Clamping Principle for Type K Connection

The type K connection is easy, tightening the taper screw so that end face between adaptor and boring heads closed. The tolerance is smaller than 0.002mm when assembling and disassembling repeatedly several times.

Figure 1

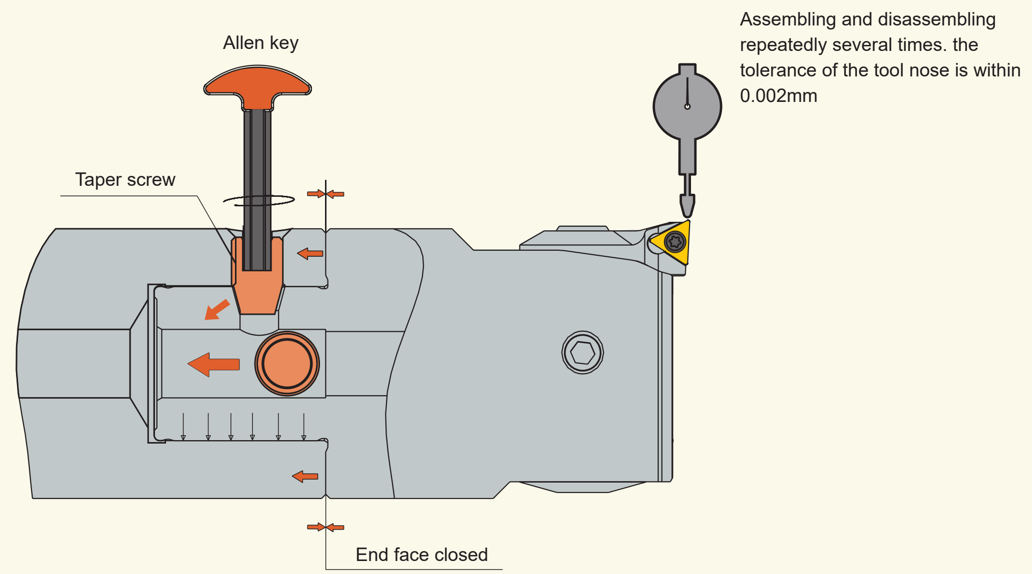
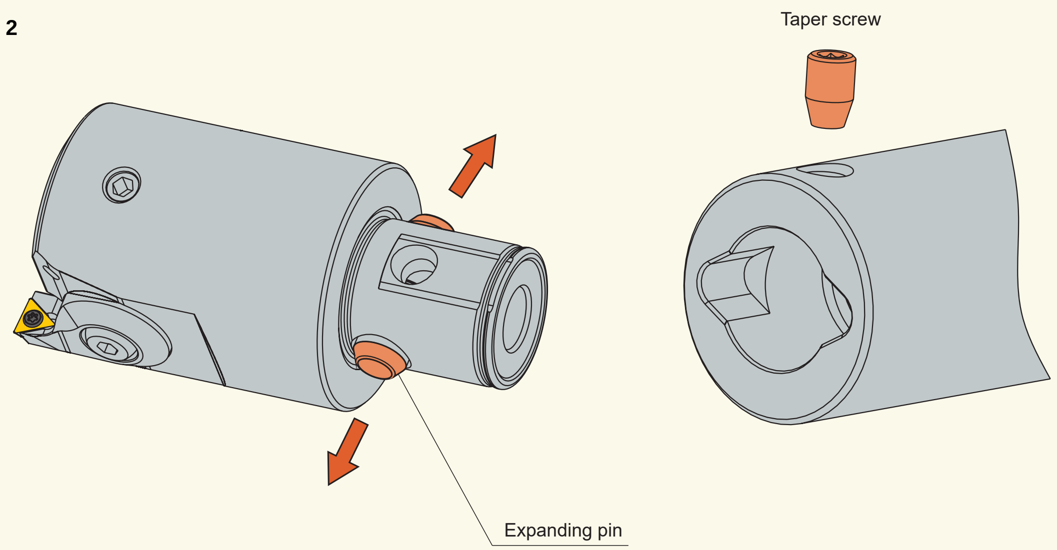


Figure 2



The Structure of Expanding Pin

Please use the expanding pin if there is large cutting torsion when machining. It works by floating right and left and it will automatically balance when assembling the boring head, so that it will support so large cutting force.

CBR Rough Boring Tool with Type K Connection

Twin cutter rough boring head with boring range Φ20- Φ153. Cylinder modular connection type K, with rectangular guide slot cartridge.

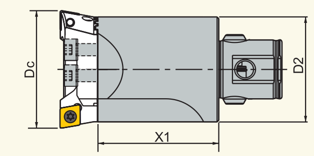


Fig A

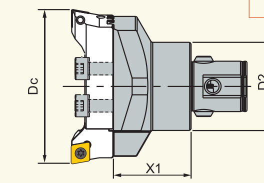


Fig B

Designation	Dc	D2	X1	Z	Fig	Kg	Cartridge	Stock
CBR D19.K19.22.C	20-24 23-27	19 19	22 22	2 2	A A	0.05 0.05	C..D020-024.. C..D023-027..	● ●
CBR D25.K25.25.C	26-35	25	25	2	A	0.09	C..D026-035..	●
CBR D32.K32.30.C	33-41	32	30	2	A	0.19	C..D033-041..	●
CBR D40.K40.30.C	41-55	40	30	2	A	0.25	C..D041-055..	●
CBR D40.K40.52.C	41-55	40	52	2	A	0.47	C..D041-055..	●
CBR D50.K50.57.C	55-70	50	57	2	A	0.86	C..D055-070..	●
CBR D63.K63.55.C	70-90	63	55	2	A	1.49	C..D070-090..	●
CBR D80.K63.55.C	90-110	63	55	2	B	1.73	C..D090-110..	●
CBR D80.K90.55.C	90-110	88	55	2	A	2.77	C..D090-110..	●
CBR D100.K63.55.C	110-133 130-153	63 63	55 55	2 2	B B	2.03 2.03	C..D110-133.. C..D130-153..	● ●
CBR D100.K90.55.C	110-133 130-153	88 88	55 55	2 2	B B	3.06 3.06	C..D110-133.. C..D130-153..	● ●

- The cartridge should be ordered separately
- The adaptors should be ordered separately

- Scale mark basis.
  The scale value for CC06/CC09/TC11/SO06 with R0.4. The scale value for SO09 with R0.6.
  The scale value for CC12/SC09/SC12/SO12 with R0.8. The scale value for SO16 with R1.2.
- Ordering sample: 1 PC CBR D25.K25.25.C.

Spare Parts

Dc	Clamping screw for cartridge	Disc spring	Allen key for adjusting screw
20-27mm	SR55 M4x16	GK20 D4	KEY01 M3
26-35mm	SR55 M4x16	GK20 D4	KEY01 M3
33-41mm	SR55 M5x16	GK20 D5	KEY01 M4
41-55mm	SR55 M6x20	GK20 D6	KEY01 M5
55-70mm	SR55 M6x20	GK20 D6	KEY01 M5
70-90mm	SR55 M8x25	GK20 D8	KEY01 M6
90-153mm	SR55 M10x30	GK20 D10	KEY01 M8

D2	Expanding pin	Disc
D2=19	FT90 D4x13.5	FT91 D2x1
D2=25	FT90 D5x17	FT91 D3x1
D2=32	FT90 D7x22	FT91 D5x1
D2=40	FT90 D8.5x26.5	FT91 D5.5x1.5
D2=50	FT90 D11x33	FT91 D8.5x1.5
D2=63	FT90 D14x43	FT91 D11x1.5
D2=88	FT90 D18x56	FT91 D15x1.5

CBR Rough Boring Tool for Back Boring with Type K Connection

Thanks to stable cartridge with rectangular slot guide for back boring, it can be back boring easily, boring range is Φ30-Φ152. It is with the features of adjusting freely and stability. Through hole of back boring D≥(Dc+D1)/2 + 1.

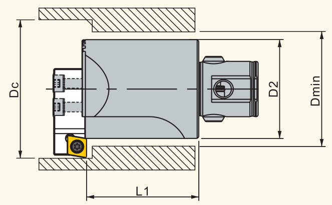


Fig A

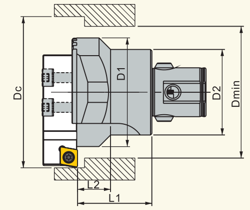


Fig B

Designation	Dc	D1	D2	L1	L2	Z	Fig	kg	Cartridge	Stock
CBR D19.K19.22.C	30-35	19	19	20	-	1	A	0.06	C90C D19.3035.CC06	●
CBR D25.K25.25.C	33-41	25	25	23	-	1	A	0.10	C90C D25.3341.CC06	●
	40-48	25	25	23	-	1	A	0.11	C90C D25.4048.CC06	●
CBR D32.K32.30.C	42-52	32	32	28	-	1	A	0.21	C90C D32.4252.CC06	●
	51-61	32	32	28	-	1	A	0.22	C90C D32.5161.CC06	●
CBR D40.K40.52.C	53-65	40	40	52	-	1	A	0.53	C90C D40.5365.CC09	●
	64-76	40	40	52	-	1	A	0.54	C90C D40.6476.CC09	●
CBR D50.K50.57.C	53-69	50	50	57	-	1	A	0.92	C90C D50.5369.CC09	●
	68-84	50	50	57	-	1	A	0.94	C90C D50.6884.CC09	●
	83-99	50	50	57	-	1	A	0.96	C90C D50.8399.CC09	●
CBR D63.K63.55.C	68-89	63	63	55	-	1	A	1.61	C90C D63.6889.CC09	●
	88-109	63	63	55	-	1	A	1.65	C90C D63.88109.CC09	●
CBR D80.K63.55.C	88-110	80	63	55	25	1	B	1.98	C90C D80.88110.CC12	●
	108-130	80	63	55	25	1	B	2.04	C90C D80.108130.CC12	●
CBR D80.K90.55.C	88-110	88	88	55	-	1	A	3.02	C90C D80.88110.CC12	●
	108-130	88	88	55	-	1	A	3.08	C90C D80.108130.CC12	●
CBR D100.K63.55.C	108-132	100	63	55	27	1	B	2.32	C90C D100.108132.CC12	●
	128-152	100	63	55	27	1	B	2.39	C90C D100.128152.CC12	●
CBR D100.K90.55.C	108-132	100	88	55	27	1	B	3.35	C90C D100.108132.CC12	●
	128-152	100	88	55	27	1	B	3.43	C90C D100.128152.CC12	●

- The cartridge should be ordered separately .
- The adaptor should be ordered separately

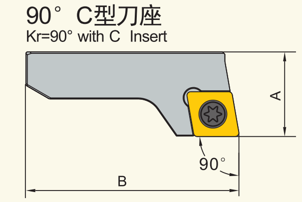
- Scale mark basis.

  The scale value for CC06/CC09/TC11/SO06 with R0.4. The scale value for SO09 with R0.6.

  The scale value for CC12/SC09/SC12/SO12 with R0.8. The scale value for SO16 with R1.2.
- The minimum diameter Dmin= (Dc+Dt)/2+1.
- Ordering sample: 1 PC CBR D19.K19.22.C.

Cartridge for Rough Boring Tool

It is suitable for the CBR rough boring tools with twin cutters, and also it can be adjusted freely due to the connection.
The boring range: 90°C style isΦ20-Φ153; 90° T style isΦ33- Φ 153; 45° style is Φ23- Φ153; 84° style isΦ20- Φ153.



90°C
Kr=90° with C Insert

Designation	Boring rang	A	B	IInsert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
C90A D020-024.CC06	20-24	13.6	16	CC..0602..	0.01	SR50 M2.5x5	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C90A D023-027.CC06	23-27	13.6	17	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C90A D026-035.CC06	26-35	13.6	20	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C90A D033-041.CC06	33-41	15.0	26	CC..0602..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M2.5x5.3	KEY03 T7	●
C90A D041-055.CC09	41-55	18.0	32	CC..09T3..	0.03	SR50 M3.0x10	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
C90A D055-070.CC09	55-70	18.0	45	CC..09T3..	0.05	SR50 M4.0x10	KEY01 M2.0	SR21 M4x9.5	KEY03 T15	●
C90A D055-070.CC12	55-70	25.0	45.5	CC..1204..	0.08	SR50 M4x10	KEY01 M2.0	SR21 M5x12.8	KEY03 T20	●
C90A D070-090.CC12	70-90	30.0	59	CC..1204..	0.15	SR50 M5.0x12	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
C90A D090-110.CC12	90-110	30.0	74	CC..1204..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
C90A D110-133.CC12	110-133	30.0	85	CC..1204..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
C90A D130-153.CC12	130-153	30.0	96	CC..1204..	0.30	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
C90A D034-042.CC09	34-42	18.0	26	CC..09T3..	0.02	SR50 M3X8	KEY01 M1.5	SR21 M4X9.5	KEY03 T15	●
C90A D047-059.CC12	47-59	22.0	35	CC..1204..	0.05	SR50 M3X10	KEY01 M1.5	SR21 M5X12.8	KEY03 T20	●
C90A D058-073.CC12	58-73	22.0	47	CC..1204..	0.06	SR50 M4X10	KEY01 M2.5	SR21 M5X12.8	KEY03 T20	●

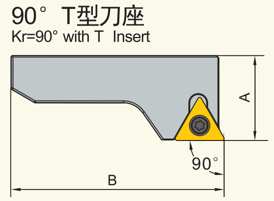
- The ins C90A D020-024.CC06 erts for diff erent materials should be ordered separately
- Ordering sample: 1 PC C90A D020-024.CC06.

Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for clamping screw	Stock
C90A D19.2630.CC06	26-30	13.6	19	CC..0602..	0.01	SR50 M2.5x5	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C90A D25.3342.CC06	33-42	13.6	24	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C90A D32.3947.CC09	39-47	15.0	29	CC..09T3..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
C90A D40.5367.CC09	53-67	18.0	38	CC..09T3..	0.05	SR50 M3.0x10	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
C90A D50.6883.CC12	68-83	20.0	52	CC..1204..	0.07	SR50 M4.0x10	KEY01 M2.0	SR21 M5x12.8	KEY03 T20	●
C90A D63.88108.CC12	88-108	30.0	68	CC..1204..	0.19	SR50 M5.0x12	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
C90A D80.108128.CC12	108-128	30.0	83	CC..1204..	0.26	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●

- Ordering sample: 1 PC C90A D020-024.CC06.

Cartridge for Rough Boring Tool

It is suitable for the CBR rough boring tools with twin cutters, and also it can be adjusted freely due to the connection.
The boring range: 90°C style isΦ20-Φ153; 90° T style isΦ33- Φ 153; 45° style is Φ23- Φ153; 84° style isΦ20- Φ153.



90°T

Kr=90° with T Insert

Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping for adjusting insert	Allen key for damping screw	Stock
C90A D033-041.TC11	33-41	15	26	TC..1102..	0.02	SR50 M3.0x8	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
C90A D041-055.TC11	41-55	18	32	TC..1102..	0.03	SR50 M3.0x10	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
C90A D055-070.TC11	55-70	18	45	TC..1102..	0.05	SR50 M4.0x10	KEY01 M2.0	SR20 M2.5x6	KEY03 T8	●
C90A D070-090.TC16	70-90	30	59	TC..16T3..	0.15	SR50 M5.0x12	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C90A D090-110.TC16	90-110	30	74	TC..16T3..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C90A D110-133.TC16	110-133	30	85	TC..16T3..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C90A D130-153.TC16	130-153	30	96	TC..16T3..	0.30	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●

●
● Ordering sample: 1 PC C90A D033-041.TC11.

90°T

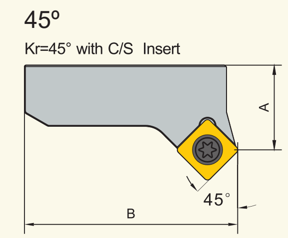
Kr=90° with T Insert

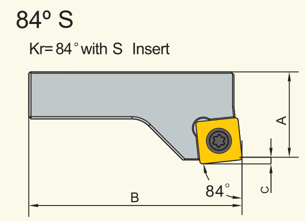
Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping for adjusting insert	Allen key for damping screw	Stock
C90A D25.3342.TC11	33-42	13.6	24	TC..1102..	0.01	SR50 M2.5x6	KEY01 M1.3	SR20 M2.5x6	KEY03 T8	●
C90A D32.3947.TC11	39-47	15.0	29	TC..1102..	0.02	SR50 M3.0x8	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
C90A D40.5367.TC11	53-67	18.0	38	TC..1102..	0.05	SR50 M3.0x10	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
C90A D50.6883.TC16	68-83	20.0	52	TC..16T3..	0.07	SR50 M4.0x10	KEY01 M2.0	SR21 M4x9.5	KEY03 T15	●
C90A D63.88108.TC16	88-108	30.0	68	TC..16T3..	0.19	SR50 M5.0x12	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C90A D80.108128.TC16	108-128	30.0	83	TC..16T3..	0.26	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●

● Ordering sample: 1 PC C90A D033-041.TC11.

Cartridge for Rough Boring Tool for Back Boring

It is suitable for the CBR rough boring tools with twin cutters, and also it can be adjusted freely due to the connection.
The boring range: 90°C style isΦ20-Φ153; 90° T style isΦ33- Φ 153; 45° style is Φ23- Φ153; 84° style isΦ20- Φ153.





45°

Kr=45° with C/S Inseret

规格型号 Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping for adjusting insert	Allen key for damping screw	Stock
C45A D023-027.CC06	23-27	13.6	17	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C45A D026-035.CC06	26-35	13.6	20	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
C45A D033-041.CC06	33-41	15.0	25	CC..0602..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M2.5x5.3	KEY03 T7	●
C45A D041-055.SC09	41-55	18.0	30	SC..09T3..	0.03	SR50 M3.0x10	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
C45A D055-070.SC09	55-70	30.0	45	SC..09T3..	0.04	SR50 M4.0x10	KEY01 M2	SR21 M4x9.5	KEY03 T15	●
C45A D070-090.SC09	70-90	30.0	59	SC..09T3..	0.13	SR50 M5.0x12	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C45A D090-110.SC09	90-110	30.0	75	SC..09T3..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C45A D110-133.SC09	110-133	30.0	85	SC..09T3..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
C45A D130-153.SC09	130-153	30.0	93	SC..09T3..	0.27	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●

● The inserts for different materials should be ordered separately, please see page A95.A100.
● Ordering sample: 1 PC C45A D023-027.CC06.

84°S

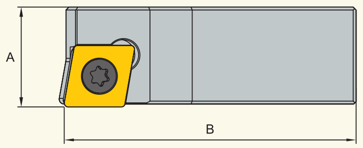
Kr=84° with S Insert

Designation	Boring rang	A	B	C	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping for adjusting insert	Allen key for damping screw	Stock
C84A D020-024.SO06	20-24	13.9	17	0.7	SO..0603..	0.01	SR50 M2.5x5	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
C84A D023-027.SO06	23-27	13.9	17.9	0.7	SO..0603..	0.01	SR50 M2.5x6	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
C84A D026-035.SO06	26-35	13.9	20.4	0.7	SO..0603..	0.01	SR50 M2.5x6	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
C84A D033-041.SO06	33-41	15.1	25.8	0.7	SO..0603..	0.02	SR50 M3x8	KEY01 M1.5	SR20 M2.2x5.6	KEY03 T7	●
C84A D041-055.SO09	41-55	18.1	32.1	0.7	SO..09T3..	0.03	SR50 M3x10	KEY01 M1.5	SR20 M3x6.6	KEY03 T9	●
C84A D055-070.SO09	55-70	18.1	45.3	0.7	SO..09T3..	0.05	SR50 M4x10	KEY01 M2	SR20 M3x6.6	KEY03 T9	●
C84A D070-090.SO12	70-90	30.3	58.8	1.0	SO..1204..	0.15	SR50 M5x12	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
C84A D090-110.SO12	90-110	30.3	73.6	1.0	SO..1204..	0.22	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
C84A D110-133.SO12	110-133	30.3	85.4	1.0	SO..1204..	0.26	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
C84A D130-153.SO12	130-153	30.3	96.4	1.0	SO..1204..	0.31	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
C84A D090-110.SO16	90-110	30.3	73.6	2.6	SO..1605..	0.22	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●
C84A D110-133.SO16	110-133	30.3	85.4	2.6	SO..1605..	0.26	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●
C84A D130-153.SO16	130-153	30.3	96.4	2.6	SO..1605..	0.32	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●

● Ordering sample: 1 PC C84A D033-041.S006.

Cartridge for Rough Boring Tool for Back Boring

It is suitable for the CBR series twin cutter rough boring tool, with the boring range of Φ30-Φ152, and also it can be adjusted easily.



Designation	Boring rang	A	B	Insert	Kg	Stock
C90C D19.3035.CC06	30-35	10.3	21.0	CC..0602..	0.01	◐
C90C D25.3341.CC06	33-41	10.3	23.0	CC..0602..	0.01	◐
C90C D25.4048.CC06	40-48	10.3	26.6	CC..0602..	0.02	◐
C90C D32.4252.CC06	42-52	10.3	30.2	CC..0602..	0.02	◐
C90C D32.5161.CC06	51-61	10.3	35.0	CC..0602..	0.03	◐
C90C D40.5365.CC09	53-65	16.6	36.6	CC..09T3..	0.06	◐
C90C D40.6476.CC09	64-76	16.6	42.3	CC..09T3..	0.07	◐
C90C D50.5369.CC09	53-69	16.6	45.0	CC..09T3..	0.06	◐
C90C D50.6884.CC09	68-84	16.6	52.8	CC..09T3..	0.08	◐
C90C D50.8399.CC09	83-99	16.6	62.0	CC..09T3..	0.10	◐
C90C D63.6889.CC09	68-89	16.6	57.3	CC..09T3..	0.12	◐
C90C D63.88109.CC09	88-109	16.6	67.3	CC..09T3..	0.16	◐
C90C D80.88110.CC12	88-110	25.6	70.4	CC..1204..	0.25	◐
C90C D80.108130.CC12	108-130	25.6	82.4	CC..1204..	0.31	◐
C90C D100.108132.CC12	108-132	25.6	82.3	CC..1204..	0.29	◐
C90C D100.128152.CC12	128-152	25.6	92.1	CC..1204..	0.36	◐

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● Ordering sample: 1 PC C902C D32.4252.CC06.

