NineBore >>>

Cycle Time
Roughness
Position Accuracy
True Roundness

Nine9 offers a range of eccentrically mechanism boring tools which designed to provide stability, accuracy, and productivity in boring operations.
These tools are commonly used in industries such as automotive, aerospace, mold and die, and general machining.
99146 can complete rough and finish boring in one operation.

P M K N H

G6.3
10000rpm

- Easy Adjustment!
- No Backlash!

Features >>>

Easy Handling

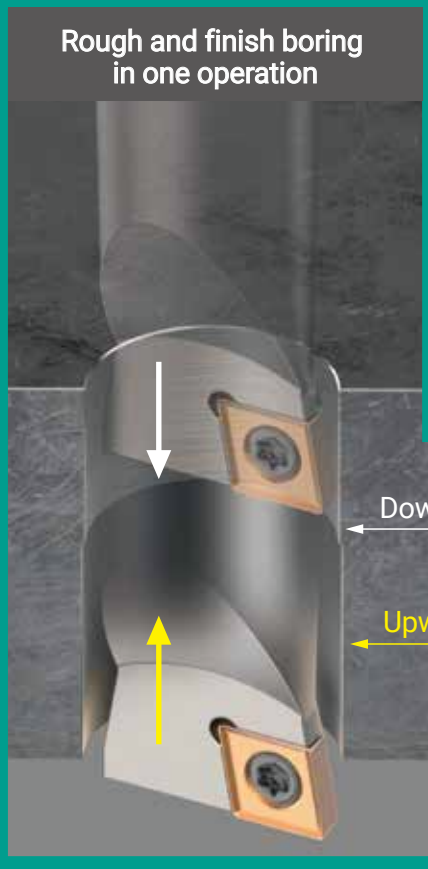
- Change the boring bar in just one minute.
- Dimensions are easy to read. They are indicated on the tools and are easily adjusted on a tool presetter or in machining center.
- Adjusting range :±0.1mm

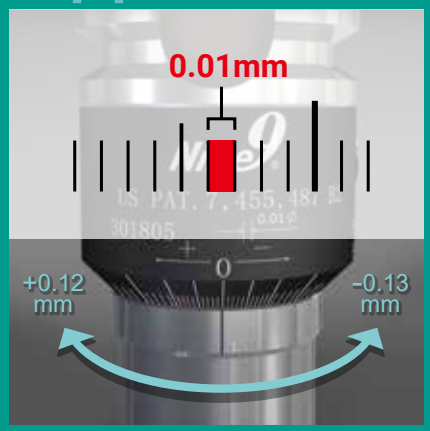
High Speed.

- Good for fine boring operation on milling machines, machining centers and special purpose machines.
- Replace solid carbide reamers.

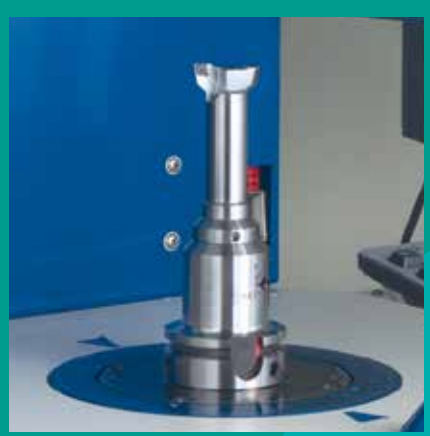
99146 Series Is Ideal For Casting Aluminum With Uncertain Pre-Hole Dimensions And Deviations In Hole Spacing.

Applications





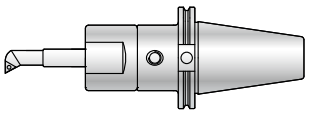
> “Ø5~Ø50mm boring bars are interchangeable, balanced grade is G6.3 10000 r.p.m., all sizes are guaranteed.”



NineBore Features

Precisely pre-balanced the basic holder and the boring bar >>

• Balanced grade is maintained while adjusting boring dimension or change to different diameter boring bars.

NineBore design	Other Boring Tool
	
• Pre-balanced	• Without pre-balanced

Application >>

• Ideal as small hole boring tool with excellent accuracy.
• For fine boring operation on milling machines, machining centres and special purpose machines.

High Speed >>

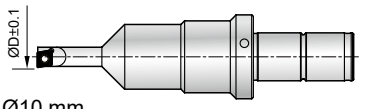
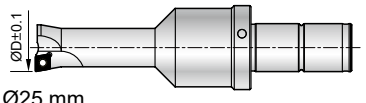
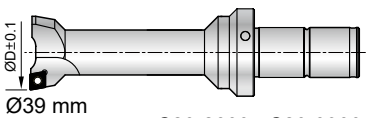
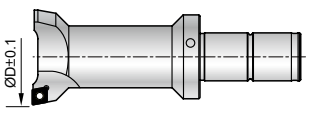
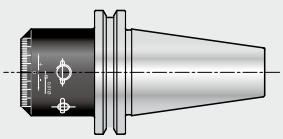
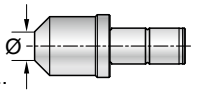
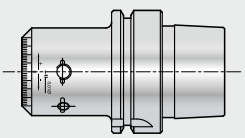
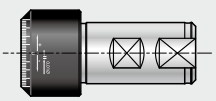
• Boring bar design ensures accurate high speed boring.
Balanced grade is G6.3 10000 r.p.m., all sizes are guaranteed.
• Combination bore / chamfer / facing / multi-task tools can be ordered on request.

