

Nine⁹® **Quick Change**
High Speed Boring Tools

Ø5mm~Ø50mm boring bars are Interchangeable.

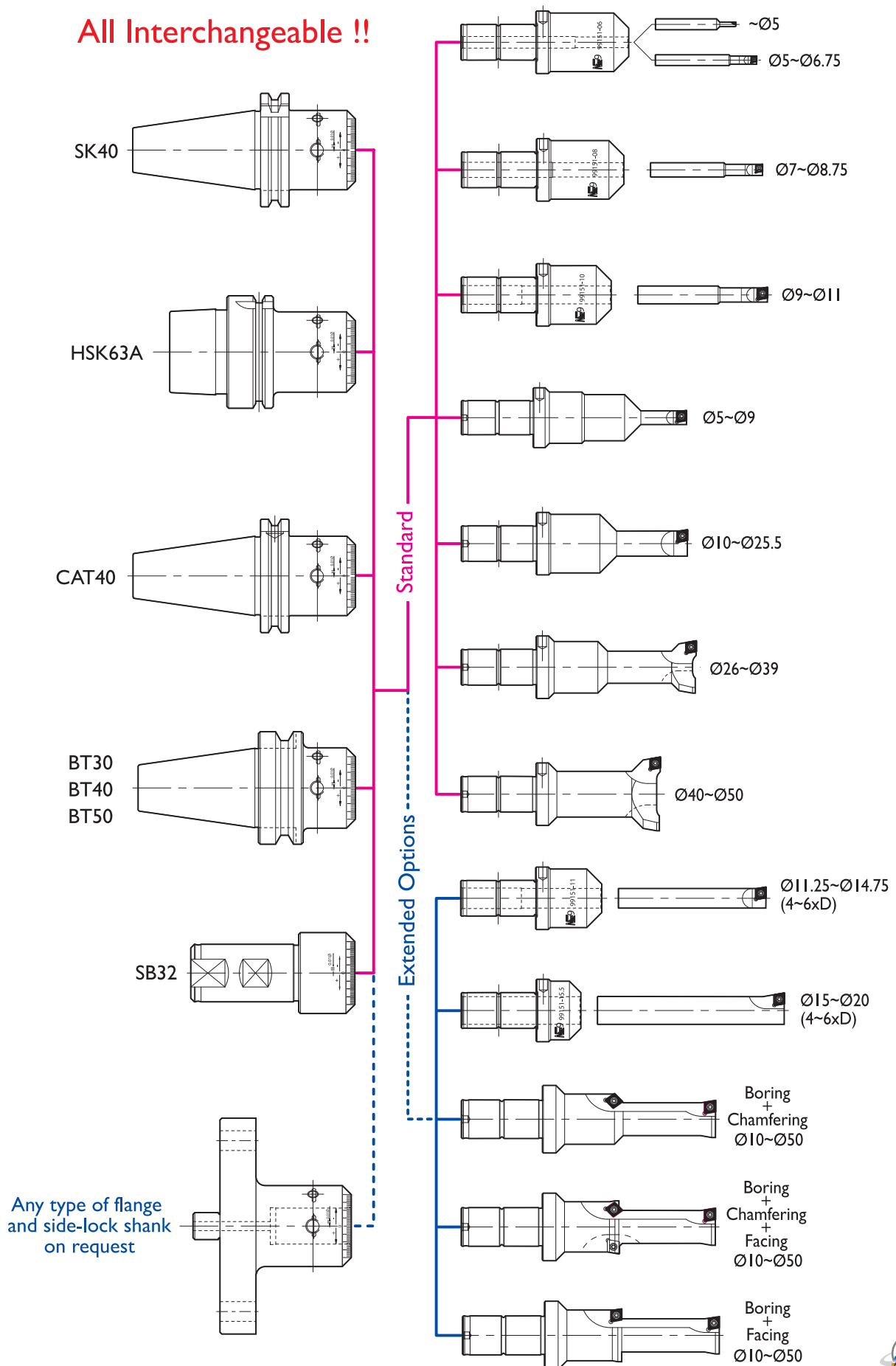
Change the boring bar in just one minute.

G6.3 10000 r.p.m. pre-balanced.

2011-02
Cat. No. 07a

Featuring Improved: • Cycle time • Position Accuracy • Roughness • True Roundness

All Interchangeable !!



Easy Handling:

- Dimensions are easy to read. They are indicated on the tools and are easily adjustable on a tool presetter or in machining center.
- No backlash.
- Change the boring bar and set the boring dimension on the tool presetter in just one minute.

Interchangeable Boring Bars from Diameters of 5 mm to 50 mm

- This simple boring tool has minimal components.
- In minutes, the boring bar may be changed and the boring dimension set on the tool presetter.

