



Center Drill >> i-Center®

The “i-Center” is a trademark of Nine9, the developer of the first indexable center drill in the world. (Patented) Offering an indexable insert system for the 1st time, Nine9’s “i-Center” design improves your process performance.

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Features

i-Center

World's first indexable center drill
Shortens set up and center drilling time
Increases tool life and reduces tooling costs

▶ High Speed, High Feed Rate

- The special ground insert and rigid holder design facilitate high performance speed and feed rates. For example, drilling alloy steel at 6000 rpm and feed rate of 600 mm/min. (0.1 mm/rev.)

▶ Excellent Repeatability

- The positioning repeatability of the insert is within 0.02 mm (.0008”) in radial direction, thus ensuring conformity to any national standards.

▶ Easy Tool Length Setting

- The axial position accuracy of the insert is 0.05 mm (.002”). It is not necessary to reset the tool length when changing the insert or cutting edge.



▲ High pressure coolant can be supplied through center directly to tip of center drill insert.

▶ Extended Tool Life

- Coolant can be supplied through the center of the holder to increase performance and extend tool life.
- Insert geometry, grades and coating process are specifically engineered for centering applications.





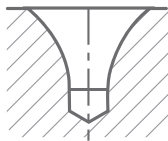
NC2033



NC5074 (IC08)

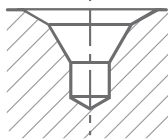
DIN 332 Form R

Ø1.0~Ø10



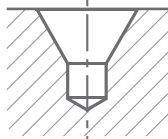
DIN 332 Form A + B

Ø1.0~Ø10



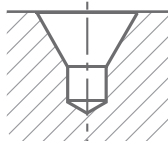
DIN 332 Form A

Ø2.0~Ø2.5

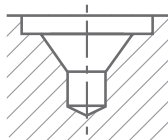


ANSI 60°

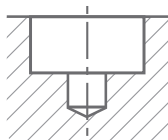
#2.0~#10



*** C Type**



*** F Type**



* special on request



▲ 2 cutting flutes design

Inserts:

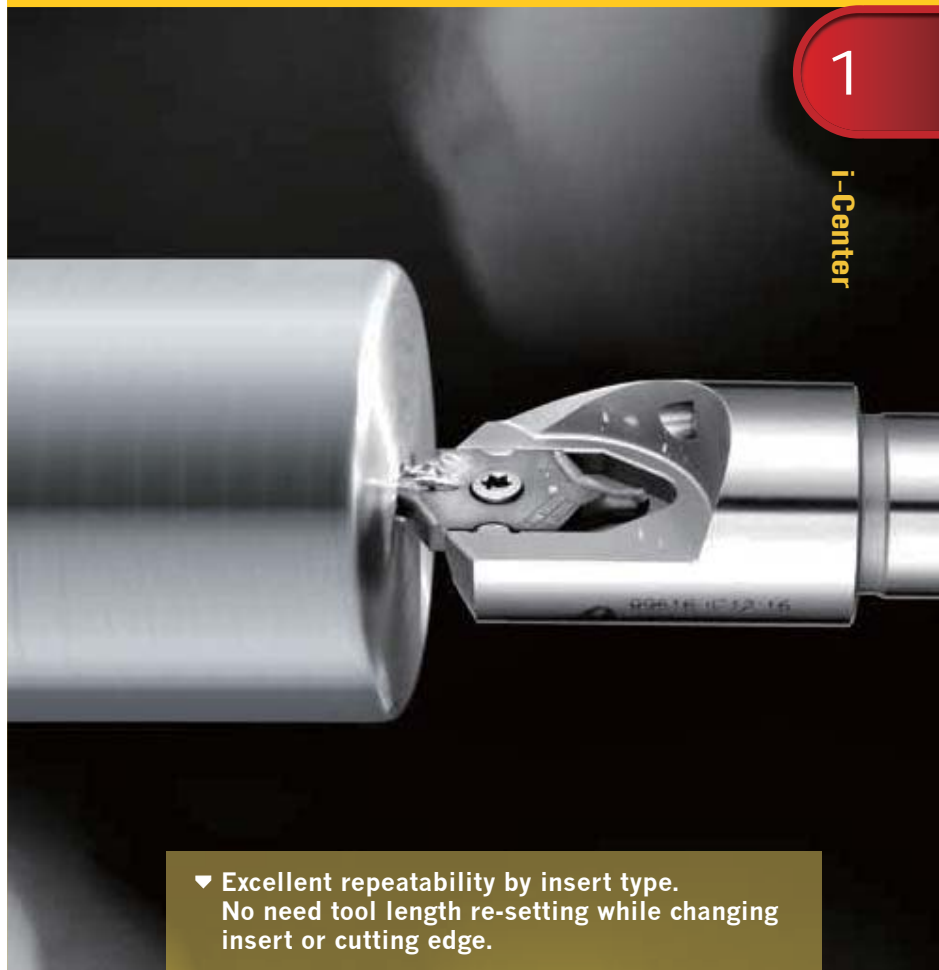
- 2 cutting flutes design same as carbide center drill for high performance speed and feed rate.
- Each insert has 2 cutting edges.

