



**Nine<sup>9</sup>**®

**NC Spot Drills  
Corner Rounding Cutters  
& Chamfering Cutters**

# NC Spot Drill with *Patented* indexable carbide insert.

**High Efficiency! Low Cost!**

**CNC Lathes, CNC Turning Centers and Machining Centers.**

**One tool will perform multiple applications.**

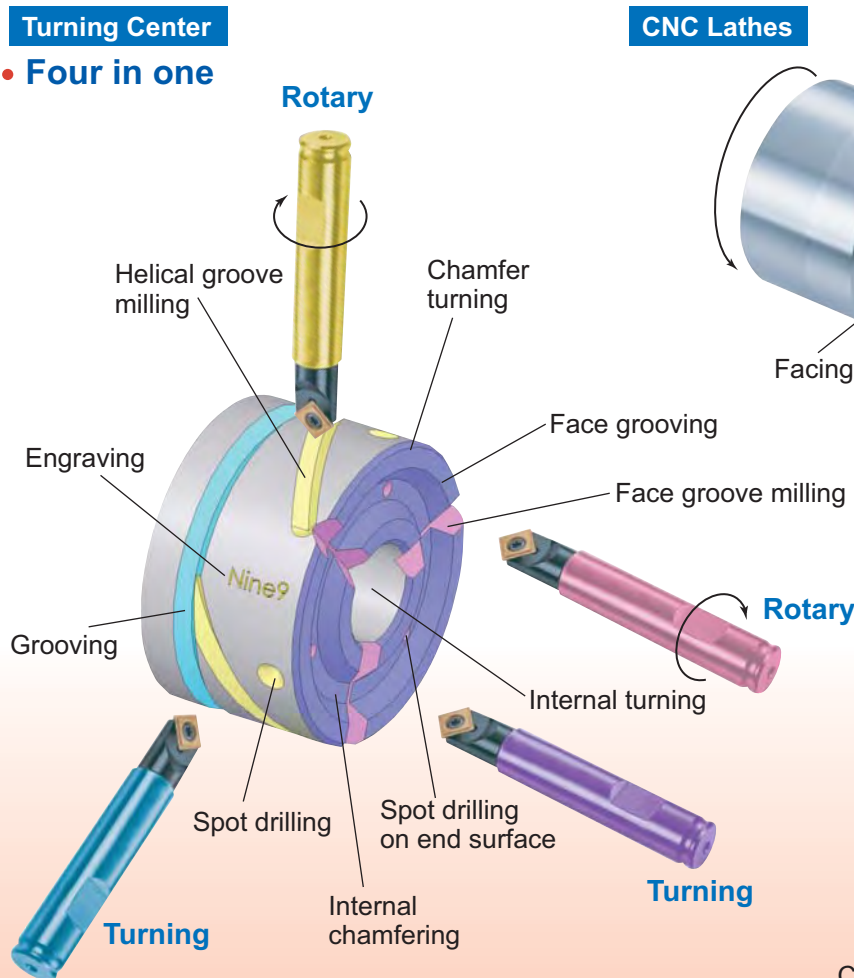
- Long tool life.
- Each insert has four cutting edges.
- Suitable for centering, chamfering, grooving and engraving.
- 60° / 90° / 120° / 142° angle for different applications.
- Increase cutting speed with coated carbide inserts.



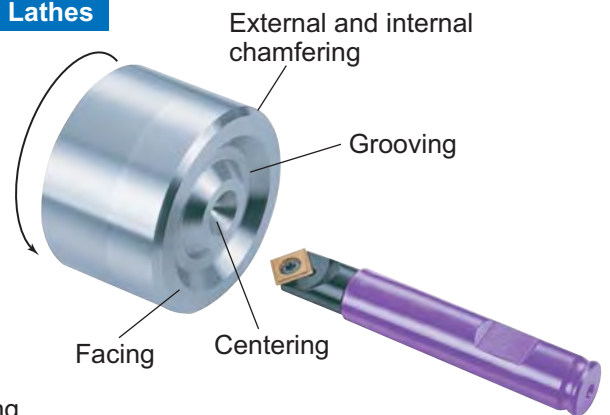
## ■ ALL IN ONE !!

### Turning Center

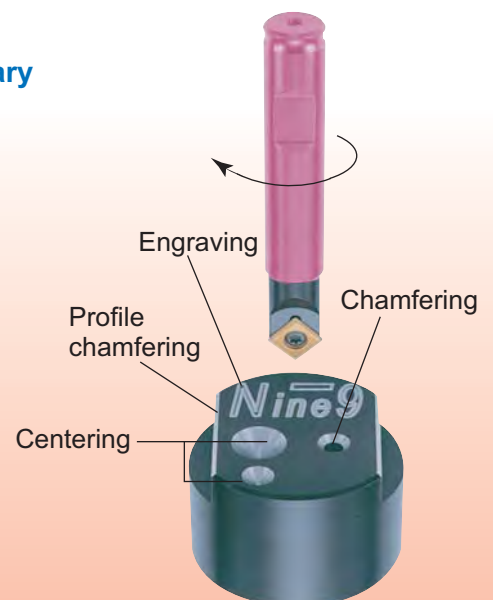
- Four in one



### CNC Lathes



### Machining Center





- Available shank diameter- Ø10mm, Ø12mm, Ø16mm, Ø20mm, Ø3/8", Ø1/2", Ø5/8", Ø3/4", M5, M6, M8
- Insert is interchangeable.



**Now & Future**



Engraving



Centering  
Turning

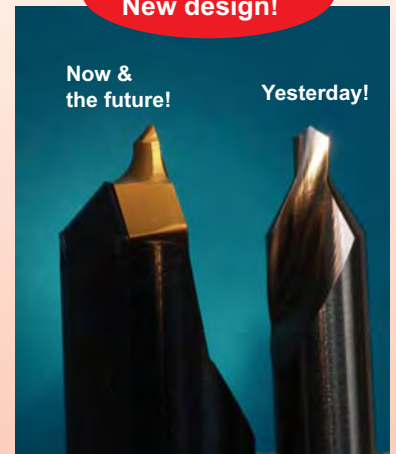


Centering  
Chamfering  
Grooving

**Yesterday**



**New concept!  
New design!**



For Centering  
Replace HSS center drill  
by Carbide Insert  
It is 30 times faster in cutting speed.

**Application Example:**



• Contour Chamfering on Machining Center.



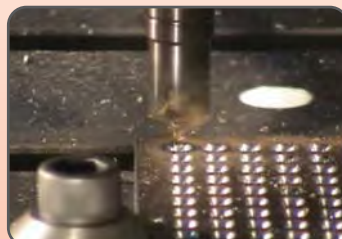
• Centering, Grooving, Engraving on Machining Center.



• Turning, Chamfering, Facing on CNC Lathes.



• Centering on Drilling Machine by PR Insert.



• Centering on Machining Center by PR Insert.

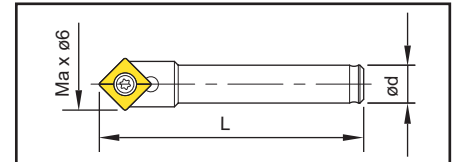


• Long Tool Life can be expected.



- Features:**
- Smallest indexable spotting drills holders.
  - Thanks single cutting edge design which creates high precision center spotting.

- Applications:**
- Spotting, engraving, grooving and chamfering on milling machines, machining centers.
  - Spotting, facing on CNC Lathes.

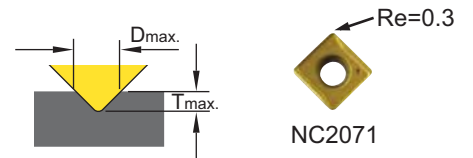


\*Attention: Insert is excluded, it has to be ordered separately.

Code	Parts No.	L	d	Screw	Key
601001	00-99616-06-6	35	6	NS-20045 1.6Nm	NK-T6
601002	00-99616-06-5	35	5		

**Inserts**

- NC2071:**
- P35 grade, TiN coated, fully ground cutting edge and relief angle.
  - Each insert has 2 cutting edges.
  - For Carbon steel, alloy steel and casting iron.



