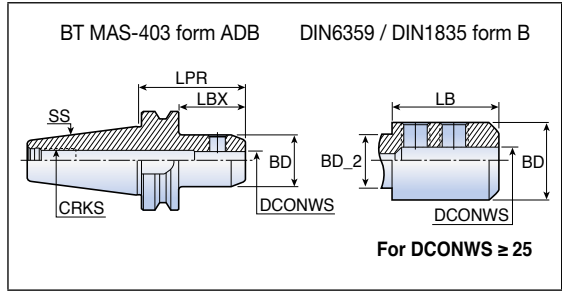
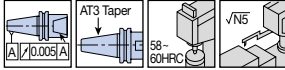




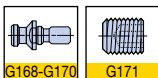


# BT-EM

## End mill holders



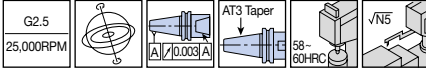
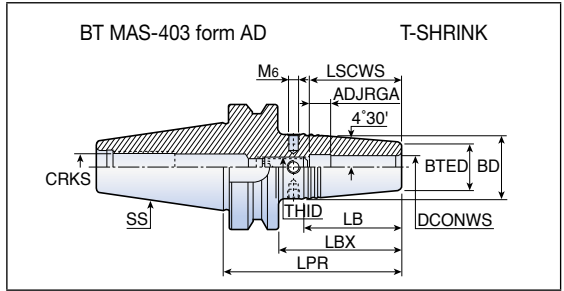
Designation	Dimension (mm)							
	SS	DCONWS	BD	BD_2	LPR	LBX	LB	CRKS
<b>BT30 EM 6x50</b>	30	6	25	-	50	28	-	M12
<b>EM 8x60</b>	30	8	28	-	60	38	-	M12
<b>EM 10x60</b>	30	10	35	-	60	38	-	M12
<b>EM 12x60</b>	30	12	42	-	60	38	-	M12
<b>EM 14x60</b>	30	14	44	-	60	38	-	M12
<b>EM 16x60</b>	30	16	46	-	60	38	-	M12
<b>EM 18x60</b>	30	18	50	-	60	38	-	M12
<b>EM 20x80</b>	30	20	52	-	80	58	-	M12
<b>BT40 EM 6x50</b>	40	6	25	-	50	23	-	M16
<b>EM 8x50</b>	40	8	28	-	50	23	-	M16
<b>EM 10x65</b>	40	10	35	-	65	38	-	M16
<b>EM 12x65</b>	40	12	42	-	65	38	-	M16
<b>EM 14x65</b>	40	14	44	-	65	38	-	M16
<b>EM 16x65</b>	40	16	48	-	65	38	-	M16
<b>EM 18x65</b>	40	18	50	-	65	38	-	M16
<b>EM 20x75</b>	40	20	52	-	75	48	-	M16
<b>EM 25x105</b>	40	25	65	61	105	78	68	M16
<b>EM 32x110</b>	40	32	72	61	110	83	73	M16
<b>BT50 EM 6x70</b>	50	6	25	-	70	32	-	M24
<b>EM 8x70</b>	50	8	28	-	70	32	-	M24
<b>EM 10x70</b>	50	10	35	-	70	32	-	M24
<b>EM 12x100</b>	50	12	42	-	100	62	-	M24
<b>EM 14x100</b>	50	14	44	-	100	62	-	M24
<b>EM 16x100</b>	50	16	48	-	100	62	-	M24
<b>EM 18x100</b>	50	18	50	-	100	62	-	M24
<b>EM 20x100</b>	50	20	52	-	100	62	-	M24
<b>EM 25x115</b>	50	25	65	-	115	77	-	M24
<b>EM 32x115</b>	50	32	72	-	115	77	-	M24
<b>EM 40x115</b>	50	40	90	-	115	77	-	M24
<b>EM 50x125</b>	50	50	100	-	125	87	-	M24



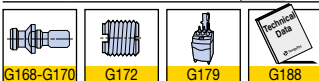




## Thermal shrinking chucks



Designation	Dimension (mm)											
	SS	DCONWS	BTED	BD	LPR	LBX	LB	ADJRGA	LSCWS	CRKS	THID	Hex key
<b>BT40 SRKIN 6x90</b>	40	6	21	27	90	63	38.0	10	36	M16	M5	2.5
<b>SRKIN 8x90</b>	40	8	21	27	90	63	38.0	10	36	M16	M6	3.0
<b>SRKIN 10x90</b>	40	10	24	32	90	63	50.5	10	42	M16	M8	4.0
<b>SRKIN 12x90</b>	40	12	24	32	90	63	50.5	10	47	M16	M10	5.0
<b>SRKIN 14x90</b>	40	14	27	34	90	63	44.5	10	47	M16	M10	5.0
<b>SRKIN 16x90</b>	40	16	27	34	90	63	44.5	10	50	M16	M12	6.0
<b>SRKIN 18x90</b>	40	18	33	42	90	63	57.0	10	50	M16	M12	6.0
<b>SRKIN 20x90</b>	40	20	33	42	90	63	57.0	10	52	M16	M16	8.0
<b>SRKIN 25x110</b>	40	25	44	53	110	83	57.0	10	58	M16	M16	8.0
<b>BT50 SRKIN 6x100<sup>(1)</sup></b>	50	6	21	26	100	62	32.0	10	36	M24	M5	2.5
<b>SRKIN 8x100<sup>(1)</sup></b>	50	8	21	27	100	62	38.0	10	36	M24	M6	3.0
<b>SRKIN 10x100<sup>(1)</sup></b>	50	10	24	32	100	62	51.0	10	42	M24	M8	4.0
<b>SRKIN 12x100<sup>(1)</sup></b>	50	12	24	32	100	62	51.0	10	47	M24	M10	5.0
<b>SRKIN 14x100<sup>(1)</sup></b>	50	14	27	34	100	62	44.5	10	47	M24	M10	5.0
<b>SRKIN 16x100<sup>(1)</sup></b>	50	16	27	34	100	62	44.5	10	50	M24	M12	6.0
<b>SRKIN 18x100<sup>(1)</sup></b>	50	18	33	42	100	62	57.0	10	50	M24	M12	6.0
<b>SRKIN 20x100<sup>(1)</sup></b>	50	20	33	42	100	62	57.0	10	52	M24	M16	8.0
<b>SRKIN 25x120<sup>(1)</sup></b>	50	25	44	53	120	82	57.0	10	58	M24	M16	8.0
<b>SRKIN 32x120<sup>(1)</sup></b>	50	32	44	53	120	82	57.0	10	58	M24	M16	8.0



► <sup>(1)</sup> Balance to G2.5 at 20,000RPM





















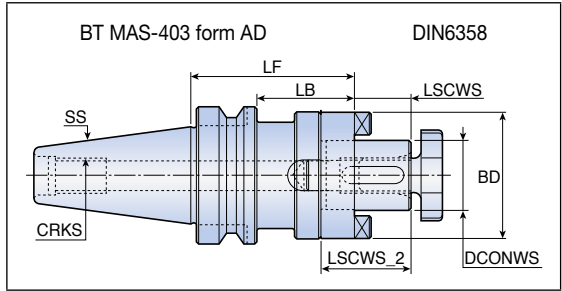
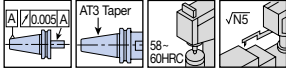




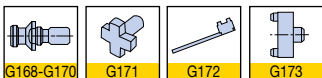


# BT-SEMC

## Combi shell end mill arbors



Designation	Dimension (mm)							
	SS	DCONWS	BD	LF	LB	LSCWS	LSCWS_2	CRKS
<b>BT40 SEMC 16x50</b>	40	16	32	50	23	17	27	M16
<b>SEMC 16x100</b>	40	16	32	100	73	17	27	M16
<b>SEMC 22x53</b>	40	22	40	53	26	19	31	M16
<b>SEMC 22x100</b>	40	22	40	100	73	19	31	M16
<b>SEMC 27x55</b>	40	27	48	55	28	21	33	M16
<b>SEMC 27x100</b>	40	27	48	98	73	21	33	M16
<b>SEMC 32x60</b>	40	32	58	60	33	24	38	M16
<b>SEMC 32x100</b>	40	32	58	100	73	24	38	M16
<b>SEMC 40x80</b>	40	40	70	80	53	27	41	M16
<b>BT50 SEMC 16x100</b>	50	16	32	100	62	17	27	M24
<b>SEMC 16x150</b>	50	16	32	150	112	17	27	M24
<b>SEMC 22x68</b>	50	22	40	68	30	19	31	M24
<b>SEMC 22x100</b>	50	22	40	100	62	19	31	M24
<b>SEMC 22x150</b>	50	22	40	150	112	19	31	M24
<b>SEMC 27x78</b>	50	27	48	78	40	21	33	M24
<b>SEMC 27x100</b>	50	27	48	100	62	21	33	M24
<b>SEMC 27x150</b>	50	27	48	150	112	21	33	M24
<b>SEMC 32x78</b>	50	32	58	78	40	24	38	M24
<b>SEMC 32x100</b>	50	32	58	100	62	24	38	M24
<b>SEMC 32x150</b>	50	32	58	150	112	24	38	M24
<b>SEMC 40x78</b>	50	40	70	78	40	27	41	M24
<b>SEMC 40x100</b>	50	40	70	100	62	27	41	M24
<b>SEMC 40x150</b>	50	40	70	150	112	27	41	M24
<b>SEMC 50x79</b>	50	50	90	79	41	30	46	M24
<b>SEMC 50x150</b>	50	50	90	150	112	30	46	M24



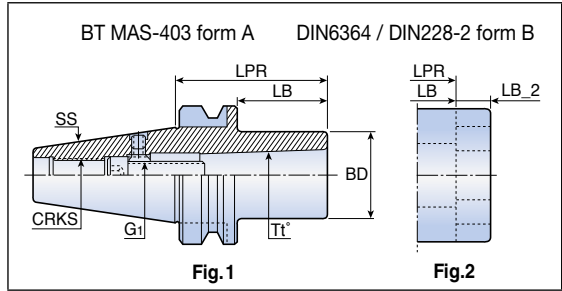
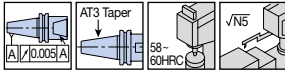
► Wrench not included





# BT-MT-DRW

## Morse taper adapters

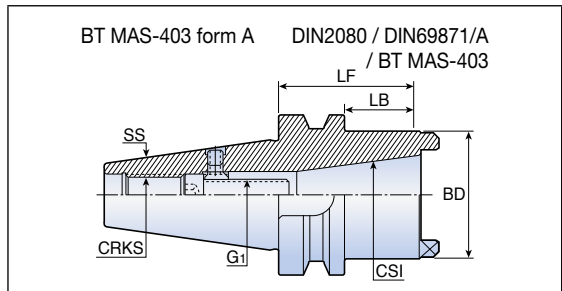
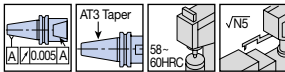


Designation	Dimension (mm)								Fig.
	SS	Tt°	BD	LPR	LB	LB_2	CRKS	G1	
<b>BT40 MT1 DRW</b>	40	MT1	25	50	23	-	M16	M6	1
<b>MT2 DRW</b>	40	MT2	32	50	23	-	M16	M10	1
<b>MT3 DRW</b>	40	MT3	40	70	43	-	M16	M12	1
<b>MT4 DRW<sup>(1)</sup></b>	40	MT4	63	95	68	15	M16	M16	2
<b>BT50 MT1 DRW</b>	50	MT1	25	45	7	-	M24	M6	1
<b>MT2 DRW</b>	50	MT2	32	60	22	-	M24	M10	1
<b>MT3 DRW</b>	50	MT3	40	65	27	-	M24	M12	1
<b>MT4 DRW<sup>(1)</sup></b>	50	MT4	63	70	32	15	M24	M16	2
<b>MT5 DRW<sup>(1)</sup></b>	50	MT5	78	100	62	18	M24	M20	2

▶ <sup>(1)</sup> DIN2201

# BT-AD

## Adapters



Designation	Dimension (mm)						
	SS	CSI	BD	LF	LB	CRKS	G1
<b>BT50 AD 40</b>	50	DIN 2080	63	75	32	M24	M16
<b>AD BT/SK 40</b>	50	DIN 69871/A, BT MAS	66	75	37	M24	M16





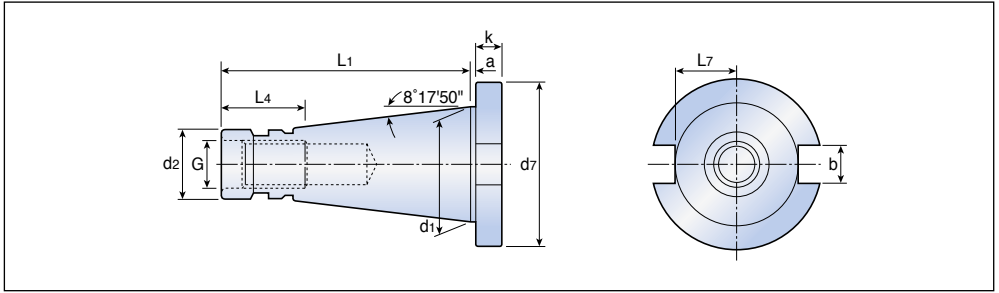


# DIN2080



# DIN2080

## Standard toolholder



Shank	a ±0.2	b (H12)	d1	d2	G	d7	K ±0.15	L1	L4	L7max	Taper AT3
<b>30</b>	1.6	16.1	31.75	17.4	M12	50.0	8	68.4	24	16.2	0.002
<b>40</b>	1.6	16.1	44.45	25.3	M16	63.0	10	93.4	32	22.5	0.003
<b>50</b>	3.2	25.7	69.85	39.6	M24	97.5	12	126.8	47	35.3	0.004

► For non-stock items: Supply condition is subject to availability.  
 If not available in stock then MOQ (Minimum order qty) will be applicable.















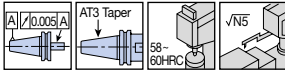
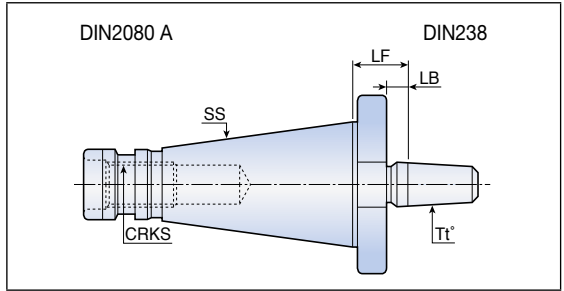






# DIN2080-DC

Drill chuck arbors - Jacobs taper arbors

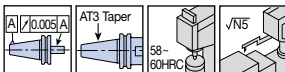
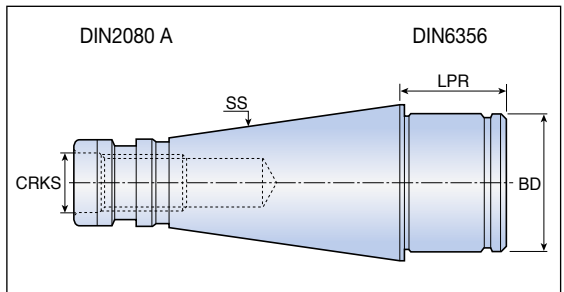


Designation	Dimension (mm)				
	SS	Tt°	LF	LB	CRKS
<b>DIN2080 40 DC B16x22</b>	40	B16	22	10.4	M16

► Drill chuck not included

# DIN2080-CP

Centering plug



Designation	Dimension (mm)			
	SS	BD	LPR	CRKS
<b>DIN2080 50 CP 60</b>	50	60	39	M24

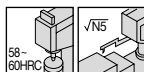
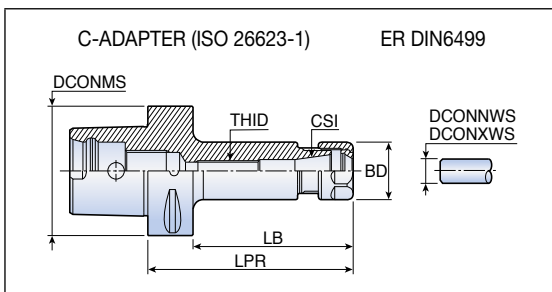
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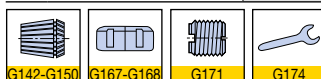


# C-ER

## ER collet chucks



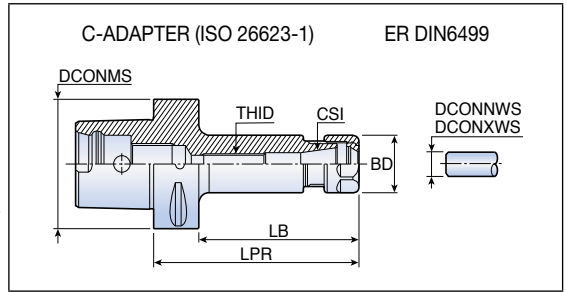
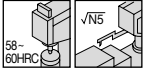
Designation	Dimension (mm)							
	DCONMS	CSI	DCONNWS	DCONXWS	BD	LPR	LB	THID
<b>C4 ER 16x70</b>	40	ER16	1.0	10.0	28	70	50	M10
<b>ER 20x35<sup>(1)</sup></b>	40	ER20	1.0	13.0	34	35	27	-
<b>ER 20x52</b>	40	ER20	1.0	13.0	34	52	32	-
<b>ER 25x38<sup>(1)</sup></b>	40	ER25	1.0	16.0	42	38	30	-
<b>ER 25x52</b>	40	ER25	1.0	16.0	42	52	32	-
<b>ER 32x54</b>	40	ER32	2.0	20.0	50	54	34	-
<b>C5 ER 16x100</b>	50	ER16	1.0	10.0	28	100	80	M10
<b>ER 16x130</b>	50	ER16	1.0	10.0	28	130	110	M10
<b>ER 20x055</b>	50	ER20	1.0	13.0	34	55	35	-
<b>ER 20x100</b>	50	ER20	1.0	13.0	34	100	80	M12
<b>ER 20x130</b>	50	ER20	1.0	13.0	34	130	110	M12
<b>ER 25x055</b>	50	ER25	1.0	16.0	42	55	35	-
<b>ER 25x100</b>	50	ER25	1.0	16.0	42	100	80	M16
<b>ER 32x057</b>	50	ER32	2.0	20.0	50	57	36	-
<b>ER 32x100</b>	50	ER32	2.0	20.0	50	100	80	M22x1.5
<b>C6 ER 16x100</b>	63	ER16	1.0	10.0	28	100	78	M10
<b>ER 16x130</b>	63	ER16	1.0	10.0	28	130	108	M10
<b>ER 16x160</b>	63	ER16	1.0	10.0	28	160	138	M10
<b>ER 20x060</b>	63	ER20	1.0	13.0	34	60	38	-
<b>ER 20x100</b>	63	ER20	1.0	13.0	34	100	78	M12
<b>ER 20x130</b>	63	ER20	1.0	13.0	34	130	108	M12
<b>ER 20x160</b>	63	ER20	1.0	13.0	34	160	138	M12
<b>ER 25x060</b>	63	ER25	1.0	16.0	42	60	38	-
<b>ER 25x100</b>	63	ER25	1.0	16.0	42	100	78	M16
<b>ER 25x130</b>	63	ER25	1.0	16.0	42	130	108	M16
<b>ER 25x160</b>	63	ER25	1.0	16.0	42	160	138	M16
<b>ER 32x060</b>	63	ER32	2.0	20.0	50	60	36	-
<b>ER 32x100</b>	63	ER32	2.0	20.0	50	100	78	M22x1.5
<b>ER 32x130</b>	63	ER32	2.0	20.0	50	130	108	M22x1.5
<b>ER 32x160</b>	63	ER32	2.0	20.0	50	160	138	M22x1.5
<b>ER 40x065</b>	63	ER40	3.0	26.0	63	65	37	-
<b>ER 40x100</b>	63	ER40	3.0	26.0	63	100	78	M28x1.5
<b>ER 40x130</b>	63	ER40	3.0	26.0	63	130	108	M28x1.5



► <sup>(1)</sup> Without V grooves, for manual use only

# C-ER

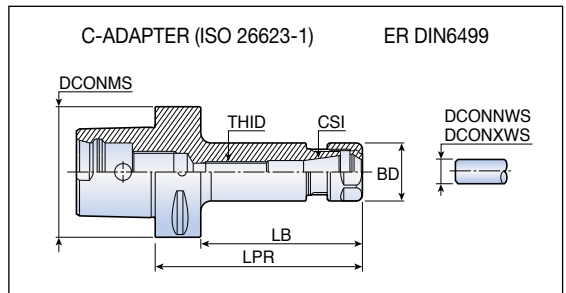
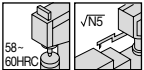
## ER collet chucks



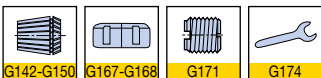
Designation	Dimension (mm)							
	DCONMS	CSI	DCONNWS	DCONXWS	BD	LPR	LB	THID
<b>C8 ER 32x70</b>	80	ER32	2.0	20.0	50	70	40	-
<b>ER 32x100</b>	80	ER32	2.0	20.0	50	100	70	M22x1.5
<b>ER 32x160</b>	80	ER32	2.0	20.0	50	160	130	M22x1.5
<b>ER 40x70</b>	80	ER40	3.0	26.0	63	70	40	-
<b>ER 40x100</b>	80	ER40	3.0	26.0	63	100	70	M28x1.5
<b>ER 40x160</b>	80	ER40	3.0	26.0	63	160	130	M28x1.5

# C-ER-M

## ER mini collet chucks



Designation	Dimension (mm)							
	DCONMS	CSI	DCONNWS	DCONXWS	BD	LPR	LB	THID
<b>C4 ER 16x70 M</b>	40	ER16	0.5	10.0	22	70	50	M10
<b>C5 ER 16x100 M</b>	50	ER16	0.5	10.0	22	100	80	M10
<b>ER 16x130 M</b>	50	ER16	0.5	10.0	22	130	120	M10
<b>C6 ER 16x100 M</b>	63	ER16	0.5	10.0	22	100	78	M10
<b>ER 16x130 M</b>	63	ER16	0.5	10.0	22	130	108	M10
<b>ER 16x160 M</b>	63	ER16	0.5	10.0	22	160	138	M10

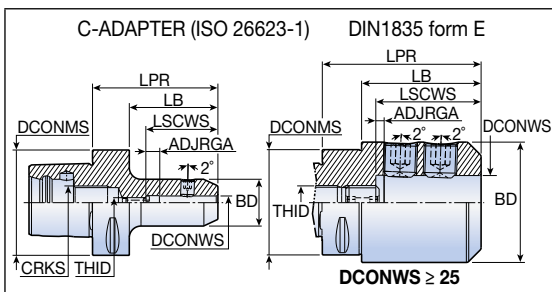
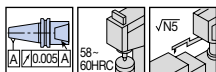






# C-EM-E

## End mill holders - Whistle notch type



Designation	Dimension (mm)								
	DCONMS	DCONWS	BD	LPR	LB	ADJRGA	LSCWS	CRKS	THID
<b>C4 EM 6x70 E</b>	40	6	25	70	50	5	35	M14	M5
<b>EM 8x70 E</b>	40	8	28	70	50	8	43	M14	M6
<b>EM 12x75 E</b>	40	12	42	75	55	5	49	M14	M10
<b>EM 14x75 E</b>	40	14	44	75	55	5	49	M14	M10
<b>C5 EM 10x70 E</b>	50	10	35	70	50	6	45	M16	M8
<b>EM 12x75 E</b>	50	12	42	75	55	5	49	M16	M10
<b>EM 14x75 E</b>	50	14	44	75	55	5	49	M16	M10
<b>EM 16x80 E</b>	50	16	48	80	60	5	52	M16	M12
<b>EM 18x80 E</b>	50	18	50	80	60	5	52	M16	M12
<b>EM 20x85 E</b>	50	20	52	85	65	6	55	M16	M16
<b>C6 EM 6x75 E</b>	63	6	25	75	53	6	36	M20	M5
<b>EM 8x75 E</b>	63	8	28	75	53	8	43	M20	M6
<b>EM 10x75 E</b>	63	10	35	75	53	7	46	M20	M8
<b>EM 12x80 E</b>	63	12	42	80	58	5	49	M20	M10
<b>EM 14x80 E</b>	63	14	44	80	58	5	49	M20	M10
<b>EM 16x85 E</b>	63	16	48	85	63	5	52	M20	M12
<b>EM 18x85 E</b>	63	18	50	85	63	5	52	M20	M12
<b>EM 20x85 E</b>	63	20	52	85	63	6	55	M20	M16
<b>EM 25x90 E</b>	63	25	65	90	68	6	60	M20	M20
<b>EM 32x95 E</b>	63	32	72	95	73	5	63	M20	M20
<b>C8 EM 8x65 E</b>	80	8	28	65	35	8	43	M20	M6
<b>EM 10x65 E</b>	80	10	35	65	35	7	46	M20	M8
<b>EM 12x70 E</b>	80	12	42	70	40	5	49	M20	M10
<b>EM 14x70 E</b>	80	14	44	70	40	5	49	M20	M10
<b>EM 16x75 E</b>	80	16	48	75	45	5	52	M20	M12
<b>EM 18x75 E</b>	80	18	50	75	45	5	52	M20	M12
<b>EM 20x80 E</b>	80	20	52	80	50	8	57	M20	M16
<b>EM 25x90 E</b>	80	25	65	90	60	6	60	M20	M20
<b>EM 32x95 E</b>	80	32	72	95	65	6	64	M20	M20

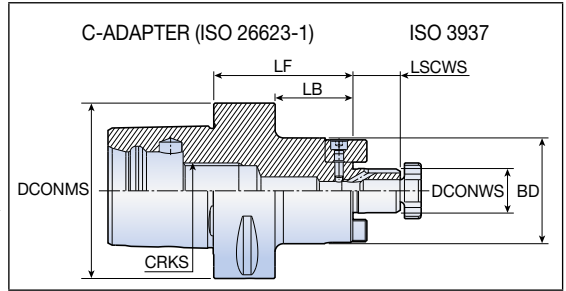
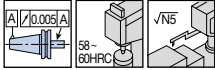


G171

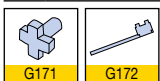


# C-SEM-C

## Face mill arbors



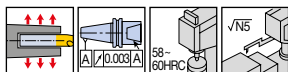
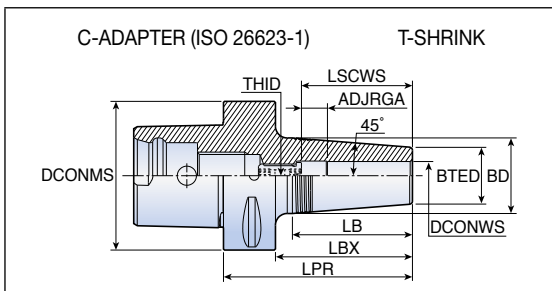
Designation	Dimension (mm)						
	DCONMS	DCONWS	BD	LF	LB	LSCWS	CRKS
<b>C4 SEM 16x32 C</b>	40	16	38	32	12	17	M14
<b>SEM 16x55 C</b>	40	16	38	55	35	17	M14
<b>SEM 22x40 C</b>	40	22	47	40	20	19	M14
<b>SEM 22x55 C</b>	40	22	47	55	35	19	M14
<b>C5 SEM 16x35 C</b>	50	16	38	35	15	17	M16
<b>SEM 16x70 C</b>	50	16	38	70	50	17	M16
<b>SEM 22x35 C</b>	50	22	47	35	15	19	M16
<b>SEM 22x70 C</b>	50	22	47	70	50	19	M16
<b>SEM 27x40 C</b>	50	27	58	40	20	21	M16
<b>SEM 32x40 C</b>	50	32	63	40	20	24	M16
<b>C6 SEM 16x50 C</b>	63	16	38	50	28	17	M20
<b>SEM 16x100 C</b>	63	16	38	100	78	17	M20
<b>SEM 22x50 C</b>	63	22	47	50	28	19	M20
<b>SEM 22x100 C</b>	63	22	47	100	78	19	M20
<b>SEM 27x60 C</b>	63	27	58	60	38	21	M20
<b>SEM 27x100 C</b>	63	27	58	100	78	21	M20
<b>SEM 32x60 C</b>	63	32	66	60	38	24	M20
<b>SEM 40x60 C</b>	63	40	82	60	38	27	M20
<b>C8 SEM 16x50 C</b>	80	16	38	50	20	17	M20
<b>SEM 16x100 C</b>	80	16	38	100	70	17	M20
<b>SEM 22x50 C</b>	80	22	47	50	20	19	M20
<b>SEM 22x100 C</b>	80	22	47	100	70	19	M20
<b>SEM 27x50 C</b>	80	27	58	50	20	21	M20
<b>SEM 27x100 C</b>	80	27	58	100	70	21	M20
<b>SEM 32x50 C</b>	80	32	66	50	20	24	M20
<b>SEM 32x100 C</b>	80	32	66	100	70	24	M20
<b>SEM 40x60 C</b>	80	40	82	60	30	27	M20







## Thermal shrinking chucks



Designation	Dimension (mm)										
	DCONMS	DCONWS	BTED	BD	LPR	LBX	LB	ADJRGA	LSCWS	THID	Hex key
<b>C4 SRKIN 6x75</b>	40	6	21	27	75	55	38.1	11	36	M5	2.5
<b>SRKIN 8x75</b>	40	8	21	27	75	55	38.1	11	36	M6	3.0
<b>SRKIN 10x75</b>	40	10	24	32	75	55	50.8	11	42	M8	4.0
<b>SRKIN 12x75</b>	40	12	24	32	75	55	50.8	11	47	M10	5.0
<b>SRKIN 14x80</b>	40	14	27	34	80	60	44.5	11	47	M10	5.0
<b>SRKIN 16x80</b>	40	16	27	34	80	60	44.5	11	50	M12	6.0
<b>SRKIN 18x80</b>	40	18	33	42	80	60	57.2	11	50	M12	6.0
<b>SRKIN 20x85</b>	40	20	33	42	85	65	57.2	11	52	M16	8.0
<b>C5 SRKIN 6x75</b>	50	6	21	27	75	55	38.1	11	36	M5	2.5
<b>SRKIN 8x75</b>	50	8	21	27	75	55	38.1	11	36	M6	3.0
<b>SRKIN 10x75</b>	50	10	24	32	75	55	50.8	11	42	M8	4.0
<b>SRKIN 12x75</b>	50	12	24	32	75	55	50.8	11	47	M10	5.0
<b>SRKIN 14x80</b>	50	14	27	34	80	60	44.5	11	47	M10	5.0
<b>SRKIN 16x80</b>	50	16	27	34	80	60	44.5	11	50	M12	6.0
<b>SRKIN 18x80</b>	50	18	33	42	80	60	57.2	11	50	M12	6.0
<b>SRKIN 20x85</b>	50	20	33	42	85	65	57.2	11	52	M16	8.0
<b>SRKIN 25x90</b>	50	25	44	53	90	70	57.2	11	58	M16	8.0
<b>C6 SRKIN 6x80</b>	63	6	21	27	80	58	38.1	11	36	M5	2.5
<b>SRKIN 8x80</b>	63	8	21	27	80	58	38.1	11	36	M6	3.0
<b>SRKIN 10x80</b>	63	10	24	32	80	58	50.8	11	42	M8	4.0
<b>SRKIN 12x80</b>	63	12	24	32	80	58	50.8	11	47	M10	5.0
<b>SRKIN 14x85</b>	63	14	27	34	85	63	44.5	11	47	M10	5.0
<b>SRKIN 16x85</b>	63	16	27	34	85	63	44.5	11	50	M12	6.0
<b>SRKIN 18x85</b>	63	18	33	42	85	63	57.2	11	50	M12	6.0
<b>SRKIN 20x85</b>	63	20	33	42	85	63	57.2	11	52	M16	8.0
<b>SRKIN 25x90</b>	63	25	44	53	90	68	57.2	11	58	M16	8.0
<b>SRKIN 32x95</b>	63	32	44	53	95	73	57.2	11	58	M16	8.0







# Straight & Morse Taper Shank







# ST-ER-F

## ER collet chucks

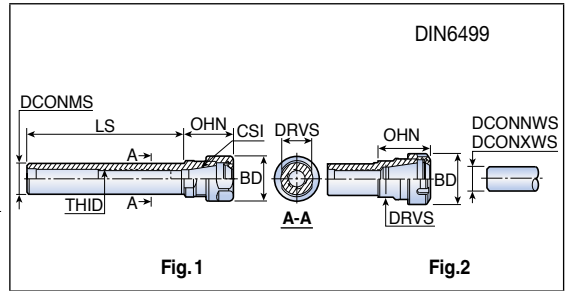
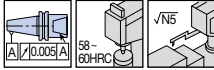
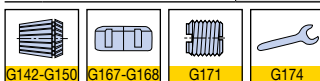


Fig. 1

Fig. 2

Designation	Dimension (mm)									Fig.
	DCONMS	CSI	DCONNWS	DCONXWS	BD	OHN	LS	THID	DRVS	
<b>ST 16x50 ER11 F</b>	16	ER11	0.5	7.0	19	18.5	50	M8	13	1
<b>20x50 ER11 F</b>	20	ER11	0.5	7.0	19	18.5	50	M10	17	1
<b>20x100 ER11</b>	20	ER11	0.5	7.0	19	18.5	100	M10	17	1
<b>20x100 ER11 F</b>	20	ER11	0.5	7.0	19	18.5	100	M10	17	1
<b>20x150 ER11</b>	20	ER11	0.5	7.0	19	18.5	150	M10	17	1
<b>20x50 ER16 F</b>	20	ER16	0.5	10.0	28	32.3	50	M12	19	1
<b>20x100 ER16</b>	20	ER16	0.5	10.0	28	30.0	100	M12	19	1
<b>20x100 ER16 F</b>	20	ER16	0.5	10.0	28	30.0	100	M12	19	1
<b>20x150 ER16</b>	20	ER16	0.5	10.0	28	30.0	150	M12	19	1
<b>20x50 ER20 F</b>	20	ER20	1.0	13.0	34	42.5	50	M12	22	1
<b>25x100 ER20</b>	25	ER20	1.0	13.0	34	36.0	100	M16	22	1
<b>25x150 ER20</b>	25	ER20	1.0	13.0	34	36.0	150	M16	22	1
<b>20x50 ER25 F</b>	20	ER25	1.0	16.0	42	46.0	50	M12	28	2
<b>20x100 ER25</b>	20	ER25	1.0	16.0	42	46.0	100	M12	28	2
<b>20x100 ER25 F</b>	20	ER25	1.0	16.0	42	46.0	100	M12	28	2
<b>25x50 ER25 F</b>	25	ER25	1.0	16.0	42	46.0	50	M16	28	2
<b>25x100 ER25</b>	25	ER25	1.0	16.0	42	46.0	100	M16	28	2
<b>20x50 ER32 F</b>	20	ER32	2.0	20.0	50	54.0	50	M12	36	2
<b>20x100 ER32</b>	20	ER32	2.0	20.0	50	54.0	100	M12	36	2
<b>20x100 ER32 F</b>	20	ER32	2.0	20.0	50	54.0	100	M12	36	2
<b>25x50 ER32 F</b>	25	ER32	2.0	20.0	50	52.0	50	M16x2	36	2
<b>30x50 ER32 F</b>	30	ER32	2.0	20.0	50	52.0	50	M18x1.5	36	2
<b>32x50 ER32 F</b>	32	ER32	2.0	20.0	50	52.0	50	M18x1.5	36	2
<b>32x150 ER32</b>	32	ER32	2.0	20.0	50	52.0	150	M18x1.5	36	2
<b>40x75 ER32 F</b>	40	ER32	2.0	20.0	50	46.0	75	M22x1.5	44	2
<b>25x50 ER40 F</b>	25	ER40	3.0	26.0	63	60.0	50	M16x2	45	2
<b>30x50 ER40 F</b>	32	ER40	3.0	26.0	63	60.0	50	M18x1.5	45	2
<b>32x50 ER40 F</b>	32	ER40	3.0	26.0	63	60.0	50	M18x1.5	45	2
<b>40x75 ER40 F</b>	40	ER40	3.0	26.0	63	55.0	75	M22x1.5	45	2
<b>50x80 ER40 F</b>	50	ER40	3.0	26.0	63	60.0	80	M28x1.5	54	2
<b>50x80 ER50 F</b>	50	ER50	10.0	34.0	78	77.0	80	M36x1.5	58	2



► F: Flat on the shank







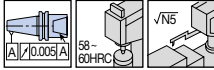
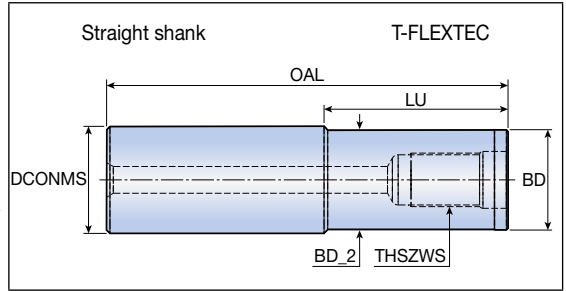




# S M-CT-L (M08/10/12/16)



Carbide T-FLEXTEC shanks with internal coolant hole

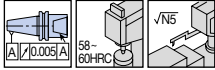
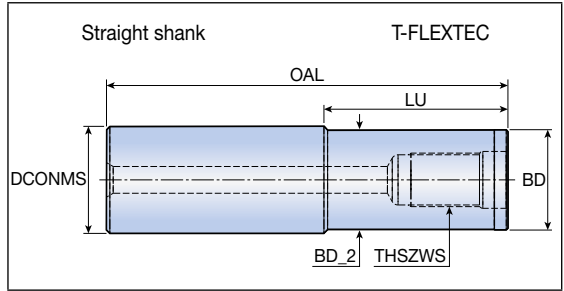


Designation	Dimension (mm)					
	THSZWS	DCONMS	BD	BD_2	OAL	LU
<b>S M08-CT16 - 20-L80</b>	M08	16	15.3	15.3	80	20
<b>40-L100</b>	M08	16	15.3	15.3	100	40
<b>80-L150</b>	M08	16	15.3	15.3	150	80
<b>100-L200</b>	M08	16	13.0	12.5	200	100
<b>140-L200</b>	M08	16	15.3	15.3	200	140
<b>180-L250</b>	M08	16	15.3	15.3	250	180
<b>S M10-CT20 - 20-L80</b>	M10	20	18.5	18.5	80	20
<b>40-L100</b>	M10	20	18.5	18.5	100	40
<b>80-L150</b>	M10	20	18.5	18.5	150	80
<b>100-L200</b>	M10	20	18.5	18.5	200	100
<b>130-L250</b>	M10	20	18.0	17.5	250	130
<b>140-L200</b>	M10	20	18.0	17.5	200	140
<b>140-L200-N</b>	M10	20	18.5	18.5	200	140
<b>180-L250</b>	M10	20	18.0	17.5	250	180
<b>180-L250-N</b>	M10	20	18.5	18.5	250	180
<b>180-L300</b>	M10	20	18.0	17.5	300	180
<b>230-L300</b>	M10	20	18.0	17.5	300	230
<b>S M12-CT25 - 40-L100</b>	M12	25	24	24.0	100	40
<b>80-L150</b>	M12	25	21	20.5	150	80
<b>80-L150-N</b>	M12	25	24	24.0	150	80
<b>100-L200</b>	M12	25	21	20.5	200	100
<b>100-L200-N</b>	M12	25	24	24.0	200	100
<b>130-L250</b>	M12	25	21	20.5	250	130
<b>140-L200</b>	M12	25	21	20.5	200	140
<b>180-L250</b>	M12	25	24	24.0	250	180
<b>180-L250-B</b>	M12	25	21	20.5	250	180
<b>180-L300</b>	M12	25	21	20.5	300	180
<b>180-L300-N</b>	M12	25	24	24.0	300	180
<b>230-L300</b>	M12	25	21	20.5	300	230

# S M-CT-L (M08/10/12/16)



Carbide T-FLEXTEC shanks with internal coolant hole

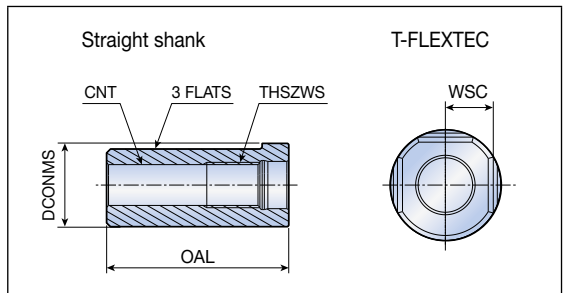


Designation	Dimension (mm)					
	THSZWS	DCONMS	BD	BD_2	OAL	LU
<b>S M16-CT32 - 40-L100</b>	M16	32	29	29.0	100	40
<b>80-L150</b>	M16	32	29	29.0	150	80
<b>100-L200</b>	M16	32	29	29.0	200	100
<b>130-L250</b>	M16	32	29	29.0	250	130
<b>140-L200</b>	M16	32	29	29.0	200	140
<b>180-L250</b>	M16	32	29	29.0	250	180
<b>180-L300</b>	M16	32	29	29.0	300	180
<b>230-L300</b>	M16	32	29	29.0	300	230
<b>230-L350</b>	M16	32	29	29.0	350	230
<b>280-L350</b>	M16	32	29	29.0	350	280

# TFLEX-TCD-M12



T-FLEXTEC shank



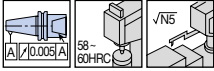
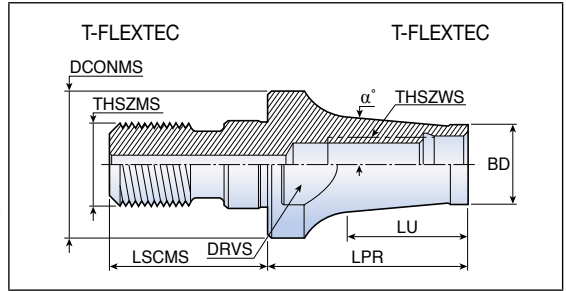
Designation	Dimension (mm)				CNT
	THSZWS	DCONMS	OAL	WSC	
<b>TFLEX 160X36-TCD-M12</b>	M12	16	36	7.5	UNF 5/16
<b>1905X36-TCD-M12</b>	M12	19.05	36	8.5	UNF 5/16
<b>200X36-TCD-M12</b>	M12	20	36	8.5	G 1/8
<b>220X48-TCD-M12</b>	M12	22	48	9.5	G 1/8
<b>250X54-TCD-M12</b>	M12	25	54	11	G 1/8
<b>254X54-TCD-M12</b>	M12	25.4	54	11	G 1/8



