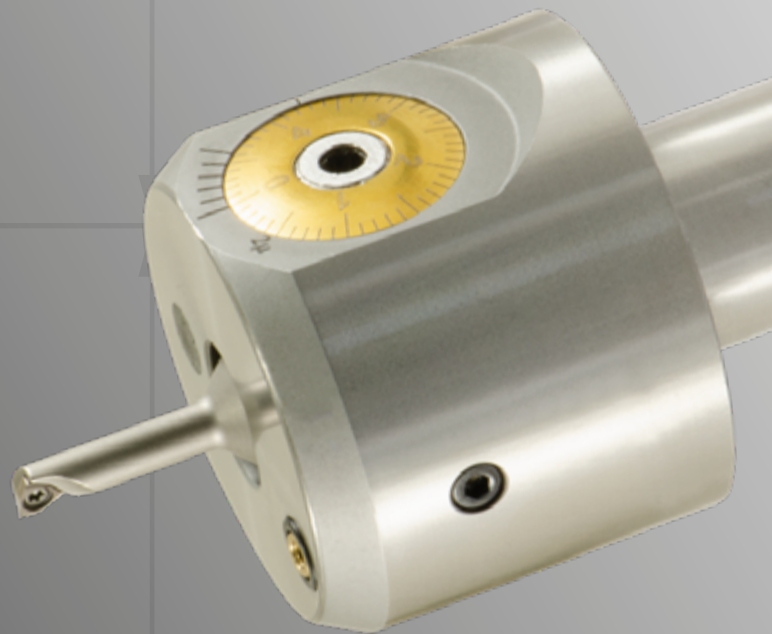


# BORING

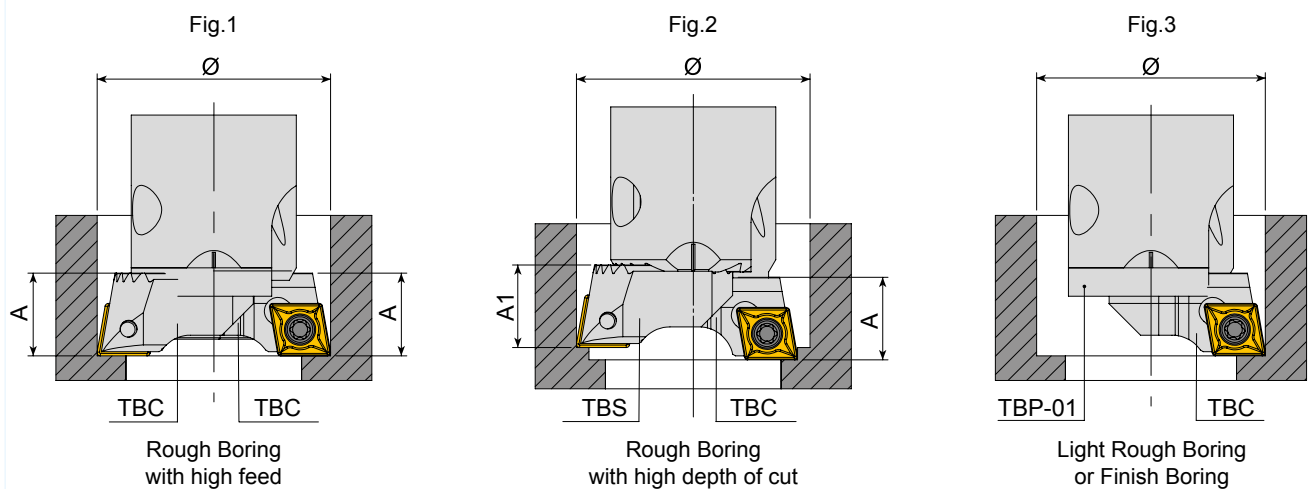


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## APPLICATION GUIDE & INDEX

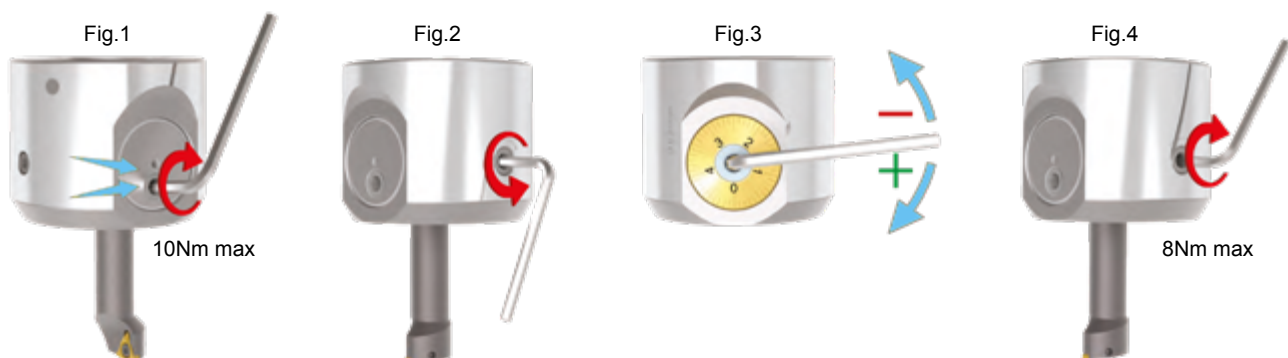
Holder	Type	Application	Size Range	Page No	Insert	Page No.
FBT FINE BORING			Ø35.7mm - Ø114mm	3-6	 WCGT TPGX	13
TBT TWIN BORING			Ø35.7mm - Ø114mm	7-9	 CCGT CCMT	10-12

