

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 spotting, chamfering, grooving and engraving.
- 45° / 60° / 82° / 90° / 100° / 120° / 142° angle for different applications.
- Increase cutting speed with coated carbide inserts.

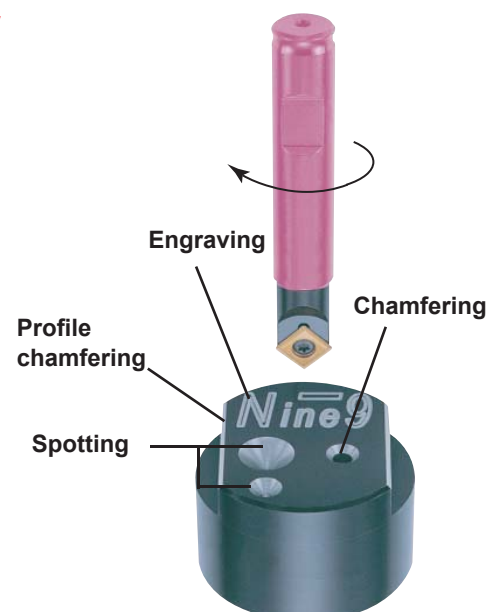
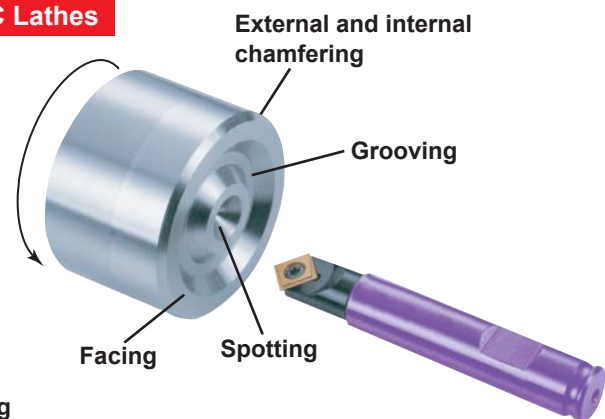
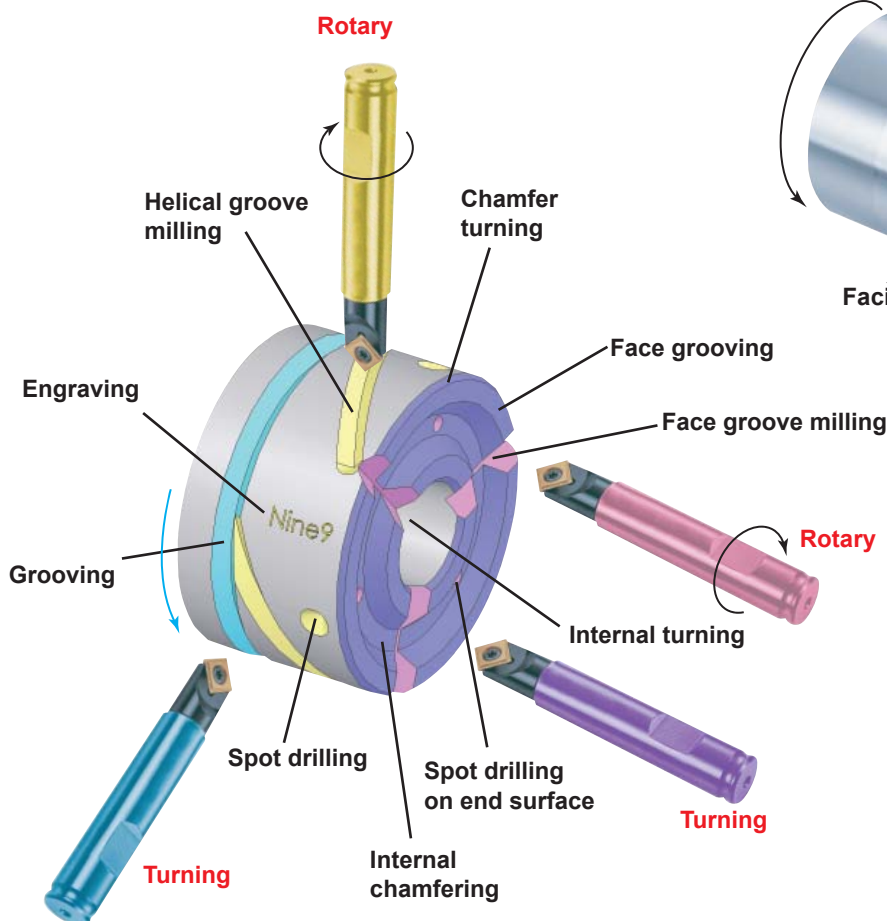