# CAB M-M



## Reducers



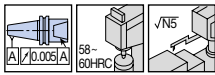
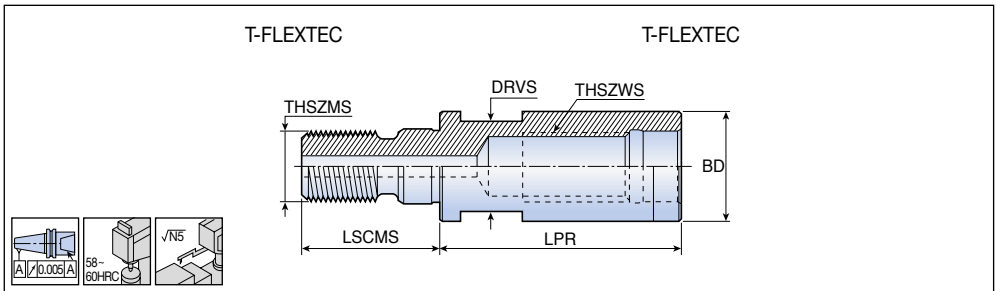
Designation	Dimension (mm)								
	THSZWS	THSZMS	BD	DCONMS	LPR	LSCMS	LU	DRVS	$\alpha^\circ$
<b>CAB M06M08</b>	M06	M08	9.7	13	30	17.5	24.8	9.5	5.7
<b>M08M10</b>	M08	M10	13.0	18	40	20.0	33.4	15.0	5.2
<b>M10M12</b>	M10	M12	18.0	21	45	22.0	36.4	17.0	2.5
<b>M12M16</b>	M12	M16	21.0	29	50	25.0	42.5	25.0	6.3

► With coolant holes

# CAB M-M-C



## Extensions



Designation	Dimension (mm)					
	THSZWS	THSZMS	BD	LPR	LSCMS	DRVS
<b>CAB M08M08-C</b>	M08	M08	13	30	17.5	9.6
<b>M10M10-C</b>	M10	M10	18	35	20.0	15.0
<b>M12M12-C</b>	M12	M12	21	40	22.0	17.0
<b>M16M16-C</b>	M16	M16	29	40	25.0	25.0

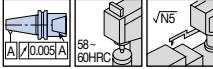
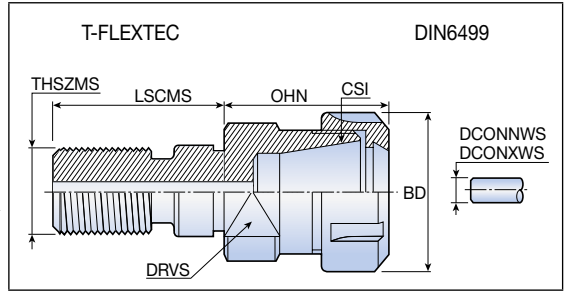
► With coolant holes



# CDP ER-M



Adapters with ER collet chuck



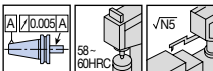
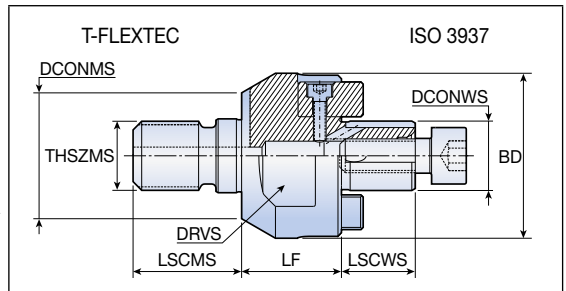
Designation	Dimension (mm)							
	CSI	THSZMS	DCONNWS	DCONXWS	BD	OHN	LSCMS	DRVS
<b>CDP ER11 M10 M</b>	ER11	M10	0.5	7.0	16	27.0	20	15
<b>ER11 M12 M</b>	ER11	M12	0.5	7.0	16	27.0	22	17
<b>ER16 M10 M</b>	ER16	M10	0.5	10.0	22	38.1	20	17
<b>ER16 M12 M</b>	ER16	M12	0.5	10.0	22	37.1	22	17
<b>ER16 M16</b>	ER16	M16	0.5	10.0	28	36.6	25	25
<b>ER20 M16</b>	ER20	M16	1.0	13.0	34	45.5	25	25
<b>ER25 M16</b>	ER25	M16	1.0	16.0	42	44.5	25	28

► With coolant holes

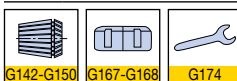
# CAB M-SEM-C



Shell mill arbors



Designation	Dimension (mm)							
	THSZMS	DCONWS	DCONMS	BD	LF	LSCWS	LSCMS	DRVS
<b>CAB M16 SEM 16C</b>	M16	16	29	38	23	17	25	32



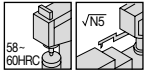
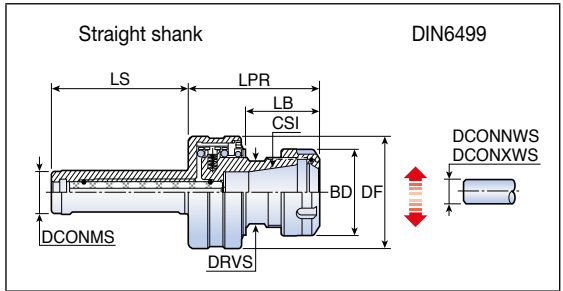
► With coolant holes





# GFI ST-ER

GFI floating reamer ER collet chucks

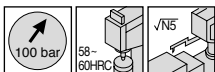
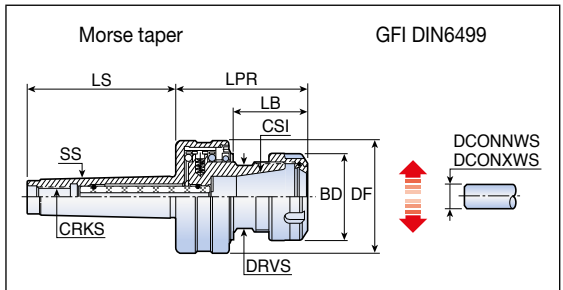


Designation	Dimension (mm)										
	DCONMS	CSI	DCONNWS	DCONXWS	DF	BD	LPR	LB	LS	Radial float	DRVS
<b>GFI ST20 ER20</b>	20	ER20	1.0	13.0	50	34	55.5	34.5	65	1.0	22
<b>ST25 ER32</b>	25	ER32	2.0	20.0	65	50	76.9	45.9	80	1.6	36

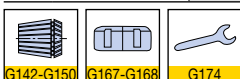
► Max. 2,000RPM

# GFI MT-ER

Morse taper GFI reamer holders



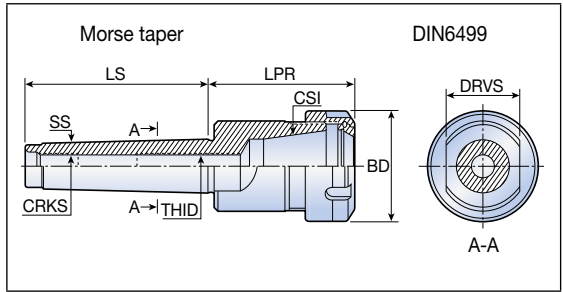
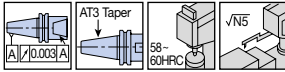
Designation	Dimension (mm)											
	SS	CSI	DCONNWS	DCONXWS	DF	BD	LPR	LB	LS	CRKS	Radial float	DRVS
<b>GFI MT2 ER20</b>	2	ER20	1.0	13.0	50	34	60.5	34.5	64	M10	1.0	22
<b>MT3 ER32</b>	3	ER32	2.0	20.0	65	50	81.9	45.9	81	M12	1.6	36



► Max. 2,000RPM

# MT-ER

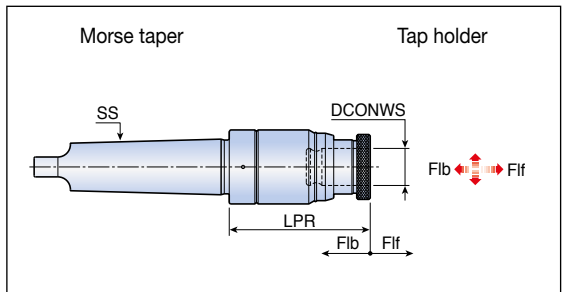
## Morse taper collet chucks



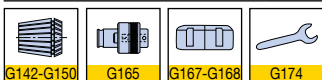
Designation	Dimension (mm)									
	SS	CSI	DCONNWS	DCONXWS	BD	LPR	LS	CRKS	THID	DRVS
<b>MT2 ER 20x48.5</b>	2	ER20	1.0	13.0	34	48.5	64.0	M10	M10	22
<b>ER 25x52</b>	2	ER25	1.0	16.0	42	52.0	64.0	M10	M10	28
<b>MT3 ER 32x69</b>	3	ER32	2.0	20.0	50	69.0	81.0	M12	M12	24
<b>ER 40x79</b>	3	ER40	3.0	26.0	63	79.0	81.0	M12	M12	24
<b>MT4 ER 32x61</b>	4	ER32	2.0	20.0	50	60.5	102.5	M16	M16	32
<b>ER 40x82</b>	4	ER40	3.0	26.0	63	81.5	102.5	M16	M16	32
<b>ER 50x108</b>	4	ER50	10.0	34.0	78	107.5	102.5	M16	M16	32
<b>MT5 ER 40x82</b>	5	ER40	3.0	26.0	63	82.0	129.5	M20	M28x1.5	45
<b>ER 50x85</b>	5	ER50	10.0	34.0	78	85.0	129.5	M20	M28x1.5	45

# MTA-TC

## Tap holders - MTA



Designation	Dimension (mm)							
	SS	Tapmin	Tapmax	DCONWS	LPR	Flb	Flf	Tap adapter
<b>MTA3 TC12-90</b>	12	M3	M12	19	90	6.5	12	TA1
<b>TC22-115</b>	22	M6	M24	31	115	14.5	13	TA2
<b>MTA4 TC12-105</b>	12	M3	M12	19	105	6.5	12	TA1
<b>TC22-115</b>	22	M6	M24	31	115	14.5	13	TA2
<b>MTA5 TC12-145</b>	12	M3	M12	19	145	6.5	12	TA1



# TYPHOON



















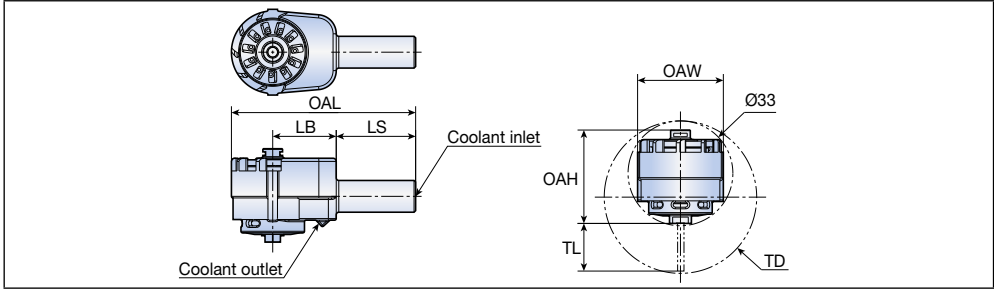






# TJS M90

## Coolant driven high-speed compact angular head spindle



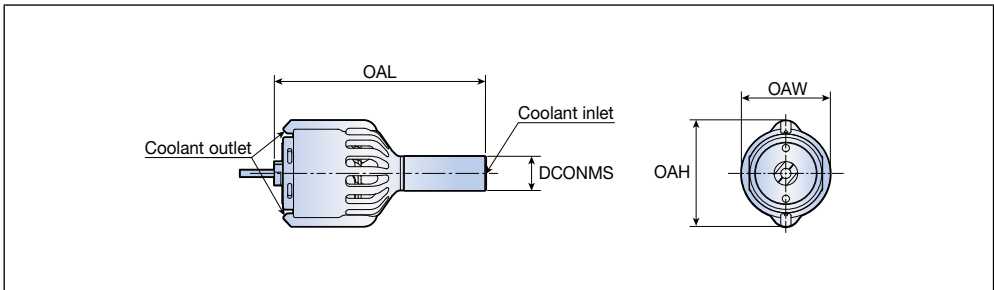
Designation	Dimension (mm)					
	DCONMS	LS	LB	OAL	OAH	OAW
<b>TJS M90-3.0</b>	10	25	20	58	29	27

- ▶ Coolant pressure 20 – 40 bar and flow rate 10 - 20 l/min
- ▶ Rotational spindle speed [rpm]: 35,000–53,000 (rev/min)
- ▶ The spindle provides only external strong coolant jet around the tool

▶ TD: TL (Tool Length)+33 mm

# TJS M00

## Coolant driven high-speed compact spindle



Designation	Dimension (mm)				
	DCONMS	LS	OAL	OAH	OAW
<b>TJS M00-3.0</b>	10	23.8	61.8	26	31

- ▶ Coolant pressure: 15 - 40 bar and flow rate: 10 - 20 l/min
- ▶ Rotational spindle speed [rpm]: 18,000 - 40,000 (rev/min)
- ▶ The spindle provides only external strong coolant jet around the tool

## Spare parts

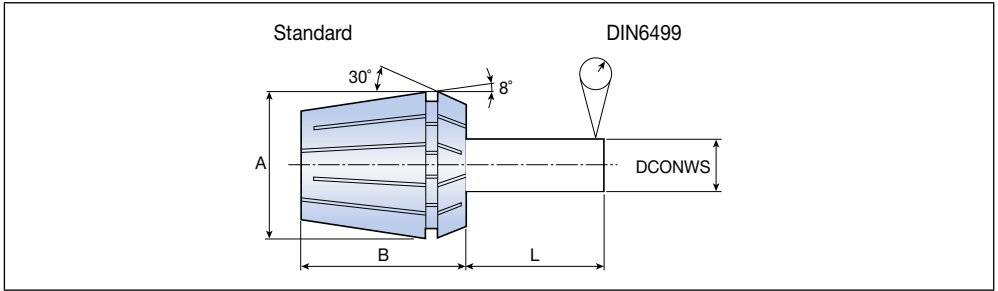
Designation	Ø3 collet	Lock key	Wrench	Nozzle	Collet*
<b>TJS M90-3.0</b>			(1)  (2)		* TJS-COLLET 1.6 * TJS-COLLET 2.0 * TJS-COLLET 3.175
<b>TJS M00-3.0</b>		TJS MJ-SHAFTLOCK	TJS MJ-WRENCH COLLET	TJS MJ-PLUG COOLANT	* TJS-COLLET 1.6 * TJS-COLLET 2.0

- ▶ \*: Optional, sold separately
- ▶ (1): For TJS M90, (2): For TJS M00

# Collet



# Collet



## Precision

(mm)

DCONWS <sub>range</sub>	L	Run-out		
		Standard precision	Ultra precision	DIN6499
<b>1.0-1.6</b>	<b>6</b>	0.01	0.005	-
<b>1.6-3.0</b>	<b>10</b>	0.01	0.005	0.015
<b>3.0-6.0</b>	<b>16</b>	0.01	0.005	0.015
<b>6.0-10.0</b>	<b>25</b>	0.01	0.005	0.015
<b>10.0-18.0</b>	<b>40</b>	0.01	0.005	0.020
<b>18.0-26.0</b>	<b>50</b>	0.01	0.005	0.020
<b>26.0-34</b>	<b>60</b>	-	-	0.025

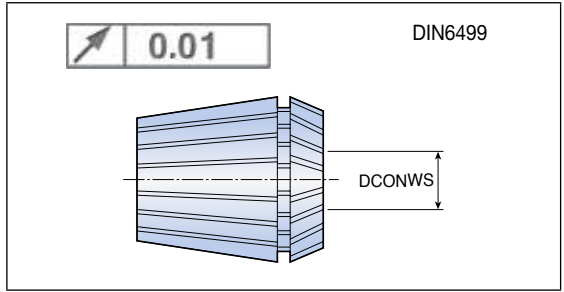
## Dimension

(mm)

Type	A	B
<b>ER11</b>	11.5	18
<b>ER16</b>	17.0	27
<b>ER20</b>	21.0	31
<b>ER25</b>	26.0	35
<b>ER32</b>	33.0	40
<b>ER40</b>	41.0	46
<b>ER50</b>	52.0	60

# ER-SPR

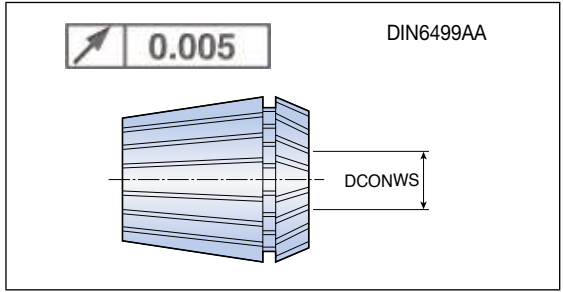
## ER spring collets - Precision



DCONWSrange	ER11	ER16	ER20	ER25	ER32	ER40	ER50
<b>0.5-1</b>	ER11 SPR 0.5-1.0	ER16 SPR 0.5-1					
<b>1-2</b>	<b>1-1.5</b>	1.0-1.5					
	<b>1.5-2</b>	1.5-2.0	1-2 ER20 SPR 1-2	ER25 SPR 1-2			
<b>2-3</b>	<b>2-2.5</b>	2.0-2.5					
	<b>2.5-3</b>	2.5-3.0	2-3	2-3	2-3 ER32 SPR 2-3		
<b>3-4</b>	<b>3-3.5</b>	3.0-3.5					
	<b>3.5-4</b>	3.5-4.0	3-4	3-4	3-4	3-4 ER40 SPR 3-4	
<b>4-5</b>	<b>4-4.5</b>	4.0-4.5					
	<b>4.5-5</b>	4.5-5.0	4-5	4-5	4-5	4-5	4-5
<b>5-6</b>	<b>5-5.5</b>	5.0-5.5					
	<b>5.5-6</b>	5.5-6.0	5-6	5-6	5-6	5-6	5-6
<b>6-7</b>	<b>6-6.5</b>	6.0-6.5					
	<b>6.5-7</b>	6.5-7.0	6-7	6-7	6-7	6-7	6-7
<b>7-8</b>		7-8	7-8	7-8	7-8	7-8	
<b>8-9</b>		8-9	8-9	8-9	8-9	8-9	
<b>9-10</b>		9-10	9-10	9-10	9-10	9-10	
<b>10-11</b>			10-11	10-11	10-11	10-11	ER50 SPR 10-12
<b>11-12</b>			11-12	11-12	11-12	11-12	ER50 SPR 10-12
<b>12-13</b>			12-13	12-13	12-13	12-13	12-14
<b>13-14</b>				13-14	13-14	13-14	12-14
<b>14-15</b>				14-15	14-15	14-15	14-16
<b>15-16</b>				15-16	15-16	15-16	14-16
<b>16-17</b>					16-17	16-17	16-18
<b>17-18</b>					17-18	17-18	16-18
<b>18-19</b>					18-19	18-19	18-20
<b>19-20</b>					19-20	19-20	18-20
<b>20-21</b>						20-21	20-22
<b>21-22</b>						21-22	20-22
<b>22-23</b>						22-23	22-24
<b>23-24</b>						23-24	22-24
<b>24-25</b>						24-25	24-26
<b>25-26</b>						25-26	24-26
<b>26-28</b>							26-28
<b>28-30</b>							28-30
<b>30-32</b>							30-32
<b>32-34</b>							32-34

# ER-SPR-AA

ER spring collets - Ultra precision "AA"



DCONWS <sub>range</sub>		ER11	ER16	ER20	ER25	ER32	ER40
<b>0.5-1</b>		ER11 SPR 0.5-1.0AA	ER16 SPR 0.5-1AA				
<b>1-2</b>	<b>1-1.5</b>	1.0-1.5AA		1-2AA	ER20 SPR 1-2AA	ER25 SPR 1-2AA	
	<b>1.5-2</b>	1.5-2.0AA					
<b>2-3</b>	<b>2-2.5</b>	2.0-2.5AA		2-3AA	2-3AA	2-3AA	ER32 SPR 2-3AA
	<b>2.5-3</b>	2.5-3.0AA	2-3AA				
<b>3-4</b>	<b>3-3.5</b>	3.0-3.5AA		3-4AA	3-4AA	3-4AA	ER40 SPR 3-4AA
	<b>3.5-4</b>	3.5-4.0AA	3-4AA				
<b>4-5</b>	<b>4-4.5</b>	4.0-4.5AA		4-5AA	4-5AA	4-5AA	4-5AA
	<b>4.5-5</b>	4.5-5.0AA	4-5AA				
<b>5-6</b>	<b>5-5.5</b>	5.0-5.5AA		5-6AA	5-6AA	5-6AA	5-6AA
	<b>5.5-6</b>	5.5-6.0AA	5-6AA				
<b>6-7</b>	<b>6-6.5</b>	6.0-6.5AA		6-7AA	6-7AA	6-7AA	6-7AA
	<b>6.5-7</b>	6.5-7.0AA	6-7AA				
<b>7-8</b>			7-8AA	7-8AA	7-8AA	7-8AA	7-8AA
<b>8-9</b>			8-9AA	8-9AA	8-9AA	8-9AA	8-9AA
<b>9-10</b>			9-10AA	9-10AA	9-10AA	9-10AA	9-10AA
<b>10-11</b>				10-11AA	10-11AA	10-11AA	10-11AA
<b>11-12</b>				11-12AA	11-12AA	11-12AA	11-12AA
<b>12-13</b>				12-13AA	12-13AA	12-13AA	12-13AA
<b>13-14</b>					13-14AA	13-14AA	13-14AA
<b>14-15</b>					14-15AA	14-15AA	14-15AA
<b>15-16</b>					15-16AA	15-16AA	15-16AA
<b>16-17</b>						16-17AA	16-17AA
<b>17-18</b>						17-18AA	17-18AA
<b>18-19</b>						18-19AA	18-19AA
<b>19-20</b>						19-20AA	19-20AA
<b>20-21</b>							20-21AA
<b>21-22</b>							21-22AA
<b>22-23</b>							22-23AA
<b>23-24</b>							23-24AA
<b>24-25</b>							24-25AA
<b>25-26</b>							25-26AA

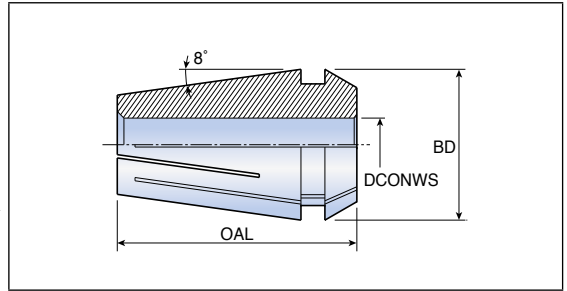






# EROH

## ER collets for internal coolant



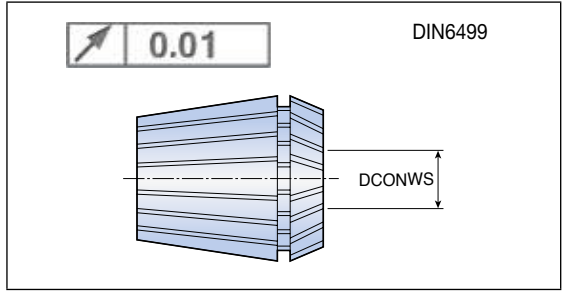
Designation	Dimension (mm)		
	DCONWSrange	BD	OAL
<b>EROH 16</b>	4.0-10.0	17	27.5
<b>EROH 20</b>	6.0-13.0	21	31.5
<b>EROH 25</b>	6.0-16.0	26	34.0
<b>EROH 32</b>	8.0-20.0	33	40.0
<b>EROH 40</b>	10.0-26.0	41	46.0

DCONWS	ER16	ER20	ER25	ER32	ER40
4	EROH 16-4				
5	EROH 16-5				
6	EROH 16-6	EROH 20-6	EROH 25-6		
7	EROH 16-7	EROH 20-7	EROH 25-7		
8	EROH 16-8	EROH 20-8	EROH 25-8	EROH 32-8	
9	EROH 16-9	EROH 20-9	EROH 25-9	EROH 32-9	
10	EROH 16-10	EROH 20-10	EROH 25-10	EROH 32-10	EROH 40-10
11		EROH 20-11	EROH 25-11	EROH 32-11	EROH 40-11
12		EROH 20-12	EROH 25-12	EROH 32-12	EROH 40-12
13		EROH 20-13	EROH 25-13	EROH 32-13	EROH 40-13
14			EROH 25-14	EROH 32-14	EROH 40-14
15			EROH 25-15	EROH 32-15	EROH 40-15
16			EROH 25-16	EROH 32-16	EROH 40-16
17				EROH 32-17	EROH 40-17
18				EROH 32-18	EROH 40-18
19				EROH 32-19	EROH 40-19
20				EROH 32-20	EROH 40-20
21					EROH 40-21
22					EROH 40-22
23					EROH 40-23
24					EROH 40-24
25					EROH 40-25
26					EROH 40-26



# SET ER-SPR

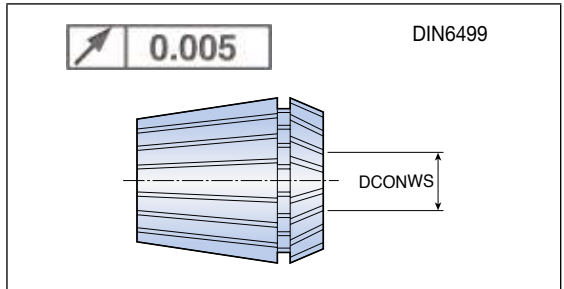
ER spring collet sets



Designation	Pieces / set	DCONWS <sub>range</sub>
<b>SET ER11 SPR 13</b>	13	0.5-7
<b>ER16 SPR 10</b>	10	0.5-10
<b>ER20 SPR 12</b>	12	1-13
<b>ER25 SPR 15</b>	15	1-16
<b>ER32 SPR 18</b>	18	2-20
<b>ER40 SPR 23</b>	23	3-26
<b>ER50 SPR 12</b>	12	10-34

# SET ER-SPR-AA

ER spring collet sets – Ultra precision “AA”

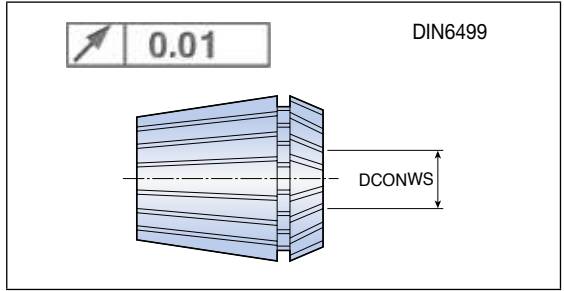


Designation	Pieces / set	DCONWS <sub>range</sub>
<b>SET ER11 SPR 13AA</b>	13	0.5-7
<b>ER16 SPR 10AA</b>	10	0.5-10
<b>ER20 SPR 12AA</b>	12	1-13
<b>ER25 SPR 15AA</b>	15	1-16
<b>ER32 SPR 18AA</b>	18	2-20
<b>ER40 SPR 23AA</b>	23	3-26



# SET ER-SPR-EM

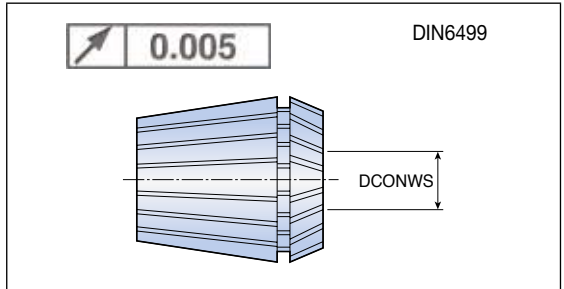
ER spring collet sets



Designation	Pieces / set	DCONWSrange
<b>SET ER16 SPR 7 EM</b>	7	1,2,3,4,5,6,7
<b>ER16 SPR 8 EM</b>	8	3, 4, 5, 6, 7, 8, 9, 10
<b>ER20 SPR 5 EM</b>	5	4, 6, 8, 10, 12
<b>ER25 SPR 6 EM</b>	6	4, 6, 8, 10, 12, 16
<b>ER32 SPR 6 EM</b>	6	6, 8, 10, 12, 16, 20
<b>ER40 SPR 7 EM</b>	7	6, 8, 10, 12, 16, 20, 25

# SET ER-SPR-EM AA

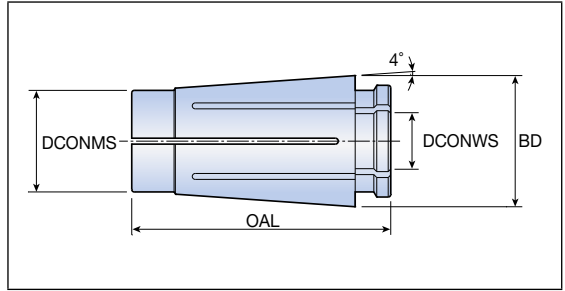
ER spring collet sets – Ultra precision “AA”



Designation	Pieces / set	DCONWSrange
<b>SET ER11 SPR 7 EM AA</b>	7	1,2,3,4,5,6,7

# TSK

## TSK collets



Designation	Dimension (mm)			
	DCONWS <sub>range</sub>	BD	DCONMS	OAL
<b>TSK 06</b>	2.0-6.0	10.4	7.5	25.0
<b>TSK 10</b>	2.0-10.0	15.5	12.0	30.6
<b>TSK 16</b>	3.0-16.0	24.6	18.8	45.0
<b>TSK 25</b>	8.0-25.0	35.7	28.8	57.0

DCONWS <sub>range</sub>	TSK 06	TSK 10	TSK 16	TSK 25
<b>1.5-2.0</b>	TSK 06-2.0	TSK 10-2.0		
<b>2.0-2.5</b>	TSK 06-2.5	TSK 10-2.5		
<b>2.5-3.0</b>	TSK 06-3.0	TSK 10-3.0	TSK 16-3.0	
<b>3.0-3.5</b>	TSK 06-3.5	TSK 10-3.5	TSK 16-3.5	
<b>3.5-4.0</b>	TSK 06-4.0	TSK 10-4.0	TSK 16-4.0	
<b>4.0-4.5</b>	TSK 06-4.5	TSK 10-4.5	TSK 16-4.5	
<b>4.5-5.0</b>	TSK 06-5.0	TSK 10-5.0	TSK 16-5.0	
<b>5.0-5.5</b>	TSK 06-5.5	TSK 10-5.5	TSK 16-5.5	
<b>5.5-6.0</b>	TSK 06-6.0	TSK 10-6.0	TSK 16-6.0	
<b>6.0-6.5</b>		TSK 10-6.5	TSK 16-6.5	
<b>6.5-7.0</b>		TSK 10-7.0	TSK 16-7.0	
<b>7.0-7.5</b>		TSK 10-7.5	TSK 16-7.5	
<b>7.5-8.0</b>		TSK 10-8.0	TSK 16-8.0	TSK 25-8.0
<b>8.0-8.5</b>		TSK 10-8.5	TSK 16-8.5	TSK 25-8.5
<b>8.5-9.0</b>		TSK 10-9.0	TSK 16-9.0	TSK 25-9.0
<b>9.0-9.5</b>		TSK 10-9.5	TSK 16-9.5	TSK 25-9.5
<b>9.5-10.0</b>		TSK 10-10.0	TSK 16-10.0	TSK 25-10.0
<b>10.0-10.5</b>			TSK 16-10.5	TSK 25-10.5
<b>10.5-11.0</b>			TSK 16-11.0	TSK 25-11.0
<b>11.0-11.5</b>			TSK 16-11.5	TSK 25-11.5
<b>11.5-12.0</b>			TSK 16-12.0	TSK 25-12.0
<b>12.0-12.5</b>			TSK 16-12.5	TSK 25-12.5
<b>12.5-13.0</b>			TSK 16-13.0	TSK 25-13.0
<b>13.0-13.5</b>			TSK 16-13.5	TSK 25-13.5
<b>13.5-14.0</b>			TSK 16-14.0	TSK 25-14.0
<b>14.0-14.5</b>			TSK 16-14.5	TSK 25-14.5
<b>14.5-15.0</b>			TSK 16-15.0	TSK 25-15.0
<b>15.0-15.5</b>			TSK 16-15.5	TSK 25-15.5
<b>15.5-16.0</b>			TSK 16-16.0	TSK 25-16.0
<b>16.0-16.5</b>				TSK 25-16.5
<b>16.5-17.0</b>				TSK 25-17.0

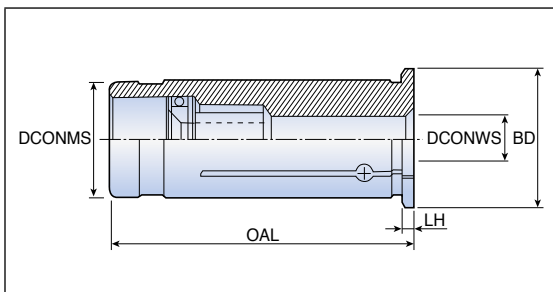






# THC

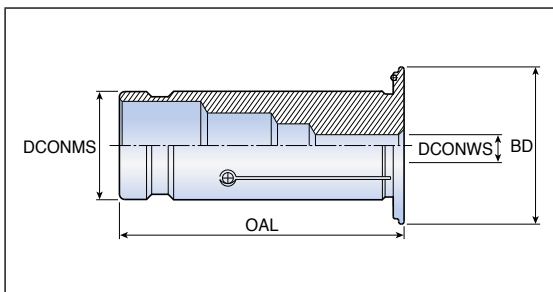
## Straight collets for hydraulic chucks



Designation	Dimension (mm)				
	DCONMS	DCONWS	BD	OAL	LH
<b>THC 12-3</b>	12	3	16	46.5	2
<b>12-4</b>	12	4	16	46.5	2
<b>12-5</b>	12	5	16	46.5	2
<b>12-6</b>	12	6	16	46.5	2
<b>12-7</b>	12	7	16	46.5	2
<b>12-8</b>	12	8	16	46.5	2
<b>12-9</b>	12	9	16	46.5	2
<b>20-3</b>	20	3	24	50.5	2
<b>20-4</b>	20	4	24	50.5	2
<b>20-5</b>	20	5	24	50.5	2
<b>20-6</b>	20	6	24	50.5	2
<b>20-7</b>	20	7	24	50.5	2
<b>20-8</b>	20	8	24	50.5	2
<b>20-9</b>	20	9	24	50.5	2
<b>20-10</b>	20	10	24	50.5	2
<b>20-11</b>	20	11	24	50.5	2
<b>20-12</b>	20	12	24	50.5	2
<b>20-13</b>	20	13	24	50.5	2
<b>20-14</b>	20	14	24	50.5	2
<b>20-15</b>	20	15	24	50.5	2
<b>20-16</b>	20	16	24	50.5	2
<b>20-17</b>	20	17	24	50.5	2
<b>32-6</b>	32	6	36	60.5	3
<b>32-8</b>	32	8	36	60.5	3
<b>32-10</b>	32	10	36	60.5	3
<b>32-12</b>	32	12	36	60.5	3
<b>32-14</b>	32	14	36	60.5	3
<b>32-16</b>	32	16	36	60.5	3
<b>32-18</b>	32	18	36	60.5	3
<b>32-20</b>	32	20	36	60.5	3
<b>32-25</b>	32	25	36	60.5	3

# THC C

## Straight collets of internal coolant type for hydraulic chucks



Designation	Dimension (mm)			
	DCONMS	DCONWS	BD	OAL
<b>THC C12-3</b>	12	3	19	47.0
<b>C12-4</b>	12	4	19	47.0
<b>C12-5</b>	12	5	19	47.0
<b>C12-6</b>	12	6	19	47.0
<b>C12-7</b>	12	7	19	47.0
<b>C12-8</b>	12	8	19	47.0
<b>C20-3</b>	20	3	29	52.5
<b>C20-4</b>	20	4	29	52.5
<b>C20-5</b>	20	5	29	52.5
<b>C20-6</b>	20	6	29	52.5
<b>C20-7</b>	20	7	29	52.5
<b>C20-8</b>	20	8	29	52.5
<b>C20-9</b>	20	9	29	52.5
<b>C20-10</b>	20	10	29	52.5
<b>C20-11</b>	20	11	29	52.5
<b>C20-12</b>	20	12	29	52.5
<b>C20-13</b>	20	13	29	52.5
<b>C20-14</b>	20	14	29	52.5
<b>C20-15</b>	20	15	29	52.5
<b>C20-16</b>	20	16	29	52.5
<b>C20-17</b>	20	17	29	52.5
<b>C32-6</b>	32	6	39	63.5
<b>C32-8</b>	32	8	39	63.5
<b>C32-10</b>	32	10	39	63.5
<b>C32-12</b>	32	12	39	63.5
<b>C32-14</b>	32	14	39	63.5
<b>C32-16</b>	32	16	39	63.5
<b>C32-18</b>	32	18	39	63.5
<b>C32-20</b>	32	20	39	63.5
<b>C32-25</b>	32	25	39	63.5



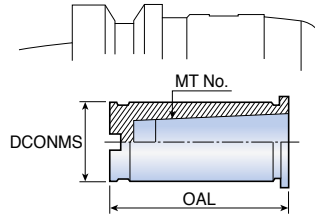


# NCMR

## Collet for milling chucks - Morse taper adapter for milling chuck



NCMR type



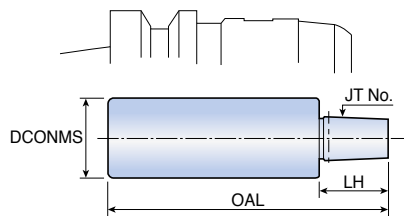
Designation	MT No.	Dimension (mm)		Application chuck
		DCONMS	OAL	
<b>NCMR 32-1</b>	1	32	60	NTMC 32
<b>32-2</b>	2	32	72	NTMC 32
<b>32-3</b>	3	32	90	NTMC 32
<b>42-1</b>	1	42	60	NTMC 42
<b>42-2</b>	2	42	72	NTMC 42
<b>42-3</b>	3	42	90	NTMC 42
<b>42-4</b>	4	42	113	NTMC 42

# CJA

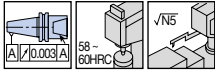
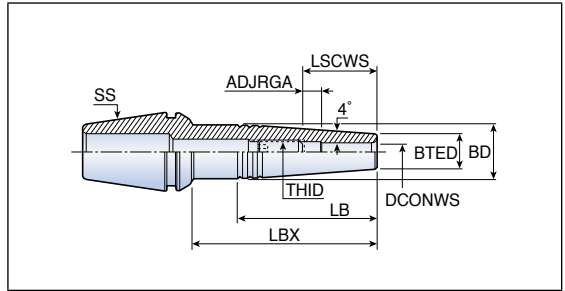
## Collet for milling chucks - Jacobs taper adapter for milling chuck



CJA type

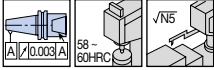
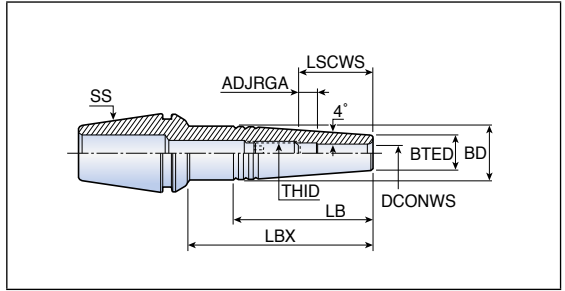


Designation	JT No.	Dimension (mm)			Application chuck
		DCONMS	OAL	LH	
<b>CJA 32-6</b>	6	32	118	28	NTMC 32
<b>42-6</b>	6	42	128	28	NTMC 42



Designation	Dimension (mm)									
	SS	DCONWS	BTED	BD	LBX	LB	ADJRGA	LSCWS	THID	Hex key
<b>ER11 SRK 3x10<sup>(1)</sup></b>	ER11	3	7.6	8.5	10	-	-	10	-	-
<b>SRK 3x25<sup>(1)</sup></b>	ER11	3	7.6	8.5	25	-	-	10	-	-
<b>SRK 4x10<sup>(1)</sup></b>	ER11	4	7.6	8.5	10	-	-	12	-	-
<b>SRK 4x25<sup>(1)</sup></b>	ER11	4	7.6	8.5	25	-	-	12	-	-
<b>ER20 SRK 3x35</b>	ER20	3	10	13.5	35	24.5	6	16	M6	3.0
<b>SRK 3x60</b>	ER20	3	10	13.5	60	24.5	6	16	M6	3.0
<b>SRK 4x35</b>	ER20	4	10	13.5	35	24.5	6	18	M6	3.0
<b>SRK 4x60</b>	ER20	4	10	13.5	60	24.5	6	18	M6	3.0
<b>SRK 5x35</b>	ER20	5	10	13.5	35	24.5	6	21	M6	3.0
<b>SRK 5x60</b>	ER20	5	10	13.5	60	24.5	6	21	M6	3.0
<b>SRK 6x35</b>	ER20	6	11	13.5	35	25.5	6	24	M8	4.0
<b>SRK 6x60</b>	ER20	6	11	13.5	60	29.5	6	24	M8	4.0
<b>ER25 SRK 3x35</b>	ER25	3	10	13.5	35	24.5	6	16	M6	3.0
<b>SRK 3x60</b>	ER25	3	10	16.3	60	44.5	6	16	M6	3.0
<b>SRK 4x35</b>	ER25	4	10	13.5	35	24.5	6	18	M6	3.0
<b>SRK 4x60</b>	ER25	4	10	16.3	60	44.5	6	18	M6	3.0
<b>SRK 5x35</b>	ER25	5	10	13.5	35	24.5	6	21	M6	3.0
<b>SRK 5x60</b>	ER25	5	10	16.3	60	44.5	6	21	M6	3.0
<b>SRK 6x35</b>	ER25	6	11	14.7	35	26.0	6	24	M8	4.0
<b>SRK 6x60</b>	ER25	6	11	17.3	60	44.5	6	24	M8	4.0
<b>SRK 8x35</b>	ER25	8	14	17.8	35	26.5	5	30	M10	5.0
<b>SRK 8x60</b>	ER25	8	14	17.9	60	39.5	6	31	M10	5.0