### TWIN BORING HEAD INFORMATION



- Radial setting of the cutting edges should be carried out with tool pre-setting equipment.
- Boring heads fitted with two cartridges are for roughing operations involving heavy chip removal.
- For high feed roughing, use two TBC cartridges set at identical radial distance on the same plane (Fig.1)
- For high depth of cut, use TBS and TBC cartridge. For rough boring, this allows double the cutting width with a single feed rate. For finish boring, the cutting width is divided to allow some of the intermediate machining to be removed. (Fig.2)
- A single cartridge can be fitted for light rough boring and finish boring operations. In this instance, always fit TBP-01 serrated surface protection plate. (Fig.3)

### • FINE BORING HEAD ASSEMBLY INSTRUCTIONS

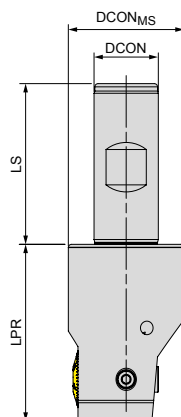


- Insert boring bar, and clamp to no more than 10Nm (Fig.1)
- Loosen fine adjustment clamp screw. (Fig.2)
- Adjust offset to required distance for fine boring operation. (Fig.3)
- Tighten fine adjustment clamp screw to no more than 8Nm. (Fig.4)



## FINE BORING HEAD

## FBT



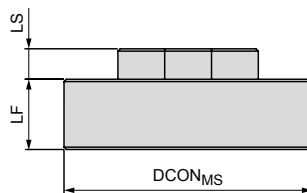
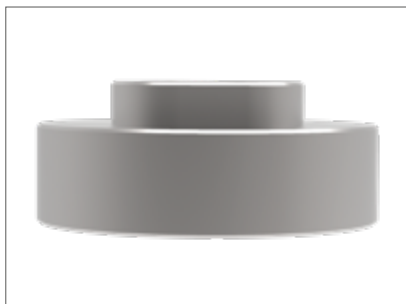
EDP Code	TOOL CODE	♦	DC-DCX	DCON	DCON <sub>MS</sub>	LPR	LS	Boring Bar to Suit	Extension	Wrench
BTH0081	<b>FBT.063025</b>	<b>X</b>	<b>6-30</b>	25	55	45	56	SWLCR STUPR	-	HA4
BTH0082	<b>FBT.294016</b>	<b>X</b>	<b>29-40</b>	16	27	46	40	STFPR	-	HA2/HA2.5
BTH0083	<b>FBT.395420</b>	<b>X</b>	<b>39-54</b>	20	36	55	50			HA2.5/HA3
BTH0084	<b>FBT.828025</b>	<b>X</b>	<b>52-80</b>	25	48	65	56			HA4/HA5
BTH0085	<b>FBT.7817032</b>	<b>X</b>	<b>79-170</b>	32	72	77	60		FBE	HA5/HA6

► Capto, ABS, HSK, BT & DIN shanks available on request



## FINE BORING HEAD EXTENSION

## FBE



EDP Code	TOOL CODE	♦	To suit Diameter	DCON	LF	LS
BTH0100	<b>FBE.114134</b>	<b>X</b>	<b>114-136</b>	31.8	12.9	9
BTH0101	<b>FBE.132152</b>	<b>X</b>	<b>132-170</b>	31.8	21.9	18



## FINE BORING BARS

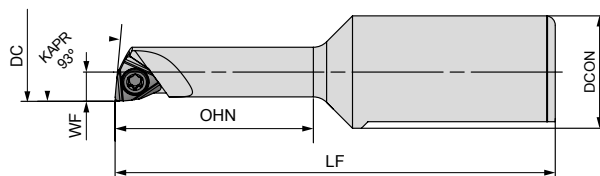
### SWLCR

For WC.. positive inserts

Insert P.13



WCGT 0201..



EDP Code	Description	DC-DCX	WF	LF	OHN	DCON	Insert Screw	Wrench
BTH0086	<b>SWLCR.061003-02</b>	<b>6-10</b>	3	47	22	12	TXS2033	TXW06
BTH0087	<b>SWLCR.081004-02</b>	<b>8-14</b>	4	55	30	12		

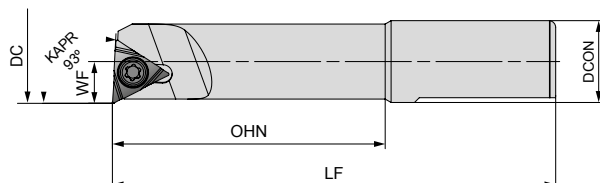
### STUPR

For TP.. positive inserts

Insert P.13



TPGX 0902..



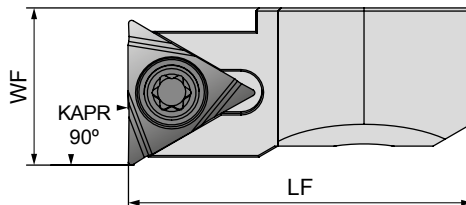
EDP Code	Description	DC-DCX	WF	LF	OHN	DCON	Insert Screw	Wrench
BTH0088	<b>STUPR.121806-09</b>	<b>12-18</b>	6	65	40	12	TXS2545	TXW08
BTH0089	<b>STUPR.162208-09</b>	<b>16-22</b>	8	65	40	12	TXS2506	
BTH0090	<b>STUPR.202610-09</b>	<b>20-26</b>	10	65	40	12		
BTH0091	<b>STUPR.243012-09</b>	<b>24-30</b>	12	75	50	12		



## FINE BORING BARS

**STFPR**

For TP.. positive inserts



Insert P.13



TPGX 0902..