Spare Parts

Insert	Clamping screw for insert	Allen key for clamping screw
CC..0602..	SR21 M2.5x5.3	KEY03 T7
CC..09T3..	SR21 M4x9.5	KEY03 T15
CC..1204..	SR21 M5x12.8	KEY03 T20

NBR

NBR Rough Boring Tool with Type K Connection

Twin cutter rough boring head.Cylinder modular connection type K, with rectangular guide slot cartridge..

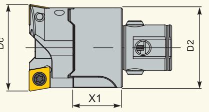

Fig A

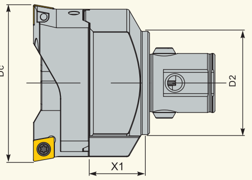

Fig B

Designation	Dc	D2	X1	Z	Fig	Kg	Cartridge	Stock
NBR D32.K32.22	32-42	30	22	2	A	0.15	N90 D32.3242.CC09	●
	41-51	30	22	2	A	0.15	N90 D32.4151.CC09	○
NBR D40.K40.27	41-54	39	27	2	A	0.3	N90 D40.4154.CC09	●
	53-66	39	27	2	A	0.3	N90 D40.5366.CC09	○
NBR D50.K50.32	53-70	49	32	2	A	0.56	N90 D50.5370.CC12	●
	69-86	49	32	2	A	0.56	N90 D50.6986.CC12	○
NBR D63.K63.42	68-90	63	42	2	A	1.21	N90 D63.6890.CC12	●
	88-110	63	42	2	A	1.21	N90 D63.88110.CC12	●
NBR D90.K63.40	98-126	63	40	2	B	1.67	N90 D90.98126.CC12	●
	125-153	63	40	2	B	1.67	N90 D90.125153.CC12	●

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- The cartridge should be ordered separately
- The adaptor should be ordered separately

- Scale mark basis.
  The scale value for CC06/CC09/TC11/SO06 with R0.4. The scale value for SO09 with R0.6.
  The scale value for CC12/SC09/SC12/SO12 with R0.8. The scale value for SO16 with R1.2.
- Ordering sample: 1 PC NBR D32.K32.22.

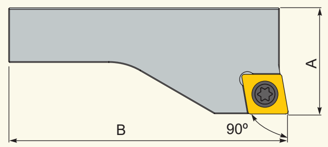
Spare Parts

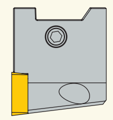
Dc	Clamping screw for cartridge	Disk spring	Allen key for adjusting screw
32-51	SR55 M6x20	GK20 D6	KEY01 M5
41-66	SR55 M8x25	GK20 D8	KEY01 M6
53-86	SR55 M10x30	GK20 D10	KEY01 M8
68-110	SR55 M10x30	GK20 D10	KEY01 M8
98-153	SR55 M12x35	GK20 D12	KEY01 M10

D2	Expanding pin	Ssaling disc
D2=30	FT90 D7x22	FT91 D5x1
D2=39	FT90 D8.5x26.5	FT91 D5.5x1.5
D2=49	FT90 D11x33	FT91 D8.5x1.5
D2=63	FT90 D14x43	FT91 D11x1.5

Trapezoidal Slot Type of Cartridge

It is suitable for the NBR rough boring tools with twin cutters, and also it can be adjusted freely due to the connection.





Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
N90 D32.3242.CC09	32-42	18.9	27	CC..09T3..	0.02	SR50 M4X6	KEY01 M2.0	SR21 M4X9.5	KEY03 T15	●
N90 D32.4151.CC09	41-51	18.9	34	CC..09T3..	0.03	SR50 M4X6	KEY01 M2.0	SR21 M4X9.5	KEY03 T15	○
N90 D40.4154.CC09	41-54	22	35	CC..09T3..	0.05	SR50 M5X8	KEY01 M2.5	SR21 M4X9.5	KEY03 T15	●
N90 D40.5366.CC09	53-66	22	43	CC..09T3..	0.07	SR50 M5X8	KEY01 M2.5	SR21 M4X9.5	KEY03 T15	○
N90 D50.5370.CC12	53-70	27	45	CC..1204..	0.09	SR50 M5X10	KEY01 M2.5	SR21 M5X12.8	KEY03 T20	●
N90 D50.6986.CC12	69-86	27	55	CC..1204..	0.13	SR50 M5X10	KEY01 M2.5	SR21 M5X12.8	KEY03 T20	○
N90 D63.6890.CC12	68-90	31.6	56	CC..1204..	0.16	SR50 M6X12	KEY01 M3	SR21 M5X12.8	KEY03 T20	●
N90 D63.88110.CC12	88-110	31.6	79	CC..1204..	0.23	SR50 M6X16	KEY01 M3	SR21 M5X12.8	KEY03 T20	●
N90 D90.98126.CC12	98-126	34	89	CC..1204..	0.29	SR50 M6X20	KEY01 M3	SR21 M5X12.8	KEY03 T20	●
N90 D90.125153.CC12	125-153	34	103	CC..1204..	0.38	SR50 M8X20	KEY01 M4	SR21 M5X12.8	KEY03 T20	●

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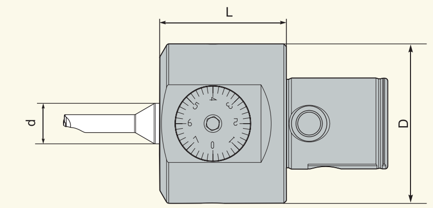
* The inserts for diff erent materials should be ordered separately
● Ordering sample: 1 PC N90 D32.3242.CC09.

CBF Mini Precision Boring Tool with Type K Connection

Mini boring tool has a highly precise adjustment mechanism, 1 DIV =0.01 mm in diameter, and the boring range is Φ2- Φ50. High rigidity thanks of cylindrical modular connection type K.Boring bars for the body.



Designation	Dc	L	D	d	Kg	Boring bar	Stock
CBF D02-22.K40.35.C	2-22	35	40	10	0.35	NBF C10-6 ST06E.. ST10.. ST10E..	●
CBF D06-50.K50.50.C	6-50	50	63	16	1.09	ST16.. ST16E..	●
CBF D06-50.K63.50.C	6-50	50	63	16	1.25	ST16.. ST16E..	●

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● The boring bar should be ordered separately
● The adaptor should be ordered separately

● The adjusting range is -0.2~+1.2mm when Dc range is 2-22.
The adjusting range is -0.2~+3.3mm when Dc range is 6-50.
● Ordering sample: 1 piece CBF D02-22.K40.35.C.

Spare Parts

Designation	Clamping screw for insert	Lock screw	Allen key for adjusting screw	Expanding pin	Sealing ring
CBF D02-22.K40	SR54 M6x10	SR50 M6x10xD3.2	KEY01 M3	FT90 D8.5x26.5	FT91 D5.5x1.5
CBF D06-50.K50	SR54 M10x16	SR50 M10x16xD6	KEY01 M5	FT90 D11x33	FT91 D8.5x1.5
CBF D06-50.K63	SR54 M10x16	SR50 M10x16xD6	KEY01 M5	FT90 D14x43	FT91 D11x1.5

CBF Precision Boring Tool with Type K Connection

It can be micro adjusted with single tooth. 1 DIV=0.01 mm in diameter. The boring range is Φ20- Φ212.Cylindrical modular connection type K. Axial combination precision cartridge for the body.

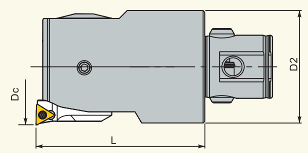


Fig A

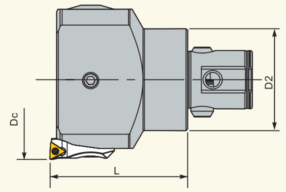


Fig B

Designation	Dc	D2	L	Kg	Fig	Cartridge	Stock
CBF D19.K19.34.C	20-26	19	34	0.07	A	FRB 10A…	●
	25-31	19	34	0.07	A	FRB 10B…	●
	30-36	19	34	0.07	A	FRB 10C…	●
CBF D25.K25.37.C	26-34	25	37	0.13	A	FRB 12A…	●
	33-41	25	37	0.13	A	FRB 12B…	●
	40-48	25	37	0.13	A	FRB 12C…	●
CBF D32.K32.43.C	33-43	32	43	0.25	A	FRB 16A…	●
	42-52	32	43	0.25	A	FRB 16B…	●
	51-61	32	43	0.25	A	FRB 16C…	●
CBF D40.K40.48.C	42-54	40	48	0.45	A	FRB 20A…	●
	53-65	40	48	0.45	A	FRB 20B…	●
	64-76	40	48	0.45	A	FRB 20C…	●
CBF D40.K40.70.C	42-54	40	70	0.65	A	FRB 20A…	●
	53-65	40	70	0.65	A	FRB 20B…	●
	64-76	40	70	0.65	A	FRB 20C…	●
CBF D50.K50.75.C	53-69	50	75	1.12	A	FRB 25A…	●
	68-84	50	75	1.12	A	FRB 25B…	●
	83-99	50	75	1.12	A	FRB 25C…	●
CBF D63.K63.85.C	68-100	63	85	2.1	A	FRB 30A…	●
	98-130	63	85	2.1	A	FRB 30B…	●
	128-160	63	85	2.1	A	FRB 30C…	●
CBF D100.K63.85.C	100-152	63	85	2.97	B	FRB 30A…	●
	130-182	63	85	2.97	B	FRB 30B…	●
	160-212	63	85	2.97	B	FRB 30C…	●
CBF D100.K90.85.C	100-152	88	85	4.35	B	FRB 30A…	●
	130-182	88	85	4.35	B	FRB 30B…	●
	160-212	88	85	4.35	B	FRB 30C…	●

- The cartridge should be ordered separately
- The adaptor should be ordered separately
- The machine range De is the value which the radius of insert of FRB 10 cartridge is R0.2, and the radius of insert of FRB 12/16/20/25/30 cartridge is R0.4
- Recommondation for selecting the ball screw with lock screw
- Ordering sample: 1 PC CBF D32.K32.43.C.

Spare Parts

Designation	Lock screw	Clamp screw for cartridge	Allen key for adjusting screw	Allen key for cartridge clamping secrew	Expanding pin	Sealing ring
CBF D19.K19.34.C	SR54-2 M4x4	SR20 M4x6-X	KEY01 M2	KEY03 T15	FT90 D4x13.5	FT91 D2x1
CBF D25.K25.37.C	SR54-2 M4x6	SR20 M4x8-X	KEY01 M2	KEY03 T15	FT90 D5x17	FT91 D3x1
CBF D32.K32.43.C	SR54-2 M5x8	SR56-2 M5x10	KEY01 M2.5	KEY01 M3	FT90 D7x22	FT91 D5x1
CBF D40.K40.48.C	SR54 M6x10	SR56-2 M5x12	KEY01 M3	KEY01 M3	FT90 D8.5x26.5	FT91 D5.5x1.5
CBF D40.K40.70.C	SR54 M6x10	SR56-2 M5x12	KEY01 M3	KEY01 M3	FT90 D8.5x26.5	FT91 D5.5x1.5
CBF D50.K50.75.C	SR54 M6x12	SR56-2 M6x16	KEY01 M3	KEY01 M4	FT90 D11x33	FT91 D8.5x1.5
CBF D63.K63.85.C	SR54 M10x16	SR56 M8x20	KEY01 M5	KEY01 M5	FT90 D14x43	FT91 D11x1.5
CBF D100.K63.85.C	SR54 M10x16	SR56 M8x25	KEY01 M5	KEY01 M5	FT90 D14x43	FT91 D11x1.5
CBF D100.K90.85.C	SR54 M10x16	SR56 M8x25	KEY01 M5	KEY01 M5	FT90 D18x56	FT91 D15x1.5

CBF Preciision Boring Tool for Back Boring with Type K Connection

Please assemble the cartridge as its reverse direction, which is for back boring, and the back boring range isΦ30-Φ212 and also with the same precision as the ordinary boring tool, but 1he tool should be rotated by the reserve direction when machining and 1he hole diameter D should meet the requirement of "D≥(Dc+D1)/2+ 1" .

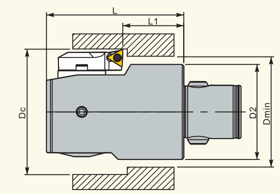


Fig A

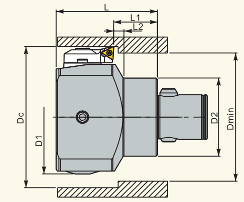
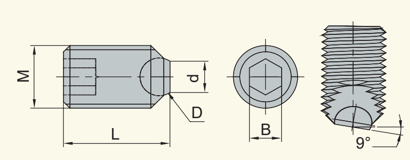


Fig B

Designation	Dc	D1	D2	L	L1	L2	Z	Fig	Kg	Cartridge
CBF D19.K19.34.C	30-36	19	19	32	11.5	-	1	A	0.07	FRB 10C...
CBF D25.K25.37.C	36-41	25	25	33	8.5	-	1	A	0.13	FRB 12B...
	40-48	25	25	33	8.5	-	1	A	0.13	FRB 12C...
CBF D32.K32.43.C	47-52	32	32	39	10.5	-	1	A	0.25	FRB 16B...
	51-61	32	32	39	10.5	-	1	A	0.25	FRB 16C...
CBF D40.K40.70.C	55-65	40	40	67	33.5	-	1	A	0.65	FRB 20B...
	64-76	40	40	67	33.5	-	1	A	0.65	FRB 20C...
CBF D50.K50.75.C	62-69	50	50	72	32	-	1	A	1.12	FRB 25A...
	68-84	50	50	72	32	-	1	A	1.12	FRB 25B...
	83-99	50	50	72	32	-	1	A	1.12	FRB 25C...
CBF D63.K63.85.C	80-100	63	63	81	35	-	1	A	2.1	FRB 30A...
	98-130	63	63	81	35	-	1	A	2.1	FRB 30B...
	128-160	63	63	81	35	-	1	A	2.1	FRB 30C...
CBF D100.K63.85.C	112-152	100	63	81	35	8	1	B	2.97	FRB 30A...
	130-182	100	63	81	35	8	1	B	2.97	FRB 30B...
	160-212	100	63	81	35	8	1	B	2.97	FRB 30C...
CBF D100.K90.85.C	112-152	100	88	81	35	8	1	B	4.35	FRB 30A...
	130-182	100	88	81	35	8	1	B	4.35	FRB 30B...
	160-212	100	88	81	35	8	1	B	4.35	FRB 30C...

- The cartridge should be ordered separately
- The adaptor should be ordered separately
- The machine range De is the value which the radius of insert of FRB 10 cartridge is R0.2, and the radius of insert of FRB 12/16/20/25/30 cartridge is R0.4
- Rotating the tool on the anticlockwise direction.
- Minimum via diameter: Dmin=(Dc+D1)/2+1.
- Ordering sample: 1 PC CBF D19.K19.34.C.

Spare Parts

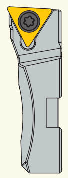


Designation	Designation	Interface	M	L	D	d	B
球头螺钉	SR50 M4x6xD2	K19/K25	4	6	2.5	2	2
球头螺钉	SR50 M5x8xD2.5	K32	5	8	3	2.5	2.5
球头螺钉	SR50 M6x10xD3.2	K40/K50	6	10	4	3.2	3
球头螺钉	SR50 M10x16xD6	K63	10	16	7	6	5
球头螺钉	SR50 M10x20xD6	K90	10	20	7	6	5

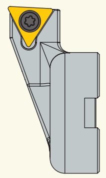
- Feature:
  End face closed
  The lip part can be rotated by 9° but with firmly clamping

Cartridge for Precision Boring Tool

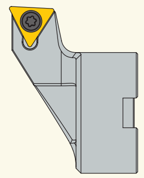
It is suitable for the NBF & CBF series micro fine boring head, and has the features of locked firmly, easy to be changed and convenient for the general and back boring machining, and also could be suitable for inserts with different specifications.



A型
Type A



B型
Type B



C型
Type C

Designation	Insert	Clamping screw for insert	Stock
FRB 10A.TB06	TB..0601..	SR20 M2x4.6	●
FRB 10B.TB06	TB..0601..	SR20 M2x4.6	●
FRB 10C.TB06	TB..0601..	SR20 M2x4.6	●
FRB 12A.TP08	TP..0802..	SR20 M2.2x5.6	●
FRB 12A.TP09	TP..0902..	SR22 M2.5x6	●
FRB 12B.TP09	TP..0902..	SR22 M2.5x6	●
FRB 12C.TP09	TP..0902..	SR22 M2.5x6	●
FRB 16A.TP08	TP..0802..	SR20 M2.2x5.6	●
FRB 16A.TP09	TP..0902..	SR22 M2.5x6	●
FRB 16B.TP09	TP..0902..	SR22 M2.5x6	●
FRB 16C.TP09	TP..0902..	SR22 M2.5x6	●
FRB 20A.TP09	TP..0902..	SR22 M2.5x6	●
FRB 20B.TP09	TP..0902..	SR22 M2.5x6	●
FRB 20C.TP09	TP..0902..	SR22 M2.5x6	●
FRB 25A.TP09	TP..0902..	SR22 M2.5x6	●
FRB 25B.TP09	TP..0902..	SR22 M2.5x6	●
FRB 25C.TP09	TP..0902..	SR22 M2.5x6	●
FRB 30A.TP11	TP..1103..	SR22 M3x8	●
FRB 30B.TP11	TP..1103..	SR22 M3x8	●
FRB 30C.TP11	TP..1103..	SR22 M3x8	●

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- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC FRB 10A.TB06.

Designation	Insert	Clamping screw for insert	Stock
FRB 10A.TC06	TC..06T1..	SR20 M2x4.6	●
FRB 10B.TC06	TC..06T1..	SR20 M2x4.6	●
FRB 10C.TC06	TC..06T1..	SR20 M2x4.6	●
FRB 12A.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 12B.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 12C.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 16A.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 16B.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 16C.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 20A.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 20B.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 20C.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 20A.TC11	TC..1102..	SR20 M2.5x6	●
FRB 20B.TC11	TC..1102..	SR20 M2.5x6	●
FRB 20C.TC11	TC..1102..	SR20 M2.5x6	●
FRB 25A.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 25B.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 25C.TC09	TC..0902..	SR20 M2.2x5.6	●
FRB 25A.TC11	TC..1102..	SR20 M2.5x6	●
FRB 25B.TC11	TC..1102..	SR20 M2.5x6	●
FRB 25C.TC11	TC..1102..	SR20 M2.5x6	●
FRB 30A.TC11	TC..1102..	SR20 M2.5x6	●
FRB 30B.TC11	TC..1102..	SR20 M2.5x6	●
FRB 30C.TC11	TC..1102..	SR20 M2.5x6	●

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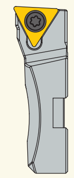
- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC FRB 10A.TC06.

Spare Parts

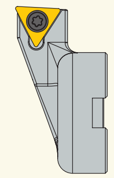
Clamping screw for insert	Allen key for clamping screw
SR20 M2x4.6	KEY03 T6
SR22 M2.5x6	KEY03 T8
SR22 M3x8	KEY03 T8
SR20 M2.2x5.6	KEY03 T7
SR20 M2.5x6	KEY03 T8
SR21 M4x9.5	KEY03 T15

Cartridge for Precision Boring Tool

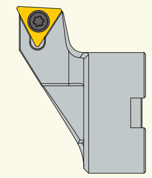
It is suitable for the NBF & CBF series micro fine boring tool, and has the features of locked firmly, easy to be changed and convenient for the general and back boring machining, and also could be suitable for inserts with different specifications.



A型
Type A



B型
Type B



C型
Type C

Designation	Insert	Clamping screw for insert	Stock
FRB 12A.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 12B.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 12C.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 16A.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 16B.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 16C.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 20A.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 20B.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 20C.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 25A.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 25B.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 25C.CC06	CC..0602..	SR21 M2.5x5.3	●
FRB 30A.CC09	CC..09T3..	SR21 M4x9.5	●
FRB 30B.CC09	CC..09T3..	SR21 M4x9.5	●
FRB 30C.CC09	CC..09T3..	SR21 M4x9.5	●

☞

- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC FRB 12A.CC06.

Designation	Insert	Clamping screw for insert	Stock
FRB 12A.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 12B.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 12C.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 16A.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 16B.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 16C.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 20A.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 20B.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 20C.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 25A.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 25A.TC1103	TC..1103..	SR20 M2.5x6	●
FRB 25B.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 25C.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 30A.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 30A.TC1103	TC..1103..	SR20 M2.5x6	●
FRB 30B.TC0903	TC..0903..	SR20 M2.5x6	●
FRB 30C.TC0903	TC..0903..	SR20 M2.5x6	●

☞

- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC FRB 12A.TC0903.

Spare Parts

Clamping screw for insert	Allen key for clamping screw
SR20 M2x3.7	KEY03 T6
SR22 M2.5x6	KEY03 T8
SR22 M3x8	KEY03 T8
SR20 M2.2x5.6	KEY03 T7
SR20 M2.5x6	KEY03 T8
SR21 M2.5x5.3	KEY03 T7
SR21 M4x9.5	KEY03 T15

Clearing Root Groove Head

It is suitable for NBF and CBF fine boring tools. Sable locking positioning, easy to be changed and machine the slots, mainly for non-ferrous metal processing.