NC2033:

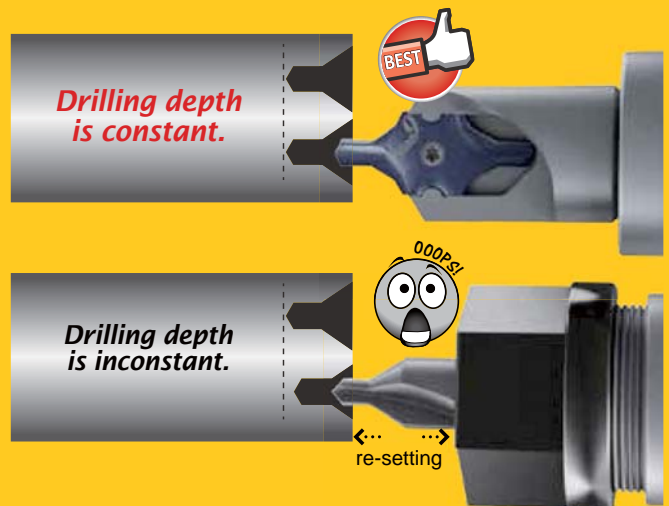
- K20F grade, TiAlN coated, for carbon steel, alloy steel, high alloy steel and cast iron.

NC5074:

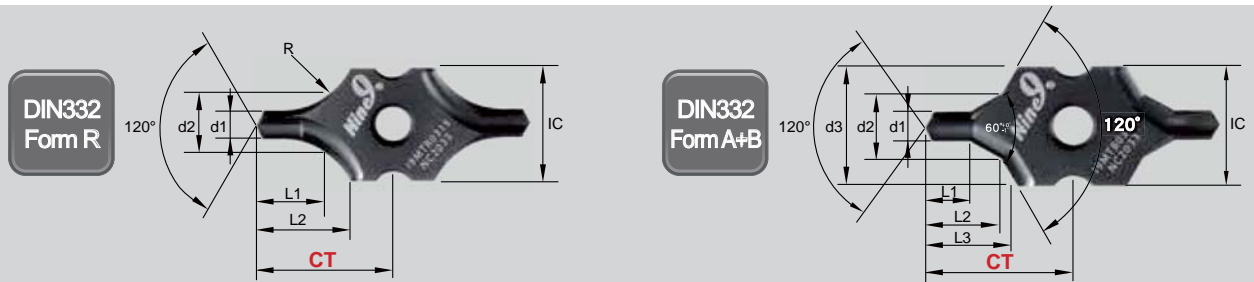
- P40 grade, Helica coated, design for small diameter center drill (IC08 inserts).



▼ Excellent repeatability by insert type. No need tool length re-setting while changing insert or cutting edge.



Insert of Indexable Center Drill



► For DIN332 Form R Center Hole >>

IC	Code	Parts No.	Coating	Grade	d1	d2	L1	L2	R	CT ±0.025	
08	032211	I9MT08T1R0100-NC5074	Helica	P40	1.00	+0.14 0	2.12	2.16	4.14	2.8	7.55
	032212	I9MT08T1R0125-NC5074			1.25		2.65	2.74	4.64	3.5	7.90
	032213	I9MT08T1R0160-NC5074			1.60		3.35	3.45	5.13	4.5	8.40
	032214	I9MT08T1R0200-NC5074			2.00		4.25	4.45	6.08	5.65	9.10
12	033201	I9MT12T2R0200-NC2033	TiAlN	K20F	2.00	+0.14 0	4.25	4.45	6.64	5.65	11.73
	033202	I9MT12T2R0250-NC2033			2.50		5.3	5.59	8.11	7.15	13.00
	033203	I9MT12T2R0315-NC2033			3.15		6.7	7.21	9.63	9.0	14.00
16	034201	I9MT1603R0400-NC2033			+0.18 0	4.00	8.5	9.06	12.23	11.0	19.40
	034202	I9MT1603R0500-NC2033				5.00	10.6	11.45	14.2	14.0	19.40
20	035201	I9MT2004R0630-NC2033			+0.22 0	6.30	13.2	14.63	18.2	18.0	28.40
	035202	I9MT2004R0800-NC2033				8.00	17.0	18.63	20.44	22.5	28.30
25	036201	I9MT2506R1000-NC2033			10.00	21.2	23.51	25.8	28.0	34.20	