Economic >>

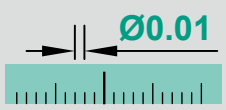
• Low cost micro adjustable boring heads.
• It can replace end mill and brazed tool bits.
• This simple boring tool has minimal components. In minutes, the boring bar can be changed and the boring dimension set on the tool presetter.

Work Task HoleØ : 10mm (H7 Tolerance) Hole Distance : 20mm		
Tool	NineBore 99146	Other Boring Tool
Workpiece material	N AL6061T6	
CNC Code	G85	G76
Spindle speed r.p.m.	**10000 r.p.m.**	2500 r.p.m.
Feed rate f = mm/rev.	0.07 mm/rev.	0.07 mm/rev.
Feed rate F= mm/min.	**700 mm/min.**	175mm/min.
	RESULT	
Drilling time sec.	**4s 75**	10s 44
Hole 1 Ø mm	Ø10.006 mm	Ø10.003 mm
Hole 2 Ø mm	Ø10.005 mm	Ø9.990 mm
Hole Distance mm	Ø20.00 mm	Ø19.98 mm
Comparison		

NineBore System

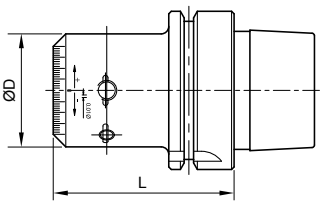
Series	Adjustment range	ØD range	Insert	Boring Bars	Head Shank
G6.3 10000 r.p.m **99146** Each Division 0.01 mm/div.	+0.12mm ≀ -0.13mm	Ø 4.87 mm ≀ 50.12 mm	CCGT030102 CCGT040102 CCGH060204	 Ø5 ~ Ø10 mm (0.197" ~ 0.394") C20-0500...C20-1000  Ø11 ~ Ø25 mm (0.433" ~ 0.984") C20-1025...C20-2550  Ø26 ~ Ø39 mm (1.02" ~ 1.54") C20-2600...C20-3900  Ø40 ~ Ø50 mm (1.57" ~ 1.97") C20-4000...C20-5000	 BT30-146-51 BT40-146-56 BT50-146-77 CAT40-146-56
4~6XD **99151** Each Division 0.01 mm/div.	+0.12mm ≀ -0.13mm	Ø 4.87 mm ≀ 20.12 mm	CCGT030102 CCGT040102 CCGH060204	 Ø4.87 ~ Ø6.87 mm (0.192" ~ 0.270") Ø6 C06...  Ø6.87 ~ Ø8.87 mm (0.270" ~ 0.349") Ø8 C08...  (0.349" ~ 0.438") Ø8.87 ~ Ø11.12 mm (0.349" ~ 0.438") Ø10 C10... Adapter  C20-ID06...15.5  Ø11.87 ~ Ø14.12 mm (0.467" ~ 0.556") Ø11 C11...  Ø14.87 ~ Ø20.12 mm (0.585" ~ 0.792") Ø15.5 C15.5...	 HSK63A-146-72  SB32-146-31

99146 Quick Change High Speed EMB Boring Bar

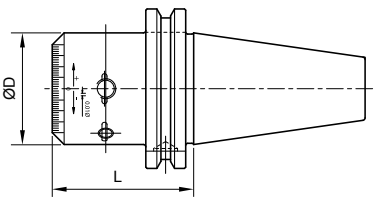


Boring Head Shank >>

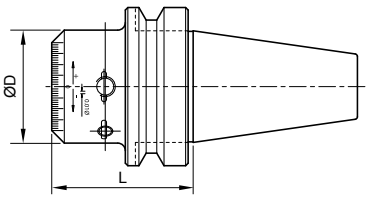
- HSK63



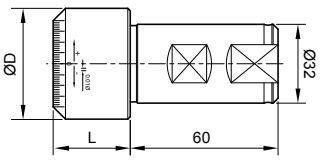
- CAT40



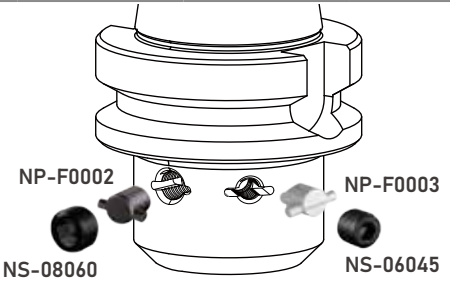
- BT



- SB32



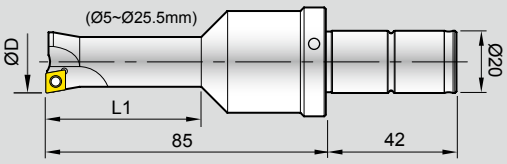
Part No.	ØD	L	M8 Screw		M6 Screw	
			Spring Fingers	Locking Screw	Spring Fingers	Pre-load Screw
HSK63A-146-72	45 (1.772")	72.0 (2.835")	NP-F0002	NS-08060 8.0 Nm	NP-F0003	NS-06045 0.9 Nm
CAT40-146-56	45 (1.772")	56.3 (2.217")				
BT30-146-51	45 (1.772")	51.3 (2.020")				
BT40-146-56	45 (1.772")	56.3 (2.217")				
BT50-146-77	45 (1.772")	77.3 (3.043")				
SB32-146-31	45 (1.772")	31.3 (1.232")				



99146 Quick Change High Speed EMB Boring Bar

Boring Bar Ø5~Ø25 >>

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



* H type with internal coolant can be ordered on request from Dia. 10mm (0.394").
  Ordering example: C20-0800-16LH.
* Other sizes are available on request.