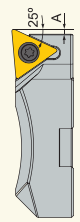


Fig A

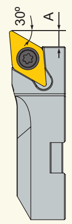


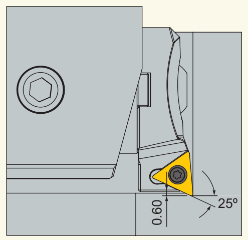
Fig B

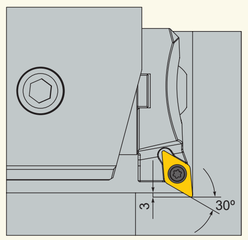
Designation	Insert	Clamping screw for insert	Maximum cutting depth A	Fig	Stock
FRB 16A.TC09-25°	TC..0902..	SR20 M2.2x5.6	0.6	A	◐
FRB 20A.DC07-30°	DC..0702..	SR20 M2.5x6	3	B	◐
FRB 25A.DC07-30°	DC..0702..	SR20 M2.5x6	3	B	◐
FRB 30A.DC07-30°	DC..0702..	SR20 M2.5x6	3	B	◐
FRB 30A.DC11-30°	DC..11T3..	SR21 M4x11	4.5	B	◐

☞

- The inserts for diff erent materials should be ordered separately
- Ordering sample: 1 PC FRB 16A.TC09-25°.
- Maximum cutting depth A indicates that the value when the rounded corner of insert is R0.4.

Diagram for The Processing Part Area



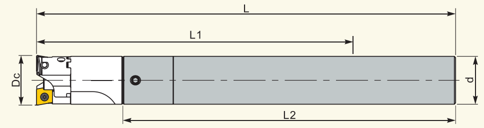


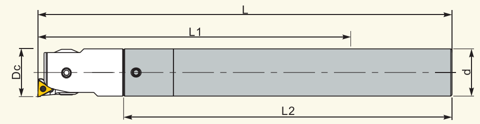
Spare Parts

Clamping screw for insert	Allen key for clamping screw
SR20 M2x3.7	KEY03 T6
SR22 M2.5x6	KEY03 T8
SR22 M3x8	KEY03 T8
SR20 M2.2x5.6	KEY03 T7
SR20 M2.5x6	KEY03 T8
SR21 M4x9.5	KEY03 T15

Cylindrical Shank Solid Carbide Boring Bar with Type K Connection

The solid carbide extension anti-vibration boring bar is suitable for the rough and fine boring tool to meet the rough and finish boring .





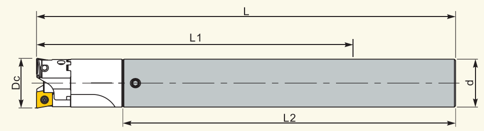
Designation	d	L	L1	L2	L/D ratio	Rough boring head	Precision boring head	Stock
STH K19-150.E	19	185	135	150	7.1	CBR D19.K19.22.C	CBF D19.K19.34.C	●
STH K25-200.E	25	240	185	200	7.4	CBR D25.K25.25.C	CBF D25.K25.37.C	●
STH K32-250.E	32	290	230	250	7.2	CBR D32.K32.30.C	CBF D32.K32.43.C	●

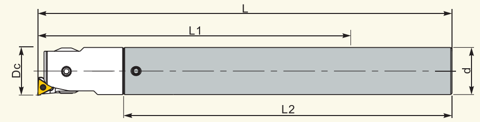
☞

- Recommended for high precision power chuck adaptor or hydraulic adaptor.
- End as ".E" can be changed into ".EN" which indicates the shank without the torsion slot. It is only suitable for precision boring head
- The suitable boring head should be ordered separately
- Ordering sample: 1 PC STH K19-150.E

Cylidrical Shank Steel Boring Bar with Type K Connection

The long version cylindrical shank steel bar with rough and precision boring heads can meet the rough and precision boring.





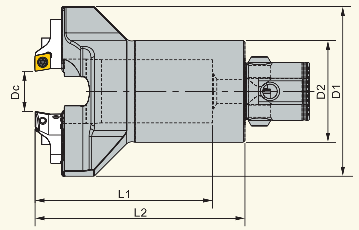
Designation	d	L	L1	L2	L/D ratio	Rough boring head	Precision boring head	Stock
STH K19-140	19	175	125	140	6	CBR D19.K19.22.C	CBF D19.K19.34.C	◐
STH K25-175	25	215	160	175	6	CBR D25.K25.25.C	CBF D25.K25.37.C	◐
STH K32-215	32	260	200	215	6	CBR D32.K32.30.C	CBF D32.K32.43.C	◐
STH K40-265	40	310	250	265	6	CBR D40.K40.30.C	CBF D40.K40.48.C	◐

☞

- Recommended for high precision power chuck adaptor or hydraulic adaptor.
- The boring tool should be ordered separately
- Ordering sample: 1 PC STH K19-140

Rough Boring Tool for External Turning

Cartridge with rectangular slot guide. the cartridge move on the guide freely to reach the diameter.
Note: Tool rotating anticlockwise when external turning.



Designation	Dc	D1	D2	L1	L2	Z	Kg	Cartridge	Stock
CXR D02-17.K50.100	2-17	62	50	82	100	2	1.3	C90A D026-035.CC06	◐
CXR D16-38.K63.120	16-38	105	63	110	130	2	2.3	C90A D041-055.CC09	◐
CXR D28-50.K63.160	28-50	118	80	152	177	2	4.1	C90A D041-055.CC09	◐
CXR D45-70.K90.230	45-70	164	95	214	239	2	6.9	C90A D055-070.CC09	◐

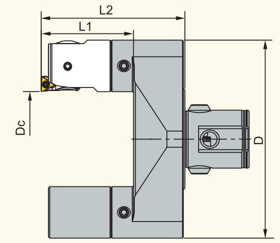
- The cartridge should be ordered separately
- The adaptor should be ordered separately
- Ordering sample: 1 PC CXR D02-17.K50.100

Spare Parts

Designation	Clamping screw for cartridge	Disk spring	Allen key for adjusting screw	Expanding pin	Sealing ring
K50	SR55 M4x16	GK20 D4	KEY01 M3	FT90 D11x33	FT91 D8.5x1.5
K63	SR55 M6x20	GK20 D6	KEY01 M5	FT90 D14x43	FT91 D11x1.5
K90	SR55 M6x20	GK20 D6	KEY01 M5	FT90 D18x56	FT91 D15x1.5

Precision Boring Tool for External Turning

It is fine boring tool body with K connection, and the dial each of which is 0.01 mm on diameter, which can be adjusted freely and stably, but the tool should be rotated on the anticlockwise direction.



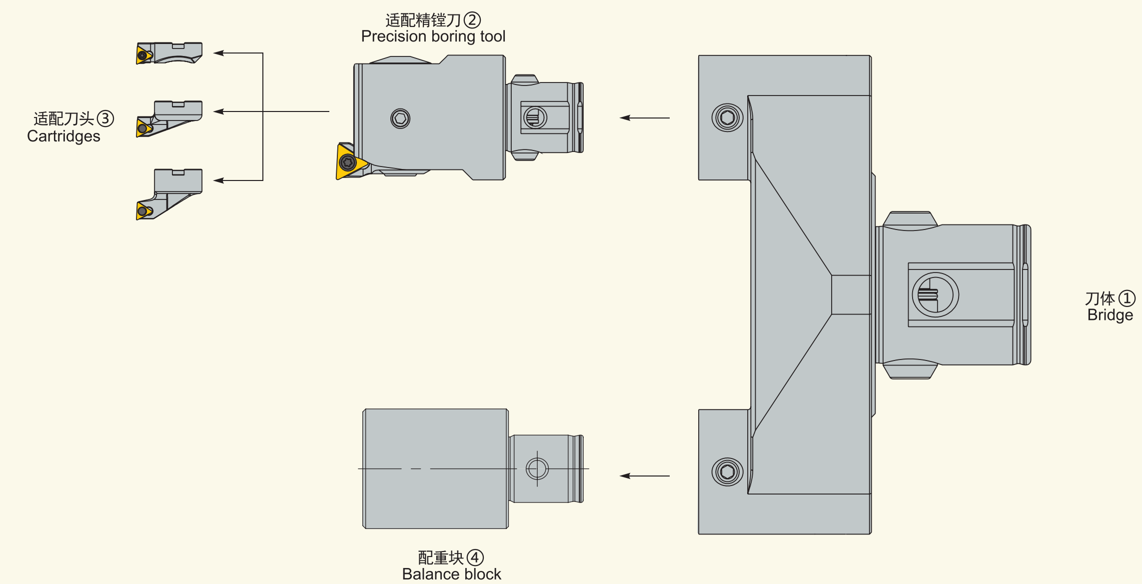
Designation	Dc	L1	L2	D	Kg	Precision boring head	Cartridge	lance block	Stock
CXF D02-30.K63.88.C	2-12	56	88	95	1.8	CBF D32.K32.43.C	FRB 16C…	BHB K32.39	◐
	11-21	56	88	95	1.8	CBF D32.K32.43.C	FRB 16B…	BHB K32.39	◐
	20-30	56	88	95	1.8	CBF D32.K32.43.C	FRB 16A…	BHB K32.39	◐
CXF D30-58.K63.88.C	30-40	56	88	125	2.1	CBF D32.K32.43.C	FRB 16C…	BHB K32.39	◐
	39-49	56	88	125	2.1	CBF D32.K32.43.C	FRB 16B…	BHB K32.39	◐
	48-58	56	88	125	2.1	CBF D32.K32.43.C	FRB 16A…	BHB K32.39	◐
CXF D58-86.K63.88.C	58-68	56	88	151	2.4	CBF D32.K32.43.C	FRB 16C…	BHB K32.39	◐
	67-77	56	88	151	2.4	CBF D32.K32.43.C	FRB 16B…	BHB K32.39	◐
	76-86	56	88	151	2.4	CBF D32.K32.43.C	FRB 16A…	BHB K32.39	◐

- The cartridge should be ordered separately
- The adaptor should be ordered separately
- Ordering sample: 1 PC CXF D02-30.K63.88.C.

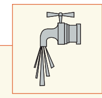
Spare Parts

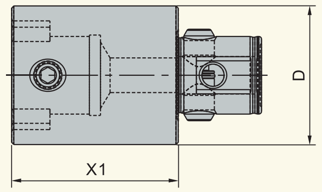
Designation	Clamping screw	Allen key for clamping screw	Expanding pin	Sealing ring
CXF D02-30.K63.88.C	SR65-2 M6x9-X	KEY01 M3	FT90 D14x43	FT91 D11x1.5
CXF D30-58.K63.88.C	SR65-2 M6x9-X	KEY01 M3	FT90 D14x43	FT91 D11x1.5
CXF D58-86.K63.88.C	SR65-2 M6x9-X	KEY01 M3	FT90 D14x43	FT91 D11x1.5

Instruction of Modular Combination Type K Connection



Extension with Type K Connection





Designation	D	X1	Kg	Stock
EX K19x20	19	20	0.04	●
EX K19x30	19	30	0.06	●
EX K25x30	25	30	0.1	●
EX K25x45	25	45	0.16	●
EX K32x30	32	30	0.17	●
EX K32x45	32	45	0.25	●
EX K40x45	40	45	0.39	●
EX K40x60	40	60	0.53	●
EX K50x60	50	60	0.83	●
EX K50x90	50	90	1.25	●
EX K63x60	63	60	1.32	●
EX K63x100	63	100	2.22	●
EX K90x105	88	105	4.59	●

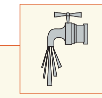
☞

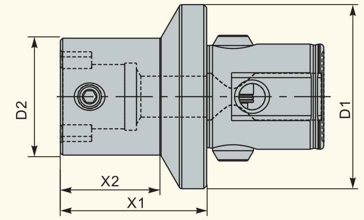
- Ordering sample: 1 PC EX K19x20.
- The adaptor should be ordered separately

Spare Parts

Designation	Expanding pin	Sealing ring	Clamping screw	Allen key for clamping screw
D=19	FT90 D4x13.5	FT91 D2x1	SR65-2 M4x5-X	KEY01 M2
D=25	FT90 D5x17	FT91 D3x1	SR65-2 M5x6.5-X	KEY01 M2.5
D=32	FT90 D7x22	FT91 D5x1	SR65-2 M6x9-X	KEY01 M3
D=40	FT90 D8.5x26.5	FT91 D5.5x1.5	SR65 M8x11-X	KEY01 M4
D=50	FT90 D11x33	FT91 D8.5x1.5	SR65 M10x14-X	KEY01 M5
D=63	FT90 D14x43	FT91 D11x1.5	SR65 M12x18-X	KEY01 M6
D=88	FT90 D18x56	FT91 D15x1.5	SR65 M20x28-X	KEY01 M10

Reduction with Type K Connection





Designation	D1	D2	X1	X2	Kg	Stock
RE K25-K19x40	25	19	40	26.5	0.1	●
RE K32-K19x40	32	19	40	27	0.14	●
RE K32-K25x35	32	25	35	22	0.16	●
RE K40-K19x50	40	19	50	35	0.25	●
RE K40-K25x50	40	25	50	38	0.28	●
RE K40-K32x50	40	32	50	38	0.32	●
RE K50-K19x60	50	19	60	40	0.38	●
RE K50-K25x50	50	25	50	33	0.4	●
RE K50-K25x80	50	25	80	63	0.51	●
RE K50-K32x50	50	32	50	33	0.54	●
RE K50-K32x80	50	32	80	63	0.64	●
RE K50-K40x40	50	40	40	23	0.47	●
RE K50-K40x70	50	40	70	53	0.82	●
RE K63-K19x70	63	19	70	36	0.84	●
RE K63-K25x70	63	25	70	54	0.69	●
RE K63-K25x95	63	25	95	79	0.98	●
RE K63-K32x60	63	32	60	44	0.75	●
RE K63-K32x90	63	32	90	74	1.12	●
RE K63-K40x50	63	40	50	34	0.8	●
RE K63-K40x85	63	40	85	69	1.28	●
RE K63-K50x40	63	50	40	24	0.92	●
RE K63-K50x75	63	50	75	59	1.33	●
RE K90-K63x105	88	63	105	88	3.1	●

☞

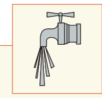
- Ordering sample: 1 PC RE K25-K19x40.
- The adaptor should be ordered separately

Spare Parts

D1	Expanding pin	Sealing ring
D1=25	FT90 D5x17	FT91 D3x1
D1=32	FT90 D7x22	FT91 D5x1
D1=40	FT90 D8.5x26.5	FT91 D5.5x1.5
D1=50	FT90 D11x33	FT91 D8.5x1.5
D1=63	FT90 D14x43	FT91 D11x1.5
D1=88	FT90 D18x56	FT91 D15x1.5

D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6

PSC-K Adaptor with Type K Connection



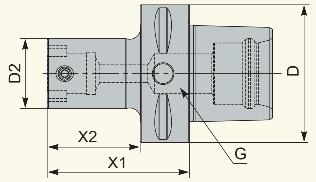


Fig A

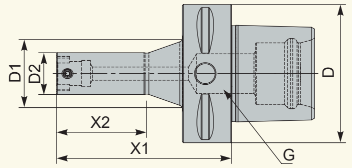
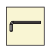


Fig B

Designation	D	D1	D2	X1	X2	G	Fig	Kg	Stock
C6 K19x80	63	31	19	80	40	M20x2	B	1.20	◐
C6 K25x80	63	-	25	80	57.5	M20x2	A	1.20	◐
C6 K32x65	63	-	32	65	42.5	M20x2	A	1.30	◐
C6 K32x100	63	-	32	100	77.5	M20x2	A	1.30	◐
C6 K40x60	63	-	40	60	37.5	M20x2	A	1.50	◐
C6 K40x95	63	-	40	95	72.5	M20x2	A	1.30	◐
C6 K50x50	63	-	50	50	27.5	M20x2	A	1.70	◐
C6 K50x85	63	-	50	85	62.5	M20x2	A	1.30	◐
C6 K63x60	63	-	63	60	37.5	M20x2	A	1.70	◐
C6 K63x95	63	-	63	95	72.5	M20x2	A	2.30	◐

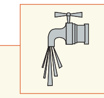
● Ordering Simple: 1 PC C6 K19x80.

Spare Parts



D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6
D2=88	SR65 M20x28-X	KEY01 M10

MAS403 BT Adaptor with Type K Connection



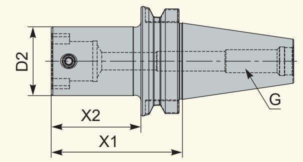


Fig A

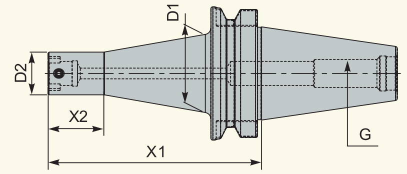
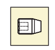


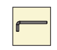
Fig B

Designation	ISO	D1	D2	X1	X2	G	Fig	Kg	Stock
BT30 K19x70	30	31	19	70	38	M12	B	0.49	●
BT30 K25x70	30	-	25	70	48	M12	A	0.52	●
BT30 K32x75	30	-	32	75	53	M12	A	0.64	●
BT30 K40x50	30	-	40	50	28	M12	A	0.55	●
BT30 K50x50	30	-	50	50	28	M12	A	0.65	●
BT40 K19x70	40	31	19	70	38	M16	B	1.07	●
BT40 K25x50	40	-	25	50	23	M16	A	1.01	●
BT40 K25x85	40	-	25	85	58	M16	A	1.14	●
BT40 K25x100	40	-	25	100	73	M16	A	1.16	●
BT40 K32x50	40	-	32	50	23	M16	A	1.05	●
BT40 K32x90	40	-	32	90	63	M16	A	1.28	●
BT40 K32x115	40	-	32	115	88	M16	A	1.4	●
BT40 K40x50	40	-	40	50	23	M16	A	1.09	●
BT40 K40x100	40	-	40	100	73	M16	A	1.54	●
BT40 K40x140	40	-	40	140	113	M16	A	1.89	●
BT40 K50x50	40	-	50	50	23	M16	A	1.2	●
BT40 K50x100	40	-	50	100	73	M16	A	1.87	●
BT40 K50x150	40	-	50	150	123	M16	A	2.25	●
BT40 K63x60	40	-	63	60	33	M16	A	1.45	●
BT40 K63x120	40	-	63	120	93	M16	A	2.74	●
BT40 K63x165	40	-	63	165	138	M16	A	3.76	●

● If needing the hole for data chip, please add ".X" at the end of the designation.
● Ordering sample: 1 PC BT 40 K32x50.

Spare Parts





D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6

MAS403 BT Adaptor with Type K Connection

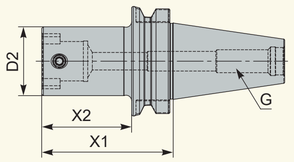


Fig A

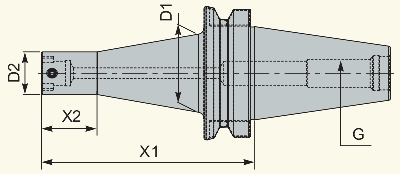


Fig B

Designation	ISO	D1	D2	X1	X2	G	Fig	Kg	Stock
BT50 K19x100	50	31	19	100	42	M24	B	3.65	●
BT50 K25x70	50	50	25	70	22	M24	B	3.62	●
BT50 K25x110	50	50	25	110	62	M24	B	3.76	●
BT50 K25x140	50	50	25	140	32	M24	B	4.17	●
BT50 K32x70	50	-	32	70	32	M24	A	3.63	●
BT50 K32x120	50	-	32	120	82	M24	A	3.93	●
BT50 K32x160	50	60	32	160	42	M24	B	4.8	●
BT50 K40x70	50	-	40	70	32	M24	A	3.71	●
BT50 K40x110	50	-	40	110	72	M24	A	4.07	●
BT50 K40x160	50	-	40	160	122	M24	A	4.53	●
BT50 K40x200	50	-	40	200	162	M24	A	4.83	●
BT50 K50x70	50	-	50	70	32	M24	A	3.86	●
BT50 K50x110	50	-	50	110	72	M24	A	4.42	●
BT50 K50x160	50	-	50	160	122	M24	A	5.13	●
BT50 K50x210	50	-	50	210	172	M24	A	5.89	●
BT50 K50x230	50	-	50	230	192	M24	A	6.06	●
BT50 K50x250	50	-	50	250	212	M24	A	6.34	●
BT50 K63x80	50	-	63	80	42	M24	A	4.12	●
BT50 K63x120	50	-	63	120	82	M24	A	5.02	●
BT50 K63x160	50	-	63	160	122	M24	A	5.94	●
BT50 K63x230	50	-	63	230	192	M24	A	7.52	●
BT50 K63x260	50	-	63	260	222	M24	A	8.16	●
BT50 K63x280	50	-	63	280	242	M24	A	8.6	●
BT50 K63x300	50	-	63	300	262	M24	A	9.05	●
BT50 K90x100	50	-	88	100	62	M24	A	5.61	●
BT50 K90x180	50	-	88	180	142	M24	A	9.2	●
BT50 K90x250	50	-	88	250	212	M24	A	12.34	●
BT50 K90x320	50	-	88	320	282	M24	A	15.48	●
BT50 K90x350	50	-	88	350	312	M24	A	16.84	●

- If needing the hole for data chip, please add ".X" at the end of the designation.
- Ordering sample: 1 PC BT50 K19x100.