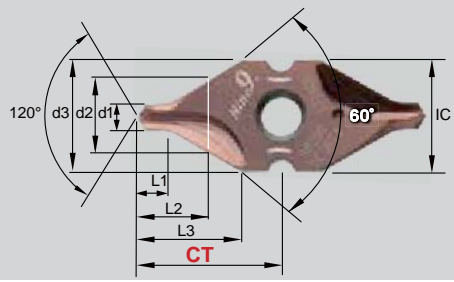
► For DIN332 Form A+B Center Hole >>

IC	Code	Parts No.	Coating	Grade	d1	d2	d3	L1	L2	L3	CT ±0.025	
08	032011	I9MT08T1B0100-NC5074	Helica	P40	1.00	+0.14 0	2.12	3.15	1.3	2.21	2.51	7.55
	032012	I9MT08T1B0125-NC5074			1.25		2.65	4.0	1.6	2.75	3.14	7.90
	032013	I9MT08T1B0160-NC5074			1.60		3.35	5.0	2.0	3.46	3.93	8.40
	032014	I9MT08T1B0200-NC5074			2.00		4.25	6.3	2.5	4.39	4.98	9.10
12	033001	I9MT12T2B0200-NC2033	TiAlN	K20F	2.00	+0.14 0	4.25	6.3	2.5	4.39	4.98	11.73
	033002	I9MT12T2B0250-NC2033			2.50		5.3	8.0	3.1	5.53	6.28	13.0
	033003	I9MT12T2B0315-NC2033			3.15		6.7	10.0	3.9	6.90	7.85	14.0
16	034001	I9MT1603B0400-NC2033			+0.18 0	4.00	8.5	12.5	5.0	8.9	10.03	19.4
	034002	I9MT1603B0500-NC2033				5.00	10.6	16.0	6.3	11.15	12.68	19.4
20	035001	I9MT2004B0630-NC2033			+0.22 0	6.30	13.2	18.0	8.0	13.98	15.33	28.4
	035002	I9MT2004B0800-NC2033				8.00	17.0	20	10.1	17.89	18.73	28.3
25	036001	I9MT2506B1000-NC2033			10.00	21.2	25	12.8	22.5	23.57	34.2	

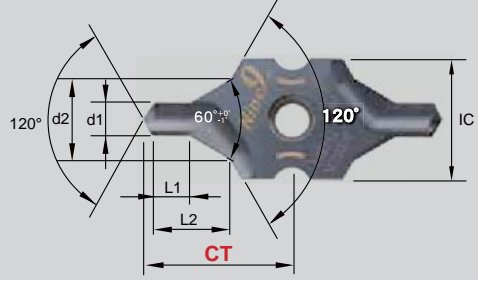
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i-Center

**DIN332
Form A**



**ANSI
60°**



► For DIN332 Form A Center Hole >>

IC	Code	Parts No.	Coating	Grade	d1	d2	d3	L1	L2	L3	CT ±0.025
08	032114	I9MT08T1A0200-NC5074	Helica	P40	2.0	4.25	8	2.15	4.10	7.35	10.5
	032115	I9MT08T1A0250-NC5074			2.5						
	032116	I9MT08T1A0315-NC5074			3.15	+0.18 0	6.7	3.23	6.30	7.43	



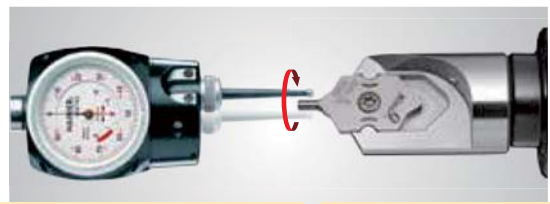
► For ANSI 60° Center Hole >>

IC	Code	Parts No.	Coating	Grade	Size	d1 mm	d2 mm	L1 mm	L2 mm	CT ±0.025
12	033101	I9MT12T2A2-NC2033	TiAlN	K20F	#2 5/64	1.98	3/16 4.76	5/64 1.98	4.4	12.6
	033102	I9MT12T2A3-NC2033			#3 7/64	2.78				1/4 6.35
	033103	I9MT12T2A4-NC2033			#4 1/8	3.18	5/16 7.94	1/8 3.18	7.3	14.25
16	034101	I9MT1603A5-NC2033			#5 3/16	4.76	7/16 11.11	3/16 4.76	10.3	20.0
	035101	I9MT2004A6-NC2033			#6 7/32	5.56				1/2 12.7
	20	035102			I9MT2004A7-NC2033	#7 1/4	6.35	5/8 15.88	1/4 6.35	14.6
035103		I9MT2004A8-NC2033			#8 5/16	7.94	3/4 19.05			
25		036101			I9MT2506A10-NC2033	#10 3/8		9.53	0.98" 25.0	3/8 9.53