EDP Code	Description	DC-DCX	WF	LF	Insert Screw	Wrench
BTH0092	<b>STFPR.293510-09</b>	<b>29-35</b>	10	21.9	TXS2506	TXW08
BTH0093	<b>STFPR.3440125-09</b>	<b>34-40</b>	12.5	21.9		
BTH0094	<b>STFPR.394712-09</b>	<b>39-47</b>	12	26.9		
BTH0095	<b>STFPR.4654155-09</b>	<b>46-54</b>	15.5	26.9		
BTH0096	<b>STFPR.526814-09</b>	<b>52-68</b>	14	34.9		
BTH0097	<b>STFPR.648020-09</b>	<b>64-80</b>	20	34.9		
BTH0098	<b>STFPR.789820-09</b>	<b>78-98</b>	20	44.9		
BTH0099	<b>STFPR.9611629-09</b>	<b>96-116</b>	29	44.9		

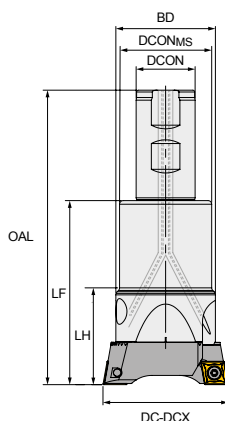


## TWIN BORING HEAD C/W CARTRIDGES

## TBT



Fitted with TBC.. cartridges



## Inserts P.10-12



CCGT 0602..  
CCGT 09T3..  
CCGT 1204..



CCMT 0602..  
CCMT 09T3..  
CCMT 1204..



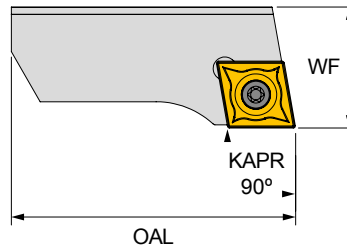
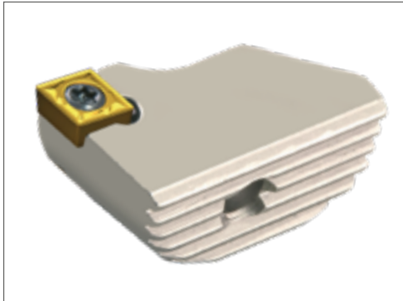
EDP Code	TOOL CODE	◆	DC-DCX	DCON	DCON <sub>MS</sub>	BD	LF	OAL	L <sub>1</sub>	Insert	Cartridge	Body
BTH0001	<b>TBT.182216.426</b>	◆	<b>18-22</b>	16	-	-	42	90	-	CCGT 06 CCMT 06	TBC.1822..06	TBH.182216.90
BTH0002	<b>TBT.182216.1026</b>	◆	<b>18-22</b>	16	-	-	102	150	-			TBH.182216.150
BTH0003	<b>TBT.182216.1526</b>	◆	<b>18-22</b>	16	-	-	152	200	-			TBH.182216.200
BTH0004	<b>TBT.222820.506</b>	◆	<b>22-28</b>	20	-	-	50	100	-		TBC.2228..06	TBH.222820.100
BTH0005	<b>TBT.222820.1006</b>	◆	<b>22-28</b>	20	-	-	100	150	-			TBH.222820.150
BTH0006	<b>TBT.222820.1506</b>	◆	<b>22-28</b>	20	-	-	150	200	-		TBS.2838..06 TBC.2838..06	TBH.222820.200
BTH0007	<b>TBT.283820.606</b>	◆	<b>28-38</b>	20	25	-	60	110	-			TBH.283820.110
BTH0008	<b>TBT.283820.1106</b>	◆	<b>28-38</b>	20	25	-	110	160	-			TBH.283820.160
BTH0009	<b>TBT.283820.1806</b>	◆	<b>28-38</b>	20	25	-	180	230	-		TBS.3650..06 TBC.3650..06	TBH.283820.230
BTH0010	<b>TBT.365025.646</b>	◆	<b>36-50</b>	25	32	-	64	120	-			TBH.365025.120
BTH0011	<b>TBT.365025.1146</b>	◆	<b>36-50</b>	25	32	-	114	170	-	TBS.3650..09 TBC.3650..09	TBH.365025.170	
BTH0012	<b>TBT.365025.1946</b>	◆	<b>36-50</b>	25	32	-	194	250	-		TBH.365025.250	
BTH0013	<b>TBT.365025.649</b>	◆	<b>36-50</b>	25	32	-	64	120	-		TBS.3650..09 TBC.3650..09	TBH.365025.120
BTH0014	<b>TBT.365025.1149</b>	◆	<b>36-50</b>	25	32	-	114	170	-	TBH.365025.170		
BTH0015	<b>TBT.365025.1949</b>	◆	<b>36-50</b>	25	32	-	194	250	-	TBS.5068..09 TBC.5068..09	TBH.365025.250	
BTH0016	<b>TBT.506832.809</b>	◆	<b>50-68</b>	32	40	-	80	140	-		TBH.506832.140	
BTH0017	<b>TBT.506832.1409</b>	◆	<b>50-68</b>	32	40	-	140	200	-		TBH.506832.200	
BTH0018	<b>TBT.506832.2209</b>	◆	<b>50-68</b>	32	40	-	220	280	-	TBS.5068..12 TBC.5068..12	TBH.506832.280	
BTH0019	<b>TBT.506832.802</b>	◆	<b>50-68</b>	32	40	-	80	140	-		TBH.506832.140	
BTH0020	<b>TBT.506832.1402</b>	◆	<b>50-68</b>	32	40	-	140	200	-		TBH.506832.200	
BTH0021	<b>TBT.506832.2202</b>	◆	<b>50-68</b>	32	40	-	220	280	-	TBS.6890..12 TBC.6890..12	TBH.506832.280	
BTH0022	<b>TBT.689032.1002</b>	◆	<b>68-90</b>	32	50	54	100	160	50		TBH.689032.160	
BTH0023	<b>TBT.689032.1502</b>	◆	<b>68-90</b>	32	50	54	150	210	50	TBS.6890..12 TBC.6890..12	TBH.689032.210	
BTH0024	<b>TBT.689032.2202</b>	◆	<b>68-90</b>	32	50	54	220	280	50		TBH.689032.280	
BTH0025	<b>TBT.9012040.802</b>	◆	<b>90-120</b>	40	63	72	80	140	63		TBS.90120..12 TBC.90120..12	TBH.9012040.140
BTH0026	<b>TBT.9012040.1302</b>	◆	<b>90-120</b>	40	63	72	130	200	63	TBH.9012040.200		
BTH0027	<b>TBT.9012040.2302</b>	◆	<b>90-120</b>	40	63	72	230	300	63	TBS.120160..12 TBC.120160..12	TBH.9012040.300	
BTH0028	<b>TBT.12016040.1402</b>	◆	<b>120-160</b>	40	80	95	140	210	75		TBH.12020040.210	
BTH0029	<b>TBT.12016040.2302</b>	◆	<b>120-160</b>	40	80	95	230	300	75		TBH.12020040.300	
BTH0030	<b>TBT.16020040.1402</b>	◆	<b>160-200</b>	40	80	95	140	210	75	TBS.160200..12 TBC.160200..12	TBH.12020040.210	
BTH0031	<b>TBT.16020040.2302</b>	◆	<b>160-200</b>	40	80	95	230	300	75		TBH.12020040.300	

