Nine9®

Quick Change e-boring Tools

- *All boring bars are interchangeable on all sizes of boring head adapters.*
- *The boring bar can be ordered on request for different diameter or with internal coolant hole.*

2009-08
Cat. No.: 02

New

Main features :

To replace reamer !

- Easy adjustment mechanism:

- The boring head adapter is 20mm shank; the receiving hole is eccentric from the center of the shank. The diameter is adjusted by rotating the boring bar.
- Boring bar has preloaded by spring and M6 screw to fix boring bar and adapter together properly. The recommended torque is 0.9-1.0 Nm.
- Boring bar is locked by M8 setscrew; clamping torque is 8-9 Nm.
- Operator without any training can exchange the preload spring and clamping screw easily.

- Interchangeable:

- All boring bars are interchangeable on both sizes of boring head adapters.
- The boring bar can be ordered on request for different diameter or with internal coolant hole.

-Economical:

- The e-boring bar is more economical than solid carbide reamer. Nine 9 e-boring bars are adjustable to compensate the wearing of insert, but the solid carbide reamer has to be replaced by new reamer.

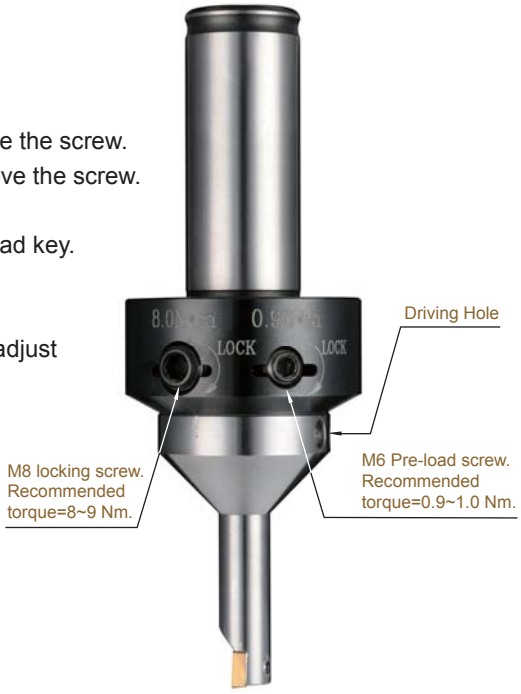
Applications:

- For fine boring operation to get IT7 tolerance, if Nine9 fine ground inserts are applied, IT6 is also possible.
- To replace solid carbide reamer for machining precise hole for dowel pin and other small diameter application; this should be done by reamer in traditional.

Operating Instruction

Procedures for assembly

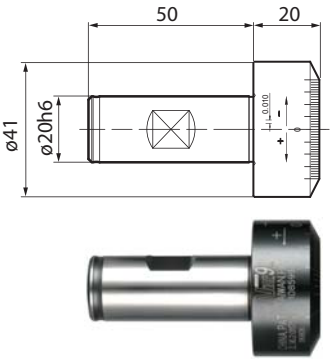
1. Use 4 mm allen-key to loosen locking screw M8, take care not to remove the screw.
2. Use 3 mm allen-key to loosen pre-load screw M6, take care not to remove the screw.
3. Remove the original boring bar and insert the new boring bar.
4. Tighten the M6 pre-load screw using the torque screwdriver with hex head key. (Recomended 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 (Recomended torque = 8~9Nm)



Procedures for adjustment

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

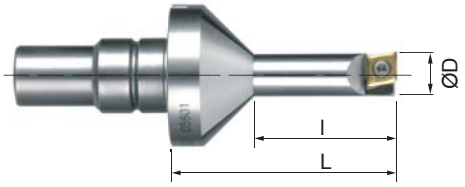
Boring head adapter



- 2 adjustable range adapters are designed for all 00-99111-xxA boring bars.
- Change the boring bar in just one minute.
- 20mm shank to fit any kind of tool holder properly.
- 99111-03-20HB, adjustment range: ±0.5mm, Each division 0.03mm.
- 99111-01-20HB, adjustment range: ±0.1mm, Each division 0.01mm.