► <sup>(1)</sup> To be used only for TYPHOON spindles

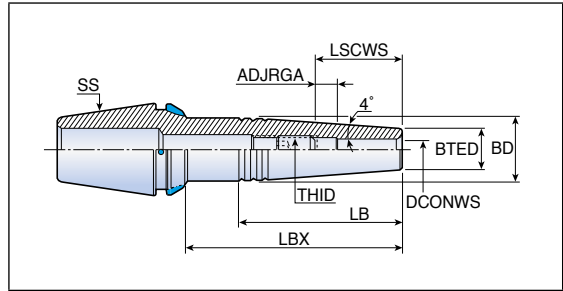


Designation	Dimension (mm)									
	SS	DCONWS	BTED	BD	LBX	LB	ADJRGA	LSCWS	THID	Hex key
<b>ER32 SRK 3x35</b>	ER32	3	10	13.5	35	22.5	6	16	M6	3.0
<b>SRK 3x60</b>	ER32	3	10	16.3	60	44.5	6	16	M6	3.0
<b>SRK 3x85</b>	ER32	3	10	19.8	85	70.0	6	16	M6	3.0
<b>SRK 4x35</b>	ER32	4	10	13.5	35	23.5	6	18	M6	3.0
<b>SRK 4x60</b>	ER32	4	10	16.3	60	44.5	6	18	M6	3.0
<b>SRK 4x85</b>	ER32	4	10	19.8	85	70.0	6	18	M6	3.0
<b>SRK 5x35</b>	ER32	5	10	13.5	35	24.5	6	21	M6	3.0
<b>SRK 5x60</b>	ER32	5	10	16.3	60	44.5	6	21	M6	3.0
<b>SRK 5x85</b>	ER32	5	10	19.8	85	70.0	6	21	M6	3.0
<b>SRK 6x35</b>	ER32	6	11	14.7	35	25.5	6	24	M8	4.0
<b>SRK 6x60</b>	ER32	6	11	17.3	60	45.0	6	24	M8	4.0
<b>SRK 6x85</b>	ER32	6	11	20.8	85	69.5	8	26	M8	4.0
<b>SRK 8x35</b>	ER32	8	14	18.9	35	33.0	6	31	M10	5.0
<b>SRK 8x60</b>	ER32	8	14	20.4	60	45.0	6	31	M10	5.0
<b>SRK 8x85</b>	ER32	8	14	23.2	85	65.0	6	31	M10	5.0
<b>SRK 10x35</b>	ER32	10	16	20.8	35	34.0	5	35	M12	6.0
<b>SRK 10x60</b>	ER32	10	16	22.4	60	44.5	6	36	M12	6.0
<b>SRK 10x85</b>	ER32	10	16	23.0	85	49.5	6	36	M12	6.0
<b>SRK 12x35</b>	ER32	12	20	24.0	35	28.0	-	-	-	-
<b>SRK 12x60</b>	ER32	12	20	24.0	60	28.0	6	38	M14	6.0
<b>SRK 12x85</b>	ER32	12	20	24.0	85	28.0	6	38	M14	6.0

# ER-SRK-JET2



T-SHRINK ER collets DIN6499



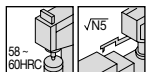
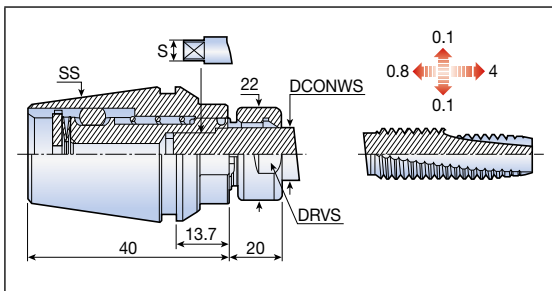
Designation	Dimension (mm)										
	SS	DCONWS	BTED	BD	LBX	LB	ADJRGA	LSCWS	THID	Hex key	
<b>ER20 SRK 3x35 JET2</b>	ER20	3	10	13.5	35	24.5	6	16	M6	3.0	
<b>SRK 4x35 JET2</b>	ER20	4	10	13.5	35	24.5	6	18	M6	3.0	
<b>SRK 5x35 JET2</b>	ER20	5	10	13.5	35	24.5	6	21	M6	3.0	
<b>SRK 6x35 JET2</b>	ER20	6	11	13.5	35	25.5	6	24	M8	4.0	
<b>ER25 SRK 3x35 JET2</b>	ER25	3	10	13.5	35	24.5	6	16	M6	3.0	
<b>SRK 3x60 JET2</b>	ER25	3	10	16.3	60	44.5	6	16	M6	3.0	
<b>SRK 4x35 JET2</b>	ER25	4	10	13.5	35	24.5	6	18	M6	3.0	
<b>SRK 4x60 JET2</b>	ER25	4	10	16.3	60	44.5	6	18	M6	3.0	
<b>SRK 5x35 JET2</b>	ER25	5	10	13.5	35	24.5	6	21	M6	3.0	
<b>SRK 5x60 JET2</b>	ER25	5	10	16.3	60	44.5	6	21	M6	3.0	
<b>SRK 6x35 JET2</b>	ER25	6	11	14.7	35	26.0	6	24	M8	4.0	
<b>SRK 6x60 JET2</b>	ER25	6	11	17.3	60	44.5	6	24	M8	4.0	
<b>SRK 8x35 JET2</b>	ER25	8	14	17.8	35	26.5	5	30	M10	5.0	
<b>SRK 8x60 JET2</b>	ER25	8	14	17.9	60	39.5	6	31	M10	5.0	
<b>ER32 SRK 3x35 JET2</b>	ER32	3	10	13.5	35	22.5	6	16	M6	3.0	
<b>SRK 3x60 JET2</b>	ER32	3	10	16.3	60	44.5	6	16	M6	3.0	
<b>SRK 3x85 JET2</b>	ER32	3	10	19.8	85	70.0	6	16	M6	3.0	
<b>SRK 4x35 JET2</b>	ER32	4	10	13.5	35	23.5	6	18	M6	3.0	
<b>SRK 4x60 JET2</b>	ER32	4	10	16.3	60	44.5	6	18	M6	3.0	
<b>SRK 4x85 JET2</b>	ER32	4	10	19.8	85	70.0	6	18	M6	3.0	
<b>SRK 5x35 JET2</b>	ER32	5	10	13.5	35	24.5	6	21	M6	3.0	
<b>SRK 5x60 JET2</b>	ER32	5	10	16.3	60	44.5	6	21	M6	3.0	
<b>SRK 5x85 JET2</b>	ER32	5	10	19.8	85	70.0	6	21	M6	3.0	
<b>SRK 6x35 JET2</b>	ER32	6	11	14.7	35	25.5	6	24	M8	4.0	
<b>SRK 6x60 JET2</b>	ER32	6	11	17.3	60	45.0	6	24	M8	4.0	
<b>SRK 6x85 JET2</b>	ER32	6	11	20.8	85	69.5	8	26	M8	4.0	
<b>SRK 8x35 JET2</b>	ER32	8	14	18.8	35	33.0	6	31	M10	5.0	
<b>SRK 8x60 JET2</b>	ER32	8	14	20.4	60	45.0	6	31	M10	5.0	
<b>SRK 8x85 JET2</b>	ER32	8	14	23.2	85	65.0	6	31	M10	5.0	
<b>SRK 10x35 JET2</b>	ER32	10	16	20.8	35	34.0	5	35	M12	6.0	
<b>SRK 10x60 JET2</b>	ER32	10	16	22.4	60	44.5	6	36	M12	6.0	
<b>SRK 10x85 JET2</b>	ER32	10	16	23.0	85	49.5	6	36	M12	6.0	
<b>SRK 12x35 JET2</b>	ER32	12	20	24.0	35	28.0	-	-	-	-	
<b>SRK 12x60 JET2</b>	ER32	12	20	24.0	60	28.0	6	38	M14	6.0	
<b>SRK 12x85 JET2</b>	ER32	12	20	24.0	85	28.0	6	38	M14	6.0	





# GTIN ER

## GTIN ER collets



## GTIN ER 32 - DIN 371 / 352

Designation	Dimension (mm)					
	SS	DCONWS	Tap <sub>min</sub>	Tap <sub>max</sub>	S	DRVS
<b>GTIN ER32 DIN 2.50x2.10</b>	ER32	2.5	M1	M1.8	2.1	20
<b>DIN 2.80x2.10</b>	ER32	2.8	M2	M4	2.1	20
<b>DIN 3.50x2.70</b>	ER32	3.5	M3	M5	2.7	20
<b>DIN 4.00x3.00</b>	ER32	4.0	M3.5	M3.5	3.0	20
<b>DIN 4.50x3.40</b>	ER32	4.5	M4	M6	3.4	20
<b>DIN 6.00x4.90</b>	ER32	6.0	M5	M8	4.9	20
<b>DIN 7.00x5.50</b>	ER32	7.0	M7	M10	5.5	20
<b>DIN 8.00x6.20</b>	ER32	8.0	M8	M8	6.2	20
<b>DIN 9.00x7.00</b>	ER32	9.0	M12	M12	7.0	20
<b>DIN 10.00x8.00</b>	ER32	10.0	M10	M10	8.0	20
<b>DIN 11.00x9.00</b>	ER32	11.0	M14	M14	9.0	20
<b>DIN 12.00x9.00</b>	ER32	12.0	M16	M16	9.0	20

## GTIN ER 32 - JIS

Designation	Dimension (mm)					
	SS	DCONWS	Tap <sub>min</sub>	Tap <sub>max</sub>	S	DRVS
<b>GTIN ER32 JIS 3.00x2.50</b>	ER32	3.0	M1	M2.6	2.5	20
<b>JIS 4.00x3.20</b>	ER32	4.0	M3	M3.5	3.2	20
<b>JIS 5.00x4.00</b>	ER32	5.0	M4	M4	4.0	20
<b>JIS 6.00x4.50</b>	ER32	6.0	M6	M6	4.5	20
<b>JIS 6.20x5.00</b>	ER32	6.2	M8	M8	5.0	20
<b>JIS 7.00x5.50</b>	ER32	7.0	M10	M10	5.5	20
<b>JIS 8.50x6.50</b>	ER32	8.5	M12	M12	6.5	20
<b>JIS 10.50x8.00</b>	ER32	10.5	M14	M14	8.0	20
<b>JIS 12.50x10.00</b>	ER32	12.5	M16	M16	10.0	20

► No coolant should be induced through the tap collet, as it will cause malfunctioning of the mechanism



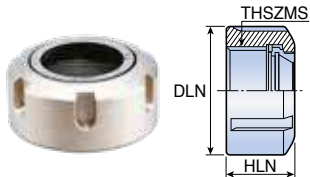


# Accessories



# NUT ER TOP

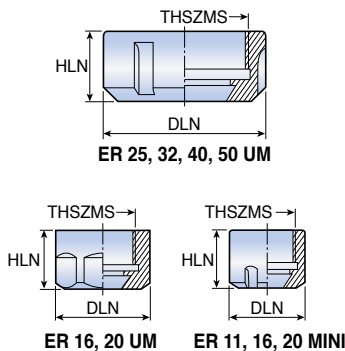
## ER - Top™ clamping nuts



Designation	Dimension (mm)		
	DLN	HLN	THSZMS
<b>NUT ER16 TOP</b>	28	17	M22x1.5
<b>ER20 TOP</b>	34	19	M25x1.5
<b>ER25 TOP</b>	42	20	M32x1.5
<b>ER32 TOP</b>	50	22	M40x1.5
<b>ER40 TOP</b>	63	25	M50x1.5

# NUT ER MINI/UM

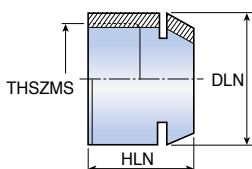
## ER clamping nuts



Designation	Dimension (mm)		
	DLN	HLN	THSZMS
<b>NUT ER11 MINI</b>	16	10.8	M13x0.75
<b>ER11 UM</b>	19	11.3	M14x0.75
<b>ER16 MINI</b>	22	18.0	M19x1.0
<b>ER16 UM</b>	28	17.0	M22x1.5
<b>ER20 MINI</b>	28	19.0	M24x1.0
<b>ER20 UM</b>	34	19.0	M25x1.5
<b>ER25 MINI</b>	35	20.0	M30x1.5
<b>ER25 UM</b>	42	20.0	M32x1.5
<b>ER32 UM</b>	50	22.0	M40x1.5
<b>ER40 UM</b>	63	25.0	M50x1.5
<b>ER50 UM</b>	78	55.0	M64x2.0

# NUT ER11 GHS


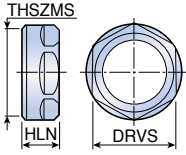
## Tightening nuts



Designation	Dimension (mm)			
	DLN	HLN	THSZMS	Wrench
<b>NUT ER11 GHS</b>	16	11.5	M13x0.75	WRENCH ER11 SMS

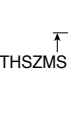
# NUT ER SHORT

## T-SHORT nuts

		Designation	Dimension (mm)		
			DRVS	HLN	THSZMS
		<b>NUT ER20 SHORT</b>	22	10.7	M25x1.5
		<b>ER32 SHORT</b>	36	15.0	M40x1.5
<b>ER40 SHORT</b>	46	16.0	M50x1.5		

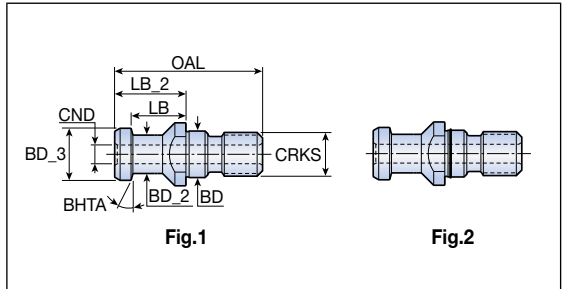
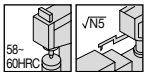
# TSKN

## TSK clamping nuts

	Designation	Dimension (mm)		Fig.
		DLN	THSZMS	
	<b>TSKN 6</b>	20	M15x1.0	1
	<b>10</b>	28	M21.5x1.0	1
	<b>16</b>	40	M32x1.5	2
<b>25</b>	55	M45x1.5	2	

# PS SK-DIN

## Pull studs DIN69872 with JIS63398 retention knob

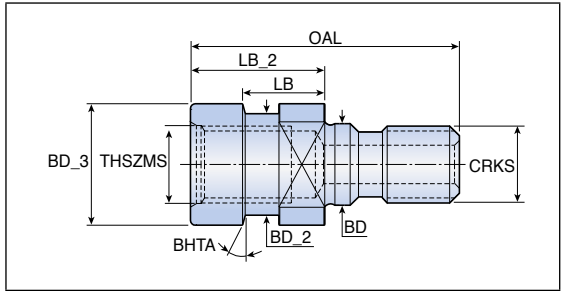


Designation	Dimension (mm)									Fig.
	CRKS	BD	BD_2	BD_3	CND	LB	LB_2	OAL	BHTA	
<b>PS SK30 15 M12 DIN</b>	M12	13	9.0	13.00	-	19.00	24.00	44.0	15	1
<b>PS SK40 15 M16 DIN</b>	M16	17	14.0	19.00	-	20.00	26.00	54.0	15	1
<b>15 M16 DIN O</b>	M16	17	14.0	19.00	-	20.00	26.00	54.0	15	2
<b>15 M16 DIN B</b>	M16	17	14.0	19.00	7.00	20.00	26.00	54.0	15	1
<b>15 M16 DIN OB</b>	M16	17	14.0	19.00	7.00	20.00	26.00	54.0	15	2
<b>PS SK50 15 M24 DIN</b>	M24	25	21.0	28.00	-	25.00	34.00	74.0	15	1
<b>15 M24 DIN O</b>	M24	25	21.0	28.00	-	25.00	34.00	74.0	15	2
<b>15 M24 DIN B</b>	M24	25	21.0	28.00	11.50	25.00	34.00	74.0	15	1

- ▶ Coolant holes only in items with a "B" suffix
- ▶ Fig. 2: With external O-ring

# PS OTT BT/SK

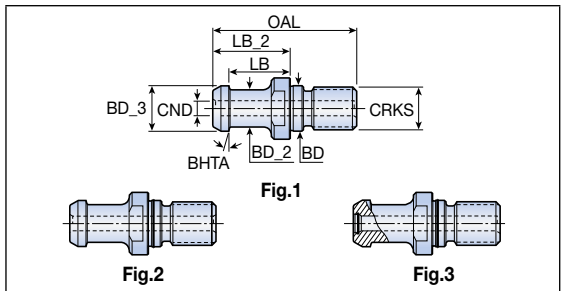
Pull studs OTT system



Designation	Dimension (mm)								
	CRKS	THSZMS	BD	BD_2	BD_3	LB	LB_2	OAL	BHTA
<b>PS OTT BT40 M16</b>	M16	M16	17	21.1	25.0	16.60	28	56	15
<b>BT50 M24</b>	M24	M24	24	32.0	39.3	13.35	25	65	15
<b>SK40 M16</b>	M16	M16	17	21.1	25.0	13.60	25	53	15

# PS BT-JIS/MAZAK

Pull studs BT-JIS 63398 / ANSI-metric for MAZAK machine



Designation	Dimension (mm)									Fig.
	CRKS	BD	BD_2	BD_3	CND	LB	LB_2	OAL	BHTA	
<b>PS BT30 15 M12 JIS B</b>	M12	13	8.00	12.00	4.0	18.40	23.4	43.0	15	1
<b>BT40 15 M16 JIS B</b>	M16	17	14.00	19.00	5.5	23.00	29.0	54.0	15	1
<b>BT40 15 M16 JIS O B</b>	M16	17	14.00	19.00	5.5	23.00	29.0	54.0	15	2
<b>BT40 15 M16 JIS O B O</b>	M16	17	14.00	19.00	5.5	23.00	29.0	54.0	15	3
<b>BT50 15 M24 JIS B</b>	M24	25	21.00	28.00	8.0	25.00	34.0	74.0	15	1
<b>BT50 15 M24 JIS O B</b>	M24	25	21.00	28.00	8.0	25.00	34.0	74.0	15	2
<b>BT40 45 M16 MAZAK B</b>	M16	17	12.45	18.79	7.0	14.02	19.1	44.1	45	1
<b>BT50 45 M24 MAZAK B</b>	M24	25	20.83	28.95	8.0	17.58	25.2	65.2	45	1

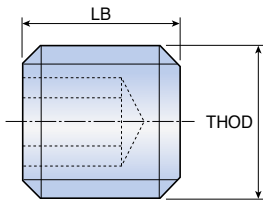
- Fig. 1: Coolant holes only in items with a "B" suffix
- Fig. 2: With external O-ring and coolant hole
- Fig. 3: With external and internal O-rings and coolant hole





# SR-DIN

Lock screw DIN1835 B/E for end mill holders



Designation	Dimension (mm)		
	THOD	LB	Used for shanks
<b>SR M6x10 DIN 1835-B</b>	M6	10	6
<b>M8x10 DIN 1835-B</b>	M8	10	8
<b>M10x12 DIN 1835-B</b>	M10	12	10
<b>M12x16 DIN 1835-B</b>	M12	16	12, 14
<b>M14x16 DIN 1835-B</b>	M14	16	16
<b>M16x16 DIN 1835-B</b>	M16	16	20
<b>M18x2x20 DIN 1835-B</b>	M18x2	20	25
<b>M20x2x20 DIN 1835-B</b>	M20x2	20	32, 40
<b>M24x2x25 DIN 1835-B</b>	M24x2	25	50

# PRESET ER-JET

Preset screw with oil hole for ER collets

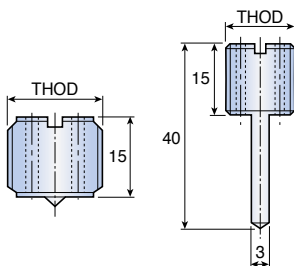


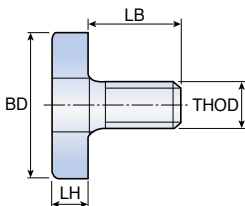
Fig.1

Fig.2

Designation	Dimension (mm)	Fig.
	THOD	
<b>PRESET ER-JET 8x1.25</b>	M8x1.25	1
<b>10x1.5</b>	M10x1.5	1
<b>12x1.75</b>	M12x1.75	1
<b>12x1.75L</b>	M12x1.75	2
<b>16x2</b>	M16x2	1
<b>16x2L</b>	M16x2	2
<b>18x1.5</b>	M18x1.5	1
<b>18x1.5L</b>	M18x1.5	2
<b>22x1.5</b>	M22x1.5	1
<b>22x1.5L</b>	M22x1.5	2
<b>28x1.5</b>	M28x1.5	1

# M-CLAMP SCREW SEM

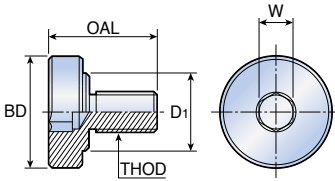
Lock screw DIN6367 for face mill arbors



Designation	Dimension (mm)				
	S.M.C	THOD	BD	LH	LB
<b>M8 CLAMP SCREW SEM 16</b>	16	M8	20	6	16
<b>M10 CLAMP SCREW SEM 22</b>	22	M10	28	7	18
<b>M12 CLAMP SCREW SEM 27</b>	27	M12	35	8	22
<b>M16 CLAMP SCREW SEM 32</b>	32	M16	42	9	26
<b>M20 CLAMP SCREW SEM 40</b>	40	M20	52	10	30
<b>M24 CLAMP SCREW SEM 50</b>	50	M24	63	12	36

# MBA M

## Lock screw for FMA

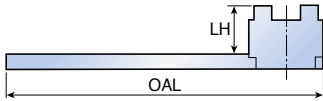


Designation	Dimension (mm)				
	THOD	BD	D1	OAL	W
<b>MBA M8</b>	M8x1.25	20	15	24	6
<b>M10</b>	M10x1.5	28	18	28	8
<b>M12</b>	M12x1.75	33	23	32	10
<b>M16</b>	M16x2.0	40	23	40	14
<b>M20</b>	M20x2.5	50	27	50	17
<b>M24</b>	M24x3.0	65	37	60	19

► Wrench for MBA screw: L-W □□

# WRENCH M-SEMC

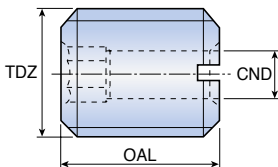
## Wrench DIN6368 for combi shell end mill holders



Designation	Dimension (mm)			
	DRVS	FTDZ	LH	OAL
<b>WRENCH M8 SEMC 16</b>	16	M8	20	180
<b>M10 SEMC 22</b>	22	M10	25	200
<b>M12 SEMC 27</b>	27	M12	32	225
<b>M16 SEMC 32</b>	32	M16	36	250
<b>M20 SEMC 40</b>	40	M20	40	280
<b>M24 SEMC 50</b>	50	M24	50	315

# PRESET SCREW

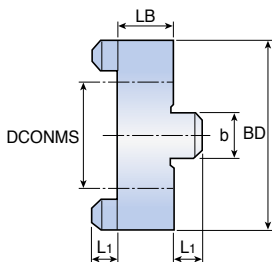
## SRKIN thermal shrink collets



Designation	Dimension (mm)				
	TDZ	OAL	CND	Used for shanks	Hex key
<b>PRESET SCREW M5x18 B</b>	M5	18	2.1	EM E / SRKIN	2.5
<b>M6x20 B</b>	M6	20	2.5	EM E / SRKIN	3.0
<b>M8x20 B</b>	M8	20	3.5	EM E / SRKIN	4.0
<b>M10x18 B</b>	M10	18	4.5	EM E / SRKIN	5.0
<b>M12x18 B</b>	M12	18	5.5	EM E / SRKIN	6.0
<b>M16x20 B</b>	M16	20	7.5	EM E / SRKIN	6.0
<b>M16x25 B</b>	M16	25	7.5	SRKIN	6.0
<b>M20x20 B</b>	M20	20	6.0	EM E	6.0

# D-RING SEMC

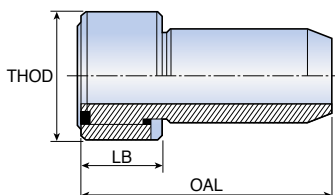
Driving ring DIN6366/1 for combi shell end mill holders



Designation	Dimension (mm)				
	DCONMS	BD	LB	b	L1
<b>16 D - RING SEMC</b>	16	32	10	8	5.0
<b>22 D - RING SEMC</b>	22	40	12	10	5.6
<b>27 D - RING SEMC</b>	27	48	12	12	6.3
<b>32 D - RING SEMC</b>	32	58	14	14	7.0
<b>40 D - RING SEMC</b>	40	70	14	16	8.0
<b>50 D - RING SEMC</b>	50	90	16	18	9.0

# COOLING TUBE HSK A

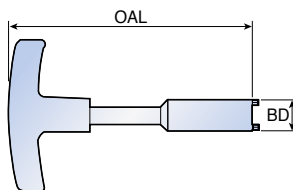
HSK A cooling tube



Designation	Dimension (mm)		
	OAL	LB	THOD
<b>COOLING TUBE HSK A 50</b>	33.0	9.5	M16x1
<b>HSK A 63</b>	36.5	11.5	M18x1
<b>HSK A 80</b>	40.0	13.5	M20x1.5
<b>HSK A 100</b>	44.0	15.5	M24x1.5

# WRENCH COOL TUBE HSK A


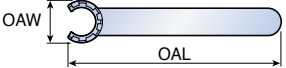
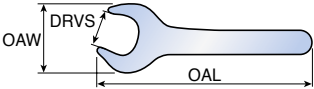
HSK A cooling tube wrench



Designation	Dimension (mm)	
	BD	OAL
<b>WRENCH COOL TUBE HSK A 50</b>	15.0	120
<b>HSK A 63</b>	17.0	122
<b>HSK A 83</b>	18.5	186
<b>HSK A 100</b>	22.0	141

# WRENCH ER-MINI/SHORT

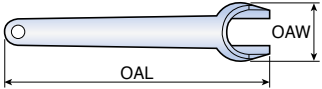
## ER wrench

DIN6499	Designation	Dimension (mm)		
		OAW	DRVS	OAL
 <p>Wrench ER 25, 32, 40, 50</p>	<b>WRENCH ER11 MINI</b>	16.8	-	95
	<b>ER11</b>	32.0	17	95
 <p>Wrench ER 11, 16, 20, 25 MINI</p>	<b>ER16 MINI</b>	22.5	-	117
	<b>ER16</b>	42.8	25	143
 <p>Wrench ER 11, 16, 20, SHORT</p>	<b>ER20 MINI</b>	28.0	-	128
	<b>ER20</b>	53.5	30	172
	<b>ER25 MINI</b>	29.0	-	120
	<b>ER25</b>	70.0	-	207
	<b>ER32</b>	78.0	-	255
	<b>ER40</b>	95.0	-	285
	<b>ER50</b>	110.0	-	350
	<b>ER32 SHORT</b>	75.0	36	303
<b>ER40 SHORT</b>	94.0	46	378	

# WRENCH ER11 SMS

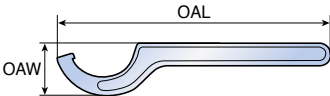


## ER11 Tightening wrench

	Designation	Dimension (mm)	
		OAW	OAL
	<b>WRENCH ER11 SMS</b>	22	100

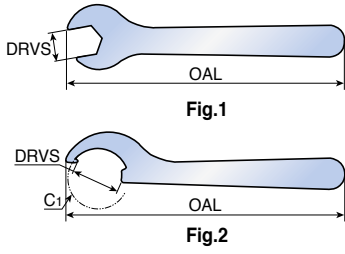
# SPANNER TMC

## NTMC milling chuck wrench

	Designation	Dimension (mm)	
		OAW	OAL
	<b>SPANNER TMC 20</b>	15.8	84.1
	<b>TMC 25</b>	18.1	94.3
	<b>TMC 32</b>	21.7	109.1
	<b>TMC 42</b>	23.2	108.0

# TSKS

## TSK slim chuck wrench

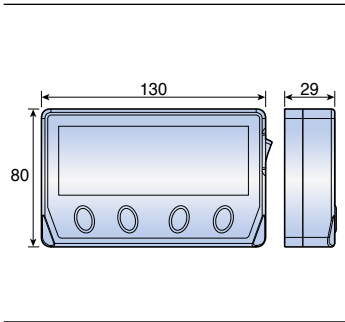


Designation	Dimension (mm)		Fig.
	DRVS	OAL	
<b>TSKS - 6</b>	18.0	174	1
<b>10</b>	25.4	177	1
<b>16</b>	36.0	189	2
<b>25</b>	52.0	228	2

# TJS TSD DISPLAY



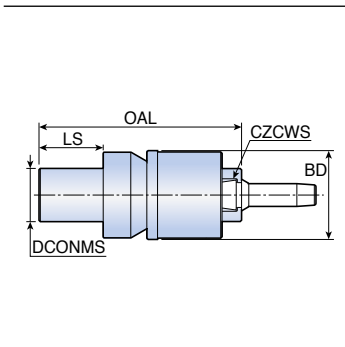
## RPM speed display for TYPHOON high-speed spindles



Designation	Machines
<b>TJS TSD DISPLAY</b>	TTS spindles

# IND ER11 TOOL ADAPTER

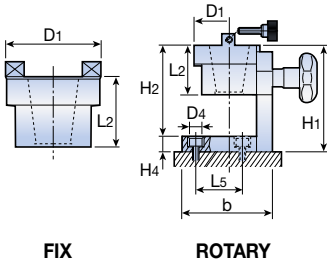
## ER 11 shrink collet adapter for induction heating device



Designation	Dimension (mm)				
	C2CWS	BD	DCONMS	OAL	LS
<b>IND ER11 TOOL ADAPTER</b>	ER11	33.2	19.9	75.7	24

# TOOL CLAMP-ROTARY/FIX

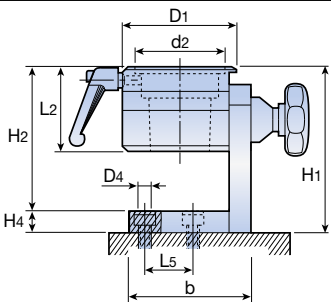
Tool clamp fixture - ISO, DIN69871, BT MAS-403



Designation	Dimension (mm)									
	CSI	b	D1	D4	L2	H1	H2	H4	L5	
<b>TOOL CLAMP 30 ROTARY</b>	ROTARY	104	70	12.5	56	128	109	19	40	
<b>40 ROTARY</b>	ROTARY	104	82	12.5	56	128	109	19	40	
<b>50 ROTARY</b>	ROTARY	144	103	12.5	71	170	151	19	85	
<b>30 FIX</b>	FIX	-	82	-	58	-	-	-	-	
<b>40 FIX</b>	FIX	-	82	-	58	-	-	-	-	
<b>50 FIX</b>	FIX	-	103	-	71	-	-	-	-	

# MULTI CLAMP-A/C

Tool clamp fixture rotary - For HSK shanks

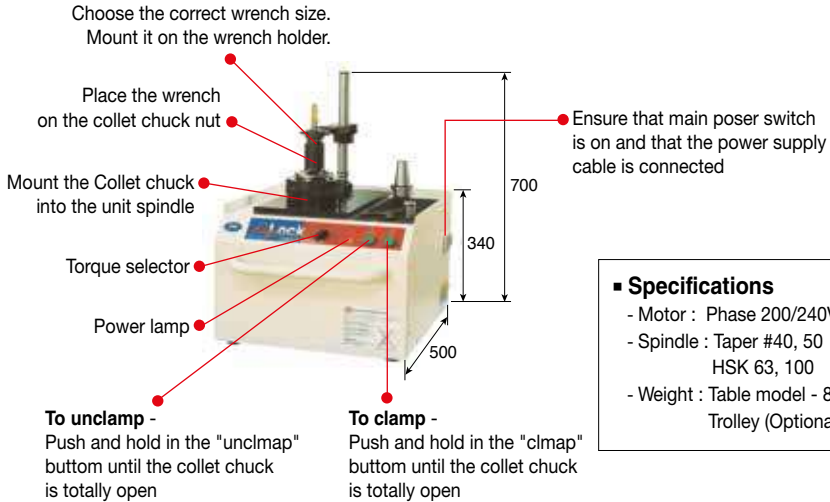


Designation	Dimension (mm)									
	CSI	b	d2	D1	D4	L2	L5	H1	H2	H4
<b>MULTI CLAMP 50 A/C</b>	50	104	50	82	12.5	72	40	142	123	19
<b>63 A/C</b>	63	104	63	95	12.5	72	40	142	123	19
<b>100 A/C</b>	100	144	100	130	12.5	90	85	178	159	19





# EASYLOCK T.C EU

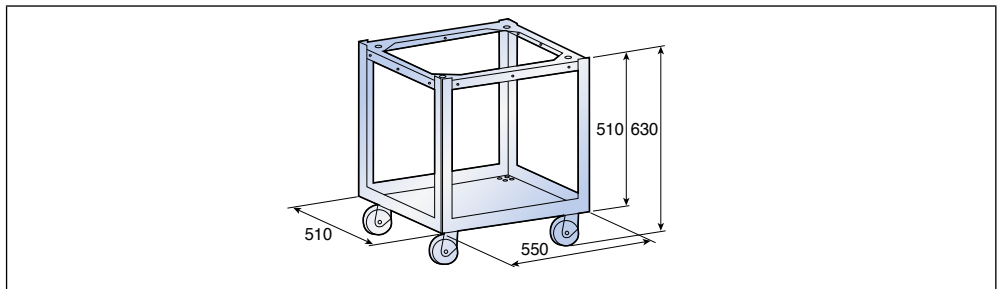


■ Specifications	
- Motor :	Phase 200/240V, 50/60HZ(1HP)
- Spindle :	Taper #40, 50 HSK 63, 100
- Weight :	Table model - 85kg Trolley (Optional) - 15kg

**Note:** Assemble the collet and cutting tools. By hand, place the nut onto the collet chuck.

Designation	TaeguTec No.	Accssories	
		Standard	Optional
<b>EASYLOCK T.C EU</b>	4651108	TP50 AD 40 EASY	EASY LOCK TROLLEY
		WRENCH ER16 EASY LOCK	TP40 AD 30 EASY
		WRENCH ER20 EASY LOCK	TP50 AD HSK 63 EASY
		WRENCH ER25 EASY LOCK	TP50 AD HSK 100 EASY
		WRENCH ER32 EASY LOCK	WRENCH ER50 EASY LOCK
		WRENCH ER40 EASY LOCK	WRENCH TG100 OPEN EASY

# EASYLOCK TROLLEY



Designation	TaeguTec No.
<b>EASYLOCK TROLLEY</b>	4651109

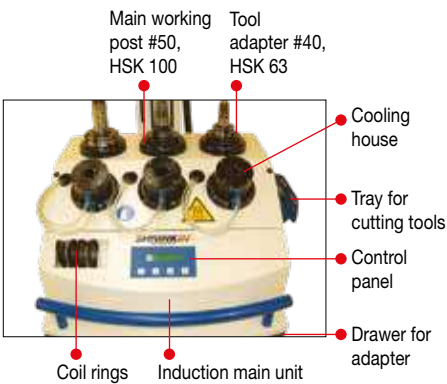
# IND SHRINKIN UNIT EUR



## Induction heating units



Technical specifications		
Clamping range	3-32mm	Carbide tool shank
Clamping range	6-32mm	
Main power supply	3x380 - 500V 50/60Hz	
Nominal power	13kW	
Nominal current	16 AMP	
Cooling unit power supply	220V 50Hz	
Nominal power	0.5kW	
Max. tool length	440mm (From gauge line)	
Max. dia. clamping chuck	52mm	
Effective induction field length	45mm	
Expansion time	5-12 seconds	
Cooling time	50-90 seconds	
Weight	150kg	
Overall dimensions	170x73x60cm	



INDUCTION starter unit  
4654106 IND SHRINK START UNIT EUR

- One working post without cooling unit

TaeguTec No.	Designation	Includes
<b>4652264</b>	<b>IND SHRINKIN UNIT EUR</b>	Induction unit, cooling unit, trolley, three tool adapters

Cooling sleeves	Used for
<b>IND COOLING COLLET 6-8</b>	SRKIN
<b>10-12</b>	SRKIN
<b>14-16</b>	SRKIN
<b>18-20</b>	SRKIN
<b>ER 3-5</b>	SRK
<b>ER 6</b>	SRK
<b>ER 8</b>	SRK
<b>ER 10</b>	SRK
<b>ER 12</b>	SRK

Optional tool adapter for HSK
<b>IND 32 HSK TOOL ADAPTER</b>
<b>40 HSK TOOL ADAPTER</b>
<b>50 HSK TOOL ADAPTER<sup>(1)</sup></b>
<b>63 HSK TOOL ADAPTER</b>
<b>80 HSK TOOL ADAPTER</b>

- <sup>(1)</sup> For taper #30

# Technical Data

## ► ER-SEAL collet

### ■ Application

ER collets are used for applications requiring through coolant, as well as for standard cutting tools such as drills, boring bars, end mills, reamers, taps and special tools.

They provide an effective solution for accurate controlled coolant flow.

Front sealing collets are available for advanced high speed machines with through coolant spindles/turrets.

They provide maximum performance, high cutting speeds, extended tool life and high quality surface finish.

### ■ Features

- A revolutionary high precision front sealing collet with 1.00mm collapsibility that has through coolant capability
- Increased machining efficiency
- Extended tool life
- Has powerful gripping and parallel clamping
- Front sealing provides protection from contamination
- Fast chip removal from work piece

### ■ Advantages

- High-pressure coolant supply up to 100 bar
- Eliminates coolant flow interference

### ■ Notes

- For maximum security and clamping power, the cutting tool shank must be inserted into the collet to a minimum depth of 2 x shank diameter
- Suitable for all shank standards

## ► TaeguTec ER coolant sealed collet

### ■ Two types:



Oil hole collet: ER-SEAL

For straight shank cutting tools with internal coolant supply



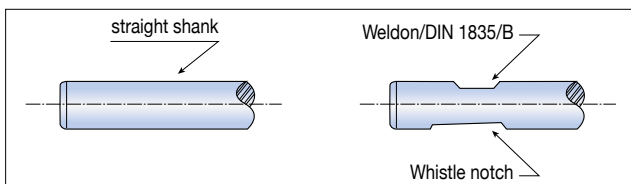
JET2 collet: ER-SEAL-JET

With angular double nozzle.

Coolant flow is direct to the cutting edge

- For use with standard straight shank cutting tools (Without coolant hole)

## ► Shank standards



# Technical Data

## ► ER - Top clamping nut DIN6499

### ■ Description

The friction ER Nut has a unique two piece exclusive friction mechanism combining radial and angular self-centering movements.

### ■ Features

- Unique two piece friction bearing
- Radial and angular float for better concentricity
- Powerful gripping force, 50-100% higher than standard ER nut due to the friction bearing mechanism
- Balanced for higher spindle speed due to unique extractor teeth design
- Compact design: General dimensions and size range are the same as the standard nut sealed design for use with sealed collets.

### ■ Operation

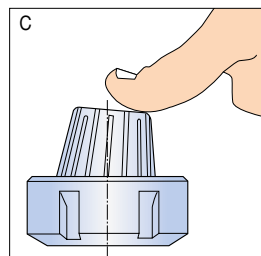
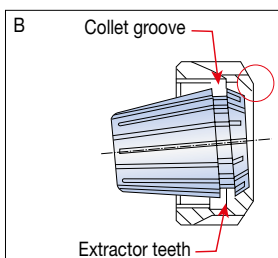
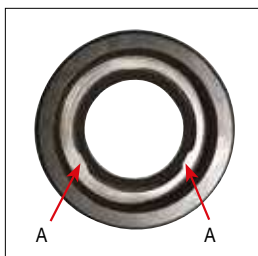
To insert collet: Always assemble the collet into the nut before mounting onto the collet chuck.

### ■ Inserting procedure

Insert the collet slantwise, fitting the two protruding extractor teeth (A) into the collet groove (B).

Place the two parts onto a clean and horizontal surface.

Press down with your thumb on the back end of the collet until it clicks into place (C).



### ■ Important

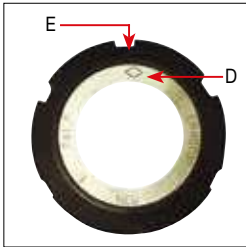
Never insert the collet parallel to the extractor ring. This will chip or break the teeth of the extractor. When unclamping the nut, the collet will self release from the chuck by means of the extractor teeth.

# Technical Data

## ► ER - Top clamping nut DIN6499

### ■ Extracting procedure

- 1 Align the diamond-shaped engraved logo which is on the silver ring (D) to any of the key slots (E) of the nut.
- 2 Place the nut with the collet facing down on a clean and horizontal work surface.
- 3 Insert a screwdriver vertically between the nut slots and the collet - on the reverse side of the diamond shaped engraved logo (D).
- 4 Tilt the screwdriver outwards while helping the extraction by pushing the back of the collet in the opposite direction (F).



### Note:

For maximum performance the clamping nut thread and collet taper must be cleaned and oiled before use.

**Recommended clamping torque for standard ER & ER-Top clamping nut.**

Nut type	Kg x m
ER-11	5
ER-11M	3
ER-16	7
ER-16M	4
ER-20	12
ER-20M	8
ER-25	20
ER-32	22
ER-40	25
ER-50	35

### Important:

The torque is calculated to suit the maximum diameter capacity of each collet. The torque should be gradually reduced when used with a smaller shank size.