► Capto, ABS, HSK, BT & DIN shanks available on request



## TWIN BORING HEAD CARTRIDGES

## TBC/TBS



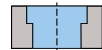
## Inserts P.10-12



CCGT 0602..  
CCGT 09T3..  
CCGT 1204..



CCMT 0602..  
CCMT 09T3..  
CCMT 1204..



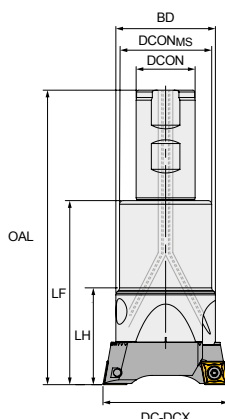
EDP Code	TOOL CODE	BORING RANGE	WF	OAL	Insert	Insert Screw	Wrench
BTH0032	<b>TBC.18229-06</b>	<b>18-22</b>	9	15	CCGT 06 CCMT 06	TXS2506	TXW08
BTH0033	<b>TBC.222810-06</b>	<b>22-28</b>	10	19			
BTH0034	<b>TBS.2838128-06</b>	<b>28-38</b>	12.8	23			
BTH0035	<b>TBC.283813-06</b>	<b>28-38</b>	13	23			
BTH0036	<b>TBS.3650158-06</b>	<b>36-50</b>	15.8	32			
BTH0037	<b>TBC.365016-06</b>	<b>36-50</b>	16	32			
BTH0038	<b>TBS.3650158-09</b>	<b>36-50</b>	15.8	32	CCGT 09 CCMT 09	TXS3508.1	TXW15
BTH0039	<b>TBC.365016-09</b>	<b>36-50</b>	16	32			
BTH0040	<b>TBS.5068197-09</b>	<b>50-68</b>	19.7	40			
BTH0041	<b>TBC.506820-09</b>	<b>50-68</b>	20	40			
BTH0042	<b>TBS.5068197-12</b>	<b>50-68</b>	19.7	40	CCGT 12 CCMT 12	TXS5011	TXW20F
BTH0043	<b>TBC.506820-12</b>	<b>50-68</b>	20	40			
BTH0044	<b>TBS.6890227-12</b>	<b>68-90</b>	22.7	54			
BTH0045	<b>TBC.689023-12</b>	<b>68-90</b>	23	54			
BTH0046	<b>TBS.90120277-12</b>	<b>90-120</b>	27.7	70			
BTH0047	<b>TBC.9012028-12</b>	<b>90-120</b>	28	70			
BTH0048	<b>TBS.120160317-12</b>	<b>120-160</b>	31.7	95			
BTH0049	<b>TBC.12016032-12</b>	<b>120-160</b>	32	95			
BTH0050	<b>TBS.160200317-12</b>	<b>160-200</b>	31.7	120			
BTH0051	<b>TBC.16020032-12</b>	<b>160-200</b>	32	120			