Spare Parts

D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6
D2=88	SR65 M20x28-X	KEY01 M10

DIN69871-A Adaptor with Type K Connection

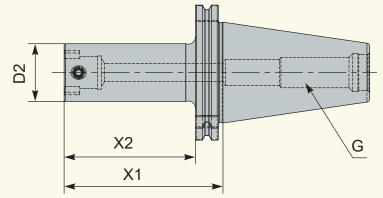


Fig A

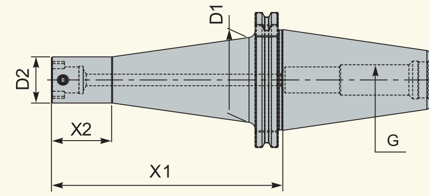


Fig B

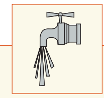
Designation	ISO	D1	D2	X1	X2	G	Fig	Kg	Stock
DIN69871 30 K19x70	30	31	19	70	38	M12	B	0.44	●
DIN69871 30 K25x70	30	-	25	70	50.9	M12	A	0.47	●
DIN69871 30 K32x75	30	-	32	75	55.9	M12	A	0.59	●
DIN69871 30 K40x50	30	-	40	50	30.9	M12	A	0.5	●
DIN69871 30 K50x50	30	-	50	50	30.9	M12	A	0.6	●
DIN69871 40 K19x70	40	31	19	70	38	M16	B	0.97	●
DIN69871 40 K25x50	40	-	25	50	30.95	M16	A	0.91	●
DIN69871 40 K25x85	40	-	25	85	65.95	M16	A	1.04	●
DIN69871 40 K25x100	40	-	25	100	80.95	M16	A	1.05	●
DIN69871 40 K32x50	40	-	32	50	30.95	M16	A	0.95	●
DIN69871 40 K32x90	40	-	32	90	70.95	M16	A	1.18	●
DIN69871 40 K32x115	40	-	32	115	95.95	M16	A	1.31	●
DIN69871 40 K40x50	40	-	40	50	30.95	M16	A	0.99	●
DIN69871 40 K40x100	40	-	40	100	80.95	M16	A	1.44	●
DIN69871 40 K40x140	40	-	40	140	120.95	M16	A	1.82	●
DIN69871 40 K50x50	40	-	50	50	30.95	M16	A	1.1	●
DIN69871 40 K50x100	40	-	50	100	80.95	M16	A	1.77	●
DIN69871 40 K50x150	40	-	50	150	130.95	M16	A	2.53	●
DIN69871 40 K63x60	40	-	63	60	40.95	M16	A	1.35	●
DIN69871 40 K63x120	40	-	63	120	100.95	M16	A	2.64	●
DIN69871 40 K63x165	40	-	63	165	145.95	M16	A	3.7	●

- If needing the hole for data chip, please add ".X" at the end of the designation.
- Ordering sample: 1 PC DIN69871 30 K19x70.

Spare Parts

D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6

DIN69871-A Adaptor with Type K Connection



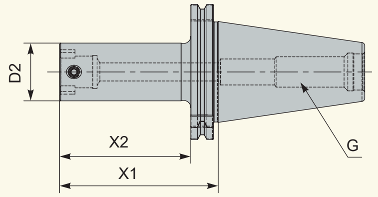


Fig A

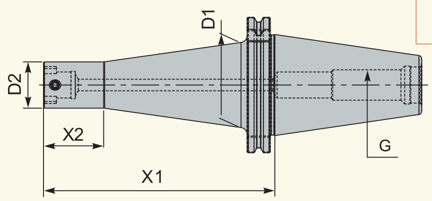


Fig B

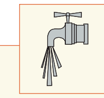
Designation	ISO	D1	D2	X1	X2	G	Fig	Kg	Stock
DIN69871 50 K19x100	50	31	19	100	42	M24	B	2.81	●
DIN69871 50 K25x70	50	50	25	70	22	M24	B	2.84	●
DIN69871 50 K25x110	50	50	25	110	62	M24	B	2.98	●
DIN69871 50 K25x140	50	50	25	140	32	M24	B	3.39	●
DIN69871 50 K32x70	50	-	32	70	50.95	M24	A	2.8	●
DIN69871 50 K32x120	50	-	32	120	100.95	M24	A	3.09	●
DIN69871 50 K32x160	50	60	32	160	42	M24	B	4.01	●
DIN69871 50 K40x70	50	-	40	70	50.95	M24	A	2.91	●
DIN69871 50 K40x110	50	-	40	110	90.95	M24	A	3.26	●
DIN69871 50 K40x160	50	-	40	160	140.95	M24	A	3.7	●
DIN69871 50 K40x200	50	-	40	200	180.95	M24	A	4.05	●
DIN69871 50 K50x70	50	-	50	70	50.95	M24	A	3.11	●
DIN69871 50 K50x110	50	-	50	110	90.95	M24	A	3.68	●
DIN69871 50 K50x160	50	-	50	160	140.95	M24	A	4.37	●
DIN69871 50 K50x210	50	-	50	210	190.95	M24	A	5.1	●
DIN69871 50 K50x230	50	-	50	230	210.95	M24	A	5.38	●
DIN69871 50 K50x250	50	-	50	250	230.95	M24	A	5.66	●
DIN69871 50 K63x80	50	-	63	80	60.95	M24	A	3.59	●
DIN69871 50 K63x160	50	-	63	160	140.95	M24	A	5.38	●
DIN69871 50 K63x230	50	-	63	230	210.95	M24	A	6.96	●
DIN69871 50 K63x260	50	-	63	260	240.95	M24	A	7.63	●
DIN69871 50 K63x280	50	-	63	280	260.95	M24	A	8.08	●
DIN69871 50 K63x300	50	-	63	300	280.95	M24	A	8.53	●
DIN69871 50 K90x100	50	-	88	100	80.95	M24	A	5.34	●
DIN69871 50 K90x180	50	-	88	180	160.95	M24	A	8.93	●
DIN69871 50 K90x250	50	-	88	250	230.95	M24	A	12.07	●
DIN69871 50 K90x320	50	-	88	320	300.95	M24	A	15.21	●
DIN69871 50 K90x350	50		88	350	330.95	M24	A	16.56	●

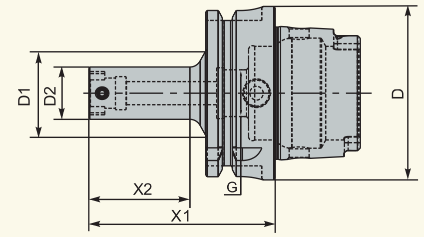
- If needing the hole for data chip, please add ".X" at the end of the designation.
- Ordering sample: 1 PC DIN69871 50 K19x100.

Spare Parts

D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6
D2=88	SR65 M20x28-X	KEY01 M10

HSK-A Adaptor with Type K Connection





Designation	D	D1	D2	X1	X2	G	Kg	Stock
HSK A63 K19x80	63	31	19	80	40	M18x1	0.9	●
HSK A63 K25x80	63	-	25	80	54	M18x1	1.0	●
HSK A63 K32x85	63	-	32	85	59	M18x1	1.1	●
HSK A63 K32x120	63	-	32	120	94	M18x1	1.13	●
HSK A63 K40x80	63	-	40	80	54	M18x1	1.2	●
HSK A63 K40x120	63	-	40	120	94	M18x1	1.42	●
HSK A63 K50x60	63	-	50	60	34	M18x1	1.3	●
HSK A63 K50x115	63	-	50	115	89	M18x1	1.78	●
HSK A63 K63x70	63	-	63	70	44	M18x1	1.5	●
HSK A63 K63x110	63	-	63	110	84	M18x1	2.02	●
HSK A100 K19x100	100	31	19	100	40	M24x1.5	2.4	●
HSK A100 K25x115	100	50	25	115	70	M24x1.5	2.6	●
HSK A100 K32x110	100	50	32	110	76	M24x1.5	2.8	●
HSK A100 K40x105	100	-	40	105	76	M24x1.5	3.0	●
HSK A100 K40x150	100	-	40	150	121	M24x1.5	3.00	●
HSK A100 K50x75	100	-	50	75	46	M24x1.5	3.3	●
HSK A100 K50x140	100	-	50	140	111	M24x1.5	3.43	●
HSK A100 K50x185	100	-	50	185	156	M24x1.5	4.10	●
HSK A100 K63x75	100	-	63	75	46	M24x1.5	3.4	●
HSK A100 K63x165	100	-	63	165	136	M24x1.5	4.79	●
HSK A100 K63x215	100	-	63	215	186	M24x1.5	5.94	●
HSK A100 K90x125	100	-	88	125	96	M24x1.5	5.8	●
HSK A100 K90x215	100	-	88	215	186	M24x1.5	9.82	●
HSK A100 K90x275	100	-	88	275	246	M24x1.5	12.58	●

☞

* Ordering Simple: 1 PC HSK A63 K19x80.

- Inner coolant should be ordered separately

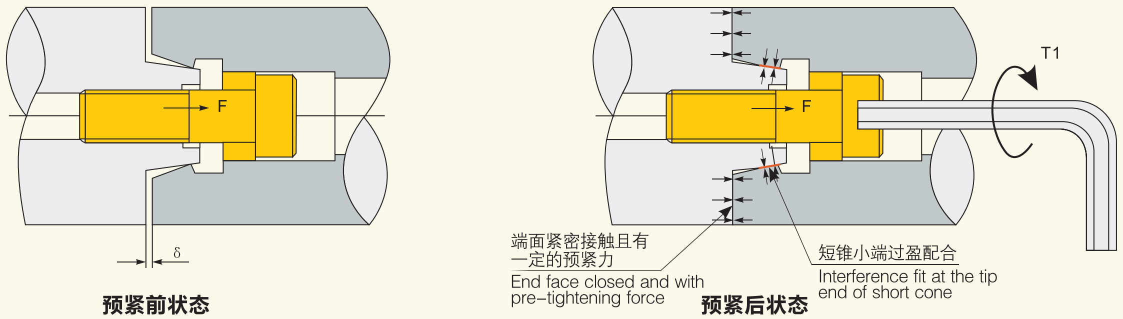
Spare Parts

D2	Clamping screw	Allen key for clamping screw
D2=19	SR65-2 M4x5-X	KEY01 M2
D2=25	SR65-2 M5x6.5-X	KEY01 M2.5
D2=32	SR65-2 M6x9-X	KEY01 M3
D2=40	SR65 M8x11-X	KEY01 M4
D2=50	SR65 M10x14-X	KEY01 M5
D2=63	SR65 M12x18-X	KEY01 M6
D2=88	SR65 M20x28-X	KEY01 M10

Clamping Principle and Assembly Instruction of Type E Connection

The type E connection adopts the short cone over-positioning connecting method, and there will have space if it is the short cone fitting when it is free status. There will be axial tension F makes the short cone interfered and a little bit deformation, meanwhile the end face closed to and the pretightening force makes sure the high rigidity, high accuracy. The interference can make sure the contact surface well-distributed, pretightening force is coincident and with the high rigidity, high accuracy. There is an end face key at the circumference to transfer more cutting torsions. There are two styles of E connection, one is standard which is with axial screw tighten the boring tool and the adaptor for standard type Two radial screw tighten the boring tool and the adaptor with balance clamping force to make long type connection easily.

Clamping Principle of Type E Connection



预紧前状态
Status before pre–tightening

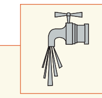
预紧后状态
Status of Tightened

Recommend Value of Tightening Torque of Type E Connection

Designation	E25	E32	E40	E50	E63	E80
T1 for Standard E connection	18	18	80	80	150	200

BR Rough Boring Tool with Type E Connection

Two teeth rough boring tool, boring range 20-153. Hollow short taper modular connection type E. with rectangular guide slot cartridge.



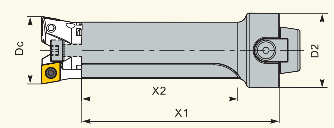


Fig A

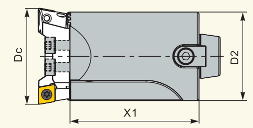


Fig B

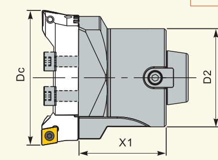


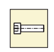
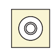
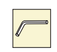
Fig C

Designation	Dc	D2	X1	X2	Z	Fig	Kg	Cartridge	Stock
BR D020-027.E25.Z2.68.C	20-24	25	68	55	2	A	0.14	S..D020-024..	●
	23-27	25	68	55	2	A	0.14	S..D023-027..	●
BR D020-027.E25.Z2.88.C	20-24	25	88	75	2	A	0.15	S..D020-024..	●
	23-27	25	88	75	2	A	0.15	S..D023-027..	●
BR D026-035.E25.Z2.68.C	26-35	25	68	-	2	B	0.20	S..D026-035..	●
BR D033-041.E32.Z2.68.C	33-41	32	68	-	2	B	0.35	S..D033-041..	●
BR D041-055.E40.Z2.65.C	41-55	40	65	-	2	B	0.54	S..D041-055..	●
BR D055-070.E50.Z2.75.C	55-70	50	75	-	2	B	0.98	S..D055-070..	●
BR D070-090.E63.Z2.75.C	70-90	63	75	-	2	B	1.65	S..D070-090..	●
BR D090-110.E63.Z2.75.C	90-110	63	75	-	2	C	1.90	S..D090-110..	●
BR D090-110.E80.Z2.75.C	90-110	80	75	-	2	B	2.68	S..D090-110..	●
BR D110-153.E63.Z2.75.C	110-133	63	75	-	2	C	2.20	S..D110-133..	●
	130-153	63	75	-	2	C	2.20	S..D130-153..	●
BR D110-153.E80.Z2.75.C	110-133	80	75	-	2	C	2.94	S..D110-133..	●
	130-153	80	75	-	2	C	2.94	S..D130-153..	●

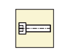
- The cartridge should be ordered separately
- The adaptor should be ordered separately

- Scale mark basis.
  The scale value for CC06/CC09/TC11/SO06 with R0.4. The scale value for SO09 with R0.6.
  The scale value for CC12/SC09/SC12/SO12 with R0.8. The scale value for SO16 with R1.2.
- Ordering sample: 1 Piece BR D020-0 27.E25.I2 .68.C

Spare Parts

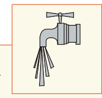
Dc	Clamping screw for cartridge	Disk spring	Allen key for adjusting screw
20-35mm	SR55 M4x16	GK20 D4	KEY01 M3
33-41mm	SR55 M5x16	GK20 D5	KEY01 M4
41-55mm	SR55 M6x20	GK20 D6	KEY01 M5
55-70mm	SR55 M6x20	GK20 D6	KEY01 M5
70-90mm	SR55 M8x25	GK20 D8	KEY01 M6
90-153mm	SR55 M10x30	GK20 D10	KEY01 M8

D2	Flat key	Clamping screw for flat key
D2=25	PL03 8x2	SR57 M3X6
D2=32	PL03 8x6	SR57 M3x10
D2=40	PL03 10x5	SR57 M4x12
D2=50	PL04 12x9	SR55 M5x12
D2=63	PL04 14x12	SR55 M5X12
D2=80	PL04 16x14	SR55 M6x16

BR Rough Boring Tool for Back Boring with Type E Connection

Thanks of stable cartridge for back boring.so that it can be back boring easily. The back boring range isΦ30-Φ152mm, and also it can be adjusted freely and stably. The hole diameter D should meet the demand of "D≥ (Dc+D1)/2+ 1".



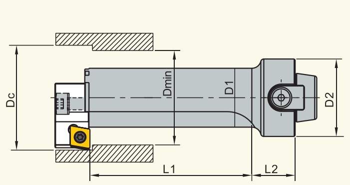


Fig A

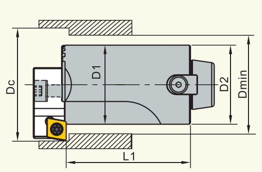


Fig B

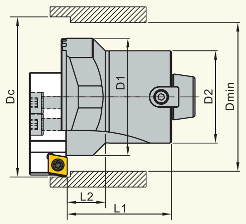


Fig C

Designation	Dc	D1	D2	L1	L2	Z	Fig	Kg	Cartridge	Stock
BR D020-027.E25.Z2.68.C	30-35	19	25	52	14	1	A	0.15	S90C D19.3035.CC06	●
BR D020-027.E25.Z2.88.C	30-35	19	25	72	14	1	A	0.15	S90C D19.3035.CC06	●
BR D026-035.E25.Z2.68.C	33-41	25	25	65	-	1	B	0.22	S90C D25.3341.CC06	●
	40-48	25	25	65	-	1	B	0.21	S90C D25.4048.CC06	●
BR D033-041.E32.Z2.68.C	42-52	32	32	65	-	1	B	0.38	S90C D32.4252.CC06	●
	51-61	32	32	65	-	1	B	0.37	S90C D32.5161.CC06	●
BR D041-055.E40.Z2.65.C	53-65	40	40	62	-	1	B	0.61	S90C D40.5365.CC09	●
	64-76	40	40	62	-	1	B	0.6	S90C D40.6476.CC09	●
BR D055-070.E50.Z2.75.C	53-69	50	50	72	-	1	B	1.04	S90C D50.5369.CC09	●
	68-84	50	50	72	-	1	B	1.06	S90C D50.6884.CC09	●
	83-99	50	50	72	-	1	B	1.08	S90C D50.8399.CC09	●
BR D070-090.E63.Z2.75.C	68-89	63	63	70	-	1	B	1.81	S90C D63.6889.CC09	●
	88-109	63	63	70	-	1	B	1.77	S90C D63.88109.CC09	●
BR D090-110.E63.Z2.75.C	88-110	80	63	70	26	1	C	2.21	S90C D80.88110.CC12	●
	108-130	80	63	70	26	1	C	1.72	S90C D80.108130.CC12	●
BR D090-110.E80.Z2.75.C	88-110	80	80	70	-	1	B	2.99	S90C D80.88110.CC12	●
	108-130	80	80	70	-	1	B	2.92	S90C D80.108130.CC12	●
BR D110-153.E63.Z2.75.C	108-132	100	63	70	26	1	C	2.55	S90C D100.108132.CC12	●
	128-152	100	63	70	26	1	C	2.48	S90C D100.128152.CC12	●
BR D110-153.E80.Z2.75.C	108-132	100	80	70	23	1	C	3.31	S90C D100.108132.CC12	●
	128-152	100	80	70	23	1	C	3.24	S90C D100.128152.CC12	●

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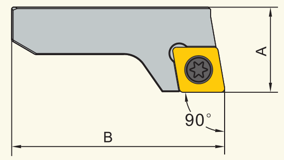
- The cartridge should be ordered separately
- The adaptor should be ordered separately

- Through hole of back boring Dmin= (Dc+D1)/2 + 1.
- Scale mark basis.
  The scale value for CC06/CC09/TC11/SO06 with R0.4. The scale value for SO09 with R0.6.
  The scale value for CC12/SC09/SC12/SO12 with R0.8. The scale value for SO16 with R1.2.
- Ordering sample: 1 piece BR D020-027.E25.Z2.68.C.

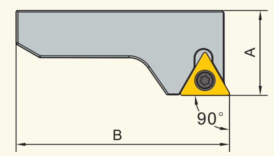
Cartridge with Rectangular Slot Guide for Rough Boring Tool

It is suitable for the BR rough boring tools with twin cutters, and also it can be adjusted freely due to the connection.
The boring range: 90° C style isΦ20-Φ153; 90° T style isΦ33-Φ153; 45° style isΦ23-Φ53; 84° style isΦ20-Φ153.

90° C型刀座
Kr=90° with C Insert



90° T型刀座
Kr=90° with T Insert



90°C

Kr=90° with C Insert

Designation	Boring range	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
S90A D020-024.CC06	20-24	13.6	16	CC..0602..	0.01	SR50 M2.5x5	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
S90A D023-027.CC06	23-27	13.6	17	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
S90A D026-035.CC06	26-35	13.6	20	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
S90A D033-041.CC06	33-41	15	26	CC..0602..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M2.5x5.3	KEY03 T7	●
S90A D034-042.CC09	34-42	18	26	CC..09T3..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
S90A D041-055.CC09	41-55	18	32	CC..09T3..	0.03	SR50 M3.0x10	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
S90A D047-059.CC12	47-59	22	35	CC..1204..	0.05	SR50 M3.0x10	KEY01 M1.5	SR21 M5x12.8	KEY03 T20	●
S90A D055-070.CC09	55-70	18	45	CC..09T3..	0.05	SR50 M4.0x10	KEY01 M2	SR21 M4x9.5	KEY03 T15	●
S90A D055-070.CC12	55-70	25	45.5	CC..1204..	0.08	SR50 M4.0x10	KEY01 M2	SR21 M5x12.8	KEY03 T20	●
S90A D070-090.CC12	70-90	30	59	CC..1204..	0.15	SR50 M5.0x12	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S90A D090-110.CC12	90-110	30	74	CC..1204..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S90A D110-133.CC12	110-133	30	85	CC..1204..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S90A D130-153.CC12	130-153	30	96	CC..1204..	0.30	SR50 M5.0x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●

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- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC S90A D020-024.CC06.

90°T

Kr=90° with C Insert

Designation	Boring rang	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
S90A D033-041.TC11	33-41	15	26	TC..1102..	0.02	SR50 M3.0x8	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
S90A D041-055.TC11	41-55	18	32	TC..1102..	0.03	SR50 M3.0x10	KEY01 M1.5	SR20 M2.5x6	KEY03 T8	●
S90A D055-070.TC11	55-70	18	45	TC..1102..	0.05	SR50 M4.0x10	KEY01 M2	SR20 M2.5x6	KEY03 T8	●
S90A D070-090.TC16	70-90	30	59	TC..16T3..	0.15	SR50 M5.0x12	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S90A D090-110.TC16	190-110	30	74	TC..16T3..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S90A D110-133.TC16	110-133	30	85	TC..16T3..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S90A D130-153.TC16	130-153	30	96	TC..16T3..	0.30	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●

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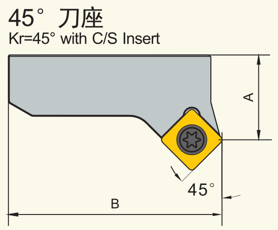
- The inserts with different materials should be ordered separately
- Ordering sample: 1 PC S90A D033-041.TC11.

Cartridge for Rough Boring Tool



45°

K =45° with C/S Insert

Designation	Boring range	A	B	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
S45A D023-027.CC06	23-27	13.6	17	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
S45A D026-035.CC06	26-35	13.6	20	CC..0602..	0.01	SR50 M2.5x6	KEY01 M1.3	SR21 M2.5x5.3	KEY03 T7	●
S45A D033-041.CC06	33-41	15	25	CC..0602..	0.02	SR50 M3.0x8	KEY01 M1.5	SR21 M2.5x5.3	KEY03 T7	●
S45A D041-055.SC09	41-55	18	30	SC..09T3..	0.03	SR50 M3.0x10	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
S45A D055-070.SC09	55-70	30	45	SC..09T3..	0.04	SR50 M4.0x10	KEY01 M2	SR21 M4x9.5	KEY03 T15	●
S45A D070-090.SC09	70-90	30	59	SC..09T3..	0.13	SR50 M5.0x12	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S45A D090-110.SC09	90-110	30	75	SC..09T3..	0.21	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S45A D110-133.SC09	110-133	30	85	SC..09T3..	0.25	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●
S45A D130-153.SC09	130-153	30	93	SC..09T3..	0.27	SR50 M5.0x16	KEY01 M2.5	SR21 M4x9.5	KEY03 T15	●

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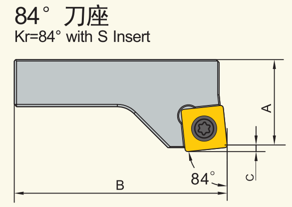
●The inserts for diff erent materials should be ordered separately
● Ordering sample: 1 PC S45A D023-027.CC06.

