



i-Center indexable center drill (patent pending)  
 First Indexable center drill in the world.  
 Shortens set up time and center drilling time.  
 Increases tool life which reduces tooling cost.  
 Special forms are possible.

# Indexable Center Drill

- Highly Efficient Tools
- No Re-setting, No Resharpener
- Time Saving
- Long Tool Life
- Improve Your Process Performance



• Coolant supply from center



• Big chip flow area

The “ i-Center ” is a trademark of Nine9, the developer of the first indexable center drill. For the first time, Nine9’s “ i-Center ” patent-pending design provides the benefit of solid carbide cutting parameters while delivering -

**• High Speed, High Feed Rate**

High performance speed and feed can be reached thanks to the special ground insert and ridged holder design. For example, for drilling  $\varnothing 3.15\text{mm}$  hole on alloy steel, running at 6000 r.p.m. and feed rate 600 mm/min. (0.1mm/rev.)



• Application on turning machine. Insert type no need to reset the tool length when changing.

**• 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 insert or cutting edge.

**• Excellent Repeatability**

The insert is positioned by two locating pins and clamped by one insert screw at the center. The positioning repeatability of the insert is within 0.02 mm(.0008”) in radial direction, thus ensuring conformity to any National Standard.



• 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.

**• Universal and Easily Fitted with Any Available Shank**

The tool holder is made of high alloy steel, hardened and ground to h6 tolerance with a flat. It’s easy for stationary tool and rotating tool.

**i-Center Tool holder**

**Feature:**

- Made of High alloy steel.
- Shank is ground to h6 tolerance.
- Special holders are available on request.

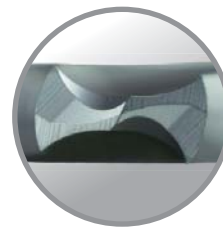


Code	Order No.	Part No.	IC	Ød	L1	L2	ØD±0.02	Screw	Key
<span style="color: red;">new</span> 802001	00-99616-IC08-10	BC10-IC08	08	10	30	22	12	NS-25060	NK-T7
803001	00-99616-IC12-16	SB16-IC12	12	16	48	36	21	NS-30072	NK-T9
804001	00-99616-IC16-16	SB16-IC16	16	16	48	43	27	NS-35080	NK-T15
805001	00-99616-IC20-20	SB20-IC20	20	20	50	60	32	NS-50125	NK-T20
806001	00-99616-IC25-25	SB25-IC25	25	25	56	65	43	NS-50125	NK-T20

Code	Order No.	Part No.	IC	Ød	L1	L2	ØD±0.02	Screw	Key
<span style="color: red;">new</span> 812001	00-99616-IC08-3/8	BC3/8"-IC08	08	3/8"	30	22	12	NS-25060	NK-T7
813001	00-99616-IC12-5/8	SB5/8"-IC12	12	5/8"	48	36	21	NS-30072	NK-T9
814001	00-99616-IC16-5/8	SB5/8"-IC16	16	5/8"	48	43	27	NS-35080	NK-T15
815001	00-99616-IC20-3/4	SB3/4"-IC20	20	3/4"	50	60	32	NS-50125	NK-T20
816001	00-99616-IC25-1	SB1"-IC25	25	1"	56	65	43	NS-50125	NK-T20

**i-Center** Indexable center insert

- NC 2033: K20F grade carbide insert and TiAlN coated for carbon steel, alloy steel, high alloy steel, cast iron and Al, Al-alloy, Cu, Cu-alloy.
- 2 cutting edges, high performance for center drilling.
- Metric sizes: DIN 332 A+B, DIN 332 R, Ø1~Ø10 mm
- Inch sizes: ANSI (BS) #2~10

