



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.

2009-01
Cat. No. 04

Featuring Improved:

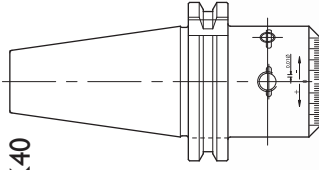
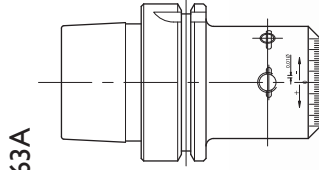
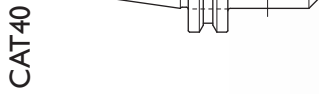
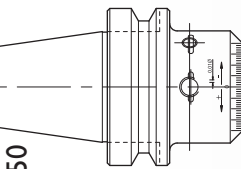
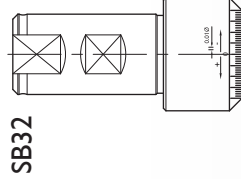
- Cycle time
- Position Accuracy

• Roughness

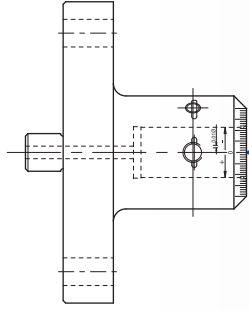
- True Roundness

All Interchangeable !!

NEW

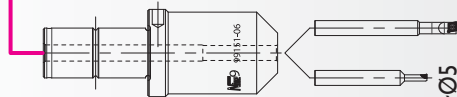


Any type of flange and side-lock shank on request

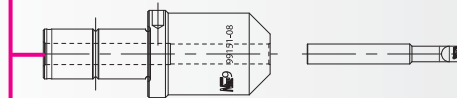


Standard

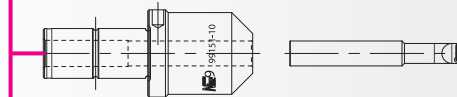
Extended Options



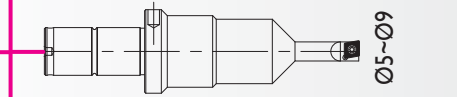
Ø5-Ø6.75



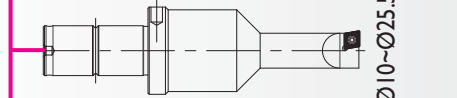
Ø7-Ø8.75



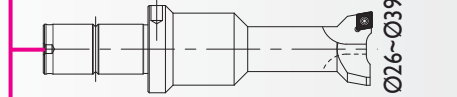
Ø9-Ø11



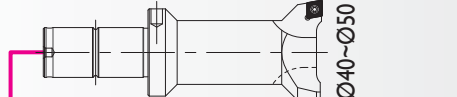
Ø5-Ø9



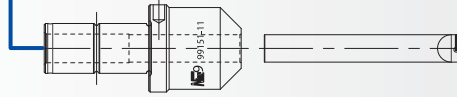
Ø10-Ø25.5



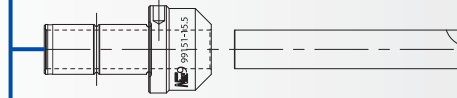
Ø26-Ø39



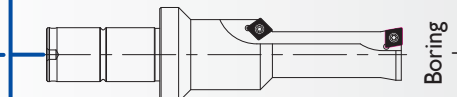
Ø40-Ø50



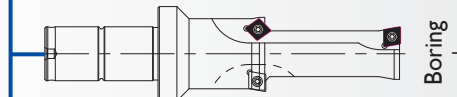
Ø11.25-Ø14.75
(4~6xD)



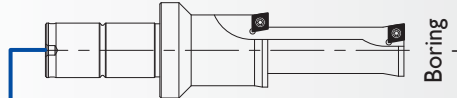
Ø15-Ø20
(4~6xD)