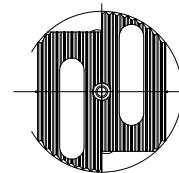


## TWIN BORING HEAD W/O CARTRIDGES

### TBH



DIN 1835



EDP Code	TOOL CODE		DC-DCX	DCON	DCON <sub>MS</sub>	DB	LF	OAL	LH	Mounting Screw	Wrench	Clamp	Adjusting Screw	Wrench
BTH0052	<b>TBH.182216.90</b>	💧	<b>18-22</b>	16	-	-	42	90	-	M3X14IMB	HA2.5	BHC16	HXS0304	HA1.5
BTH0053	<b>TBH.182216.150</b>	💧	<b>18-22</b>	16	-	-	102	150						
BTH0054	<b>TBH.182216.200</b>	💧	<b>18-22</b>	16	-	-	152	200						
BTH0055	<b>TBH.222820.100</b>	💧	<b>22-28</b>	20	-	-	50	100	-	M4X15IMB	HA3	BHC20	HXS0305	HA1.5
BTH0056	<b>TBH.222820.150</b>	💧	<b>22-28</b>	20	-	-	100	150						
BTH0057	<b>TBH.222820.200</b>	💧	<b>22-28</b>	20	-	-	150	200						
BTH0058	<b>TBH.283820.110</b>	💧	<b>28-38</b>	20	25	-	60	110	-	M4X20IMB	HA3	BHC25	HXS0308	HA1.5
BTH0059	<b>TBH.283820.160</b>	💧	<b>28-38</b>	20	25	-	110	160						
BTH0060	<b>TBH.283820.230</b>	💧	<b>28-38</b>	20	25	-	180	230						
BTH0061	<b>TBH.365025.120</b>	💧	<b>36-50</b>	25	32	-	64	120	-	M5X25IMB	HA4	BHC32	HXS0412	HA2
BTH0062	<b>TBH.365025.170</b>	💧	<b>36-50</b>	25	32	-	114	170						
BTH0063	<b>TBH.365025.250</b>	💧	<b>36-50</b>	25	32	-	194	250						
BTH0064	<b>TBH.506832.140</b>	💧	<b>50-68</b>	32	40	-	80	140	-	M6X30IMB	HA5	BHC40	HXS0516	HA2.5
BTH0065	<b>TBH.506832.200</b>	💧	<b>50-68</b>	32	40	-	140	200						
BTH0066	<b>TBH.506832.280</b>	💧	<b>50-68</b>	32	40	-	220	280						
BTH0067	<b>TBH.689032.160</b>	💧	<b>68-90</b>	32	50	54	100	160	50	M8X35IMB	HA6	BHC50	HXS0512	HA2.5
BTH0068	<b>TBH.689032.210</b>	💧	<b>68-90</b>	32	50	54	150	210						
BTH0069	<b>TBH.689032.280</b>	💧	<b>68-90</b>	32	50	54	220	280						
BTH0070	<b>TBH.9012040.140</b>	💧	<b>90-120</b>	40	63	72	80	140	63	M10X40IMB	HA8	BHC63	HXS0616	HA3
BTH0071	<b>TBH.9012040.200</b>	💧	<b>90-120</b>	40	63	72	130	200						
BTH0072	<b>TBH.9012040.300</b>	💧	<b>90-120</b>	40	63	72	230	300						
BTH0073	<b>TBH.12020040.210</b>	💧	<b>120-160 160-200</b>	40	80	95	140	210	75	M12X40IMB	HA10	BHC80	HXS0825	HA4
BTH0074	<b>TBH.12020040.300</b>	💧	<b>120-160 160-200</b>	40	80	95	230	300						