Code	Parts No.	Grade	Coating	Tmax.	Dmax.		Dimensions		
							L	S	Re
011201	N9MT05T1CT-NC2071	P35	TiN	3.5	6		5	1.38	0.3

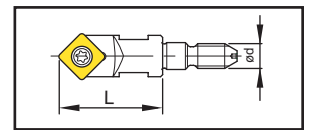
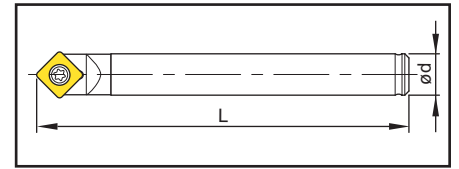


- Features:**
- Indexable spotting drills holders.
  - Thanks to single cutting edge design which creates high precision center spotting.

- Applications:**
- Spotting, engraving, grooving and chamfering on milling machines, machining centers.
  - Spotting, facing on CNC Lathes.

\*Attention: Insert is excluded, it has to be ordered separately.

Code	Parts No.	L	d	Screw	Key
603001	00-99616-10	90	10	NS-30055 2.0 Nm	NK-T8
603003	00-99616-10-SL10	90	10		
613001	00-99616-10-3/8"	90	3/8"		
623001	00-99616-10-M5	25	M5		
623002	00-99616-10-M6	25	M6		



### Inserts

**Features:** All inserts are submicron grain carbide.

**H-NC40** : High positive geometry and special ground cutting edge for long cutting chip metals, such as low carbon steel, stainless steel and Ti, Ti-alloy.

- Each insert has 2 cutting edges, with supporting edge for low power machine and manual drilling machine.

**H-NC9076** : High positive geometry and special ground cutting edge, DLC coated, for Al, Al-alloy, Copper, Brass and Bronze.

- Each insert has 2 cutting edges, with supporting edge for low power machine and manual drilling machine.

**NC40** : Ground relief angle, for all unhardened steel and casting iron.

- Each insert has 4 cutting edges.

**NC10** : High positive angle and fully ground cutting edge and relief angle, for Al, Al-alloy, non-ferrous metal and stainless steel.

- Each insert has 4 cutting edges.

**W-60-NC40** : 60° Special ground engraving insert for all kinds of unhardened steel and casting iron.

- Each insert has 4 cutting edges.

**W-NC40** : 90° special ground engraving insert for all unhardened steel and casting iron.

- Each insert has 4 cutting edges.

**W-NC10** : 90° special ground engraving insert for all kinds of Al, Al-alloy, hardened steel HRC40°-50° and stainless steel.

- Each insert has 4 cutting edges.

Re=0.8



Re=0.8



Re=0.8



Re=0.4



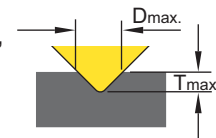
Re=0.1



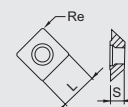
Re=0.1



Re=0.1



Code	Parts No.	Grade	Coating	Tmax.	Dmax.	Dimensions		
						L	S	Re
013201	N9MT0802CT2T-H-NC40	K20F	TiN	4	8.8	8	2.38	0.8
013202	N9MT0802CT2T-H-NC9076	P35	DLC	4	8.8	8	2.38	0.8
013401	N9MT080208CT-NC40	K20F	TiN	4	8.8	8	2.38	0.8
013402	N9MT080204CT-NC40	K20F	TiN	4	8.8	8	2.38	0.4
013403	N9MT080204CT-NC10	K20F	TiAlN	4	8.8	8	2.38	0.4
013404	N9MT080201W-60-NC40	K20F	TiN	0.8	1.1	8	2.38	0.1
013405	N9MT080201W-NC40	K20F	TiN	0.9	2	8	2.38	0.1
013406	N9MT080201W-NC10	K20F	TiAlN	0.9	2	8	2.38	0.1

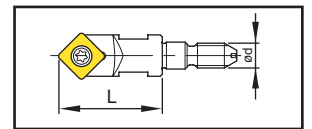
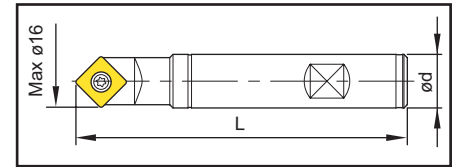
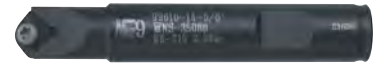




- Features:**
- Indexable insert spotting drill holders.
  - The most wide range application of spotting drills for milling and turning operation.
  - Holders and inserts are universal interchangeable.

- Applications:**
- Spotting, engraving, grooving and chamfering on milling machines, machining centers.
  - Spotting, facing on CNC Lathes.

Code	Parts No.	L	ød	Screw	Key
604002	00-99616-14-12	100	12	NS-35080 2.5 Nm	NK-T15
604004	00-99616-14	100	16		
604007	00-99616-14-150L	150	16		
604009	00-99616-14-220L	220	20		
614001	00-99616-14-1/2"	100	1/2"		
614002	00-99616-14-5/8"	100	5/8"		
624001	00-99616-14-M8	30	M8		



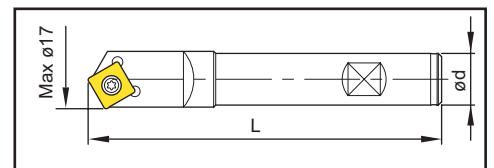
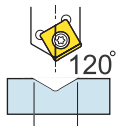
## Holders-120°



- Features:**
- Indexable insert spotting drill holders for 120 degree spotting.
  - Shorten spotting time, increase tool life and position accuracy of the next drilling operation.

- Applications:**
- For spotting before drilling and 60° chamfering.

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

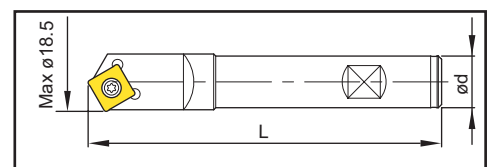
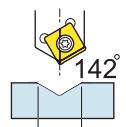


## Holders-142°

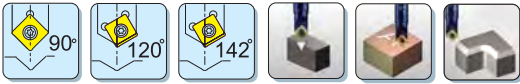


- Features:**
- Indexable insert spotting drill holders for 142 degree spotting.
  - Shorten spotting time, increase tool life and position accuracy of the next drilling operation.

- Applications:**
- For spotting before drilling and chamfering.

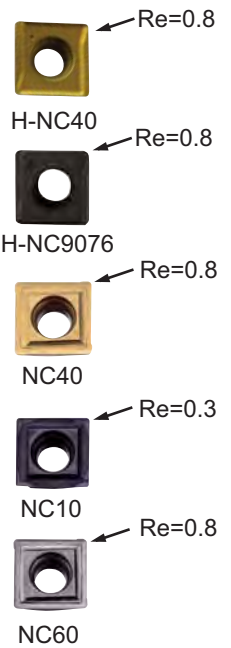
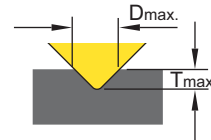


Code	Parts No.	L	ød	Screw	Key
604014	00-99616-20-142	100	20	NS-35080 2.5 Nm	NK-T15
614004	00-99616-3/4"-142	100	3/4"		



**Features:** The most universal applications indexable spotting insert.

- H-NC40** :
  - High positive geometry and special ground cutting edge for long cutting chip metals, such as low carbon steel, stainless steel and Ti, Ti-alloy.
  - Each insert has 2 cutting edges, with supporting edge for low power machine and manual drilling machine.
- H-NC9076** :
  - High positive geometry and special ground cutting edge, DLC coated, for Al, Al-alloy, Copper, Brass and Bronze.
  - Each insert has 2 cutting edges, with supporting edge for low power machine and manual drilling machine.
- NC40** :
  - Ground relief angle, for all unhardened steel and casting iron.
  - Each insert has 4 cutting edges.
- NC10** :
  - High positive angle and fully ground cutting edge and relief angle, for Al, Al-alloy, non-ferrous metal and stainless steel.
  - Each insert has 4 cutting edges.
- NC60** :
  - Cermet insert, fully ground cutting and relief angle, for hardened steel up to HRC55 .
  - Each insert has 4 cutting edges.



Code	Parts No.	Grade	Coating	Tmax.	Dmax.	Diagram	Dimensions		
							L	S	Re
014202	N9MT11T3CT2T-H-NC40	K20F	TiN	7	15		11	3.97	0.8
014203	N9MT11T3CT2T-H-NC9076	P35	DLC	7	15		11	3.97	0.8
014401	N9MT11T3CT-NC40	P35	TiN	7	15		11	3.97	0.8
014402	N9MT11T3CT-NC10	K10F	TiAlN	7	15		11	3.97	0.3
014403	N9MT11T3CT-NC60	CERMET		7	15		11	3.97	0.8

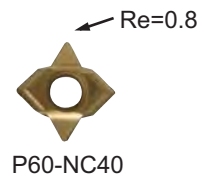
## Insert for 60 degree



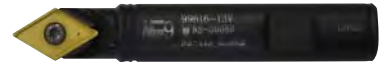
**Feature:** Fully ground spotting insert, for spotting and engraving.