Low Cost for Machining Small Holes

- The cost of this product is low compared to other micro adjustable boring heads.

High Speed

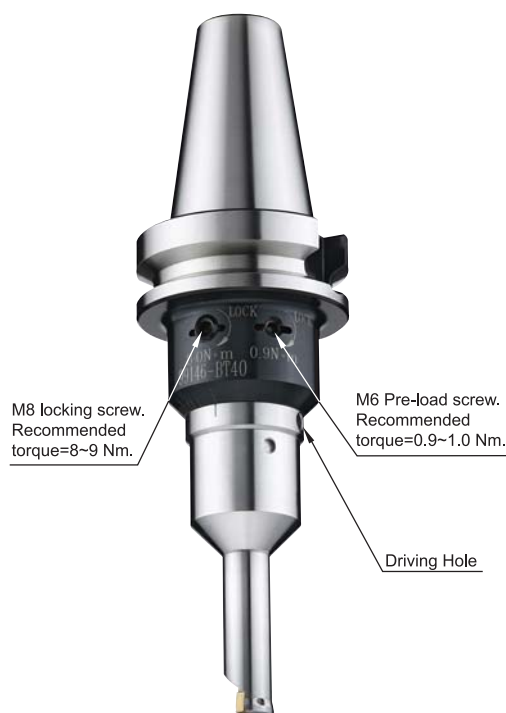
- Boring bar design ensures accurate high speed boring. Grade balance is G6.3 10000 r.p.m., all sizes are guaranteed.
- Surface speeds of carbide inserts up to 700 m/min.
- Combination bore / chamfer / facing tools can be ordered on request.

Procedures for assembly

1. Use 4 mm allen-key to **loosen locking screw M8**, take care not to remove the screw.
2. Use 3 mm allen-key to **loosen pre-load screw M6**, take care not to remove the screw.
3. Remove the original boring bar and insert the new boring bar.
4. **Tighten the M6 pre-load screw** using the torque screwdriver with hex head key.
(Recommended torque = 0.9~1.0 Nm)
5. Ensure the boring head and boring bar fit together securely.
6. Measure the boring diameter of the boring bar using tool presetter and adjust it to the required diameter.
7. **Tighten the M8 locking screw** using the torque screwdriver with hex head key (Recommended torque = 8~9Nm)

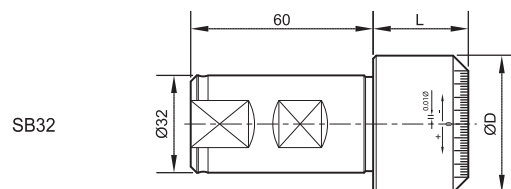
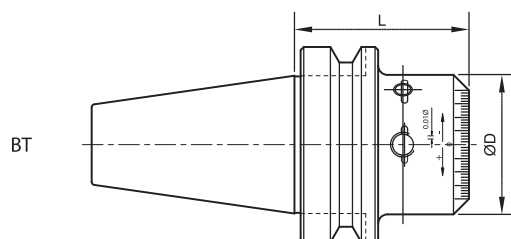
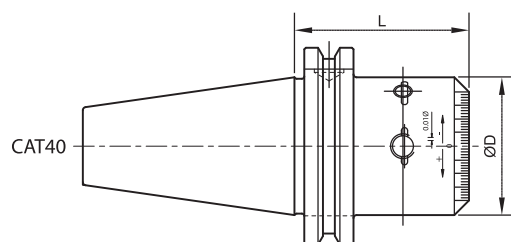
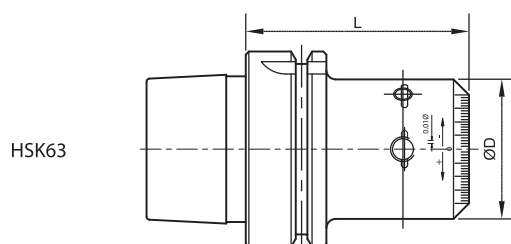
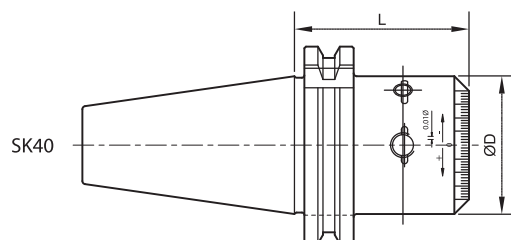
Procedures for adjustment

1. **Loosen locking screw M8**.
2. Put a 4 mm allen-key into the adjustable driving hole.
3. To increase the boring diameter turn towards “+” and to decrease the boring diameter turn towards “-”.
4. **Tighten the M8 locking screw** using the torque screwdriver with hex head key.
(Recommended torque = 8~9Nm)



Boring Head Shank

- Adjustable range: $+0.12 / -0.13$ mm.
- Each adjustment division is 0.01 mm.
- Balance grade : G6.3 10000 r.p.m.



