



Inserts

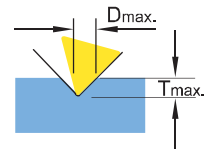
- Feature:**
- For spotting diameter up to 25mm.
 - Fully ground cutting edge and relief angle.



NC40

- NC40:**
- P35, TiN coated.
 - Universal grade for carbon steel, alloy steel and cast iron.
 - Each insert has 3 cutting edges.

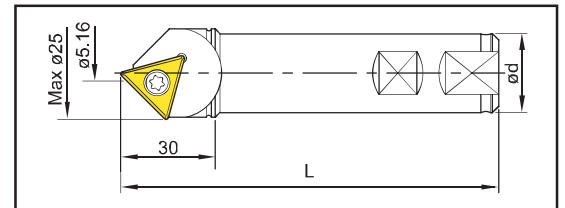
Code	Parts No.	Grade	Coating		Dimensions		Dmax.	Tmax.
					L	S		
017301	TCMT220408CT-NC40	P35	TiN		20.83	4.76	25 (0.98")	12.2 (0.48")



HOLDERS

- Features:**
- Large spotting diameter with indexable insert.
 - Single cutting edge design gives high precision when spotting.

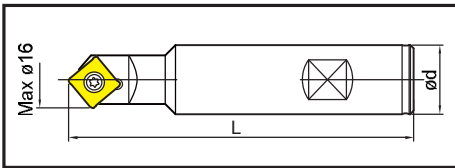
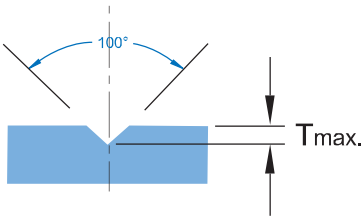
- Applications:**
- Spotting, and chamfering on milling machines, machining centers.



Code	Parts No.	Ød	L	Screw	Key
607001	00-99616-25-CT28	25	120	NS-40100 3.8 Nm	NK-T15
617001	00-99616-1-CT28	25.4	120		

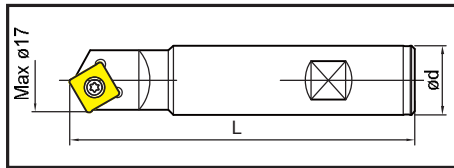
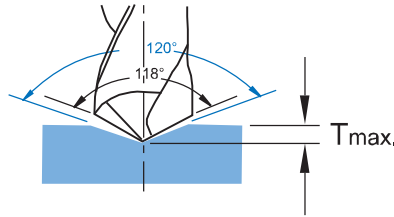


• 100 degree



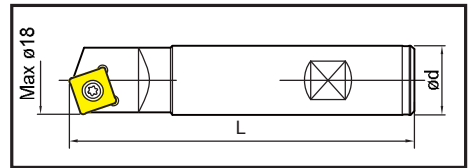
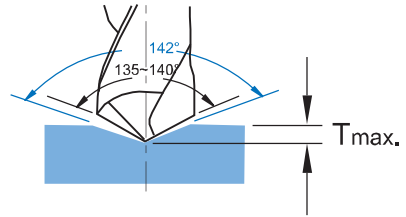
- For aircraft 100° normal rivet hole and screw hole.

• 120 degree



- For spotting before drilling by 118° point angle drill.
- 60° chamfering.

• 142 degree

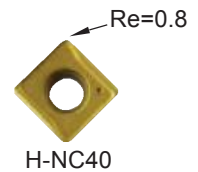


- For spotting before drilling by 135~140° point angle high performance drilling.

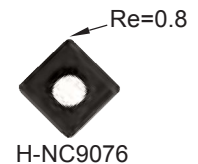
Inserts

Feature: • Special geometry with supporting edges to reduce the vibration in high speed machining.

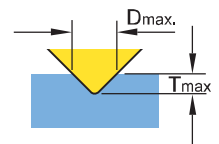
- H-NC40** : • K20F grade, TiN coated.
 • General purpose for all kinds of steel and cast iron.
 • Each insert has 2 cutting edges.



- H-NC9076** : • High positive geometry and sharp edge .
 • DLC coated, specially developed for Al, Al-alloy, copper, brass and bronze.
 • Produces excellent surface finish when chamfering non-ferrous metals.
 • Each insert has 2 cutting edges.



Code	Parts No.	Grade	Coating	Diagram	Dimensions			Dmax.	Tmax.
					L	S	Re		
014202	N9MT11T3CT2T-H-NC40	K20F	TiN		11	3.97	0.8	15	7
014203	N9MT11T3CT2T-H-NC9076	K20F	DLC		11	3.97	0.8	15	7





HOLDERS-100°/120°/142°

- Features:**
- Indexable insert spotting drill holders for 100°/120°/142° spotting.
 - Reduces spotting time, increase tool life and position accuracy of the next drilling operation.

Code	Parts No.	Angle	ød	L	Screw	Key
604011	00-99616-20-100	100°	20	100	NS-35080 2.5 Nm	NK-T15
604013	00-99616-20-120	120°	20			
614003	00-99616-3/4-120		3/4"			
604014	00-99616-20-142	142°	20			
614004	00-99616-3/4-142		3/4"			

Note: ● ød 3/4" shank 100° NC spot drill is available on request.

*Higher feed rate!
Better center position!
Longer tool life!*



SINGLE SET-100°/120°/142°

- User friendly, each set is fitted with one complimentary insert.

Code	Parts No.	Angle	Shank ø	Total Length	Insert fitted	Dmax.	Tmax.
604111-4202	00-99616-20-100-H-02S	100°	20	100	N9MT11T3CT2T -H-NC40	16.53	6
604113-4202	00-99616-20-120-H-02S	120°	20	100		17	5
614103-4202	00-99616-3/4-120-H-02S		3/4"	4"		0.67"	0.196"
604114-4202	00-99616-20-142-H-02S	142°	20	100		18.5	3
614104-4202	00-99616-3/4-142-H-02S		3/4"	4"		0.728"	0.118"



STARTER PACKAGE-100°/120°/142°

- Selected package for starter who wants to try NC Spot Drill.
 - Included one insert on tool holder and 5 inserts in the pocket.
- All kits are packed by blister card.

Code	Parts No.	Angle	Shank ø	Insert included	Content
604211-4202	00-99616-20-100-H-ME6	100°	20	N9MT11T3CT2T-H-NC40	1 tool holder + 6 inserts + 1 key
604213-4202	00-99616-20-120-H-ME6	120°	20		
614203-4202	00-99616-3/4-120-H-IN6		3/4"		
604214-4202	00-99616-20-142-H-ME6	142°	20		
614204-4202	00-99616-3/4-142-H-IN6		3/4"		





Shank
Ø20

Inserts

Feature:

- Patented square insert, each insert has 4 cutting-edges.
- Special wiper design to create better-finished surface, increasing feed rate double.



N9MT XX,
f=0.3mm/rev
with wiper

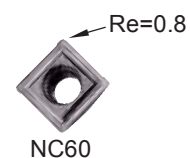
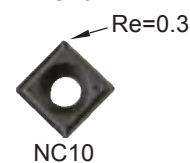
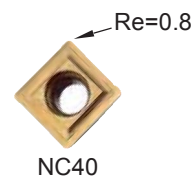


N9MT11T308LA -NC40 : • Carbide insert, TiN coated.
Good for all kinds of steel and cast iron.

N9MT11T308LA -NC10 : • Carbide insert, very positive angle.
Good for Al, Al-alloy and non-ferrous metal.

N9MT11T308LA -NC60 : • Cermet insert.
Good for hardened steel, up to HRC55°.

Code	Parts No.	Grade	Coating		Dimensions		
					L	S	Re
014409	N9MT11T308LA -NC40	P35	TiN		11.11	3.97	0.8
014410	N9MT11T308LA -NC10	K10F	TiAN		11.11	3.97	0.3
014411	N9MT11T308LA -NC60	Cermet			11.11	3.97	0.8



HOLDERS

Features:

- 99616-28 can be applied for machining bottom chamfering and side grooving.