Boring +
Chamfering
Ø10-Ø50



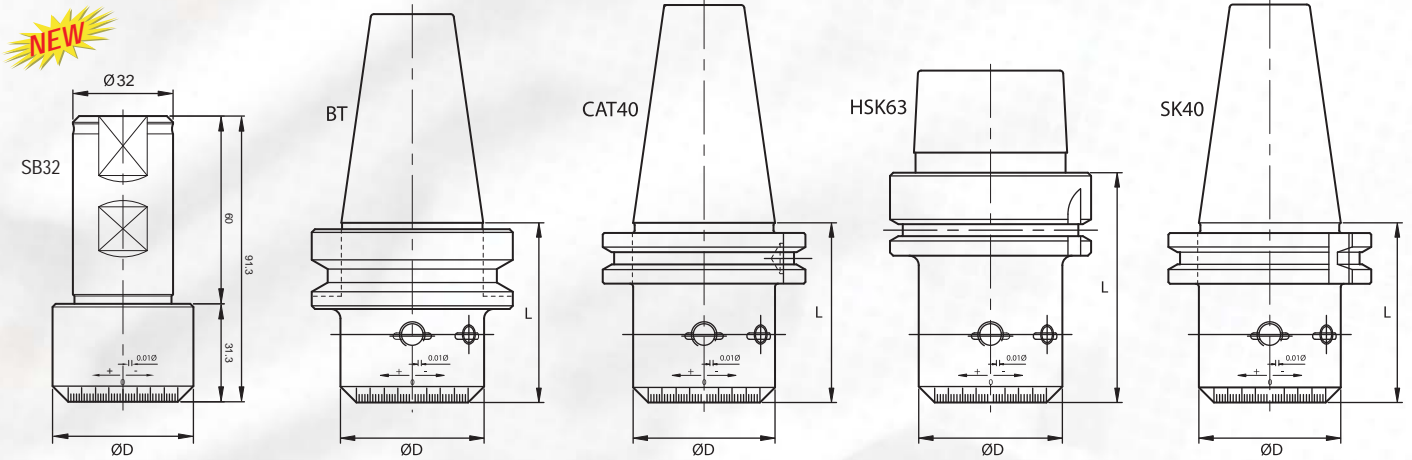
Boring +
Chamfering +
Facing
Ø10-Ø50



Boring +
Facing
Ø10-Ø50

Boring Head Shank

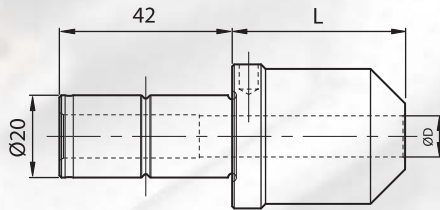
- Adjustable range: +0.12 /-0.13 mm.
- Each division is 0.01 mm.



Ordering Code	Part No.	ØD	L
99146-01-32HB	SB32-146-01	45	60
99146-BT30H	BT30-146-51	45	51.3
99146-BT40H	BT40-146-56	45	56.3
99146-BT50H	BT50-146-77	45	77.3
99146-CAT40H	CAT40-146-56	45	56.3
99146-HSK63AH	HSK63A-146-72	45	72
99146-SK40H	SK40-146-56	45	56.3

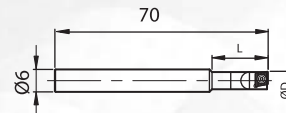
Ø5~Ø11mm, 4~6xD

• Adapter



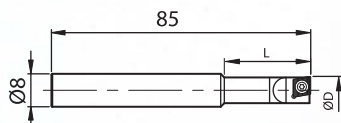
Ordering Code	Part No.	ØD	L
99151A-06	C20-ID06	6	52
99151A-08	C20-ID08	8	49
99151A-10	C20-ID10	10	21.5
99151A-11	C20-ID11	11	21.5
99151A-15.5	C20-ID15.5	15.5	21.5

• Solid Carbide Shank



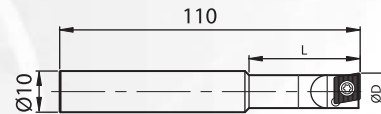
Ordering Code	Part No.	ØD	L	Insert
99151-0500W	C06-0500-20L	4.87~5.12	20.00	CCGT030102-NC30 Screw:NS-16030 Key:NK-T6
99151-0525W	C06-0525-20L	5.12~5.37	20.00	
99151-0550W	C06-0550-22L	5.37~5.62	22.00	
99151-0575W	C06-0575-22L	5.62~5.87	22.00	
99151-0600W	C06-0600-24L	5.87~6.12	24.00	
99151-0625W	C06-0625-24L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