► Capto, ABS, HSK, BT & DIN shanks available on request



# BORING



## CCGT 80° RHOMBIC TYPE

▶ EDP Code TI..... Example: CCGT 060202-AL ET10U = TI01163

CCGT	DESIGNATION	RE (mm)	f <sub>n</sub> (mm/rev)	a <sub>p</sub> (mm)	Material Compatibility Matrix																																																																																																																																		
					ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U																																																																																																																					
<table border="1"> <tr> <th>INSERT</th> <th>LE</th> <th>IC</th> <th>S</th> </tr> <tr> <td>CC-- 0602</td> <td>6.2</td> <td>6.35</td> <td>2.38</td> </tr> <tr> <td>CC-- 09T3</td> <td>9.2</td> <td>9.53</td> <td>3.97</td> </tr> <tr> <td>CC-- 1204</td> <td>12.4</td> <td>12.7</td> <td>4.76</td> </tr> </table>					INSERT	LE	IC	S	CC-- 0602	6.2	6.35	2.38	CC-- 09T3	9.2	9.53	3.97	CC-- 1204	12.4	12.7	4.76	<table border="1"> <tr> <th>P</th><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td><td>●</td> </tr> <tr> <th>M</th><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td><td>●</td> </tr> <tr> <th>K</th><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td><td>●</td> </tr> <tr> <th>N</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td></td> </tr> <tr> <th>S</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td>○</td><td>○</td><td>●</td><td></td><td></td><td></td><td></td> </tr> <tr> <th>H</th><td></td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td></td><td></td><td></td> </tr> </table>													P	●	●	●	●	○								●			●	M				●	●	●	●	●	●	○	○					●	K	●	●											●			●	N														●	●		S									○	○	○	●					H		○											○			
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CC-- 0602	6.2	6.35	2.38																																																																																																																																				
CC-- 09T3	9.2	9.53	3.97																																																																																																																																				
CC-- 1204	12.4	12.7	4.76																																																																																																																																				
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Finishing to Roughing <b>AL</b> 	CCGT 060202-AL	0.2	0.02 - 0.15	0.1 - 2.0												●																																																																																																																							
	CCGT 060204-AL	0.4	0.05 - 0.15	0.5 - 2.0											●	01163																																																																																																																							
	CCGT 09T302-AL	0.2	0.02 - 0.08	0.5 - 1.0											●	01671																																																																																																																							
	CCGT 09T304-AL	0.4	0.05 - 0.25	0.5 - 2.0											●	01164																																																																																																																							
	CCGT 09T308-AL	0.8	0.10 - 0.35	1.0 - 3.0											●	00222																																																																																																																							
	CCGT 120402-AL	0.2	0.04 - 0.15	0.1 - 1.0											●	00223																																																																																																																							
	CCGT 120404-AL	0.4	0.04 - 0.20	0.3 - 1.5											●	00224																																																																																																																							
	CCGT 120408-AL	0.8	0.04 - 0.30	0.6 - 2.5											●	00225																																																																																																																							
Finishing to Medium <b>MSF</b> 	CCGT 060201-MSF	0.1	0.02 - 0.15	0.1 - 1.5									●																																																																																																																										
	CCGT 060202-MSF	0.2	0.02 - 0.15	0.1 - 1.5						●	●	●	●																																																																																																																										
	CCGT 060204-MSF	0.4	0.03 - 0.20	0.1 - 2.0						●	●	●	●																																																																																																																										
	CCGT 09T301-MSF	0.1	0.02 - 0.15	0.1 - 2.5						●	●	●	●																																																																																																																										
	CCGT 09T302-MSF	0.2	0.02 - 0.15	0.1 - 2.5						●	●	●	●																																																																																																																										
	CCGT 09T304-MSF	0.4	0.03 - 0.20	0.1 - 2.5						●	●	●	●																																																																																																																										
	CCGT 09T308-MSF	0.8	0.03 - 0.25	0.1 - 2.5						●	●	●	●																																																																																																																										
										01672	01673	01674	01436																																																																																																																										
									01675	01676	01677	01437																																																																																																																											
									01678	01679	02066	01658																																																																																																																											
									01680	01681	02067	01577																																																																																																																											
									01682	01683	01684	01578																																																																																																																											
									01685	01686	01687	01579																																																																																																																											

ISO	P			M		K		N	S	H	
MATERIAL	Non-alloy steel <25 HRC	Low alloy steel 25-35 HRC	High alloy steel, Tool steel 35-45 HRC	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium & Non-ferrous material	Heat Resistant and Super Alloys	Hardened steel <55 HRC	
VDI GROUP	1-5	6-9	10-11	12-13	14	15-16	17-20	21-30	31-37	38-41	
Vc (m/min)	ET101C	-	-	-	-	170 - 420	120 - 410	-	-	-	
	ET31C	170 - 450	180 - 380	100 - 330	-	120 - 300	120 - 280	-	-	40 - 80	
	ET315C	180 - 500	170 - 450	60 - 180	-	-	-	-	-	-	
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	-	
	ET225C	-	-	-	160 - 220	100 - 200	-	-	-	-	
	ET21P	135 - 405	120 - 350	95 - 280	130 - 230	100 - 200	-	-	30 - 90	-	
	ET23P	-	-	-	110 - 180	40 - 130	-	-	20 - 40	-	
	ET24P	-	-	-	80 - 150	30 - 120	-	-	20 - 40	-	
	ET41P	-	-	-	95 - 290	90 - 210	-	-	35 - 90	-	
	ET801	120 - 200	70 - 230	70 - 180	70 - 180	-	60 - 160	60 - 120	-	-	40 - 80
	ET10D	-	-	-	-	-	-	-	350 - 1200	-	-
	ET10U	-	-	-	-	-	-	-	250 - 800	-	-
	CT10U	150 - 480	160 - 420	100 - 360	130 - 260	110 - 240	130 - 450	130 - 400	-	-	-



# BORING



## CCMT 80° RHOMBIC TYPE

► EDP Code TI..... Example: CCGT 060201-MSF ET41P = TI01576

		INSERT				EDP Code																				
		LE	IC	S	P	M	K	N	S	H	ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U		
		6.2	6.35	2.38	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	CC-- 0602	6.2	6.35	2.38	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	CC-- 09T3	9.2	9.53	3.97	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	CC-- 1204	12.4	12.7	4.76	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
CCMT	DESIGNATION	RE (mm)	f <sub>n</sub> (mm/rev)	a <sub>p</sub> (mm)	ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U								
	Finishing <b>BF</b>	<b>CCMT 060204-BF</b>	0.4	0.05 - 0.20	0.5 - 2.0	●	●	●	●						●											
		<b>CCMT 09T304-BF</b>	0.4	0.05 - 0.25	0.5 - 2.0	●	●	●	●						●											
		<b>CCMT 09T308-BF</b>	0.8	0.05 - 0.25	1.0 - 2.0	●	●	●	●						●											
		<b>CCMT 120404-BF</b>	0.4	0.10 - 0.25	1.5 - 3.0	●	●	●	●						●											
	Finishing <b>MF</b>	<b>CCMT 060208-MF</b>	0.8	0.05 - 0.20	0.1 - 2.0						●	●	●	●												
		<b>CCMT 09T302-MF</b>	0.2	0.04 - 0.15	0.1 - 2.0						●	●	●	●												
		<b>CCMT 09T304-MF</b>	0.4	0.06 - 0.25	0.1 - 2.0						●	●	●	●												
		<b>CCMT 09T308-MF</b>	0.8	0.08 - 0.30	0.1 - 2.0						●	●	●	●												
	Finishing Cermet <b>PF</b>	<b>CCMT 09T302-PF</b>	0.2	0.04 - 0.15	0.1 - 2.0																			●	1913	
		<b>CCMT 09T304-PF</b>	0.4	0.06 - 0.25	0.1 - 2.0																			●	1914	
		<b>CCMT 09T308-PF</b>	0.8	0.08 - 0.30	0.1 - 2.0																			●	1915	
	Medium <b>BG</b>	<b>CCMT 060204-BG</b>	0.4	0.10 - 0.25	0.5 - 2.0	●	●	●	●		●				●											
		<b>CCMT 060208-BG</b>	0.8	0.10 - 0.25	0.8 - 2.0	●	●	●	●		●				●											
		<b>CCMT 09T304-BG</b>	0.4	0.15 - 0.30	0.5 - 2.5	●	●	●	●						●											
		<b>CCMT 09T308-BG</b>	0.8	0.15 - 0.30	0.8 - 2.5	●	●	●	●		●				●											
		<b>CCMT 120404-BG</b>	0.4	0.15 - 0.35	0.5 - 3.0	●	●	●	●						●											
		<b>CCMT 120408-BG</b>	0.8	0.15 - 0.35	0.8 - 3.0	●	●	●	●						●											
		<b>CCMT 120412-BG</b>	1.2	0.15 - 0.35	1.2 - 3.0	●	●	●	●		●				●											