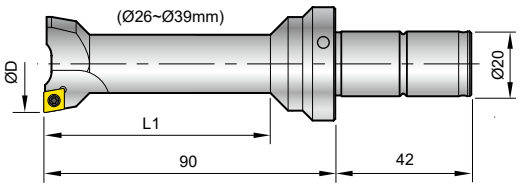
Part No.	ØD	L1	Insert Screw / Key
C20-0500-10L	4.87~5.12 (0.192"~0.202")	10.00 (0.394")	CC...030102 NS-16030 0.4Nm / NK-T6
C20-0600-12L	5.87~6.12 (0.231"~0.241")	12.00 (0.472")	
C20-0700-14L	6.87~7.12 (0.270"~0.280")	14.00 (0.551")	CC...040102 NS-20036, 0.6Nm / NK-T6
C20-0800-16L	7.87~8.12 (0.310"~0.320")	16.00 (0.630")	
C20-0900-18L	8.87~9.12 (0.349"~0.359")	18.00 (0.709")	
C20-1000-25L	9.87~10.12 (0.389"~0.398")	25.00 (0.984")	
C20-1025-25L	10.12~10.37 (0.398"~0.408")		
C20-1050-26L	10.37~10.62 (0.408"~0.418")	26.25 (1.03")	
C20-1075-26L	10.62~10.87 (0.418"~0.428")		
C20-1100-27L	10.87~11.12 (0.428"~0.438")	27.50 (1.08")	
C20-1125-27L	11.12~11.37 (0.438"~0.448")		
C20-1150-28L	11.37~11.62 (0.448"~0.457")	28.75 (1.13")	
C20-1175-28L	11.62~11.87 (0.457"~0.467")		
C20-1200-30L	11.87~12.12 (0.467"~0.477")	30.00 (1.18")	
C20-1225-30L	12.12~12.37 (0.477"~0.487")		CC...0602...
C20-1250-31L	12.37~12.62 (0.487"~0.497")	31.25 (1.23")	
C20-1275-31L	12.62~12.87 (0.497"~0.507")		NS-25045 0.9Nm / NK-T7
C20-1300-32L	12.87~13.12 (0.507"~0.517")	32.50 (1.28")	
C20-1325-32L	13.12~13.37 (0.517"~0.526")		
C20-1350-33L	13.37~13.62 (0.526"~0.536")	33.75 (1.33")	
C20-1375-33L	13.62~13.87 (0.536"~0.546")		
C20-1400-35L	13.87~14.12 (0.546"~0.556")	35.00 (1.38")	
C20-1425-35L	14.12~14.37 (0.556"~0.566")		
C20-1450-36L	14.37~14.62 (0.566"~0.576")	36.25 (1.43")	
C20-1475-36L	14.62~14.87 (0.576"~0.585")		
C20-1500-37L	14.87~15.12 (0.585"~0.595")	37.50 (1.48")	
C20-1525-37L	15.12~15.37 (0.595"~0.605")		
C20-1550-38L	15.37~15.62 (0.605"~0.615")	38.75 (1.53")	
C20-1575-38L	15.62~15.87 (0.615"~0.625")		
C20-1600-40L	15.87~16.12 (0.625"~0.635")	40.00 (1.57")	CC...0602... NS-25060 0.9Nm / NK-T7
C20-1625-40L	16.12~16.37 (0.635"~0.644")		
C20-1650-41L	16.37~16.62 (0.644"~0.654")	41.25 (1.62")	
C20-1675-41L	16.62~16.87 (0.654"~0.664")		
C20-1700-42L	16.87~17.12 (0.654"~0.674")	42.50 (1.67")	