# Technical Data

## ▶ TSK slim collet chuck

### ■ Features & advantages

- Excellent accuracy & good gripping power by gentle taper angle (ER collet : 8°, TSK collet : 4°)
- Slim design for deep and cavity machining
- Suitable on high speed machining
- Variety of TSK collets (Normal & coolant type)
- General machining using drill & end mill

### ■ Application

- General machining using drill & end mill
- High speed machining for mold & die industry
- Accurate machining using reamer & end mill

### ■ How to assemble the collet with a nut



a. Assembly device  
(Optional, sold separately)



b. Nut



c. Collet

① Insert the back end of the collet (c) into the assembly device (a)



② Insert the combined part (a+c) in the nut (b)



③ Pluck out the assembly device (a) from the remaining part (b+c)



a. Assembly device

Designation

TSK 06, TSK 10, TSK 16, TSK 25

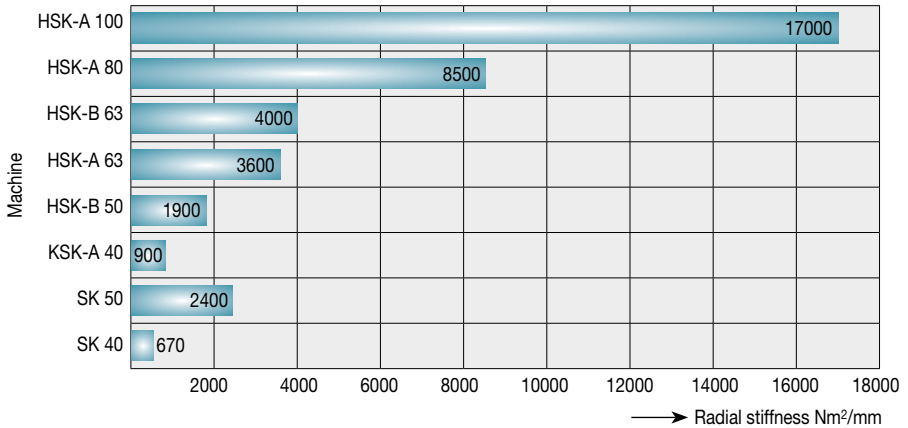
# Technical Data

## ► HSK (DIN69893) system

### ■ Features

- DIN standard
- For high speed machining
- Size: #32, 40, 50, 63, 100
- For A.T.C. & manual machine
- Double face contact
- High stiffness

## ► Radial stiffness of different machine tool interface

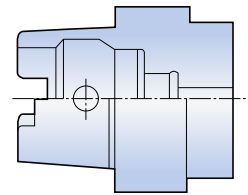
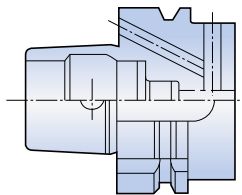
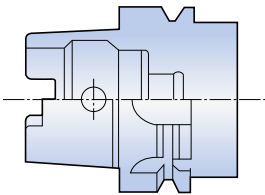


## ► Type

■ A type: Automatic tool change

■ B type: With coolant through face

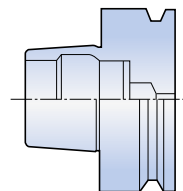
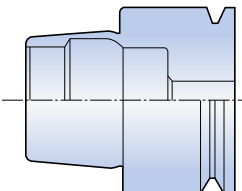
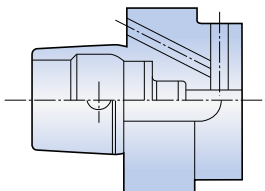
■ C type: Manual clamp



■ D type: With coolant through face

■ E type: Super high speed

■ F type: Ultra high speed



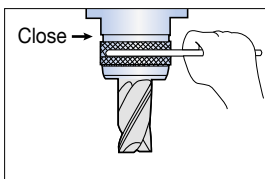
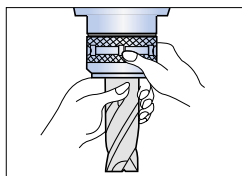
# Technical Data

## ► Milling chuck

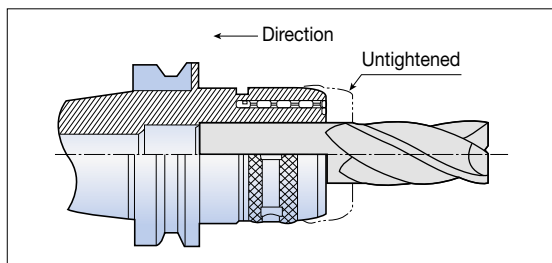
- Exceptional gripping power and simple operation

- Torque

Type	Torque (kgf·m)
NTMC 25	180
NTMC 32	360
NTMC 42	520

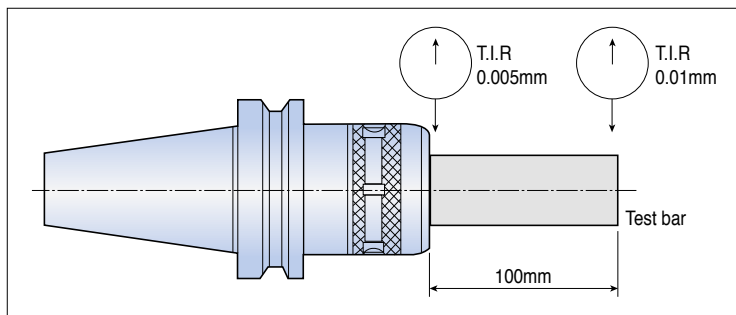


Tighten slightly when collar is close to body (Avoid hammering)



- Improved accuracy prolongs tool life

The accuracy and low runout has been achieved by utilizing precise grinding and spiral laser slitting to avoid damage and tool distortion.





## ► Hydraulic chuck

### ■ Features & advantages

- Consistent gripping force
- Excellent accuracy (Run-out : within  $5\mu\text{m}$ )
- Convenient and safe tool change using a clamping screw
- Can use THC straight collets (Normal & coolant type)

### ■ Application

- Accurate machining
  - a) Fine milling, reaming, fine boring
- Drilling: Small diameter using carbide drill
  - a) For Al or Cast iron

### ■ Operation

- Tool mounting
  - a) Insert the tool shank between  $L_{\text{max}}$  and  $L_{\text{min}}$  (Fig 1.) and then, turn the clamping screw clockwise until it can no longer rotate.
- Tool releasing
  - a) To release the tool from the hydraulic chuck, turn the clamping screw in a counter clock-wise direction approximately 5 or 6 evolutions and remove the tool shank.

### - Notice

- a) **Eliminate grease, coolant oil and any dirt** from the internal bore of the hydraulic chuck and tool shank prior to mounting.
- b) **Ensure the minimum chucking length ( $L_{\text{min}}$ )** is maintained. (see Fig 1. & Table 1.)
- c) Cylindrical tool shanks available in accordance with  **$h6$  tolerance** (Table 2.) and  **$Ra \text{ min} = 0.3\mu\text{m}$  (ground)** and weldon shanks should be used in collet only.
- d) Remove the end tool from the hydraulic chuck when not in use for long periods of time.
- e) Do not turn the clamping screw prior to tool mounting in the hydraulic chuck.

\* Please refer to the backface for information tables.

Figure 1. Tool structure

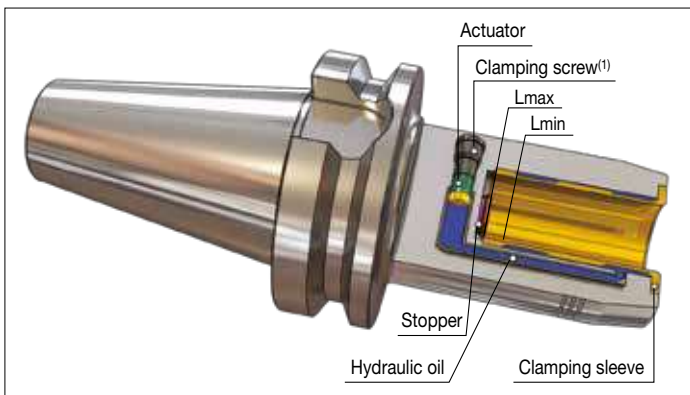


Table 1. Recommended minimum & maximum depth (L) of end tool insertion

Inner bore diameter Ø (mm)	Lmin (mm)	Lmax (mm)
6	27.5	37.5
8	27.5	37.5
10	32.5	42.5
12	37.5	47.5
14	37.5	47.5
16	42.5	52.5
20	42.5	52.5
25	51.0	61.0
32	55.0	65.0

Table 2. h6 tolerance range

Shank size Ø (mm)		h6 tolerance range (µm)
	3	0
		-6
3	6	0
		-8
6	10	0
		-9
10	18	0
		-11
18	30	0
		-13
30	50	0
		-16

Table 3. Clamping torque

Inner bore diameter Ø (mm)	Clamping torque (N•m)
6	10
8	25
10	40
12	65
14	90
16	120
20	240
25	260
32	450

## ► Thermal T-SHRINK chucking system



## ► T-SHRINK chucking system

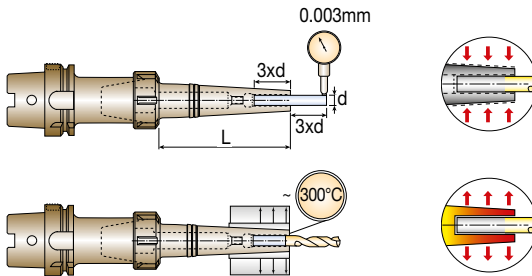
The thermal T-SHRINK ER collet chucking system is an enhancement to the existing popular ER system. The T-SHRINK collets utilize the thermal shrink phenomena for rigid clamping of solid carbide cutters. This new system provides higher torque, precision runout and better repeatability. The T-SHRINK collets with their slim design and different projection length allows the user to reach into deeper cavities and perform narrow milling applications. TaeguTec offers a complete system for T-SHRINK ER collets, including a uniquely designed heating unit with a portable heating handle. The unit is equipped with a high-tech temperature control for easy and practical use at the machining center or in the tool room.



- For carbide tools only



L(mm)	Max. T.I.R
35	7 $\mu\text{m}$
60	9 $\mu\text{m}$
85	10 $\mu\text{m}$



## ▶ GTI-Tap attachment

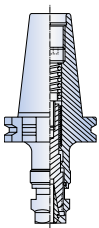
### ■ Description

Short tap chucks for ER collets

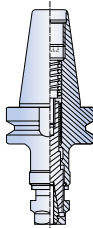


### ■ Application

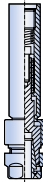
Axial-float/tension/compression type for CNC milling machines and lathes with reversing motors and rigid tapping



DIN 69871



BT MAS-403



Straight shank

### ■ Features

- Compensates for machine feed and tap pitch variance
- Floating mechanism compensates for misalignment between tap and workpiece
- Right and left-hands tapping

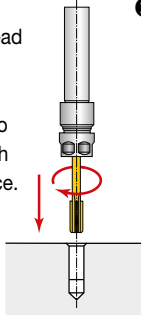
### ■ Advantages

- Practical and efficient tap holding by the ER spring collet without using drive jaw
- Compact design for minimal clearance applications
- Heavy-duty design for high torque drive ensures the same accuracy as the tap itself

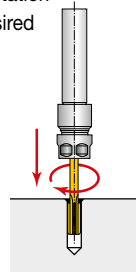
### ■ Operation

For through and blind hole tapping

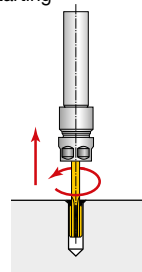
- 1** Enter feed rate according to thread pitch (or 1-2% lower), and set spindle to starting point with 0.08mm clearance.



- 2** Start spindle forward with right hand rotation until reaching desired depth.



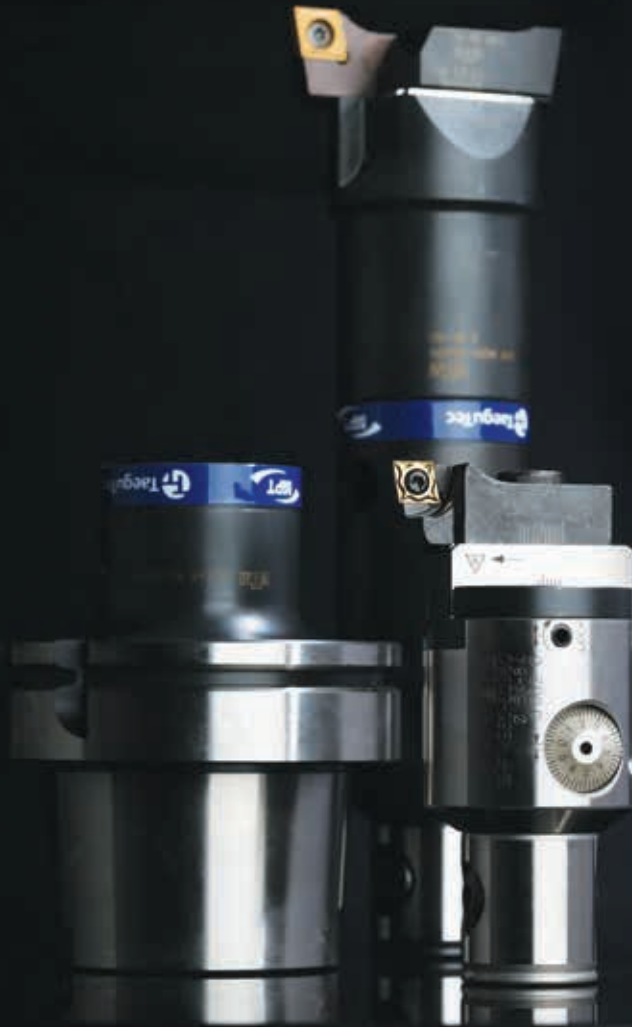
- 3** Stop feed and rotation and reverse to starting point.





# MPT

MODULAR PRECISION TOOLING







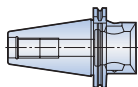


# Tool Selection Guide

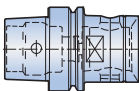
MPT system

## Shanks

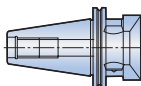
SKA



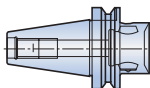
HSK



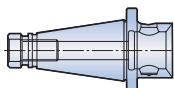
CATM



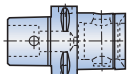
BT/BT-FC



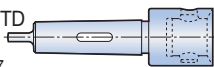
ISOM/ISO



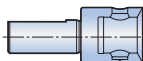
C MB



MTT/MTD

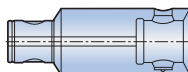


ST

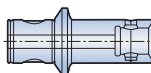


## Extensions and reducers

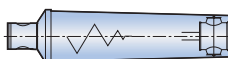
EX  H18



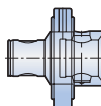
RE  H19



RE AVI  H20



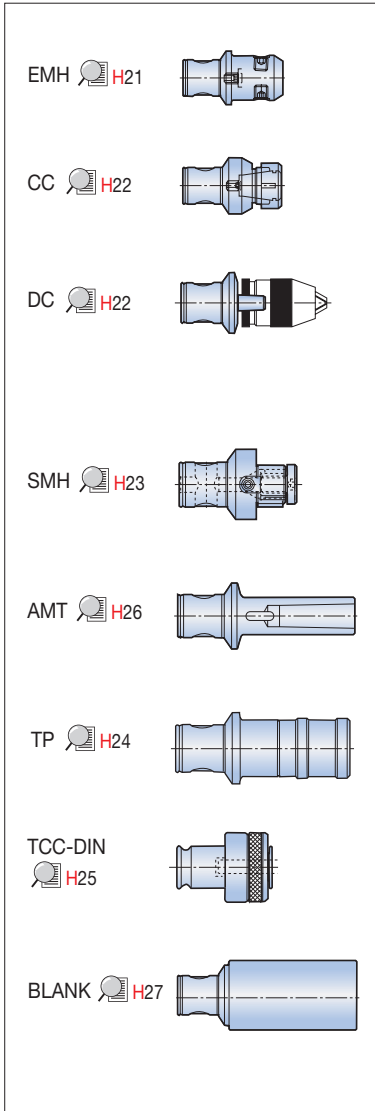
CHR  H20



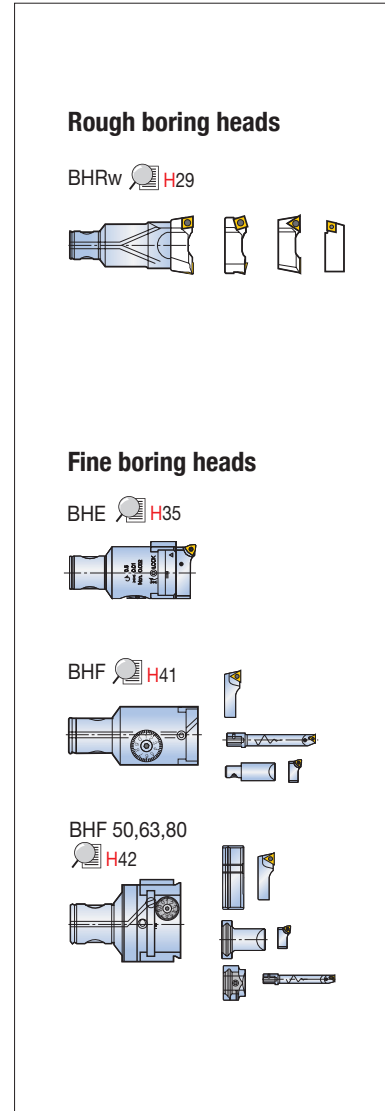
# Tool Selection Guide

MPT system

## Toolholders



## Boring heads





















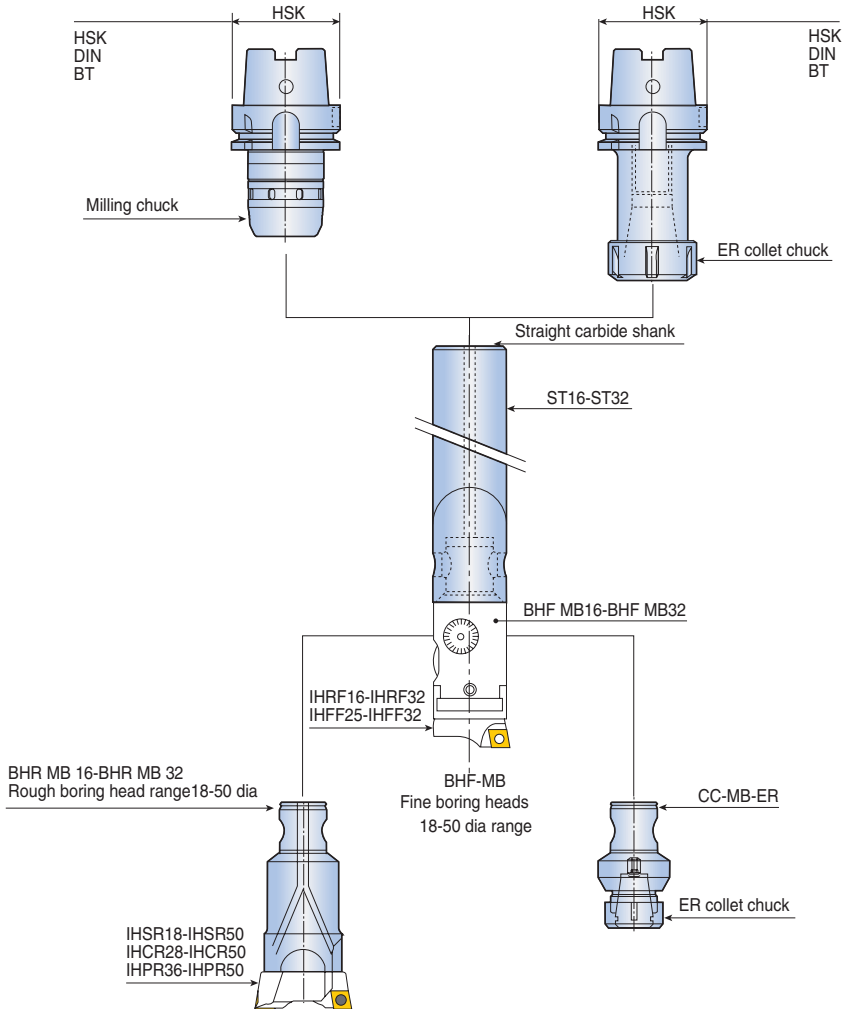




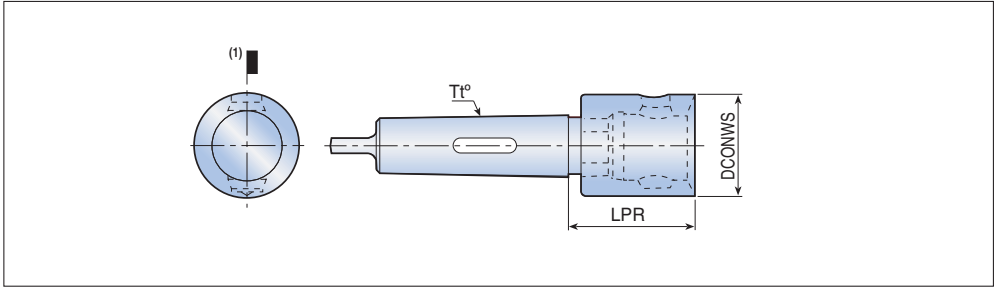
## ST-MB straight carbide shank with MB connection assembly options

**ST16-ST32 MB16-MB32**

**Diameter range: 18-50 mm**



## Morse taper shanks with MB connection

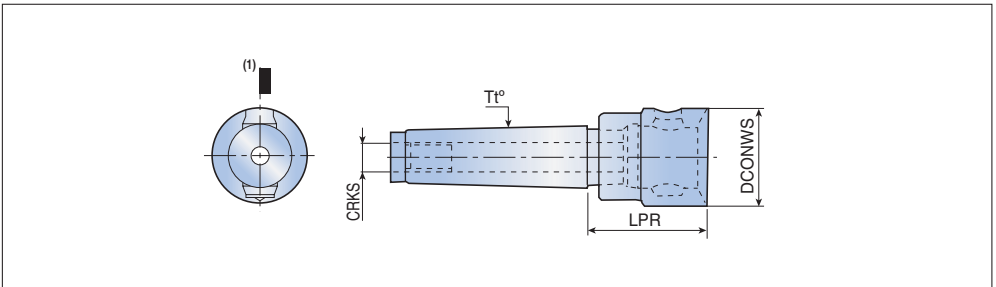


Designation	Dimension (mm)			Kg
	Tt°	DCONWS	LPR	
<b>MTT 5-MB63</b>	MT5	MB63	65	2.1

► <sup>(1)</sup>Cutting edge position

# MTD-MB

## Morse taper shanks with MB connection

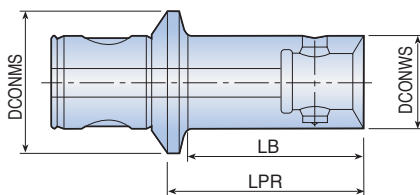


Designation	Dimension (mm)			CRKS	Kg
	Tt°	DCONWS	LPR		
<b>MTD 4-MB50</b>	MT4	MB50	63	M16	0.9
<b>MB50 SIP</b>	MT4	MB50	63	M14	1.0

► <sup>(1)</sup>Cutting edge position



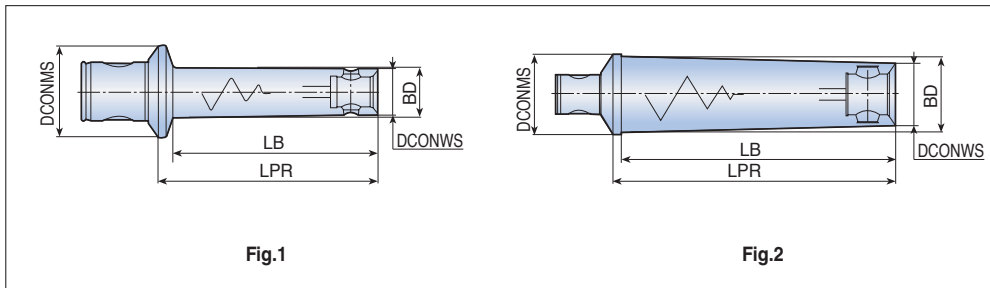
## Reducers with MB connection



Designation	Dimension (mm)				Kg
	DCONMS	DCONWS	LPR	LB	
<b>RE MB16-MB14x24</b>	MB16	MB14	24	19.5	0.3
<b>MB20-MB14x19</b>	MB20	MB14	19	13.5	0.4
<b>MB20-MB16x20</b>	MB20	MB16	20	16	0.5
<b>MB25-MB14x19</b>	MB25	MB14	19	13.5	0.6
<b>MB25-MB16x20</b>	MB25	MB16	20	15	0.8
<b>MB25-MB20x25</b>	MB25	MB20	25	20	0.9
<b>MB32-MB14x25</b>	MB32	MB14	25	17	1.0
<b>MB32-MB16x24</b>	MB32	MB16	24	18	1.3
<b>MB32-MB20x25</b>	MB32	MB20	25	20	1.6
<b>MB32-MB25x28</b>	MB32	MB25	28	23	2.1
<b>MB40-MB14x23</b>	MB40	MB14	23	16	2.8
<b>MB40-MB16x24</b>	MB40	MB16	24	17	3.5
<b>MB40-MB20x26</b>	MB40	MB20	26	20	0.4
<b>MB40-MB25x28</b>	MB40	MB25	28	22	0.5
<b>MB40-MB32x32</b>	MB40	MB32	32	27	0.6
<b>MB50-MB14x23</b>	MB50	MB14	23	14.5	0.8
<b>MB50-MB14x39</b>	MB50	MB14	39	30.5	0.9
<b>MB50-MB16x24</b>	MB50	MB16	24	15	1.0
<b>MB50-MB16x40</b>	MB50	MB16	40	31	1.3
<b>MB50-MB16x74</b>	MB50	MB16	74	65	1.6
<b>MB50-MB20x26</b>	MB50	MB20	26	18	3.5
<b>MB50-MB20x70</b>	MB50	MB20	70	62	0.4
<b>MB50-MB20x93</b>	MB50	MB20	93	85	0.5
<b>MB50-MB25x28</b>	MB50	MB25	28	21	0.6
<b>MB50-MB25x87</b>	MB50	MB25	87	80	0.8
<b>MB50-MB25x117</b>	MB50	MB25	117	110	3.5
<b>MB50-MB32x32</b>	MB50	MB32	32	25	0.4
<b>MB50-MB32x87</b>	MB50	MB32	87	80	0.5
<b>MB50-MB32x144</b>	MB50	MB32	144	137	0.6
<b>MB50-MB40x36</b>	MB50	MB40	36	30	0.8
<b>MB50-MB40x87</b>	MB50	MB40	87	80	0.9
<b>MB50-MB40x176</b>	MB50	MB40	176	170	1.0
<b>MB63-MB50x40</b>	MB63	MB50	40	34	1.3
<b>MB80-MB50x45</b>	MB80	MB50	45	36	1.6
<b>MB80-MB63x60</b>	MB80	MB63	60	52	1.6
<b>MB110-MB80x70</b>	MB110	MB80	70	52	6.0



## Carbide core reducers with MB connection

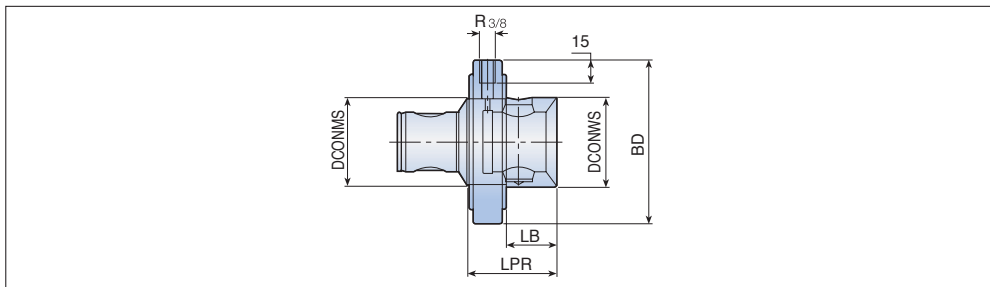


Designation	Dimension (mm)					Kg	Fig.
	DCONMS	DCONWS	BD	LPR	LB		
<b>RE MB50-MB16x74-AVI</b>	MB50	MB16	17.5	74	65	0.4	1
<b>MB50-MB20x93-AVI</b>	MB50	MB20	21.5	93	85	0.5	1
<b>MB50-MB25x117-AVI</b>	MB50	MB25	27	117	110	0.8	1
<b>MB50-MB32x144-AVI</b>	MB50	MB32	35	144	138	1.4	1
<b>MB50-MB40x176-AVI</b>	MB50	MB40	47	176	170	2.5	1
<b>MB63-MB50x220-AVI</b>	MB63	MB50	60	220	214	5.6	1
<b>MB80-MB63x280-AVI</b>	MB80	MB63	77	280	272	10.6	2

# CHR MB

# Extensions and Reducers

## Coolant extensions with MB connection

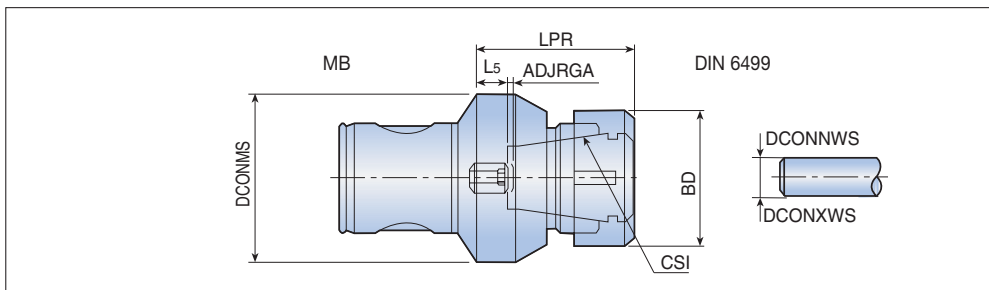


Designation	Dimension (mm)									Kg
	DCONMS	DCONWS	R	BD	LPR	LB	LS	RPM <sub>Max</sub>	Bar	
<b>CHR MB63</b>	MB63	MB63	-	115	63	35	-	3500	10	5.0

- ▶ Important: Start coolant flow prior to rotating the spindle to avoid damage of the O rings.
- ▶ Use with stop block. (not included)



## ER Collet chucks with MB connection

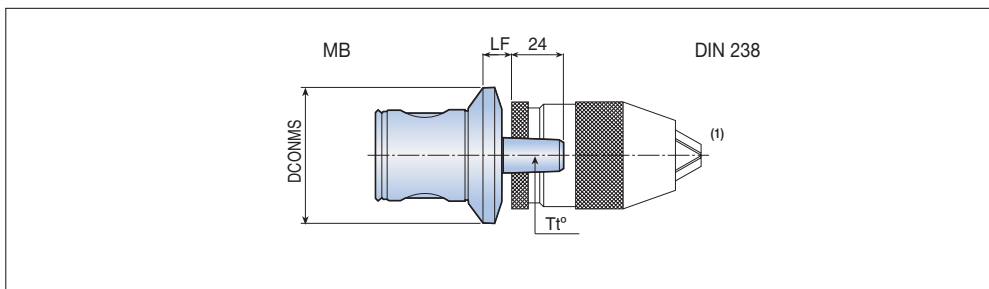


Designation	Dimension (mm)							Kg
	DCONMS	CSI	DCONXWS	DCONWS	BD	LPR	ADJRGA	
<b>CC MB16 ER11M</b>	MB16	ER11	0.5	7.0	16	25	2.5	0.03
<b>MB20 ER16M</b>	MB20	ER16	0.5	10.0	22	32	1.0	0.06
<b>MB25 ER20M</b>	MB25	ER20	1.0	13.0	28	40	2.5	0.15
<b>MB32 ER25M</b>	MB32	ER25	1.0	16.0	35	42	1.5	0.25
<b>MB40 ER25</b>	MB40	ER25	1.0	16.0	42	45	5.0	0.25
<b>MB50 ER25</b>	MB50	ER25	1.0	16.0	42	48	7.0	0.70
<b>MB50 ER32</b>	MB50	ER32	2.0	20.0	50	59	7.0	1.00
<b>MB63 ER32</b>	MB63	ER32	2.0	20.0	50	59	12	1.30
<b>MB63 ER40</b>	MB63	ER40	3.0	26.0	63	64	12	1.50

# DC MB

# Toolholders

## Drill chucks with MB connection



Designation	Dimension (mm)			Kg
	DCONMS	T1°	LF	
<b>DC MB50 B16</b>	MB50	B16	10.0	0.4
<b>MB63 B16</b>	MB63	B16	13.5	0.8

Spare Parts ▶ <sup>(1)</sup>Without drill chuck



H58-H68



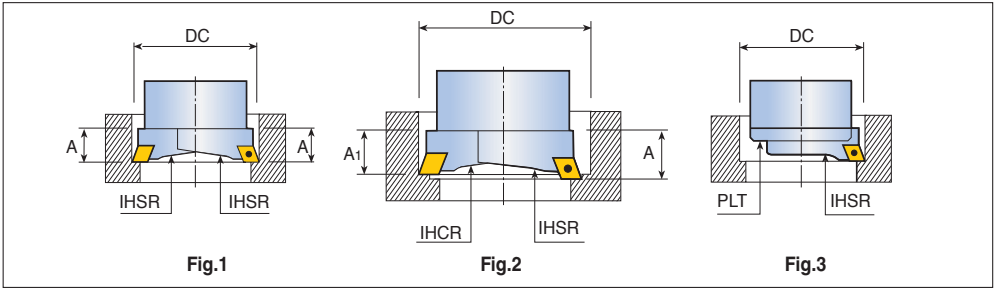












- ▶ When using the MPT system, it is strongly recommended that the user utilizes the tool pre-setting equipment provided to set the radial cutting edges. The boring bars that are equipped with two inserts holders are for rough machining and heavy stock removal.
- ▶ The bars are applicable to three types of machining scenarios:
  - When two IHSR insert holders are on the same plane, the two cutting edges are placed at identical radial distances for high feed rough machining(Fig. 1).
  - When each IHCR and IHSR insert is not set on the same plane, each of the two cutting edges is placed at a different radial distance for deep rough machining(Fig. 2).
  - If boring bars are set with a single insert holder it allows rough and finish machining with normal chip removal. In this situation, it is strongly recommended that a serrated surface protection plate (PLT) is used(Fig. 3).

## Rough boring head diameter range

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	150	200	300	400	600	700	800	
<b>BHR MB 16-16x34</b>				18-22																		
<b>20-20x40</b>				22-28																		
<b>25-25x50</b>					28-38																	
<b>32-32x63</b>						35.5-50																
<b>40-40x80</b>							50-68															
<b>50-50x100</b>										68-90												
<b>50-63x80</b>														90-120								
<b>63-63x125</b>														90-120								
<b>80-80x140</b>																	120-200					



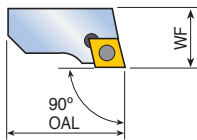


Fig.1

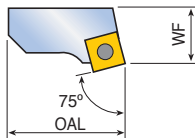


Fig.2

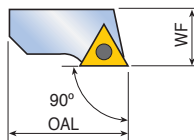


Fig.3

Designation	Dimension (mm)				Spare parts			Fig.
	DCN	DCX	WF	OAL	Insert	Insert screw	Torx key	
<b>IHSR 18-22</b>	18	22	8.0	15.0	CCMT 0602...	SR 14-548	T 7	1
<b>22-28</b>	22	28	9.5	19.0	CCMT 0602...	SR 14-548	T 7	1
<b>28-38</b>	28	38	12.5	23.0	CCMT 0602...	SR 14-548	T 7	1
<b>36-50</b>	36	50	15.0	32.0	CCMT 0602...	SR 14-548	T 7	1
<b>50-68</b>	50	68	19.0	40.0	CCMT 09T3...	SR 16-236	T 15	1
<b>50-68-12</b>	50	68	19.0	40.0	CCMT 1204..	SR 16-212	T 20	1
<b>68-90</b>	68	90	22.0	54.0	CCMT 1204..	SR 16-212	T 20	1
<b>90-120</b>	90	120	27.0	70.5	CCMT 1204...	SR 16-212	T 20	1
<b>120-160</b>	120	160	32.0	94.5	CCMT 1204..	SR 16-212	T 20	1
<b>160-800</b>	160	800	32.0	130.0	CCMT 1204..	SR 16-212	T 20	1
<b>IHCR 28-38</b>	28	38	12.3	23.0	CCMT 0602..	SR 14-548	T 7	1
<b>36-50</b>	36	50	14.8	32.0	CCMT 0602...	SR 14-548	T 7	1
<b>36-50-09</b>	36	50	14.8	32.0	CCMT 09T3..	SR 16-236	T 15	1
<b>50-68</b>	50	68	18.7	40.0	CCMT 09T3..	SR 16-236	T 15	1
<b>50-68-12</b>	50	68	18.7	40.0	CCMT 1204..	SR 16-212	T 20	1
<b>68-90</b>	68	90	21.7	54.0	CCMT 1204..	SR 16-212	T 20	1
<b>90-120</b>	90	120	26.7	70.5	CCMT 1204..	SR 16-212	T 20	1
<b>120-160</b>	120	160	31.7	94.5	CCMT 1204..	SR 16-212	T 20	1
<b>160-800</b>	160	800	31.7	130.0	CCMT 1204..	SR 16-212	T 20	1
<b>IHPR 36-50</b>	36	50	15	32.0	SCMT 09T3..	SR 16-236	T 15	2
<b>50-68</b>	50	68	19	40.0	SCMT 09T3...	SR 16-236	T 15	2
<b>68-90</b>	68	90	22	54.0	SCMT 1204..	SR 16-212	T 20	2
<b>90-120</b>	90	120	27	70.5	SCMT 1204..	SR 16-212	T 20	2
<b>120-160</b>	120	160	32	94.5	SCMT 1204..	SR 16-212	T 20	2
<b>160-800</b>	160	800	32	130.0	SCMT 1204..	SR 16-212	T 20	2
<b>IHBR 90-120</b>	90	120	27	70.5	TCMT 2205..	SR 16-212	T 20	3
<b>120-160</b>	120	160	32	94.5	TCMT 2205..	SR 16-212	T 20	3
<b>160-800</b>	160	800	32	130.0	TCMT 2205..	SR 16-212	T 20	3



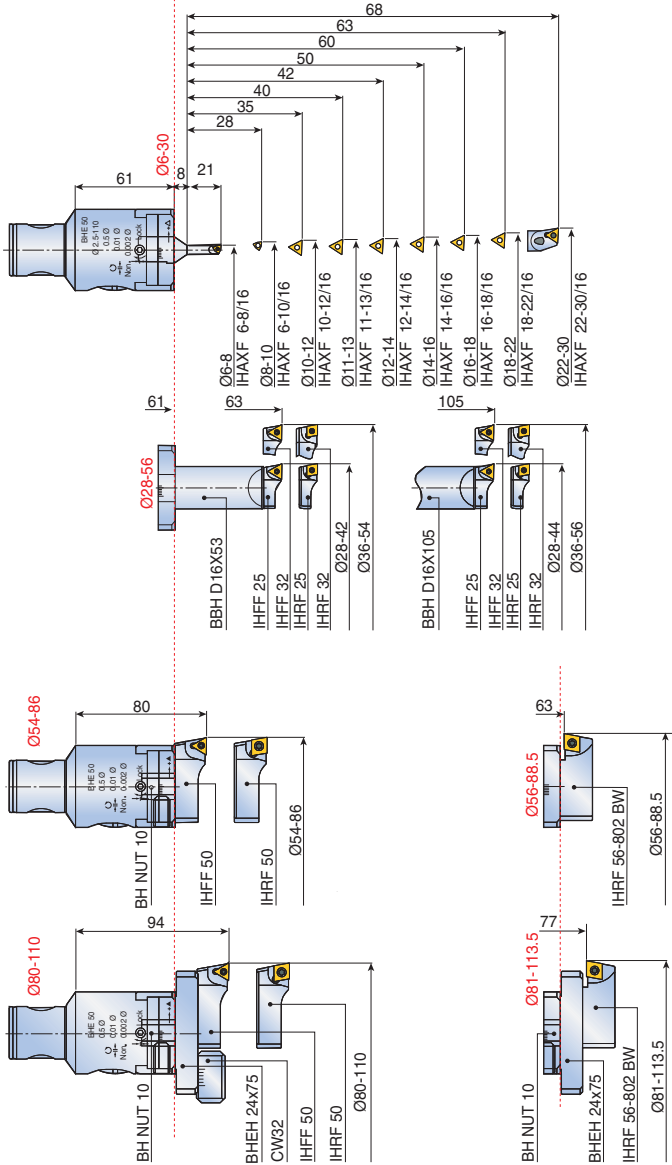
H50-H53



Fine boring head range: 10µm direct diametric adjustment and 2µm with the vernier scale

10µm  
2µm

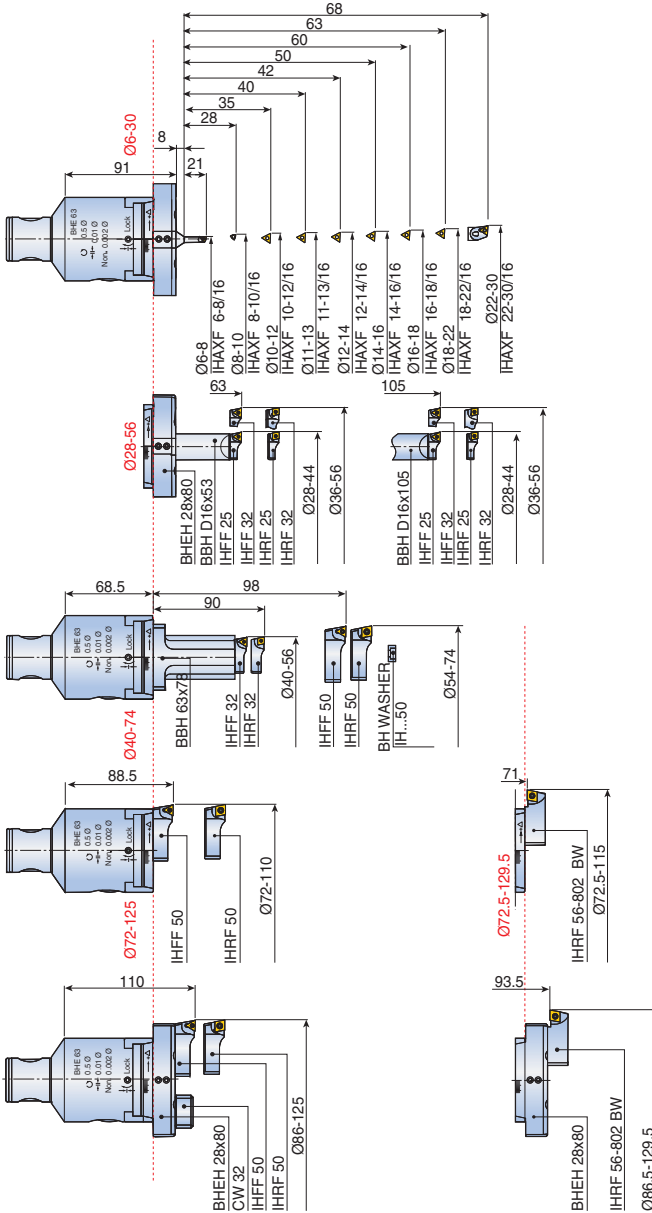
**BHE MB50-50x80**  
**Ø6-113.5**



Fine boring head range: 10µm direct diametric adjustment and 2µm with the vernier scale

**BHE MB63-63x89**  
**ø6-129.5**

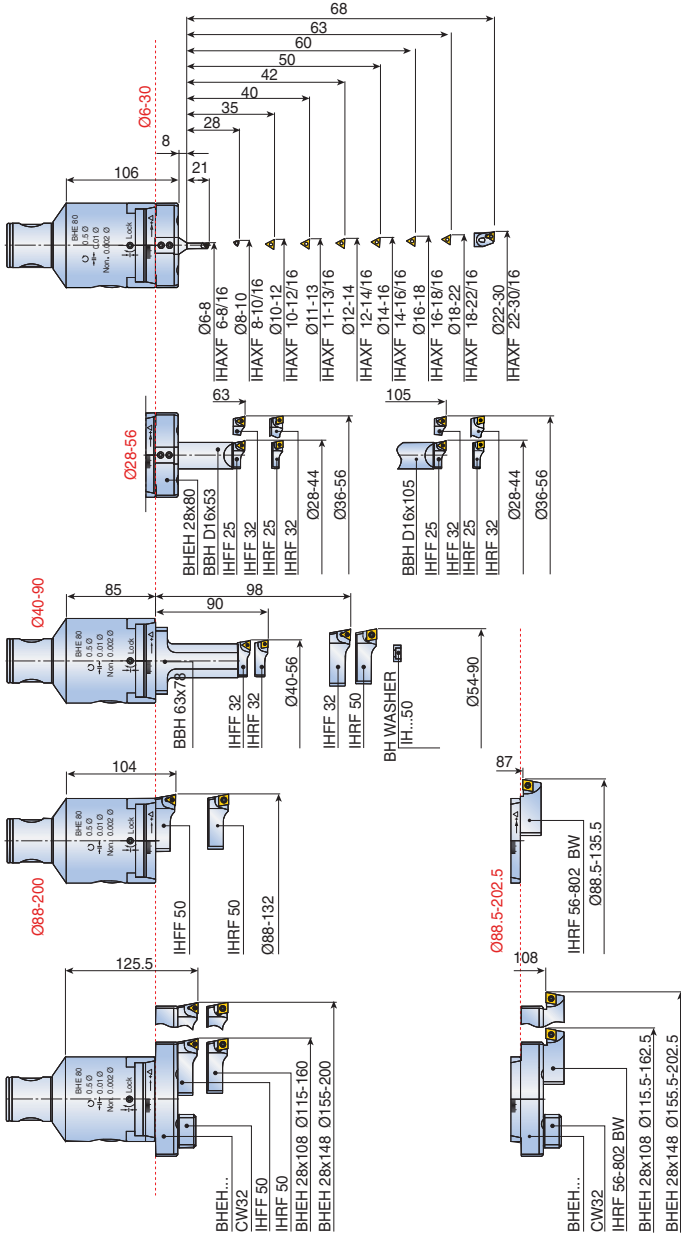
10µm  
 2µm



Fine boring head range: 10µm direct diametric adjustment and 2µm with the vernier scale

10µm  
2µm

**BHE MB80-80x104**  
Ø6-202.5







## BHF fine boring heads

These intricate boring heads enable fine radial adjustments as small as 0.002mm whilst accomplishing high precision machining to the strictest of tolerances with a superb surface finish.