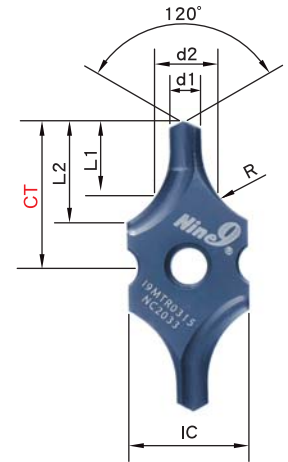


2 cutting flutes

• DIN332 Form R



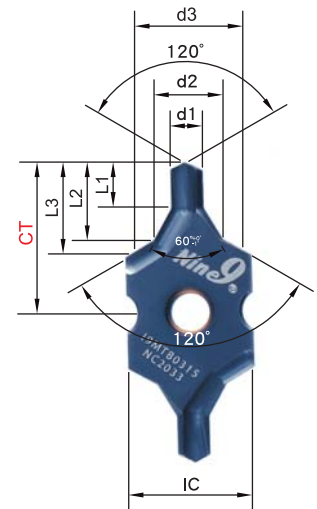
Part No.		d1	d2	L1	L2	R	CT ±0.025	IC	
<b>new</b>	I9MT08T1R0100-NC2033	1.00	+0.14 0	2.12	2.16	4.14	2.8	7.55	08 <b>Mini i-Center</b>
<b>new</b>	I9MT08T1R0125-NC2033	1.25		2.65	2.74	4.64	3.5	7.90	
<b>new</b>	I9MT08T1R0160-NC2033	1.60		3.35	3.45	5.13	4.5	8.4	
<b>new</b>	I9MT08T1R0200-NC2033	2.00		4.25	4.45	6.08	5.65	9.1	
	I9MT12T2R0200-NC2033	2.00	+0.14 0	4.25	4.45	6.64	5.5	11.73	12
	I9MT12T2R0250-NC2033	2.50		5.3	5.59	8.11	7.15	13.0	
	I9MT12T2R0315-NC2033	3.15	+0.18 0	6.7	7.21	9.63	9.0	14.0	16
	I9MT1603R0400-NC2033	4.00		8.5	9.06	12.23	11.0	19.4	
	I9MT1603R0500-NC2033	5.00		10.6	11.45	14.2	14.0	19.4	
	I9MT2004R0630-NC2033	6.30		13.2	14.63	18.2	18.0	28.4	
	I9MT2004R0800-NC2033	8.00	+0.22 0	17.0	18.63	20.44	22.5	28.3	20
	I9MT2506R1000-NC2033	10.00		21.2	23.51	25.8	28.0	34.2	



• DIN332 Form A+B



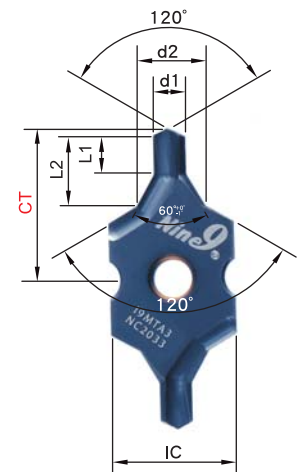
Part No.		d1	d2	d3	L1	L2	L3	CT ±0.025	IC	
<b>new</b>	I9MT08T1B0100-NC2033	1.00	+0.14 0	2.12	3.15	1.3	2.21	2.51	7.55	08 <b>Mini i-Center</b>
<b>new</b>	I9MT08T1B0125-NC2033	1.25		2.65	4.0	1.6	2.75	3.14	7.90	
<b>new</b>	I9MT08T1B0160-NC2033	1.60		3.35	5.0	2.0	3.46	3.93	8.4	
<b>new</b>	I9MT08T1B0200-NC2033	2.00		4.25	6.3	2.5	4.39	4.98	9.1	
	I9MT12T2B0200-NC2033	2.00	+0.14 0	4.25	6.3	2.5	4.39	4.98	11.73	12
	I9MT12T2B0250-NC2033	2.50		5.3	8.0	3.1	5.53	6.28	13.0	
	I9MT12T2B0315-NC2033	3.15	+0.18 0	6.7	10.0	3.9	6.90	7.85	14.0	16
	I9MT1603B0400-NC2033	4.00		8.5	12.5	5.0	8.9	10.03	19.4	
	I9MT1603B0500-NC2033	5.00		10.6	16.0	6.3	11.15	12.68	19.4	
	I9MT2004B0630-NC2033	6.30		13.2	18.0	8.0	13.98	15.33	28.4	
	I9MT2004B0800-NC2033	8.00	+0.22 0	17.0	20	10.1	17.89	18.73	28.3	20
	I9MT2506B1000-NC2033	10.00		21.2	25	12.8	22.5	23.57	34.2	