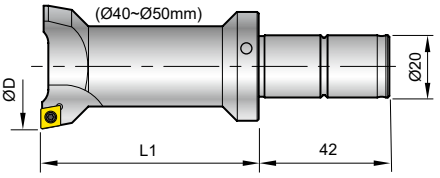
Part No.	ØD	L1	Insert Screw / Key
C20-1725-42L	17.12~17.37 (0.674"~0.684")	42.50 (1.67")	
C20-1750-43L	17.37~17.62 (0.684"~0.694")	43.75 (1.72")	
C20-1775-43L	17.62~17.87 (0.684"~0.704")		
C20-1800-45L	17.87~18.12 (0.704"~0.713")	45.00 (1.77")	
C20-1825-45L	18.12~18.37 (0.713"~0.723")		
C20-1850-46L	18.37~18.62 (0.723"~0.733")	46.25 (1.82")	
C20-1875-46L	18.62~18.87 (0.733"~0.743")		
C20-1900-47L	18.87~19.12 (0.743"~0.753")	47.50 (1.87")	
C20-1925-47L	19.12~19.37 (0.753"~0.763")		
C20-1950-48L	19.37~19.62 (0.763"~0.772")	48.75 (1.92")	
C20-1975-48L	19.62~19.87 (0.772"~0.782")		
C20-2000-50L	19.87~20.12 (0.782"~0.792")	50.00 (1.97")	CC...0602... NS-25060 0.9Nm / NK-T7
C20-2025-50L	20.12~20.37 (0.792"~0.802")		
C20-2050-50L	20.37~20.62 (0.802"~0.812")		
C20-2075-50L	20.62~20.87 (0.812"~0.822")		
C20-2100-50L	20.87~21.12 (0.822"~0.831")		
C20-2125-50L	21.12~21.37 (0.831"~0.841")		
C20-2150-50L	21.37~21.62 (0.841"~0.851")		
C20-2175-50L	21.62~21.87 (0.851"~0.861")		
C20-2200-50L	21.87~22.12 (0.861"~0.871")		
C20-2225-50L	22.12~22.37 (0.871"~0.881")		
C20-2250-50L	22.37~22.62 (0.881"~0.891")		
C20-2275-50L	22.62~22.87 (0.891"~0.900")		
C20-2300-50L	22.87~23.12 (0.900"~0.910")		
C20-2325-50L	23.12~23.37 (0.910"~0.920")		
C20-2350-50L	23.37~23.62 (0.920"~0.930")		
C20-2375-50L	23.62~23.87 (0.930"~0.940")		
C20-2400-50L	23.87~24.12 (0.940"~0.950")		
C20-2425-50L	24.12~24.37 (0.950"~0.959")		
C20-2450-50L	24.37~24.62 (0.959"~0.969")		
C20-2475-50L	24.62~24.87 (0.969"~0.979")		
C20-2500-50L	24.87~25.12 (0.979"~0.989")		
C20-2525-50L	25.12~25.37 (0.989"~0.999")		
C20-2550-50L	25.37~25.62 (0.999"~1.01")		

99146 Quick Change High Speed EMB Boring Bar

Boring Bar Ø26~Ø50

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





Ø26~Ø39mm (1.024"~1.535")

* H type with internal coolant can be ordered on request.
Ordering example: C20-3600-70LH.

Part No.	ØD	L1	Insert Screw / Key
C20-2600-50L	25.87~26.12 (1.019”~1.028”)	50 (1.969”)	CC...0602... NS-25060 0.9Nm NK-T7
C20-2700-50L	26.87~27.12 (1.058”~1.068”)		
C20-2800-50L	27.87~28.12 (1.097”~1.107”)		
C20-2900-50L	28.87~29.12 (1.137”~1.146”)		
C20-3000-50L	29.87~30.12 (1.176”~1.186”)		
C20-3100-70L	30.87~31.12 (1.215”~1.225”)	70 (2.756”)	
C20-3200-70L	31.87~32.12 (1.255”~1.265”)		
C20-3300-70L	32.87~33.12 (1.294”~1.304”)		
C20-3400-70L	33.87~34.12 (1.333”~1.343”)		
C20-3500-70L	34.87~35.12 (1.373”~1.383”)		
C20-3600-70L	35.87~36.12 (1.412”~1.422”)		
C20-3700-70L	36.87~37.12 (1.452”~1.461”)		
C20-3800-70L	37.87~38.12 (1.491”~1.501”)		
C20-3900-70L	38.87~39.12 (1.530”~1.540”)		

Ø40~Ø50mm (1.574"~1.969")