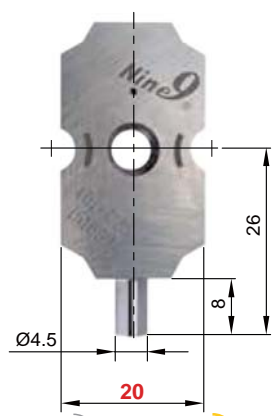
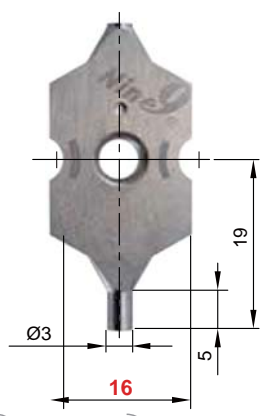
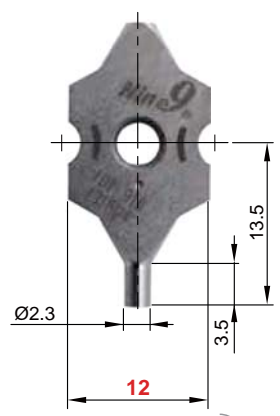
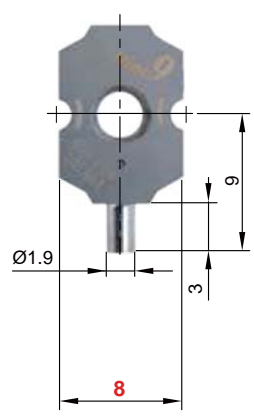
New

► Measuring Master >>

- Apply on lathe to align the center of work spindle and tool.
- Each insert has just one measuring tip.
- Concentricity: ±0.01mm



IC08	IC12	IC16	IC20
I9MT08T1-MM	I9MT12T2-MM	I9MT1603-MM	I9MT2004-MM



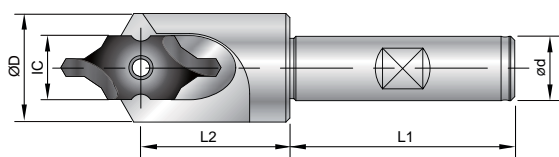
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Holders of Indexable Center Drill



▶ Weldon Shank >>

- Made of hardened high alloy steel, 58 HRC.
- IC08 shank is cylindrical shank.
Other shanks are weldon shank.

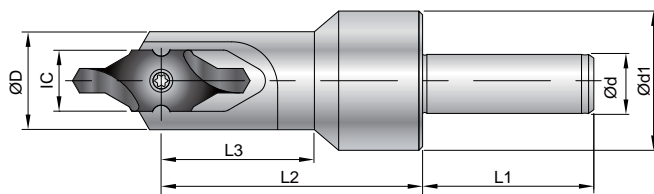


IC	Code	Parts No.	Type	ød	L1	L2	ØD	Screw	Key
08	802002	00-99616-IC08-10F	BC10-IC08F	10	30	18.5	12	*NS-25060 0.9 Nm	NK-T7
	812002	00-99616-IC08-3/8F	BC3/8"-IC08F	3/8"					
12	803002	00-99616-IC12-16F	SB16-IC12F	16	48	30.5	21	NS-30072 2.0 Nm	NK-T9
	813002	00-99616-IC12-5/8F	SB5/8"-IC12F	5/8"					
16	804002	00-99616-IC16-16F	SB16-IC16F	16	48	37	27	NS-35080 2.5 Nm	NK-T15
	814002	00-99616-IC16-5/8F	SB5/8"-IC16F	5/8"					
20	805002	00-99616-IC20-20F	SB20-IC20F	20	50	51	32	NS-50125 5.5 Nm	NK-T20
	815002	00-99616-IC20-3/4F	SB3/4"-IC20F	3/4"					
25	806002	00-99616-IC25-25F	SB25-IC25F	25	56	56	43	NS-50125 5.5 Nm	NK-T20
	816002	00-99616-IC25-1F	SB 1"-IC25F	1"					

*Torque screwdriver is recommended, see page 6-4.

▶ Cylindrical Shank with Pre-balanced >>

- Made of hardened high alloy steel, 58 HRC.
- G6.3 / 10,000 r.p.m.



IC	Code	Parts No.	Type	ød	ød1	L1	L2	L3	ØD	Screw	Key
08	802003	00-99616-IC08-10B	BC10-IC08B	10	22	30	33.5	19	12	*NS-25060 0.9 Nm	NK-T7
12	803003	00-99616-IC12-12B	BC12-IC12B	12	34	48	51	30	21	NS-30072 2.0 Nm	NK-T9
16	804003	00-99616-IC16-16B	BC16-IC16B	16	39	48	67	37	27	NS-35080 2.5 Nm	NK-T15
20	805003	00-99616-IC20-20B	BC20-IC20B	20	49	50	86	51	32	NS-50125 5.5 Nm	NK-T20
25	806003	00-99616-IC25-25B	BC25-IC25B	25	59	56	99	56	43	NS-50125 5.5 Nm	NK-T20

*Torque screwdriver is recommended, see page 6-4.

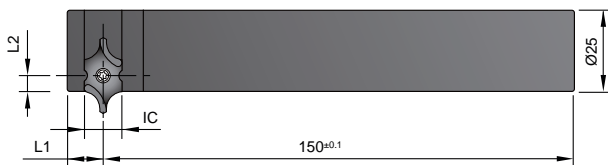
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i-Center



► Square Shank 25 x 25 Right / Left Hand >>

- For used on lathe.
- Made of hardened alloy steel, 40 HRC.
- Other sizes are available on request.