Cartridge for Rough Boring Tool



84°

Kr=84° with S Insert

Designation	Boring range	A	B	C	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
S84A D020-024.SO06	20-24	13.9	17	0.7	SO.. 0603..	0.01	SR50 M2.5x5	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
S84A D023-027.SO06	23-27	13.9	17.9	0.7	SO.. 0603..	0.01	SR50 M2.5x6	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
S84A D026-035.SO06	26-35	13.9	20.4	0.7	SO.. 0603..	0.01	SR50 M2.5x6	KEY01 M1.3	SR20 M2.2x5.6	KEY03 T7	●
S84A D033-041.SO06	33-41	15.1	25.8	0.7	SO.. 0603..	0.02	SR50 M3x8	KEY01M1.5	SR20 M2.2x5.6	KEY03 T7	●
S84A D041-055.SO09	41-55	18.1	32.1	0.7	SO.. 09T3..	0.03	SR50 M3x10	KEY01 M1.5	SR20 M3x6.6	KEY03 T9	●
S84A D055-070.SO09	55-70	18.1	45.3	0.7	SO.. 09T3..	0.05	SR50 M4x10	KEY01 M2	SR20 M3x6.6	KEY03 T9	●
S84A D070-090.SO12	70-90	30.3	58.8	1.0	SO.. 1204..	0.15	SR50 M5x12	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
S84A D090-110.SO12	90-110	30.3	73.6	1.0	SO.. 1204..	0.22	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
S84A D110-133.SO12	110-133	30.3	85.4	1.0	SO.. 1204..	0.26	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
S84A D130-153.SO12	130-153	30.3	96.4	1.0	SO.. 1204..	0.31	SR50 M5x16	KEY01 M2.5	SR20 M4x9.5	KEY03 T15	●
S84A D090-110.SO16	90-110	30.1	73.6	2.6	SO.. 1605..	0.22	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●
S84A D110-133.SO16	110-133	30.1	85.4	2.6	SO.. 1605..	0.26	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●
S84A D130-153.SO16	130-153	30.1	96.4	2.6	SO.. 1605..	0.32	SR50 M5x16	KEY01 M2.5	SR20 M5x13.8	KEY03 T15	●

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●The inserts for diff erent materials should be ordered separately
● Ordering sample: 1 PC S84A D033-041.SO06.

Designation	Boring range	A	B	C	Insert	Kg	Clarping for adjusting insert	Allen key for adjusting screw	Clamping screw for ingert	Allen key for damping screw	Stock
S84A D033-041.SC09	33-41	16.5	26	1.3	SC..09T3..	0.02	SR50 M3x8	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
S84A D041-055.SC09	41-55	18.0	32	1.3	SC..09T3..	0.04	SR50 M3x8	KEY01 M1.5	SR21 M4x9.5	KEY03 T15	●
S84A D047-059.SC12	47-59	20.0	36	2.0	SC..1204..	0.04	SR50 M3x10	KEY01 M1.5	SR21 M5x12.8	KEY03 T20	●
S84A D055-070.SC09	55-70	18.0	45	1.3	SC..09T3..	0.05	SR50 M4x10	KEY01 M2.0	SR21 M4x9.5	KEY03 T15	●
S84A D058-073.SC12	58-73	20.0	47	2.0	SC..1204..	0.05	SR50 M4x10	KEY01 M2.0	SR21 M5x12.8	KEY03 T20	●
S84A D070-090.SC12	70-90	30.0	59	2.0	SC..1204..	0.15	SR50 M5x12	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S84A D090-110.SC12	90-110	30.0	74	2.0	SC..1204..	0.22	SR50 M5x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S84A D110-133.SC12	110-133	30.0	85	2.0	SC..1204..	0.26	SR50 M5x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●
S84A D130-153.SC12	130-153	30.0	96	2.0	SC..1204..	0.31	SR50 M5x16	KEY01 M2.5	SR21 M5x12.8	KEY03 T20	●

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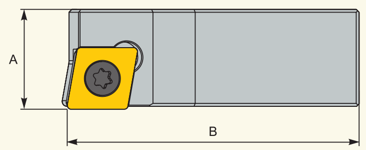
●The inserts for diff erent materials should be ordered separately
● Ordering sample: 1 PCS84A D070-090.SC12.

Cartridge for Rough Boring Tool for Back Boring

It is suitable for the BR series twin cutter rough boring tool, with the boring range of Φ30-Φ152, and also it can be adjusted easily.



Designation	Boring rang	A	B	Insert	Kg	Stock
S90C D19.3035.CC06	30-35	11.3	21.0	CC..0602..	0.01	◐
S90C D25.3341.CC06	33-41	11.3	23.0	CC..0602..	0.01	◐
S90C D25.4048.CC06	40-48	11.3	26.6	CC..0602..	0.02	◐
S90C D32.4252.CC06	42-52	10.3	30.2	CC..0602..	0.02	◐
S90C D32.5161.CC06	51-61	10.3	35.0	CC..0602..	0.03	◐
S90C D40.5365.CC09	53-65	16.6	36.6	CC..09T3..	0.06	◐
S90C D40.6476.CC09	64-76	16.6	42.3	CC..09T3..	0.07	◐
S90C D50.5369.CC09	53-69	16.6	45.0	CC..09T3..	0.06	◐
S90C D50.6884.CC09	68-84	16.6	52.8	CC..09T3..	0.08	◐
S90C D50.8399.CC09	83-99	16.6	62.0	CC..09T3..	0.10	◐
S90C D63.6889.CC09	68-89	16.6	57.3	CC..09T3..	0.12	◐
S90C D63.88109.CC09	88-109	16.6	67.3	CC..09T3..	0.16	◐
S90C D80.88110.CC12	88-110	25.6	70.4	CC..1204..	0.25	◐
S90C D80.108130.CC12	108-130	25.6	82.4	CC..1204..	0.31	◐
S90C D100.108132.CC12	108-132	25.6	82.3	CC..1204..	0.29	◐
S90C D100.128152.CC12	128-152	25.6	92.1	CC..1204..	0.36	◐

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- The inserts for different materials should be ordered separately
- Ordering sample: 1 PC S90C D32.4252.CC06.

Spare Parts

Insert	Clamping screw for insert	Allen key for clamping screw
CC..0602..	SR21 M2.5x5.3	KEY03 T7
CC..09T3..	SR21 M4x9.5	KEY03 T15
CC..1204..	SR21 M5x12.8	KEY03 T20

NBF Mini Precision Boring Tools with Type E Connection

It is suitable for the BR rough boring Mini boring tool has a highly precise adjustment mechanism, 1 DIV =0.001 mm in diameter, and the boring range isΦ 2-Φ50. High rigidity thanks of hollow short taper combination type E connection. Boring bars for the body.

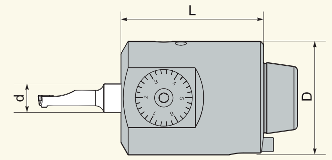

Fig A

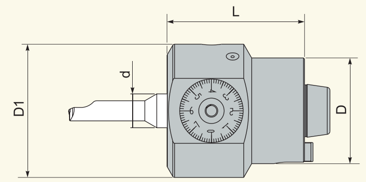

Fig B

Designation	Dc	L	D	D1	d	Kg	Fig	Boring bar	Stock
NBF D02-22.E40.50.C	2-22	50	40	-	10	0.5	A	NBF C10-6 ST06E.. ST10.. ST10E..	●
NBF D06-50.E50.65.C	6-50	65	50	63	16	1.15	B	ST16 .. ST16E..	●
NBF D06-50.E63.70.C	6-50	70	63	-	16	1.55	A	ST16 .. ST16E..	●

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- The boring bar should be ordered separately
- The adaptor should be ordered separately

- The adjusting range is -0.2~+1.2mm when Dc range is 2-22.
  The adjusting range is -0.2~+3.3mm when Dc range is 6-50.
- Ordering sample: 1 piece NBF D02-22.E40.Z1.50.C.

Spare Parts

Designation	Clamping screw for insert	Lock screw	Allen key for adjusting screw	Flat key	Clamping screw for flat key
NBF D02-22.E40	SR54 M6x10	SR50 M6x10xD3.2	KEY01 M3	PL03 10x5	SR57 M4x12
NBF D06-50.E50	SR54 M10x16	SR50 M10x16xD6	KEY01 M5	PL04 12x9	SR55 M5x12
NBF D06-50.E63	SR54 M10x16	SR50 M10x16xD6	KEY01 M5	PL04 14x12	SR55 M5X12

Mini Precision Boring Bar

Mini boring bar made of steel with standard length.

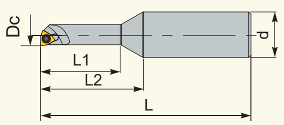


Fig A

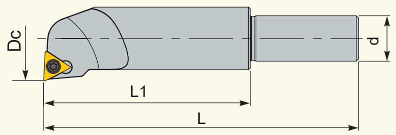


Fig B

ST10

Designation	Dc	d	L	L1	L2	Insert	Fig	Stock
ST10 D06-08.WB06.23	6-8	10	53	20	23	WB..0601..	A	●
ST10 D08-10.WB06.25	8-10	10	55	23	25	WB..0601..	A	●
ST10 D10-12.WB06.30	10-12	10	60	30	30	WB..0601..	A	●
ST10 D12-14.TP09.36	12-14	10	66	36	-	TP..0902..	B	●
ST10 D14-16.TP09.42	14-16	10	72	42	-	TP..0902..	B	●
ST10 D16-18.TP11.48	16-18	10	78	48	-	TP..1103..	B	●
ST10 D18-20.TP11.54	18-20	10	84	54	-	TP..1103..	B	●
ST10 D20-22.TP11.60	20-22	10	90	60	-	TP..1103..	B	●

☞

- The insert should be ordered separately
- Ordering sample: 1 piece ST10 D06-08.WB06.23.
- Toolholder with inner coolant should be ordered separately. Ordering sample: 1 piece ST10 D06-08.WB06.23.C.

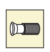
ST16

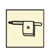
Designation	Dc	d	L	L1	L2	Insert	Fig	Stock
ST16 D06-08.WB06.23	6--8	16	63	23	33	WB..0601..	A	●
ST16 D08-11.WB06.28	8--11	16	68	28	36	WB..0601..	A	●
ST16 D10-13.WB06.36	10--13	16	76	36	42	WB..0601..	A	●
ST16 D12-16.TP09.50	12--16	16	90	50	54	TP..0902..	A	●
ST16 D15-21.TP09.60	15-21	16	100	60	61	TP..0902..	A	●
ST16 D20-26.TP11.64	20-26	16	104	64	-	TP..1103..	B	●
ST16 D25-31.TP11.64	25-31	16	104	64	-	TP..1103..	B	●
ST16 D30-36.TP11.72	30-36	16	112	72	-	TP..1103..	B	●
ST16 D35-41.TP11.72	35-41	16	112	72	-	TP..1103..	B	●
ST16 D40-46.TP11.72	40-46	16	112	72	-	TP..1103..	B	●
ST16 D44-50.TP11.72	44-50	16	112	72	-	TP..1103..	B	●

☞

- The insert should be ordered separately
- Ordering sample: 1 piece ST16 D06-08.WB06.23.
- Toolholder with inner coolant should be ordered separately. Ordering sample: 1 piece ST16 D06-08.WB06.23.C.

Spare Parts





Insert	Clamping screw for insert	Allen key for insert clamping screw
WB..0601..	SR20 M2x3.7	KEY03 T6
TP..0902..	SR22 M2.5x6	KEY03 T8
TP..1103..	SR22 M3x8	KEY03 T8

Mini Anti-Vibration Precision Boring Bar

Anti-vibration mini boring bar made of carbide. Advantage: increase rigidity. Reduce deflection. Vibration neutralisation.

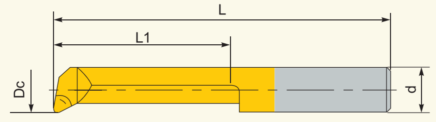


Fig A

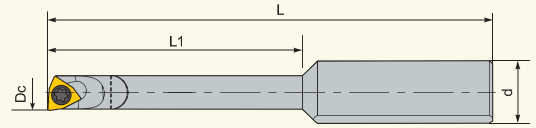


Fig B

ST06E/10E

Designation	Dc	d	L	L1	Insert	Fig	Stock
ST06E D02-03.10	2-3	6	35	10	-	A	○
ST06E D03-04.15	3-4	6	40	15	-	A	○
ST06E D04-06.20	4-6	6	45	20	-	A	○
ST10E D06-08.WB06.40	6-8	10	70	40	WB..0601..	B	◐
ST10E D08-10.WB06.60	8-10	10	90	60	WB..0601..	B	◐
ST10E D10-12.WB06.75	10-12	10	105	75	WB..0601..	B	◐

☞

- D2-D6 is solid carbide boring bar and the MOQ is 5 units. ST06E must be clamped by the reduction sleeve whose model# is NBF C10-6.
- Insert should be ordered by separately
- Ordering sample: 5 pieces ST06E D02-03.10.

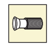
ST16E

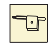
Designation	Dc	d	L	L1	Insert	Fig	Stock
ST16E D06-08.WB06.45	6-8	16	85	45	WB..0601..	B	◐
ST16E D08-11.WB06.60	8-11	16	100	60	WB..0601..	B	◐
ST16E D10-13.WB06.75	10-13	16	115	75	WB..0601..	B	◐
ST16E D12-16.TP09.90	12-16	16	130	90	TP..0902..	B	◐
ST16E D15-21.TP09.110	15-21	16	150	110	TP..0902..	B	◐

☞

- The insert should be ordered separately
- Ordering sample: 1 piece ST16E D06-08.WB06.45.

Spare Parts

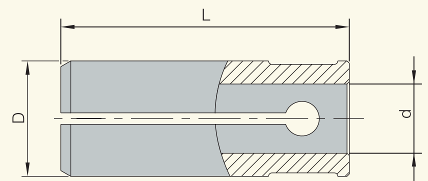




Insert	Clamping screw for insert	Allen key for insert clamping screw
WB..0601..	SR20 M2x3.7	KEY03 T6
TP..0902..	SR22 M2.5x6	KEY03 T8

Reduction Sleeve for Mini Boring Bar

It is suitable for ST06E ... mini precision boring bar.



Designation	D	d	L	Stock
NBF C10-6	10	6	25	○

- Ordering sample: 1 piece NBF C10-6.

NBF Mini Precision Boring Tool with Type E Connection

It can be micro adjusted with single tooth. 1 DIV=0.01m m in diameter. The boring range is Φ2 0- Φ212. Hollow short taper modular connection type E. Snail cartridge is for the body.

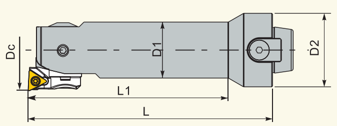


Fig A

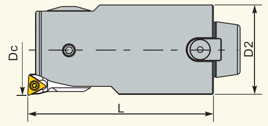


Fig B

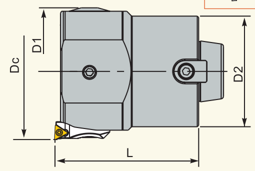


Fig C

Designation	Dc	D1	D2	L	L1	Fig	Kg	Cartridge	Stock
NBF D19.E25.65.C	20-26	19	25	80	65	A	0.18	FRB 10A...	●
	25-31	19	25	80	65	A	0.18	FRB 10B...	●
	30-36	19	25	80	65	A	0.18	FRB 10C...	●
NBF D25.E25.80.C	26-34	-	25	80	-	B	0.28	FRB 12A...	●
	33-41	-	25	80	-	B	0.28	FRB 12B...	●
	40-48	-	25	80	-	B	0.28	FRB 12C...	●
NBF D32.E32.80.C	33-43	-	32	80	-	B	0.17	FRB 16A...	●
	42-52	-	32	80	-	B	0.17	FRB 16B...	●
	51-61	-	32	80	-	B	0.17	FRB 16C...	●
NBF D40.E40.80.C	42-54	-	40	80	-	B	0.75	FRB 20A...	●
	53-65	-	40	80	-	B	0.75	FRB 20B...	●
	64-76	-	40	80	-	B	0.75	FRB 20C...	●
NBF D50.E50.90.C	53-69	-	50	90	-	B	1.31	FRB 25A...	●
	68-84	-	50	90	-	B	1.31	FRB 25B...	●
	83-99	-	50	90	-	B	1.31	FRB 25C...	●
NBF D63.E63.100.C	68-100	-	63	100	-	B	2.33	FRB 30A...	●
	98-130	-	63	100	-	B	2.33	FRB 30B...	●
	128-160	-	63	100	-	B	2.33	FRB 30C...	●
NBF D100.E63.100.C	100-152	100	63	100	-	C	3.24	FRB 30A...	●
	130-182	100	63	100	-	C	3.24	FRB 30B...	●
	160-212	100	63	100	-	C	3.24	FRB 30C...	●
NBF D80.E80.100.C	88-120	-	80	100	-	B	3.86	FRB 30A...	●
	118-150	-	80	100	-	B	3.86	FRB 30B...	●
	148-180	-	80	100	-	B	3.86	FRB 30C...	●
NBF D100.E80.100.C	100-152	100	80	100	-	C	4.37	FRB 30A...	●
	130-182	100	80	100	-	C	4.37	FRB 30B...	●
	160-212	100	80	100	-	C	4.37	FRB 30C...	●

- The cartridge should be ordered separately
- The adaptor should be ordered separately
- Recommondation for selecting the ball screw with lock screw
- The diameter range De is the value that the radius of insert of FRB 10 cartridge is R0.2, and the radius of insert of FRB 12/16/20/25/30 cartridge is R0.4.

- Ordering sample: 1 piece NBF D19.E25.65.C.

Spare Parts

Designation	Lock screw	Flat key	Clamping screw for flat key	Clamp screw for cartridge	Allen key for cartridge clamping secrew	Allen key for adjusting screw
NBF D19.E25.65.C	SR54-2 M4x4	PL03 8x2	SR57 M3x6	SR20 M4x6-X	KEY03 T15	KEY01 M2
NBF D25.E25.80.C	SR54-2 M4x6	PL03 8x2	SR57 M3x6	SR20 M4x8-X	KEY03 T15	KEY01 M2
NBF D32.E32.80.C	SR54-2 M5x8	PL03 8x6	SR57 M3x10	SR56-2 M5x10	KEY01 M3	KEY01 M2.5
NBF D40.E40.80.C	SR54 M6x10	PL03 10x5	SR57 M4x12	SR56-2 M5x12	KEY01 M3	KEY01 M3
NBF D50.E50.90.C	SR54 M6x12	PL04 12x9	SR55 M5x12	SR56-2 M6x16	KEY01 M4	KEY01 M3
NBF D63.E63.100.C	SR54 M10x16	PL04 14x12	SR55 M5X12	SR56 M8x20	KEY01 M5	KEY01 M5
NBF D80.E80.100.C	SR54 M10x20	PL04 16x14	SR55 M6x16	SR56 M8x25	KEY01 M5	KEY01 M5
NBF D100.E63.100.C	SR54 M10x16	PL04 14x12	SR55 M5X12	SR56 M8x25	KEY01 M5	KEY01 M5
NBF D100.E80.100.C	SR54 M10x20	PL04 16x14	SR55 M6x16	SR56 M8x25	KEY01 M5	KEY01 M5

NBF Precision Boring Tool for Back Boring with Type E Connection

Please assemble the cartridge as its reverse direction, which is for back boring, and the back boring range isΦ30-Φ212 and also with the same precision as the ordinary boring tool, but the tool should be rotated by the reserve direction when machining and the hole diameter D should meet the requirement of "D≥(Dc+D1)/2+ 1" .

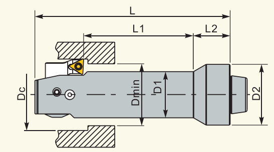


Fig A

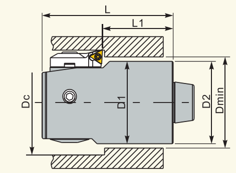


Fig B

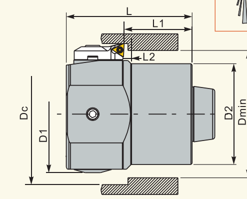


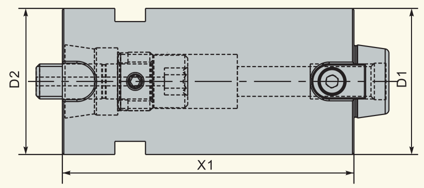
Fig C

Designation	Dc	D1	D2	L	L1	L2	Fig	Kg	Cartridge
NBF D19.E25.65.C	30-36	19	25	80	44.5	15.5	A	0.18	FRB 10C...
NBF D25.E25.80.C	36-41	25	25	80	55	-	B	0.28	FRB 12B...
	40-48	25	25	80	55	-	B	0.28	FRB 12C...
NBF D32.E32.80.C	47-52	32	32	80	51	-	B	0.47	FRB 16B...
	51-61	32	32	80	51	-	B	0.47	FRB 16C...
NBF D40.E40.80.C	55-65	40	40	80	46	-	B	0.75	FRB 20B...
	64-76	40	40	80	46	-	B	0.75	FRB 20C...
NBF D50.E50.90.C	62-69	50	50	90	50	-	B	1.31	FRB 25A...
	68-84	50	50	90	50	-	B	1.31	FRB 25B...
	83-99	50	50	90	50	-	B	1.31	FRB 25C...
NBF D63.E63.100.C	80-100	63	63	100	54	-	B	2.33	FRB 30A...
	98-130	63	63	100	54	-	B	2.33	FRB 30B...
	128-160	63	63	100	54	-	B	2.33	FRB 30C...
NBF D100.E63.100.C	112-152	100	63	100	54	6.5	C	3.24	FRB 30A...
	130-182	100	63	100	54	6.5	C	3.24	FRB 30B...
	160-212	100	63	100	54	6.5	C	3.24	FRB 30C...
NBF D80.E80.100.C	100-120	80	80	100	54	-	B	3.86	FRB 30A...
	118-150	80	80	100	54	-	B	3.86	FRB 30B...
	148-180	80	80	100	54	-	B	3.86	FRB 30C...
NBF D100.E80.100.C	112-152	100	80	100	54	6.5	C	4.37	FRB 30A...
	130-182	100	80	100	54	6.5	C	4.37	FRB 30B...
	160-212	100	80	100	54	6.5	C	4.37	FRB 30C...