2µm



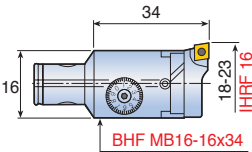
## Fine boring head diameter range

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	150	180	280	400	600	700	800	
<b>BHF MB 16-16x34 RV</b>				18-23																		
<b>20-20x40 RV</b>				22-29																		
<b>25-25x50</b>					28-38																	
<b>32-32x63</b>						36-50																
<b>40-40x80</b>							48-63															
<b>50-50x60</b>													2.5-108									
<b>50-63x87</b>														2.5-125								
<b>50-80x94</b>															2.5-160							
<b>63-63x87</b>														2.5-125								
<b>80-80x94</b>															2.5-160							
<b>80-125x114</b>																					36-500	

## BHF MB16-MB40 Diameter range: 18-63

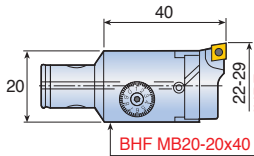
### BHF MB16-16x34 RV

18-23



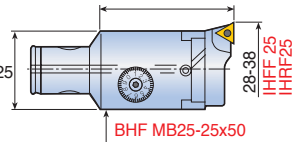
### BHF MB20-20x40 RV

22-29



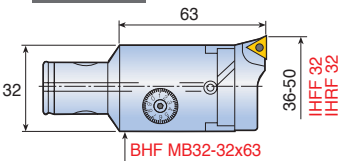
### BHF MB25-25x50

28-38



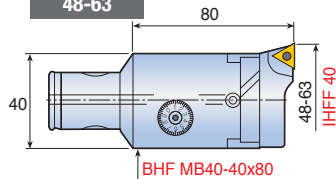
### BHF MB32-32x63

36-50



### BHF MB40-40x80

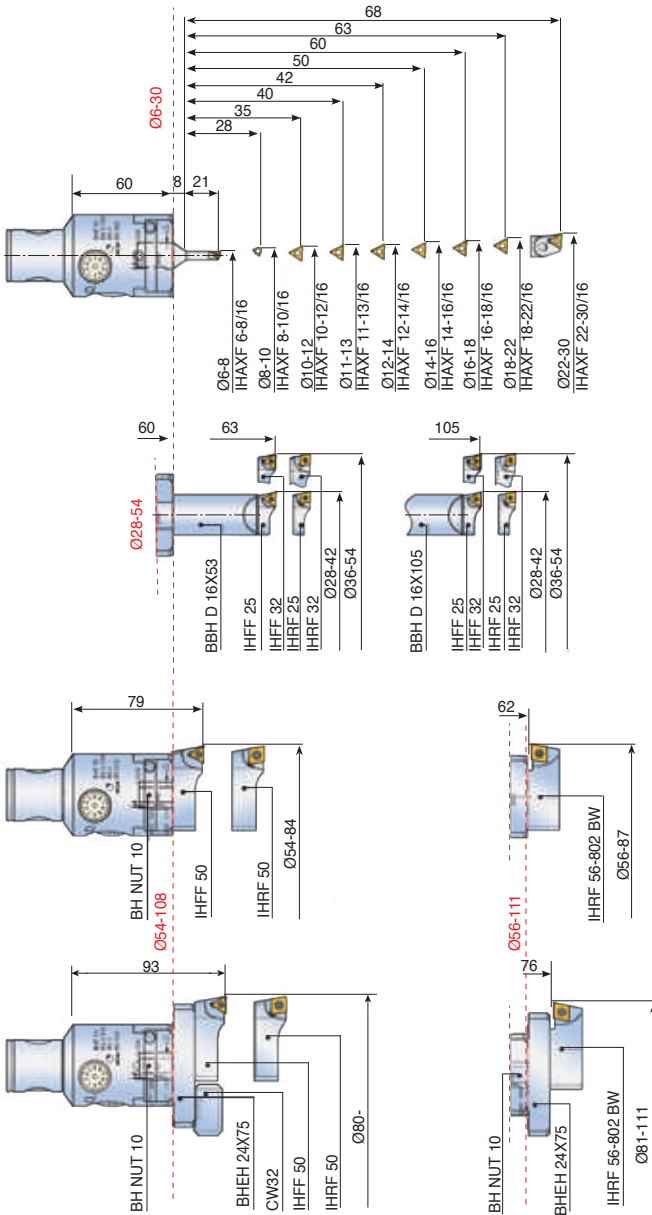
48-63



## Fine boring head range: 2µm direct diametric adjustment

**BHF MB50-50x60**  
**Diameter range: 6-111**

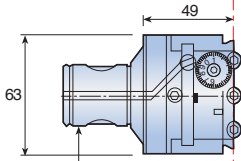
2µm



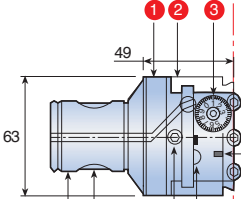
## Fine boring head range: 2µm direct diametric adjustment

2µm

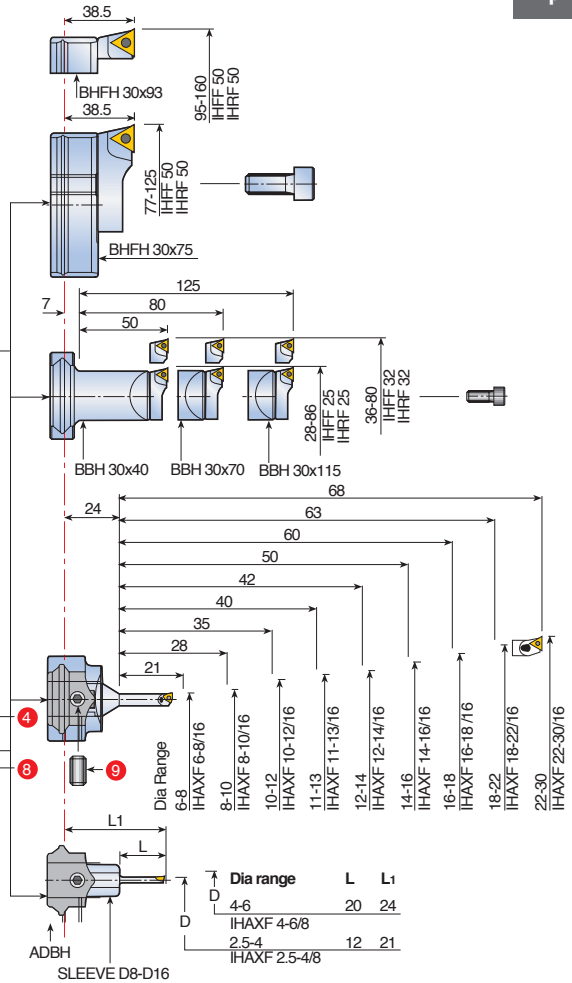
**BHF MB50-63x87**  
**BHF MB63-63x87**  
 Diameter range: 2.5-160



BHF MB50-63x87



BHF MB63-63x87



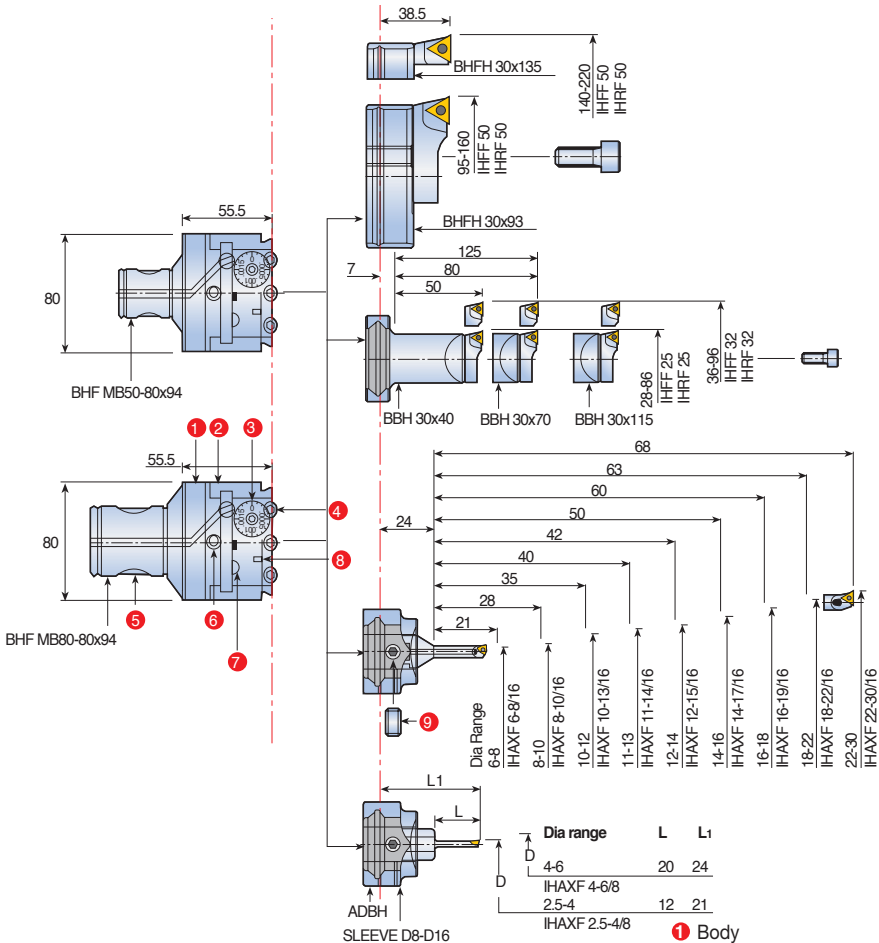
ADBH  
 SLEEVE D8-D16

- 1 Body
- 2 Tool slide
- 3 Graduated dial
- 4 Toolholder locking screw
- 5 Expanding pin
- 6 Slide locking screw
- 7 Coolant nozzle
- 8 Oiling nipple
- 9 Toolholder locking screw

## Fine boring head range: 2µm direct diametric adjustment

2µm

**BHF MB50-80x94**  
**BHF MB80-80x94**  
**Diameter range: 2.5-220**

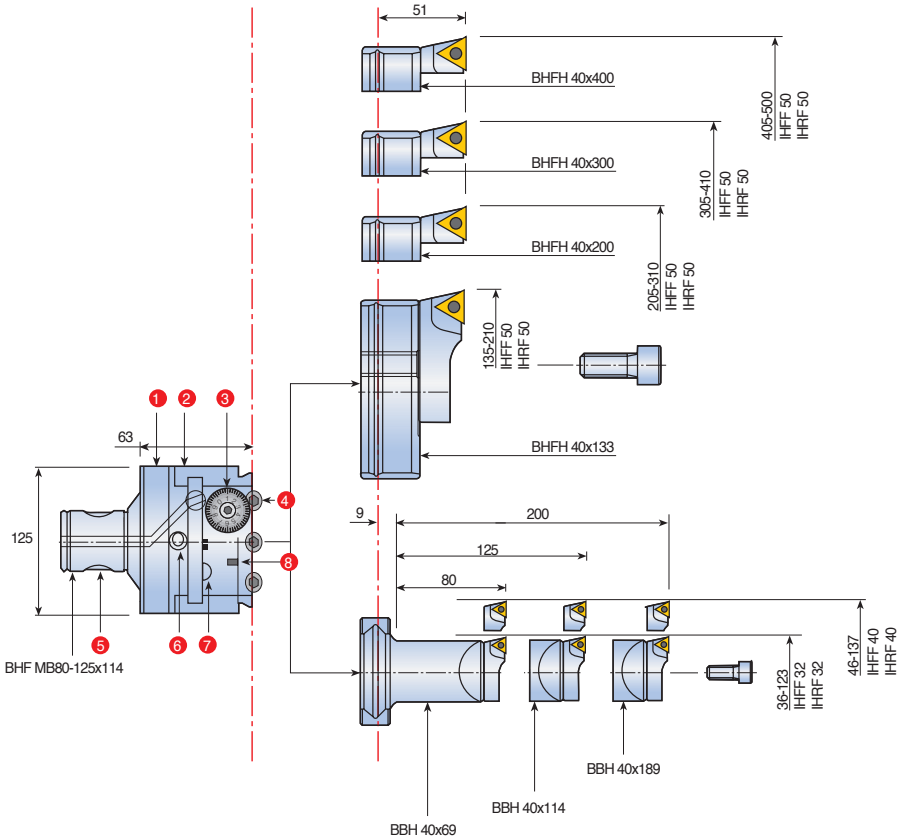


- 1 Body
- 2 Tool slide
- 3 Graduated dial
- 4 Toolholder locking screw
- 5 Expanding pin
- 6 Slide locking screw
- 7 Coolant nozzle
- 8 Oiling nipple
- 9 Toolholder locking screw

## Fine boring head range: 2µm direct diametric adjustment

2µm

**BHF MB80-125x114**  
Diameter range:36-500



- ① Body
- ② Tool slide
- ③ Graduated dial
- ④ Toolholder locking screw
- ⑤ Expanding pin
- ⑥ Slide locking screw
- ⑦ Coolant nozzle
- ⑧ Oiling nipple



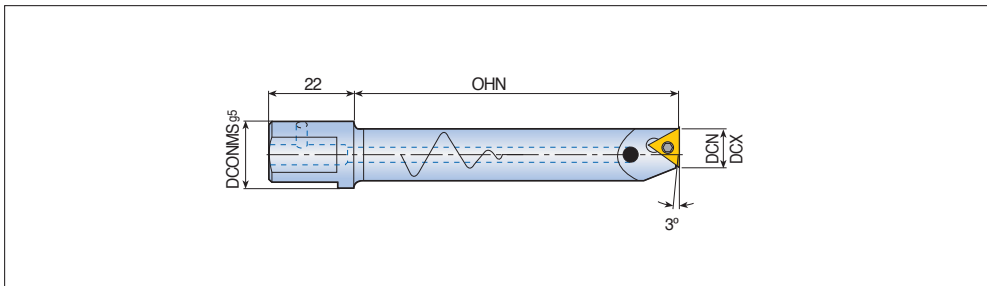








## Vibration dampening for fine boring bars – Heavy metal shank

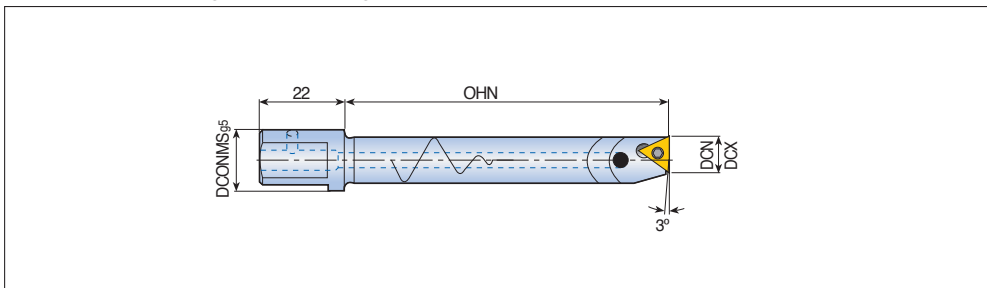


Designation	Dimension (mm)				Spare parts		
	DCN	DCX	OHN	DCONMS	Insert	Screw	Key
<b>IHAXF 6-8-AVI</b>	6	8	36	16	WCGT 0201..	SR 14-299	T 6
<b>8-10-AVI</b>	8	10	48	16	WCGT 0201..	SR 14-299	T 6
<b>10-12-AVI</b>	10	12	60	16	TPGX 0902..	SO 25061I	T 8
<b>12-14-AVI</b>	12	14	72	16	TPGX 0902..	SO 25061I	T 8
<b>14-16-AVI</b>	14	16	84	16	TPGX 0902..	SO 25061I	T 8
<b>16-18-AVI</b>	16	18	96	16	TPGX 0902..	SO 25061I	T 8

# IHAXF-E

# Fine Boring Bar

## Vibration dampening for fine boring bars – Carbide shank



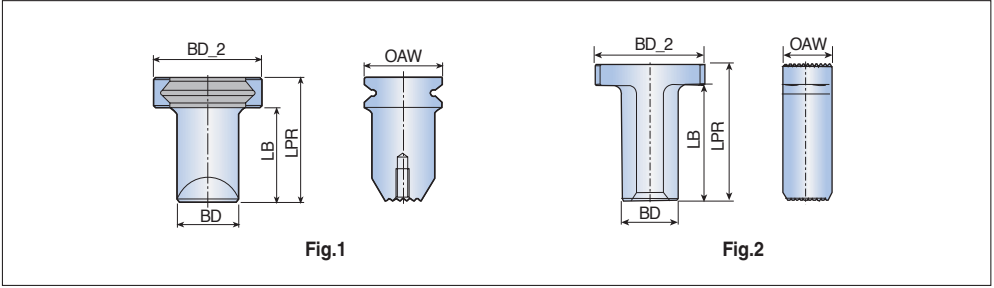
Designation	Dimension (mm)				Spare parts		
	DCN	DCX	OHN	DCONMS	Insert	Screw	Key
<b>IHAXF 6-8-E</b>	6	8	45	16	WCGT 0201..	SR 14-299	T 6
<b>8-10-E</b>	8	10	60	16	WCGT 0201..	SR 14-299	T 6
<b>10-12-E</b>	10	12	75	16	TPGX 0902..	SO 25061I	T 8
<b>12-14-E</b>	12	14	90	16	TPGX 0902..	SO 25061I	T 8
<b>14-16-E</b>	14	16	105	16	TPGX 0902..	SO 25061I	T 8
<b>16-18-E</b>	16	18	120	16	TPGX 0902..	SO 25061I	T 8





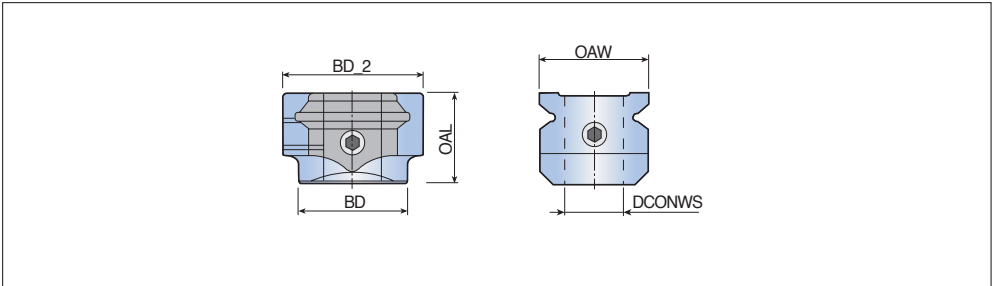


## Slide extensions for fine boring holders



Designation	Dimension (mm)					Kg	Fig.
	BD	LB	LPR	BD_2	OAW		
<b>BBH 30x40</b>	25	40	52.5	43	30.5	0.3	1
<b>30x70</b>	25	70	82.5	43	30.5	0.4	1
<b>30x115</b>	27	115	127.5	43	30.5	0.7	1
<b>40x69</b>	32	69	86	56	40	0.7	1
<b>40x114</b>	32	114	131	56	40	1.0	1
<b>40x189</b>	38	189	206	56	40	2.0	1
<b>63x78</b>	32	66	78	63	28	0.7	2

## Sleeve for fine boring holders



Designation	Dimension (mm)					Kg
	BD	BD_2	OAL	OAW	DCONWS	
<b>ADBH 30xD16</b>	30	39	25	30.5	16	0.2

# BHFH/BHEH

# Fine Boring Insert Holders & Slides

## Slide for BHF & BHE fine boring holders

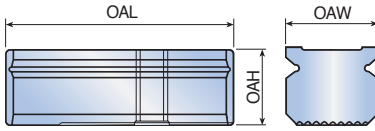


Fig.1

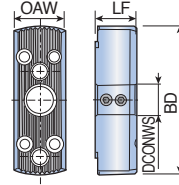


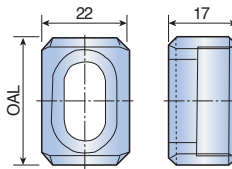
Fig.2

Designation	Dimension (mm)						Kg	Fig.
	OAH	OAL	OAW	BD	LF	DCONWS		
<b>BHFH 30x75</b>	25	75	30.5	-	-	-	0.4	1
<b>30x93</b>	25	93	30.5	-	-	-	0.5	1
<b>30x135</b>	25	135	30.5	-	-	-	0.7	1
<b>40x133</b>	40	133	40	-	-	-	1.5	1
<b>40x200</b>	40	200	40	-	-	-	2.4	1
<b>40x300</b>	40	300	40	-	-	-	3.5	1
<b>40x400</b>	40	400	40	-	-	-	4.6	1
<b>BHEH 24x75</b>	-	-	24	75	14.5	-	0.2	2
<b>28x80</b>	-	-	28	80	22.5	16	0.3	2
<b>28x108</b>	-	-	28	108	22.5	-	0.5	2
<b>28x148</b>	-	-	28	148	22.5	-	0.6	2

# CW32

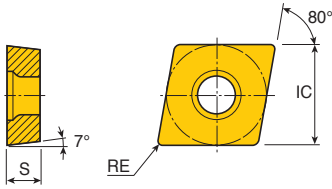
# Fine Boring Insert Holders & Slides

## Counter balancing weight



Designation	Dimension (mm)		Kg
	OAL		
<b>CW 32</b>	31.5		0.5

Positive 7° clearance 80° rhombic inserts

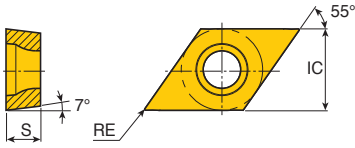


Size	Dimension (mm)		
	IC	S	RE
<b>06</b>	6.35	2.38	0.1-0.8
<b>09</b>	9.52	3.97	0.1-0.8
<b>12</b>	12.7	4.76	0.2-1.2


Insert	Designation	Cermet		CVD coated										PVD coated				Uncoated			
		PV3010	CT3000	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT5080	TT8020	TT9020	TT9080	P20	K10	K20
	<b>CCMT 060204 MT</b>	●	●	●	●		●	●	●	●	●	●	●	●	●						●
	<b>060208 MT</b>	●	●	●	●			●	●	●			●	●	●						
	<b>09T304 MT</b>	●		●	●	●		●	●			●	●	●	●						
	<b>09T308 MT</b>		●	●	●	●		●	●	●		●	●	●	●						
	<b>120404 MT</b>	●	●	●	●			●	●				●		●						
	<b>120408 MT</b>		●	●	●	●		●	●	●		●	●	●	●	●					
	<b>120412 MT</b>			●				●	●				●								
	<b>CCGT 060201 SA</b>													●		●					
	<b>060202 SA</b>													●		●					
	<b>060204 SA</b>													●		●					
	<b>09T301 SA</b>													●		●					
	<b>09T302 SA</b>													●		●					
	<b>09T304 SA</b>													●		●					
	<b>09T308 SA</b>													●		●	●				
	<b>09T308 SA</b>													●		●					
	<b>CCGT 060202 FL</b>																			●	
	<b>060204 FL</b>																			●	
	<b>09T302 FL</b>																			●	
	<b>09T304 FL</b>																			●	
	<b>09T308 FL</b>																			●	
	<b>120402 FL</b>																			●	
	<b>120404 FL</b>																			●	
	<b>120408 FL</b>																			●	

● : Standard items

Positive 7° clearance 55° rhombic inserts



Size	Dimension (mm)		
	IC	S	RE
<b>07</b>	6.35	2.38	0.4-0.8
<b>11</b>	9.52	3.97	0.4-1.2

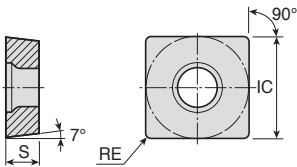
Insert	Designation	Cermet		CVD coated								PVD coated				Uncoated					
		PV3010	CT3000	TT7005	TT7015	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9020	TT9080	P20	K10	K20
	<b>DCMT 070204 PC</b>					●	●		●	●							●				
	<b>070208 PC</b>					●	●		●	●							●				
	<b>11T304 PC</b>					●	●		●	●							●				
	<b>11T308 PC</b>					●	●		●	●							●				
	<b>11T312 PC</b>						●	●		●	●						●				

● : Standard items


# SCGT

# Boring Inserts

Positive 7° clearance inserts for aluminum machining



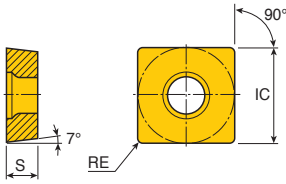
Size	Dimension (mm)		
	IC	S	RE
<b>09</b>	9.52	3.97	0.8
<b>12</b>	12.7	4.76	0.2-0.8

Insert	Designation	Cermet		CVD coated								PVD coated				Uncoated							
		PV3010	CT3000	TT7005	TT7015	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9020	TT9080	P20	K10	K20		
	<b>SCGT 09T308 FL</b>																			●			
	<b>120402 FL</b>																				●		
	<b>120404 FL</b>																				●		
	<b>120408 FL</b>																				●		



● : Standard items



## Positive 7° clearance square inserts



Size	Dimension (mm)		
	IC	S	RE
<b>09</b>	9.52	3.97	0.4-0.8
<b>12</b>	12.7	4.76	0.4-1.2

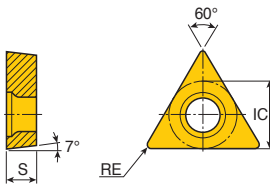
Insert	Designation	Cermet		CVD coated										PVD coated			Uncoated						
		PV3010	CT3000	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9020	P20	K10	K20		
	<b>SCMT 09T304 FG</b>							●				●											
	<b>09T308 FG</b>							●	●			●	●			●	●						
	<b>SCMT 09T304 MT</b>	●	●	●	●		●	●	●			●		●			●						
	<b>09T308 MT</b>		●	●	●	●		●	●	●		●	●	●	●		●	●					
	<b>120404 MT</b>		●	●	●			●	●				●										
	<b>120408 MT</b>		●	●	●	●		●	●	●		●	●	●		●	●						
	<b>120412 MT</b>			●	●		●		●	●							●						

● : Standard items


# TCMT

# Boring Inserts

## Positive 7° clearance triangular inserts

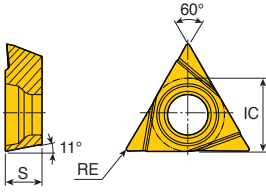


Size	Dimension (mm)		
	IC	S	RE
<b>22</b>	12.7	4.76	0.8


Insert	Designation	Cermet		CVD coated										PVD coated			Uncoated						
		PV3010	CT3000	TT7005	TT7015	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9020	TT9080	P30	K10	K20		
	<b>TCMT 220508-19</b>																		●				

● : Standard items

## Positive 11° clearance triangular inserts



Size	Dimension (mm)		
	IC	S	RE
<b>09</b>	5.56	2.38	0.2-0.4
<b>11</b>	6.35	3.18	0.2-0.4

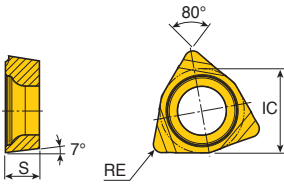
Insert	Designation	Cermet		CVD coated								PVD coated		Uncoated							
		PV3010	CT3000	TT7005	TT7015	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9020	P20	P30	K10	K20
 Left-hand	<b>TPGX 090202 L</b>		●																		
	<b>090204 L</b>		●																		●
	<b>110302 L</b>		●																		●
	<b>110304 L</b>		●																		●

● : Standard items


# WCGT

# Boring Inserts

## Positive 7° clearance 80° trigon inserts



Size	Dimension (mm)		
	IC	S	RE
<b>02</b>	3.97	1.59	0.2-0.4

Insert	Designation	Cermet		CVD coated								PVD coated		Uncoated							
		PV3010	CT3000	TT7005	TT7015	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9030	TT9080	P20	K10	K20
	<b>WCGT 020102L</b>															●					
	<b>020104L</b>															●					

● : Standard items

# KIT BHE MB50-50 6-110

Kits

Boring kit BHE MB50-50 (ø6-110mm) with fine boring head

10µm  
2µm

Technical drawings and dimensions for BHE MB50-50 configurations:

- Ø6-30:** Dimensions: 21, 28, 40, 60, 68. Parts: IHAXF 6-8/16, Ø8-12, IHAXF 8-10/16, Ø11-17, IHAXF 11-13/16, Ø16-23, IHAXF 16-18/16, Ø22-30, IHAXF 22-30/16.
- Ø28-56:** Dimensions: 51, 63. Parts: BBH D16x53, IHFF 25, IHFF 32.
- Ø54-86:** Dimensions: 19. Parts: IHFF 50, BH NUT10.
- Ø80-110:** Dimensions: 80, 94. Parts: BHEH 24x73, IHFF 50.
- Ø92-110:** Dimensions: 94. Parts: CW 32, BHEH 24x75, IHFF 50.

Kit contents:

- 1 BHE MB50-50x80
- 1 IHFF 25
- 1 IHFF 32
- 1 IHFF 50
- 1 IHAXF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 BBH D16x53
- 1 BH NUT 10
- 1 CW 32

Designation	Dimension (mm)	
	SS	Boring range
<b>KIT BHE MB50-50 6-110</b>	MB50	6-110

▶ 10µm direct diametric adjustment and 2µm by a vernier scale

# KIT BHE MB63-63 6-125

Kits

Boring kit BHE MB63-63 (ø6-125mm) with fine boring head

10µm  
2µm

Technical drawings and dimensions for BHE MB63-63 configurations:

- Ø6-30:** Dimensions: 8, 21, 28, 40, 60, 68. Parts: BHEH 28x80, IHAXF 6-8/16, Ø8-10, IHAXF 8-10/16, Ø11-13, IHAXF 11-13/16, Ø16-18, IHAXF 16-18/16, Ø22-30, IHAXF 22-30/16.
- Ø40-90:** Dimensions: 85, 90, 98. Parts: BBH 63x78, Ø40-56, Ø54-74, IHFF 32, IHFF 50.
- Ø88-132:** Dimensions: 104. Parts: SFTP 50, Ø88-132.
- Ø115-200:** Dimensions: 125.5. Parts: BHEH..., CW 32, SFTP 50, Ø115-160 BHEH 28x108, Ø155-200 BHEH 28x148.

Kit contents:

- 1 BHE MB63-63x89
- 1 IHFF 32
- 1 IHFF 50
- 1 IHFF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 BBH 63x78
- 1 BHEH 28x80
- 1 BH WASHER IH...50
- 1 CW 32

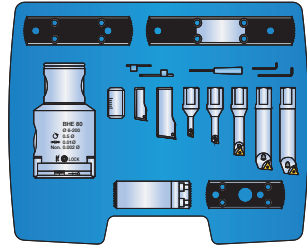
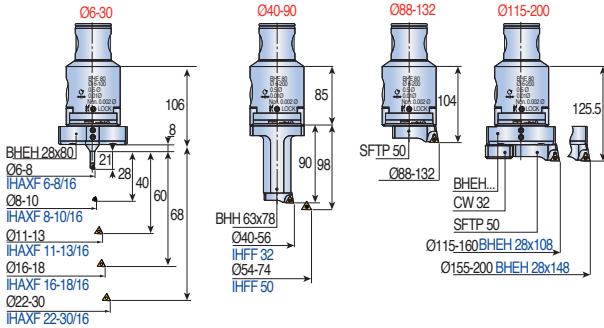
Designation	Dimension (mm)	
	SS	Boring range
<b>KIT BHE MB63-63 6-125</b>	MB63	6-125

# KIT BHE MB80-80 6-200

Kits

Boring kit BHE MB80-80 (ø6-200mm) with fine boring head

10µm  
2µm



- 1 BHE MB80-80x104
- 1 IHFF 32
- 1 BH 63x78
- 1 IHFF 50
- 1 IHFF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 BH 63x78
- 1 BHEH 28x80
- 1 BHEH 28x108
- 1 BHEH 28x148
- 1 BH WASHER IH..50
- 1 CW 32

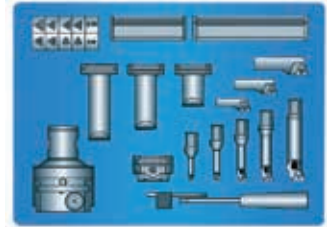
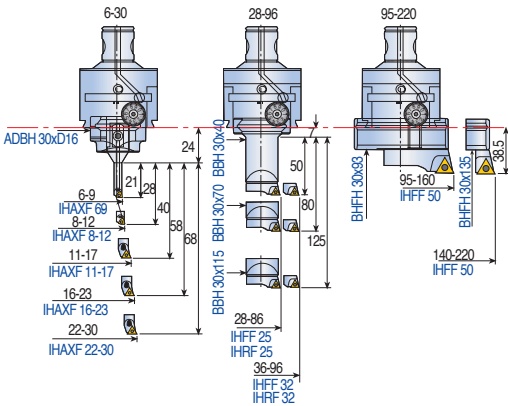
Designation	Dimension (mm)	
	SS	Boring range
<b>KIT BHE MB80-80 6-200</b>	MB80	6-200

# KIT BHF MB50-80/80-80

Kits

Kit BHF MB50-80 / Kit BHF MB80-80 6-220mm diameter range

2µm



- 1 BHF MB.-80x94
- 1 IHAXF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 ADBH 30xD16
- 1 BBH 30x40
- 1 BBH 30x70
- 1 BBH 30x115
- 1 BHFH 30x93
- 1 BHFH 30x135
- 1 IHFF 25
- 1 IHFF 32
- 1 IHFF 50
- 5 TPGX 090202L
- 1 TPGX 110302L
- 2 WCGT 020102L
- T-8/5
- T-6/5

Designation	Dimension (mm)	
	SS	Boring range
<b>KIT BHF MB50-80 6-220</b>	MB50	6-220
<b>MB80-80 6-220</b>	MB80	6-220

# KIT BHF MB50-50 6-108

Kits

6-108mm diameter range

2µm

Technical drawings showing dimensions for the KIT BHF MB50-50 6-108 boring tools. Dimensions include diameters (e.g., Ø23-30, Ø16-25, Ø11-17, Ø8-12, Ø6-8, Ø32, Ø28-42, Ø16x53, Ø54-84, Ø80-108, Ø92-108) and lengths (e.g., 63, 61, 28-54, 19, 79, 54-84, 80-108, 93, 92-108, 93).

Kit contents:

- 1 BHF MB50-50x60
- 1 IHFF 25
- 1 IHFF 32
- 1 IHFF 50
- 1 IHAXF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 BBH D 16x53
- 1 BHEH 24x75
- 1 BH NUT 10
- 1 CW 32
- 5 TPGX 090202L
- 1 TPGX 110302L
- 2 WCGT 020102L

Designation	Dimension (mm)	
	<b>KIT BHF MB50-50 6-108</b>	SS MB50

# KIT BHF MB50-63/MB63-63

Kits

6-125mm diameter range

2µm

Technical drawings showing dimensions for the KIT BHF MB50-63/MB63-63 boring tools. Dimensions include diameters (e.g., Ø6-30, Ø28-80, 77-125) and lengths (e.g., 24, 21, 28, 40, 58, 68, 7, 50, 80, 38.5, 6-9, 8-12, 11-17, 16-23, 22-30, 28-70, 36-80, 77-125, 50).

Kit contents:

- 1 BHF MB...-63x87
- 1 IHAXF 6-8/16
- 1 IHAXF 8-10/16
- 1 IHAXF 11-13/16
- 1 IHAXF 16-18/16
- 1 IHAXF 22-30/16
- 1 ADBH 30xD16
- 1 BBH 30x40
- 1 BBH 30x70
- 1 BHFH 30x75
- 1 BHFH 30x75
- 1 IHFF 25
- 1 IHFF 32
- 1 IHFF 50
- 5 TPGX 090202L
- 1 TPGX 110302L
- 2 WCGT 020102L
- T-8/5
- T-6/5

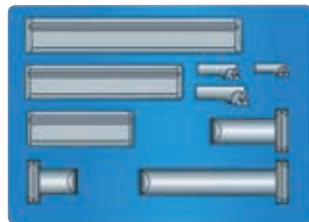
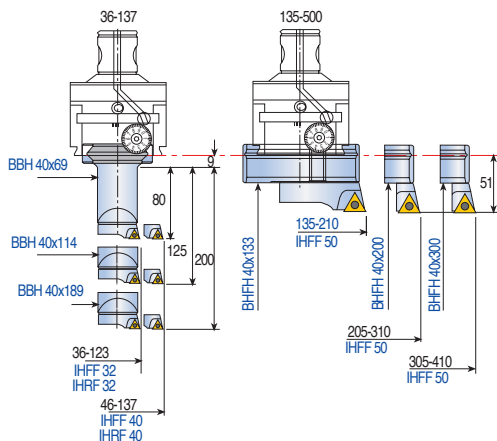
Designation	Dimension (mm)	
	<b>KIT BHF MB50-63 6-125</b> <b>MB63-63 6-125</b>	SS MB50 MB63

# KIT BHFH MB80-125

Kits

Kit BHFH MB80-125 holder for BHF MB80-125x114,36-410mm diameter range

2µm

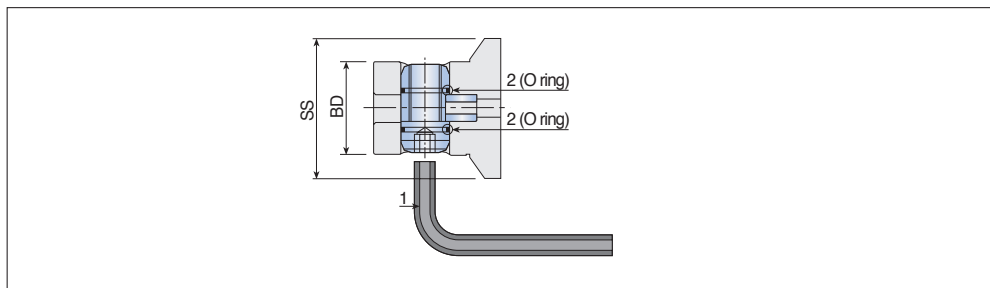


- 1 BBH 40x69
- 1 BBH 40x114
- 1 BBH 40x189
- 1 BHFH 40x133
- 1 BHFH 40x200
- 1 BHFH 40x300
- 1 IHFF 25
- 1 IHFF 40
- 1 IHFF 50

Designation	Dimension (mm)	
	SS	Boring range
<b>KIT BHFH MB80-125</b>	MB80	36-410

► 10µm direct diametric adjustment and 2µm by a vernier scale

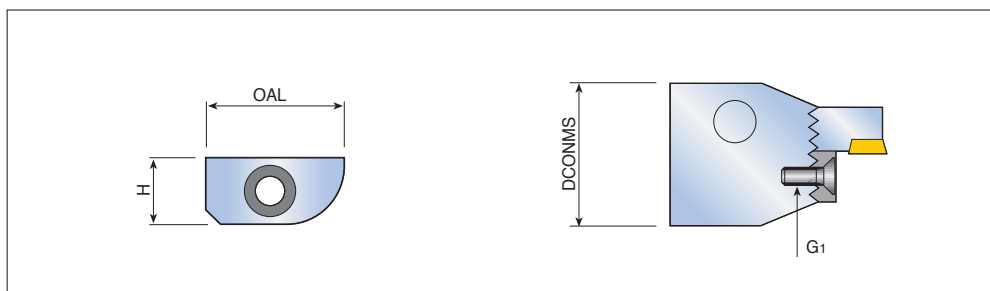
## MB system clamp set



Designation	Dimension (mm)			
	SS	BD	1	2
<b>BH MB 16 COUPLING SET</b>	MB16	10	2.5	-
<b>20 COUPLING SET</b>	MB20	13	3	-
<b>25 COUPLING SET</b>	MB25	16	3	-
<b>32 COUPLING SET</b>	MB32	20	4	ORM 0100-10
<b>40 COUPLING SET</b>	MB40	25	5	ORM 0130-10
<b>50 COUPLING SET</b>	MB50	32	6	ORM 0140-10
<b>63-80 COUPLING SET</b>	MB63-80	42	8	OR 2075

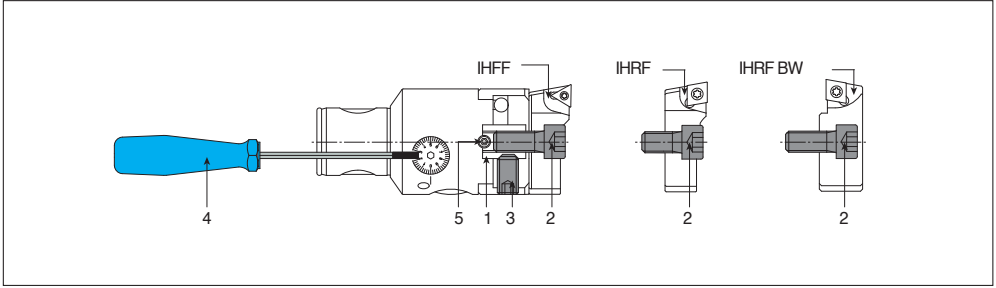
## PLT

## Cover plate

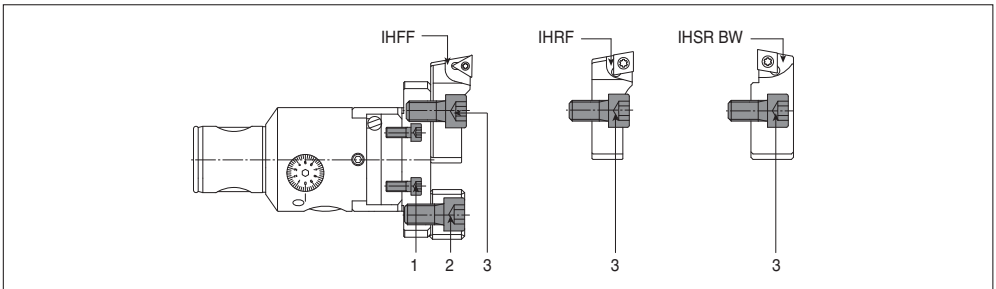


Designation	Dimension (mm)			
	DCONMS	H	OAL	G1
<b>PLT 16</b>	16	7	14	M 3x8
<b>20</b>	20	8.5	17	M 4x10
<b>25</b>	25	10.2	21	M 4x16
<b>32</b>	32	13.9	28	M 5x20
<b>40</b>	40	17.4	35	M 6x25
<b>50</b>	50	21.4	47.5	M 8x25
<b>63</b>	63	26.4	62	M 10x30
<b>80</b>	80	33.9	82.5	M 12x35

► Protects the serrated faces when a single toolholder is being used.