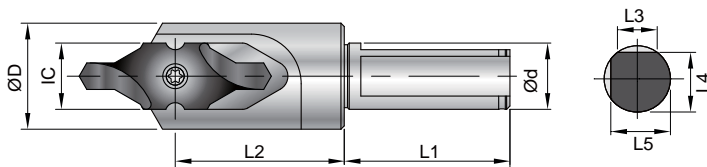


IC	Code	Parts No.	L1	L2	Screw	Key
08	822022	00-99616-IC08-R2525MF	8	3.25	*NS-25060 0.9 Nm	NK-T7
	822012	00-99616-IC08-L2525MF				
12	823022	00-99616-IC12-R2525MF	11	4.9	NS-30072 2.0 Nm	NK-T9
	823012	00-99616-IC12-L2525MF				
16	824022	00-99616-IC16-R2525MF	13	4.9	NS-35080 2.5 Nm	NK-T15
	824012	00-99616-IC16-L2525MF				

*Torque screwdriver is recommended, see page 6-4.

► Double Flat Shank >> Non-Stock Item

- Made of hardened high alloy steel, 58 HRC.
- Double flat shank type for used on lathe.
- 180° for insert at top, 90° for insert at front.



IC	Code	Parts No.	Type	Ød	L1	L2	L3	L4	L5	ØD	Screw	Key
08	802004	00-99616-IC08-10S	SL10-IC08S	10	30	18.5	6	9	9	12	*NS-25060 0.9 Nm	NK-T7
12	803004	00-99616-IC12-16S	SL16-IC12S	16	48	30.5	9.33	14.5	14.5	21	NS-30072 2.0 Nm	NK-T9
16	804004	00-99616-IC16-16S	SL16-IC16S	16	48	37	9.33	14.5	14.5	27	NS-35080 2.5 Nm	NK-T15
20	805004	00-99616-IC20-20S	SL20-IC20S	20	50	51	12	18	18	32	NS-50125 5.5 Nm	NK-T20
25	806004	00-99616-IC25-25S	SL25-IC25S	25	56	56	13.57	23	23	43	NS-50125 5.5 Nm	NK-T20

*Torque screwdriver is recommended, see page 6-4.

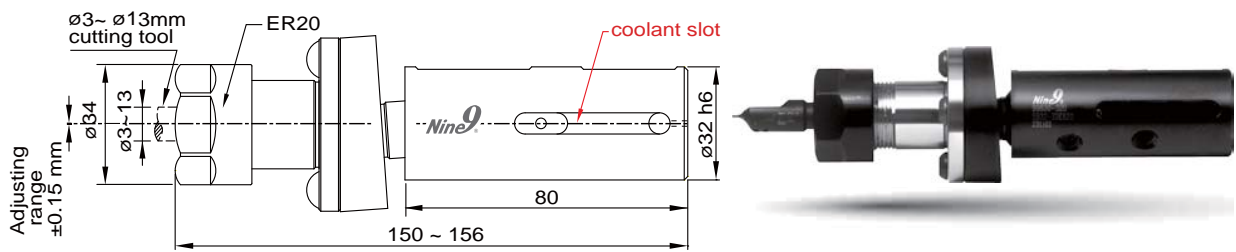
Center Height Adjusting Sleeve

► Principle >>

- Designed for adjusting Center Height of center drills, NC spot drills, reamers and taps on the CNC lathes.
- The main body is made from two sleeves. The inner sleeve is to hold and lock the cutting tool.
- Its center is inclined to the outer sleeve. When the inner sleeve is pushed or pulled, the cutting tool's center height is adjusted to lower or higher position.