Ordering Code	Part No.	ØD	L
00-99146-01-32HB	SB32-146-01	45	31.3
00-99146-BT30H	BT30-146-51	45	51.3
00-99146-BT40H	BT40-146-56	45	56.3
00-99146-BT50H	BT50-146-77	45	77.3
00-99146-CAT40H	CAT40-146-56	45	56.3
00-99146-HSK63AH	HSK63A-146-72	45	72
00-99146-SK40H	SK40-146-56	45	56.3

Adapter

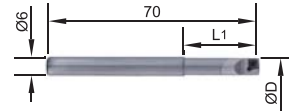
- Economical solution of small dia. boring bar.



Ordering Code	Part No.	ØD	L
00-99151A-06	C20-ID06	6	52
00-99151A-08	C20-ID08	8	49
00-99151A-10	C20-ID10	10	21.5
00-99151A-11	C20-ID11	11	21.5
00-99151A-15.5	C20-ID15.5	15.5	21.5

Ø4.87~Ø6.87mm

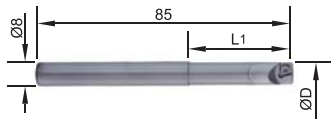
- Solid Carbide Shank
- Boring Depth : L1, 4~6xD



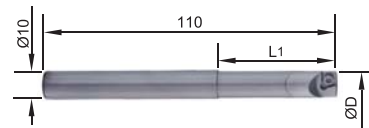
Ordering Code	Part No.	ØD	L1	Insert
00-99151-0500W	C06-0500-20L	4.87~5.12	20.00	CCGT030102-NC30 Screw: NS-16030 Key:NK-T6
00-99151-0525W	C06-0525-20L	5.12~5.37	20.00	
00-99151-0550W	C06-0550-22L	5.37~5.62	22.00	
00-99151-0575W	C06-0575-22L	5.62~5.87	22.00	
00-99151-0600W	C06-0600-24L	5.87~6.12	24.00	
00-99151-0625W	C06-0625-24L	6.12~6.37	24.00	
00-99151-0650W	C06-0650-26L	6.37~6.62	26.00	
00-99151-0675W	C06-0675-26L	6.62~6.87	26.00	

Ø6.87~Ø11.12mm

- Solid Carbide Shank
- Boring Depth : L1, 4~6xD



Ordering Code	Part No.	ØD	L1	Insert
00-99151-0700W	C08-0700-28L	6.87~7.12	28.00	CCGT040102-NC30 Screw: NS-20045 Key:NK-T6
00-99151-0725W	C08-0725-28L	7.12~7.37	28.00	
00-99151-0750W	C08-0750-30L	7.37~7.62	30.00	
00-99151-0775W	C08-0775-30L	7.62~7.87	30.00	
00-99151-0800W	C08-0800-32L	7.87~8.12	32.00	
00-99151-0825W	C08-0825-32L	8.12~8.37	32.00	
00-99151-0850W	C08-0850-34L	8.37~8.62	34.00	
00-99151-0875W	C08-0875-34L	8.62~8.87	34.00	



Ordering Code	Part No.	ØD	L1	Insert
00-99151-0900W	C10-0900-36L	8.87~9.12	36.00	CCGT060204 CCFT060204 All grades are available. Screw: NS-25045 Key:NK-T7
00-99151-0925W	C10-0925-36L	9.12~9.37	36.00	
00-99151-0950W	C10-0950-38L	9.37~9.62	38.00	
00-99151-0975W	C10-0975-38L	9.62~9.87	38.00	
00-99151-1000W	C10-1000-40L	9.87~10.12	40.00	
00-99151-1025W	C10-1025-40L	10.12~10.37	40.00	
00-99151-1050W	C10-1050-42L	10.37~10.62	42.00	
00-99151-1075W	C10-1075-42L	10.62~10.87	42.00	
00-99151-1100W	C10-1100-44L	10.87~11.12	44.00	