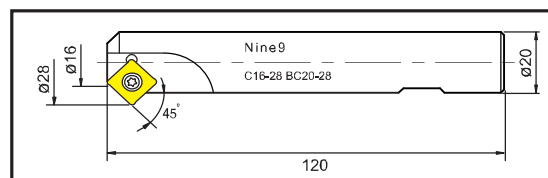
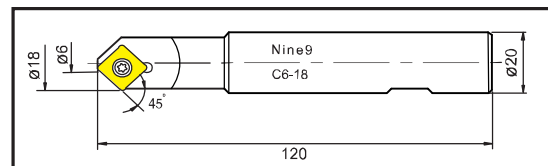


99616-18



99616-28

Code	Parts No.	C	ød	L	Screw	Key
604017	00-99616-18	ø6-ø18	20	120	NS-35080 2.5 Nm	NK-T15
604018	00-99616-28	ø16-ø28				





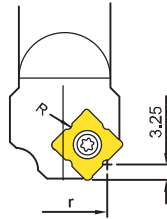
Inserts

Features:

- Each insert has four cutting edges.
- Various corner radius inserts can fit on same holder.
- Carbide insert can stand very long tool life.

N9MT11T3RXX-NC40 :

- Carbide insert, P35, TiN coated, for steel and cast iron, general purpose.
- Inserts are CNC ground for precision radius location.



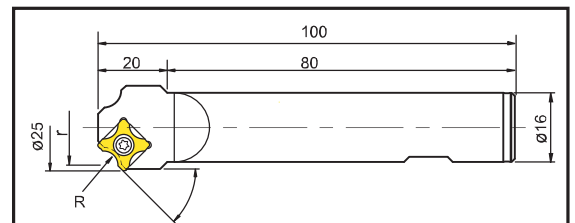
Code	Parts No.	Grade	Coating	Corner radius(R)	Tool radius offset (r)	Dimensions	
						L	S
014404	N9MT11T3R10-NC40	P35	TiN	1.0	9.25	11.11	3.97
014405	N9MT11T3R15-NC40	P35	TiN	1.5	9.5	11.11	3.97
014406	N9MT11T3R20-NC40	P35	TiN	2.0	9.75	11.11	3.97
014407	N9MT11T3R25-NC40	P35	TiN	2.5	10	11.11	3.97
014408	N9MT11T3R30-NC40	P35	TiN	3.0	10.25	11.11	3.97

HOLDERS

Features:

- Center of radius of each tool is dedicated.
- Tool offset can be set after measuring tool length by tool presetter or Z-Zero Setter.

Code	Parts No.	ød	L	Screw	Key
604015	00-99616-16-25R	16	100	NS-35080 2.5 Nm	NK-T15





Shank
Ø12
Ø16

Shank
Ø1/2"
Ø5/8"

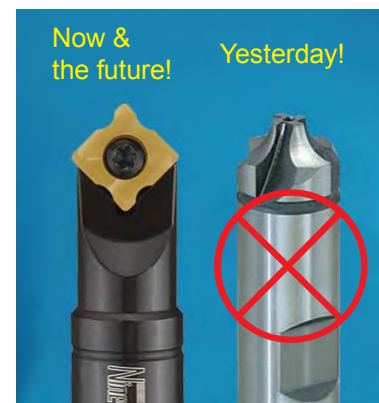
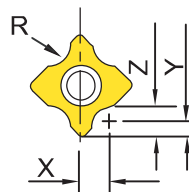
Inserts

Features:

- Each insert has two cutting edges.
- Higher cutting speed and feed rate.
- Various corner radius inserts can fit on same holder.
- **Combination corner rounding and 45° chamfering application on same insert.**
- Carbide insert can stand very long tool life.
- Very small X offset, good for contour chamfering.

N9MT11T3RCXX-NC40

- Submicron carbide insert, K20F, TiN coated, universal design for all kinds of materials.
- Inserts are CNC ground for precision radius location.



Code	Parts No.	Grade	Coating	Corner radius(R)	offset			Dimensions	
					X	Y	Z	L	S
014209	N9MT11T3RC10-NC40	K20F	TiN	1.0	2.75	1.5	2.5	11.11	3.97
014210	N9MT11T3RC15-NC40	K20F	TiN	1.5	3.25	1.5	3	11.11	3.97
014211	N9MT11T3RC20-NC40	K20F	TiN	2.0	3.75	1.5	3.5	11.11	3.97
014212	N9MT11T3RC25-NC40	K20F	TiN	2.5	4.25	1.5	4	11.11	3.97
014213	N9MT11T3RC30-NC40	K20F	TiN	3.0	4.75	1.4	4.4	11.11	3.97
014214	N9MT11T3RC1/64-NC40	K20F	TiN	1/64	0.086"	0.059"	0.0747"	0.437"	0.156"
014215	N9MT11T3RC1/32-NC40	K20F	TiN	1/32	0.101"	0.059"	0.090"	0.437"	0.156"
014216	N9MT11T3RC1/16-NC40	K20F	TiN	1/16	0.133"	0.059"	0.122"	0.437"	0.156"
014217	N9MT11T3RC3/32-NC40	K20F	TiN	3/32	0.164"	0.059"	0.153"	0.437"	0.156"
014218	N9MT11T3RC 1/8-NC40	K20F	TiN	1/8	0.199"	0.055"	0.180"	0.437"	0.156"

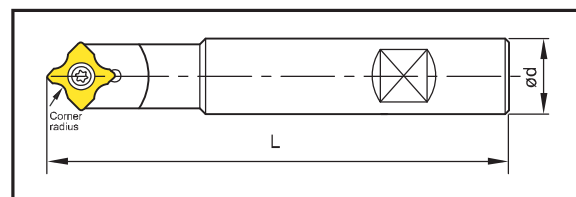
• Other sizes also available upon request.

HOLDERS

Features:

- **For corner rounding using NC Spot Drill shank.**
- Good for small work pieces.
- Same insert can also be used to produce a 45 degree edge chamfer.

Code	Parts No.	ød	L	Screw	Key
604002	00-99616-14-12	12	100	NS-35080 2.5 Nm	NK-T15
604004	00-99616-14	16	100		
614001	00-99616-14-1/2	1/2"	4"		
614002	00-99616-14-5/8	5/8"	4"		





Shank
Ø20

Shank
Ø25

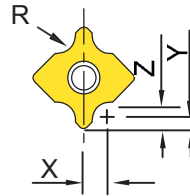
Inserts

Features:

- Higher cutting speed and feed rate.
- Various corner radius inserts can fit on same holder.
- **Combination corner rounding and 45° chamfering application on same insert.**
- Carbide insert can stand very long tool life.

N9MT1704RCXX-NC2071 :

- Submicron carbide insert, K20F, TiN coated, universal design for all kind of materials.
- Inserts are CNC ground for precision radius location.
- Each insert has two cutting edges.



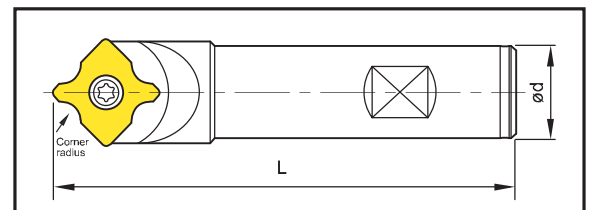
Code	Parts No.	Grade	Coating	Corner radius(R)	offset			Dimensions		
					X	Y	Z			
016202	N9MT1704RC40-NC2071	K20F	TiN	4.0	5.95	2	6		L	S
016203	N9MT1704RC50-NC2071	K20F	TiN	5.0	6.90	2	7		17	4.76
016204	N9MT1704RC60-NC2071	K20F	TiN	6.0	7.90	2	8		17	4.76

HOLDERS

Features:

- **For corner rounding using NC Spot Drill shank.**
- Good for small work pieces, which need large corner rounding.
- 45 degree chamfering is available by using straight position of cutting edge.