- NC40** :
  - P35 grade, TiN coated.
  - Each insert has 2 cutting edges.

- Applications:**
- For spotting, engraving, small grooving on milling machines, machining centers.
  - For Carbon steel, alloy steel and casting iron, general purpose.

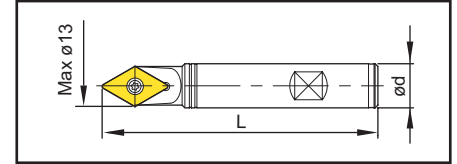


Code	Parts No.	Grade	Coating	Tmax.	Dmax.	Diagram	Dimensions		
							L	S	Re
014204	N9MT11T3P60-NC40	P35	TiN	4	6.2		11	3.97	0.8



- Features:**
- 60 degree spotting drill with indexable insert.
  - Thanks single cutting edge design which creates high precision center spotting.

- Applications:**
- Spotting, engraving, grooving and chamfering on milling machines, machining centers.
  - Spotting, facing on CNC Lathes.

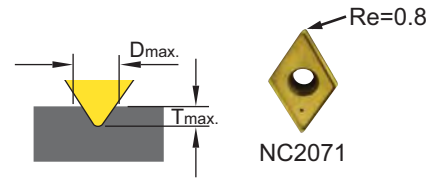


\*Attention: Insert is excluded, it has to be ordered separately.

Code	Parts No.	L	d	Screw	Key
605001	00-99616-13V	100	16	NS-35080 3.8 Nm	NK-T15

**Inserts**

- Feature:**
- 60 degree indexable spotting insert.
- NC2071 :**
- P35 grade, TiN coated, fully ground cutting edge and relief angle.
  - For Carbon steel, alloy steel and casting iron.
  - Each insert has 2 cutting edges.



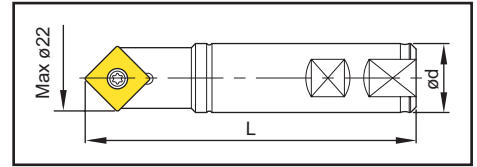
Code	Parts No.	Grade	Coating	Tmax.	Dmax.		Dimensions		
							L	S	Re
015201	V9MT12T3CT-NC2071	P35	TiN	11.7	13		12	3.97	0.8





- Features:**
- 90 degree spotting drill with indexable insert.
  - Thanks single cutting edge design which creates high precision center spotting.

- Applications:**
- Spotting, engraving, grooving and chamfering on milling machines, machining centers.
  - Spotting, facing on CNC Lathes.

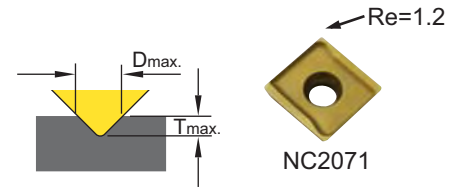


\*Attention: Insert is excluded, it has to be ordered separately.

Code	Parts No.	L	d	Screw	Key
606001	00-99616-22	100	20	NS-50125 4.0 Nm	NK-T20

**Inserts**

- Feature:**
- 90 degree indexable spotting insert, Dmax 22mm.
- H-NC2071:**
- P35 grade, TiN coated, high positive geometry, fully ground cutting edge and relief angle.
  - Each insert has 2 cutting edges.



Code	Parts No.	Grade	Coating	Tmax.	Dmax.		Dimensions		
							L	S	Re
016201	N9MT1704CT-NC2071	P35	TiN	10	22		17	4.78	1.2



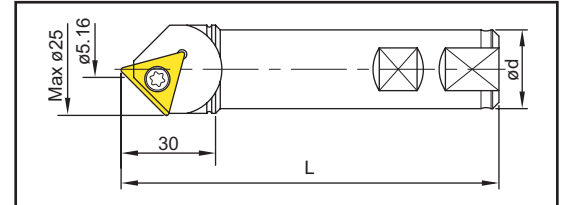
- Features:**
- Large spotting diameter with indexable insert.
  - Thanks single cutting edge design which creates high precision center spotting.

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



\*Attention: Insert is excluded, it has to be ordered separately.

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



## Inserts

**Features:**

- NC40**
- P35, TiN coated, fully ground cutting edge and relief angle.
  - Universal grade for carbon steel, alloy steel and casting iron.

- Applications:**
- For spotting and chamfering on milling machines, machining centers.
  - For Carbon steel, alloy steel and casting iron.



Code	Parts No.	Grade	Coating	Tmax.	Dmax.		Dimensions		
							L	S	Re
017301	TCMT220408CT-NC40	P35	TiN	12.2 (0.48")	25 (0.98")		20.83	4.76	0.8



**Feature:** • All of tool holders will be supplied with **one complimentary insert.**

Code	Parts No.	Total Length	insert fitted	Max. Depth.	Max. Dia.
604102-4204	00-99616-14-12-02SP60	100	N9MT11T3P60-NC40	4	6.2
604104-4204	00-99616-14-02SP60				



**Feature:** • All of tool holders will be supplied with **one complimentary insert.**

Code	Parts No.	Total Length	insert fitted	Max. Depth.	Max. Dia.
603101-3401	00-99616-10-02S	90	N9MT080208CT-NC40	4	8.8
604102-4401	00-99616-14-12-02S	100	N9MT11T3CT-NC40	7	15
604102-4402	00-99616-14-12-02SAL		N9MT11T3CT-NC10		
604102-4403	00-99616-14-12-02SHS		N9MT11T3CT-NC60		
604104-4401	00-99616-14-02S	100	N9MT11T3CT-NC40	7	15
604104-4402	00-99616-14-02SAL		N9MT11T3CT-NC10		
604104-4403	00-99616-14-02SHS		N9MT11T3CT-NC60		
607101-7301	00-99616-25-CT28-02S	120	TCMT220408-NC40	12.2	25
613101-3401	00-99616-10-3/8"-02S	3.54"	N9MT080208CT-NC40	0.157"	0.35"
614101-4401	00-99616-14-1/2"-02S	4"	N9MT11T3CT-NC40	0.275"	0.6"
614101-4402	00-99616-14-1/2"-02SAL		N9MT11T3CT-NC10		
614101-4403	00-99616-14-1/2"-02SHS		N9MT11T3CT-NC60		
614102-4401	00-99616-14-5/8"-02S	4"	N9MT11T3CT-NC40	0.275"	0.6"
614102-4402	00-99616-14-5/8"-02SAL		N9MT11T3CT-NC10		
614102-4403	00-99616-14-5/8"-02SHS		N9MT11T3CT-NC60		
617101-7301	00-99616-1"-CT28-02S	4.72"	TCMT220408-NC40	0.48"	0.98"



**Feature:** • All of tool holders will be supplied with **one complimentary insert.**

Code	Parts No.	Total Length	insert fitted	Max. Depth.	Max. Dia.
604113-4401	00-99616-20-120-02S	100	N9MT11T3CT-NC40	5	17.8
604113-4402	00-99616-20-120-02AL		N9MT11T3CT-NC10		
604113-4403	00-99616-20-120-02-HS		N9MT11T3CT-NC60		
614103-4401	00-99616-3/4"-120-02S	4"	N9MT11T3CT-NC40	0.196"	0.70"
614103-4402	00-99616-3/4"-120-02AL		N9MT11T3CT-NC10		
614103-4403	00-99616-3/4"-120-02HS		N9MT11T3CT-NC60		



**Feature:** • All of tool holders will be supplied with **one complimentary insert.**

Code	Parts No.	Total Length	insert fitted	Max. Depth.	Max. Dia.
604114-4401	00-99616-20-142-02S	100	N9MT11T3CT-NC40	3	18.5
604114-4402	00-99616-20-142-02AL		N9MT11T3CT-NC10		
604114-4403	00-99616-20-142-02-HS		N9MT11T3CT-NC60		
614104-4401	00-99616-3/4"-142-02S	4"	N9MT11T3CT-NC40	0.118"	0.728"
614104-4402	00-99616-3/4"-142-02AL		N9MT11T3CT-NC10		
614104-4403	00-99616-3/4"-142-02HS		N9MT11T3CT-NC60		





Shank  
Ø10

Shank  
Ø1/2"

Screw  
Fit  
M5, M6

**Features:**

- Indexable engraving insert with 4 cutting edges.
- No resharpener required.
- For marking on any kind of work pieces.
- For small diameter centering Ø0.2~Ø2 mm.