Ø11.87~Ø20.12mm

- Solid Carbide Shank
- Boring Depth : L1, 4~6xD

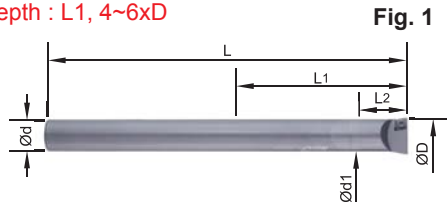


Fig. 1

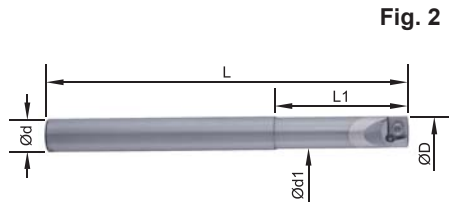
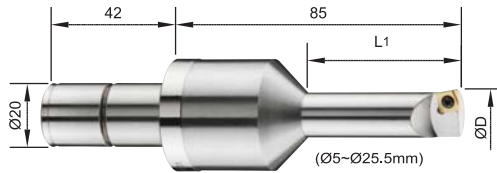


Fig. 2

Ordering Code	Part No.	ØD	Ød	Ød1	L1	L2	L	Fig.	Insert
00-99151-1200W	C11-1200-150L	11.87~12.12	11	11	70	20	150	1	CCGT060204 CCFT060204 Screw: NS-25045 Key:NK-T7
00-99151-1300W	C11-1300-150L	12.87~13.12	11	-	70	-	150		
00-99151-1400W	C11-1400-150L	13.87~14.12	11	-	70	-	150		
00-99151-1500W	C15.5-1500-90L	14.87~15.12	15.5	14	90	90	180	2	CCGT060204 CCFT060204 Screw: NS-25060 Key:NK-T7
00-99151-1600W	C15.5-1600-180L	15.87~16.12	15.5	15	90	90	180		
00-99151-1700W	C15.5-1700-180L	16.87~17.12	15.5	-	100	-	180		
00-99151-1800W	C15.5-1800-180L	17.87~18.12	15.5	-	100	-	180		
00-99151-1900W	C15.5-1900-180L	18.87~19.12	15.5	-	100	-	180		
00-99151-2000W	C15.5-2000-180L	19.87~20.12	15.5	-	100	-	180		

Ø5~Ø25mm

- Alloy Steel Shank
- Boring Depth : L1, 2~3xD

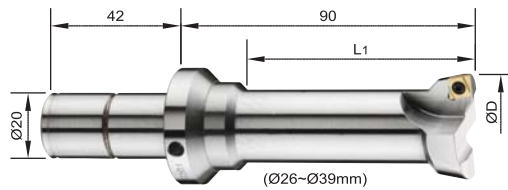


* H type with internal coolant can be ordered on request from Dia. 10mm.
Ordering example: 00-99146-1000SH.