Code	Parts No.	ød	L	Screw	Key
606001	00-99616-22	20	100	NS-50125 5.5 Nm	NK-T20
606002	00-99616-22-150L	25	150		



- Other sizes also available upon request.



Inserts

Features:

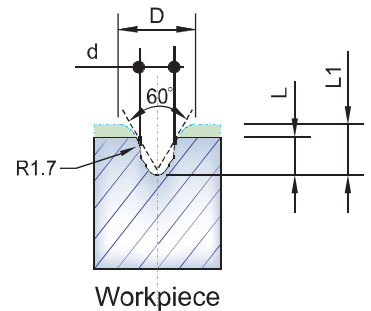
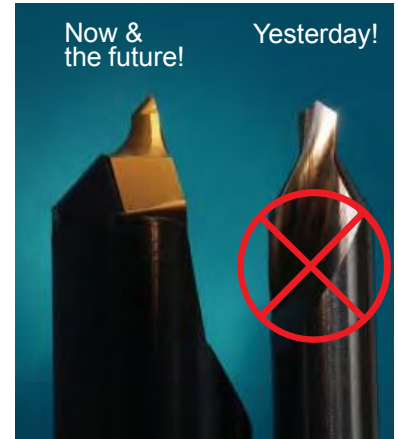
- Very high cutting speed and feed rate.
- Center drilling with indexable inserts.
- Create center holes similar to DIN 332 Form R, R2.0, 2.5 and 3.15 mm.
- Different dimension inserts are interchangeable on same holder.
- Carbide insert can stand very long tool life.
- Indexable insert saves pre-setting time of tool change.

N9MT11T3PRXX-NC40 :

- Carbide insert, P35, TiN coated, for all steel and cast iron, general purpose.
- Each insert has two cutting edges.
- Radius curve eliminates the sharp transition from drill point to countersink angle. The risk of breakage is reduced.



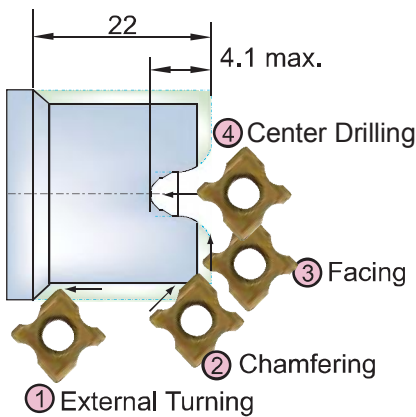
NC40



Dimensions of the center hole drilled by PR center drilling inserts.

Code	Parts No.	Grade	Coating	Rotation	Dimensions				
					d	D	L	L ₁	Re
014205	N9MT11T3PR20-NC40	P35	TiN	CW	2.0	5.4	2.7	3.3	0.8
014206	N9MT11T3PR25-NC40			CW	2.5	5.9	3.0	3.7	0.8
014207	N9MT11T3PR30-NC40			CW	3.15	6.4	3.3	4.0	0.8
014208	N9MT11T3PL30-NC40			CCW	3.15	6.4	3.3	4.0	0.8

Turning and Centering Capacity on CNC Lathes



Center drilling by Nine 9 PR insert, spindle speed: 6000 r.p.m. Feed rate: 1800 mm/min. It is 30 times more than HSS center drill.

Holders

Features:

- For center drilling on any type of machine.
- For external turning and facing on lathes as well.

Code	Parts No.	ød	L	Screw	Key
604002	00-99616-14-12	12	100	NS-35080 2.5 Nm	NK-T15
604004	00-99616-14 (*PR)	16	100		

*Especially holder for PR inserts.



Shank
Ø12
Ø16

Shank
Ø1/2"
Ø5/8"

Single Set

- User friendly, each set is fitted with one complimentary insert.

Code	Parts No.	Shank Ø	Total Length	Insert fitted	Dmax.	Tmax.
604102-4205	00-99616-14-12-PR20-02S	12	100	N9MT11T3PR20	2.0	2.7
604102-4206	00-99616-14-12-PR25-02S			N9MT11T3PR25	2.5	3.0
604102-4207	00-99616-14-12-PR30-02S			N9MT11T3PR30	3.15	3.3
604104-4205	00-99616-14-PR20-02S	16	100	N9MT11T3PR20	2.0	2.7
604104-4206	00-99616-14-PR25-02S			N9MT11T3PR25	2.5	3.0
604104-4207	00-99616-14-PR30-02S			N9MT11T3PR30	3.15	3.3



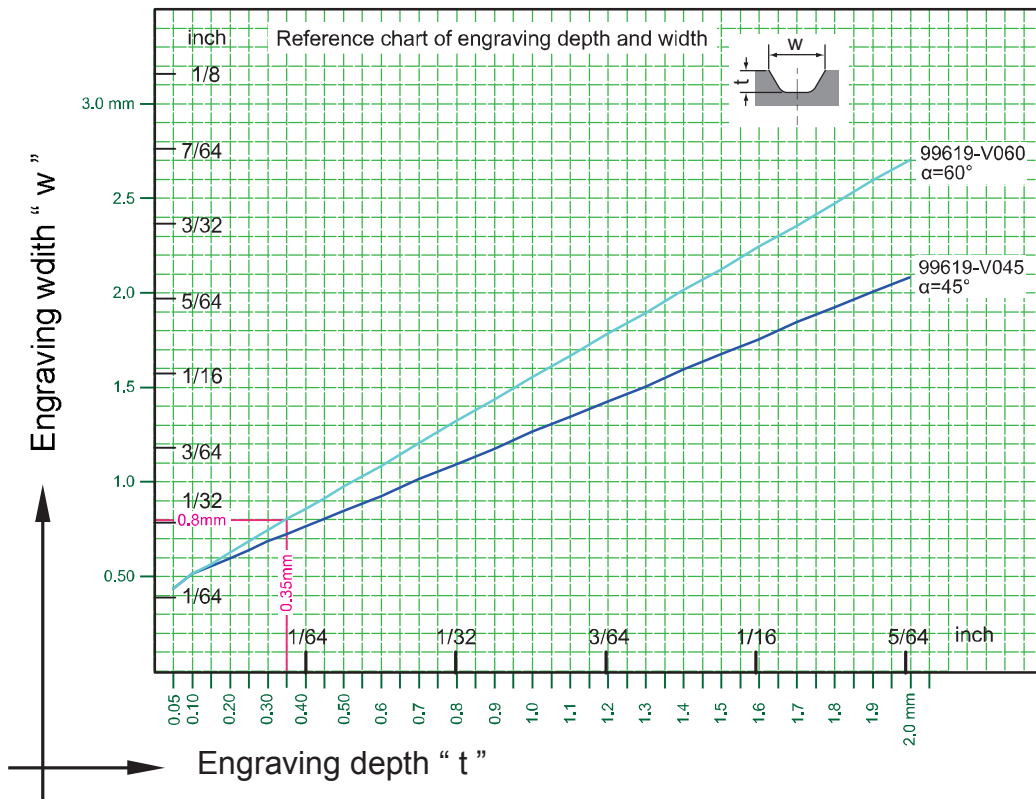
Starter Package

Features:

- Selected package for starter who likes to try Center Drilling.
 - Included one insert on tool holder and 5 inserts in the pocket.
- All kits are packed by blister card.

Code	Parts No.	Shank Ø	Insert included	Content
604202-4205	00-99616-14-12-ME6PR20	12	N9MT11T3PR20-NC40	1 tool holder + 6 inserts + 1 key
604202-4206	00-99616-14-12-ME6PR25		N9MT11T3PR25-NC40	
604202-4207	00-99616-14-12-ME6PR30		N9MT11T3PR30-NC40	
604204-4205	00-99616-14-ME6PR20	16	N9MT11T3PR20-NC40	
604204-4206	00-99616-14-ME6PR25		N9MT11T3PR25-NC40	
604204-4207	00-99616-14-ME6PR30		N9MT11T3PR30-NC40	





- The bottom of the engraving is flat, minimum engraving depth (t) of 0.05 mm (0.002") is recommended.
- To use the engraving chart, select your engraving width (w) on the vertical axis. Select your engraving insert angle (45° or 60°), and follow the horizontal line from the (w) axis to the intersection with the insert angle. Follow the vertical line from this intersection point to the engraving depth (t) axis to determine the engraving depth.