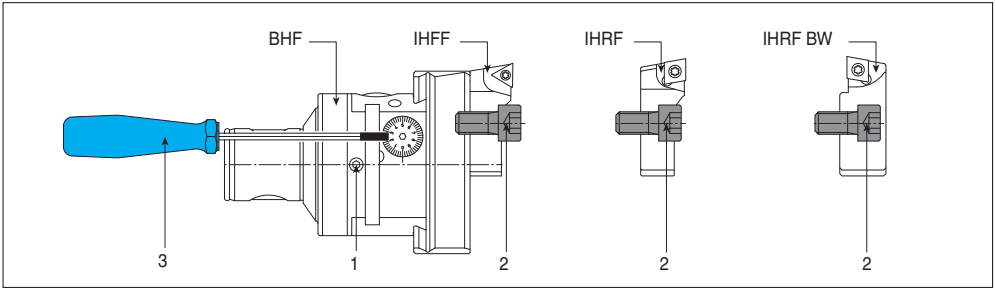


Designation	1	2	3	4	5
<b>BHF...- 16...</b>	-	SR M3x6 DIN 912	-	BH HW 1.5 HANDLE SR M3x4.5 DIN 913	
<b>20...</b>	-	SR M4x8 DIN 912	-	BH HW 1.5 HANDLE SR M3x4.5 DIN 913	
<b>25...</b>	-	SR M5x10 DIN 912	-	BH HW 2.0 HANDLE SR M4x4 DIN 913	
<b>32...</b>	-	SR M6x12 DIN 912	-	BH HW 2.0 HANDLE SR M4x5 DIN 913	
<b>40...</b>	-	SR M8x14 DIN 912	-	BH HW 2.5 HANDLE SR M5x6 DIN 913 SR	
<b>50-60</b>	BH NUT 10	SR M10x25 DIN 912	SR M10x16 DIN 913	BH HW 2.5 HANDLE SR M5x8 DIN 913	

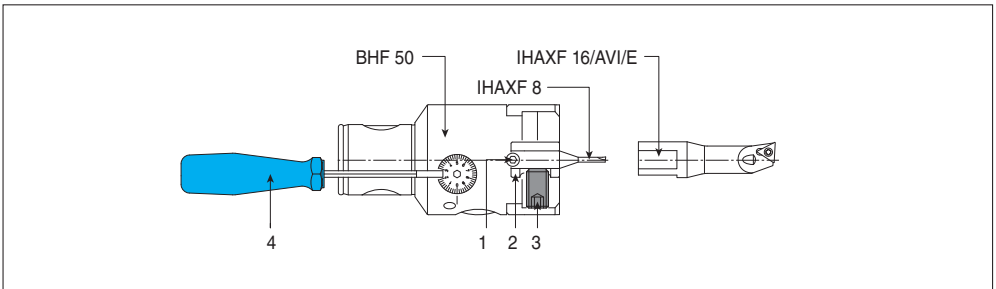


Designation	1	2	3
<b>BHF...- 50...</b>	SR M5x12 DIN 912	SR M10x20 DIN 912	SR M10x25 DIN 912



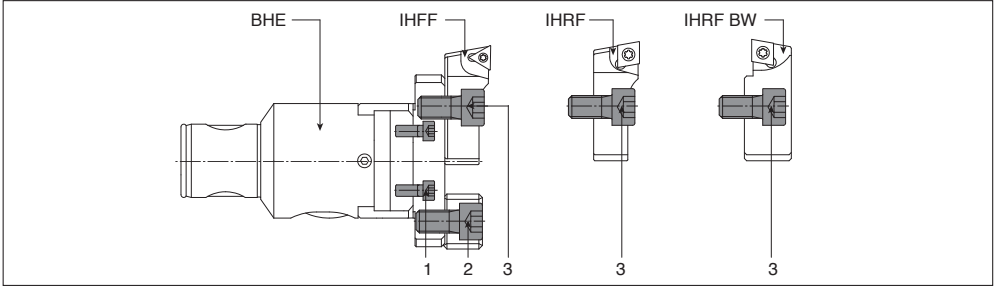


Designation	1	2	3
<b>BHF...- 63...</b>	SR M6x10 DIN 915	SR M10x25 DIN 912	BH HW 3.0 HANDLE
<b>80...</b>	SR M6x14 DIN 915	SR M10x25 DIN 912	BH HW 3.0 HANDLE
<b>125...</b>	SR M6x22 DIN 915	SR M10x25 DIN 912	BH HW 3.0 HANDLE

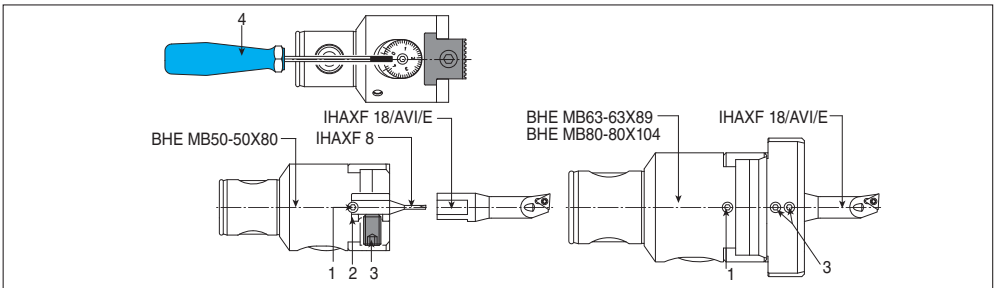


Designation	1	2	3	4
<b>BHF...- 50...</b>	SR M5x8 DIN 913	SLEEVE D8-D16	SR M10x10 DIN 913	BH HW 2.5 HANDLE



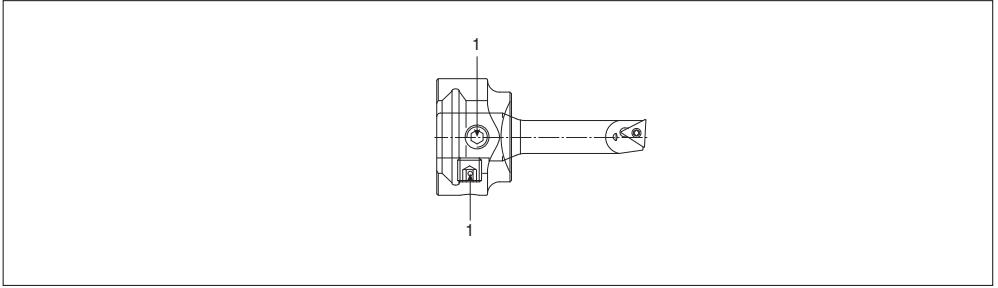


Designation	1	2	3
<b>BHE MB50-50x80</b>	SR M5x12 DIN 912	SR M10x20 DIN 912	SR M10x25 DIN 912
<b>MB63-63x89</b>	SR M5x25 DIN 912	SR M10x20 DIN 912	SR M10x25 DIN 912
<b>MB80-80x104</b>	SR M5x25 DIN 912	SR M10x20 DIN 912	SR M10x25 DIN 912



Designation	1	2	3	4
<b>BHE MB50-50x80</b>	SR M6x8 DIN 913	SLEEVE D 8-D16	SR M10x10 DIN 913	BH HW 3.0 HANDLE
<b>MB63-63x89</b>	SR M6x8 DIN 913	-	SR M6x6 DIN 913	BH HW 3.0 HANDLE
<b>MB80-80x104</b>	SR M6x12 DIN 913	-	SR M6x6 DIN 913	BH HW 3.0 HANDLE

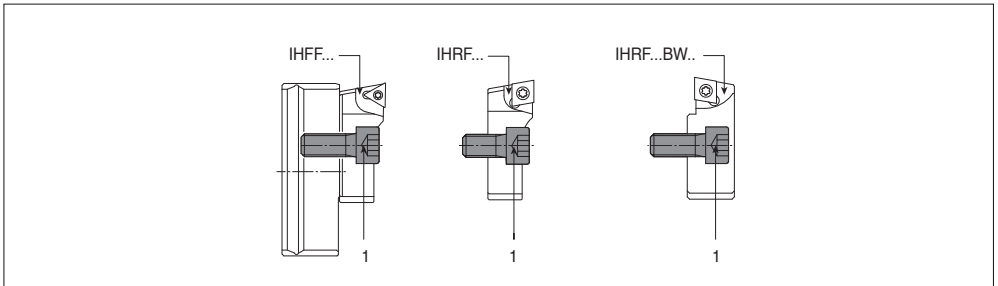




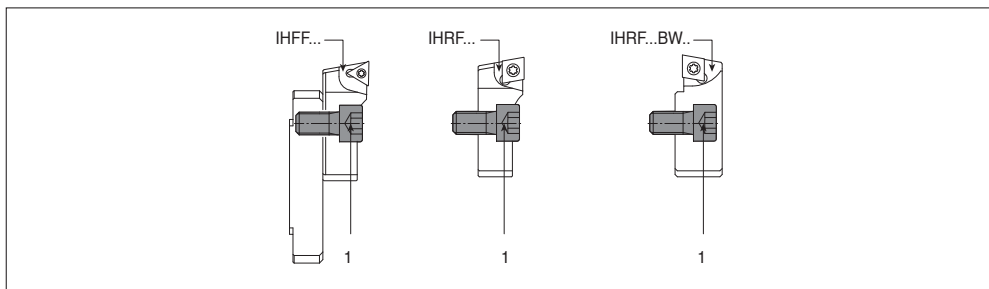
Designation	1
<b>ADBH 30xD16</b>	SR M8x8 DIN 915

# BHFH

# Spare Parts



Designation	1
<b>BHFH 30x75</b>	SR M10x18 DIN 912
<b>40x133</b>	SR M10x18 DIN 912
<b>30x93</b>	SR M10x18 DIN 912
<b>40x200</b>	SR M10x25 DIN 912
<b>30x135</b>	SR M10x25 DIN 912
<b>40x300</b>	SR M10x25 DIN 912
<b>40x400</b>	SR M10x25 DIN 912

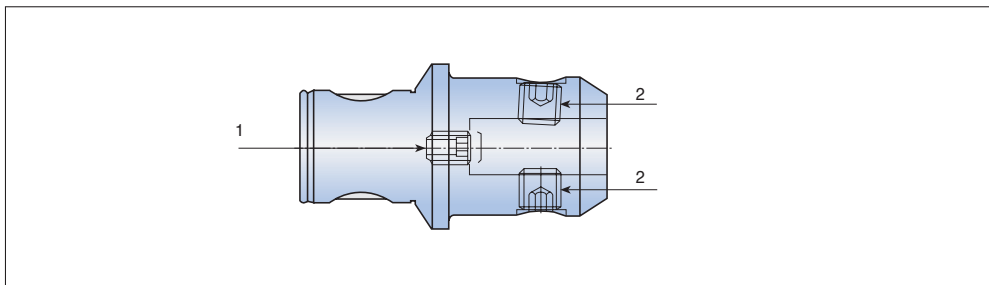


Designation	1
<b>BHEH 24x75</b>	SR M10x20 DIN 912
<b>28x80</b>	SR M10x25 DIN 912
<b>28x108</b>	SR M10x25 DIN 912
<b>28x148</b>	SR M10x25 DIN 912

## EMH MB

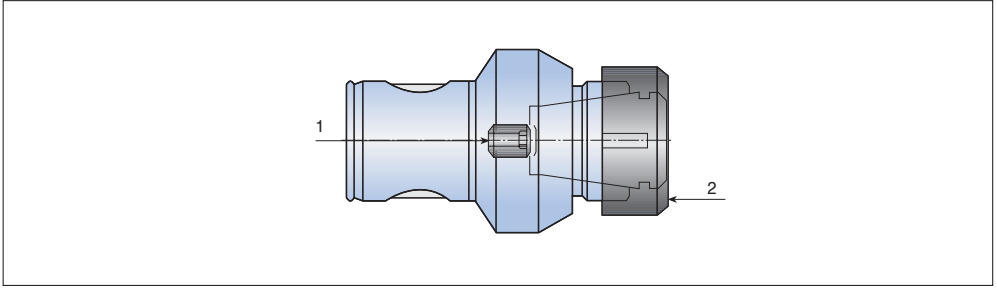
## Spare Parts

### Screws for EMH



Designation	Screw #1	Screw # 2
<b>EMH MB50-6</b>	BH EMH PRST M8X8B	SR M6X10 DIN1835B
<b>MB50-8</b>	BH EMH PRST M8X8B	BH EMH M8X9.5
<b>MB50-10</b>	BH EMH PRST M8X10B	BH EMH M10X11.5
<b>MB50-12</b>	BH EMH PRST M8X10B	BH EMH M12X15.5
<b>MB50-14</b>	BH EMH PRST M8X10B	BH EMH M12X15.5
<b>MB50-16</b>	BH EMH PRST M12X16B	BH EMH M14X15.5
<b>MB50-20</b>	BH EMH PRST M12X16B	BH EMH M16X15.5
<b>MB63-16</b>	BH EMH PRST M12X16B	BH EMH M14X15.5
<b>MB63-20</b>	BH EMH PRST M12X16B	BH EMH M16X15.5
<b>MB63-25</b>	BH EMH PRST M16X16B	BH EMH M18X19.5
<b>MB63-32</b>	BH EMH PRST M16X16B	BH EMH M20X19.5

## Components for CC

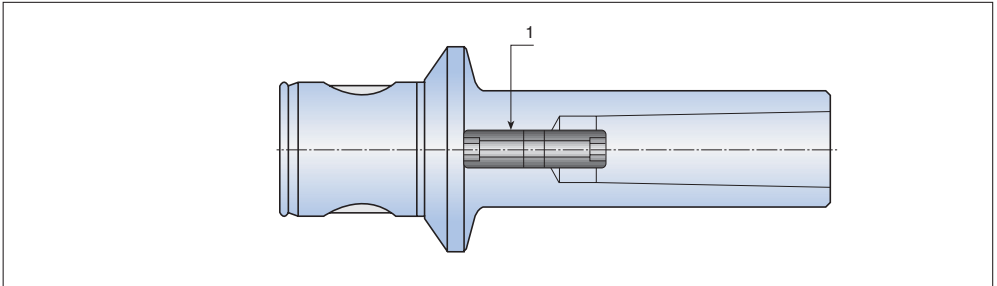


Designation	1	2	Wrench
<b>CC MB16-ER11M</b>	CC MB16 SCREW	NUT ER11 MINI	WRENCH ER11 MINI
<b>MB20-ER16M</b>	CC MB20 SCREW	NUT ER16 MINI	WRENCH ER16 MINI
<b>MB25-ER20M</b>	CC MB25 SCREW	NUT ER20 MINI	WRENCH ER20 MINI
<b>MB32-ER25M</b>	CC MB32 SCREW	NUT ER25 MINI	WRENCH ER25 MINI
<b>MB40-ER25</b>	CC MB40 SCREW	NUT ER25 TOP	WRENCH ER25
<b>MB50-ER25</b>	CC MB50 SCREW	NUT ER25 TOP	WRENCH ER25
<b>MB50-ER32</b>	CC MB50 SCREW	NUT ER32 TOP	WRENCH ER32
<b>MB63-ER32</b>	CC MB63 SCREW	NUT ER32 TOP	WRENCH ER32
<b>MB63-ER40</b>	CC MB63 SCREW	NUT ER40 TOP	WRENCH ER40

# AMT MB-MT

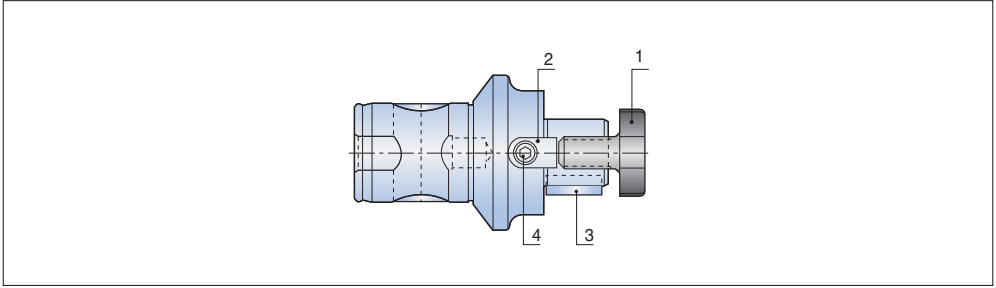
# Spare Parts

## Screw for shanks: Morse taper tang AMT



Designation	1
<b>AMT MB50-MT2</b>	AMT MT2-SCREW
<b>MB50-MT3</b>	AMT MT3-SCREW
<b>MB63-MT3</b>	AMT MT3-SCREW
<b>MB63-MT4</b>	AMT MT4-SCREW

## Screw for shell mill holders SMH



Designation	1	2	3	4
<b>SMH MB40-22</b>	M10 CLAMP SCREW SEM 22	BH DOG DRIVE SMH 22	KEY SMH 22	M4x10 SMH KEY SCREW
<b>MB50-16</b>	M 8 CLAMP SCREW SEM 16	BH DOG DRIVE SMH 16	KEY SMH 16	M3x 8 SMH KEY SCREW
<b>MB50-22</b>	M10 CLAMP SCREW SEM 22	BH DOG DRIVE SMH 22	KEY SMH 22	M4x10 SMH KEY SCREW
<b>MB50-27</b>	M12 CLAMP SCREW SEM 27	BH DOG DRIVE SMH 27	KEY SMH 27	M5x12 SMH KEY SCREW
<b>MB50-32</b>	M16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6x16 SMH KEY SCREW
<b>MB63-27</b>	M12 CLAMP SCREW SEM 27	BH DOG DRIVE SMH 27	KEY SMH 27	M5x12 SMH KEY SCREW
<b>MB63-32</b>	M16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6x16 SMH KEY SCREW
<b>MB80-32</b>	M16 CLAMP SCREW SEM 32	BH DOG DRIVE SMH 32	KEY SMH 32	M6x16 SMH KEY SCREW
<b>MB80-40</b>	M20 CLAMP SCREW SEM 40	BH D OG DRIVE SMH 40	KEY SMH 40	M6x18 SMH KEY SCREW

# NUT ER TOP

## ER - Top™ clamping nut



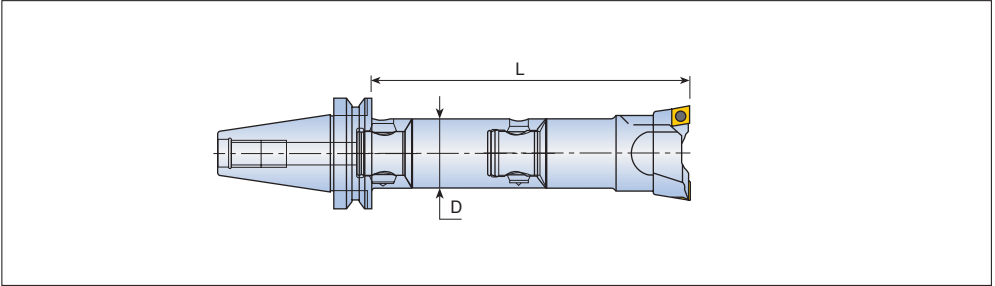
Designation	Dimension (mm)		
	DLN	HLN	THSZMS
<b>NUT ER16 TOP</b>	28	17	M22x1.5
<b>ER20 TOP</b>	34	19	M25x1.5
<b>ER25 TOP</b>	42	20	M32x1.5
<b>ER32 TOP</b>	50	22	M40x1.5
<b>ER40 TOP</b>	63	25	M50x1.5



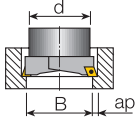


# Recommended Cutting Conditions

## BHR rough boring heads



## Cutting depth



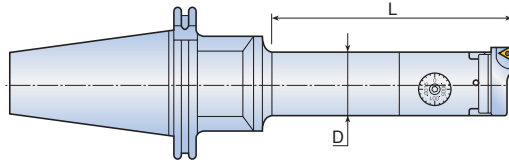
It's advisable to start with  $B \text{ hole} \geq \text{boring bar diameter } d$

B Working range	ap (mm) Steel	ap (mm) Cast iron, Aluminum
18-20	1.5-2	2-2.5
28-50	2-3	2.5-3.5
50-68	3-4	3.5-5
68-200	4-5	5-7
200-500	5-6	6-8

► In case of a single or a stepped boring cutter configuration, only half the feed should be applied

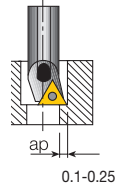
# Recommended Cutting Conditions

## Fine boring heads



Stability ●●● – Good  
 ●● – Normal  
 ● – Poor

Material	L/D	Stability	Cutting speed (Vc=m/min)	Feed f=mm/rev		Cutting depth (ap)
				Insert radius		
				R=0.2	R=0.4	
Carbon steel HB≤200	L/D=2.5	●●●	200-300	0.05-0.08	0.08-0.10	
	L/D=4	●●	160-250	0.05-0.08	0.08-0.10	
	L/D=6.3	●	70-100	0.05-0.08	-	
Carbon steel HB>200	L/D=2.5	●●●	160-250	0.05-0.08	0.08-0.10	
	L/D=4	●●	150-200	0.05-0.08	0.08-0.10	
	L/D=6.3	●	70-100	0.05-0.08	-	
Stainless steel	L/D=2.5	●●●	150-200	0.05-0.08	0.08-0.10	
	L/D=4	●●	120-180	0.08-0.10	0.08-0.10	
	L/D=6.3	●	70-80	0.05-0.08	0.08-0.10	
Alloyed steel HB 480-550	L/D=2.5	●●●	120-160	0.05-0.08	0.08-0.10	
	L/D=4	●●	100-140	0.05-0.08	0.08-0.10	
	L/D=6.3	●	70-100	0.05-0.08	-	
Cast iron	L/D=2.5	●●●	120-160	0.05-0.08	0.08-0.10	
	L/D=4	●●	100-140	0.05-0.08	0.08-0.10	
	L/D=6.3	●	70-100	0.05-0.08	-	
Aluminum	L/D=2.5	●●●	300-400	0.05-0.08	0.08-0.10	
	L/D=4	●●	250-350	0.05-0.08	0.08-0.10	
	L/D=6.3	●	100-150	0.05-0.08	-	



# Recommended Cutting Conditions

Stability ●●● – Good  
 ●● – Normal  
 ● – Poor

## BHR rough boring cutting data

ap(mm), R(radius), Vc(m/min), f(mm/rev)

ISO	Workpiece material	Hardness HB	Overhang L/D	Boring range D18-28		Boring range D28-50		Boring range D50-68		
				ap (mm)	0.5-1.2	1.2-2.5	0.8-1.5	1.5-2.5	0.8-1.5	1.5-3.0
				R (Radius)	0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
P	Carbon steel	HB<200	2.5 ●●●	Vc	150-180	120-150	160-200	140-170	160-200	140-180
				f	0.1-0.2	0.08-0.2	0.15-0.2	0.1-0.175	0.15-0.25	0.08-0.2
			4 ●●●	Vc	140-160	100-140	160-180	120-150	160-180	120-150
				f	0.1-0.18	0.08-0.15	0.1-0.12	0.08-0.1	0.1-0.12	0.08-0.1
			6.3 ●●●	Vc	60-80	40-60	60-90	50-60	70-90	50-70
				f	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.1	0.06-0.1
	Carbon steel	HB>200	2.5 ●●●	Vc	130-160	100-130	140-180	120-160	140-180	120-160
				f	0.08-0.15	0.08-0.12	0.08-0.2	0.06-0.12	0.08-0.25	0.08-0.18
			4 ●●●	Vc	110-140	80-110	100-140	80-120	100-140	80-120
				f	0.08-0.12	0.08-0.1	0.08-0.15	0.06-0.15	0.08-0.2	0.06-0.15
			6.3 ●●●	Vc	70-90	60-70	80-100	60-80	80-100	60-80
				f	0.08-0.1	0.06-0.08	0.06-0.1	0.06-0.08	0.08-0.15	0.06-0.1

ISO	Workpiece material	Hardness HB	Overhang L/D	Boring range D68-120		Boring range D120-200		Boring range D200-500		
				ap (mm)	0.8-1.5	1.5-3.5	0.8-2.0	2.0-3.5	0.8-1.5	2.0-4.0
				R (Radius)	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
P	Carbon steel	HB<200	2.5 ●●●	Vc	160-220	150-180	180-250	160-200	220-280	200-220
				f	0.15-0.25	0.08-0.2	0.15-0.3	0.1-0.2	0.15-0.3	0.1-0.15
			4 ●●●	Vc	140-180	120-150	160-200	140-180	N.R.	N.R.
				f	0.08-0.2	0.08-0.15	0.1-0.2	0.08-0.15		
			6.3 ●●●	Vc	70-100	50-70	N.R.	N.R.	N.R.	N.R.
				f	0.06-0.1	0.06-0.1				
	Carbon steel	HB>200	2.5 ●●●	Vc	140-180	120-160	150-170	100-140	100-140	80-120
				f	0.15-0.3	0.12-0.2	0.15-0.25	0.1-0.2	0.15-0.3	0.1-0.2
			4 ●●●	Vc	120-150	100-140	100-130	80-110	N.R.	N.R.
				f	0.1-0.2	0.1-0.18	0.08-0.2	0.08-0.12		
			6.3 ●●●	Vc	80-100	60-80	N.R.	N.R.	N.R.	N.R.
				f	0.08-0.12	0.08-0.12				

► N.R. = Not recommended

► In case of a single or a stepped boring cutter configuration, only half the feed should be applied

# Recommended Cutting Conditions

Stability ●●● – Good  
 ●● – Normal  
 ● – Poor

## BHR rough boring cutting data

ap(mm), R(radius), Vc(m/min), f(mm/rev)

ISO	Workpiece material	Hardness HB	Overhang L/D			Boring range D18-28		Boring range D28-50		Boring range D50-68	
				ap (mm)		0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0
				R (Radius)		0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
P	Alloyed steel	HB<200	2.5 ●●●	Vc	140-160	90-120	150-180	100-130	160-200	140-180	
				f	0.08-0.18	0.08-0.15	0.08-0.2	0.08-0.18	0.1-0.25	0.1-0.15	
			4 ●●	Vc	100-130	70-100	110-150	90-120	140-180	100-130	
				f	0.08-0.15	0.06-0.12	0.08-0.18	0.08-0.15	0.8-0.18	0.08-0.12	
			6.3 ●	Vc	80-100	60-90	80-100	70-90	100-140	80-120	
				f	0.08-0.15	0.06-0.1	0.06-0.12	0.06-0.12	0.6-0.15	0.08-0.1	
	Alloyed steel	HB>200	2.5 ●●●	Vc	130-150	120-140	130-150	120-140	140-170	120-150	
				f	0.08-0.18	0.06-0.15	0.08-0.18	0.06-0.15	0.08-0.2	0.08-0.18	
			4 ●●	Vc	100-130	100-120	100-130	100-120	120-150	100-120	
				f	0.08-0.15	0.06-0.13	0.08-0.15	0.06-0.13	0.08-0.18	0.08-0.15	
			6.3 ●	Vc	80-100	70-90	80-100	70-90	100-120	70-90	
				f	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11	

ISO	Workpiece material	Hardness HB	Overhang L/D			Boring range D68-120		Boring range D120-200		Boring range D200-500	
				ap (mm)		0.8	2.5	0.8-2.0	2.0-3.5	0.8-2.0	2.0-4.0
				R (Radius)		0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
P	Alloyed steel	HB<200	2.5 ●●●	Vc	160-220	140-180	160-220	140-180	160-220	140-180	
				f	0.1-0.3	0.1-0.25	0.1-0.3	0.1-0.25	0.1-0.35	0.1-0.3	
			4 ●●	Vc	150-200	120-160	120-160	120-160	N.R.	N.R.	
				f	0.1-0.2	0.08-0.18	0.1-0.2	0.08-0.18			
			6.3 ●	Vc	100-140	100-140	N.R.	N.R.	N.R.	N.R.	
				f	0.08-0.18	0.08-0.15					
	Alloyed steel	HB>200	2.5 ●●●	Vc	160-200	140-180	140-200	140-180	140-200	140-180	
				f	0.1-0.3	0.01-0.25	0.01-0.35	0.01-0.3	0.01-0.35	0.01-0.3	
			4 ●●	Vc	140-160	120-140	150-180	120-140	N.R.	N.R.	
				f	0.08-0.2	0.08-0.15	0.08-0.12	0.08-0.12			
			6.3 ●	Vc	100-120	70-90	N.R.	N.R.	N.R.	N.R.	
				f	0.08-0.16	0.08-0.12					

► N.R. = Not recommended

► In case of a single or a stepped boring cutter configuration, only half the feed should be applied

# Recommended Cutting Conditions

Stability ●●● - Good  
 ●● - Normal  
 ● - Poor

## BHR rough boring cutting data

ap(mm), R(radius), Vc(m/min), f(mm/rev)

ISO	Workpiece material	Hardness HB	Overhang L/D	Boring range								
				D18-28		D28-50		D50-68				
				ap (mm)	0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0		
M	Stainless steel	Ferritic & martensitic	2.5 ●●●	Vc	100-150	110-130	120-160	100-150	120-160	110-160		
				f	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.08-0.18		
			4 ●●	Vc	90-130	90-120	100-140	90-140	100-150	80-120		
				f	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.08-0.12		
			6.3 ●	Vc	60-90	50-70	60-90	50-70	70-100	50-70		
				f	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.08-0.1		
	Stainless steel	Austenitic	2.5 ●●●	Vc	110-130	100-130	120-150	110-140	110-160	100-150		
				f	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12		
			4 ●●	Vc	80-110	80-110	90-130	90-120	100-150	90-130		
				f	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1		
			6.3 ●	Vc	60-90	50-70	60-90	50-70	70-100	50-70		
				f	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1		
	Stainless steel cast	Ferritic & martensitic	2.5 ●●●	Vc	90-130	100-130	120-150	110-140	120-160	100-150		
				f	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12		
			4 ●●	Vc	70-110	80-110	90-130	90-120	100-150	90-130		
				f	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1		
			6.3 ●	Vc	60-90	50-70	60-90	50-70	70-100	50-70		
				f	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1		
	Stainless steel cast	Austenitic	2.5 ●●●	Vc	80-120	70-110	100-150	90-140	110-150	100-150		
				f	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12		
			4 ●●	Vc	70-100	70-100	80-130	70-120	90-140	90-130		
				f	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1		
			6.3 ●	Vc	60-90	50-70	60-90	50-70	70-100	50-70		
				f	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1		
M	Stainless steel	Ferritic & martensitic	2.5 ●●●	Vc	130-220	120-200	140-220	120-180	150-220	120-200		
				f	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25		
			4 ●●	Vc	100-160	90-140	120-180	90-140	N.R.	N.R.		
				f	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18				
			6.3 ●	Vc	70-100	50-70	N.R.	N.R.	N.R.	N.R.		
				f	0.08-0.2	0.08-0.15						
	Stainless steel	Austenitic	2.5 ●●●	Vc	120-200	100-160	120-200	100-160	120-200	100-180		
				f	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25		
			4 ●●	Vc	100-150	90-140	100-160	90-140	N.R.	N.R.		
				f	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18	0.08-0.18	0.06-0.1		
			6.3 ●	Vc	70-100	50-70	N.R.	N.R.	N.R.	N.R.		
				f	0.08-0.2	0.08-0.15						
	Stainless steel cast	Ferritic & martensitic	2.5 ●●●	Vc	130-200	120-180	140-200	120-160	140-200	120-180		
				f	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25		
			4 ●●	Vc	110-150	90-150	100-160	90-140	N.R.	N.R.		
				f	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18				
			6.3 ●	Vc	70-100	50-70	N.R.	N.R.	N.R.	N.R.		
				f	0.08-0.2	0.08-0.15						
	Stainless steel cast	Austenitic	2.5 ●●●	Vc	130-180	120-180	120-200	100-160	120-200	100-180		
				f	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.3	0.08-0.25		
			4 ●●	Vc	100-140	90-140	100-160	90-140	N.R.	N.R.		
				f	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18				
			6.3 ●	Vc	70-190	50-70	N.R.	N.R.	N.R.	N.R.		
				f	0.08-0.2	0.08-0.15						

▶ N.R. = Not recommended

▶ In case of a single or a stepped boring cutter configuration, only half the feed should be applied

# Recommended Cutting Conditions

Stability ●●● – Good  
 ●● – Normal  
 ● – Poor

## BHR rough boring cutting data

ap(mm), R(radius), Vc(m/min), f(mm/rev)

ISO	Workpiece material	Hardness HB	Overhang L/D			Boring range D18-28		Boring range D28-50		Boring range D50-68	
				ap (mm)	0.5-1.0	1.0-1.8	0.5-1.0	1.0-1.8	0.5-1.2	1.2-2.0	
				R (Radius)	0.2-0.4	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8	
K	Gray cast iron GG 10-25	HB<200	2.5 ●●●	Vc	120-160	100-140	120-180	110-150	120-180	110-150	
				f	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.12	0.08-0.2	0.08-0.12	
			4 ●●	Vc	100-140	80-120	100-150	80-120	100-150	80-120	
				f	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.08-0.12	0.08-0.1	
			6.3 ●	Vc	70-100	60-90	70-100	60-90	70-100	60-90	
				f	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1	
	Gray cast iron GG 25-40	HB<200	2.5 ●●●	Vc	140-200	140-200	140-220	160-250	180-220	200-280	
				f	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.2	0.1-0.25	
			4 ●●	Vc	120-160	120-160	120-180	140-200	140-180	180-220	
				f	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.2	
			6.3 ●	Vc	70-100	60-90	70-100	60-90	60-100	60-120	
				f	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1	
Cast iron GGG	Spheroidal & graphite	2.5 ●●●	Vc	120-180	120-180	120-200	140-220	180-220	180-240		
			f	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.18	0.1-0.2		
		4 ●●	Vc	120-160	120-160	120-180	140-200	140-200	160-220		
			f	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.18		
		6.3 ●	Vc	60-100	60-90	60-100	60-90	60-90	60-100		
			f	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1		

ISO	Workpiece material	Hardness HB	Overhang L/D			Boring range D18-28		Boring range D28-50		Boring range D50-68	
				ap (mm)	0.8-1.8	1.8-2.5	0.8-2.0	2.0-3.0	0.8-2.0	2.0-3.5	
				R (Radius)	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	
K	Gray cast iron GG 10-25	HB<200	2.5 ●●●	Vc	120-200	110-150	150-250	180-280	150-250	180-280	
				f	0.08-0.25	0.08-0.3	0.08-0.25	0.08-0.35	0.08-0.25	0.08-0.35	
			4 ●●	Vc	100-150	80-120	120-170	120-170	N.R.	N.R.	
				f	0.08-0.18	0.08-0.2	0.08-0.18	0.08-0.25	N.R.	N.R.	
			6.3 ●	Vc	70-100	60-90	N.R.	N.R.	N.R.	N.R.	
				f	0.08-0.15	0.08-0.12	N.R.	N.R.	N.R.	N.R.	
	Gray cast iron GG 25-40	HB<200	2.5 ●●●	Vc	50-300	250-350	250-350	250-350	250-350	250-350	
				f	0.12-0.35	0.12-0.35	0.15-0.3	0.15-0.4	0.15-0.3	0.15-0.4	
			4 ●●	Vc	200-270	230-300	200-300	200-270	N.R.	N.R.	
				f	0.1-0.25	0.12-0.3	0.15-0.3	0.15-0.35	N.R.	N.R.	
			6.3 ●	Vc	70-150	60-120	N.R.	N.R.	N.R.	N.R.	
				f	0.1-0.15	0.12-0.25	N.R.	N.R.	N.R.	N.R.	
Cast iron GGG	Spheroidal & graphite	2.5 ●●●	Vc	200-240	200-280	200-280	220-300	220-300	220-300		
			f	0.12-0.3	0.12-0.3	0.15-0.3	0.15-0.35	0.15-0.3	0.15-0.35		
		4 ●●	Vc	160-220	180-240	180-250	200-270	N.R.	N.R.		
			f	0.1-0.2	0.12-0.25	0.15-0.25	0.15-0.35	N.R.	N.R.		
		6.3 ●	Vc	60-100	60-100	N.R.	N.R.	N.R.	N.R.		
			f	0.1-0.15	0.12-0.2	N.R.	N.R.	N.R.	N.R.		