Ordering Code	Part No.	ØD	L1	Insert	Ordering Code	Part No.	ØD	L1	Insert
00-99146-0500S	C20-0500-10L	4.87~5.12	10.00	CC030102-NC30 NS-16030, NK-T6	00-99146-1725S	C20-1725-42L	17.12~17.37	42.50	CCGT060204 CCFT060204 Screw: NS-20045 Key: NK-T7
00-99146-0600S	C20-0600-12L	5.87~6.12	12.00		00-99146-1750S	C20-1750-43L	17.37~17.62	43.75	
00-99146-0700S	C20-0700-14L	6.87~7.12	14.00		00-99146-1775S	C20-1775-43L	17.62~17.87	43.75	
00-99146-0800S	C20-0800-16L	7.87~8.12	16.00		00-99146-1800S	C20-1800-45L	17.87~18.12	45.00	
00-99146-0900S	C20-0900-20L	8.87~9.12	18.00		00-99146-1825S	C20-1825-45L	18.12~18.37	45.00	
00-99146-1000S	C20-1000-25L	9.87~10.12	25.00		00-99146-1850S	C20-1850-46L	18.37~18.62	46.25	
00-99146-1025S	C20-1025-25L	10.12~10.37	25.00		00-99146-1875S	C20-1875-46L	18.62~18.87	46.25	
00-99146-1050S	C20-1050-26L	10.37~10.62	26.25		00-99146-1900S	C20-1900-47L	18.87~19.12	47.50	
00-99146-1075S	C20-1075-26L	10.62~10.87	26.25		00-99146-1925S	C20-1925-47L	19.12~19.37	47.50	
00-99146-1100S	C20-1100-27L	10.87~11.12	27.50		00-99146-1950S	C20-1950-48L	19.37~19.62	48.75	
00-99146-1125S	C20-1125-27L	11.12~11.37	27.50	CCGT060204 CCFT060204 Screw: NS-20045 Key: NK-T7	00-99146-1975S	C20-1975-48L	19.62~19.87	48.75	
00-99146-1150S	C20-1150-28L	11.37~11.62	28.75		00-99146-2000S	C20-2000-50L	19.87~20.12	50.00	
00-99146-1175S	C20-1175-28L	11.62~11.87	28.75		00-99146-2025S	C20-2025-50L	20.12~20.37	50.00	
00-99146-1200S	C20-1200-30L	11.87~12.12	30.00		00-99146-2050S	C20-2050-50L	20.37~20.62	50.00	
00-99146-1225S	C20-1225-30L	12.12~12.37	30.00		00-99146-2075S	C20-2075-50L	20.62~20.87	50.00	
00-99146-1250S	C20-1250-31L	12.37~12.62	31.25		00-99146-2100S	C20-2100-50L	20.87~21.12	50.00	
00-99146-1275S	C20-1275-31L	12.62~12.87	31.25		00-99146-2125S	C20-2125-50L	21.12~21.37	50.00	
00-99146-1300S	C20-1300-32L	12.87~13.12	32.50		00-99146-2150S	C20-2150-50L	21.37~21.62	50.00	
00-99146-1325S	C20-1325-32L	13.12~13.37	32.50		00-99146-2175S	C20-2175-50L	21.62~21.87	50.00	
00-99146-1350S	C20-1350-33L	13.37~13.62	33.75		00-99146-2200S	C20-2200-50L	21.87~22.12	50.00	
00-99146-1375S	C20-1375-33L	13.62~13.87	33.75	CCGT060204 CCFT060204 Screw: NS-20060 Key: NK-T7	00-99146-2225S	C20-2225-50L	22.12~22.37	50.00	
00-99146-1400S	C20-1400-35L	13.87~14.12	35.00		00-99146-2250S	C20-2250-50L	22.37~22.62	50.00	
00-99146-1425S	C20-1425-35L	14.12~14.37	35.00		00-99146-2275S	C20-2275-50L	22.62~22.87	50.00	
00-99146-1450S	C20-1450-36L	14.37~14.62	36.25		00-99146-2300S	C20-2300-50L	22.87~23.12	50.00	
00-99146-1475S	C20-1475-36L	14.62~14.87	36.25		00-99146-2325S	C20-2325-50L	23.12~23.37	50.00	
00-99146-1500S	C20-1500-37L	14.87~15.12	37.50		00-99146-2350S	C20-2350-50L	23.37~23.62	50.00	
00-99146-1525S	C20-1525-37L	15.12~15.37	37.50		00-99146-2375S	C20-2375-50L	23.62~23.87	50.00	
00-99146-1550S	C20-1550-38L	15.37~15.62	38.75		00-99146-2400S	C20-2400-50L	23.87~24.12	50.00	
00-99146-1575S	C20-1575-38L	15.62~15.87	38.75		00-99146-2425S	C20-2425-50L	24.12~24.37	50.00	
00-99146-1600S	C20-1600-40L	15.87~16.12	40.00		00-99146-2450S	C20-2450-50L	24.37~24.62	50.00	
00-99146-1625S	C20-1625-40L	16.12~16.37	40.00	CCGT060204 CCFT060204 Screw: NS-20060 Key: NK-T7	00-99146-2475S	C20-2475-50L	24.62~24.87	50.00	
00-99146-1650S	C20-1650-41L	16.37~16.62	41.25		00-99146-2500S	C20-2500-50L	24.87~25.12	50.00	
00-99146-1675S	C20-1675-41L	16.62~16.87	41.25		00-99146-2525S	C20-2525-50L	25.12~25.37	50.00	
00-99146-1700S	C20-1700-42L	16.87~17.12	42.50		00-99146-2550S	C20-2550-50L	25.37~25.62	50.00	

Ø26~Ø39mm

- Alloy Steel Shank
- Boring Depth : L1, 2~3xD

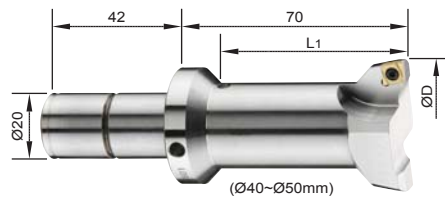


* H type with internal coolant can be ordered on request.
Ordering example: 00-99146-36AH.

Ordering Code	Part No.	ØD	L1	Insert
00-99146-26A	C20-2600-50L	25.87~26.12	50.00	CCGT060204 CCFT060204 Screw: NS-25060 Key: NK-T7
00-99146-27A	C20-2700-50L	26.87~27.12	50.00	
00-99146-28A	C20-2800-50L	27.87~28.12	50.00	
00-99146-29A	C20-2900-50L	28.87~29.12	50.00	
00-99146-30A	C20-3000-50L	29.87~30.12	50.00	
00-99146-31A	C20-3100-70L	30.87~31.12	70.00	
00-99146-32A	C20-3200-70L	31.87~32.12	70.00	
00-99146-33A	C20-3300-70L	32.87~33.12	70.00	
00-99146-34A	C20-3400-70L	33.87~34.12	70.00	
00-99146-35A	C20-3500-70L	34.87~35.12	70.00	
00-99146-36A	C20-3600-70L	35.87~36.12	70.00	
00-99146-37A	C20-3700-70L	36.87~37.12	70.00	
00-99146-38A	C20-3800-70L	37.87~38.12	70.00	
00-99146-39A	C20-3900-70L	38.87~39.12	70.00	

Ø40~Ø50mm

- Alloy Steel Shank
- Boring Depth : L1, 2~3xD



* H type with internal coolant can be ordered on request.
Ordering example: 00-99146-45AH.