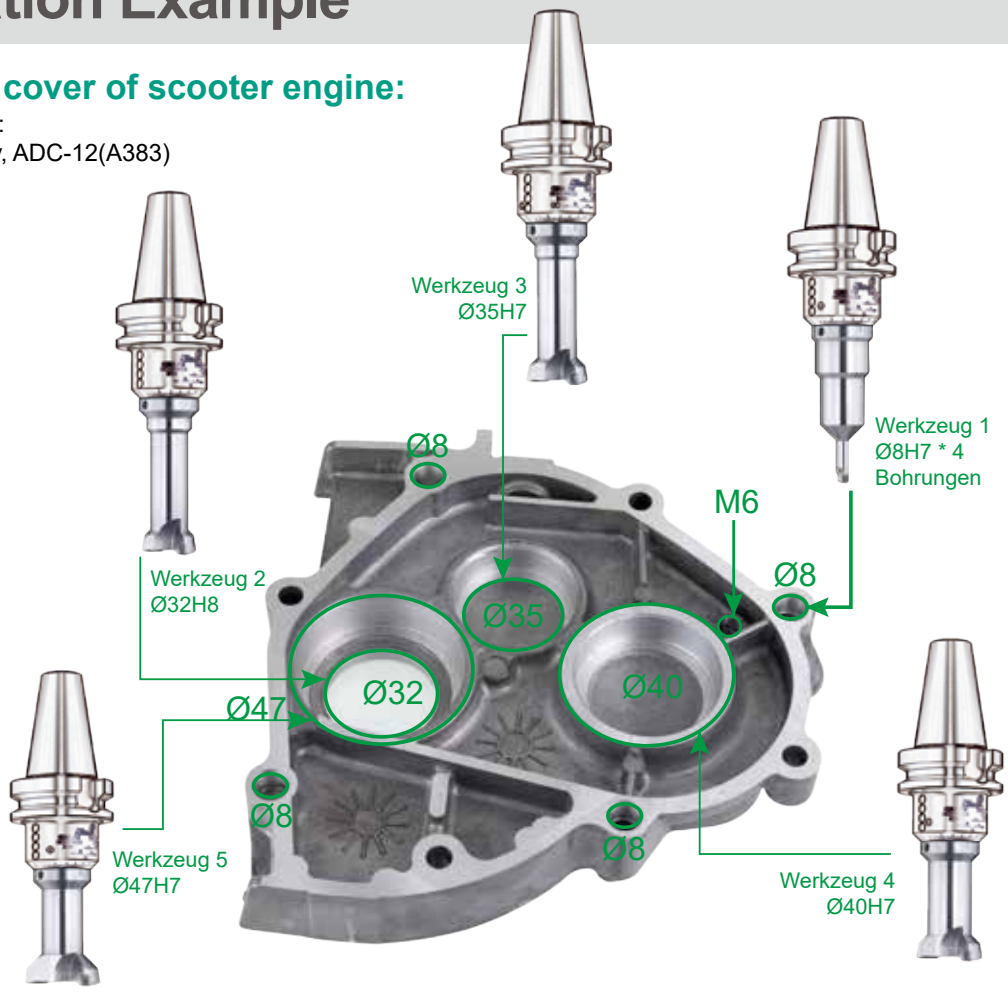
* H type with internal coolant can be ordered on request.
Ordering example: C20-4700-70LH.

Part No.	ØD	L1	Insert Screw / Key
C20-4000-70L	39.87-40.12 (1.570”~1.580”)	70 (2.756”)	CC...0602... NS-25060 0.9Nm NK-T7
C20-4100-70L	40.87-41.12 (1.609”~1.619”)		
C20-4200-70L	41.87-42.12 (1.648”~1.658”)		
C20-4300-70L	42.87-43.12 (1.688”~1.700”)		
C20-4400-70L	43.87-44.12 (1.727”~1.737”)		
C20-4500-70L	44.87-45.12 (1.767”~1.776”)		
C20-4600-70L	45.87-46.12 (1.806”~1.816”)		
C20-4700-70L	46.87-47.12 (1.845”~1.855”)		
C20-4800-70L	47.87-48.12 (1.885”~1.894”)		
C20-4900-70L	48.87-49.12 (1.924”~1.934”)		
C20-5000-70L	49.87-50.12 (1.963”~1.973”)		

Application Example

Machining a cover of scooter engine:

Workpiece material:
Die casting, Al-alloy, ADC-12(A383)
Spindle Size: BT40

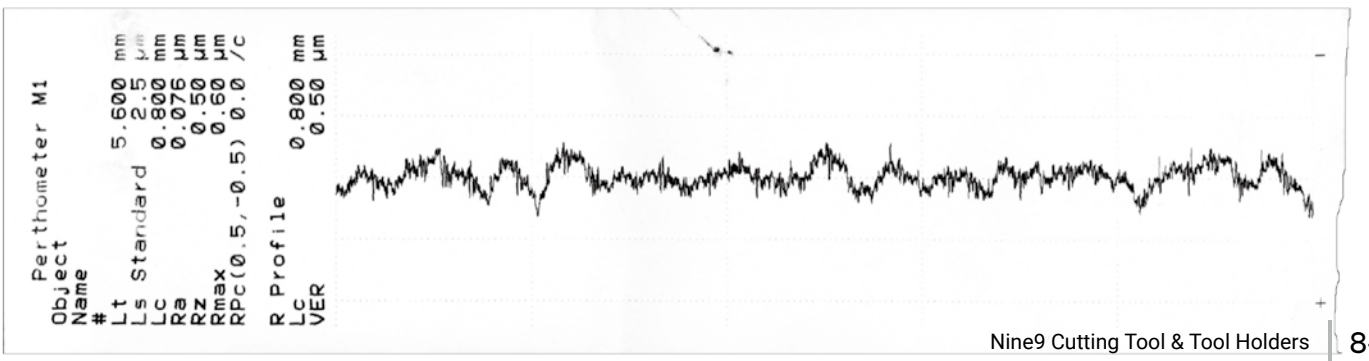


TOOL LIST by Nine9 Boring Bar 99146-series :

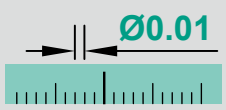
No.	Boring Bar	Grade of insert	Dia. mm	Depth	r.p.m.	F = mm/min.	Machining time
1	C20-146-0824	CCGT040102 NC30	Ø8H7	8 mm	8000	400	1.2 sec.
2	C20-3200-70L	CCFT060204HP NC9031	Ø32H8	8 mm	2985	209	2.3 sec.
3	C20-3500-70L		Ø35H7	12 mm	2730	191	3.8 sec.
4	C20-4000-70L		Ø40H7	15 mm	2400	168	5.4 sec.
5	C20-4700-70L		Ø47H7	15 mm	2030	142	6.4 sec.