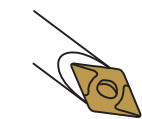
Attention!

1. Setting-up the tool holder:

- The engraving tool shank runout should be below 0.02 mm (0.0008"). Shrink fit chucks, hydraulic chuck and high precision spring collet chucks are recommended.
- Pre-balance the tool holder: G6.3/10,000 R.P.M. is recommended.

2. Clamping the engraving insert:

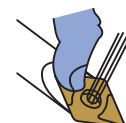
Place and hold the insert in the insert pocket against the positioning side. See illustration below:



Step 1: Place the insert in the insert pocket,



Step 2: Push insert against the insert pocket and insert the screw,



Step 3: Tighten the insert screw.

3. Selecting the speed and feed rate:

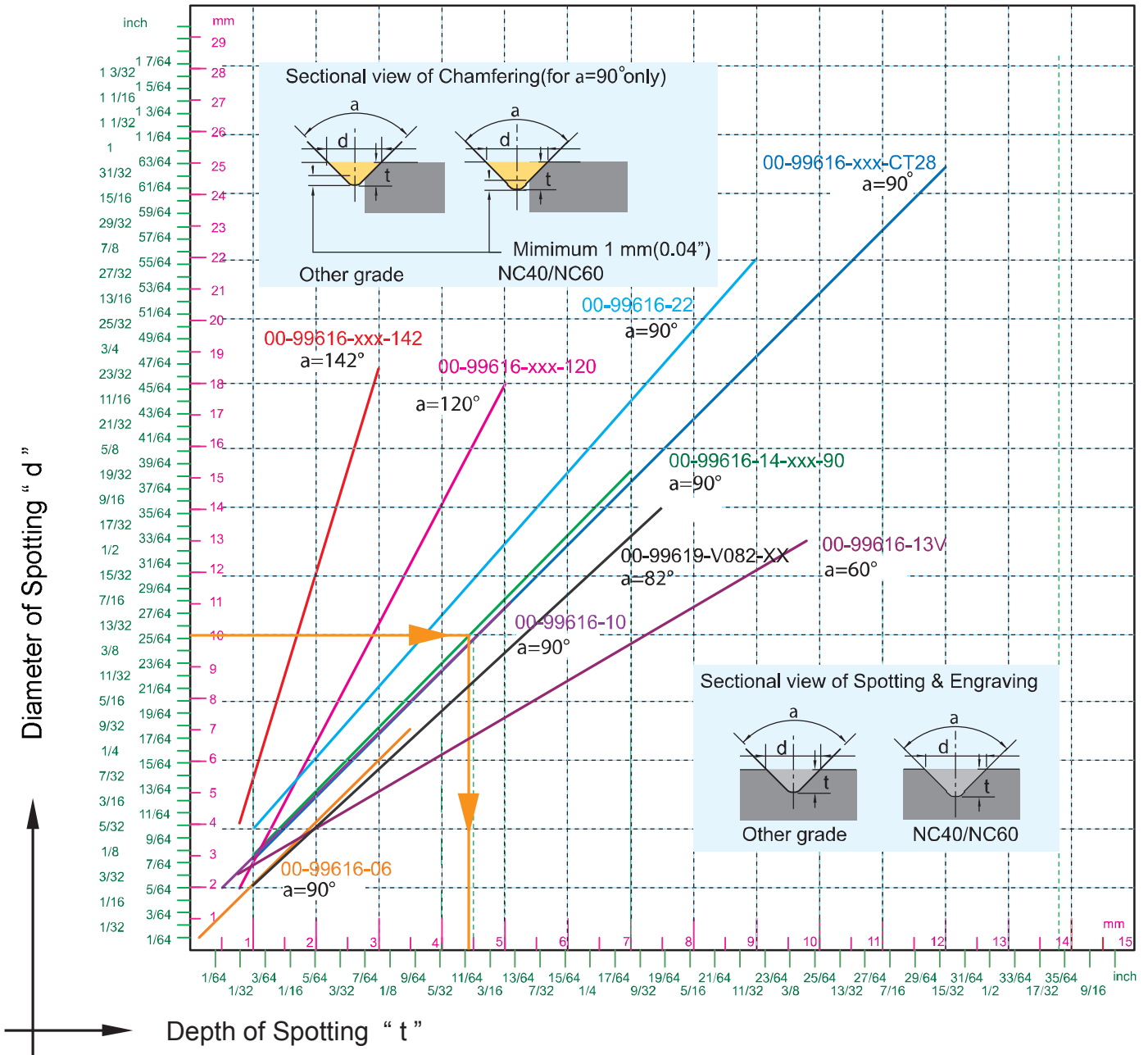
Select the spindle speed and feed rate according to the selected material's cutting data. The downward feed rate of the Z-axis should be reduced to 50-70% of the table feed rate.

4. Cutting fluid and cooling condition:

- Elmulsion is recommended for engraving on steel, stainless steel, Al and Al-alloy.
- Blown cooled air is recommended for engraving on cast iron and plastic.

Cutting Data

Work Material		S RPM	f (mm/rev.)	Grade of Insert
Stainless Steel		5000~20000	0.02~0.05	NC2071
Steel	< 30°HRC	5000~20000	0.02~0.05	NC2071
	30°-50°HRC	5000~20000	0.01~0.02	NC2032
Cast iron		5000~20000	0.01~0.02	NC2032
Aluminum, Non-Ferrous Metal		5000~20000	0.02~0.08	NC2071
PMMA, POM (Plastic)		5000~20000	0.02~0.08	NC2071



Instruction of Use

1. From Spot diameter "d" to get drill depth "t".
2. Point angle " α " is decided by which tool holder you use.
3. From "d" draw a horizontal line to get intersection of the line by point angle " α ".
4. From the intersection draw a vertical line to the bottom to have depth of spotting "t". "t" is the drill depth of the NC program.
5. The sectional view of spotting will depend on the shape of insert, NC40 and other grade of inserts have different sectional view.
6. For chamfering, do not use tip of insert, 1mm(0.04") minimum clearance is required for a smooth surface finish.

Calculate Spindle Speed

1. Using your "d" value and cutting speed Vc(SFM) from the data sheet (reference page 31), calculate spindle speed "S"(RPM).
2. Feed rate per minute $F=f \times S=RPM \times IPR$

Metric

$$S = \frac{V_c \times 1000}{\pi \times D}$$

$$F = f \times S$$

D= Diameter -mm
 S= Spindle speed -r.p.m.
 Vc= Cutting Speed -m/min.
 f = mm/rev.
 F= mm/min.

inch

$$S = RPM = (3.82 \times SFM) / D$$

$$F = IPR = RPM \times IPR$$

D= Diameter(inch)
 S=RPM=Revolutions per Minute(Spindle Speed)
 SFM= Surface Feet per Minute
 $SFM = V_c \text{ (m/min.)} \times 3.28$
 $IPR = f / 25.4$ - inches Per Revolution
 F=IPM= inches Per Minute(Feed)

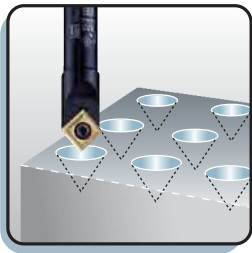
N9MT-CT Insert Multi-function Insert

Determine spindle speed and feed rate:

- Choose spotting depth to decide spotting diameter according to the Diameter/Depth chart of page 30.
- The spindle speed should be calculated by the maximum diameter of spotting, chamfering and grooving.