- All of tool holders will be supplied with **one complimentary insert.**

Code	Parts No.	Shank	Total Length	Insert fitted	Max. Depth.	Max. Dia.
603101-3405	00-99616-10-02SW	10	90	N9MT080201W-NC40	0.9	2.0
603101-3406	00-99616-10-02SWAL			N9MT080201W-NC10	0.9	2.0
603101-3404	00-99616-10-02SW-60			N9MT080201W-60-NC40	0.8	1.1

**Attention !**

Max. depth = 0.8~1.0 mm.



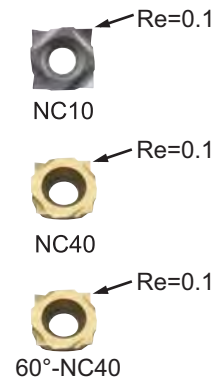
**Inserts**

**Features:** Each insert has 4 cutting edges.

**N9MT080201W-NC10 :** • Submicron carbide insert, TiAlN coated, for all Al, Al-alloy, hardened steel 40-50°, Stainless steel.

**N9MT080201W-NC40 :** • Submicron carbide insert, TiN coated, for all unhardened steel and casting iron, general purpose.

**N9MT080201W-60-NC40 :** • Submicron carbide insert, TiN coated, very positive angle for 60° engraving for all kind of steel and casting iron.

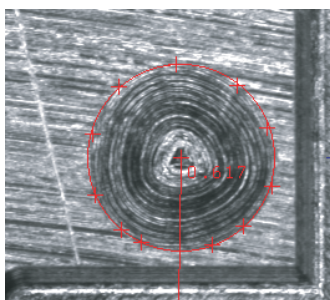


Code	Insert Code	Grade	Coating	Diagram	Dimensions		
					L	S	Re
013406	N9MT080201W-NC10	K20F	TiAlN		8	2.38	0.1
013405	N9MT080201W-NC40	K20F	TiN		8	2.38	0.1
013404	N9MT080201W-60-NC40	K20F	TiN		8	2.38	0.1

**N9MT080201W**

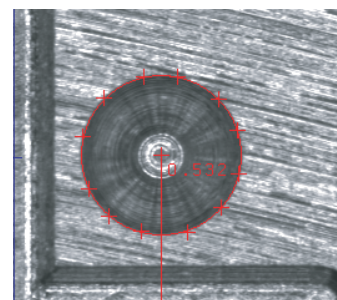
For small diameter Ø0.2~Ø2 mm centering

- **Left hand side** shows spot hole drilled by regular HSS insert, Ø1mm, without centering before.
  - Spot hole is drilled polygonal and center distance is incorrect.
- **Right hand side** shows same operation, but using Mini NC Spot Drill insert with centering before.
  - Spot hole is drilled perfect and center distance is correct too.



**Without Centering**

Speed 25000~30000 rpm  
Feed 0.01~0.2 mm/rev.



**Pre-Centering by N9MT080201W-NC40**





Shank  
Ø12  
Ø16

Shank  
Ø1/2  
Ø5/8

**Features:**

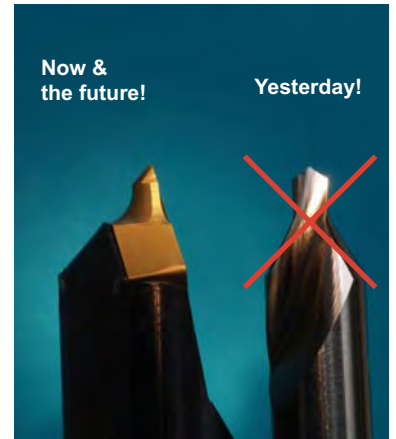
- Insert is ground similar to DIN332 Form R, R2.0, 2.5 and 3.15 mm.
- Very high cutting speed and feed rate.
- For center drilling on any type of machine.
- For external turning and facing on lathes as well.
- Indexable insert saves pre-setting time of tool change.
- Long tool life is expected.



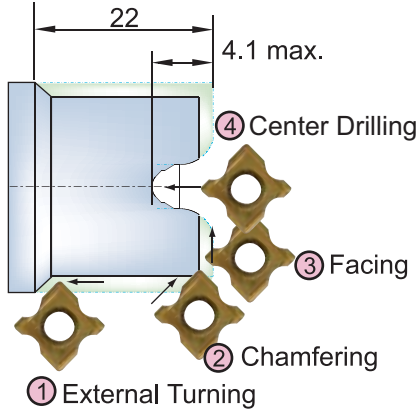
00-99616-12-PR30

- All of tool holders will be supplied with **one complimentary insert**.

Code	Parts No.	Shank	Total Length	Insert fitted	Max. Dia.	Max. Depth.
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

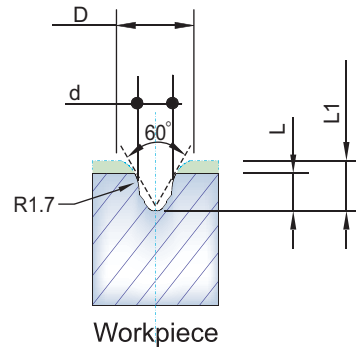


■ Turning and Centering Capacity on CNC Lathes



■ Dimensions

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



**Inserts**

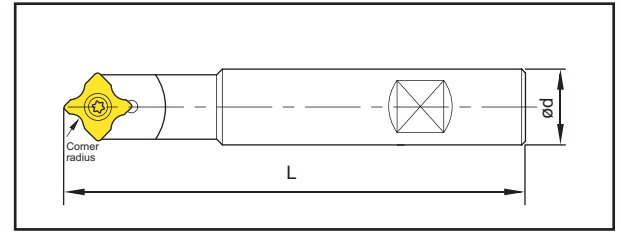
- N9MT11T3PRXX-NC40** : Carbide insert, P35, TiN coated, for all steel and casting iron, general purpose.
- Each insert has two cutting edges.
  - Radius curve eliminates the sharp transition from drill point to countersink angle. The risk of breakage is reduced.

Code	Insert Code	Grade	Coating	Re	Rotation	d	D	L	L <sub>i</sub>
014205	N9MT11T3PR20-NC40	P35	TiN	0.8	CW	2.0	5.4	2.7 (mm)	3.3
014206	N9MT11T3PR25-NC40				CW	2.5	5.9	3.0 (mm)	3.7
014207	N9MT11T3PR30-NC40				CW	3.15	6.4	3.3 (mm)	4.0
014208	N9MT11T3PL30-NC40				CCW	3.15	6.4	3.3 (mm)	4.0



## Features:

- Center of radius of each tool is dedicated.
- Indexable corner rounding cutters, one holder can fit with various corner radius inserts.
- Long Tool life.
- Good for small work pieces.
- 45° degree chamfering is available by using straight position of cutting edge.
- For corner rounding using NC Spot Drill shank.



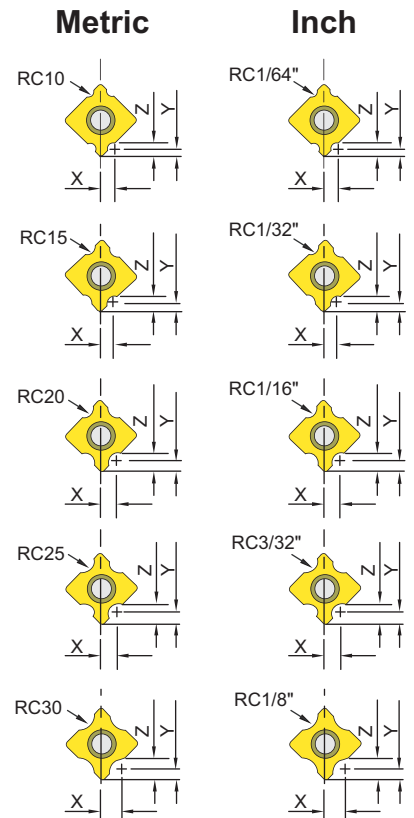
## Available holder diameter

\*Attention: Insert is excluded, it has to be ordered separately.