Example >>

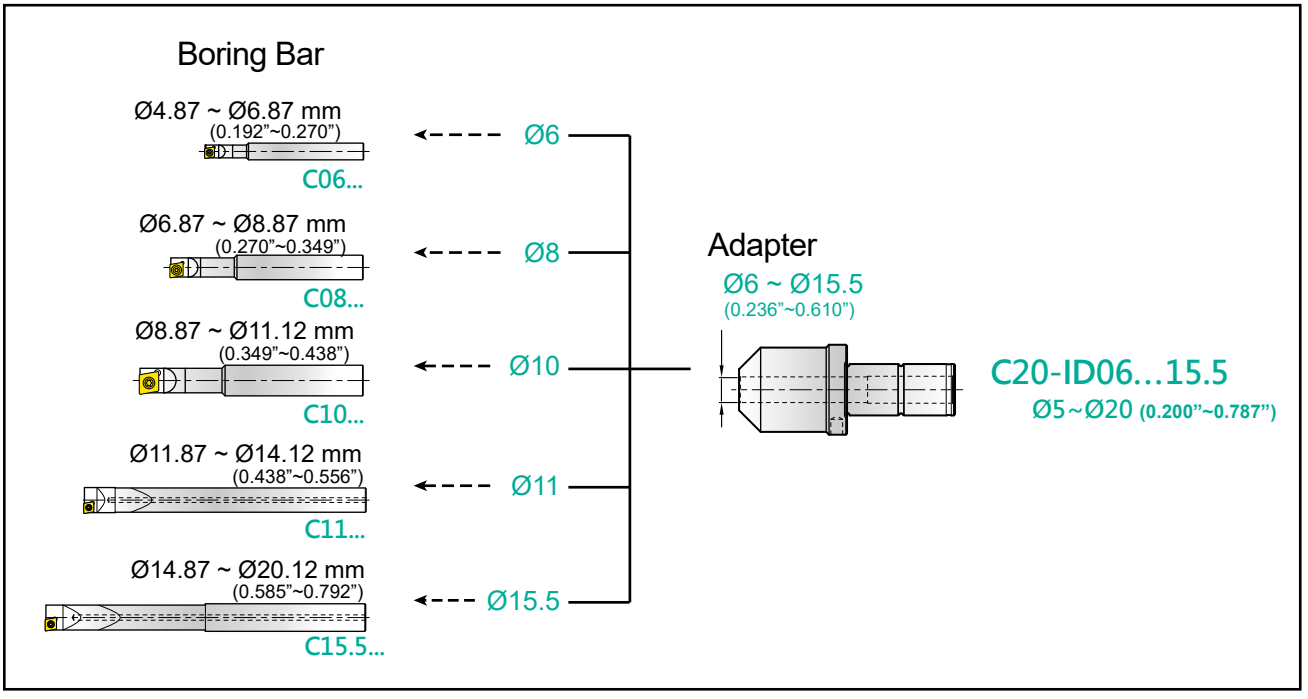
Material	Vc m/min.	f mm/rev.	Roughness			Tool holder	Insert
			Ra	Rz	Rmax		
Al alloy, 6061	150	0.2	0.076μm	0.50μm	0.6μm	99146-BT40-26A	CCGH0602U NC9036



99151 Deep hole boring 4~6XD

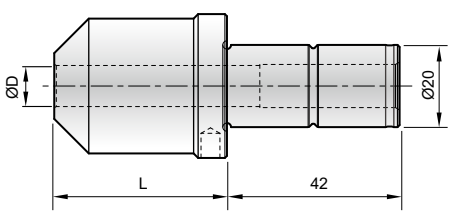


99151 System >>



Adapter >>

- Economical solution of small dia. boring bar.

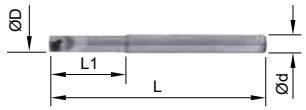
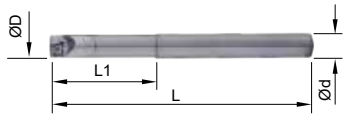
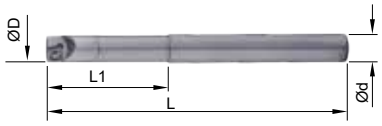
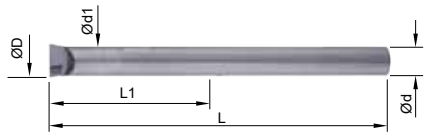
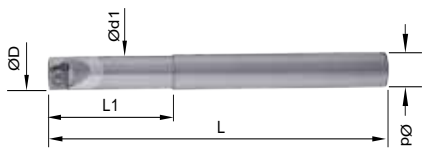
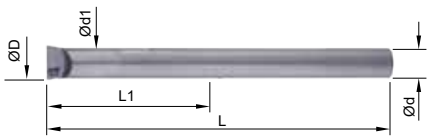