▶ N.R. = Not recommended

▶ In case of a single or a stepped boring cutter configuration, only half the feed should be applied

# Recommended Cutting Conditions

Stability ●●● – Good  
 ●● – Normal  
 ● – Poor

## BHR rough boring cutting data

ap(mm), R(radius), Vc(m/min), f(mm/rev)

ISO	Workpiece material	Hardness HB	Overhang L/D	Boring range D18-28		Boring range D28-50		Boring range D50-68		
				ap (mm)	0.5-1.5	1.5-2.5	0.5-1.5	1.5-2.5	0.5-2.0	1.2-3.0
				R (Radius)	0.2-0.4	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8
N	Aluminum/ Cast	>12si	2.5 ●●●	Vc	200-300	240-350	200-300	240-350	200-300	240-350
				f	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.3
			4 ●●	Vc	150-220	150-220	150-220	150-220	150-220	150-220
				f	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2
			6.3 ●	Vc	60-100	60-100	60-100	60-100	60-100	60-100
				f	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1
	Aluminum/ Cast	<12si	2.5 ●●●	Vc	180-250	220-280	180-250	220-280	180-250	220-280
				f	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.3
			4 ●●	Vc	120-220	120-220	120-220	120-220	120-220	120-220
				f	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.25
			6.3 ●	Vc	60-100	60-100	60-100	60-100	60-100	60-100
				f	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1

ISO	Workpiece material	Hardness HB	Overhang L/D	Boring range D68-120		Boring range D120-200		Boring range D200-500		
				ap (mm)	0.8-3.0	1.8-4.0	0.8-3.0	2.0-4.0	0.8-3.0	2.0-4.5
				R (Radius)	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
N	Aluminum/ Cast	>12si	2.5 ●●●	Vc	200-300	240-350	200-300	240-350	200-300	240-350
				f	0.06-0.25	0.06-0.3	0.06-0.25	0.06-0.4	0.06-0.25	0.06-0.4
			4 ●●	Vc	150-220	150-220	150-220	150-220	N.R.	N.R.
				f	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2		
			6.3 ●	Vc	60-100	60-100	N.R.	N.R.	N.R.	N.R.
				f	0.06-0.1	0.06-0.1				
	Aluminum/ Cast	<12si	2.5 ●●●	Vc	180-250	220-280	180-250	220-280	180-250	220-280
				f	0.06-0.25	0.06-0.3	0.06-0.3	0.06-0.4	0.06-0.3	0.06-0.4
			4 ●●	Vc	120-220	120-220	120-220	120-220	N.R.	N.R.
				f	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25		
			6.3 ●	Vc	60-100	60-100	N.R.	N.R.	N.R.	N.R.
				f	0.06-0.1	0.06-0.1				

▶ N.R. = Not recommended

▶ In case of a single or a stepped boring cutter configuration, only half the feed should be applied



# Technical Data

## ► Fine boring head BHF 16-50 and BHE operating instructions

### ■ Assembly

- When mounting the BHF boring head, the expanding pin should be kept tightly inside the cylindrical body
- Insert the BHF into the shank
- Tighten the pin ② by turning clockwise

The recommended tightening torque guidelines are as follows:

Recommended Torque	(N·m)
BHF MB16 - 16 x 34	2.0 - 2.5
BHF MB20 - 20 x 40	4.0 - 4.5
BHF MB25 - 25 x 50	6.5 - 7.5
BHF MB32 - 32 x 63	7.0 - 8.0
BHF MB40 - 40 x 80	16.0 - 18.0
BHF MB50 - 50 x 60	30.0 - 35.0

- Insert screw ⑤ until it completely enters the recess in the sleeve nut or boring bar

### ■ Disassembly

- Loosen the pin ② by turning counter-clockwise

### ■ Positioning

- Loosen the screw ④ before making any slide adjustment
- By turning the graduated dial ③ counterclockwise, set the tool slide ⑦ allowance for a 4mm adjustment
- Lock the tool slide by means of screw ④, to the desired position
- Lock the screw ④
- When making any slide adjustment, firstly loosen the screw ④

### ■ Maintenance

Weekly:

- Lubricate through the oiling nipple ⑧ with ISO UN G220 oil

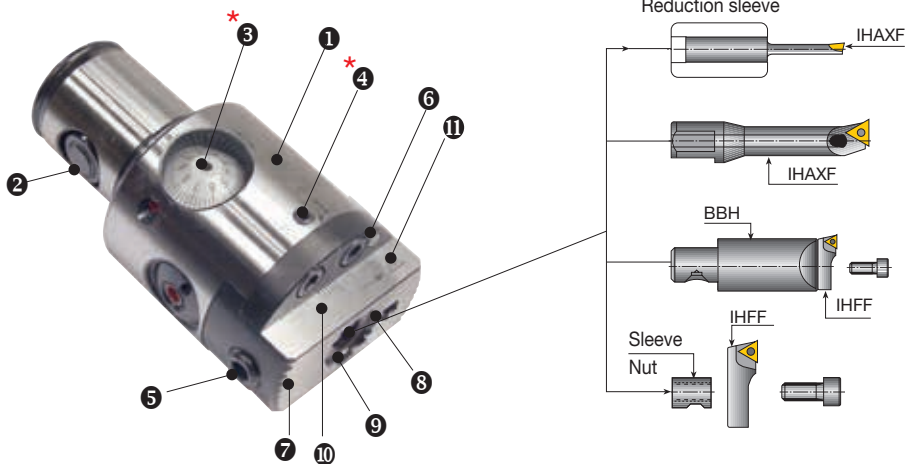
Periodically:

- Clean the conical cylindrical surface and then lubricate
- Grease the expanding pin ② with an anti-friction lubricant
- Clean and lubricate the tool slide guideway

### ■ Important note:

- Toolholder should be firmly affixed to the slide at all times

\* Due to back-lash phenomenon, if you pass the required value, turn the dial ③ in the reverse direction at least one rotation and then re-adjust in the original direction



- |                    |                            |                   |   |
|--------------------|----------------------------|-------------------|---|
| 1 Body             | * 4 Slide locking screw    | 7 Slide holder    | 10 Slide adjusting range<br>Do not exceed the range marks!! |
| 2 Expanding pin    | 5 Toolholder locking screw | 8 Oiling nipple   |   |
| * 3 Graduated dial | 6 Coolant nozzle           | 9 Tool bore .63H7 | 11 Cutting edge position mark                               |

# Technical Data

## ► Fine boring head BHF 63-125 operating instructions

### ■ Assembly

- When mounting the BHF boring head, the expanding pin should be kept tightly inside the cylindrical body
- Insert the BHF into the shank
- Tighten the pin **2** by turning clockwise

The recommended tightening torque guidelines are as follows:

Recommended Torque	(N·m)
BHF MB50 - 63 x 87	30 - 35
BHF MB50 - 80 x 94	30 - 35
BHF MB63 - 63 x 87	80 - 90
BHF MB80 - 80 x 94	80 - 90
BHF MB80 - 125 x 94	80 - 90
BHF MB50 - 50 x 60	30 - 35

- Insert screw **5** until it completely enters the recess in the sleeve nut or boring bar

### ■ Disassembly

- Loosen the pin **2** by turning counter-clockwise

### ■ Positioning

- Loosen the screw **4** before making any slide adjustment
- By turning the graduated dial **3** counterclockwise, set the tool slide **7** allowance for a 4mm adjustment
- Lock the tool slide by means of screw **4**, to the desired position
- Lock the screw **4**
- When making any slide adjustment, firstly loosen the screw **4**

### ■ Maintenance

Weekly:

- Lubricate through the oiling nipple **8** with ISO UN G220 oil

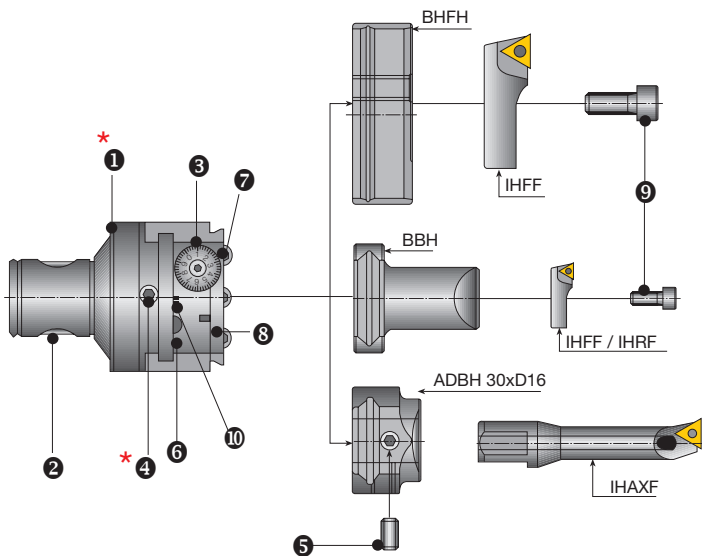
Periodically:

- Clean the conical cylindrical surface and then lubricate
- Grease the expanding pin **2** with an anti-friction lubricant
- Clean and lubricate the tool slide guideway

### ■ Important note:

- Toolholder should be firmly affixed to the slide at all times

\* Due to back-lash phenomenon, if you pass the required value, turn the dial **3** in the reverse direction at least one rotation and then re-adjust in the original direction



- \* 1 Body
  - 2 Expanding pin
  - 3 Graduated dial
  - \* 4 Slide locking screw
  - 5 Toolholder locking screw
  - 6 Coolant nozzle
  - 7 Slide holder
  - 8 Oiling nipple
  - 9 Toolholder locking screws
  - 10 Slide adjusting range
- Do not exceed the range marks!!



# MATERIALS & GRADES



# Grade Comparison Table

## ▶ Milling grades

ISO class	TaeguTec	Sandvik	Walter	Seco	Kennametal	MMC	Sumitomo	Tungaloy	Kyocera	Korloy	Iscar
P	TT5505 TT5515 TT2510 TT7080 TT8515B	GC4330 GC1010 GC4220 GC4230	WKP25S WKP25 WAM10 WAM20 WHH15X WXM15	MP1500 MP2500 T250M	KC510M KCPM15	MP6120 UP20M	ACP100	T3130 AH3035 AH710		PC2005 PC3525 PC3530 NC5330 NC5340	IC5400 IC380 IC902 IC950 IC520M
	TT5513 TT5520 TT9080 TT5523 TT5525	GC4340 GC1130 GC1030 GC4240	WKP25S WAM30 WJ30TF	F25M F30M F32M MK2050 MP3000	KC522M KC635M KC633M KC643M	MP9120 MP9130 VP15TF MP6130 VP20RT	XCU2500 ACP3000 ACU2500 ACP200	AH110 AH3225 AH725 AH730 GH330 AH120	PR830 PR1225 PR1230 PR9925 PR1825	PC3700 PC3500 PC3600 PC5300 PC5535 PC210F	IC608 IC808 IC908
	TT8080 TT5543 TT8525B	GC4240 GC1040	WKP35G WKP35S WKP45S WSM45X WSP45S WSP45G WSP46	F40M T350M T60M MS2050 MP2050	KC725M KC735M KC935M KCPM20 KCPM40	VP30RT FH7020 F7030	ACP300 ACZ350	AH140 T3130 AH130 AH3135 AH9030	PR1525	PC3600 PC5400 NC5350 NCM535	IC830 IC330 IC845 IC928 IC300
M S	TT5515 TT5520 TT9080 TT9030 TT5523	GC1010 GC1130 GC1030 GC2030 S30T GC1025	WXM15 WAM30 WXM35	MS2050 MP3000 MP2500 F25M F30M F32M	KC635M KCSM15A KCPM15 KC643M KCSM15 KC633M	MP9120 MP9130 VP15TF VP20RT	XCU2500 ACU2500 ACK300 ACP300 ACM100 ACM20	AH110 AH3225 T3130 AH8015 AH725 AH120 AH4035	PR830 PR1210 PR1025 PR1225 PR905	PC5300 PC9530	IC608 IC808 IC902 IC908
	TT8080 TT5543 TT8020 TT3535 TT3520	GC2040 GC1040 S40T	WJ30RA WSM30 WSM35 WSM35G WSM35S WSM36 WSP45G WSP45S WSM45X WMP45G WSP45G WSP46	F40M MS2500 MM4500 MP2050	KC725M KCPM40 KCSM40	MP9140 MP7030 MP7130 MP7140 VP30RT MV1020 MC7020	ACM200 ACM300 ACS2500 ACS3000	AH130 AH140 SH730 AH3135	PR1225 PR905 PR1525 PR1535	PC5400 NC5350 PC9540	IC840 IC830 IC882 IC330 IC328
K	TT7505 TT7515	GC1010 GC3220 GC3330 GC4220	WAK15 WHH15X WXM15	F15M MK1500 MP1500 MH1000	KC915M KCK15 KC643M KCPM15	MC5020	ACK3000 ACU2500 ACK200	T1115 AH9130		PC2005 PC8110	IC5100 IC4100 IC902 DT7150 IC4050
	TT5515 TT5520 TT6080 TT5525	GC1020 GC4230 GC3040 GC4240 K20D	WKP25S WKP35G WKP35S WKK25G WKK25S	F25M MK2000 MK3000 MK2050 F32M	KCKP10 KCK15 KC520M KC633M KC643M KCPM15	MP8010 VP15TF VP20RT F5010	XCU2500 XCK2000 ACK300 ACZ310	AH110 AH725 AH120 AH8015	PR905 PR1210 PR1510 PR1810	PC210F PC6510 NC5330 PC5535 NC5340 NCM535	IC808 IC810 IC910 IC608
H	TT5505 TT5515 TT2510 TT6080 TT9080	GC1010 GC1130 GC1030	WHH15 WHH15X	F15M MH1000 MP1500 MP3000 F32M	KC510M KC522M KC635M KC639M KCPM15	MV1020 MP8010 VP15TF VP20RT F5010		AH710 AH750 AH8005 AH8015 AH9030	PRO15S	PC2005 PC2010 PC2015 PC2510 PC2505 PC210F PC5535	IC902 IC903 IC900 IC808 IC908

# Grade Comparison Table

## ► Cermet grades

ISO class	TaeguTec	Sandvik	Kennametal	Sumitomo	Kyocera	Tungaloy	Mitsubishi	Korloy	Seco	NTK	Ceramtec
<b>P</b>	CT7000	CT530	KT1120 KT175	T250A T130A	TN100M TN620M TC60M PV90	NS740	VP45N NX99 NX3035	CN20 CN30	TP1020 C15M	N20 Z15 C50 C7X	SC7015 SC60

## ► Ceramic grades

ISO class	Composition	TaeguTec	Sandvik	Kennametal	Ceramtec	NTK	Kyocera	Sumitomo	Tungaloy
<b>K</b>	Al <sub>2</sub> O <sub>3</sub> , ZrO <sub>2</sub>	AW120	CC620		SN60 SN80	HC1 HW2	KA30		TZ120
	Al <sub>2</sub> O <sub>3</sub> , TiC	AB30	CC650	KY1615	SH2 SH4	HC2 HC5 HC6	A65	NB90S NB90M	LX21
	Si <sub>3</sub> N <sub>4</sub> , Al <sub>2</sub> O <sub>3</sub> , Y <sub>2</sub> O <sub>3</sub> , AlN	AS500		KY1310 KY3000	SL506 SL508 SL606 SL608	SX9			
	S <sub>3</sub> N <sub>4</sub> , ZrO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , Y <sub>2</sub> O <sub>3</sub>	AS10	CC6090 CC6190	KY1320 KY3500 KYK10	SL500 SL808	SX1 SX6 SX8	KS6000 KS6050	SN2000K SN2100K NS260	FX105 CX710
	CVD coated	SC10	CC1690	KY3400 KYK25	SL550C SL554C SL654C SL658C SL854C SL858C	SP2 SP9	CS7050	NS260C	CXC73
<b>H</b>	Al <sub>2</sub> O <sub>3</sub> , TiCN	AB20	CC6050		SH2 SH4	HC2 HC5 HC7			LX10
	PVD coated	AB2010	CC670	KY4400		ZC4 ZC7	A66N PT600M	NB100C	LX11
<b>S</b>	Al <sub>2</sub> O <sub>3</sub> , SiC whisker	TC430	CC6060 CC6065 CC6160	KY4300		WA1 WA5		WX2000	
	Si <sub>3</sub> N <sub>4</sub> , TiN	TC3020 TC3030	CC6220 CC6230	KY2100 KY1540 KYS30 KYS25 KYS30P		SX3 SX5 SX7 SX9	KS6030 KS6040	SN1000S SN2000S	TS200 TS300



# Grade Comparison Table

## ▶ CBN grades

ISO class	TaeguTec	Iscar	Tungaloy	Sumitomo	Sandvik	Kennametal	Mitsubishi	Kyocera	Seco
H	TB610	IB10H IB50	BX310	BN1000 BNX10	CB7105 CB7015	KB1610	MBC010	KBN510	CBN010
		IB10HC	BXC30 BXA30	BNC80 BNC100 BNC2010		KB5610 KB9610	MB8025 BC8105 BC8210	KBN10M KBN10C KBN25C	CBN050C CH0550
	TB2015 TB650	IB20H IB55	BX330 BX530	BN250 BN2000 BNX20	CB7115 CB7025	KB1625	MB810	KBN525	CBN100
		IB25HA	BXM10 BXC30 BXA40	BNC160 BNC2020		KB5625	MB820 BC8110 BC8220	KBN05M KBN25M	CBN160C CH2540
	TB670	IB25HC	BX360 BX380	BNX25 BN350	CB7125 CB7135 CB50 CB7525 CB7925		MB825 MB8025 BC8120 BC8220		CBN150 CBN170
			BXM20 BXA20 BXA40 BXC50	BNC200 BNC300			MB835 BC8020 BC8130		KBN30M
K	TB7015 TB730	IB90	BX930 BX850 BX950	BN500 BN7500 BN7000	CB50 CB7525	KB1630 KB1345	MB4020 MB710	KBN475 KBN60M KBN65B	CBN200
		IB05S IB10S	BX470 BX480	BN700 BNC500	CB7050	KB5630 KB9640	MB730	KBN65M KBN70M KBN570	CH3515
	KB90A TB7020		BX90S BXC90	BNS800	CB7925		MBS140	KBN900	CBN200 CBN300 CBN300P CBN350 CBN400C

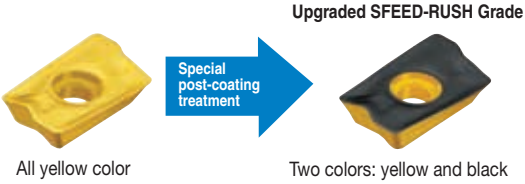
## ▶ PCD grades

ISO class	TaeguTec	Iscar	Tungaloy	Sumitomo	Sandvik	Kennametal	Mitsubishi	Kyocera	Seco	NTK
N01-N10	TC1010	ID8	DX180 DX160	DA90		KD1405	MD203	KPD230	PCD30M PCD30	
N05-N20	TC1020	ID5	DX140	DA150	CD10	KD1400	MD220	KPD010	PCD20	PD1
N15-N30	TC1030		DX120 DX110	DA2200 DA1000		KD1425	MD205	KPD001	PCD10 PCD05	PD2

# SFEED-RUSH Grades

## ► Milling SFEED-RUSH grades

SFEED-RUSH grades have upgraded toughness and chipping resistance through special post-coating treatment process of CVD grades. Through the post-coating treatment process, single color inserts have been transformed into two different colors, on the side and the top (see the illustrations below).

ISO class	Grade	ISO Range	Insert color
P	TT8525B	P30-P45	 <p style="text-align: center;">Upgraded SFEED-RUSH Grade</p> <p style="text-align: center;">Special post-coating treatment</p> <p style="text-align: center;">All yellow color      Two colors: yellow and black</p>



# Hardness Conversion Table

Vickers 50kg  HV	Brinell HB10mm ball LOAD 3000kgf		Rockwell				Shore's  HS	Tensile strength N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )
	Standard ball	Tungsten carbide ball	A scale 60kgf diamond brale HRA	B scale 100kgf 1/16in ball HRB	C scale 150kgf diamond brale HRC	D scale 100kgf diamond brale HRD		
1900			93.1		80.5			
1800			92.6		79.2			
1700			91.9		77.9			
1600			91.3		76.6			
1500			90.5		75.3			
1450			90.1		74.6			
1400			89.6		74.0			
1350			89.1		73.4			
1300			88.7		72.7			
1250			88.3		72.1			
1200			87.9		71.5			
1150			87.5		70.9			
1100			87.1		70.3			
1050			86.6		69.6			
1000			86.2		68.9			
940			85.6		68.0	76.9	97	
920			85.3		67.5	76.5	96	
900			85.0		67.0	76.1	95	
880		(767)	84.7		66.4	75.7	93	
860		(757)	84.4		65.9	75.3	92	
840		(745)	84.1		65.3	74.8	91	
820		(733)	83.8		64.7	74.3	90	
800		(722)	83.4		64.0	74.8	88	
780		(710)	83.0		63.3	73.3	87	
760		(698)	82.6		62.5	72.6	86	
740		(684)	82.2		61.8	72.1	84	
720		(670)	81.8		61.0	71.5	83	
700		(656)	81.3		60.1	70.8	81	
690		(647)	81.1		59.7	70.5		
680		(638)	80.8		59.2	70.1	80	
670		630	80.6		58.8	69.8		
660		620	80.3		58.3	69.4	79	
650		611	80.0		57.8	69.0		
640		601	79.8		57.3	68.7	77	2205(210)
630		591	79.5		56.8	68.3		2020(206)
620		582	79.2		56.3	67.9	75	1985(202)
610		573	78.9		55.7	67.5		1950(199)
600		564	78.6		55.2	67.0	74	1905(194)
590		554	78.4		54.7	66.7		1860(190)
580		545	78.0		54.1	66.2	72	1825(186)
570		535	77.8		53.6	65.8		1795(183)
560		525	77.4		53.0	65.4	71	1750(179)
550	(505)	517	77.0		52.3	64.8		1750(174)
540	(496)	507	76.7		51.7	64.4	69	1660(169)
530	(488)	497	76.4		51.1	64.0		1620(165)
520	(480)	488	76.1		50.5	63.5	67	1570(160)
510	(473)	479	75.7		49.8	62.9		1530(156)
500	(465)	471	75.3		49.1	62.2	66	1459(153)
490	(456)	460	74.9		48.4	61.6		1460(149)
480	488	452	74.5		47.7	61.3	64	1410(144)





▶ Note: Gray figures come from ASTM E 140 table (Calculated by SAE-ASM-ASTM together)







Vickers 50kg  HV	Brinell HB10mm ball LOAD 3000kgf		Rockwell				Shore's  HS	Tensile strength N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )
	Standard ball	Tungsten carbide ball	A scale 60kgf diamond brale HRA	B scale 100kgf 1/16in ball HRB	C scale 150kgf diamond brale HRC	D scale 100kgf diamond brale HRD		
470	441	442	74.1		46.9	60.7		1570(160)
460	433	433	73.6		46.1	60.1	62	1530(156)
450	425	425	73.3		45.3	59.4		1459(153)
440	415	415	72.8		44.5	58.8	59	1460(149)
430	405	405	72.3		43.6	58.2		1410(144)
420	397	397	71.8		42.7	57.5	57	1370(140)
410	388	388	71.4		41.8	56.8		1330(136)
400	379	379	70.8		40.8	56.0	55	1290(131)
390	369	369	70.3		39.8	55.2		1240(127)
380	360	360	69.8	(110.0)	38.8	54.4	52	1250(123)
370	350	350	69.2		37.7	53.6		1170(120)
360	341	341	68.7	(109.0)	36.6	52.8	50	1130(115)
350	331	331	68.1		35.5	51.9		1095(112)
340	322	322	67.6	(108.0)	34.4	51.1	47	1070(109)
330	313	313	67.0		33.3	50.2		1035(105)
320	303	303	66.4	(107.0)	32.2	49.4	45	1005(103)
310	294	294	65.8		31.0	48.4		980(100)
300	284	284	65.2	(105.5)	29.8	47.5	42	950(97)
295	280	280	64.8		29.2	47.1		935(96)
290	275	275	64.5	(104.5)	28.5	46.5	41	915(94)
285	270	270	64.2		27.8	46.0		905(92)
280	265	265	63.8	(103.5)	27.1	45.3	40	890(91)
275	261	261	63.5		26.4	44.9		875(89)
270	256	256	63.1	(102.0)	25.6	44.3	38	855(87)
265	252	252	62.7		24.8	43.7		840(86)
260	247	247	62.4	(101.0)	24.0	43.1	37	825(84)
255	243	243	62.0		23.1	42.2		805(82)
250	238	238	61.6	99.5	22.2	41.7	36	795(81)
245	233	233	61.2		21.3	41.1		780(79)
240	228	228	60.7	98.1	20.3	40.3	34	765(78)
230	219	219		96.7	(18.0)		33	730(75)
220	209	209		95.0	(15.7)		32	695(71)
210	200	200		93.4	(13.4)		30	670(68)
200	190	190		91.5	(11.0)		29	635(65)
190	181	181		89.5	(8.5)		28	605(62)
180	171	171		87.1	(6.0)		26	580(59)
170	162	162		85.0	(3.0)		25	545(56)
160	152	152		81.7	(0.0)		24	515(53)
150	143	143		78.7			22	490(50)
140	133	133		75.0			21	455(45)
130	124	124		71.2			20	425(44)
127	121			69.8			19	(42)
122	116			67.6			18	(41)
117	111			65.7			15	(39)

► Note: Gray figures come from ASTM E 140 table (Calculated by SAE-ASM-ASTM together)

# Material Conversion Table





## ► According to VDI 3323 standard






Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
1	A 366 (1012) 1008	0.0030 C10	040 A 10 045 M 10 1449 10 CS		AF 34 C 10 XC 10
1		1.0028 Ust 34-2 (S250G1T)			A 34-2
1		1.0034 RSt 34-2 (S250G2T)	1449 34/20 HR, HS, CR, CS		A 34-2 NE
1		1.0035 St185 (Fe 310-0) St 33	Fe 310-0 1449 15 HR, HS		A 33
1	A 570 Gr. 33,36	1.0036 S235JRG1 (Fe 360 B) Ust 37-2	Fe 360 B 4360-40 B		
1		1.0037 S235JR (Fe 360 B) St 37-2	Fe 360 B 4360-40 B		E 24-2
1	1115	1.0038 GS-CK16	030A04	1A	
1	A 570 Gr. 40	1.0044 S275JR (Fe 430 B) St44-2	Fe 430 B FN 1449 43/25 HR, HS 4360-43 B		E 28-2
1		1.0045 S355JR	4360-50 B		E 36-2
1	A 570 Gr.50 A 572 Gr.50	1.0050 E295 (Fe 490-2) St 50-2	Fe 490-2 FN 4360-50 B		A 50-2
1	A 572 Gr. 65	1.0060 E335 (Fe 590-2) St 60-2	Fe 60-2 4360-55 E; 55 C		A 60-2
1		1.0060 St 60-2			
1		1.0070 E360 (Fe 690-2) St 70-2	Fe 690-2 FN		A 70-2
1		1.0112 P235S	1501-164-360B LT20		A37AP
1		1.0114 S235JU;St 37-3 U	4360-40C		E 24-3
1	A 284 Gr.D A 573 Gr.58 A 570 Gr 36;C A 611 Gr. C	1.0116 S235J2G3 (Fe 360 D 1) St 37-3	Fe 360 D1 FF 1449 37/23 CR 4360-40 D		E 24-3 E 24-4
1		1.0130 P265S	1501-164-400B LT 20		A 42 AP
1		1.0143 S275J0; St 44-3 U	4360-43C		E 28-3

 SS	 UNI	 UNE	 JIS	 KS	 GOST
	C 10 1 C 10	F.1511 F.151A	S 10C	SM 10C	10
	Fe 330, Fe 330 B FU		SS 330	SS 330	
	Fe 330 B FU				St2sp
1300	Fe 320	Fe 310-0			St0
1311	FE37BFU	AE 235 B			16D, 18Kp
1312		Fe 360 B			St3Kp
1311	Fe 360 B 1449 37/23 HR	AE 235 B Fe 360 B	STKM 12A;C	STKM 12A;C	
1325	Fe 330, Fe 330 B FU		SS 330	SS 330	
1412	Fe 430 B Fe 430 B FN	AE 275 B Fe 430 B FN	SM 400 A;B;C	SM 400 A;B;C	St4ps; sp
2172	Fe 510 B	AE 355 B			
1550	Fe 490	a 490-2	SS 490	SS 490	ST5ps; sp
2172		Fe 490-2 FN			
1650	Fe 60-2 Fe 590	A 590-2 Fe 590-2 FN	SM 570	SM 570	St6ps; sp
	Fe 60-2				
1655	Fe 70-2 Fe 690	A 690-2 Fe 690-2 FN			
	Fe 360 C	AE 235 C			
	Fe 360 C	AE 235 C			
1312	Fe 360 D1 FF				
1313	Fe 360 C FN Fe 360 D FF Fe 37-2	AE 235 D Fe 360 D1 FF			St3kp; ps; sp 16D
		SPH 265			
1414-01	Fe 430 D	AE 275 D			

# Material Conversion Table

## ► According to VDI 3323 standard





Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
1	A 573 Gr. 70	1.0144 S275J2G3 (Fe 430 D 1)	Fe 430 D1 FF		E 28-3
	A 611 Gr.D	St 44-3	4360-43 C; 43 D		E 28-4
1		1.0149 S275JOH; RoSt 44-2	4360-43C		
1		1.0226 DX51D; St 02 Z	Z2		GC
1	M 1010	1.0301 C10	040 A 10		AF 34 C 10
			045 M 10		XC 10
			1449 10 CS		
1	A 621 (1008)	1.0330 DC 01	1449 4 CR		TE
		St 2; St 12	1449 3 CS		
1	A 619 (1008)	1.0333 Ust 3 (DC03G1)	1449 2 CR;3 CR		E
		Ust 13			
1	A 621 (1008)	1.0334 UStW 23 (DD12G1)			SC
1	A 622 (1008)	1.0335 DD13; StW 24	1449 1 HR		3C
1	A 620 (1008)	1.0338 DC04	1449 1 CR;2 CR		ES
		St4; St 14			
1	A 516 Gr. 65; 55	1.0345 P235GH	1501 Gr. 141-360		A 37 CP;AP
	A 515 Gr. 65;55	HI	1501 Gr. 161-360; 151-360		
	A 414 Gr. C		1501 Gr. 161-400; 154-360		
	A 442 Gr.55		1501 Gr. 164-360; 161-360		
1	(M) 1020	1.0402 C22	055 M 15, 070 M 20 2C/2D		AF 42 C 20; XC 25;1 C 22
	M 1023		1499 22 HS, CS		
1	1020	1.0402 C22	050A20	2C/2D	CC20
1	1020;1023	1.0402 C22	055 M 15, 070 M 20 2C		AF 42 C 20; XC 25;1 C 22
1		1.0425 P265GH H II	1501 Gr. 161-400;151-400		A 42 CP; AP
			1501 Gr. 164-360; 161-400		
			1501 Gr. 164-400;154-400		
1	A27 65-35	1.0443 GS-45	A1		E 23-45 M
1		1.0539 S355NH;StE 335			TSE 355-4
1		1.0545 S355N; StE 355	4360-50E		E 355 R
1		1.0546 S355NL;TStE 355	4360-50EE		E 355 FP
1		1.0547 S355JOH	4360-50C		TSE 355-3
1		1.0549 S355 NLH;TStE 355			
1		1.0553 S355JO;St 52-3U	4360-50C		E 36-3







					
SS	UNI	UNE	JIS	KS	GOST
1411, 1412 1414	Fe 430 B, Fe 430 C (FN) Fe 430 D (FF)	AE 275 D Fe 430 D1 FF	SM 400 A;B;C	SM 400 A;B;C	St4kp> ps; sp
1412-04	Fe 430 C	Fe 430 C			
1151 10	FeP 02 G	FeP 02 G			
	C 10 1 C 10	F.1511 F.151.A	S 10C	SM 10C	10
1142	FeP 00 FeP 01 FeP 02	AP 11 AP 02	SPHD SPCD	SPHD SPCD	15kp
	FeP 12 FeP 13	AP 12 AP 13	SPHE SPHE	SPHE SPHE	10kp 08kp
1147	FeP 04	AP 04	SPCE	SPCE	08jU; JUA
1331 1330	FeE235, Fe 360 1 KW;KG Fe 360 2 KW;KG	A 37 RC I RA II	SGV 410, SGV 450, SGV 48, SPV 450;SPV 480	SGV 410, SGV 450, SGV 480, SPPV 450;SPPV 480	
1450	C 20 C 21, C 25	1 C 22 F.112	S20C	SM 20C	20
1450	C20, C21	F.112	S22C	SM 22C	20
1450	C 20; C 21;C 25	1 C 22F.112	S 20 C;S 22 C	SM 20 C;SM 22C	
1431 1430 1432 1305	Fe 410 1 KW; KG; KT Fe 410 2 KW; KG	A 42 RC I A 42 RC II	SPV 315; SPV 355 SG 295; SGV 410 SGV 450; SGV 480	SPPV 315; SPPV 355 SG 295; SGV 410 SGV 450; SGV 480	16K 20K
2134-04	Fe 510 B	Fe 355 KGN			
2334-01	FeE 355 KG	AE 355 KG			
2135-01	FeE 355 KT	AE 355 KT			
2172-04	Fe 510 C	Fe 510 C			
2135	Fe 510 D Fe 510 C	FeE 355 KTM			



# Material Conversion Table





## ► According to VDI 3323 standard







Material group				
	AISI/SAE	Material No. DIN	BS EN	AFNOR
1	A 633 Gr.C A 588	1.0562 P355N StE 355	1501 Gr.225-490A LT 20	FeE 355 KG N E 355 R/FP; A 510 AP
1		1.0565 P355NH; WStE 355	1501-225-490B LT 20	A 510 AP
1		1.0566 P355NL1; TStE 355	1501-225-490A LT 50	A 510 FP
1	1	1.0570 S355J2G3 St 52-3	Fe 510 D1 FF 1449 50/35 HR>HS 4360-50 D	E 36-3 E 36-4
1	1213	1.0715 9 SMn 28 (1SMn30)	230 M 07	S 250
1	1213	1.0715 9 SMn 28	230 M 07	S 250
1	12 L 13	1.0718 9 SMnPb 28 (11SMnPb30)		S 250 Pb
1	1108 1109	1.0721 10 S 20	(210 M 15)	10S20 10F 2
1	11 L 08	1.0722 10 SPb 20		10PbF 2
1	11 L 08	1.0722 10 SPb 20		10PbF 2
1	1215	1.0736 9 SMn 36 11SMn37)		S 300
1	12 L 14	1.0737 9 SMnPb 36 (11SMnPb37)		
1		1.0972 S315MC; QStE 300 TM	1501-40F30	E 315 D
1		1.0976 S355MC; QStE 360 TM	1501-43F35	E 355 D
1		1.0982 S460MC; QStE 460 TM	1501-50F45	
1		1.0984 S500MC; QStE 500 TM		E 490 D
1		1.0986 S500MC; QStE 500 TM	1501 - 60F55	E 560 D
1	1010	1.1121 CK 10 (C10E)	040 A 10	XC 10
1		1.1121 St 37-1	4360 40 A	
1	1015	1.1141 CK 15 (C15E)	040 A 15 080 M 15	32C XC 12 XC 15 XC 18
1	1020 1023	1.1151 C22E CK 22	055 M 15 (070 M 20)	2 C 22 XC 18 XC 25
1	D 3	1.2080 X 210 Cr 12	BD 3	Z 200 C 12

					
SS	UNI	UNE	JIS	KS	GOST
2106	FeE 355 KG;KW	AEE 355 KG;DD	SM 490 A;B;C; YA;YB	SM 490 A;B;C; YA;YB	15GF
2106	FeE 355-2				
2107-01	FeE 355-3				
2132, 2133	17GS	AE 355 D	SM 490 A;B;C;	SM 490 A;B;C;	17GS
2134, 2174	17G1S	Fe 510, D1 FF	YA;YB	YA;YB	17G1S
1912	CF SMn 28	F.2111 - 11 SMn 28	SUM 22	SUM 22	
1912	CF 9 SMn 28	11 SMn 28	SUM 22	SUM 22	
1914	CF 9 SMnPb 28	F.2112-11 SMnPb 28	SUM 22 L SUM 23 L, SUM 24 L	SUM 22 L SUM 23 L, SUM 24 L	
	CF 10 S 20	F. 2121 - 10 S 20			
	CF 10 SPb 20	F.2122-10 SPb 20			
	CF 10 SPb 20	10 SPb 20			
	CF 9 Mn 36	F.2113 - 12 SMn 35	SUM25	SUM25	
2642	FeE 355TM				
2662	FeE 490 TM FeE 560 TM				
1265	C 10, 2 C 10 2 C 15	F-1510-C 10 K	S 9 CK S 10 C	S 9 CK S 10 C	08;10
1300					
1370	C 15	C 16 F.1110-C 15 F.1511-C 16 K	S 15 S 15 CK	SM 15C SM 15CK	15
1450	C 20	C 25 F.1120-C 25 K	S 20 C, S 20 CK S 22 C	SM 20 C, SM20 CK SM22 C	20
2642					

# Material Conversion Table



## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
1	A36	St 44-2	4360 43 A		NFA 35-501 E 28
1		StE 320-3Z	1 501 160		
1	A572-60	1.8900 StE 380	4360 55 E		
2	(M) 1025	1.0406 C 25	070 M 26		1 C 25
2		1.0416 GS-38			20-400 M
2	A 537 Cl.1 A 414 Gr. G A 612	1.0473 P355GH	19 Mn 6		A 52 CP
2	1035	1.0501 C 35	080 A 32, 080 A 35 080 M 36, 1449 40 CS		1 C 35 AF 55 C 35 XC 38
2	1045	1.0503 CF 45 (C45G)	060 A 47 080 M 46		XC 42 H 1 TS
2	1040	1.0511 C 40	080 M 40		1 C 40 AF 60 C 40
2		1.0540 C 50			
2	A27 70-36	1.0551 GS-52	A2		280-480 M
2	A148 80-40	1.0553 GS-60	A3		320-560 M
2	A738	1.0577 S355J2G4 (Fe 510 D 2)	Fe 510 D2 FF 1501 Gr.224-460 1501 Gr. 224-490		A 52 FP
2	1140	1.0726 35 S 20	212 M 36	8M	35MF 6
2	1146	1.0727 45 S 20 (46S20)			45 MF 4
2	1035 1041	1.1157 40Mn4	150 M 36	15	35 M 5 40 M 5
2	1025	1.1158 C25E CK 25	(070 M 25)		2 C 25 XC 25
2	1536	1.1166 34Mn5			
2	1330	1.1170 28Mn6	(150 M 28), (150 M 18)		20 M 5, 28 Mn 6
2	1330	1.1170 28Mn6	150 M 5		20 M 5
2	1330	1.1170 28Mn6		14A	20 M 5
2		1.1178 C30E; CK 30	080M30		XC 32

 SS	 UNI	 UNE	 JIS	 KS	 GOST
1411					
1421					
2145	FeE390KG C 25	1 C 25	S 25C	SM 25C	
1306					
2101 2102	Fe E 355-2	A 52 RC I RA II	SGV 410 SGV 450 SGV 480	SGV 410 SGV 450 SGV 480	
1572 1550	C 35 1 C 35	F.113	S35C	SM35C	35
1672	C 43 C 46 C 40	1 C 40	S 45 C S 40 C	SM 45 C SM 40 C	45
1674	C 50	1 C 50			
1505					
1606					
2107		A 52 RB II AE 355 D			
1957 1973		F.210.G			
			S 09CK	SMn 433	
C 25	F.1120 - C 25 K TO.B	S 25 C S 28 C SMn 433 H	S 25 C	SM 25 C	
1421	C 28 Mn	28 Mn 6	SCMn 1	SCMn 1	30G
2145					
	C 28 Mn		SCMn 1	SCMn 1	
	C 30	2 C 30			

# Material Conversion Table



## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
2	1035	1.1180 C35R Cm 35	080 A 35		3 C 35 XC 32
2	1035	1.1181 C35E	080 A 35		2 C 35, XC 32
	1038	CK 35	(080 M 36)		XC 38 H 1
2	1035	1.1181 C35E CK 35	080 A 35 (080 M 36)		
2	1042	1.1191 GS- Ck 45	080 A 46		XC 45
2	1049	1.1206 C50E	080 M 50		2 C 50
	1050	CK 50			XC 48 H 1; XC 50 H 1
2	1050	1.1213 Cf 53	070 M 55		XC 48 H TS
	1055	(C53G)			
2	4520	1.5423 22Mo4	1503-245-420		
3		1.0050 St50-2			
3	A 516 Gr.70 A 515 Gr. 70 A 414 Gr.F; G	1.0481 P295GH 17 Mn 4	1501 Gr. 224		a 48 Cp;AP
3	1043	1.0503 C35	060 A 47 080 M 46 1449 50 HS, CS		1 C 45 AF 65 C 45
3	1074	1.0614 C 76 D; D 75-2			XC 75
3	1086	1.0616 C 86 D; D 85-2			XC 80
3	1095	1.0618 C 92 D;D 95-2			XC 90
3	1036 1330	1.1165 30Mn5	120 M 36 (150 M 28)		35 M 5
3	1335	1.1167 30Mn5	150 M 36		40 M 5
3	1040	1.1186 C40E CK 40	060 A 40, 080 A 40 080 M 40		2 C 40 XC 42 H 1
3	1045	1.1191 C45E CK 45	080 M 46 060 A 47		2 C 45 XC 42 H 1 XC 45 XC 48 H 1

					
SS	UNI	UNE	JIS	KS	GOST
1572		F.1130-C 35 K-1			
1550	C35	F.1130-C 35 K	S 35 C	SM 35 C	35
1572					
1572	C36		S 35 C	SM 35 C	
1660	C45	F-1140			
1674	C 50				50
1674	C 53		S 50 C	SM 50 C	50
	16 Mo 5 KG; KW	F.2602- 16 Mo 5	SB 450 M	SB 450 M	SB 480 M
	FE50				
	Fe 510 KG;KT;KW	A 47 RC I RA II	SG 365, SGV 410	SG 365, SGV 410	14G2
	Fe 510-2 KG;KT;KW		SGV 450	SGV 450	
	FeE 295		SGV 480	SGV 480	
1672	C 45	F.114	S 45 C	SM 45 C	45
1650	1 C 45				
C 85					
		F.8211-30 Mn 5	SMn 433 H	SMn 433 H	27ChGSNMDDL
		f.8311-AM 30 Mn 5	SCMn 2	SCMn 2	30GSL
2120		F. 1203-36 Mn 6	SMn 438 (H)	SMn 438 (H)	35G2
		F. 8212-36 Mn 5	SCMn 3	SCMn 3	35GL
	C 40		S 40 C	SM 40 C	
1672	C 45	F.1140-C 45 K	S 45 C	S 45 C	45
	C 46	F.1142-C48 K	S 48 C	S 48 C	

# Material Conversion Table

## ► According to VDI 3323 standard





Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
3	1049	1.1201 C45R Cm 45	080 M 46		3 C 45 XC 42 H 1 XC 48 H 1
3		1.7242 18 CrMo 4			
3	A 387 Gr. 12 Cl	1.7337 16 CrMo 4 4			
3	A 387 Gr. 12 Cl	1.7337 16 CrMo 4 4			
3		1.7362 12 CrMo 19 5	3606-625		Z 10 CD 5.05
3	A572-60	17 MnV 6	436055 E		NFA 35-501 E 36
4	1055	1.0535 C55	070 M 55		1 C 55 AF 70 C 55
4	1060	1.0601 C60	060 A 62 1449 HS,CS	43D	1 C 60 AF 70 C 55
4	1070	1.0603 C67	080 A 67 1449 70HS		XC65
4	1074 1075	1.0605 C75	1449 80 HS		
4	1055	1.1203 C55E CK 55	060 A 57 070 M 55		2 C 5 XC 55 H 1
4	1055	1.1209 C55R Cm 55	070 M 55		3 C 55 XC 55 H 1
4	1060 1064	1.1221 C60E CK 60	060 A 62	43D	2 C 60 XC 60 H 1
4	1070	1.1231 CK 67 (C67E)	060 A 67		XC 68
4	1074 1075 1078	1.1248 CK 75 (C75E)	060 A 78		XC 75
4	1086	1.1269 CK 85 (C85E)			XC 90
4	1095	1.1274 Ck 101 (C101E)			XC 100
4	W 112	1.1663 C 125 W			Y2 120
4					
5		1.0070 St70-2			
5		1.7238 49 CrMo 4			
5		1.7701 51 CrMoV 4			







					
SS	UNI	UNE	JIS	KS	GOST
1660	C 45	F.1145-C 45K-1 F.1147C 48 K-1	S 50 C	SM 50 C	
18 CrMo 4	A 18 CrMo 4 5 KW A 18 CrMo 4 5 KW 16 CrMo 20 5				
2142					
1655	C 55 1 C 55 C 60 1 C 60 C 67 C 75		S 55 C  S 58 C	SM 55 C  SM 58 C	55  60(G)  75
1655	C 55 C 55	F.1150-C 55 K F.1155-C 55 K-1	S 55 C	SM 55 C	55
1655 1678	C 60		S 58 C	SM 58 C	60 60G, 60GA
1770	C 70				65GA 68GA , 70
774	C 75 C 90 C 100	F-5117	SUP 4	SPS 4	75(A)  85(A)
1870 2223	FE70-2				
	51 CrMoV 4				