Centering

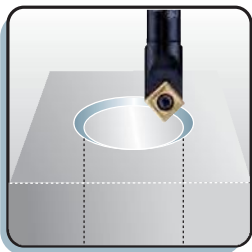


Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~250	0.05~0.10	NC40, H-NC40
Alloy Steel	100~200	0.04~0.06	NC40, H-NC40
Stainless Steel	65~125	0.03~0.06	NC10, NC60, H-NC40
Non-Ferrous Metal (Al, copper)	150~300	0.05~0.10	NC10, H-NC9076
Cast iron	80~150	0.05~0.10	NC40, NC10
Ti, Ti-alloy	60~80	0.03~0.06	H-NC40

* For technical construction reasons, the insert is not located on the center of the holder.

* Inserts with supporting edges can increase feed rate 50%. (ex:NC2071, NC9076, H-NC40 type)

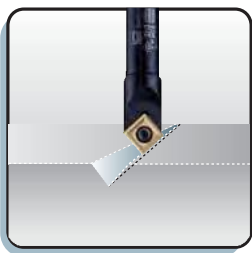
Chamfering



Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~320	0.15~0.24	NC40, H-NC40
Alloy Steel	100~250	0.12~0.20	NC40, H-NC40
Stainless Steel	65~125	0.1~0.20	NC10, NC60, H-NC40
Non-Ferrous Metal (Al, copper)	150~320	0.15~0.25	NC10, H-NC9076
Cast iron	150~250	0.15~0.25	NC40, NC10
Ti, Ti-alloy	60~80	0.03~0.06	H-NC40

* NC2071, NC9076, H-NC40 type can increase feed rate 20%.

Grooving



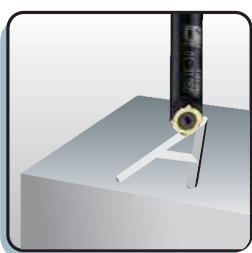
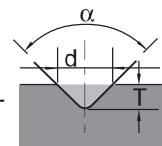
Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~250	0.05~0.08	NC40, H-NC40
Alloy Steel	100~200	0.04~0.06	NC40, H-NC40
Stainless Steel	65~125	0.03~0.06	NC10, NC60, H-NC40
Non-Ferrous Metal (Al, copper)	150~320	0.05~0.08	NC10, H-NC9076
Cast iron	80~150	0.05~0.08	NC40, NC10
Ti, Ti-alloy	60~80	0.03~0.06	H-NC40

N9MT-W Insert Engraving Insert

Engraving: Width of engraving=diameter of cutting="d"
Depth of engraving=depth of cutting="T"

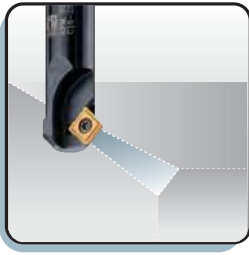
■ For $\alpha = 90^\circ$ insert, $d=2xT$

■ For $\alpha = 60^\circ$ insert, $d=1.73xT$



Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
All Kind of Steel, unhardened, Cast iron	20~80	0.01~0.02	NC40
Non-Ferrous Metal	20~100	0.01~0.02	NC10
Hardened Steel HRC 40-50°	20~80	0.01~0.02	NC10

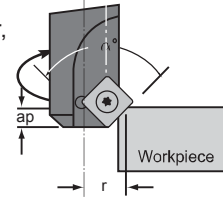
Attention: The calculated result "d" is only for calculation of spindle speed.

N9MT11T308
45° Chamfering Tool


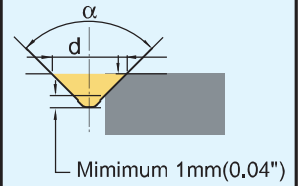
$$S = \frac{V_c \times 1000}{d \times \pi} \text{ r.p.m.}$$

$$F = S \times f \text{ mm/min.}$$

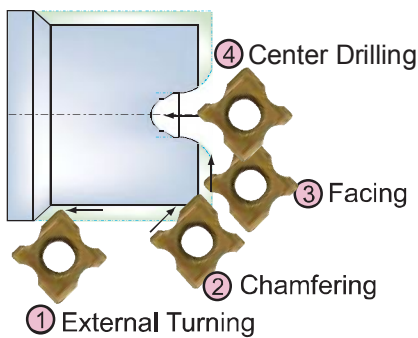
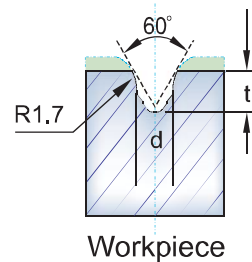
α = point angle 90°
 d = effective diameter,
 $= 2xr$
 V_c = cutting speed
 m/min. or ft./min.
 S = Spindle speed
 f = feed per rev.
 mm/rev.



Chamfering(90° only)


Recommended cutting speed for different materials:
45° Chamfering

Workpiece material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	120-150	0.05~0.10	NC40
Alloy Steel	100-120	0.04~0.08	NC40
High alloy steel, Hardened steel <HRC40°	60-80	0.03~0.06	NC40
Hardened steel HRC40°-55°	60-80	0.05~0.10	NC40
Stainless steel	50-60	0.03~0.06	NC10
Gray cast iron	80-100	0.05~0.10	NC40
Aluminum, Al-alloy Si < 12%	200-250	0.05~0.10	NC10
Al-alloy Si >12%	150-200	0.05~0.10	NC10
Copper	200-250	0.05~0.10	NC10
Brass and Bronze	150-200	0.05~0.10	NC10

N9MT-PR Insert
Center Drilling Insert
Turning and Centering

Center Drilling

Recommended cutting speed for different materials:
Center Drilling PR

Workpiece material	Vc (m/min.)	f (mm/rev.)	Grade of insert
Carbon Steel	80-150	0.05-0.20	NC40
Alloy steel	80-150	0.05-0.20	NC40
High alloy steel	80-150	0.05-0.20	NC40
Gray cast iron	80-150	0.05-0.20	NC40
Aluminum, Al-alloy Si < 12%	150-300	0.05-0.20	NC40
Al-alloy Si >12%	150-250	0.05-0.15	NC40
Copper	200-250	0.05-0.20	NC40
Brass and Bronze	150-250	0.05-0.20	NC40

Corner Rounding Tool Cutting Data



N9MT-R Insert

N9MT-RC Insert

Corner Rounding Tool

Determine spindle speed and feed:

To decide running speed of the tools and feed rate, please calculate spindle speed and feed rate according to the following formula and cutting data:

Calculate spindle speed

$$d = 2 \times X \quad \text{mm} \quad d = \text{diameter of the tool for calculation purpose}$$

$$d = 2 \times r \quad \text{mm} \quad X = \text{tool radius offset (ref. page 25~26 for RC inserts)}$$

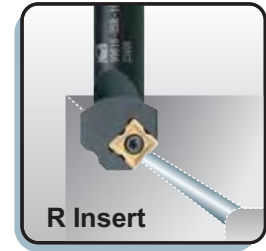
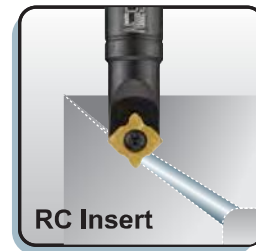
$$S = \frac{V_c \times 1000}{d \times \pi} \quad \text{r.p.m.} \quad r = \text{tool radius offset (ref. page 24 for R inserts)}$$

$$F = S \times f \quad \text{mm/min.} \quad V_c = \text{cutting speed m/min.}$$

$$\quad \quad \quad \quad \quad \quad S = \text{Spindle speed}$$

$$\quad \quad \quad \quad \quad \quad F = \text{Feed rate}$$

$$\quad \quad \quad \quad \quad \quad f = \text{feed per rev. mm/rev.}$$



Calculate tool length offset on machining center

$$TL = TL' - Y, \quad X = \text{tool radius offset (ref. page 25~26 for RC inserts)}$$