• ANSI 60°



Parts No.	Size	d1		d2		L1		L2		CT ±0.025	IC
			mm		mm		mm		mm		
I9MT12T2A2-NC2033	#2	5/64	1.98	+0.14 0	3/16	4.76	5/64	1.98	4.4	12.6	12
I9MT12T2A3-NC2033	#3	7/64	2.78		1/4	6.35	7/64	2.78	5.9	13.85	
I9MT12T2A4-NC2033	#4	1/8	3.18	+0.18 0	5/16	7.94	1/8	3.18	7.3	14.25	16
I9MT1603A5-NC2033	#5	3/16	4.76		7/16	11.11	3/16	4.76	10.3	20.0	
I9MT2004A6-NC2033	#6	7/32	5.56	+0.22 0	1/2	12.7	7/32	5.56	11.8	27.75	20
I9MT2004A7-NC2033	#7	1/4	6.35		5/8	15.88	1/4	6.35	14.6	28.5	
I9MT2004A8-NC2033	#8	5/16	7.94	+0.22 0	3/4	19.05	5/16	7.94	17.6	29.0	25
I9MT2506A10-NC2033	#10	3/8	9.53		0.98"	25.0	3/8	9.53	22.9	34.9	



**Cutting data**

**i - Center**
**Attention:**

- For  $d1 < 4$  mm or size #5, be sure the center misalignment is less than 0.05mm.
- If the misalignment of the turret center of the CNC lathe is above 0.15mm, please use the Center Height Adjusting Sleeve ( see page 44).
- For low spindle speed special purpose machines or lathes, lower spindle speed is allowed but the feed rate should be maintained.

**•  $\phi 1\sim\phi 4$  (#2~#5)**

Work piece material	Vc (m/min.)	f (mm/rev.)					Cutting fluid
		IC08		IC12			
		$\phi 1\sim 1.25$	$\phi 1.6\sim 2$ (#2)	$\phi 2$ (#2)	$\phi 2.5$ (#3)	$\phi 3.15$ (#4)	
Carbon steel C<0.3%	60-70-80	(S=17825 rpm) 0.02-0.03-0.05	(S=13930 rpm) 0.03-0.05-0.06	(S=11140 rpm) 0.04-0.06-0.08	(S=8912 rpm) 0.06-0.08-0.10	(S=7073 rpm) 0.08-0.10-0.12	emulsion
Carbon steel C>0.3%	50-60-70	(S=17825 rpm) 0.02-0.03-0.05	(S=11940 rpm) 0.03-0.04-0.05	(S=9549 rpm) 0.03-0.04-0.05	(S=7639 rpm) 0.06-0.08-0.10	(S=6063 rpm) 0.08-0.10-0.12	emulsion
Low alloy steel C<0.3%	45-55-65	(S=14005 rpm) 0.01-0.02-0.04	(S=10950 rpm) 0.02-0.03-0.05	(S=8753 rpm) 0.02-0.03-0.05	(S=7002 rpm) 0.04-0.06-0.08	(S=5557 rpm) 0.06-0.08-0.10	emulsion
High alloy steel C>0.3%	40-50-60	(S=12732 rpm) 0.01-0.02	(S=9950 rpm) 0.01-0.02-0.04	(S=7957 rpm) 0.01-0.02-0.04	(S=6366 rpm) 0.02-0.04-0.06	(S=5052 rpm) 0.04-0.06-0.08	emulsion
Stainless Steel	5-10-20	-	-	(S=1592 rpm) 0.01-0.02	(S=1270 rpm) 0.01-0.02-0.03	(S=1010 rpm) 0.02-0.03-0.05	emulsion internal $\geq 5$ bar
Casting iron	50-60-70	(S=15278 rpm) 0.01-0.02-0.04	(S=11940 rpm) 0.02-0.04-0.06	(S=9549 rpm) 0.02-0.04-0.06	(S=7639 rpm) 0.04-0.06-0.08	(S=6063 rpm) 0.06-0.08-0.10	dry
Al, and non-ferrous metal	100-150 -200	(S=38197 rpm) 0.01-0.02-0.03	(S=29850 rpm) 0.01-0.02-0.04	(S=23873 rpm) 0.01-0.02-0.04	(S=19098 rpm) 0.02-0.03-0.05	(S=15157 rpm) 0.02-0.04-0.06	emulsion