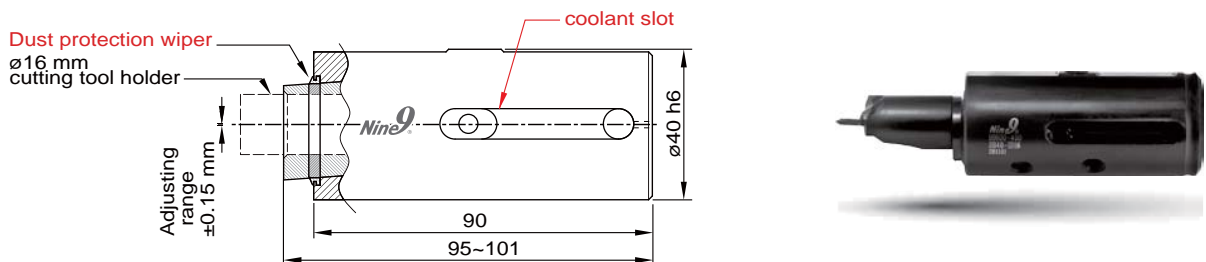
► Parts No.:00-99600-320H >>

► Type : SB32-IDER20



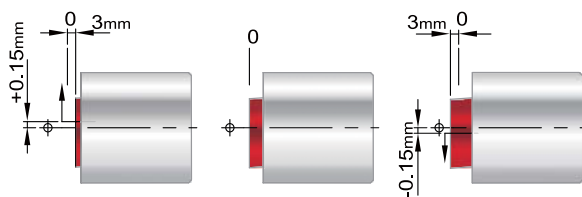
► Parts No.:00-99600-400H >>

► Type : SB32-ID16

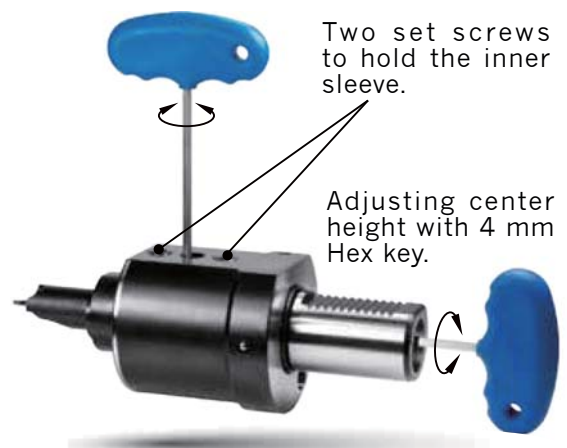


► Applications >>

- Used when the CNC lathes need to adjust the center height.
- This sleeve can be clamped by VDI 40, VDI 50 E2 tool holders, and other types internal turning tool holders.
- Center height adjusting range: ± 0.15 mm (.006").
- Total axial movement is 6mm (.236").

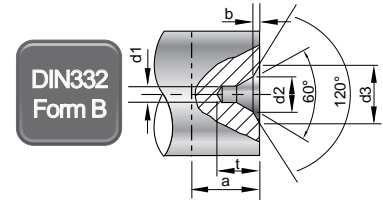
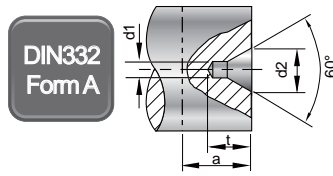
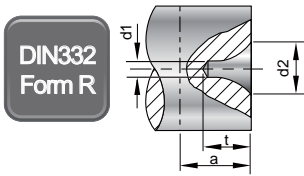


Tightening screw 4mm Hex key



Technical Standard ISO 2541-1972 / DIN332

► 60° Center holes



STD	DIN332 Form R ISO 2541-1972			DIN332 Form A ISO 866-1975			DIN332 Form B ISO 2540 1973					
	d1	d2	t	a	d2	t	a	d2	b	d3	t	a
1		2.12	1.9	3	2.12	1.9	3	2.12	0.3	3.15	2.2	3.5
1.25		2.65	2.3	4	2.65	2.3	4	2.65	0.4	4	2.7	4.5
1.6		3.35	2.9	5	3.35	2.9	5	3.35	0.5	5	3.4	5.5
2		4.25	3.7	6	4.25	3.7	6	4.25	0.6	6.3	4.3	6.6
2.5		5.3	4.6	7	5.3	4.6	7	5.3	0.8	8	5.4	8.3
3.15		6.7	5.8	9	6.7	5.9	9	6.7	0.9	10	6.8	10
4		8.5	7.4	11	8.5	7.4	11	8.5	1.2	12.5	8.6	12.7
5		10.6	9.2	14	10.6	9.2	14	10.6	1.6	16	10.8	15.6
6.3		13.2	11.4	18	13.2	11.5	18	13.2	1.4	18	12.9	20
8		17	14.7	22	17	14.8	22	17	1.6	22.4	16.4	25
10		21.2	18.3	28	21.2	18.4	28	21.2	2	28	20.4	31

* a: Minimum material will be cut. If the center hole will be removed after turning or grinding. (mm/inch)



► Advantage of Form R Center hole

60° Center of tail stock	90° Center of tail stock	Center hole and center are misaligned

► Advantage of Form B center hole

Avoid scar or distortion while transportation	Burr	Rough surface of workpiece	Total solution

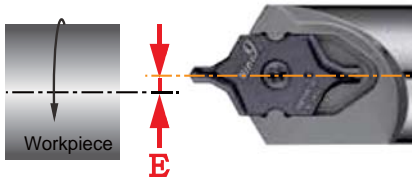
Technical Guide

Before you start, please pay attention the following conditions



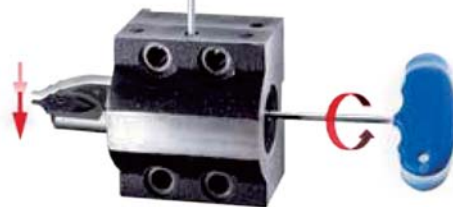
Center misalignment

E must be $< 0.02\text{mm}$.