Ordering Code	Part No.	ØD	L1	Insert
00-99146-40A	C20-4000-70L	39.87~40.12	70.00	CCGT060204 CCFT060204 Screw: NS-25060 Key: NK-T7
00-99146-41A	C20-4100-70L	40.87~41.12	70.00	
00-99146-42A	C20-4200-70L	41.87~42.12	70.00	
00-99146-43A	C20-4300-70L	42.87~43.12	70.00	
00-99146-44A	C20-4400-70L	43.87~44.12	70.00	
00-99146-45A	C20-4500-70L	44.87~45.12	70.00	
00-99146-46A	C20-4600-70L	45.87~46.12	70.00	
00-99146-47A	C20-4700-70L	46.87~47.12	70.00	
00-99146-48A	C20-4800-70L	47.87~48.12	70.00	
00-99146-49A	C20-4900-70L	48.87~49.12	70.00	
00-99146-50A	C20-5000-70L	49.87~50.12	70.00	

High Speed boring bar kit

Ordering Code	Contents
00-99146-32HB-05SET	SB32-146-01 Weldon Shank
00-99146-BT30-05SET	BT30H Boring head shank
00-99146-BT40-05SET	BT40H Boring head shank
00-99146-BT50-05SET	BT50H Boring head shank
00-99146-CAT40-05SET	CAT40H Boring head shank
00-99146-SK40-05SET	SK40H Boring head shank
00-99146-HSK63A-05SET	HSK63A Boring head shank

Boring head shank: 1pc
Boring bar: any 5 pcs
Key: 3~5 pcs
Plastic box: 1pc



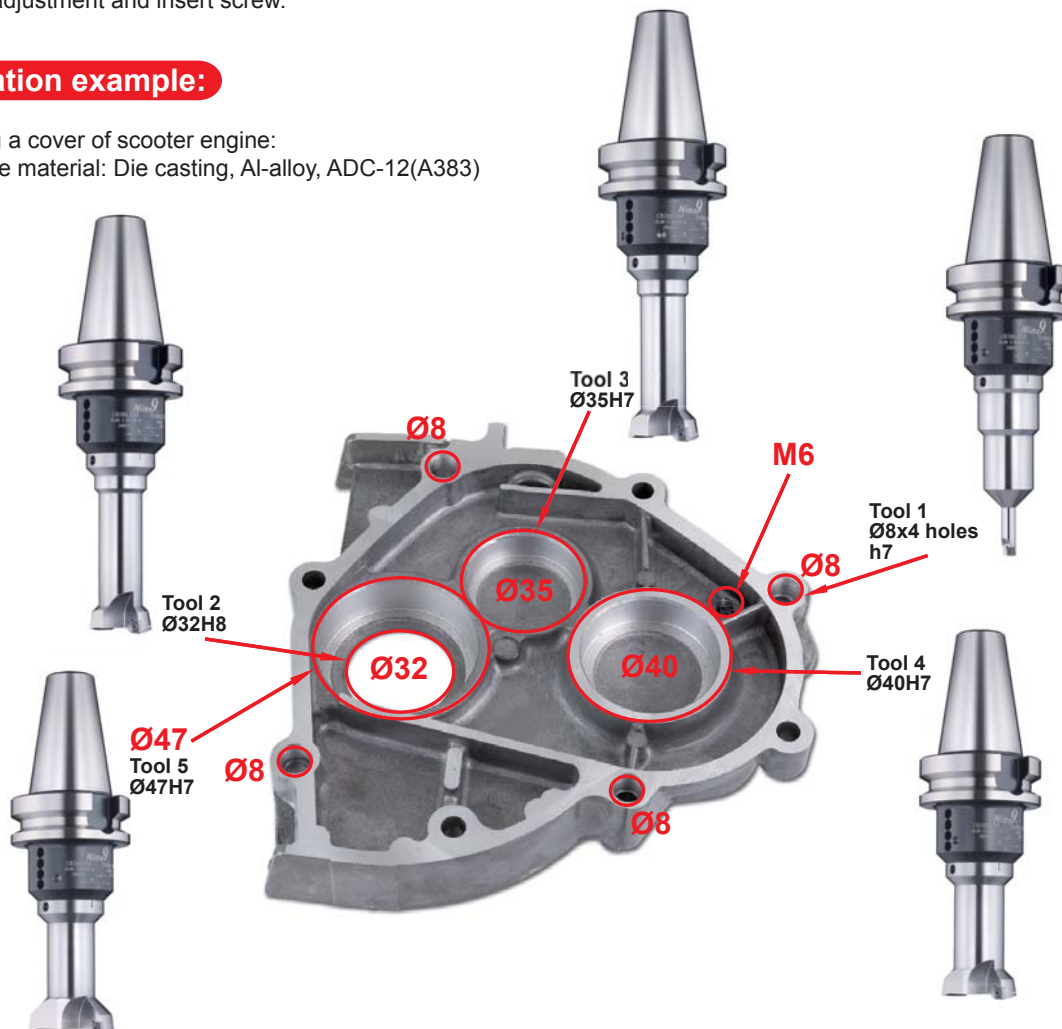
Each package include:

- One handsome carrying case.
- One of SB32 / BT30 / BT40 / BT50 / CAT40 / SK40 / HSK63A Micro adjustable boring head shank.
- Select any **Five boring bars** from standard S and A type, Ø5~Ø50mm diameter. (see page)
- **Keys** for adjustment and insert screw.

(Insert is not included, please order separately)
• Note: BT50 boring head shank is packed in a separate box.

Application example:

- Machining a cover of scooter engine:
Work piece material: Die casting, Al-alloy, ADC-12(A383)



TOOL LIST by Nine9 Boring Bar 99146-series, Spindle Size: BT40

No.	Boring Bar	Grade of insert	Dia. mm	Depth	r.p.m.	F = mm/min.	Machining time
1	00-99146-08A	CCGT040104 NC30	Ø8H7	8 mm	8000	400	1.2 sec.
2	00-99146-32A	CCGT060202HP NC9031	Ø32H8	8 mm	2985	209	2.3 sec.
3	00-99146-35A	CCGT060202HP NC9031	Ø35H7	12 mm	2730	191	3.8 sec.
4	00-99146-40A	CCGT060202HP NC9031	Ø40H7	15 mm	2400	168	5.4 sec.
5	00-99146-47A	CCGT060202HP NC9031	Ø47H7	15 mm	2030	142	6.4 sec.

Precisely ground Inserts

-CC030102, CC040102

- **NC30** : K20F carbide insert, TiAlN coated, universal grade for casting iron, carbon steel, alloy steel, stainless steel.



NC30

-CC040102, CC060204

- **NC2032** : K20F carbide insert, AlTiN coated, for high speed cutting of casting iron.
- **NC2033** : K20F carbide insert, TiAlN coated, good for carbon steel, alloy steel, stainless steel.
- **HP-NC9031**: K20F carbide insert, TiN coated, good for Al, Al-alloy, Copper and non ferrous metal.
- **NC9036** : K20F carbide insert, DLC coated, long tool life. Good for Al, Al-alloy, Copper and non ferrous metal.
- **U-NC9036** : K20F carbide insert, DLC coated, long tool life. It's a super finishing insert with large corner radius for high feed rate for cutting Al, Al-alloy and non-ferrous metal. (patent pending)
- **DM** : PCD brazed tipped insert with a polished and honed cutting edge for fine surface finished and longer tool life.



NC2032

NC9036



NC2033

U-NC9036

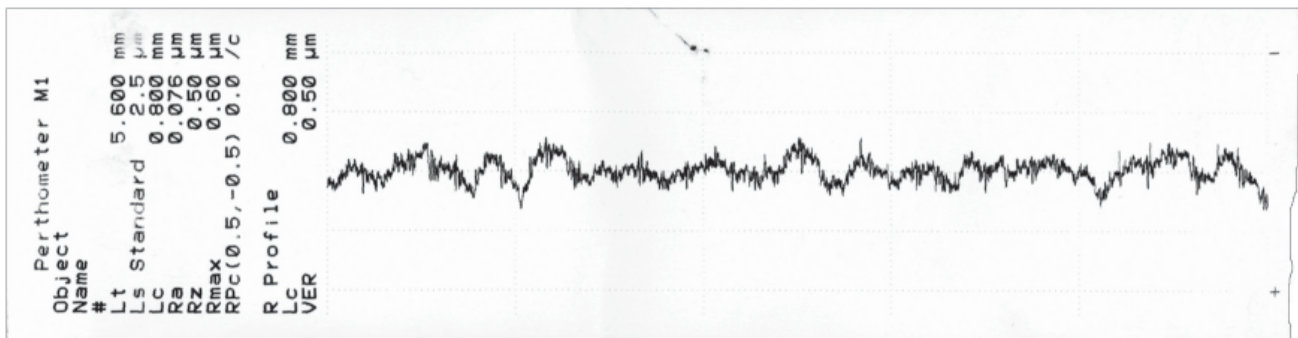


HP-NC9031

DM

Working example

Material	Vc m/min.	f mm/rev.	Roughness			Tool holder	Insert
			Ra	Rz	Rmax		
Al alloy, 6061	150	0.2	0.076µm	0.50µm	0.6µm	99146-BT40-26A	CCGH0602U NC9096