Code	Parts No.	L	ød	Screw	Key
604002	00-99616-14-12	100	12	NS-35080 2.5 Nm	NK-T15
604004	00-99616-14	100	16		
614001	00-99616-14-1/2"	100	1/2"		
614002	00-99616-14-5/8"	100	5/8"		
624001	00-99616-14-M8	30	M8		

## Inserts

- N9MT11T3RCXX-NC40** : 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.



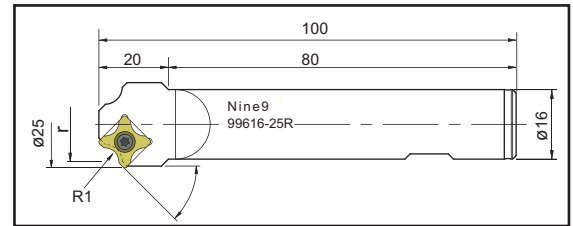
Code	Insert Code	Grade	Coating	Corner radius	offset			Dimensions
					X	Y	Z	
014209	N9MT11T3RC10-NC40	K20F	TiN	1.0	2.75	1.5	2.5	L: 11.11, S: 3.97, Re: 1.0
014210	N9MT11T3RC15-NC40	K20F	TiN	1.5	3.25	1.5	3	L: 11.11, S: 3.97, Re: 1.5
014211	N9MT11T3RC20-NC40	K20F	TiN	2.0	3.75	1.5	3.5	L: 11.11, S: 3.97, Re: 2.0
014212	N9MT11T3RC25-NC40	K20F	TiN	2.5	4.25	1.5	4	L: 11.11, S: 3.97, Re: 2.5
014213	N9MT11T3RC30-NC40	K20F	TiN	3.0	4.75	1.4	4.4	L: 11.11, S: 3.97, Re: 3.0
014214	N9MT11T3RC1/64"-NC40	K20F	TiN	1/64	0.086"	0.059"	0.0747"	L: 0.437", S: 0.156", Re: 1/64
014215	N9MT11T3RC1/32"-NC40	K20F	TiN	1/32	0.101"	0.059"	0.090"	L: 0.437", S: 0.156", Re: 1/32
014216	N9MT11T3RC1/16"-NC40	K20F	TiN	1/16	0.133"	0.059"	0.122"	L: 0.437", S: 0.156", Re: 1/16
014217	N9MT11T3RC3/32"-NC40	K20F	TiN	3/32	0.164"	0.059"	0.153"	L: 0.437", S: 0.156", Re: 3/32
014218	N9MT11T3RC 1/8"-NC40	K20F	TiN	1/8	0.199"	0.055"	0.180"	L: 0.437", S: 0.156", Re: 1/8

**Attention** : • Each different radius insert has different length offset value which has been shown on the above sketches.  
• Please refer to page 15 for cutting data.



### 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.
- Economical corner rounding cutters, one holder can fit with different corner radius inserts.
- Long Tool life.



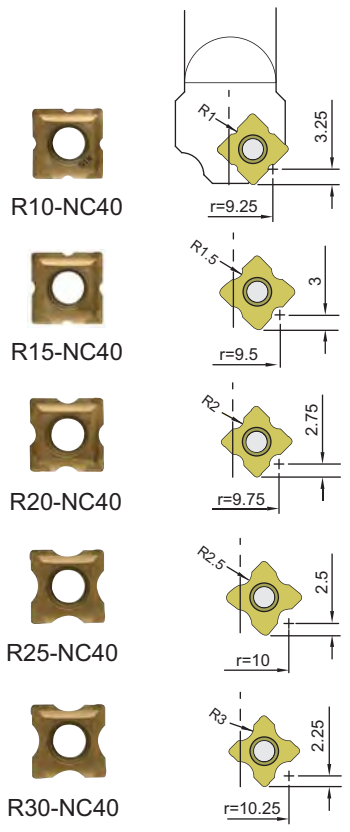
### HOLDERS for Corner rounding

Code	Parts No.	Screw	Key
604105	00-99616-16-25R	NS-35080 3.0 Nm	NK-T15

### Features:

- All of tool holders will be supplied with **one complimentary insert**.

Code	Parts No.	Total Length	Insert fitted	radius
604115-4404	00-99616-16-25R-R10	100	N9MT11T3R10-NC40	1.0
604115-4405	00-99616-16-25R-R15		N9MT11T3R15-NC40	1.5
604115-4406	00-99616-16-25R-R20		N9MT11T3R20-NC40	2.0
604115-4407	00-99616-16-25R-R25		N9MT11T3R25-NC40	2.5
604115-4408	00-99616-16-25R-R30		N9MT11T3R30-NC40	3.0



### Inserts

- N9MT11T3RXX-NC40** :
- Carbide insert, P35, TiN coated, for steel and cast iron, general purpose.
  - Inserts are CNC ground for precision radius location.
  - Each insert has four cutting edges.

Code	Insert Code	Grade	Coating	Corner radius(R1)	Tool radius offset ( r )	Dimensions		
						L	S	Re
014404	N9MT11T3R10-NC40	P35	TiN	1.0	9.25	11.11	3.97	1.0
014405	N9MT11T3R15-NC40	P35	TiN	1.5	9.5	11.11	3.97	1.5
014406	N9MT11T3R20-NC40	P35	TiN	2.0	9.75	11.11	3.97	2.0
014407	N9MT11T3R25-NC40	P35	TiN	2.5	10	11.11	3.97	2.5
014408	N9MT11T3R30-NC40	P35	TiN	3.0	10.25	11.11	3.97	3.0

- Attention :**
- Each different radius insert has different length offset value which has been shown on the above sketches..
  - Please refer to page 15 for cutting data.

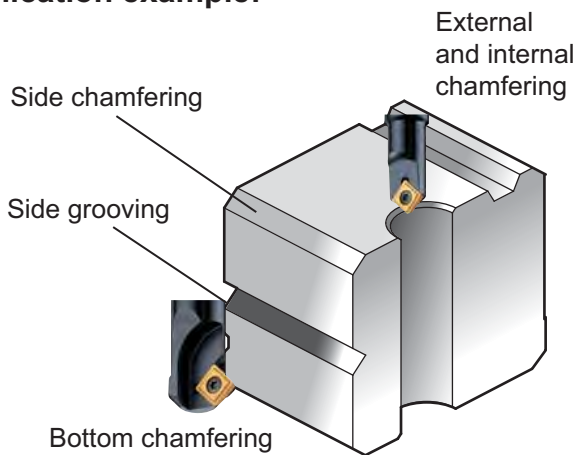


- Features:**
- Patented insert for 45° Chamfering.
  - Each insert has 4 cutting-edges.
  - 99616-28 can be applied for machining bottom chamfering and side grooving.

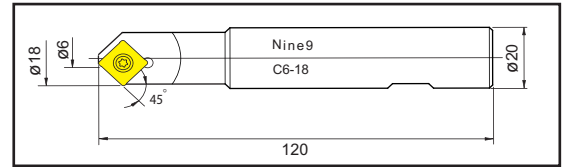
### HOLDERS for Chamfering

Code	Parts No.	Screw	Key
604017	00-99616-18	NS-35080 3.0 Nm	NK-T15
604018	00-99616-28		

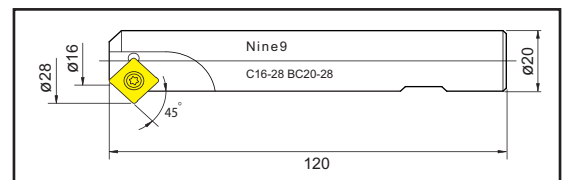
### Application example:



99616-18



99616-28



**Feature:** • All of tool holders will be supplied with **one complimentary insert**.

Code	Parts No.	Ød	Bottom Chamfer	Insert fitted
604117-4409	00-99616-18-02S	Ø6-Ø18	-	N9MT11T308-NC40
604117-4410	00-99616-18-02AL			N9MT11T308-NC10
604117-4411	00-99616-18-02HS			N9MT11T308-NC60
604118-4409	00-99616-28-02S	Ø16-Ø28	Ø20-Ø28	N9MT11T308-NC40
604118-4410	00-99616-28-02AL			N9MT11T308-NC10
604118-4411	00-99616-28-02HS			N9MT11T308-NC60

### Inserts

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

**N9MT11T308 -NC40** : • Carbide Insert, TiN Coated.  
Good for all kinds of steel and casting iron.

**N9MT11T308 -NC10** : • Carbide Insert, very positive angle.  
Good for Al, Al-alloy and non-Ferrous metal.

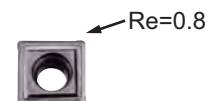
**N9MT11T308 -NC60** : • Cermet Insert.  
Good for hardened steel, up to HRC55°.