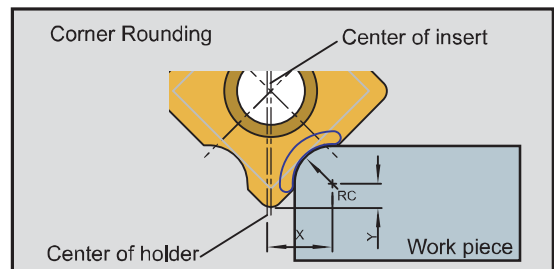
$$H = X \text{ or } r, \quad r = \text{tool radius offset (ref. page 24 for R inserts)}$$

$$\quad \quad \quad Y = \text{distance to the center of radius. (page 25~26 for RC inserts)}$$

$$\quad \quad \quad TL' = \text{tool length}$$

$$\quad \quad \quad TL = \text{tool length offset}$$

$$\quad \quad \quad H = \text{tool radius offset}$$



Recommended cutting speed for different materials:

Corner Rounding R Insert

Workpiece material	Vc (m/min.)	f (mm/rev.)	Grade of insert
Carbon Steel	120~150	0.05~0.10	NC40
Alloy steel	100~120	0.04~0.08	NC40
High alloy steel	60~80	0.03~0.06	NC40
Hardened steel <HRC40°	60~80	0.03~0.06	NC40
Stainless steel	50~60	0.03~0.06	NC40
Gray cast iron	80~100	0.05~0.10	NC40
Aluminum, Al-alloy Si < 12%	200~250	0.05~0.10	NC40
Al-alloy Si > 12%	150~200	0.05~0.10	NC40
Copper	200~250	0.05~0.10	NC40
Brass and Bronze	150~200	0.05~0.10	NC40

Corner Rounding RC Insert

Workpiece material	Vc (m/min.)	f (mm/rev.)	Grade of insert
Carbon Steel	80~150	0.05~0.10	NC40
Alloy steel	80~150	0.05~0.10	NC40
High alloy steel	80~150	0.04~0.08	NC40
Hardened steel <HRC40°	60~80	0.04~0.08	NC40
Stainless steel	60~100	0.05~0.10	NC40
Gray cast iron	80~150	0.05~0.10	NC40
Aluminum, Al-alloy Si < 12%	150~300	0.05~0.10	NC40
Al-alloy Si > 12%	150~250	0.05~0.10	NC40
Copper	200~250	0.05~0.10	NC40
Brass and Bronze	150~250	0.05~0.10	NC40

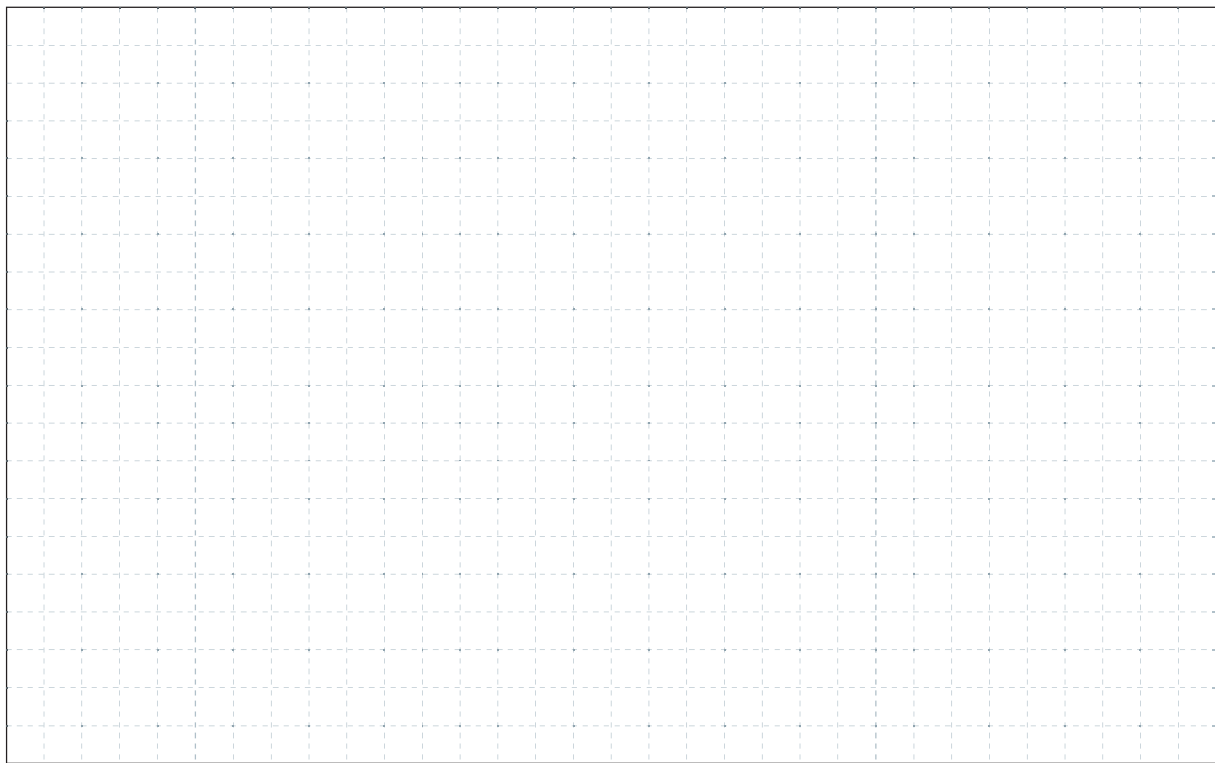
Job: Spotting Chamfering Engraving Facing Drilling

Milling Turning Others:





Holder: **Dia:** _____ **Length:** _____ **Shank:** _____

Working Material : ISO code or DIN code: _____

Sketch of working pieces:



Special

Ordering Code	Various Applications
 N9MT11T3FH-NC2031	8 mm end milling, face milling (High postive)
 N9MT11T3T-NC2031	Pitch 0.5-3 mm thread turning external
 N9MT11T3G-NC2031	2 mm grooving, depth 4 mm
 N9MT11T3E-NC2031	Drilling and milling a groove

*Special insert and holder are available on request.



8 mm end milling, face milling (High postive)



Pitch 0.5-3 mm thread turning external



2 mm grooving, depth 4 mm

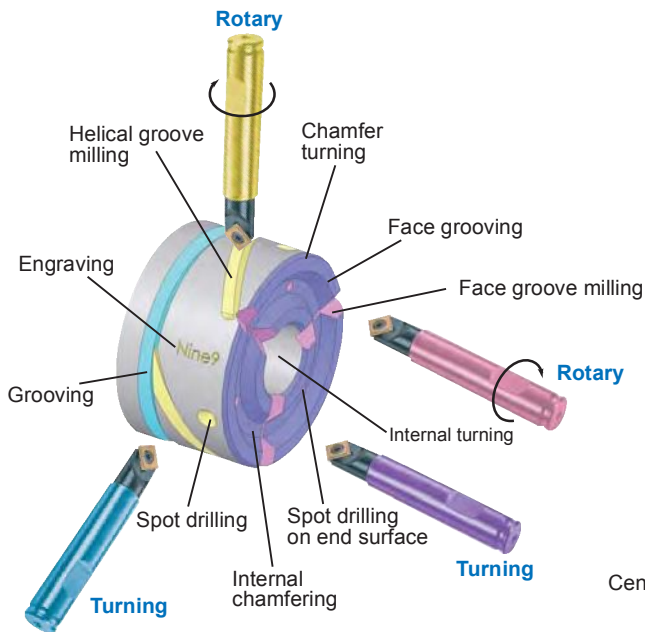


Drilling and milling a groove

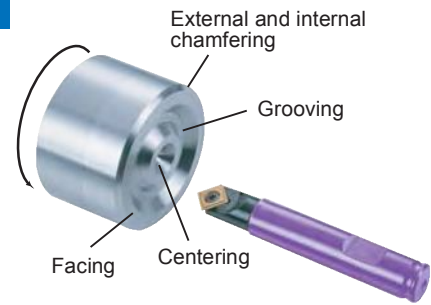
■ NC Spot Drill can be used on various machines types.