# Material Conversion Table



## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
6	A573-81 65	1.0116 St 37-3	4360 40 B		E 24-U
6	A515 65	1.0345 H1	1 501 161		A 37 CP
6	5120	1.0841 St 52-3	150 M 19		20 MC 5
6	9255	1.0904 55 Si 7	250A53	45	55S7
6	9254	1.0904 55 Si 7	250 A 53		55 S 7
6	9262	1.0961 60SiCr7	1 501 161		60SC6
6	L3	1.2067 100Cr6	BL3		Y100C6
6	L1	1.2108 90 CrSi 5			
6	L2	1.2210 115CrV3			100C3
6		1.2241 51CrV4			
6		1.2311 40 CrMnMo 7			
6	4135	1.2330 35 CrMo 4	708 A 37		34 CD 4
6		1.2419 105WCr6	BO1		105WC13
6	0 1	1.2510 100 MnCrW 4	BS1		8 MO 8
6	S1	1.2542 45 WCrV7			
6	S1	1.255 60WCrV7			55WC20
6	L6	1.2713 55NiCrMoV6			55NCDV7
6	L6	1.2721 50NiCr13			55 NCV 6
6	O2	1.2842 90MnCrV8	BO2		90 MV8
6	E 50100	1.3501 100 Cr 2			55WC20
6	52100	1.3505 100Cr6	2 S 135 535 A 99	31	100 C 6
6		1.5024 46Si7			45 S 7; Y 46 7;46 SI 7
6	9255	1.5025 51Si7			51 S 7 51 Si 7
6	9255	1.5026 55Si7	251 a 58		55 S 7
6	9260	1.5027 60Si7	251 A 60 251 H 60		60 S 7
6	9260 H	1.5028 65Si7			60 S 7
6		1.5120 38 MnSi 4			

 SS	 UNI	 UNE	 JIS	 KS	 GOST
1312	Fe37-3				
1330					
2172	Fe 52	F-431			
2085	55Si8	56Si7			
2090		F-431			
60SiCr8	60SiCr8				
	100Cr6				
2092	105WCR 5				
	107CrV3KU				
	35 cRmO 8 KU				
2234	35CrMo4	34CrMo4	SCM435TK	SCM435TK	
2140	10WCr6	105WCr5			
2140	10WCr6	105WCr5	SKS 31	STS 31	
2710	45 WCrV8 KU	45WCrSi8			
2710	58WCr9KU				
		F.520.S	SKT 4	STF 4	
2550		f-528			
2258	100Cr6	F.1310 - 100 Cr 6	SUJ2	STB 2	SchCh 15
		F. 1451 - 46 Si 7			
2090	48 Si 7	F.1450-50 Si 7			
	50 Si 7				
2085 2090	55 Si 7	F.1440 - 56 Si 7			55S2
	60 Si 7	F. 1441 - 60 Si 7			60S2
			50 P 7 SUP 6	SPS 6	

# Material Conversion Table

## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
6	A 204 Gr.A 4017	1.5415 16Mo3 15 Mo 3	1503-243 B		15 D 3
6	4419	1.5419 20Mo4	1503-243-430		
6	A 350-LF 5	1.5622 14Ni6			16N6
6	3415	1.5732 1 NiCr10			14 NC 11
6	3310; 3314	1.5752 14NiCr14	655M13	36A	12NC15
6		1.6587 17CrNiMo6	820A16		18NCD6
6		1.6657 14NiCrMo134			
6	5515	1.7015 15 Cr 3	523 M 15		12 C 3
6	5132	1.7033 34Cr4	530A32	18B	32C4
6	5140	1.7035 41C r4	530M40	18	42C4
6	5140	1.7045 42Cr41	530 A 40		42 C 4 TS
6	5115	1.7131 16MnCr5	527 M 17		16 MC 5
6		1.7139 16MnCr5			
6	5515	1.7176 55Cr3	527 A 60	48	55 C 3
6	4135; 4137	1.7220 34CrMo4	708 Aa 37		35 CD 4
6	4142	1.7223 41CrMo4			
6	4140	1.7225 42CrMo4	708 M 0		42 CD 4
6		1.7228 55NiCrMoV6G	823M30	33	
6		1.7262 15CrMo5			12 CD 4
6		1.7321 20 mOcR 4			
6	ASTM A182 F-12	1.7335 13CrMo4 4	1501-620Gr27		
6	A 182-F11;12	1.7335 13 CrMo 4 4	1 501 620 Gr. 27		15 CD 4.5
6	ASTM A 182 F.22	1.7380 10CrMo9 10	1501-622gR31; 45		
6	A182 F-22	1.7380 10 CrMo 9 10	1501-622		12 CD 9.10
6		1.7715 14MoV6 3	1503-660-440		
6	A355A	1.8509 41CrAlMo 7	905 M 39	41B	40 CAD 6.12
7	A570.36	1.0038 S235JRG2 (Fe 360 B) RSt 37-2	Fe 360 B FU 1449 27/23 CR 4360-40 B		E 24-2NE
7	3135	1.5710 36NiCr6	640A35		35NC6

					
SS	UNI	UNE	JIS	KS	GOST
2912	16Mo3(KG;KW)	F. 2601 - 16 Mo 3			
-2512	G 20 Mo 5    G 22 Mo5		SCPH 11	SCPH 11	
14 Ni 6 KG;KT	F.2641 - 15 Ni 6				
16NiCr11	15NiCr11	SNC415(H) SNC815(H)			
	14NiCrMo13				
	14NiCrMo131				
			SCr415(H)	SCr415(H)	
	34Cr4(KB)	35Cr4	SCr430(H)	SCr430(H)	
	41Cr4	42Cr4	SCr440(H)	SCr440(H)	
2245	41Cr4	42Cr4	SCr440	SCr440	
2511	16MnCr5	16MnCr5			
2127					
2253			SUP9(A)	SPS 9(A)	
2234					
	41CrMo4	42CrMo4	SNB 22-1	SNB 22-1	
2244					
2512	653M31				
2216		12CrMo4			
2625					
	14CrMo4 5	14CrMo45			
2216		12CrMo4	SCM415(H)	SCM415(H)	
2218	12CrMo9,10	TU.H 13MoCrV6			
2940	41CrAlMo7	41CrAlMo7			
1312	Fe 360 B FN	AE 235 B FN;FU Fe 360 B FN; FU			St3ps; sp

# Material Conversion Table





## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
7		1.5755 31 NiCr 14	653 M 31		18 NC 13
7	8620	1.6523 2 NiCrMo2	805M20	362	20 NCD 2
7	8740	1.6546 40 NiCrMo 22	311-Tyre 7		
7	4130	1.7218 25CrMo4	CDS 110		25 CD 4
7		1.7733 24 CrMoV 5 5			20 CDV 6
7		1.7755 GS-45 CrMOV 10 4			
7		1.8070 21 CrMoV 5 11			
8	4142	1.2332 47 CrMo 4	708 M 40	19A	42 CD 4
8	A128 (A)	1.3401 G-X120 Mn 12			Z 120 M 12
8	3435	1.5736 36 NiCr 10			30 NC 11
8	9840	1.6511 36CrNiMo4	816M40	110	40NCD3
8	4340	1.6582 35CrNiM 6	817 M 40	24	35 NCD 6
8		1.7361 32 CeMo12	722 M 24	40B	30 CD 12
8	6150	1.8159 50 CrV 4	735 A 50	47	50CrV4
8		1.8161 58 CrV 4			
8		1.8515 32 CrMo 12	722 M 24	40B	30 CD 12
8		1.8523 39CrMoV13 9	897M39	40C	
9		1.4882 X 50 CrMnNiNbN 21 9			Z 50 CMNNb 21.09
9	3135	1.5710 36NiCr6	640A35	111A	35NC6
9		1.5864 35 niCr 18			
9		31 NiCrMo 13 4	830 m 31		
10	A573-81	1.0144 ST 44-3	4360 43 C		E 28-3
10	A 619	1.0347 DCO3 RSt;RRSt 13	1449 3 CR 1449 2 CR		E
10	M 1015 M 1016 M 1017	1.0401 C15	080 M 15 080 M 15 1449 17 CS		AF 37 C12 XC 18
10		1.0570 ST 52-3	4360 50 B		E 36-3
10	12L13	1.0718 9SMnPb28			S250Pb
10	(12L13)	1.0718 9 SMnPb 28			S 250 Pb

					
SS	UNI	UNE	JIS	KS	GOST
2506	20NiCrMo2	20NiCrMo2	SNCM220(H)	SNCM220(H)	
	40NiCrMo2(KB)	40NiCrMo2	SNCM240	SNCM240	
2225	25CrMo4(KB)	55Cr3	SCM420/430	SCM420/430	
	21 CrMoV 5 11				
	35 NiCr 9				
2244	42CrMo4	42CrMo4	SCM (440)	SCM (440)	
2183	GX120Mn12	F. 8251-AM-X120Mn12	SCMnH 1, SCMn H 11	SCMnH 1, SCMn H 11	110G13L
	36NiCrMo4(KB)	35NiCrMo4	SUP 10	SPS 10	
2541	35NiCrMo6(KB)		SNCM 447	SNCM 447	
2240	30CrMo12	F.124.A			
2230	50CrV4	51CrV4			
2240	32CrMo12	F.124.A			
	36CrMoV12				
			SNC236	SNC236	
2534		f-1270			
1412			SM 400A;B;C	SM 400A;B;C	
	Fep 02	AP 02			08JU
1350	C15				
	C16	F.111	S 15 C	SM 15 C	
	1 C 15				
2132	Fe52BFN/Fe52CFN		SM490A;B;C;YA;YB	SM490A;B;C;YA;YB	
1914	CF9SMnPb28	11SMnPb28			
1914	CF 9 SMnPb 28	11 SMnPb 28	SUM 22L	SUM 22L	

# Material Conversion Table

## ► According to VDI 3323 standard





Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
10		1.0723 15 S 22 15 S 20	210 A 15 210 M 15		
10		1.2083			
10	H 11	1.2343 x 38 CrMoV 5 1	BH 11		Z 38 CDV 5
10	H 13	1.2344 X 40 CrMoV 5 1	BH 13		Z 40 CDV 5
10	A 2	1.2363 X100 CrMoV 5 1	BA 2		Z 100 CDV 5
10	D 2	1.2379 X 155 CrMo 12 1	BD2		Z 160 CDV 12
10	HNV3	1.2379 X210Cr12G	BD2		Z160CDV12
10	D 4 (D 6)	1.2436 X 210 CrW 12	BD6		Z 200 CD 12
10	H 21	1.2581 X 30 WCrV 9 3	BH 21		Z 30 WCV 9
10		1.2601 X 165 CrMoV 12			
10	H 12	1.2606 X 37 CrMoW 5 1	BH 12		Z 35 CWDV 5
10	D3	1.3343 S 6-5-2	BM2		Z200C12
10	N08028	1.4563			Z1NCDU31-27-03
10	ASTM A353	1.5662 X8Ni9	1501-509;510		
10	ASM A353	1.5662 X8Ni9	502-650		9 Ni
10	2517	1.5680 12Ni19	12Ni19		Z18N5
10	2515	1.5680 12 Ni 19			Z 18 N 5
11		1.3202 S 12-1-4-5	BT 15		
11		1.3207 S 10-4-3-10	BT 42		Z130WKCDV
11	T15	1.3243 S 6-5-2-5			KCV 06-05-05-04-02
11		1.3246 S 7-4-2-5			Z110 WKCDV 07-05-04
11		1.3247 S 2-10-1-8	BM 42		Z110 DKCWW 09-08-04
11	M 42	1.3249 S 2-9-2-8	BM 34		
11	T 4	1.3255 S 18-1-2-5	BT 4		Z 80 WKCV 18-05-04-0
11	M 2	1.3343 S6-5-2	BM2		Z 85 WDCV
11	M 7	1.3348 S2-9-2			Z 100 DCWV 09-04-02-







 SS	 UNI	 UNE	 JIS	 KS	 GOST
1922		F.210.F	SUM 32	SUM 32	
2314	X 37 CrMoV 5 1 KU				
2242	X40CrMoV511KU	F-5318	SKD61	STD61	
2260	X100CrMoV51KU	F-5227	SKD12	STD12	
2310	X165CrMoW12KU	X160CrMoW12KU			
2736					
2312	X215CrW 12 1 KU	F-5213			
	X30WCrV 9 3 KU	F-526	SKD5	STD5	
2310					
	X 35 CrMoW 05 KU	F.537			
2715	X210Cr13KU	X210Cr12	SUH3	STR3	
2584					
	14 Ni 6 KG;KT	XBNI09			
	X10Ni9	F-2645	SL9N60(53)	SL9N590(520)	
	HS 12-1-5-5	12-1-5-5			
2723	HS 6-5-2-5	6-5-2-5	SKH55	SKH55	
7-4-2-5	HS 7-4-2-5	M 35			
2-10-1-8	HS 2-9-1-8 2-9-2-8	M 41			
2722	HS 652	F-5604	SKH 51	SKH 51	
2782	HS 292	F-5607			



# Material Conversion Table





## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
11	T 1	1.3355 S 18-0-1	BT 1		Z 80 WCV 18-4-01
11	630	1.4548			Z7CNU17-04
11	HNV 3	1.4718 X45CrSi 9 3	401S45	52	Z45CS9
11	422	1.4935 x20 CrMoWV 12 1			
12	403	1.4000 X6Cr13	403 S 17		Z 6 C 13
12		1.4001 X6Cr14			
12	(410S)	1.4001 X7 Cr 13	(403 S 7)		Z 8 C 13
12	405	1.4002 X6CrA12	405S17		Z8CA12
12	405	1.4002 X6 CrAl 13	405 S 17		Z6CA13
12	416	1.4005 X12CrS 13	416 S 21		Z11 CF 13
12	410; CA-15	1.4006 (G-)X10 Cr 13	410S21	56A	Z10 C 13
12	430	1.4016 X8Cr17	Z8C17		430S15
12	430	1.4016 X6 Cr 17	430 S 15	60	Z 8 C 17
12		1.4027 G-X20Cr14	420 C 29		Z20 C 13M
12		1.4027 G-X 20 Cr 14	420 C 29		Z 20 C 13M
12	420	1.4028 X30 Cr 13	420 S 45		Z 30 C 13
12		1.4086 G-X120Cr29	452C11		
12	430 F	1.4104 X12CrMoS17	420 S 37		Z 10 CF 17
12	440B	1.4112 X90 CrMoV 18			
12	434	1.4113 X6CrMo 17	434 S 17		Z 8 CD 17.01
12		1.4340 G-X40CrNi27 4			
12	S31500	1.4417 X2CrNiMoSi19 5			
12	S31500	1.4417 X2 CrNoMoSi 18 5 3			
12		1.4418 X4 CrNiMo16 5			Z6CND16-04-01
12	XM 8	1.4510			Z 4 CT 17
	430 Ti				
	439				
12	430tl	1.4510 X6 CrTi 17			Z 4 CT 17
12		1.4511 X 6 CrNb 17(X 6 CrNb 17			Z 4 CNb 17
12	409	1.4512 X 6 CrTi 12 (X2CrTi12)	LW 19 409 S 19		Z 3 CT 12
12		1.4720 X20CrMo13			

					
SS	UNI	UNE	JIS	KS	GOST
	X45CrSi8	F322	SUH1	STR1	
2301	X6Cr13	F.3110 F8401	SUS403	STS 403	
2301	X6CrAl13				
2302	X6CrAl13				
2380	X12 CrSC13	F-3411	SUS 416	SUS 416	
2302	X12Cr13	F.3401	SUS 410	SUS 410	
2320	X8Cr17	F.3113			
2320	X8Cr17	F.3113	SUS 430	SUS 430	
2304					
2383	X10CrS17	F.3117	SUS430F	STS 430F	
2325	X8CrMo17		SUS434	STS 434	
2376					
2376					
2387	X 6 CrTi 17	F.3115-X 5 CrTi 17	SUS 430 LK	STS 430 LX	08 Ch17T
	X 6 CrNb 17	F.3122-X 5 CrNb 17	SUS 430 LK	STS 430 LX	
	X 6 CrTi 17		SUH 409	STR 409	

# Material Conversion Table





## ► According to VDI 3323 standard

Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
12	405	1.4724 X10CrA113	403S17		Z10C13
12	430	1.4742 X10CrA118	439S15	60	Z10CAS18
12	HNV6	1.4747 X80CrNiSi20	443S65	59	Z80CSN20.02
12	446	1.4749 x18 cRn 28			
12	446	1.4762 X10CrA124			Z10CAS24
12	EV 8	1.4871 X 53 CrMnNiN 21 9	349 S 54		Z 52 CMN 21.09
12	302	x12 CrNi 18 9	302 S 31		Z 10 CN 18-09
12	429	X10 CrNi 15			
13	420	1.4021 X20Cr13	420S37		Z 20 C 13
13	420	1.4031 X40 Cr 13			Z 40 C 14
13		1.4034 X46Cr13	420 S 45		Z40 C 14
13	431	1.4057 X20CrNi172	431 S 29	57	Z 15 CN 16.02
13		1.4125 X 105 CrMo 17			Z 100 CD 17
13	CA6-NM	1.4313 G-X4 CrNi 13 4	425 C 11		Z 4 CND 13-04 M
13	630	1.4542 X 5 CrNiCuNb 17 4 (X5CrNiCuNb 16-4)			
13		1.4544	S. 524 S. 526		
13	348	1.4546 X5CrNiNb 18-10	347 S 31 2 S. 130 2 S. 143/144/145 S.525/527		
13		1.4922 x20cRmV12-1			
13		1.4923 X22 CrMoV12 1			
14	304	1.4301 X 5 CrNi 18 9	304 S 15		Z 5 CN 18.09
14	303	1.4305 X10 CrNiS 18 9	303 S 21	58M	Z 8 CNF 18-09
14	304L	1.4306 X2CrNi18 9	304S12		Z2CrNi18 10
14	304L	1.4306 X2 CrNi 18 10	304 S 11		Z 3 CN 19-11
14	CF-8	1.4308 X6 CrNi 18 9	304 C 15	58E	Z 6 CN 18-10 M
14	301	1.4310 X12CrN i17 7	301 S 21		Z 12 CN 17.07

					
SS	UNI	UNE	JIS	KS	GOST
	X10CrA112	F.311			
	X8Cr17	F.3113	SUS430	STS430	
	X80CrSiNi20	F.320B	SUH4	STR4	
2322	X16Cr26		SUH446	STR446	
	X53CrMnNiN21 9		SUH35,SUH36	STR35,STR36	
2330					
2303	14210				
-2304					
	X40Cr14	F.3405	SUS420J2	STS420J2	
2321	X16CrNi16	F.3427	SUS431	STS431	
	X 105 CrMo 17				
2385	(G)X6CrNi304		SCS5	SSC5	
	X 6 CrNiTi 18 11				08Ch 18N12T
	X 6 CrNiNb 18 11				
2317	x20cRmOnl 12 01				
2332;2333					
2346	X10CrNiS18.09	F.3508	SUS303	STS303	
2352	x2cRn18 11	F.3503	SCS19	SSC19	
2352	X2CrNi18 11				
2333			SUS304L	STS304L	
2331	X2CrNi18 07	F.3517			

# Material Conversion Table






## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
14	304 LN	1.4311 X2 CrNiN 18 10	304 S 62		Z 2 CN18.10
14		1.4312 G-X10CrNi18 8	302C25		Z10CN18.9M
14	305	1.4312 X8 CrNi 18 12	305 S 19		
14		1.4332 X2 CrNi 18-8			
14	304	1.4350 X5CrNi18 9	304S15	58E	Z6CN18.09
14	S32304	1.4362 X2 CrNiN 23 4			Z 2 CN 23-04 AZ
14	202	1.4371 X3 CrMnNiN 188 8 7	284 S 16		Z 8 CMN 18- 08-05
14	316	1.4401 X 5 CrNiMo 17 12 2 (X4 CrNiMo 17 -12-2)	316 S 13 316 S 17 316 S 19 316 S 31 316 S 33		Z 3 CND 17 -11-01 Z 6 CND 17-11 Z 6 CND 17-11-02 Z 7 CND 17-11-02 Z 7 CND 17-12-02
14	316L	1.4404 X2 CrNiMo 17 13 2 (X2 CrNiMo 17-12-2) GX 2 CrNiMoN 18-10	316 S 11, 316 S 13 316 S 14, 316 S 31; 316 S 42, S.537;316 C 12, T.75, S. 161		Z 2 CND 17-12 Z 2 CND 18-13 Z 3 CND 17-11-02 Z 3 CND 17-12-02 FF Z 3 CND 18-12-03 Z 3 CND 19.10 M
14	316LN	1.4406 X2 CrNiMoN 17 12 2 (X2CrNiMoN 18-10)	316 S 61 316 S 63		Z2 CND 17-12 AZ
14	CF-8M	1.4408 GX 5 CrNiMoN 7 12 2 G-X 6 CrNiMo 18 10	316 C 16 (LT 196) ANC 4 B		
14		1.4410 G-X10CrNiMo18 9			Z5CNaD20.12M
14	316 Ln	1.4429 X2 CrNiMo 17 -13-3	316 S 62		Z 2 CND 17-13 Az
14	316L	1.4435 X2 CrNiMo18 14 3	316 S 11;316 S 13 316 S 14;316 S 31 LW 22 LWCF 22		Z 3 CND 17-12-03 Z 3 CND 18-14-03
14	316	1.4436 X 5 CrNiMo 17 13 3 (X4CRNIMO 17-13-3)	316 S 19; 316 S 31 316 S 33 LW 23 LWCF 23		Z 6 CND 18-12-03 Z 7 CND 18-12-03

					
SS	UNI	UNE	JIS	KS	GOST
2371	X2CrNiN18 10		SUS304LN	STS304LN	
2332	X5CrNi18 10	F.3551	SUS304	STS304	
2347	X 5 CrNiMo 17 12	F.3534-X 5 CrNiMo 17 12 2	SUS 316	STS 316	
2348	X 2 CrNiMo 17 12	F.3533 - X 2 CrNiMo 17 13 2			
	G-X 2 CrNiMo 19 11	F.3537 - X 2 CrNiMo 17 13 3	SUS 316 L	STS 316 L	
	X 2 CrNiMoN 17 12	F.3542-X 2 CrNiMoN 17 12 2	SUS316LN	STS316LN	
2343		F.8414-AM-X 7 CrNiMo 20 10	SCS 14	SSC 14	07 Ch 18N10G2S2MSL
2328					
2375	X 2 CrNiMoN 17 13	F.3543-X 2 CrNiMoN 17 13 3	SUS 316 LN	STS 316 LN	
2375	X 2 CrNiMoN 17 13	F.3533-X 2 CrNiMo 17 13 2	SUS 316 L	STS 316 L	O3 Ch 17N14M3
2343	X 5 CrNiMo 117 13 X 8 cRnImO 17 13	F.3543-X 5 CrNiMo 17 12 2 F.3538-X 5 CrNiMo 17 13	SUS 316	STS 316	

# Material Conversion Table

## ► According to VDI 3323 standard






Material group	 AISI/SAE	 Material No. DIN	 BS	 EN	 AFNOR
14	317L	1.4438 X2 CrNiMo 18 16 4 (X2CrNiMo 18-15-4)	317 S 12		Z 2 CND 19-15-04 z 3 cnd 19-15-04
14	(s31726)	1.4439 X2 CrNiMoN 17 13 5			Z 3 CND 18-14-06 AZ
14		1.4440 X 2 CrNiMo 18 13			
14	317	1.4449 X5 CrNiMo 17 13 3	317 S 16		
14	329	1.4449 X 4 CrNiMo 27 5 2 1.4460 (X3CrNiMo27-5-2)			(Z 3 CND 25-07 Az) Z 5 CND 27-05 Az
14	329	1.4460 X8CrNiMo27 5			
14		1.4462 X2CrNiMoN22 5 3	318 S 13		Z 3 CND 22-05 Az (Z 2 CND 24 -08 Az ) (Z 3 CND 25-06-03 Az)
14		1.4500 G-X7NiCrMoCuNb25 20			Z3NCDU25.20M
14	17-7PH	1.4504	316S111		
14	443 444	1.4521 X2CrMoTi18-2	317 S 16		
14	UNS N 08904	1.4539 X1NiCrMoCuN25-20-5			Z 2 NCDU 25-20
14	CN-7M	1.4539 (G-)X1 NiCrMoCu 25 20 5			Z1 NCDU 25-02 M
14	321	1.4541 Z 6 CrNiTi 18-10	321 S 31 321 S 51 (1010;1105) LW 24 LWCF 24		Z 6 CNT 18-10
14	630	1.4542 X5 CrNiCuNb 17 4 (X5 CrNiChNb 16-4)			Z 7 CNU 15-05 Z 7 CNU 17-04
14	17-4PH	1.4542			Z7CNU17-04
14	S31254	1.4547 X1 CrNiMoN 20 18 7			
14	17-4PH	1.4548			Z7CNU17-04
14	347	1.4550 X6 CrNiNb 18 10	347 S 17	58F	Z 6 CNNb 18.10
14		1.4552 G-X7CrNiNb18 9			Z4CNNb19.10M
14	17-7PH	1.4568	316S111		
14	316tTi	1.4571 X6 CrNiMoTi 17 12 2	320 S 31		Z 6 CNDT 17-12002
14		1.4581 G-X 5 CrNiMoNb	318 C 17		Z 4 CNDNb 18.12 M
14	318	1.4583 X 10CrNiMoNb 18 12	303 S 21		Z15CNS20.12







 SS	 UNI	 UNE	 JIS	 KS	 GOST
2367	X2CrNiMo18 16	f.3539-x 2 cRnlmO 18 16 4	SUS317L	STS317L	
	X 5 CrNiMo 18 15		SUS 317	STS 317	
2324		F.3309-X 8 CrNiMo 17 12 2 F.3552-X 8 CrNiMo 18 16 4	SUS 329 J 1	STS 329 J 1	
2377			SUS 329 J3L	STS 329 J3L	
	Z8CNA17-07	X2CrNiMo1712			
2326		F.3123-X 2 CrMoTiNb 18 2	SUS 444	STS 444	
2562					
2564					
2337	X 6 CrNiTi 18 11	F.3523 - X 6 CrNiTi 18 10	SUS 321	STS 321	06Ch18N10T 08Ch18N10T 09Ch18N10T 12Ch18N10T
			SCS 24 SUS 630	SSC 24 STS 630	
2378					
2338	X6CrNiNb18 11	F.3552	SUS347	STS347	
	Z8CNA17-07	X2CrNiMo1712			
2350					
	x15cRnlsl2 12				



# Material Conversion Table





## ► According to VDI 3323 standard







Material group	 AISI/SAE	 Material No. DIN	 BS	 EN	 AFNOR
14		1.4585 G-X7CrNiMoCuNb18 18			
14		1.4821 X20CrNiSi25 4			Z20CNS25.04
14		1.4823 G-X40CrNiSi27 4			
14	309	1.4828 X15CrNiSi20 12	309 S 24	58C	Z15CNS20.12
14	309S	1.4833 X6 CrNi 22 13	309 S 13		Z 15 CN 24-13
14	310 S	1.4845 X12 CrNi 25 21	310S24		Z 12 CN 25-20
14	321	1.4878 X6 CrNiTi 18 9	32 1 S 20	58B	Z 6 CNT 18-12 (B)
14	Ss30415	1.4891 X5 CrNiNb 18 10			Z20CNS25.04
14	S30815	1.4893 X8 CrNiNb 11			
14	304H	1.4948 X6 CrNi 18 11	304 S 51		Z 5 CN 18-09
14	660	1.498 X5 NiCrTi 25 15			Zz 8 nctv 25-15 b ff
14		X5 NiCrN 35 25			
14	S31753	X2 CrNiMoN 18 13 4			
14		X2 CrNiMoN 25 22 7			
15	CLASS20	0.6010 GG10			Ft10D
15	A48-20B	0.6010 GG-10			Ft 10 D
15	NO 25 B	0.6015 GG 15	Grade 150		Ft 15 D
15	CLASS25	0.6015 GG 15	Grade 150		Ft 15D
15	A48 25 B	0.6015 GG 15	Grade 150		Ft 15 D
15	A48-30B	0.6020 GG-20	Grade 220		Ft 20 D
15	NO 30 B	0.6020 GG 20	Grade 220		Ft 20 D
15	A436 Type 2	0.6660 GGL-NiCr202	L-NiCuCr202		L-NC 202
15	60-40-18	0.7040 GGG 40	SNG 420/12		FCS 400-12
15	No 20 B	GG 10			Ft 10 D
16	CLASS30	0.6020 GG 20	Grade 220		Ft 20D
16	CLASS45	0.6030 GG 30	Grade 300		Ft 30D
16	A48-45 B	0.6030	Grade 350		Ft 30D
16	A48-50	0.6035 GG-35	Grade 350		Ft 35 D
16	A48-60 B	0.6040 GG40	Grade 400		Ft 40 D
16	100/70/03	0.7070 GGG-70	SNG700/2		FGS 700-2

 SS	 UNI	 UNE	 JIS	 KS	 GOST
	X6CrNiMoTi17 12				
		F.8414	SCS17	SSC17	
2361	X6CrNi25 20	F.331	SUH310	STR310	
2337	X6CrNiTi18 11	F.3553	SUS321	STS321	
2372					
2368					
2333					
2570					
110	G 10				
0110-00					
0115-00	G 15	FG 15	FC150	GC150	
115	G 15	FG 15			
01 15-00	G 14	FG 15			
0120-00					
120	G 20		FC200	GC200	
0523-00					
0717-02	GS 370-17	FGE 38-17	FCD400	GCD400-18,15	
110			FC100	GC100	
120	G 20	FG 20			
130	G 30	FG 30	FC300	GC300	
01 30-00					
135	G 35	FG 35	FC350	GC350	
140					
07 37-01	GGG 70	GGG 70	FCD700	GCD700-2	

# Material Conversion Table





## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
16		1.4829 X 12 CrNi 22 12			
17		0.7033 GGG35.3			
17		0.7033 GGG-35.3	350/22 L 40		FGS 370/17
17	60-40-18	0.7040 GGG-40	SNG 420/12		FGS 400-12
17	60/40/18	0.7043 GGG-40.3	370/7		FGS 370/17
17	80-55-06	0.7050 GGG50	SNG500/7		FGS 500/7
17	65-45-12	0.7050 GGG-50	SNG 500/7		FGS 500-7
17		0.7652 GGG-NiMn 13 7	S-NiMn 137		S-Mn 137
17	A43D2	0.7660 GGG-NiCr 20 2	Grade S6		S-NC 202
17		GGG 40.3	SNG 370/17		FGS 370-17
18	A48-40 B	0.6025 GG25	Grade260		Ft 25 D
18		0.7060 GGG60	SNG600/3		FGS600-3
18	80/55/06	0.7060 GGG-60	600/3		FGS 600/3
18	A48 40 B				
19		0.8055 GTW55			
19	32510	0.8135 GTS-35-10	B 340/12		MN35-10
19	A47-32510	0.8135 GTS-35-10	B 340/2		Mn 35-10
19	A220-40010	0.8145 GTS-45-06	P 440/7		Mn 450-6
19		GTS-35	B 340/12		
19			8 290/6		MN 32-8
19	32510	GTS-35	B340/12		MN 35-10
20		0.8035 GTM-35	W340/3		MB35-7
20		0.8040 GTW-40	W410/4		MB40-10
20		0.8045			
20		0.8065 GTMW-65			
20	A220-50005	0.8155 GTS-55-04	P 510/4		Mn 550-4
20	50005	0.8155 GTS-55-04	P 510/4		MP 50-5
20	70003	0.8165 GTS-65-02	P 570/3		Mn 650-3
20	90001	0.8170 GTS-70-02	P 690/2		Mn 700-2
20	A220-90001	0.8170 GTS-70-02			Mn 700-2

					
SS	UNI	UNE	JIS	KS	GOST
0717-15					
0717-15					
0717-02					
0717-15					
0727-02	GGG 50				
	0727-02		FCD 500	GCD 500-7	
0772-00					
0776-00					
0717-12					
125	G 25	FG 25	FC250	GC250	
07 32-03	GGG 60	GGG 60			
0727-03			FCD600	GCD600-3	
		GTW 55			
810		GTS 35			
0815-00					
	0852-00	GMN 45			FCMW370
0810-00					
814			AC4A	AC4A	
08 15			FCMW330	FCMW330	
852		GTM 35			
	GTB40	GTM 40			
	GMB45	GTM 45			
		GTM 65			
0854-00					
0854-00	GMN 55		FCMP490	PMC 490	
0856-00	GMN 65		FCMP590	PMC 590	

# Material Conversion Table





## ► According to VDI 3323 standard

Material group	 AISI/SAE	 Material No. DIN	 BS	 EN	AFNOR
20		0.8170 GTS-70-02	IP 70-2		
20	1022				
	1518	1.1133 20Mn5	120 M 19		20 M 5
20	1035	1.1183 Cf 35 (C35G)	080 A 35		XC 38 H 1 TS
20	400 10	GTS-45	P440/7		
20	70003	GTS-65	P 570/3		MP 60-3
21	Al99	3.0205			
21	1000	3.0255 Al99.5	L31/34/36		A59050C
21		3.3315 AlMg1			
22		3.1325 AlCuMg 1			
22		3.1655 AlCuSiPb			
22		3.2315 AlMgSi1			
21	7050	3.4345 AlZnMgCuO,5	L 86		AZ 4 GU/9051
23		3.2381 G-AlSi 10 Mg			
23		3.2382 GD-AlSi10Mg			
23		3.2581 G-AlSi12			
23		3.3561 G-ALMg 5			
23	ZE 41	3.5101 G-MgZn4sE1Zr1	MAG 5		
23	EZ 33	3.5103 MgSE3Zn27r1	MAG 6		G-TR3Z2
23	AZ 81	3.5812 G-MgAl8Zn1	NMAG 1		
23	AZ 91	3.5912 G-MgAl9Zn1	MAG 7		
24		2.1871 G-AlCu 4 TiMg			
24		3.1754 G-AlCu5Ni1,5			
24		3.2163 G-AlSi9Cu3			
24	4218 B	3.2371 G-AlSi 7 Mg			
24	SC64D	3.2373 G-AlSi9MGWA			A-S7G
24		3.2373 G-AlSi 9 Mg			
24	QE 22	3.5106 G-MgAg3SE2Zr1	mag 12		
24	GD-AlSi12	G-ALMG5	LM5		A-SU12
23-24	A360.2	3.2383 G-AlSi0Mg(Cu)	LM9		

 SS	 UNI	 UNE	 JIS	 KS	 GOST
0862-00	GMN 70		FCMP690	PMC 690	
0864-00					
2132	G 22 Mn 3				
	20 Mn 7	F.1515-20 Mn 6	SMnC 420	SMnC 420	
1572	C 36; C 38		S 35 C	SM 35 C	35
08 52					
858			FCMP540	PMC 540	
811-04					
4231			C4BS	C4BS	
4252					
4253					

# Material Conversion Table

## ► According to VDI 3323 standard





				
Material group	AISI/SAE	Material No. DIN	BS EN	AFNOR
23-24	A356-72		2789;1973	NF A32-201
23-24	356.1		LM25	
23-24	A413.2	G-AISi12	LM6	
23-24	A413.1	G-AISi 12 (Cu)	LM20	
23-24	A413.0	GD-AISi12		
23-24	A380.1	GD-AISi8Cu3	LM24	
26	C93200	2.1090 G-CuSn 7 5 pb		U-E 7 Z 5 pb 4
26	C83600	2.1096 G-CuSn5ZnPb	LG 2	
26	C83600	2.1098 G-CuSn 2 Znpb		
26	C23000	2.1182 G-CuPb15Sn	LB1	U-pb 15 E 8
26	C93800	2.1182 G-CuPb15Sn		Uu-PB 15e 8
27		2.0240 CuZn 15		
27	C27200	2.0321 CuZn 37	cz 108	CuZn 36, CuZn 37
27	C27700	2.0321 CuZn 37	cz 108	CuZn 36, CuZn 37
27		2.0590 G-CuZn40Fe		
27	C 86500	2.0592 G-CuZn 35 Al 1	U-Z 36 N 3	HTB 1
27	C 86200	2.0596 G-CuZn 34 Al 2	HTB 1	U-Z 36 N 3
27	C 18200	2.1293 CuCrZr	CC 102	U-Cr 0.8 Zr
28		2.0060 E-Cu57		
28		2.0375 CuZn36Pb3		
28	C 94100	2.0596 G-CuZn 34 Al 2	HTB 1	U-Z 36 N 3
28	C 63000	2.0966 CuAl 10 Ni 5 Fe 4	Ca 104	U-A 10 N
28	B-148-52	2.0975 G-CuAl 10 Ni		
28	C 90700	2.105 G-CuSn 10	CT1	
28	C 90800	2.1052 G-CuSn 12	pb 2	UE 12 P
28	C 81500	2.1292 G-CuCrF 35	CC1-FF	
28		2.4764 CoCr20W15Ni		
31	N 08800	1.4558 X 2 NiCrAlTi 32 20	NA 15	
31	N 08031	1.4562 X 1 NiCrMoCu 32 28 7		





# Material Conversion Table




## ► According to VDI 3323 standard







Material group					
	AISI/SAE	Material No. DIN	BS	EN	AFNOR
31	N 08028	1.4563 X 1 NiCrMoCuN 32 27 4			
31	N 08330	1.4564 X 12 NiCrSi 36 16	NA 17		Z 12 NCS 35.16
31	330	1.4564 X12 NiCrSi 36 16	NA 17		Z 12 NCS 37.18
31		1.4865 G-X40NiCrSi38 18	330 C 40		
31		1.4958 X 5 NiCrAlTi 31 20			
31	AMS 5544	LW2.4668 NiCr19NbMo			NC20K14
32		1.4977 X 40 CoCrNi 20 20			Z 42 CNKDOWNb
33	Monel 400	2.4360 NiCu30Fe	NA 13		NU 30
33	5390A	2.4603			NC22FeD
33	Hastelloy C-4	2.4610 NiMo16Cr16Ti			
33	Nimonic75	2.4630 NiCr20Ti	HR 5,203-4		NC 20 T
33		2.4630 NiCr20Ti	HR5,203-4		NC20T
33	Inconel 690	2.4642 NiCr29Fe			Nnc 30 Fe
33	Inconel 625	2.4856 NiCr22Mo9Nb	NA 21		NC 22 FeDNb
33	5666	2.4856 NiCr22Mo9Nb			Inconel 625
33	Incoloy 825	2.4858 NiCr21Mo	NA 16		NC 21 Fe DU
34	Monel k-500	2.4375 NiCu30 Al	NA 18		NU 30 AT
34	4676	2.4375 NiCu30Al	3072-76		
34		2.4631 NiCr20TiAl	Hr40;601		NC20TA
34	Inconel 718	2.4668 NiCr19FeNbMo			NC 19 Fe Nb
34	Inconel	2.4694 NiCr16fE7TiAl			
34		2.4955 NiFe25Cr20NbTi			
34	5383	LM2.4668 NiCr19Fe19NbMo	HR8		NC19eNB
34	5391	LW2 4670 S-NiCr13A16MoNb	3146-3		NC12AD
34	5660	LW2.4662 NiFe35Cr14MoTi			ZSNCDT42
34	5537C	LW2.4964 CoCr20W15Ni			KC20WN
34	AMS 5772	C0Cr22W14Ni			KC22WN
35	Inconel X-750	2.4669 NiCr15Fe7TiAl			NC 15 TNb A
35	Hastelloy B	2.4685 G-NiMo28			
35	Hastelloy C	2.4810 G-NiMo30			



# Material Conversion Table

## ► According to VDI 3323 standard

Material group				
	AISI/SAE	Material No. DIN	BS	EN AFNOR
35	AMS 5399	2.4973 NiCr19Co11MoTi		NC19KDT
35		3.7115 TiAl5Sn2		
36	R 50250	3.7025 Ti 1	2 TA 1	
36	R 52250	3.7225 Ti 1 pd	TP 1	
36	AMS 5397	LW2 4674 NiCo15Cr10MoAlTi		
37		3.7124 TiCu2	2 TA 21-24	
37	R 54620	3.7145 TiAl6Sn2Zr4Mo2Si		
37		3.7165 TiAl6V4	TA 10-13;TA 28	T-A 6 V
37		3.7185 TiAl4Mo4Sn2	TA 45-51; TA 57	
37		3.7195 TiAl 3 V 2.5		
37		TiAl4Mo4Sn4Si0.5		
37	AMS R54520	TiAl5Sn2.5	TA14/17	T-A5E
37	AMS R56400	TiAl6V4	TA10-13/TA28	T-A6V
37	AMS R56401	TiAl6V4ELI	TA11	
38	W 1	1.1545 C105W1	BW 1A	Y1105
38	W210	1.1545 C105W1	BW2	Y120
38		1.2762 75 CrMoNiW 6 7		
38	440C	1.4125 X105 CrMo 17		Z 100 CD 17
38		1.6746 32 nlcRmO 14 5	832 M 31	35 NCD 14
40	Ni- Hard 2	0.9620 G-X 260 NiCr 4 2	Grade 2 A	
40	Ni- Hard 1	0.9625 G-X 330 Ni Cr 4 2	Grade 2 B	
40	Ni- Hard 4	0.9630 G-X 300 CrNiSi 9 5 2		
40		0.9640 G-X 300 CrMoNi 15 2 1		
40	A 532 III A 25% Cr	0.9650 G-X 260 Cr 27	Grade 3 D	
40	A 532 III A 25% Cr	0.9655 G-X 300 CrNMo 27 1	Grade 3 E	
40		1.2419 105 WCr 6	105WC 13	
40	310	1.4841 X15 CrNiSi 25 20	314 S31	Z 15 CNS 25-20
41		0.9635 G-X 300 CrMo 15 3		
41		0.9645 G-X 260 CrMoNi 20 2 1		
41		0.9655 G-X 300 CrNMo 27 1		

 SS	 UNI	 UNE	 JIS	 KS	 GOST
1880	C100KU	F-5118	SK3	STC 105(STC3)	
2900	C120KU	CF.515	SUP4	SPS 4	
	0512-00				
	0513-00				
	0466-00				
		107 WCr 5 KU			

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