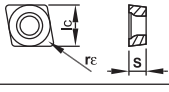
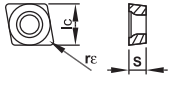
Comparison of super finished bore (Mirror finished)

- **Work piece material: Al-Alloy 6061**
- **Applications:** High precision bore for bearings and shafts of Al-alloy components.
- **Comparison:**

	PCD Insert CCGT060204	Nine 9 CCGT0602U-9096	x-Brand Roller burnishing tool
Cutting data	Vc=150~300 m/min. f=0.05~0.07 mm/rev.	Vc=100~300 m/min. f=0.10~0.30 mm/rev.	Vc=40~60 m/min. f=0.10~0.50 mm/rev.
Machining allowance	Ø 0.20~Ø0.30mm	Ø 0.05~Ø0.20mm	Ø 0.02~Ø0.04mm
Best surface roughness	Ra=0.50~0.80 µm	Ra=0.10~0.20 µm	Ra=0.10~0.30 µm
Comparison	- Long tool life - Low feed rate - Expensive - High rigid machine required	- Better tool life - High feed rate / High speed - Cost efficiency - Good for any kind of machine	- Better tool life - Low speed - Expensive - Each dimension needs one tool

- CCGH0602U can replaced any ISO insert of the high precision boring heads and boring bar for mirror finished surface.
- 99146-series are strongly recommended for the same application as well.

Inserts

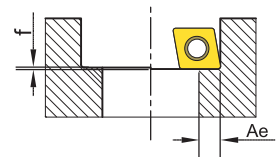
Inserts								Dimensions		
	NC30	DM	NC2032	NC2033	NC9031	NC9036		lc	S	r _e
CCGT030102	•							3.5	1.4	0.2
CCGT040102	•							4.3	1.8	0.2
CCGW040102		•						4.3	1.8	0.2
CCGH0602U						•		6.35	2.38	-
CCFT060204				•		•		6.35	2.38	0.4
CCFW060204			•					6.35	2.38	0.4
CCFT060204HP					•			6.35	2.38	0.4
CCMW060204		•						6.35	2.38	0.4

Cutting Data

- Note: Super fine finishing insert **U-NC9036** and **DM** with special specified cutting width **0.15mm**.(Radius)
(see table below)

Formulas of spindle speed and feed rate :

$$\text{Spindle speed } S = \frac{V_c \times 1000}{\pi \times D} \text{ r.p.m.} \quad \text{Feed rate: } f \times S \text{ mm/min.}$$



Material	Cutting conditions or surface finishes	Grade of insert		Ae Max mm	Cutting Speed Vc(m/min.)	feed rate f (mm/rev.)
Carbon Steel	Regular cutting	NC2033		0.5	120-150-200	0.05-0.07-0.10
	Interrupted cutting	NC30		0.3	100-120-140	0.04-0.05-0.08
Alloy Steel	Regular cutting	NC2033		0.5	100-120-140	0.05-0.07-0.10
	Interrupted cutting	NC30		0.3	80-100-120	0.04-0.05-0.08
Hardened Steel <HRC 50	Regular cutting	NC30		0.3	80-100-120	0.04-0.06-0.08
Stainless Steel	Regular cutting	NC2033		0.5	80-100-120	0.05-0.07-0.10
	Interrupted cutting	NC30		0.3	70-80-100	0.05-0.07-0.10
Casting Iron	Regular cutting	NC2032	NC30	0.5	80-100-120	0.05-0.07-0.10
Brass, Bronze and Al-alloy si >6%	Regular cutting	NC9036	NC9031	0.5	150-200-300	0.05-0.07-0.10
	Super mirror finish	U-NC9036		0.15	150-200-300	0.15-0.2-0.25
Al, Al-alloy, non-ferrous metal	Regular cutting	NC9036	NC9031	0.5	150-200-300	0.05-0.07-0.10
	Super finished	DM		0.3	500-1000-2000	0.05-0.07-0.10
	Super mirror finish	U-NC9036		0.15	150-200-300	0.15-0.20-0.25



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