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

## 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.

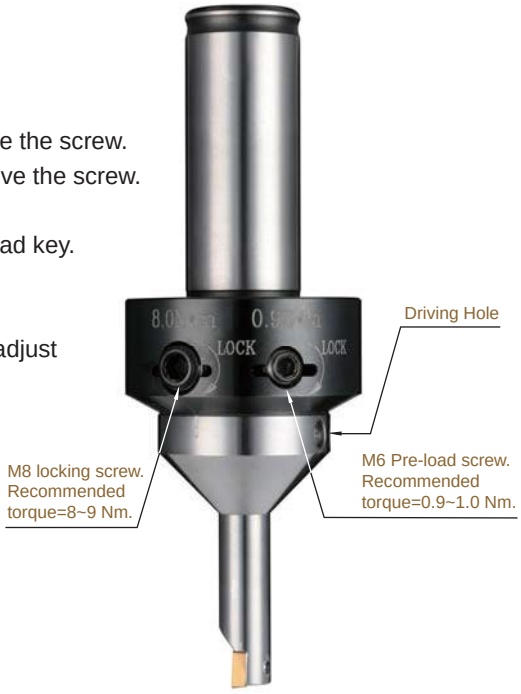
### Applications:

- 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

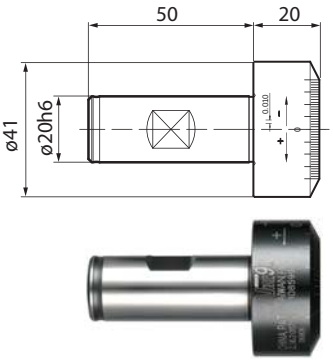
1. Use 4 mm allen-key to loosen locking screw M8, take care not to remove the screw.
2. Use 3 mm allen-key to loosen pre-load screw M6, take care not to remove the screw.
3. Remove the original boring bar and insert the new boring bar.
4. Tighten the M6 pre-load screw using the torque screwdriver with 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

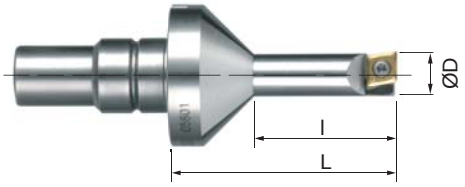





- 2 adjustable range adapters are designed for all 00-99111-xxA boring bars.
- Change the boring bar in just one minute.
- 20mm shank to fit any kind of tool holder properly.
- 99111-03-20HB, adjustment range: ±0.5mm, Each division 0.03mm.
- 99111-01-20HB, adjustment range: ±0.1mm, Each division 0.01mm.

| 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<br>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<br>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<br>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<br>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.

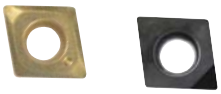
NC30

### -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

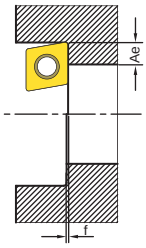
NC2033 U-NC9036



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