* The cartridge should be ordered separately
- The adaptor should be ordered separately
- The tool should be rotated by the anticlockwise direction when machining.
- The diameter range De is the value of the radius of insert of FRB 10 cartridge is R0.2, and the radius of insert of FRB 12/16/20/25/30 cartridge is R0.4.

- Minimum via diameter Dmin=(Dc+D1)/2+1.
- Ordering sample: 1 piece NBF D19.E25.65.C.

Extension with Type E Connection

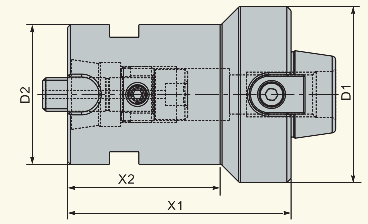


Designation	D1	D2	X1	Kg	Stock
EX E25-E25x50.C	25	25	50	0.20	●
EX E25-E25x75.C	25	25	75	0.25	●
EX E32-E32x50.C	32	32	50	0.30	●
EX E32-E32x80.C	32	32	80	0.50	●
EX E40-E40x55.C	40	40	55	0.50	●
EX E40-E40x75.C	40	40	75	0.65	●
EX E40-E40x100.C	40	40	100	0.90	●
EX E50-E50x60.C	50	50	60	0.90	●
EX E50-E50x80.C	50	50	80	1.15	●
EX E50-E50x100.C	50	50	100	1.45	●
EX E63-E63x80.C	63	63	80	1.80	●
EX E63-E63x100.C	63	63	100	2.25	●
EX E63-E63x120.C	63	63	120	2.70	●
EX E80-E80x100.C	80	80	100	3.60	●
EX E80-E80x120.C	80	80	120	4.35	●
EX E80-E80x140.C	80	80	140	5.10	●
EX E80-E80x160.C	80	80	160	5.80	●

☞ ☞

- The adaptor should be ordered separately
- Ordering sample: 1 piece EX E25-E25x50.C.

Reduction with Type E Connection

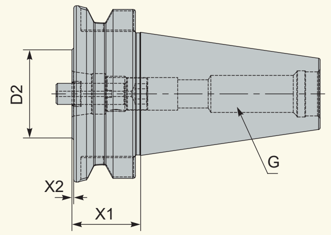


Designation	D1	D2	X1	X2	Kg	Stock
RE E32-E25x50.C	32	25	50	32	0.21	●
RE E40-E25x50.C	40	25	50	30	0.30	●
RE E40-E32x50.C	40	32	50	28	0.38	●
RE E50-E25x50.C	50	25	50	25	0.30	●
RE E50-E32x50.C	50	32	50	25	0.50	●
RE E50-E40x70.C	50	40	70	50	0.70	●
RE E63-E25x50.C	63	25	50	20	0.70	●
RE E63-E25x80.C	63	25	80	50	0.80	●
RE E63-E32x50.C	63	32	50	20	0.80	●
RE E63-E32x80.C	63	32	80	50	0.95	●
RE E63-E40x80.C	63	40	80	55	1.00	●
RE E63-E40x100.C	63	40	100	75	1.20	●
RE E63-E40x120.C	63	40	120	95	1.40	●
RE E63-E40x140.C	63	40	140	15	1.60	●
RE E63-E50x80.C	63	50	80	55	1.30	●
RE E63-E50x100.C	63	50	100	75	1.60	●
RE E63-E50x120.C	63	50	120	95	1.90	●
RE E63-E50x140.C	63	50	140	115	2.20	●
RE E80-E32x80.C	80	32	80	45	1.45	●
RE E80-E40x80.C	80	40	80	45	1.65	●
RE E80-E50x80.C	80	50	80	48	1.95	●
RE E80-E50x100.C	80	50	100	63	2.20	●
RE E80-E63x80.C	80	63	80	50	2.25	●
RE E80-E63x100.C	80	63	100	63	2.80	●

☞ ☞

- The adaptor should be ordered separately
- Ordering sample: 1 piece RE E32-E25x50.C.

MAS403 BT Adaptor with Type E Connection



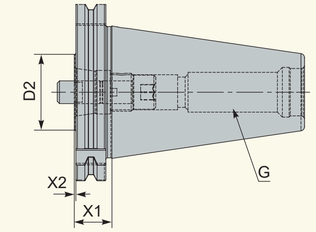
Designation	ISO	D2	X1	X2	G	Kg	Stock
BT30 E25.C	30	25	23	1	M12	0.36	●
BT30 E32.C	30	32	23	1	M12	0.36	●
BT30 E40.C	30	40	55	33	M12	0.73	●
BT30 E50.C	30	50	60	38	M12	0.99	●
BT40 E25.C	40	25	28	1	M16	0.95	●
BT40 E32.C	40	32	28	1	M16	0.95	●
BT40 E40.C	40	40	28	1	M16	0.91	●
BT40 E40x70.C	40	40	70	43	M16	1.27	●
BT40 E50.C	40	50	28	1	M16	0.91	●
BT40 E50x80.C	40	50	80	53	M16	1.64	●
BT40 E63.C	40	63	50	23	M16	1.35	●
BT40 E63x90.C	40	63	90	63	M16	2.24	●
BT40 E80.C	40	80	90	63	M16	2.30	●
BT50 E25.C	50	25	39	1	M24	3.60	●
BT50 E32.C	50	32	39	1	M24	3.60	●
BT50 E32x70.C	50	32	70	32	M24	3.73	●
BT50 E40.C	50	40	39	1	M24	3.55	●
BT50 E40x80.C	50	40	80	42	M24	3.84	●
BT50 E50.C	50	50	39	1	M24	3.55	●
BT50 E50x90.C	50	50	90	52	M24	4.2	●
BT50 E63.C	50	63	39	1	M24	3.50	●
BT50 E63x100.C	50	63	100	62	M24	4.81	●
BT50 E80.C	50	80	44	6	M24	3.50	●
BT50 E80x120.C	50	80	120	82	M24	6.3	●

- If needing the hole for data chip, please add ".X" at the end of the designation.
- Ordering sample: BT30 E25.C.

Spare Parts

Connection	Thread ring	Locking screw	Central Screw	Remarks
E25/E32	RG05 M14x1	SR51 M4x8	SR155 M8x30.C	-
E40	RG05 M20x1.5	SR51 M5x10	SR55 M12x40.C	BT50/BT40
E40	RG05 M20x1.5	SR51 M5x10	SR61 M12x40.C	BT30
E50	RG05 M20x1.5	SR51 M6x12	SR55 M12x40.C	BT50/BT40
E50	RG05 M20x1.5	SR51 M6x12	SR61 M12x40.C	BT30
E63	RG05 M26x1.5	SR51 M6x12	SR55 M16x45.C	BT50
E63	RG05 M26x1.5	SR51 M6x12	SR61 M16x45.C	BT40
E80	RG05 M33x1.5	SR51 M6x12	SR55 M20x50.C	BT50
E80	RG05 M33x1.5	SR51 M6x12	SR62 M20x50.C	BT40

DIN69871-A Adaptor with Type E Connection



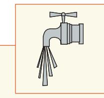
Designation	ISO	D2	X1	X2	G	Kg	Stock
DIN69871 40 E25.C	40	25	20	1	M16	0.80	●
DIN69871 40 E32.C	40	32	20	1	M16	0.80	●
DIN69871 40 E40.C	40	40	20	1	M16	0.80	●
DIN69871 40 E50.C	40	50	20	1	M16	0.80	●
DIN69871 40 E63.C	40	63	50	31	M16	1.20	●
DIN69871 40 E80.C	40	80	72	52.95	M16	1.80	●
DIN69871 50 E25.C	50	25	20	0.85	M24	2.60	●
DIN69871 50 E32.C	50	32	20	0.85	M24	2.60	●
DIN69871 50 E40.C	50	40	20	0.85	M24	2.60	●
DIN69871 50 E50.C	50	50	20	0.85	M24	2.60	●
DIN69871 50 E63.C	50	63	20	0.85	M24	2.50	●
DIN69871 50 E80.C	50	80	24	4.85	M24	2.50	●

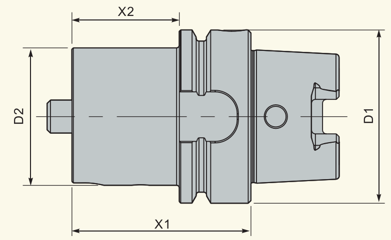
- If needing the hole for data chip, please add ".X" at the end of the designation.
- Ordering sample: DIN69871 40 E25.C.

Spare Parts

Connection	Thread ring	Locking screw	Central Screw	Remarks
E25/E32	RG05 M14x1	SR51 M4x8	SR155 M8x30.C	-
E40	RG05 M20x1.5	SR51 M5x10	SR55 M12x40.C	-
E50	RG05 M20x1.5	SR51 M6x12	SR55 M12x40.C	DIN69871 40
E50	RG05 M20x1.5	SR51 M5x10	SR55 M12x40.C	DIN69871 50
E63	RG05 M26x1.5	SR51 M6x12	SR55 M16x45.C	DIN69871 50
E63	RG05 M26x1.5	SR51 M6x12	SR61 M16x45.C	DIN69871 40
E80	RG05 M33x1.5	SR51 M6x12	SR55 M20x50.C	DIN69871 50
E80	RG05 M33x1.5	SR51 M6x8	SR62 M20x50.C	DIN69871 40

HSK-A Adaptor with Type E Connection

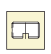


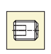


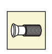
Designation	D1	D2	X1	X2	Kg	Stock
HSK A63 E25.C	63	25	60	34	0.80	●
HSK A63 E32.C	63	32	60	34	0.80	●
HSK A63 E40.C	63	40	75	49	0.90	●
HSK A63 E50.C	63	50	75	49	1.00	●
HSK A63 E63.C	63	63	80	54	1.40	●
HSK A100 E25.C	100	25	65	36	2.20	●
HSK A100 E32.C	100	32	65	36	2.20	●
HSK A100 E40.C	100	40	80	51	2.60	●
HSK A100 E50.C	100	50	80	51	2.80	●
HSK A100 E63.C	100	63	90	61	3.40	●
HSK A100 E80.C	100	80	100	71	4.10	●

- Ordering sample :HSK A63 E25.C

Spare Parts

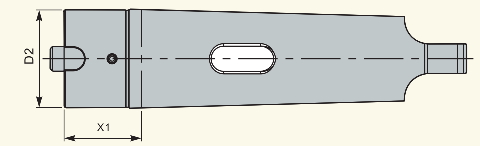






Connection	Thread ring	Locking screw	Central Screw	Remarks
E25/E32	RG05 M14x1	SR51 M4x8	SR155 M8x30.C	-
E40	RG05 M20x1.5	SR51 M5x10	SR55 M12x40.C	HSK A100
E40	RG05 M20x1.5	SR51 M5x10	SR61 M12x40.C	HSK A63
E50	RG05 M20x1.6	SR51 M6x12	SR55 M12x40.C	HSK A100
E50	RG05 M20x1.6	SR51 M6x12	SR61 M12x40.C	HSK A63
E63	RG05 M26x1.5	SR51 M6x13	SR61 M16x45.C	-
E80	RG05 M33x1.5	SR51 M6x13	SR61 M20x50.C	HSK A100

Morse Taper Adaptor for Boring Tool

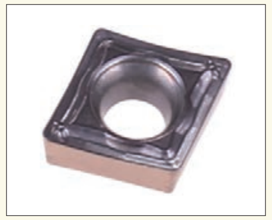


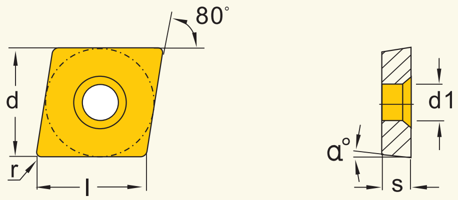
Designation	Standard shank	D2	X1	Kg	Stock
MT6A E63	MT#6	63	50	4.46	○
MT80A E80	Metric 80	80	28	7.61	○

☞

- Ordering sample: MT6A E63.

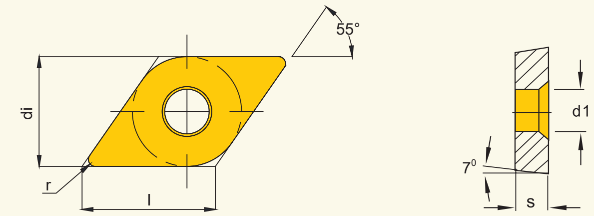
C.C.





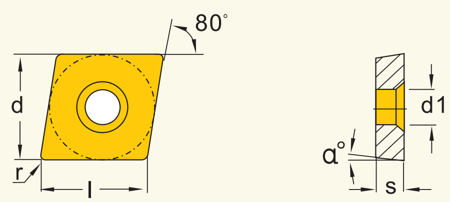
Designation	Size				Material						Recommended cutting parameter		
	l	di	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
CCMT 060204-F2P 1115	6.5	6.35	2.38	0.4	•						120-300	0.10-1.50	0.05-0.20
CCMT 060204-M2P 1115	6.5	6.35	2.38	0.4	•						120-300	0.50-2.50	0.08-0.30
CCMT 060204-M2M 1225	6.5	6.35	2.38	0.4		•					100-250	0.50-2.50	0.08-0.30
CCMT 060204-M2K 1115	6.5	6.35	2.38	0.4			•				150-350	0.50-2.50	0.08-0.30
CCMT 060204-F2S 1215	6.5	6.35	2.38	0.4					•		40-70	0.20-1.50	0.03-0.20
CCMT 060208-M2P 1125	6.5	6.35	2.38	0.8	•						120-280	0.50-2.50	0.08-0.35
CCMT 060208-M2K 1115	6.5	6.35	2.38	0.8			•				120-300	0.50-2.50	0.08-0.35
CCMT 09T304-F2P 1115	9.7	9.525	3.97	0.4	•						150-300	0.20-2.00	0.05-0.20
CCMT 09T304-M2P 1115	9.7	9.525	3.97	0.4	•						120-280	0.50-2.50	0.08-0.30
CCMT 09T304-M2M 1225	9.7	9.525	3.97	0.4		•					100-250	0.50-2.50	0.08-0.30
CCMT 09T304-M2K 1115	9.7	9.525	3.97	0.4			•				150-350	0.50-2.50	0.08-0.30
CCMT 09T304-F2S 1215	9.7	9.525	3.97	0.4					•		40-70	0.20-1.50	0.03-0.20
CCMT 09T308-R1P 1125	9.7	9.525	3.97	0.8	•						120-280	1.00-3.50	0.15-0.40
CCMT 09T308-M2M 1225	9.7	9.525	3.97	0.8		•					120-280	0.50-3.50	0.08-0.30
CCMT 09T308-M2K 1115	9.7	9.525	3.97	0.8			•				150-350	0.50-3.50	0.08-0.35
CCMT 120404-M2P 1125	12.9	12.7	4.76	0.4	•						120-280	0.50-2.50	0.08-0.30
CCMT 120404-M2M 1225	12.9	12.7	4.76	0.4		•					150-300	0.50-2.50	0.08-0.30
CCMT 120404-M2K 1115	12.9	12.7	4.76	0.4			•				150-350	0.50-2.50	0.08-0.30
CCMT 120408-M2P 1125	12.9	12.7	4.76	0.8	•						120-280	0.50-2.50	0.08-0.30
CCMT 120408-R1P 1125	12.9	12.7	4.76	0.8	•						120-280	1.00-3.50	0.15-0.40
CCMT 120408-M2M 3220	12.9	12.7	4.76	0.8	•	•					100-280	0.50-3.50	0.08-0.30
CCMT 120408-M2K 1115	12.9	12.7	4.76	0.8			•				200-350	0.50-3.50	0.08-0.30

D.C.



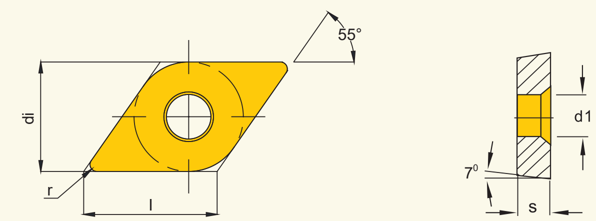
Designation	Size				Material						Cutting parameter		
	l	di	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
DCMT 070204-F2P 1115	7.8	6.35	2.38	0.4	•						150-360	0.30-1.50	0.05-0.20
DCMT 070204-F2M 1115	7.8	6.35	2.38	0.4		•					200-300	0.30-1.50	0.05-0.20
DCMT 11T304-F2P 2125	11.6	9.525	3.97	0.4	•						150-360	0.50-2.50	0.08-0.30
DCMT 11T304-M2M 1115	11.6	9.525	3.97	0.4		•					200-300	0.50-2.50	0.08-0.30
DCMT 11T304-M2K 1115	11.6	9.525	3.97	0.4			•				150-350	0.50-2.50	0.08-0.30
DCMT 11T308-M2P 1115	11.6	9.525	3.97	0.8	•						150-360	0.50-2.50	0.08-0.30
DCMT 11T308-M2M 1115	11.6	9.525	3.97	0.8		•					200-300	0.50-2.50	0.08-0.30

C.C.



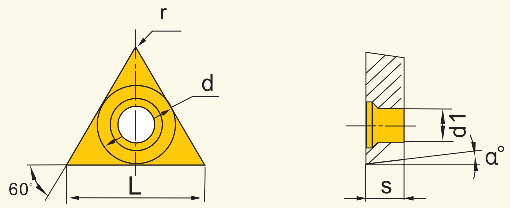
Designation	Size				Material						Recommended cutting parameter		
	l	di	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
CCGT 060204-F4N 1015	6.5	6.35	2.38	0.4				•			300-1000	0.5-2.50	0.1-0.25
CCGT 060204-F5N 1010	6.5	6.35	2.38	0.4				•			300-1000	0.5-2.50	0.1-0.25
CCGT 09T304-F4N 1015	9.7	9.525	3.97	0.4				•			300-1000	0.5-3.00	0.1-0.25
CCGT 09T304-F5N 1010	9.7	9.525	3.97	0.4				•			300-1000	0.5-3.00	0.1-0.25
CCGT 09T308-F4N 1015	9.7	9.525	3.97	0.8				•			300-1000	0.5-3.50	0.1-0.30
CCGT 09T308-F5N 1010	9.7	9.525	3.97	0.8				•			300-1000	0.5-3.50	0.1-0.30
CCGT 120404-F4N 1015	12.9	12.7	4.76	0.4				•			300-1000	0.5-3.00	0.1-0.25
CCGT 120408-F5N 1010	12.9	12.7	4.76	0.8				•			300-1000	0.5-4.00	0.1-0.30
CCGT 120408-F4N 1015	12.9	12.7	4.76	0.8				•			300-1000	0.5-4.00	0.1-0.30

D.C.



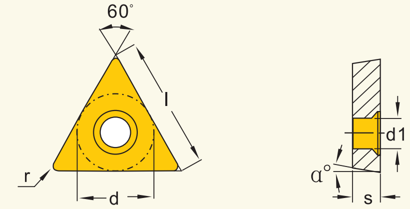
Designation	Size				Material						Cutting parameter		
	l	di	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
DCGT 070204-F4N 1020	7.8	6.35	2.38	0.4				•			300-1000	0.50-2.50	0.05-0.40
DCGT 11T304-F4N 1015	11.6	9.525	3.97	0.8				•			300-1000	0.50-3.50	0.05-0.50

TB..



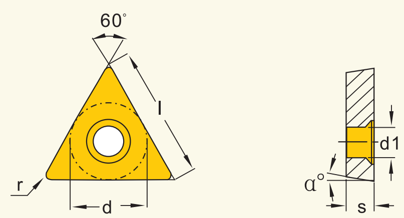
Designation	Size				Material						Recommended cutting parameter		
	l	r	s	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TBGT 060102-F7G 2315	6.9	0.2	1.59	2.3	•						100-250	0.08-0.15	0.05-0.10
TBGT 060102-F7K 1115	6.9	0.2	1.59	2.3			•				100-300	0.08-0.15	0.05-0.10
TBGT 060102-F7N 2020	6.9	0.2	1.59	2.3				•			150-400	0.08-0.15	0.05-0.15
TBGT 060102-F7P 1225	6.9	0.2	1.59	2.3	•	•			•		100-300	0.08-0.15	0.05-0.10
TBGT 060104-F7G 2315	6.9	0.4	1.59	2.3	•						100-250	0.10-0.20	0.08-0.15
TBGT 060104-F7K 1115	6.9	0.4	1.59	2.3			•				100-300	0.10-0.20	0.08-0.15
TBGT 060104-F7N 2020	6.9	0.4	1.59	2.3				•			150-400	0.10-0.20	0.08-0.15
TBGT 060104-F7P 1225	6.9	0.4	1.59	2.3	•	•			•		100-300	0.10-0.20	0.08-0.15
TBGT 060102-C1 CD05 ①	6.9	0.2	1.59	2.3				•			600-2000	0.10-0.20	0.05-0.25
TBGT 060104-C1 CD05 ①	6.9	0.4	1.59	2.3				•			600-2000	0.10-0.20	0.05-0.25
TBGT 060102-C1 CB05 ②	6.9	0.2	1.59	2.3			•				150-400	0.08-0.15	0.05-0.25
TBGT 060104-C1 CB05 ②	6.9	0.4	1.59	2.3			•				150-400	0.08-0.25	0.05-0.25

TC..