**•  $\phi 5\sim\phi 10$  (#6~#10)**

Work piece material	Vc (m/min.)	f (mm/rev)					Cutting fluid
		IC16		IC20		IC25	
		$\phi 4$ (#5)	$\phi 5$	#6	$\phi 6.3$ (#7)	$\phi 8$ (#8)	
Carbon steel C<0.3%	60-70-80	(S=5570 rpm) 0.08-0.12-0.14	(S=4456 rpm) 0.10-0.12-0.16	(S=3536 rpm) 0.10-0.14-0.16	(S=2785 rpm) 0.12-0.15-0.18	(S=2228 rpm) 0.14-0.18-0.20	emulsion
Carbon steel C>0.3%	50-60-70	(S=4774 rpm) 0.08-0.12-0.14	(S=3819 rpm) 0.10-0.12-0.16	(S=3031 rpm) 0.10-0.14-0.16	(S=2387 rpm) 0.12-0.15-0.18	(S=1909 rpm) 0.14-0.18-0.20	emulsion
Low alloy steel C<0.3%	45-55-65	(S=4376 rpm) 0.06-0.08-0.10	(S=3501 rpm) 0.08-0.10-0.12	(S=2778 rpm) 0.08-0.12-0.14	(S=2188 rpm) 0.10-0.14-0.16	(S=1750 rpm) 0.12-0.16-0.20	emulsion
High alloy steel C>0.3%	40-50-60	(S=3978 rpm) 0.04-0.06-0.08	(S=3183 rpm) 0.06-0.08-0.10	(S=2526 rpm) 0.08-0.10-0.12	(S=1989 rpm) 0.10-0.14-0.16	(S=1591 rpm) 0.10-0.14-0.16	emulsion
Stainless Steel	10-15-25	(S=1194 rpm) 0.02-0.04-0.06	(S=955 rpm) 0.02-0.04-0.06	(S=758 rpm) 0.04-0.06-0.08	(S=597 rpm) 0.04-0.06-0.08	(S=477 rpm) 0.05-0.07-0.10	emulsion internal $\geq 5$ bar
Casting iron	50-60-70	(S=4774 rpm) 0.06-0.08-0.10	(S=3819 rpm) 0.08-0.10-0.12	(S=3031 rpm) 0.08-0.12-0.14	(S=2387 rpm) 0.10-0.14-0.16	(S=1909 rpm) 0.12-0.16-0.18	dry
Al, and non-ferrous metal	100-150 -200	(S=11936 rpm) 0.02-0.04-0.06	(S=9549 rpm) 0.04-0.06-0.08	(S=7578 rpm) 0.04-0.06-0.08	(S=5968 rpm) 0.06-0.08-0.10	(S=4774 rpm) 0.06-0.08-0.10	emulsion

**Disassemble**
**Step-1**
**Loosen the screw**

**Step-2**
**Hole in the back**

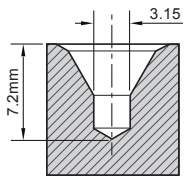
**Step-3**
**Push out insert**


Undeniable benefits of i-Center.

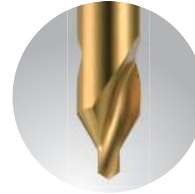
i-Center is the unique solution in the world to upgrade the center drill process into the indexable generation - leaving HSS and solid carbide centering as ancient history.

**Example of comparison:**

Work piece: Low carbon alloy steel, 850 N/mm<sup>2</sup>  
 Diameter of tool: Ø3.15 mm Depth of drilling: 7.2 mm  
 Machine: Vertical Machining Center, BT40 with internal coolant



i-Center



HSS Center Drill (TiN Coating)



Solid Carbide Center Drill

	i-Center	HSS Center Drill (TiN Coating)	Solid Carbide Center Drill
Cutting speed m/min.	65	17	65
Spindle speed r.p.m.	6570	1718	6570
Feed rate f = mm/rev.	0.12	0.02	0.1
Feed rate F= mm/min.	788.4	34.4	657
Coolant Emulsion	External / Internal	External	External
Drilling time sec.	0.55	12.5	0.65
Holes of drilling per edge	7000	700	5000

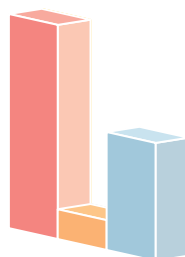
**Profit by making the right choice**

- High speed and feed rate reduce cutting time.
- The unique design increases tool life and reduces changeover time.
- Together these attributes lower cost and increase your profit!