• Solid Carbide Shank



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

• Solid Carbide Shank

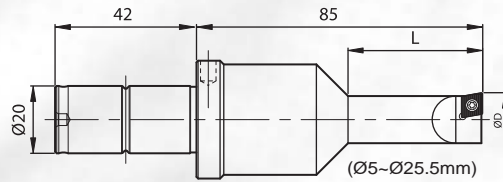


Ordering Code	Part No.	ØD	L	Insert
99151-0900W	C10-0900-36L	8.87~9.12	36.00	CCGT060204 CCFT060204 All grades are available. Screw:NS-25045 Key:NK-T7
99151-0925W	C10-0925-36L	9.12~9.37	36.00	
99151-0950W	C10-0950-38L	9.37~9.62	38.00	
99151-0975W	C10-0975-38L	9.62~9.87	38.00	
99151-1000W	C10-1000-40L	9.87~10.12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

Ø5~Ø50mm, 2~3xD

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

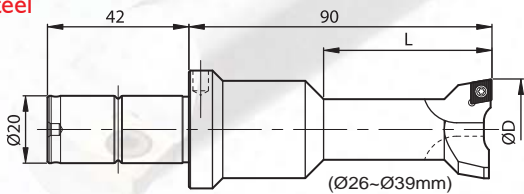
• Alloy Steel



Ordering Code	Part No.	ØD	L	Insert
99146-0500S	C20-0500-10L	4.87~5.12	10.00	CC030102-NC30
99146-0600S	C20-0600-12L	5.87~6.12	12.00	NS-16030, NK-T6
99146-0700S	C20-0700-14L	6.87~7.12	14.00	CC040102-NC30
99146-0800S	C20-0800-16L	7.87~8.12	16.00	NS-20045, NK-T6
99146-0900S	C20-0900-20L	8.87~9.12	18.00	
99146-1000S	C20-1000-25L	9.87~10.12	25.00	
99146-1025S	C20-1025-25L	10.12~10.37	25.00	
99146-1050S	C20-1050-26L	10.37~10.62	26.25	
99146-1075S	C20-1075-26L	10.62~10.87	26.25	
99146-1100S	C20-1100-27L	10.87~11.12	27.50	
99146-1125S	C20-1125-27L	11.12~11.37	27.50	
99146-1150S	C20-1150-28L	11.37~11.62	28.75	
99146-1175S	C20-1175-28L	11.62~11.87	28.75	
99146-1200S	C20-1200-30L	11.87~12.12	30.00	
99146-1225S	C20-1225-30L	12.12~12.37	30.00	
99146-1250S	C20-1250-31L	12.37~12.62	31.25	CCGT060204
99146-1275S	C20-1275-31L	12.62~12.87	31.25	CCFT060204
99146-1300S	C20-1300-32L	12.87~13.12	32.50	All grades are available.
99146-1325S	C20-1325-32L	13.12~13.37	32.50	Screw: NS-20045
99146-1350S	C20-1350-33L	13.37~13.62	33.75	Key: NK-T7
99146-1375S	C20-1375-33L	13.62~13.87	33.75	
99146-1400S	C20-1400-35L	13.87~14.12	35.00	
99146-1425S	C20-1425-35L	14.12~14.37	35.00	
99146-1450S	C20-1450-36L	14.37~14.62	36.25	
99146-1475S	C20-1475-36L	14.62~14.87	36.25	
99146-1500S	C20-1500-37L	14.87~15.12	37.50	
99146-1525S	C20-1525-37L	15.12~15.37	37.50	
99146-1550S	C20-1550-38L	15.37~15.62	38.75	
99146-1575S	C20-1575-38L	15.62~15.87	38.75	
99146-1600S	C20-1600-40L	15.87~16.12	40.00	
99146-1625S	C20-1625-40L	16.12~16.37	40.00	CCGT060204
99146-1650S	C20-1650-41L	16.37~16.62	41.25	CCFT060204
99146-1675S	C20-1675-41L	16.62~16.87	41.25	Screw: NS-20060
99146-1700S	C20-1700-42L	16.87~17.12	42.50	Key: NK-T7