NC40



NC10



NC60

Code	Ordering Code	Grade	Coating		Dimensions		
					L	S	Re
014409	N9MT11T308 -NC40	P35	TiN		11.11	3.97	0.8
014410	N9MT11T308 -NC10	K10F	TiAlN		11.11	3.97	0.3
014411	N9MT11T308 -NC60	Cermet	-		11.11	3.97	0.8



- Features:**
- Selected package for starter who wants to try **NC Spot Drill**.
  - Included one insert on tool holder and 5 inserts in the pocket of inserts. All kits are packed by blister card.
  - Total 6 inserts are equal to 24 spot drills.

90°

Code	Parts No.	Shank $\phi$	insert included	Content
603201-3401	00-99616-10-ME6	10	N9MT080208CT-NC40	1 tool holder + 6 inserts + 1 key
604204-4401	00-99616-14-ME6	16	N9MT11T3CT-NC40	
604204-4402	00-99616-14-ME6AL		N9MT11T3CT-NC10	
604204-4403	00-99616-14-ME6HS		N9MT11T3CT-NC60	
614202-4401	00-99616-5/8"-IN6	5/8"	N9MT11T3CT-NC40	
614202-4402	00-99616-5/8"-IN6AL		N9MT11T3CT-NC10	
614202-4403	00-99616-5/8"-IN6HS		N9MT11T3CT-NC60	



120°

Code	Parts No.	Shank $\phi$	insert included	Content
604213-4401	00-99616-20 -120-ME6	20	N9MT11T3CT-NC40	1 tool holder + 6 inserts + 1 key
614203-4401	00-99616-3/4"-120-IN6	3/4"		

142°

Code	Parts No.	Shank $\phi$	insert included	Content
604214-4401	00-99616-20 -142-ME6	20	N9MT11T3CT-NC40	1 tool holder + 6 inserts + 1 key
614204-4401	00-99616-3/4"-142-IN6	3/4"		

## Starter packages- Center Drilling DIN332 Form R

## Promotion Set

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

Code	Parts No.	Shank $\phi$	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	



## Starter packages- Chamfering Tools

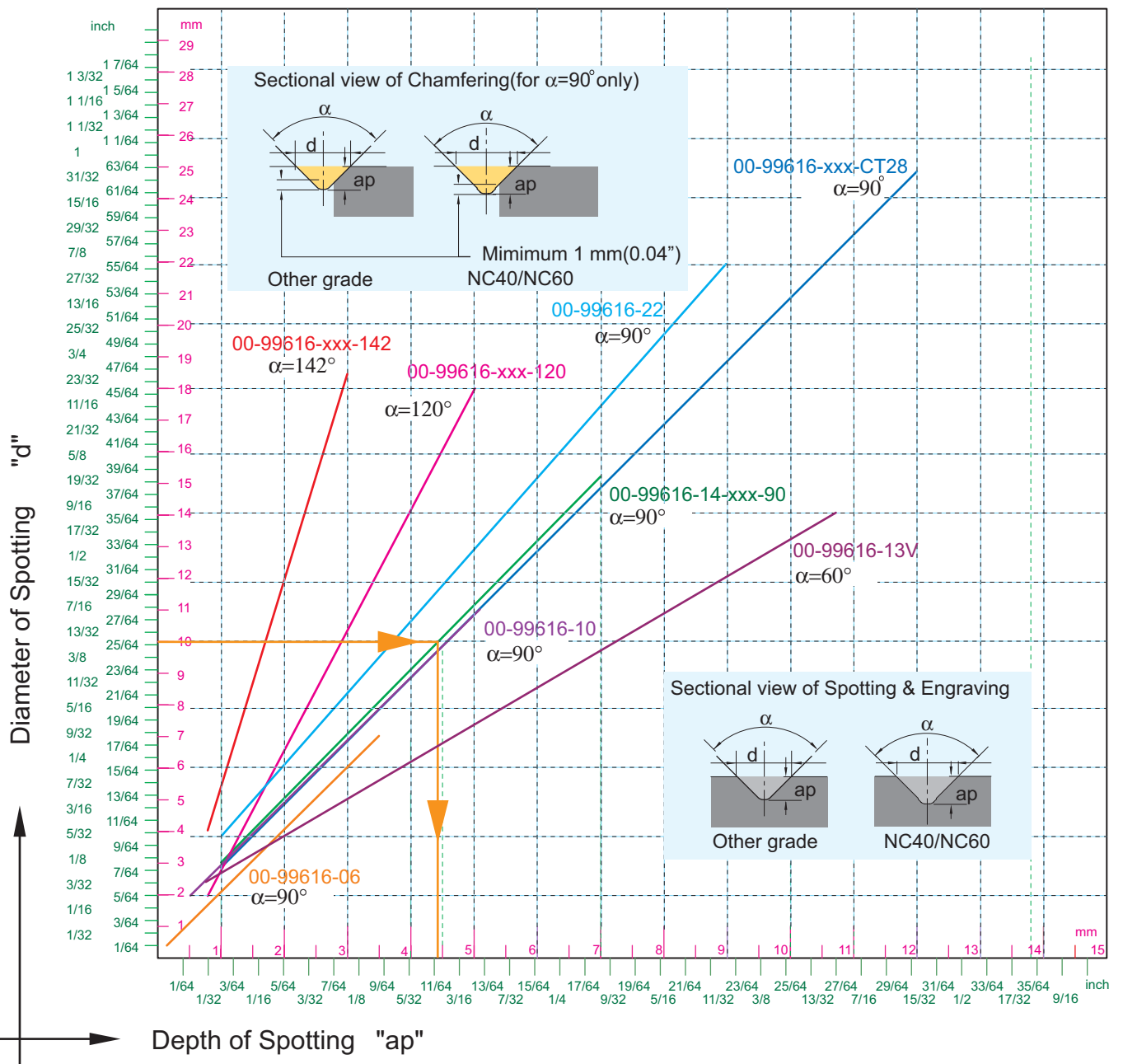
## Promotion Set

- Features:**
- Selected package for starter who likes to try **Chamfering Tool**.
  - Included one holder and 6 inserts in the pocket. All kits are packed by blister card.

45°

Code	Parts No.	Shank $\phi$	insert included	Content
604217-4409	00-99616-18-ME6	20	N9MT11T308-NC40	1 tool holder + 6 inserts + 1 key
604217-4410	00-99616-18-ME6AL		N9MT11T308-NC10	
604217-4411	00-99616-18-ME6HS		N9MT11T308-NC60	
604218-4409	00-99616-28-ME6		N9MT11T308-NC40	
604218-4410	00-99616-28-ME6AL		N9MT11T308-NC10	
604218-4411	00-99616-28-ME6HS		N9MT11T308-NC60	





### Instruction of Use

1. From Spot diameter "d" to get drill depth "ap".
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 "ap". "ap" 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 for cutting, 1mm(0.04") minimum clearance is required for a continuous smooth finish.

### Calculate Spindle Speed

1. Using your "d" value and cutting speed Vc(SFM) from the data sheet (reference page 14), calculate spindle speed "S"(RPM).
2. Feed rate per minute F=f x S=RPMxIPR

#### 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

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

$$F = \text{IPM} = \text{RPM} \times \text{IPR}$$

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

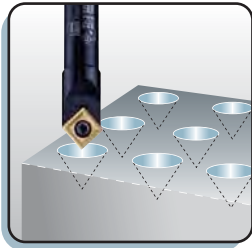
## N9MT-CT Insert Multi-function Insert

Determine spindle speed and feed rate:

- Choose spotting depth to decide spotting diameter according to the Diameter/Depth chart of page 13.
- The spindle speed should be calculated by the maximum diameter of spotting, chamfering and grooving.



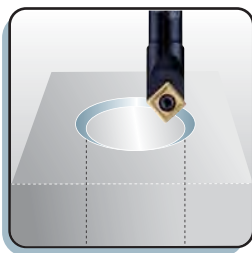
### Centering



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
Casting Iron	80~150	0.05~0.10	NC40, NC10
Ti, Ti-alloy	60~80	0.03~0.06	H-NC40

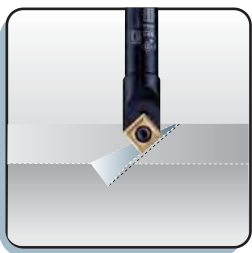
\* For technical construction reasons, the insert is not located on the center of the holder.