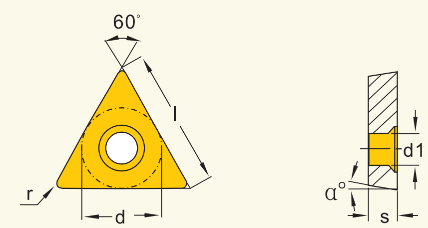
Designation	Size				Material						Recommended cutting parameter		
	l	d	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TCMT 110204-M2P 1115	11	6.35	2.38	0.4	•						120-300	0.5-2.5	0.08-0.30
TCMT 110204-F2M 1225	11	6.35	2.38	0.4		•					100-220	0.2-1.5	0.03-0.20
TCMT 110204-F2K 1115	11	6.35	2.38	0.4			•				150-350	0.5-2.5	0.08-0.30
TCMT 16T304-M2P 1125	16.5	9.525	3.97	0.4	•						120-280	0.5-2.5	0.08-0.30
TCMT 16T304-M2M 1215	16.5	9.525	3.97	0.4		•					120-300	0.5-2.5	0.08-0.30
TCMT 16T304-M2K 1115	16.5	9.525	3.97	0.4			•				150-350	0.5-2.5	0.08-0.30
TCMT 16T308-M2P 1125	16.5	9.525	3.97	0.8	•						120-280	0.5-3.0	0.10-0.30
TCMT 16T308-M2M 1225	16.5	9.525	3.97	0.8		•					100-220	0.5-3.0	0.10-0.30
TCMT 16T308-M2K 1115	16.5	9.525	3.97	0.8			•				150-350	0.5-3.0	0.10-0.30
TCMT 220408-M2P 1115	22	12.7	4.76	0.8	•						120-280	0.5-3.0	0.08-0.30

TC..



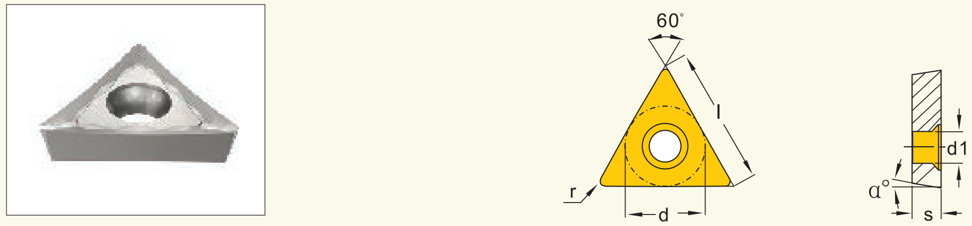
Designation	Size				Material						Recommended cutting parameter		
	l	r	s	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TCMT 06T102F-F7P 2125	6	0.2	1.98	2.3	•						100-300	0.10-0.15	0.05-0.15
TCMT 06T102F-F7M 2120	6	0.2	1.98	2.3		•					100-300	0.10-0.15	0.05-0.15
TCMT 06T102F-F7K 2025	6	0.2	1.98	2.3			•				100-300	0.10-0.15	0.05-0.15
TCMT 06T104F-F7P 2116	6	0.4	1.98	2.3	•						100-300	0.10-0.20	0.05-0.15
TCMT 06T104F-F7M 2210	6	0.4	1.98	2.3		•					100-300	0.10-0.20	0.05-0.15
TCMT 06T104F-F7K 2120	6	0.4	1.98	2.3			•				100-300	0.10-0.20	0.05-0.15
TCMT 090202F-F7P 2116	9	0.2	2.38	2.45	•						120-300	0.10-0.15	0.05-0.20
TCMT 090204F-F7P 2116	9	0.4	2.38	2.45	•						120-300	0.10-0.20	0.05-0.20
TCMT 090204F-F7M 2216	9	0.4	2.38	2.45		•					120-300	0.10-0.20	0.05-0.20
TCMT 090204F-F7K 2120	9	0.4	2.38	2.45			•				120-300	0.10-0.20	0.05-0.20
TCGT 090304L-M1P 1220	9	0.4	3.18	2.45	•	•					120-300	0.10-0.20	0.05-0.20

TC..



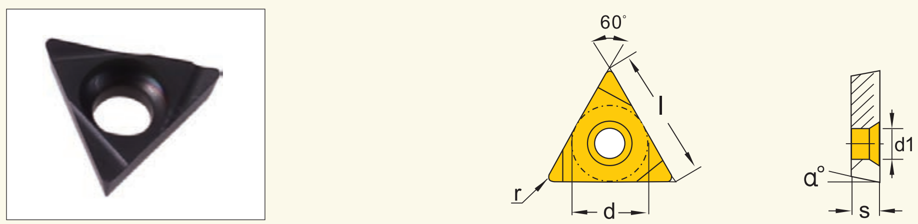
Designation	Size				Material						Recommended cutting parameter		
	l	r	S	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TCGT 06T104-F9N 2020	6	0.4	1.98	2.3				•			300-1000	0.2-0.40	0.05-0.30
TCGT 090204-F9N 2020	9	0.4	2.38	2.45				•			300-1000	0.2-0.40	0.05-0.30

TC..



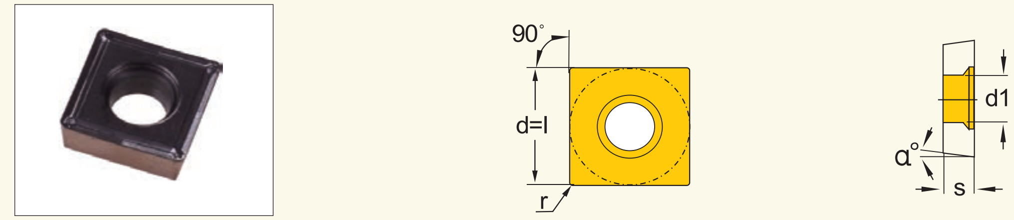
Designation	Size				Material						Recommended cutting parameter		
	l	d	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TCGT 110204-F4N 1025	11	6.35	2.38	0.4				•			300-1000	0.20-3.00	0.05-0.30
TCGT 110204-F5N 1010	11	6.35	2.38	0.4				•			300-1000	0.20-3.00	0.05-0.30
TCGT 110208-F5N 1010	11	6.35	2.38	0.8				•			300-1000	0.20-3.50	0.05-0.30
TCGT 16T304-F5N 1010	16.5	9.525	3.97	0.4				•			300-1000	0.50-3.50	0.1-0.30
TCGT 16T304-F4N 1015	16.5	9.525	3.97	0.4				•			300-1000	0.50-3.50	0.1-0.30
TCGT 16T308-F5N 1010	16.5	9.525	3.97	0.8				•			300-1000	0.50-4.00	0.1-0.30

TP..



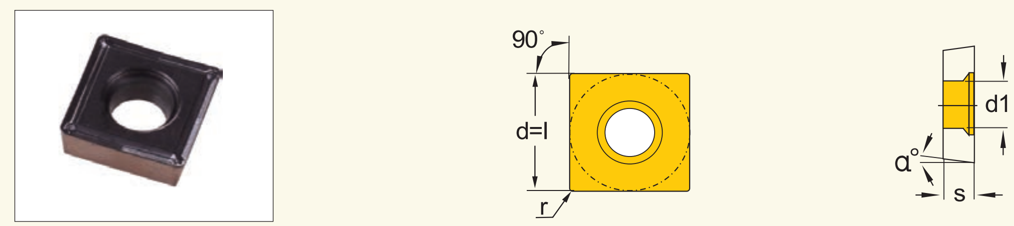
Designation	Size				Material						Recommended cutting parameter		
	l	d	S	r	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
TPGX 090202-F6G 1310	9.6	5.56	2.38	0.2	•						120-300	0.08-0.15	0.05-0.12
TPGX 090202-F5S 2125	9.6	5.56	2.38	0.2	•	•			•		70-260	0.08-0.15	0.05-0.12
TPGX 090202-F7P 1225	9.6	5.56	2.38	0.2	•						120-300	1.00-2.50	0.08-0.15
TPGX 090202-F5K 1115	9.6	5.56	2.38	0.2			•				120-300	1.00-2.50	0.08-0.15
TPGX 090204-F6G 1310	9.6	5.56	2.38	0.4	•						120-300	0.10-0.20	0.08-0.15
TPGX 090204-F5K 1115	9.6	5.56	2.38	0.4			•				120-300	0.10-0.20	0.08-0.15
TPGX 090204-F5S 2125	9.6	5.56	2.38	0.4	•	•			•		70-260	0.10-0.20	0.08-0.15
TPGX 090204-F1N 1010	9.6	5.56	2.38	0.4				•			300-1000	0.10-0.20	0.08-0.15
TPGX 090204-F7P 1225	9.6	5.56	2.38	0.4	•						120-300	1.00-2.50	0.08-0.15
TPGX 110302-F6G 1310	11	6.35	3.18	0.2	•						120-300	0.08-0.15	0.05-0.12
TPGX 110302-F5S 2125	11	6.35	3.18	0.2	•	•			•		70-260	0.08-0.15	0.05-0.12
TPGX 110302-F7P 1225	11	6.35	3.18	0.2	•						120-300	1.00-2.00	0.05-0.12
TPGX 110302-F5K 1115	11	6.35	3.18	0.2			•				120-300	1.00-2.00	0.05-0.12
TPGX 110304-F6G 1310	11	6.35	3.18	0.4	•						120-300	0.10-0.20	0.08-0.15
TPGX 110304-F5K 1115	11	6.35	3.18	0.4			•				120-300	0.10-0.20	0.08-0.15
TPGX 110304-F5S 2125	11	6.35	3.18	0.4	•	•			•		70-260	0.10-0.20	0.08-0.15
TPGX 110304-F1N 1010	11	6.35	3.18	0.4				•			300-1000	0.10-0.20	0.08-0.15
TPGX 110304-F7P 1225	11	6.35	3.18	0.4	•						120-300	1.00-3.00	0.08-0.15
TPGX 090204-C1 CD05 ①	9.6	5.56	2.38	0.4				•			600-2000	0.10-0.30	0.05-0.25
TPGX 110304-C1 CD05 ①	11	6.35	3.18	0.4				•			600-2000	0.10-0.30	0.05-0.30
TPGX 090204-C1 CB05 ②	9.6	5.56	2.38	0.4			•				150-400	0.08-0.25	0.05-0.20
TPGX 110304-C1 CB05 ②	11	6.35	3.18	0.4			•				150-400	0.08-0.25	0.05-0.20

SC..



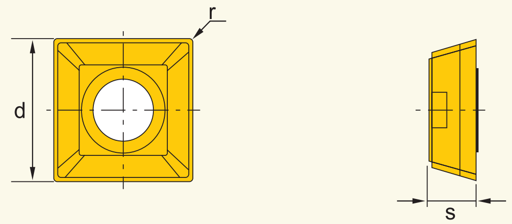
Designation	Size				Material						Recommended cutting parameter		
	l	r	s	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
SCMT 09T304-M2P 1125	9.525	0.4	3.97	4.4	•						120-280	0.40-2.00	0.08-0.20
SCMT 09T304-M2M 1115	9.525	0.4	3.97	4.4		•					120-300	0.40-2.00	0.08-0.20
SCMT 09T304-M2K 1115	9.525	0.4	3.97	4.4			•				120-300	0.40-2.00	0.08-0.20
SCMT 09T308-M2P 1125	9.525	0.8	3.97	4.4	•						120-280	0.50-2.50	0.10-0.30
SCMT 09T308-M2M 1125	9.525	0.8	3.97	4.4		•					120-280	0.50-2.50	0.10-0.30
SCMT 09T308-M2K 1115	9.525	0.8	3.97	4.4			•				120-300	0.50-2.50	0.10-0.30
SCMT 120408-M2P 1115	12.7	0.8	4.76	5.5	•						150-300	0.50-3.00	0.10-0.30
SCMT 120408-M2M 2210	12.7	0.8	4.76	5.5		•					150-300	0.50-3.00	0.10-0.30
SCMT 120408-M2K 1115	12.7	0.8	4.76	5.5			•				150-300	0.50-3.00	0.10-0.30

SC..



Designation	Size				Material						Recommended cutting parameter		
	l	r	s	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
SCGT 09T304-F5N 1010	9.52	0.4	3.97	4.4				•			300-1000	0.40-2.50	0.08-0.30
SCGT 09T308-F5N 1010	9.52	0.8	3.97	4.4				•			300-1000	0.50-3.00	0.10-0.30
SCGT 120408-F9N 2020	12.7	0.8	4.76	5.5				•			300-1000	0.50-3.00	0.15-0.30

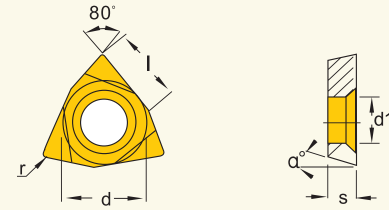
SO..



Designation	Size			Material						Recommended cutting parameter	
	r	S	d	P	M	K	N	S	H	ap(mm)	fz(mm/z)
SOMX 060304-D4G 2225	0.4	3.2	6.2	●	●	●		●		0.50-2.50	0.08-0.20
SOMX 070305-D4G 2225	0.5	3.6	7.7	●	●	●		●		0.70-2.50	0.15-0.25
SOMT 09T306-D4G 2225	0.6	3.81	9	●	●	●		●		0.80-3.00	0.08-0.20
SOMT 120408-D4G 2225	0.8	4.76	12.7	●	●	●		●		0.80-3.50	0.08-0.25
SOMT 160512-D4G 2225	1.2	5.56	16	●	●	●		●		0.80-4.00	0.08-0.30

● Insert with different materials should be ordered separately.

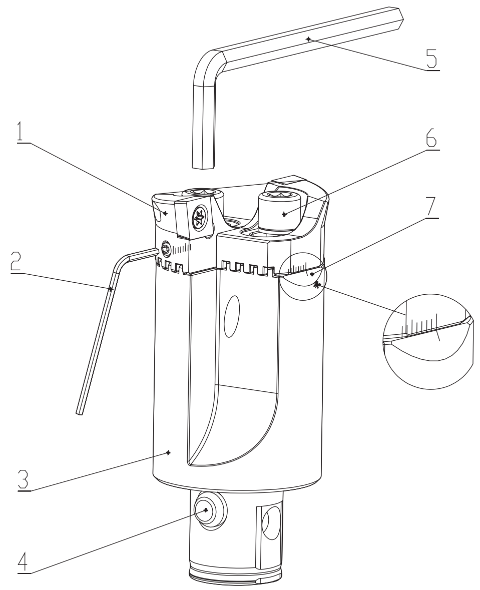
WB..



Designation	Size				Material						Recommended cutting parameter		
	l	r	s	d1	P	M	K	N	S	H	VC(m/min)	ap(mm)	f(mm/rev)
WBGT 060102-F6G 2225	2.18	0.2	1.59	2.24	●	●	●		●		70-200	0.08-0.15	0.05-0.12
WBGT 060102-F1N 1010	2.18	0.2	1.59	2.24				●			300-800	0.10-0.25	0.05-0.12
WBMT 060102-F6P 2220	2.18	0.2	1.59	2.24	●						100-250	0.08-0.15	0.05-0.12

Features:

1.Cartridge for rough boring
2.Allen key for adjusting screw
3.Boring tool body
4.Expanding pin
5.Lock wrench
6.Clamping screw for cartridge
7.Rough adjusting scale mark



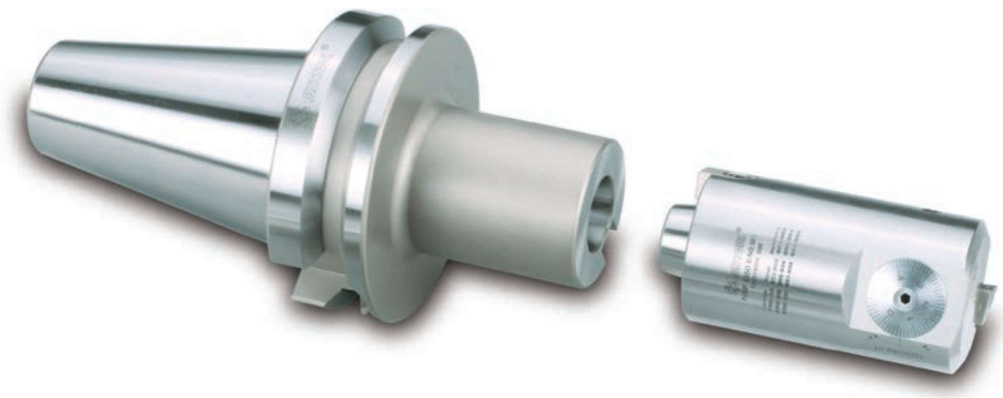
Adjustment Steps:

1.Loosening the 6# clamping screw;
2.Rough adjusting the insert holders as the scale mark, and the distance between the two bits should be 0.5mm shorter than the one of the demanded distance;
3.Tighten the 2# clamping screw to lock the cartridge; then rotate the 3# adjusting screw,preload the 2# clamping screw to avoid the cutter relieving;
4.Testing run and comparing the testing size and actual requirements, then figure out the smaller number;
5.Loosen the 6# clamping screw lightly, so that the 2# adjusting screw for cartridge can make the cartridge moved;
6.Pre-load the 3# adjusting screw, and then compare by the dial gage to make the amount of the payment come to the smaller number;
7.Lock the 6# screw, and then machining the work piece as the demanded dimension.
6.The boring tool must be turned by anticlockwise when back boring.

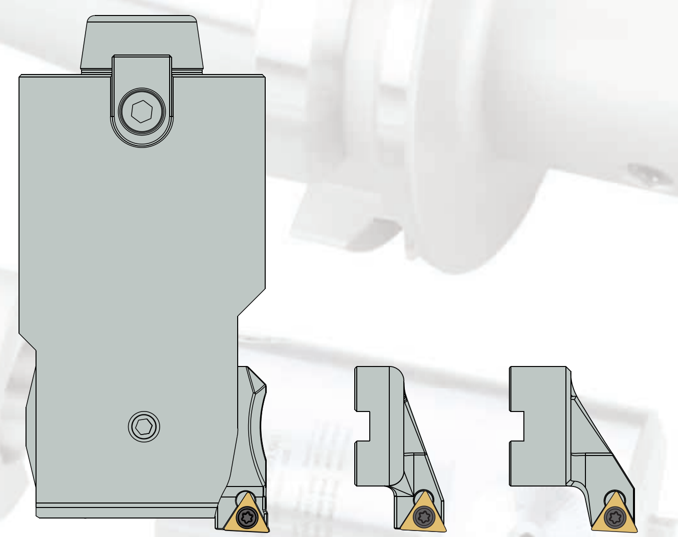
Adjustment Process:

Loosen the clamping screw | Rough adjusting as the scale mark | Pre-load the cartridge | Rotate the adjusting screw to avoid the cutter relieving | Tighten the clamping screw for the cartridge

Instructions of Rough Boring Tool

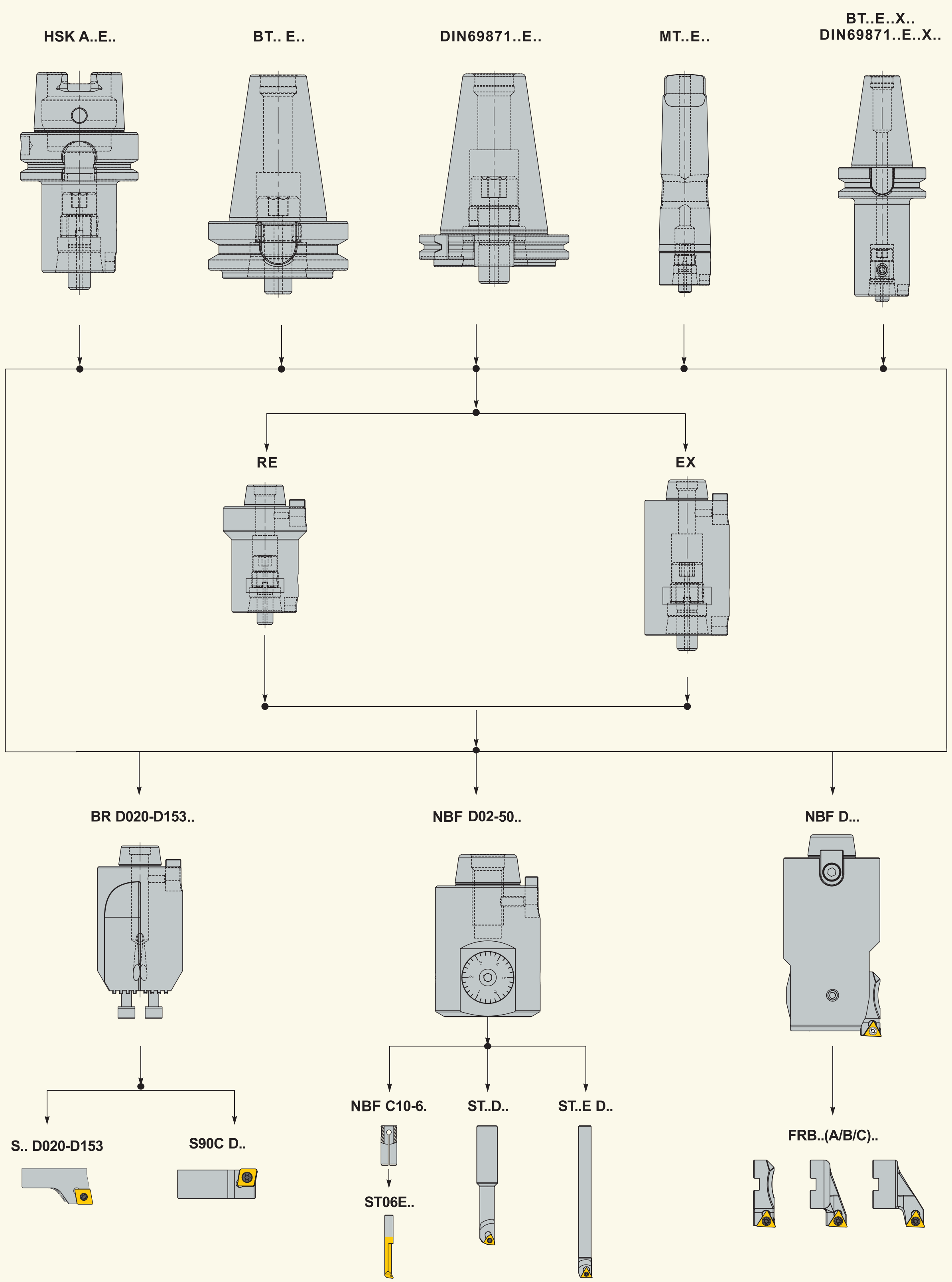


- It can be micro adjusted and the dial each of which is 0.01mm on diameter.
- It can meet the higher precision due to eliable design.
- It can be general & back boring.
- Wider machining range: diameter of micro-finish boring bar is D2-D50mm
  the length-diameter ratio of mini solid carbide boring bar is l./0=6-8
  machining range of finish boring tool with boring bar is D20-D212mm
  solid carbide finish boring bar is D20-D76mm, l./0=6-10
  diameter of back boring bar is D30-D212mm
  diameter of modular adapter for pin turning is D2-D86mm
  diameter of large diameter precision boring tool is D150-D4200mm
- Adaptors could be: HSK A 100/63, BT50/40, DIN69871 50/40,
  metric 80 system , and Morse taper adaptor.