Part No.	ØD	L
C20-ID06	6 (0.236")	52 (2.047")
C20-ID08	8 (0.315")	49 (1.929")
C20-ID10	10 (0.394")	42 (1.654")
C20-ID11	11 (0.433")	21.5 (0.846")
C20-ID15.5	15.5 (0.610")	21.5 (0.846")

99151 Deep hole boring 4~6XD

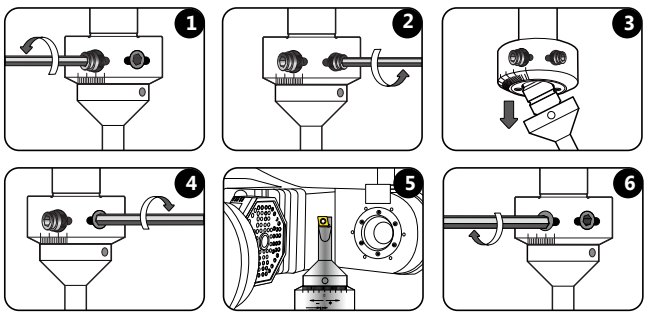
Boring Bar Ø5~Ø20 >>

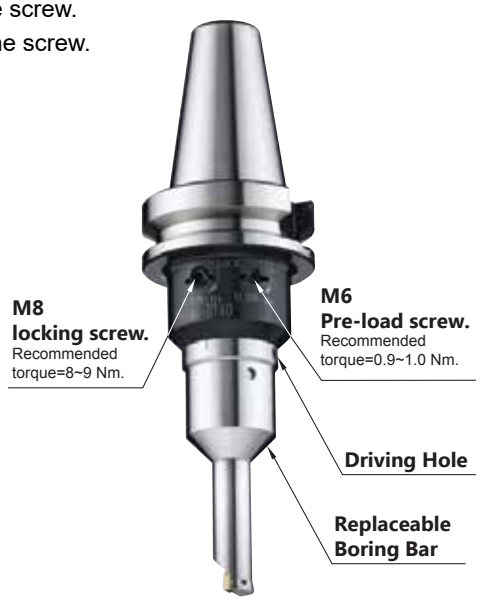
- Solid Carbide Shank
- Boring Depth : L1, 4~6xD

Type	ØD	Ød	Ød1	L1	L	Insert Screw / Key	Fig.
C06-0500-20L	4.87~5.12 (.192"~.202")	6 (0.236")	-	20 (0.787)	70 (2.756")	CCGT030102 NS-16030 0.4Nm / NK-T6	
C06-0525-20L	5.12~5.37 (.202"~.211")		-				
C06-0550-22L	5.37~5.62 (.211"~.221")		-	22 (0.866")			
C06-0575-22L	5.62~5.87 (.221"~.231")		-				
C06-0600-24L	5.87~6.12 (.231"~.241")		-	24 (0.945")			
C06-0625-24L	6.12~6.37 (.241"~.251")		-				
C06-0650-26L	6.37~6.62 (.251"~.261")		-	26 (1.024")			
C06-0675-26L	6.62~6.87 (.261"~.270")		-				
C08-0700-28L	6.87~7.12 (.270"~.280")	8 (0.315")	-	28 (1.102")	85 (3.346")	CCGT040102 NS-20036 0.6Nm / NK-T6	
C08-0725-28L	7.12~7.37 (.280"~.290")		-				
C08-0750-30L	7.37~7.62 (.290"~.300")		-	30 (1.181")			
C08-0775-30L	7.62~7.87 (.300"~.310")		-				
C08-0800-32L	7.87~8.12 (.310"~.320")		-	32 (1.260")			
C08-0825-32L	8.12~8.37 (.320"~.330")		-				
C08-0850-34L	8.37~8.62 (.330"~.339")		-	34 (1.339")			
C08-0875-34L	8.62~8.87 (.339"~.349")		-				
C10-0900-36L	8.87~9.12 (.349"~.359")	10 (0.394")	-	36 (1.417")	110 (4.331")	CC...0602... NS-25045 0.9Nm / NK-T7	
C10-0925-36L	9.12~9.37 (.359"~.369")		-				
C10-0950-38L	9.37~9.62 (.369"~.379")		-	38 (1.496")			
C10-0975-38L	9.62~9.87 (.379"~.389")		-				
C10-1000-40L	9.87~10.12 (.389"~.398")		-	40 (1.575")			
C10-1025-40L	10.12~10.37 (3.98"~.408")		-				
C10-1050-42L	10.37~10.62 (.408"~.418")		-	42 (1.654")			
C10-1075-42L	10.62~10.87 (.418"~.428")		-				
C10-1100-44L	10.87~11.12 (.428"~.438")		-	44 (1.732")			
C11-1200-120L	11.87~12.12 (.467"~.477")	11 (0.433")	11 (.433")	70 (2.756")	120 (4.724")	CC...0602... NS-25045 0.9Nm / NK-T7	
C11-1300-120L	12.87~13.12 (.507"~.517")		-				
C11-1400-120L	13.87~14.12 (.546"~.556")		-				
C15.5-1500-180L	14.87~15.12 (.585"~.595")	15.5 (0.610")	14 (.551)	90 (3.543")	180 (7.087")		
C15.5-1600-180L	15.87~16.12 (.625"~.635")	15.5 (0.610")	15 (.591)	90 (3.543")	180 (7.087")	CC...0602... NS-25060 0.9Nm / NK-T7	
C15.5-1700-180L	16.87~17.12 (.664"~.674")		-	100 (3.937")			
C15.5-1800-180L	17.87~18.12 (.704"~.713")		-				
C15.5-1900-180L	18.87~19.12 (.743"~.753")		-				
C15.5-2000-180L	19.87~20.12 (.782"~.792")		-				

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. Recomended torque = 0.9 ~ 1.0Nm.
5. Measure the boring diameter of the boring bar using tool presetter and adjust it to the required diameter.
6. Tighten the M8 locking screw. Recomended torque = 8 ~ 9Nm.