Ordering Code	Type	Shank (h6)	Adjustable range	Boring dia.range
00-99111-03-20HB	SB20-111-03	20mm	±0.5mm	ø7 ~ ø25
00-99111-01-20HB	SB20-111-01	20mm	±0.1mm	ø5 ~ ø25

Interchangeable Boring Bar:



- Made by high alloy tool steel, the rigidity is enough for 3xD boring depth.
- All of 00-99111-xxA boring bars are interchangeable to fit same boring head adapter.
- H type with internal coolant can be order on request. ordering code:00-99111-07AH

Ordering Code	Type	ØD		l	L	Insert	Key / Screw
		99111-03-20HB	99111-01-20HB				
00-99111-05A	C16-0515	-	4.9 - 5.1	15	34	CC030102	NK-T6 NS-16030
00-99111-06A	C16-0618	-	5.9 - 6.1	18	37		
00-99111-07A	C16-0721	6.5 -7.5	6.9 - 7.1	21	40	CC040102	NK-T6 NS-20045
00-99111-08A	C16-0824	7.5 - 8.5	7.9 - 8.1	24	43		
00-99111-09A	C16-0927	8.5 - 9.5	8.9 - 9.1	27	45	CC060204	NK-T7 NS-25045
00-99111-10A	C16-1030	9.5 - 10.5	9.9 - 10.1	30	48		
00-99111-11A	C16-1133	10.5 - 11.5	10.9 - 11.1	33	50		
00-99111-12A	C16-1236	11.5 - 12.5	11.9 - 12.1	36	53		
00-99111-13A	C16-1339	12.5 - 13.5	12.9 - 13.1	39	55		
00-99111-14A	C16-1442	13.5 - 14.5	13.9 - 14.1	42	58		
00-99111-15A	C16-1545	14.5 - 15.5	14.9 - 15.1	45	60		
00-99111-16A	C16-1648	15.5 - 16.5	15.9 - 16.1	48	63		
00-99111-17A	C16-1751	16.5 - 17.5	16.9 - 17.1	51	65	CC060204	NK-T7 NS-25060
00-99111-18A	C16-1850	17.5 - 18.5	17.9 - 18.1	50	62		
00-99111-19A	C16-1950	18.5 - 19.5	18.9 - 19.1	50	62		
00-99111-20A	C16-2050	19.5 - 20.5	19.9 - 20.1	50	62		
00-99111-21A	C16-2150	20.5 - 21.5	20.9 - 21.1	50	62		
00-99111-22A	C16-2250	21.5 - 22.5	21.9 - 22.1	50	62		
00-99111-23A	C16-2350	22.5 - 23.5	22.9 - 23.1	50	62		
00-99111-24A	C16-2450	23.5 - 24.5	23.9 - 24.1	50	62		
00-99111-25A	C16-2550	24.5 - 25.5	24.9 - 25.1	50	62		

Quick Change e-boring Bars

Precisely ground Inserts

-CC030102, CC040102

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

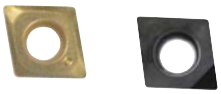
NC30

-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: U Super finishing insert for Al, Al-alloy and non ferrous metal, with large corner radius for super finishes and high feed rate.(Patent pending)
- DM: PCD brazed tip insert, fine polished and honed cutting edge for very fine surface finishes.

NC2032 NC9036

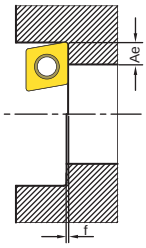
NC2033 U-NC9036



HP-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 :

Metric $S = \frac{Vc \times 1000}{\pi \times D}$ r.p.m.

$F = f \times S$ mm/min.

inch $RPM = \frac{(Vc(m/min.) \times 3.28)\ 3.82}{D}$

$IPR = \frac{f(mm/rev.)}{25.4}$

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	HP-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	HP-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

Jimmore International Corp.

Distributor:

2009.08. Cat. No.: NEB3 02 : 1000 PC