A型 Type A | B型 Type B | C型 Type C

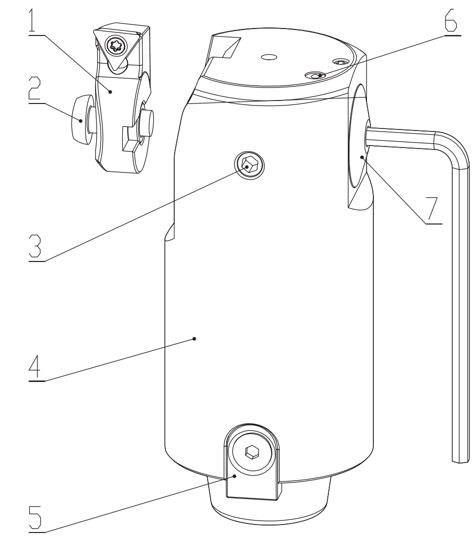
Modular Structure



Instructions of Precision Boring Tool

Features:

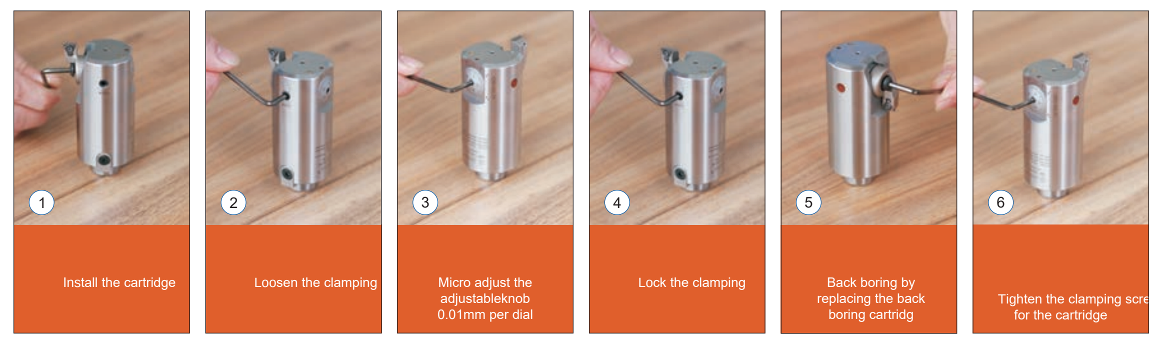
1.Cartridge
2.Clamping screw for cartridge
3.Lock Screw
4.Boring tool body
5.Expanding pin
6.Oil hole
7.Micro-adjustable knob



Adjustment Steps:

1.Install the 1# cartridge firmly according to the correct direction, and then lock the 2# clamping screw.
2.Loosen the clamping screw (3#), adjust the micro-adjustable knob with the allen key to meet the demanded diameter and then rotate the clamping screw (3#) by clockwise direction. It is 0.01mm in diameter when rotating per graduation. (Rotate the graduated dial by clockwise is to increase the processing diameter and by anti-clockwise is to decrease the processing diameter);
3.Please see the mark on the body which indicates the boring range (Be sure not to be out of the adjustment range);
4.Do regular scheduled maintenance, dip it in lube oil (dipping the oil at the 6# oil hole);
5.Do not open the place where is sealed by the red paint, otherwise the accuracy of boring head will be damaged;
6.The boring tool must be turned by anticlockwise when back boring.

Adjustment Process:



Recommended Cutting Data for Rough Boring

ISO	Work-piece mater-ial	HB Hardness	L/D Overhang L/D		D20-35 Boring range		D35-55 Boring range		D55-70 Boring range		D70-110 Boring range		D110-150 Boring range		D150- Boring range	
				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	0.8-1.5	1.5-3.5	0.8-2.0	2.0-3.5	0.8-2.0	2.0-4.0
				R(Radius)	0.2	0.4	0.2-0.4	0.4	0.2-0.4	0.4-0.8	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	Unall-oyed steel	HB<200	2.5 Good	Vc(m/min)	150-180	120-150	160-200	140-170	160-200	140-180	160-200	150-180	180-250	160-200	220-280	200-220
				fz(mm/z)	0.1-0.2	0.08-0.2	0.15-0.2	0.1-0.175	0.15-0.25	0.08-0.2	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 Normal	Vc(m/min)	140-160	100-140	160-180	120-150	160-180	120-150	140-180	120-150	160-200	140-180	-	-
				fz(mm/z)	0.1-0.18	0.08-0.15	0.1-0.12	0.08-0.1	0.1-0.12	0.08-0.1	0.08-0.2	0.08-0.15	0.1-0.2	0.08-0.15	-	-
			6.0 Difficult	Vc(m/min)	60-80	40-60	60-90	50-60	70-90	50-70	70-100	50-70	-	-	-	-
				fz(mm/z)	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	-	-	-	-
P	Unall-oyed steel	HB>200	2.5 Good	Vc(m/min)	130-160	100-130	140-180	120-160	140-180	120-160	140-180	120-160	150-170	100-140	100-140	80-120
				fz(mm/z)	0.08-0.15	0.08-0.12	0.08-0.2	0.06-0.12	0.08-0.25	0.08-0.18	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 Normal	Vc(m/min)	110-140	80-110	100-140	80-120	100-140	80-120	120-150	100-140	100-130	80-110	-	-
				fz(mm/z)	0.08-0.12	0.08-0.1	0.08-0.15	0.06-0.15	0.08-0.2	0.06-0.15	0.1-0.2	0.1-0.18	0.08-0.2	0.08-0.12	-	-
			6.0 Difficult	Vc(m/min)	70-90	60-70	80-100	60-80	80-100	60-80	80-100	60-80	-	-	-	-
				fz(mm/z)	0.08-0.1	0.06-0.08	0.06-0.1	0.06-0.08	0.08-0.15	0.06-0.1	0.08-0.12	0.08-0.12	-	-	-	-
P	Lowalloy-ed steel	HB<200	2.5 Good	Vc(m/min)	140-160	90-120	150-180	100-130	160-200	140-180	160-220	140-180	160-220	140-180	160-220	140-180
				fz(mm/z)	0.08-0.18	0.08-0.15	0.08-0.2	0.08-0.18	0.1-0.25	0.1-0.15	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 Normal	Vc(m/min)	100-130	70-100	110-150	90-120	140-180	100-130	150-200	120-160	120-160	120-160	-	-
				fz(mm/z)	0.08-0.15	0.06-0.12	0.08-0.18	0.08-0.15	0.08-0.18	0.08-0.12	0.1-0.2	0.08-0.18	0.1-0.2	0.08-0.18	-	-
			6.0 Difficult	Vc(m/min)	80-100	60-90	80-100	70-90	100-140	80-120	100-140	100-140	-	-	-	-
				fz(mm/z)	0.08-0.15	0.06-0.1	0.06-0.12	0.06-0.12	0.06-0.15	0.08-0.1	0.08-0.18	0.08-0.15	-	-	-	-
P	Lowalloy-ed steel	HB>200	2.5 Good	Vc(m/min)	130-150	120-140	130-150	120-140	140-170	120-150	160-200	140-180	140-200	140-180	140-200	140-180
				fz(mm/z)	0.08-0.18	0.06-0.15	0.08-0.18	0.06-0.15	0.08-0.2	0.08-0.18	0.1-0.3	0.1-0.25	0.1-0.35	0.1-0.3	0.1-0.35	0.1-0.3
			4 Normal	Vc(m/min)	100-130	100-120	100-130	100-120	120-150	100-120	140-160	120-140	150-180	120-140	-	-
				fz(mm/z)	0.08-0.15	0.06-0.13	0.08-0.15	0.06-0.13	0.08-0.18	0.08-0.15	0.08-0.2	0.08-0.15	0.08-0.12	0.08-0.12	-	-
			6.0 Difficult	Vc(m/min)	80-100	70-90	80-100	70-90	100-120	70-90	100-120	70-90	-	-	-	-
				fz(mm/z)	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11	0.08-0.12	0.06-0.11	0.08-0.16	0.08-0.12	-	-	-	-

- Different cutting condition probably affect the machining diameter, so please do the tested cutting before the formal machining.
- When set the cutting parameters, the machine spindle, rigidity of workpiece and length of boring tool will have an impact on the processing. Please start from the low cutting parameters by slowly improving after confirming.
- "-" It indicates that not recommended. Please contact with our sales engineer.

Recommended Cutting Data for Rough Boring

ISO	work-piece mater-ial	HB Hardness	L/D Overhang L/D		D20-35 Boring range		D35-55 Boring range		D55-70 Boring range		D70-110 Boring range		D110-150 Boring range		D150- Boring range	
				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	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	0.2-0.4	0.4	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8	0.2-0.4	0.4-0.8
M	Stain-less steel	Ferritic & Martensitic	2.5 Good	Vc(m/min)	100-150	110-130	120-160	100-150	120-160	110-160	120-220	120-200	140-220	120-180	150-220	120-200
				fz(mm/z)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.08-0.18	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 Normal	Vc(m/min)	90-130	90-120	100-140	90-140	100-150	80-120	100-160	90-140	120-180	90-140	-	-
				fz(mm/z)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.08-0.12	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18	-	-
			6.0 Difficult	Vc(m/min)	60-90	50-70	60-90	50-70	70-100	50-70	70-100	50-70	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.08-0.1	0.08-0.2	0.08-0.15	-	-	-	-
M	Stain-less steel	Austenitic	2.5 Good	Vc(m/min)	110-130	100-130	120-150	110-140	110-160	100-150	120-200	100-160	120-200	100-160	120-200	100-180
				fz(mm/z)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12	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 Normal	Vc(m/min)	80-110	80-110	90-130	90-120	100-150	90-130	100-150	90-140	100-160	90-140	-	-
				fz(mm/z)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18	-	-
			6.0 Difficult	Vc(m/min)	60-90	50-70	60-90	50-70	70-100	50-70	70-100	50-70	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1	0.08-0.2	0.08-0.15	-	-	-	-
M	Cast stain-less steel	Ferritic & Martensitic	2.5 Good	Vc(m/min)	90-130	100-130	120-150	110-140	120-160	100-150	130-200	120-180	140-200	120-160	140-200	120-180
				fz(mm/z)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12	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 Normal	Vc(m/min)	70-110	80-110	90-130	90-120	100-150	90-130	110-150	90-150	100-160	90-140	-	-
				fz(mm/z)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18	-	-
			6.0 Difficult	Vc(m/min)	60-90	50-70	60-90	50-70	70-100	50-70	70-100	50-70	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1	0.08-0.2	0.08-0.15	-	-	-	-
M	Cast stain-less steel	Austenitic	2.5 Good	Vc(m/min)	80-120	70-110	100-150	90-140	110-150	100-150	130-180	120-180	120-200	100-160	120-200	100-180
				fz(mm/z)	0.08-0.15	0.06-0.12	0.08-0.18	0.06-0.12	0.08-0.25	0.06-0.12	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 Normal	Vc(m/min)	70-100	70-100	80-130	70-120	90-140	90-130	100-140	90-140	100-160	90-140	-	-
				fz(mm/z)	0.08-0.12	0.06-0.1	0.08-0.12	0.06-0.1	0.08-0.18	0.06-0.1	0.08-0.25	0.08-0.18	0.08-0.25	0.08-0.18	-	-
			6.0 Difficult	Vc(m/min)	60-90	50-70	60-90	50-70	70-100	50-70	70-90	50-70	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.12	0.06-0.1	0.06-0.15	0.06-0.1	0.08-0.2	0.08-0.15	-	-	-	-

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Recommended Cutting Data for Rough Boring

ISO	work-piece material	HB Hardness	L/D Overhang L/D		D20-35 Boring range		D35-55 Boring range		D55-70 Boring range		D70-110 Boring range		D110-150 Boring range		D150- Boring range	
				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	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	0.2-0.4	0.4	0.2-0.4	0.4-0.8	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	GG 10-25 Grey cast iron	HB<200	2.5 Good	Vc(m/min)	120-160	100-140	120-180	110-150	120-180	110-150	120-200	110-150	150-250	180-280	150-250	180-280
				fz(mm/z)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.12	0.08-0.2	0.08-0.12	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 Normal	Vc(m/min)	100-140	80-120	100-150	80-120	100-150	80-120	100-150	80-120	120-170	120-170	-	-
				fz(mm/z)	0.06-0.12	0.06-0.1	0.06-0.12	0.06-0.1	0.08-0.12	0.08-0.1	0.08-0.18	0.08-0.2	0.08-0.18	0.08-0.25	-	-
			6.0 Difficult	Vc(m/min)	70-100	60-90	70-100	60-90	70-100	60-90	70-100	60-90	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1	0.08-0.15	0.08-0.12	-	-	-	-
K	GG 25-40 Grey cast iron	-	2.5 Good	Vc(m/min)	140-200	140-200	140-220	160-250	180-220	220-280	250-300	250-350	250-350	250-350	250-350	250-350
				fz(mm/z)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.2	0.1-0.25	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 Normal	Vc(m/min)	120-160	120-160	120-180	140-200	140-180	180-220	200-270	230-300	200-300	200-270	-	-
				fz(mm/z)	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.2	0.1-0.25	0.12-0.3	0.15-0.3	0.15-0.35	-	-
			6.0 Difficult	Vc(m/min)	70-100	60-90	70-100	60-90	60-100	60-120	70-150	60-120	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1	0.1-0.15	0.12-0.25	-	-	-	-
K	GGG Cast iron	Spheroidal graphite cast iron	2.5 Good	Vc(m/min)	120-180	120-180	120-200	140-220	180-220	180-240	200-240	200-280	200-280	220-300	220-300	220-300
				fz(mm/z)	0.06-0.15	0.06-0.18	0.06-0.15	0.06-0.18	0.08-0.18	0.1-0.2	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 Normal	Vc(m/min)	120-160	120-160	120-180	140-200	140-200	160-220	160-220	180-240	180-250	200-270	-	-
				fz(mm/z)	0.06-0.12	0.06-0.14	0.06-0.12	0.06-0.14	0.08-0.12	0.08-0.18	0.1-0.2	0.12-0.25	0.15-0.25	0.15-0.35	-	-
			6.0 Difficult	Vc(m/min)	60-100	60-90	60-100	60-90	60-90	60-100	60-100	60-100	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.08-0.1	0.08-0.1	0.1-0.15	0.12-0.2	-	-	-	-

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Recommended Cutting Data for Rough Boring

ISO	work-piece material	HB Hardness	L/D Overhang L/D		D20-35 Boring range		D35-55 Boring range		D55-70 Boring range		D70-110 Boring range		D110-150 Boring range		D150- Boring range	
				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	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	0.2-0.4	0.4	0.2-0.4	0.4-0.8	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	Cast alum-inium alloys	Si>12%	2.5 Good	Vc(m/min)	200-300	240-350	200-300	240-350	200-300	240-350	200-300	240-350	200-300	240-350	200-300	240-350
				fz(mm/z)	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.3	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 Normal	Vc(m/min)	150-220	150-220	150-220	150-220	150-220	150-220	150-220	150-220	150-220	150-220	-	-
				fz(mm/z)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	-	-
			6.0 Difficult	Vc(m/min)	60-100	60-100	60-100	60-100	60-100	60-100	60-100	60-100	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	-	-	-	-
N	Cast alum-inium alloys	Si<12%	2.5 Good	Vc(m/min)	180-250	220-280	180-250	220-280	180-250	220-280	180-250	220-280	180-250	220-280	180-250	220-280
				fz(mm/z)	0.06-0.2	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.25	0.06-0.3	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 Normal	Vc(m/min)	120-220	120-220	120-220	120-220	120-220	120-220	120-220	120-220	120-220	120-220	-	-
				fz(mm/z)	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25	0.06-0.2	0.06-0.25	-	-
			6.0 Difficult	Vc(m/min)	60-100	60-100	60-100	60-100	60-100	60-100	60-100	60-100	-	-	-	-
				fz(mm/z)	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	0.06-0.1	-	-	-	-

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Recommended Cutting Data for Finish Boring

work-piece mater-ial	L/D Overhang L/D	Stability	Vc=m/min Cutting speed	f=mm/rev Radius R=0.2	f=mm/rev Radius R=0.4	Ap(mm)	Grade
Hb≤200	2.5	Good	200-300	0.05-0.08	0.08-0.1	0.1-0.25	P 1115 P 1125 P 1225 P 2125 P 2116 P 2220 G 2315 G 1310 G 2225
	4	Normal	160-250	0.05-0.08	0.08-0.1		
	6	Difficult	70-100	0.05-0.08	-		
Hb≥200	2.5	Good	160-250	0.05-0.08	0.08-0.1	0.1-0.25	
	4	Normal	150-200	0.05-0.08	0.08-0.1		
	6	Difficult	70-100	0.05-0.08	-		
Low alloyed steel	2.5	Good	150-200	0.05-0.08	0.08-0.1	0.1-0.25	
	4	Normal	120-160	0.05-0.08	0.08-0.1		
	6	Difficult	70-80	0.05-0.08	-		
HB 480-550 Low alloyed steel	2.5	Good	120-160	0.05-0.08	0.08-0.1	0.1-0.25	
	4	Normal	100-140	0.05-0.08	0.08-0.1		
	6	Difficult	70-100	0.05-0.08	-		
Stainless steel	2.5	Good	160-210	0.05-0.08	0.08-0.1	0.1-0.25	M 1220 M 2216 M 2120 M 1225 M 2210 M 1215 M 1115
	4	Normal	120-160	0.05-0.08	0.08-0.1		
	6	Difficult	70-90	0.05-0.08	-		
Cast iron	2.5	Good	120-160	0.05-0.08	0.08-0.1	0.1-0.25	K 1115 K 2025 K 2120
	4	Normal	100-140	0.05-0.08	0.08-0.1		
	6	Difficult	70-100	0.05-0.08	-		
Aluminum alloy	2.5	Good	300-400	0.05-0.08	0.08-0.1	0.1-0.25	N 2020 N 1010 N 1025 N 1015
	4	Normal	250-350	0.05-0.08	0.08-0.1		
	6	Difficult	100-150	0.05-0.08	-		

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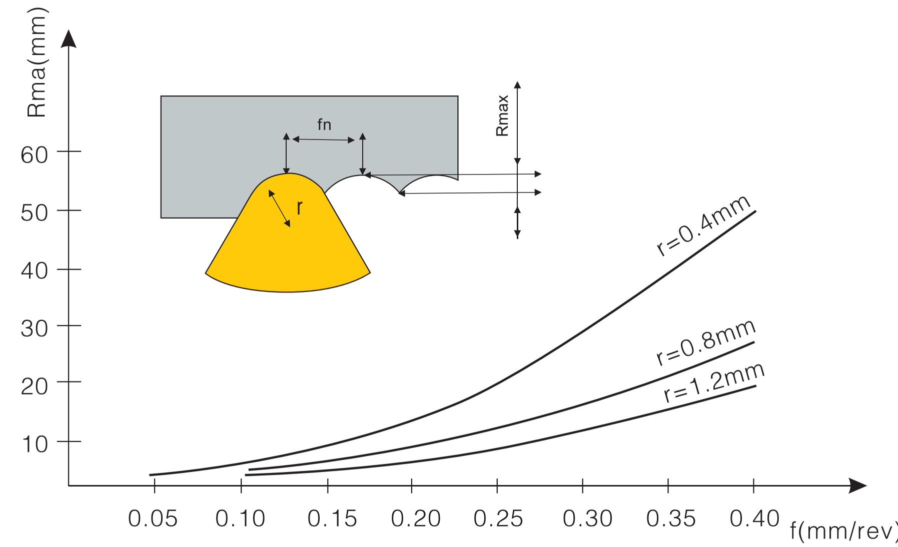
Achievable Surface Quality

$$R_{max}=\frac{fn^2}{8r}\times 1000\text{ , μm}$$

Rmax=残留面积高度，μm
Residual area height

r=刀尖半径 ,mm
Nose radius

fn=每转进给 ,mm/rev



Achievable Surface Quality with Insert Radius and Feed Rage

Rt	Ra ISO 1302		(mm/rev) Radius and feed R=0.4	r=0.8	r=1.2	r=1.6
Rt100	12.5-25	25	-	0.51	0.69	0.88
Rt63	6.3-25	12.5	0.27	0.43	0.56	0.68
Rt40	4.9-6.3	6.3	0.25	0.37	0.49	0.57
Rt31.5	4.0-4.9		0.22	0.32	0.41	0.47
Rt25	2.5-4.0	3.2	0.20	0.28	0.36	0.39
Rt16	1.6-.2.5		0.15	0.22	0.29	0.31
Rt10	1.0-1.6	1.6	0.10	0.13	0.18	0.20