Center height adjusting sleeve

When CNC lathe turret center is misaligned $\geq 0.15\text{mm}$, please use center height adjusting sleeve. (See page 1-35)



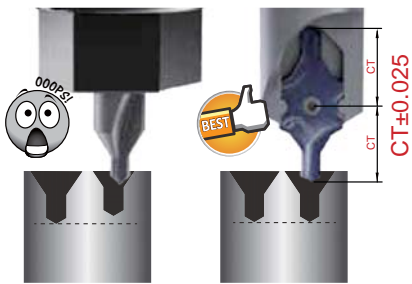
Internal coolant

Internal coolant is recommended.

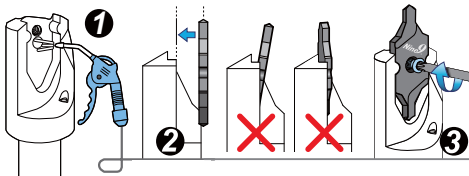


No reset and regrind

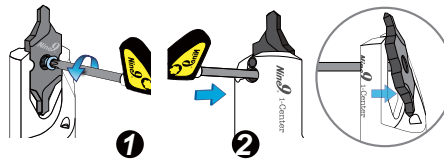
Tool length maintain while changing the insert or cutting edge.



Clamping insert



Loosen insert



Possible to run on low r.p.m machine



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i-Center



Applications

Various centering applications and products - shafts of engine, transmission gear boxes, bearings, motors, grinding parts, spindles, gear reducers, cooling fan, universal joints...





Cutting Data

▶ Ø1~Ø3.15 (#2~#4)

Workpiece material	Vc (m/min.)	d1	IC08		IC12				
			Ø1~1.25	Ø1.6~3.15	Ø2 (#2)	Ø2.5 (#3)	Ø3.15 (#4)		
Carbon steel C<0.3%	< 80	S r.p.m.	2000 ~ 10000	1600 ~ 8000	1600 ~ 8000	1400 ~ 7000	1200 ~ 6000	●	○
		f mm/rev.	0.02~0.03~0.05	0.03~0.05~0.06	0.04~0.06~0.08	0.06~0.08~0.10	0.08~0.10~0.12		
Carbon steel C>0.3%	< 70	S r.p.m.	2000 ~ 9000	1600 ~ 7200	1600 ~ 7200	1400 ~ 6300	1200 ~ 5400	●	○
		f mm/rev.	0.02~0.03~0.05	0.03~0.04~0.05	0.03~0.04~0.05	0.06~0.08~0.10	0.08~0.10~0.12		
Low alloy steel C<0.3%	< 65	S r.p.m.	2000 ~ 8000	1600 ~ 6400	1600 ~ 6400	1400 ~ 5600	1200 ~ 4800	●	○
		f mm/rev.	0.01~0.02~0.04	0.02~0.03~0.05	0.02~0.03~0.05	0.04~0.06~0.08	0.06~0.08~0.10		
High alloy steel C>0.3%	< 60	S r.p.m.	1000 ~ 6000	800 ~ 4800	800 ~ 4800	700 ~ 4200	600 ~ 3600	●	○
		f mm/rev.	0.01 ~ 0.02	0.01~0.02~0.04	0.01~0.02~0.04	0.02~0.04~0.06	0.04~0.06~0.08		
Stainless steel	< 20	S r.p.m.	1000 ~ 3000	800 ~ 2400	800 ~ 2400	700 ~ 2100	600 ~ 1800	●	○
		f mm/rev.	0.003 ~ 0.01	0.005 ~ 0.02	0.01 ~ 0.02	0.01~0.02~0.03	0.02~0.03~0.05		
Casting iron	< 70	S r.p.m.	2000 ~ 9000	1600 ~ 7200	1600 ~ 7200	1400 ~ 6300	1200 ~ 5400	Air	
		f mm/rev.	0.01~0.02~0.04	0.02~0.04~0.06	0.02~0.04~0.06	0.04~0.06~0.08	0.06~0.08~0.10		
Al, and non-ferrous metal	< 200	S r.p.m.	6000 ~ 20000	4800 ~ 16000	4800 ~ 16000	4200 ~ 14000	3600 ~ 12000	●	○
		f mm/rev.	0.01~0.02~0.03	0.01~0.02~0.04	0.01~0.02~0.04	0.02~0.03~0.05	0.02~0.04~0.06		

● Best ○ Possible

▶ Ø4~Ø10 (#5~#10)