Continued ►

ISO	P			M		K		N	S	H	
MATERIAL	Non-alloy steel <25 HRC	Low alloy steel 25-35 HRC	High alloy steel, Tool steel 35-45 HRC	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium & Non-ferrous material	Heat Resistant and Super Alloys	Hardened steel <55 HRC	
VDI GROUP	1-5	6-9	10-11	12-13	14	15-16	17-20	21-30	31-37	38-41	
Vc (m/min)	ET101C	-	-	-	-	170 - 420	120 - 410	-	-	-	
	ET31C	170 - 450	180 - 380	100 - 330	-	120 - 300	120 - 280	-	-	40 - 80	
	ET315C	180 - 500	170 - 450	60 - 180	-	-	-	-	-	-	
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	-	
	ET225C	-	-	-	160 - 220	100 - 200	-	-	-	-	
	ET21P	135 - 405	120 - 350	95 - 280	130 - 230	100 - 200	-	-	30 - 90	-	
	ET23P	-	-	-	110 - 180	40 - 130	-	-	20 - 40	-	
	ET24P	-	-	-	80 - 150	30 - 120	-	-	20 - 40	-	
	ET41P	-	-	-	95 - 290	90 - 210	-	-	35 - 90	-	
	ET801	120 - 200	70 - 230	70 - 180	70 - 180	-	60 - 160	60 - 120	-	-	40 - 80
	ET10D	-	-	-	-	-	-	-	350 - 1200	-	-
	ET10U	-	-	-	-	-	-	-	250 - 800	-	-
CT10U	150 - 480	160 - 420	100 - 360	130 - 260	110 - 240	130 - 450	130 - 400	-	-	-	



# BORING

## CCMT 80° RHOMBIC TYPE

► EDP Code TI..... Example: CCMT 09T304-PM CT10U = TI01916

		INSERT	LE	IC	S																					
		CC-- 0602	6.2	6.35	2.38	P	M	K	N	S	H	ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U	
Medium <b>MM</b> 	<b>CCMT 09T304-MM</b>	0.4	0.08 - 0.25	0.25 - 3.0														●	●	●	●	●				
	<b>CCMT 09T308-MM</b>	0.8	0.10 - 0.30	0.5 - 3.0														●	●	●	●	●				
																			●	●	●	●	●			
Medium Cermet <b>PM</b> 	<b>CCMT 09T304-PM</b>	0.4	0.08 - 0.25	0.25 - 3.0																						●
	<b>CCMT 09T308-PM</b>	0.8	0.10 - 0.30	0.5 - 3.0																						●

ISO	P			M		K		N	S	H	
MATERIAL	Non-alloy steel <25 HRC	Low alloy steel 25-35 HRC	High alloy steel, Tool steel 35-45 HRC	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium & Non-ferrous material	Heat Resistant and Super Alloys	Hardened steel <55 HRC	
VDI GROUP	1-5	6-9	10-11	12-13	14	15-16	17-20	21-30	31-37	38-41	
Vc (m/min)	<b>ET101C</b>	-	-	-	-	170 - 420	120 - 410	-	-	-	
	<b>ET31C</b>	170 - 450	180 - 380	100 - 330	-	120 - 300	120 - 280	-	-	40 - 80	
	<b>ET315C</b>	180 - 500	170 - 450	60 - 180	-	-	-	-	-	-	
	<b>ET32C</b>	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	
	<b>ET33C</b>	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	-	
	<b>ET225C</b>	-	-	-	160 - 220	100 - 200	-	-	-	-	
	<b>ET21P</b>	135 - 405	120 - 350	95 - 280	130 - 230	100 - 200	-	-	30 - 90	-	
	<b>ET23P</b>	-	-	-	110 - 180	40 - 130	-	-	20 - 40	-	
	<b>ET24P</b>	-	-	-	80 - 150	30 - 120	-	-	20 - 40	-	
	<b>ET41P</b>	-	-	-	95 - 290	90 - 210	-	-	35 - 90	-	
	<b>ET801</b>	120 - 200	70 - 230	70 - 180	70 - 180	-	60 - 160	60 - 120	-	-	40 - 80
	<b>ET10D</b>	-	-	-	-	-	-	-	350 - 1200	-	-
	<b>ET10U</b>	-	-	-	-	-	-	-	250 - 800	-	-
	<b>CT10U</b>	150 - 480	160 - 420	100 - 360	130 - 260	110 - 240	130 - 450	130 - 400	-	-	-