### 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
Casting Iron	150~250	0.15~0.25	NC40, NC10
Ti, Ti-alloy	60~80	0.03~0.06	H-NC40

### Grooving



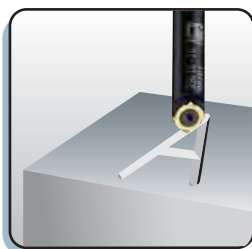
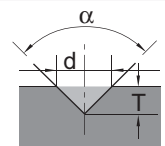
Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~250	0.05~0.08	NC40, H-NC40
Alloy Steel	100~200	0.04~0.06	NC40, H-NC40
Stainless Steel	65~125	0.03~0.06	NC10, NC60, H-NC40
Non-Ferrous Metal (Al, copper)	150~320	0.05~0.08	NC10, H-NC9076
Casting Iron	80~150	0.05~0.08	NC40, NC10
Ti,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

## N9MT-R Insert

## N9MT-RC Insert

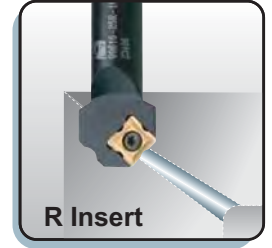
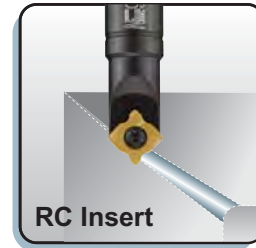
## Corner Rounding Tool

### 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:

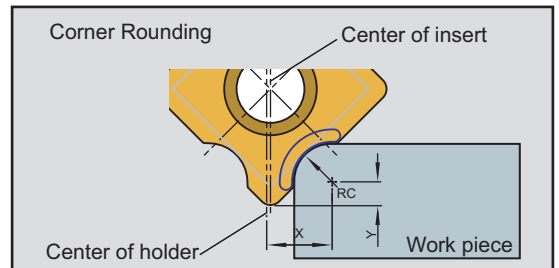
#### Calculate spindle speed

$d = 2 \times X$	mm	$d$ = diameter of the tool for calculation purpose
$d = 2 \times r$	mm	$X$ = tool radius offset (ref. page 9 for RC inserts)
$S = \frac{V_c \times 1000}{d \times \pi}$	r.p.m.	$r$ = tool radius offset (ref. page 10 for R inserts)
$F = S \times f$	mm/min.	$V_c$ = cutting speed m/min.
		$S$ = Spindle speed
		$F$ = Feed rate
		$f$ = feed per rev. mm/rev.



#### Calculate tool length offset on machining center

$TL = TL' - Y$	$X$ = tool radius offset (ref. page 9 for RC inserts)
$H = X$ or $r$	$r$ = tool radius offset (ref. page 10 for R inserts)
	$Y$ = distance to the center of radius. (page 9 for RC inserts)
	$TL'$ = tool length
	$TL$ = tool length offset
	$H$ = 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 casting 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

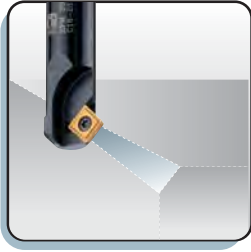
#### Corner Rounding RC Insert

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 casting 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



## N9MT11T308

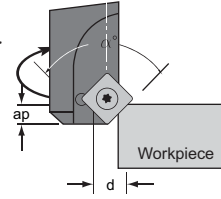
## 45° Chamfering Tool



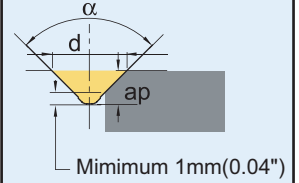
$$S = \frac{V_c \times 1000}{d \times \pi} \quad \text{r.p.m.}$$

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

$\alpha$  = point angle 90°  
 $a_p$  = depth  
 $d$  = effective diameter  
 $V_c$  = 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:

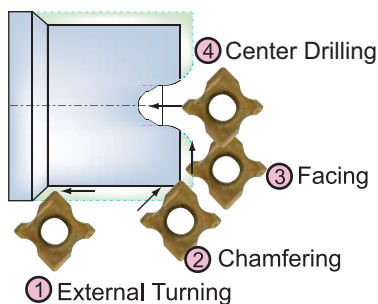
### 45° Chamfering

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 casting 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