Workpiece material	Vc m/min.	d1	IC16			IC20		IC25		
			Ø4 (#5)	Ø5	(#6)	Ø6.3 (#7)	Ø8 (#8)	Ø10 (#10)		
Carbon steel C<0.3%	< 80	S r.p.m.	1000 ~ 5000	900 ~ 4500	800 ~ 4000	700 ~ 3500	600 ~ 3000	●	○	
		f mm/rev.	0.08~0.12~0.14	0.10~0.12~0.16	0.10~0.14~0.16	0.12~0.15~0.18	0.14~0.18~0.20			
Carbon steel C>0.3%	< 70	S r.p.m.	1000 ~ 4500	900 ~ 4050	800 ~ 3600	700 ~ 3150	600 ~ 2700	●	○	
		f mm/rev.	0.08~0.12~0.14	0.10~0.12~0.16	0.10~0.14~0.16	0.12~0.15~0.18	0.14~0.18~0.20			
Low alloy steel C<0.3%	< 65	S r.p.m.	1000 ~ 4000	900 ~ 3600	800 ~ 3200	700 ~ 2800	600 ~ 2400	●	○	
		f mm/rev.	0.06~0.08~0.10	0.08~0.10~0.12	0.08~0.12~0.14	0.10~0.14~0.16	0.12~0.16~0.20			
High alloy steel C>0.3%	< 60	S r.p.m.	500 ~ 3000	450 ~ 2700	400 ~ 2400	350 ~ 2100	300 ~ 1800	●	○	
		f mm/rev.	0.04~0.06~0.08	0.06~0.08~0.10	0.08~0.10~0.12	0.10~0.14~0.16	0.10~0.14~0.16			
Stainless Steel	< 25	S r.p.m.	500 ~ 1500	450 ~ 1350	400 ~ 1200	350 ~ 1050	300 ~ 900	●	○	
		f mm/rev.	0.02~0.04~0.06	0.02~0.04~0.06	0.04~0.06~0.08	0.04~0.06~0.08	0.05~0.07~0.10			
Casting iron	< 70	S r.p.m.	1000 ~ 4500	900 ~ 4050	800 ~ 3600	700 ~ 3150	600 ~ 2700	Air		
		f mm/rev.	0.06~0.08~0.10	0.08~0.10~0.12	0.08~0.12~0.14	0.10~0.14~0.16	0.12~0.16~0.18			
Al, and non-ferrous metal	< 200	S r.p.m.	3000 ~ 10000	2700 ~ 9000	2400 ~ 8000	2100 ~ 7000	1800 ~ 6000	●	○	
		f mm/rev.	0.02~0.04~0.06	0.04~0.06~0.08	0.04~0.06~0.08	0.06~0.08~0.10	0.06~0.08~0.10			

● Best ○ Possible

▶ Attention of Form A+B insert:

Reduce 30% of Spindle speed and keep same feed rate (mm/rev.) while depth L2 is reached.

▶ Using your “d1” value and cutting speed Vc from the data sheet, calculate spindle speed “S”(r.p.m).

“ F ” feed rate per minute $F = S \times f = IPR \times r.p.m$

Metric		Inch	
$S = \frac{Vc \times 1000}{\pi \times d1}$	d1 = diameter -mm S = Spindle Speed -r.p.m. Vc = Cutting Speed -m/min.	$S = \frac{(3.82 \times SFM)}{d1}$	d1 = diameter-inch S = Spindle Speed-r.p.m. SFM = Surface Speed-ft./min. Vc (m/min.) x 3.28
$F = S \times f$	f = mm/rev. F = mm/min.	$F = IPR \times r.p.m$	f = IPR = inch/rev. F = inch/min.



Torque Screwdriver

It prevents damages of the screws and tool



► Why Torque Control is important? >>

- Increase tool life of insert screw.
- Optimize performance of milling cutters after locking with identical torque on all inserts.
- Avoid damage of screw, resulted couldn't take insert out from the cutter.
- Deliver right tightening force to precise parts, no more over-tightening.
- Enhance the function of both tightened parts and connected parts.

► 0.6~5.5Nm torque screwdriver with 25mm+50mm TORX® high precision bit.

Parts No.	Contents						N.W.	Packaging Illustration
	Handle	Adapter			Bit			
		Nm	KgfcM	In-lb	Size	25mm+50mm		
0-TPK01-TX06-0.6-S	TPK-H02	0.6	6.1	5.3	TX6			
0-TPK01-TX07-0.9-S		0.9	9.2	8.0	TX7	2 pcs + 2 pcs		
0-TPK01-TX08-1.2-S		1.2	12.0	10.6	TX8			
0-TPK01-TX08-2.0	TPK-H01	2.0	20.4	17.7	TX8			
0-TPK01-TX09-1.4		1.4	14.0	12.4	TX9			
0-TPK01-TX09-2.0		2.0	20.4	17.7				
0-TPK01-TX10-2.0		2.0	20.4	17.7	TX10	2 pcs + 2 pcs		
0-TPK01-TX15-3.0		3.0	30.6	26.6	TX15			
0-TPK01-TX20-5.0		5.0	51.0	44.3	TX20			
0-TPK01-TX20-5.5	5.5	56.1	48.7	TX20				
0-TPK01-TX2025-5.5	TPK-H03	5.5	56.1	48.7		Bit 50mm		
					TX20	2 pcs		200g
					TX25	2 pcs		

Note: other size are available, please feel free to contact us.

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Accessory