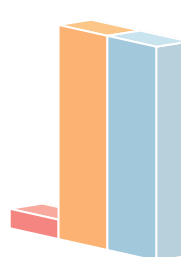
► Feed rate



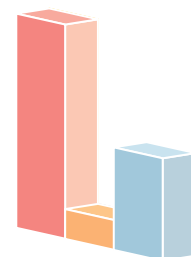
► Tool life per edge



► Tool setting time



► Cost saving



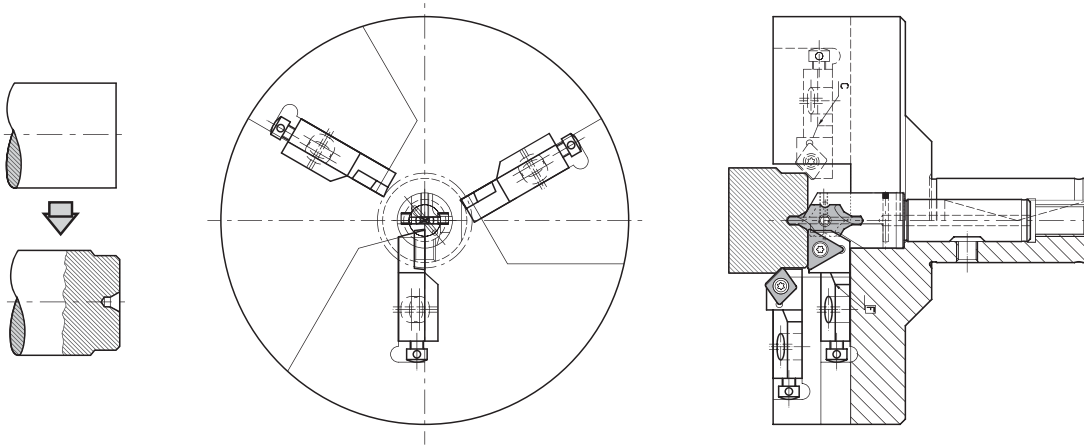
Nine9 i-Center

HSS center drill

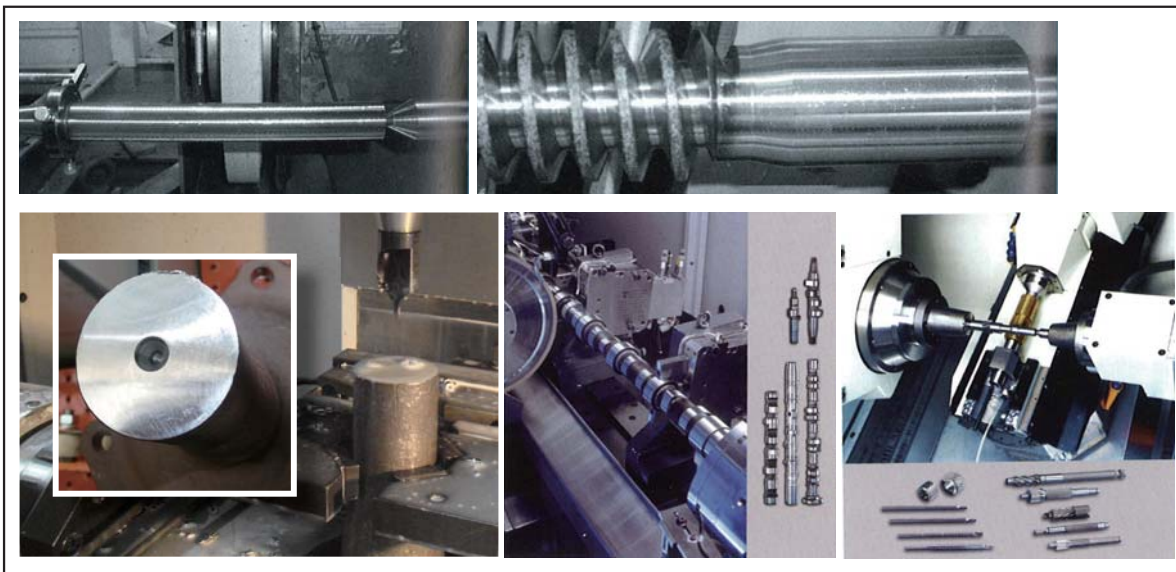
Solid carbide center drill

## Application of i-Center.

- For shaft end machining.



- For shaft centering.



## Center Height Adjusting Sleeve

### Principle:

Designed for adjusting Center Height of center drills, NC spot drills, reamers and taps on the CNC lathes.

### 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 type of internal turning tool holders.
- Center height adjusting range:  $\pm 0.15$  mm (.006").
- Total axial movement is 6mm (.236").



• Detail information, please see page44