## FINE BORING INSERTS

► EDP Code BI..... Example: WCGT 020102L CT10U = BI0001

	<table border="1"> <tr><th>INSERT</th><th>LE</th><th>IC</th><th>S</th></tr> <tr><td>WCGT 0201</td><td>2.71</td><td>3.97</td><td>1.59</td></tr> </table>	INSERT	LE	IC	S	WCGT 0201	2.71	3.97	1.59	<table border="1"> <tr><th>P</th><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td><td>●</td></tr> <tr><th>M</th><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td>○</td><td></td><td></td><td></td><td>●</td></tr> <tr><th>K</th><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td>●</td></tr> <tr><th>N</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td><td>●</td></tr> <tr><th>S</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td>○</td><td>○</td><td>●</td><td></td><td></td></tr> <tr><th>H</th><td></td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td></td><td></td></tr> </table>												P	●	●	●	●	○					●			●	M				●	●	●	●	○	○				●	K	●	●										●	●	N												●	●	S								○	○	○	●			H		○									○		
	INSERT	LE	IC	S																																																																																																					
WCGT 0201	2.71	3.97	1.59																																																																																																						
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WCGT	DESIGNATION	RE (mm)	f <sub>n</sub> (mm/rev)	a <sub>p</sub> (mm)	ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U																																																																																							
	WCGT 020102L	0.2	0.05 - 0.2	0.1 - 0.3															● 0001																																																																																						
	WCGT 020104L	0.4	0.08 - 0.3	0.1 - 0.3																● 0002																																																																																					

► EDP Code BI..... Example: TPGX 090202L CT10U = BI0003

	<table border="1"> <tr><th>INSERT</th><th>LE</th><th>IC</th><th>S</th></tr> <tr><td>TPGX 0902</td><td>9.52</td><td>5.56</td><td>2.38</td></tr> </table>	INSERT	LE	IC	S	TPGX 0902	9.52	5.56	2.38	<table border="1"> <tr><th>P</th><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td></td><td></td><td></td><td></td><td>●</td><td></td><td></td><td>●</td></tr> <tr><th>M</th><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td>○</td><td></td><td></td><td></td><td>●</td></tr> <tr><th>K</th><td>●</td><td>●</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td></tr> <tr><th>N</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>●</td></tr> <tr><th>S</th><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td>○</td><td>○</td><td>●</td><td></td><td></td></tr> <tr><th>H</th><td></td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>○</td><td></td><td></td></tr> </table>												P	●	●	●	●	○					●			●	M				●	●	●	●	○	○				●	K	●	●											●	N													●	S								○	○	○	●			H		○									○		
	INSERT	LE	IC	S																																																																																																					
TPGX 0902	9.52	5.56	2.38																																																																																																						
P	●	●	●	●	○					●			●																																																																																												
M				●	●	●	●	○	○				●																																																																																												
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H		○									○																																																																																														
TPGX	DESIGNATION	RE (mm)	f <sub>n</sub> (mm/rev)	a <sub>p</sub> (mm)	ET101C	ET31C	ET315C	ET32C	ET33C	ET225C	ET21P	ET23P	ET24P	ET41P	ET801	ET10D	ET10U	CT10U																																																																																							
	TPGX 090202L	0.2	0.15 - 0.3	0.1 - 0.3															● 0003																																																																																						
	TPGX 090204L	0.4	0.2 - 0.4	0.1 - 0.3																● 0004																																																																																					

ISO	P			M		K		N	S	H	
MATERIAL	Non-alloy steel <25 HRC	Low alloy steel 25-35 HRC	High alloy steel, Tool steel 35-45 HRC	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium & Non-ferrous material	Heat Resistant and Super Alloys	Hardened steel <55 HRC	
VDI GROUP	1-5	6-9	10-11	12-13	14	15-16	17-20	21-30	31-37	38-41	
V <sub>c</sub> (m/min)	ET101C	-	-	-	-	170 - 420	120 - 410	-	-	-	
	ET31C	170 - 450	180 - 380	100 - 330	-	120 - 300	120 - 280	-	-	40 - 80	
	ET315C	180 - 500	170 - 450	60 - 180	-	-	-	-	-	-	
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	-	
	ET225C	-	-	-	160 - 220	100 - 200	-	-	-	-	
	ET21P	135 - 405	120 - 350	95 - 280	130 - 230	100 - 200	-	-	30 - 90	-	
	ET23P	-	-	-	110 - 180	40 - 130	-	-	20 - 40	-	
	ET24P	-	-	-	80 - 150	30 - 120	-	-	20 - 40	-	
	ET41P	-	-	-	95 - 290	90 - 210	-	-	35 - 90	-	
	ET801	120 - 200	70 - 230	70 - 180	70 - 180	-	60 - 160	60 - 120	-	-	40 - 80
	ET10D	-	-	-	-	-	-	-	350 - 1200	-	-
ET10U	-	-	-	-	-	-	-	250 - 800	-	-	
CT10U	150 - 480	160 - 420	100 - 360	130 - 260	110 - 240	130 - 450	130 - 400	-	-	-	