Procedures For Adjustment

On Tool Presetter

1. Loosen M8 locking screw.
2. Set the boring bar at the neutral position. (Step 1)
3. Measure the boring diameter using the tool presetter and compare with the required diameter. (Step 2)
4. If boring diameter is too big or too small, please put an allen-key into the adjusting driving hole.
   Turn to " + " to increase and turn to " - " to reduce boring diameter. (Step 3 and 4)
5. Tighten M8 locking screw.

(Step 1)

(Step 2)

(Step 3)

(Step 4)

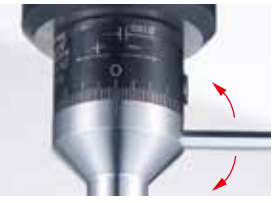
To Increase Diameter

To Reduce Diameter

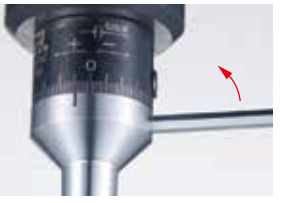
On Milling Machine and Machining Centers

1. Set the boring bar at the neutral position. (Step 1)
2. Tighten M8 locking screw.
3. Test cut on work piece, about 3-5mm deepth on the machine.
4. Measuring boring diameter of workpiece and compare with required diameter.
5. If boring diameter is too big or too small, loosen M8 locking screw, please put an allen-key into the adjusting driving hole.
   Turn to " + " to increase and turn to " - " to reduce boring diameter. (Step 2 and 3)
6. Tighten M8 locking screw. (Step 4)

(Step 1)



(Step 2)



To Increase Diameter

(Step 3)

(Step 4)

To Reduce Diameter

Precisely Ground Inserts

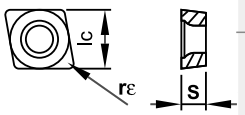
NC30 : • Universal grade for casting iron, carbon steel, alloy steel, stainless steel.

NC2032 : • For high speed cutting of casting iron.

NC2033 : • Good for carbon steel, alloy steel, stainless steel.

NC9036 : • long tool life.
• Good for Al, Al-alloy, copper and non-ferrous metal.

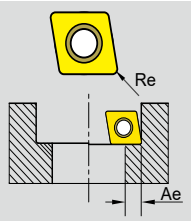
NC9031 : • Good for Al, Al-alloy, copper and non-ferrous metal.

Parts No.		Coating	Grade		Dimensions			Screw	Key
					Ic	S	Re		
CCGT030102	NC30	TiAlN	K20F		3.5 (.138")	1.4 (.055")	0.2 (.008")	NS-16030 0.4Nm	NK-T6
	NC9036	DLC							
CCGT040102	NC30	TiAlN	K20F		4.3 (.169")	1.8 (.071"	0.2 (.008")	NS-20036 0.6Nm	NK-T6
	NC9036	DLC							
CCFT060204HP	NC9031	TiN	K20F		6.35 (.25")	2.38 (.094")	0.4 (.016")	NS-25045 0.9Nm	NK-T7
CCFT060204	NC2033	TiAlN	K20F						
	NC9036	DLC							
CCFW060204	NC2032	AlTiN	K20F						

Cutting Data

$$RPM = \frac{SFM \times 3.82}{D}$$

IPM = RPM x IPR



	Workpiece Meterial	Cutting conditions or surface finishes	SFM (ft./min.)	IPR (inch/rev.)	Re0.2	Re0.4	Grade of Insert	
					Ae (inch)			
P	Carbon steel	Regular cutting	394-656	0.002 - 0.004	0.002	0.004	NC2033	
		Interrupted cutting	328-459	0.002 - 0.003	0.002	0.004	NC30	
	Alloy steel	Regular cutting	328-459	0.002 - 0.004	0.002	0.004	NC2033	
		Interrupted cutting	262-394	0.002 - 0.003	0.002	0.004	NC30	
M	Stainless steel	Regular cutting	262-394	0.002 - 0.004	0.002	0.004	NC2033	
		Interrupted cutting	230-328	0.002 - 0.004	0.002	0.004	NC30	
K	Cast iron	Regular cutting	262-394	0.002 - 0.004	0.002	0.004	NC2032	NC30
N	Non-ferrous metal	Regular cutting	492-984	0.002 - 0.004	0.002	0.004	NC9036	
		Super mirror finish	492-984	0.006 - 0.010	0.006		NC9031	
H	Hardened steel <HRC 50	Regular cutting	262-394	0.002 - 0.003	0.002	0.004	NC30	