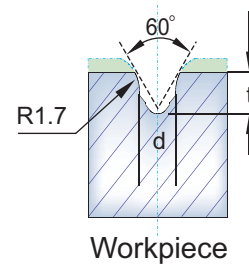
## N9MT-PR Insert

## Center Drilling Insert

### Turning and Centering



### Center Drilling

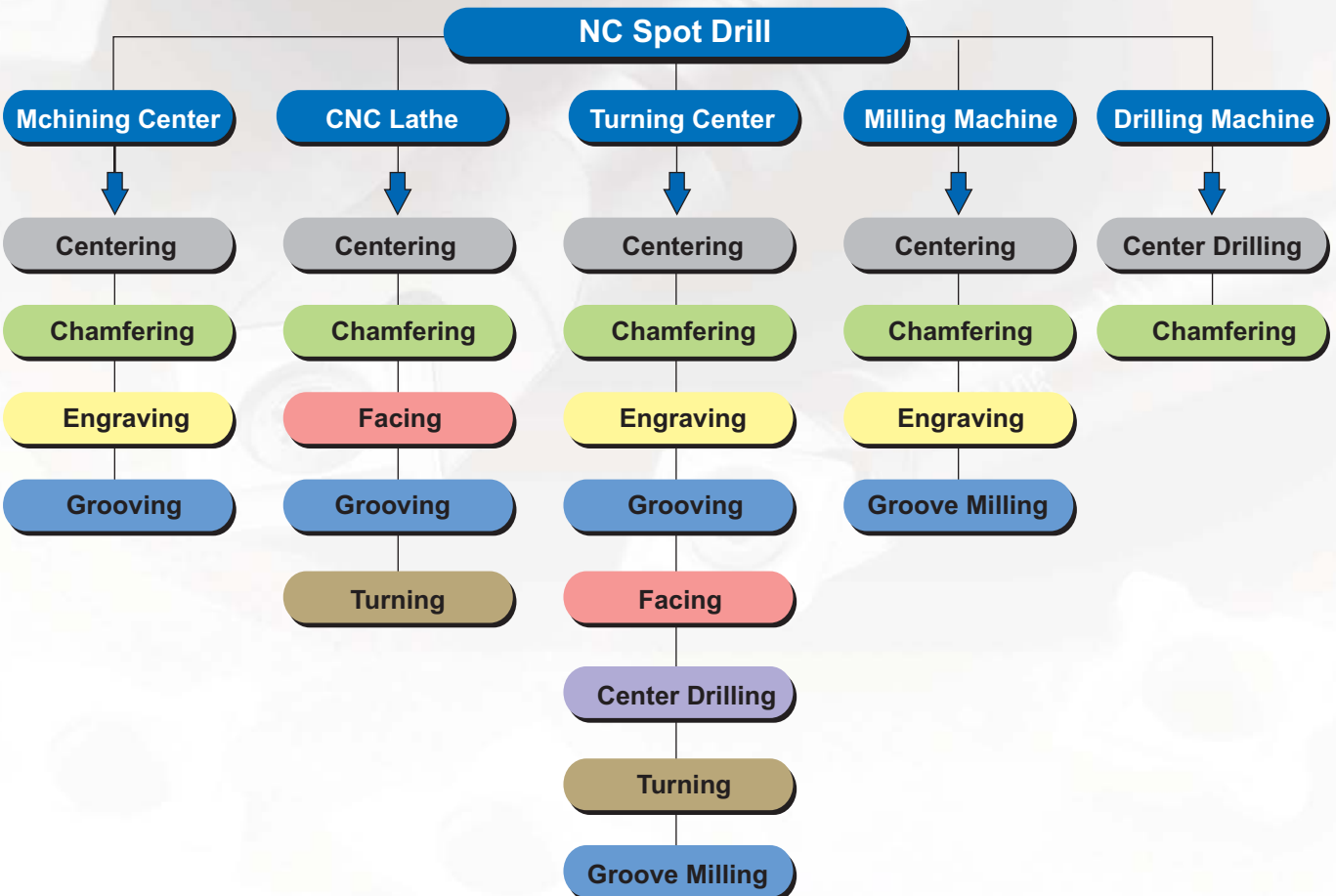
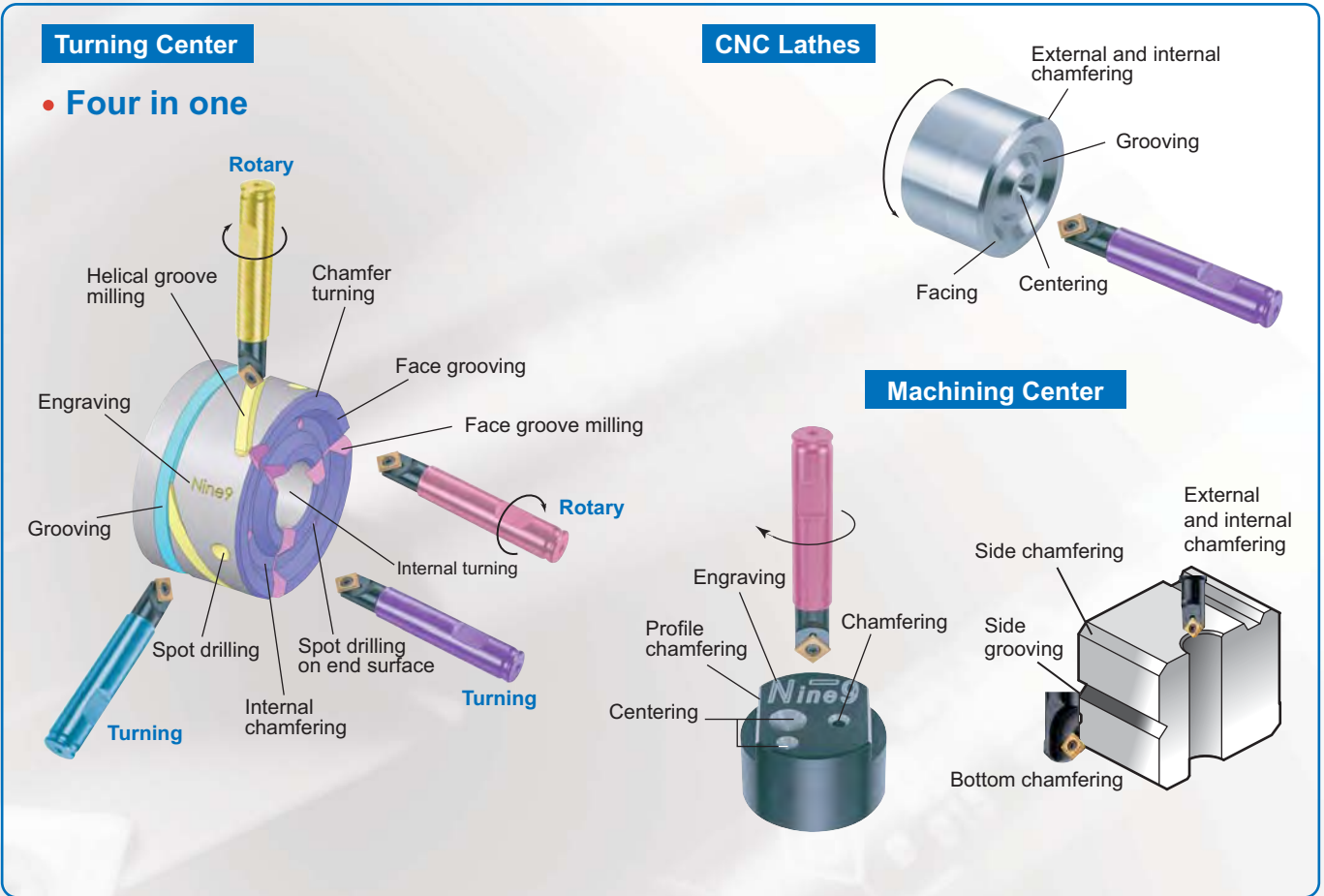


Recommended cutting speed for different materials:

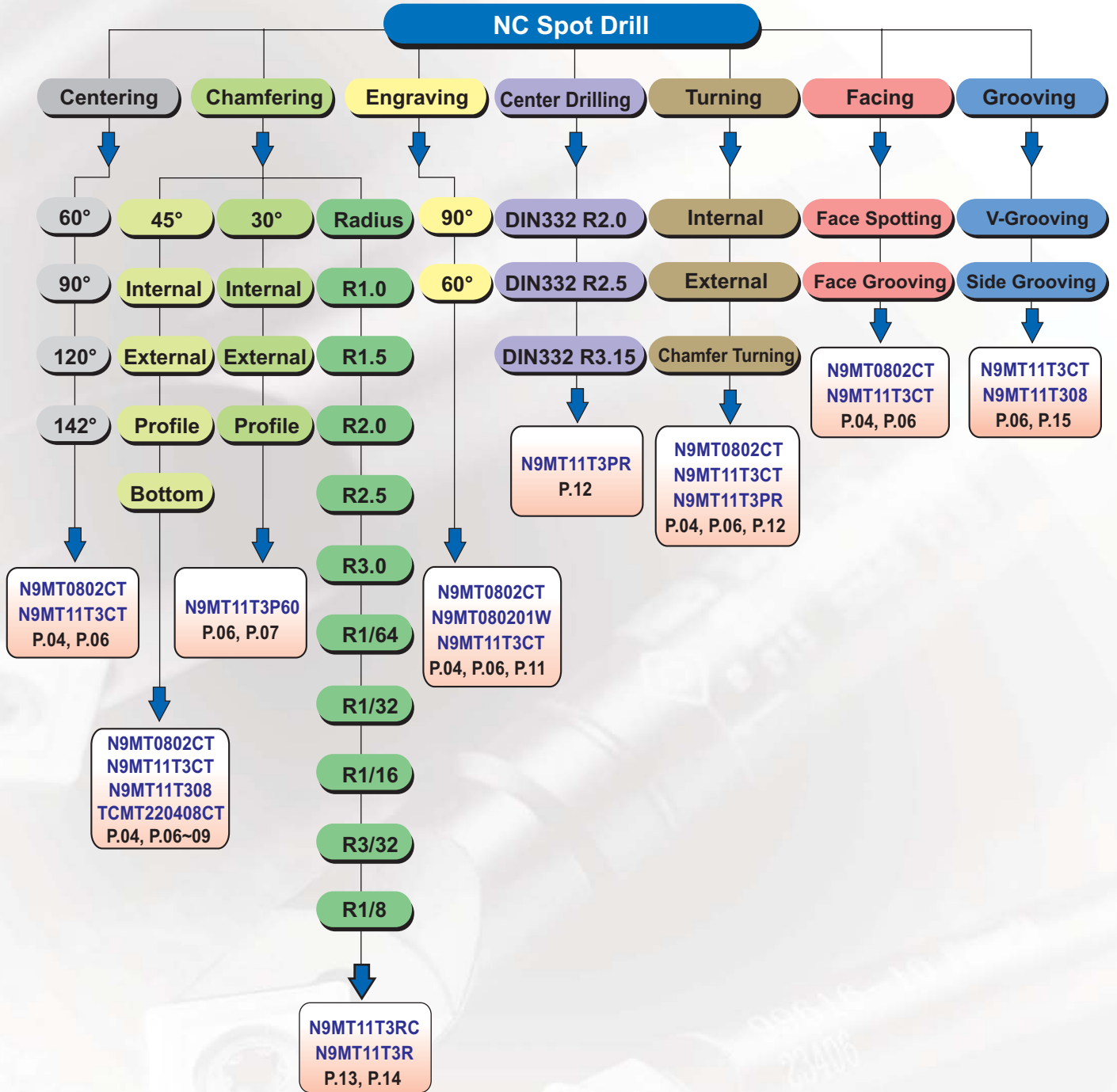
### Center Drilling PR

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 casting 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

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



■ NC Spot Drill can be used for various applications.



## Coming Soon...

Ordering Code	Various Applications
N9MT11T3FH-NC2031	8 mm end milling, face milling (High positive)
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



8 mm end milling, face milling (High positive)



Pitch 0.5-3 mm thread turning external



2 mm grooving, depth 4 mm



Drilling and milling a groove



- *Super Power Drill and Super Drill*
- *High Speed Boring Tool*
- *NC-Spot Drill*
- *Power Mill*
- *Solid Carbide End Mill*
- *Tool Holder*



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