Turning Center

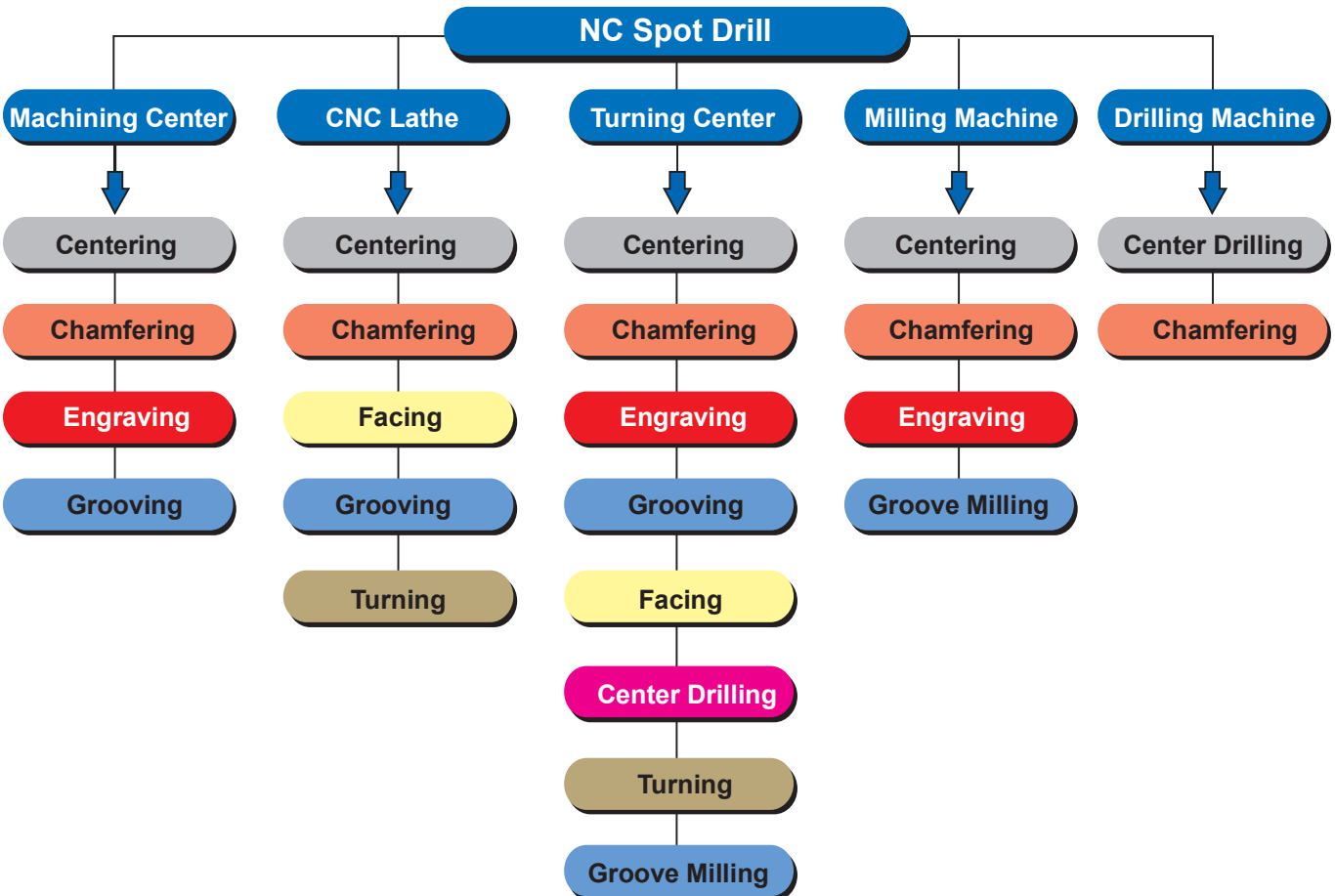
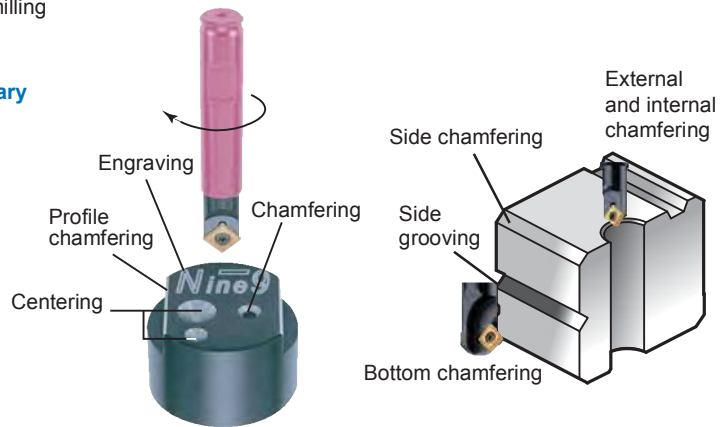
• Four in one