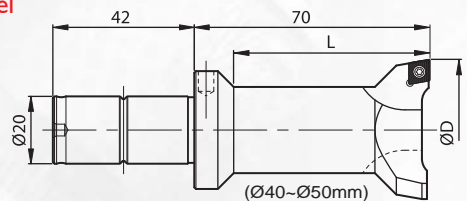
Ordering Code	Part No.	ØD	L	Insert
99146-1725S	C20-1725-42L	17.12~17.37	42.50	
99146-1750S	C20-1750-43L	17.37~17.62	43.75	
99146-1775S	C20-1775-43L	17.62~17.87	43.75	
99146-1800S	C20-1800-45L	17.87~18.12	45.00	
99146-1825S	C20-1825-45L	18.12~18.37	45.00	
99146-1850S	C20-1850-46L	18.37~18.62	46.25	
99146-1875S	C20-1875-46L	18.62~18.87	46.25	
99146-1900S	C20-1900-47L	18.87~19.12	47.50	
99146-1925S	C20-1925-47L	19.12~19.37	47.50	
99146-1950S	C20-1950-48L	19.37~19.62	48.75	
99146-1975S	C20-1975-48L	19.62~19.87	48.75	
99146-2000S	C20-2000-50L	19.87~20.12	50.00	
99146-2025S	C20-2025-50L	20.12~20.37	50.00	
99146-2050S	C20-2050-50L	20.37~20.62	50.00	
99146-2075S	C20-2075-50L	20.62~20.87	50.00	
99146-2100S	C20-2100-50L	20.87~21.12	50.00	CCGT060204
99146-2125S	C20-2125-50L	21.12~21.37	50.00	CCFT060204
99146-2150S	C20-2150-50L	21.37~21.62	50.00	All grades are available.
99146-2175S	C20-2175-50L	21.62~21.87	50.00	Screw: NS-20045
99146-2200S	C20-2200-50L	21.87~22.12	50.00	Key: NK-T7
99146-2225S	C20-2225-50L	22.12~22.37	50.00	
99146-2250S	C20-2250-50L	22.37~22.62	50.00	
99146-2275S	C20-2275-50L	22.62~22.87	50.00	
99146-2300S	C20-2300-50L	22.87~23.12	50.00	
99146-2325S	C20-2325-50L	23.12~23.37	50.00	
99146-2350S	C20-2350-50L	23.37~23.62	50.00	
99146-2375S	C20-2375-50L	23.62~23.87	50.00	
99146-2400S	C20-2400-50L	23.87~24.12	50.00	
99146-2425S	C20-2425-50L	24.12~24.37	50.00	
99146-2450S	C20-2450-50L	24.37~24.62	50.00	
99146-2475S	C20-2475-50L	24.62~24.87	50.00	
99146-2500S	C20-2500-50L	24.87~25.12	50.00	
99146-2525S	C20-2525-50L	25.12~25.37	50.00	
99146-2550S	C20-2550-50L	25.37~25.62	50.00	

• Alloy Steel



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

• Alloy Steel



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

Main Features

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 with 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.
- 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)



Kit Package

Ordering Code	Contents	
99146-32HB-05SET	SB32-146-01 Weldon Shank	Boring head shank: 1pc Boring bar: any 5 pcs Key: 3~5 pcs Plastic box: 1pc
99146-BT30-05SET	BT30H Boring head shank	
99146-BT40-05SET	BT40H Boring head shank	
99146-BT50-05SET	BT50H Boring head shank	
99146-CAT40-05SET	CAT40H Boring head shank	
99146-SK40-05SET	SK40H Boring head shank	
99146-HSK63A-05SET	HSK63A Boring head shank	

Each package includes:

- 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 4)
- **Keys** for adjustment and insert screw.
- Note: BT50 boring head shank is packed in a separate box.



(Insert is not included, please order separately)

Precisely ground Inserts

-CC030102, CC040102, CC060204

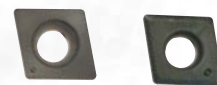
- **NC30**: K20F carbide insert, TiAlN coated, universal grade for casting iron, carbon steel, alloy steel, stainless steel.



NC30

-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.
- **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**: Is a super finishing insert with a large corner radius for high feed rates in Al, Al-alloy and non-ferrous metal. (patent pending)
- **DM**: PCD brazed tipped insert with a polished and honed cutting edge for fine surface finishes and longer tool life.



NC2032 NC9036



NC2033 U-NC9036



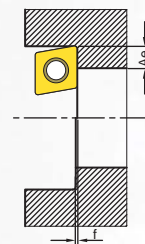
NC9031 DM

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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