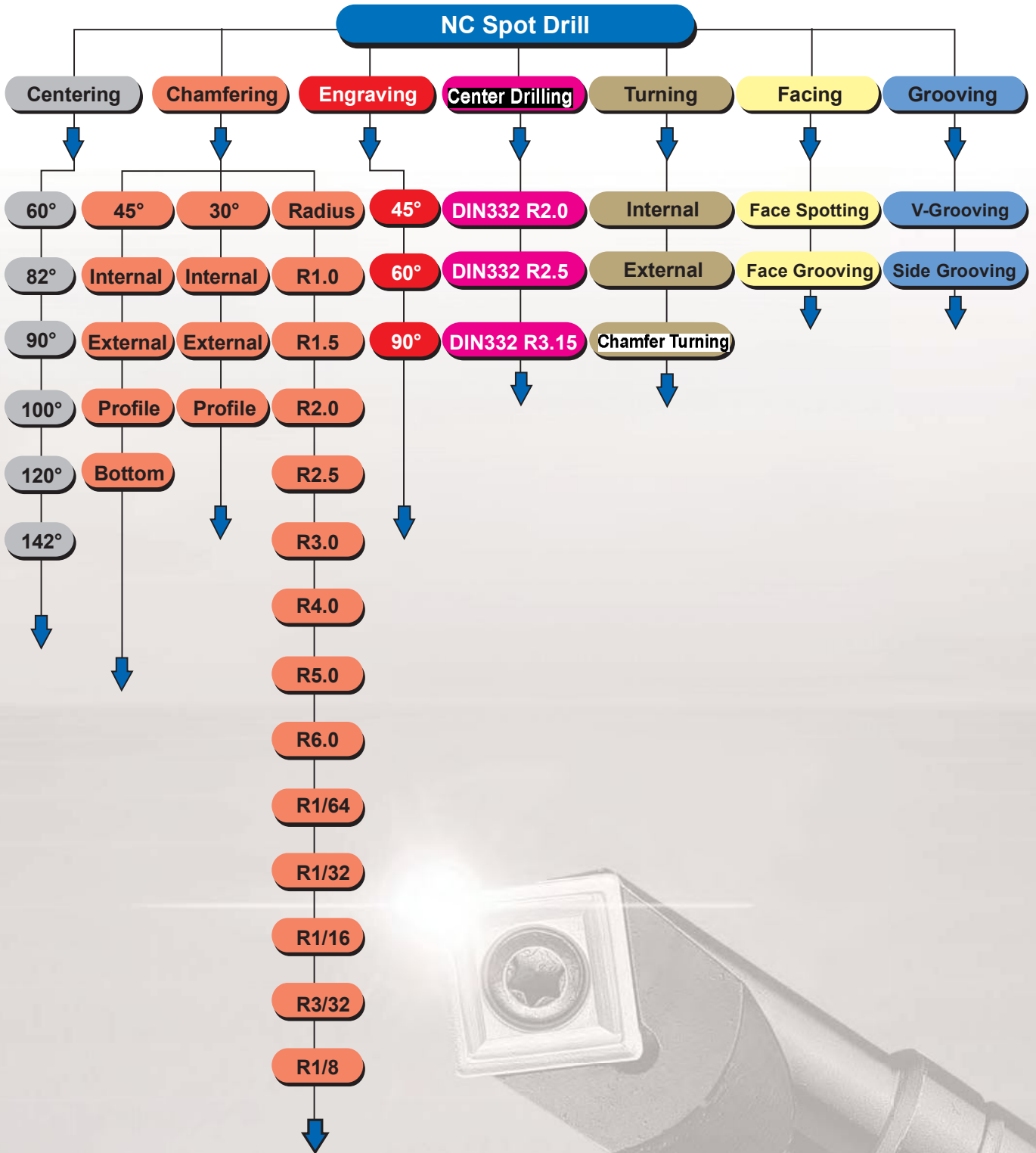
CNC Lathes



Machining Center

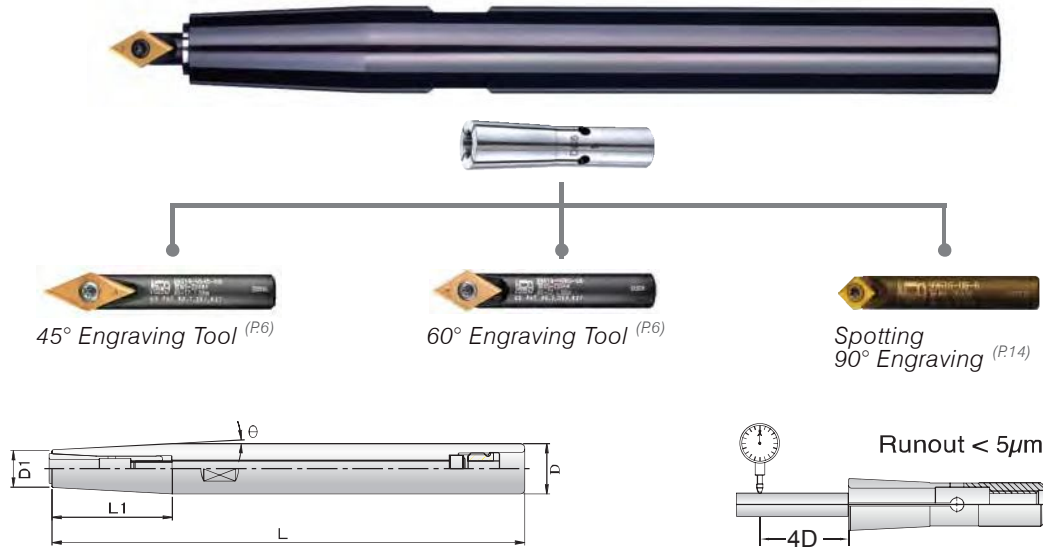


■ NC Spot Drill can be used for various applications.



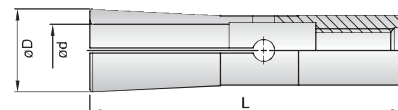
Extension Bar For NC Spot Drill

DC Slim Chuck



Ordering Code	Type of Holder	d	L	L1	ϕD	D1	θ	Collet	Hexagon Key	Back Screw	Stop Screw	Stop Nut
0-329090-212	ST12-DC6-120	2~6	120	40	12	13	--	DC6	0-301940~642	M5 × L95	--	TP-M12
-222	ST16-DC6-150	2~6	150	38	16	13	3°	DC6		M5 × L100	OP-M10	--
-232	ST20-DC6-200	2~6	200	70	20	13	3°	DC6		M5 × L100	OP-M10	--
-242	ST25-DC6-250	2~6	250	115	25	13	3°	DC6	0-301940~643	M5 × L100	OP-M10	--
0-329090-312	ST20-DC8-150	3~8	150	28	20	19	2°	DC8	0-301940~652	M6 × L72	OP-M12	--
-322	ST20-DC8-200	3~8	200	28	20	19	2°	DC8		M6 × L120	OP-M12	--
0-329090-412	ST25-DC10-150	3~10	150	28	25	24	2°	DC10	0-301940~662	M8 × L80	OP-M16	--
-422	ST25-DC10-200	3~10	200	28	25	24	2°	DC10		M8 × L100	OP-M16	--
-432	ST25-DC10-250	3~10	250	28	25	24	2°	DC10		M8 × L150	OP-M16	--

DC6-E		DC8-E		DC10-E	
Ordering Code	Size (mm)	Ordering Code	Size (mm)	Ordering Code	Size (mm)
0-300090-203	3.0	0-300090-303	3.0	0-300090-403	3.0
0-300090-204	4.0	0-300090-304	4.0	0-300090-404	4.0
0-300090-206	6.0	0-300090-306	6.0	0-300090-406	6.0
		0-300090-308	8.0	0-300090-408	8.0
				0-300090-410	10.0



Type	DC6	DC8	DC10
D	9.6	15	19.1
L	36	45	52

Solid Carbide Extension Bar

- TiN coated to indentify the efficient length



NC Spot Drill
99616-10-M6 (P15)
99616-14-M8 (P17)

Order No.	Part No.	ϕD	T	L	M
00-99801-12W	BC12-100M06W	12	60	100	M6xP1.0
00-99801-14W	BC14-120M08W	14	70	120	M8xP1.25
00-99801-16W	BC16-150M08W	16	80	150	M8xP1.25

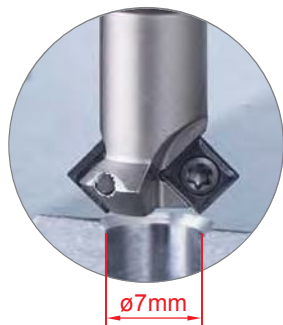
You can count on more Nine9 tools !

45° indexable chamfer mill

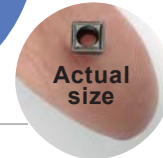
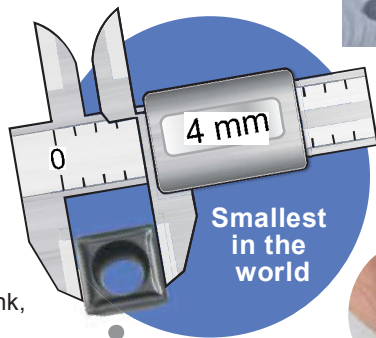
~ Get ready to go! ~

New Nine9 chamfer mill

is designed for chamfering and countersinking with an indexable insert.
The insert is a specifically designed for use in high speed machining ;
the multiple flutes provide for increased feed rate, optimizing performance and reducing cutting time.



*Smallest Indexable counter sink, diameter ø7 mm.



I-Center New Indexable Center Drills

~ Coming soon! ~

DIN 332 A+B, DIN 332 R, ø2.0mm ~ ø10mm
ANSI 60° Center Drill #2~#10
Special shape, extra long neck, combination type



DIN 332 A+B, DIN 332 R

- ▷ 2.00mm ▷ 5.00mm
- ▷ 2.50mm ▷ 6.30mm
- ▷ 3.15mm ▷ 8.00mm
- ▷ 4.00mm ▷ 10.00mm

A+B R

ANSI 60°

- ▷ 5/64 (#2) ▷ 7/32 (#6)
- ▷ 7/64 (#3) ▷ 1/4 (#7)
- ▷ 1/8 (#4) ▷ 5/16 (#8)
- ▷ 3/16 (#5) ▷ 3/8 (#10)

60°

Special

- ▷ Shape ex: long neck
- ▷ Diameter ex: 5.30mm
- ▷ Point angle ex: 140°
- ▷ Combination

ex: Center+Facing



High feedrate !
Economical !



Expensive !



Low feedrate !

- Very high cutting speed and feed rate.
- Each insert has 2 cutting edges.
- Latest coated carbide inserts provide for very long tool life.
- Center drilling with indexable insert saves pre-setting time of tool change.