ALL IN ONE !!

Turning Center Four in one

CNC Lathes

Machining Center



- Available shank diameter-Ø5, Ø6, Ø10, Ø12, Ø16, Ø20mm, Ø3/8", Ø1/2", Ø5/8", Ø3/4", M5, M6, M8
- Inserts are interchangeable.



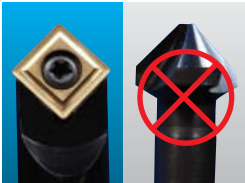
90° Spotting



142° Spotting



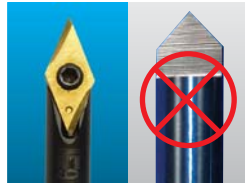
Engraving 60°/ 90°



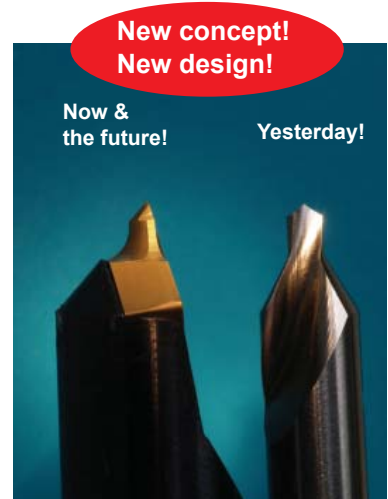
Spotting, Chamfering Grooving



Chamfering Corner Rounding



Engraving 45°/ 60°

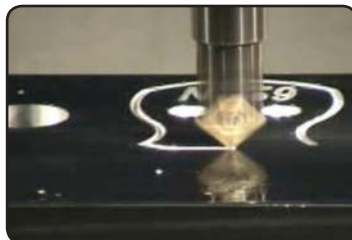


For Centering
 Replace HSS center drill
 with Carbide Insert
 Increase cutting speed by 30 times

• Application Example



• 45° and 60° Engraving Tools.



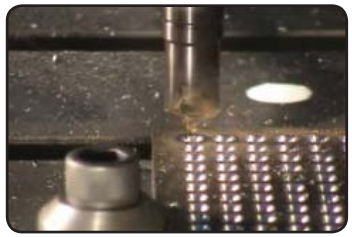
• Spotting, Grooving, Engraving on Machining Center.



• Turning, Chamfering, Facing on CNC Lathes.



• Cut a Serrated Workpiece.
 • Single Pass Each Direction.













• Centering on Machining Center by PR Insert.



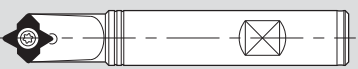





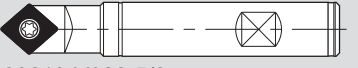







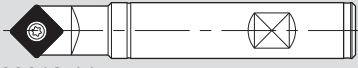





• Contour Chamfering on Machining Center.

Engraving Tools

Angle	Holder	Inserts	D min.	D max.	Spotting	Chamfering	Grooving	Engraving	Drilling	Page
45°	 99619-V045		0.45	2.1	○			●		8
		V04506T1W								
60°	 99619-V060		0.45	2.7	○			●		8
		V06006T1W								
60°	 99616-10...SW		0.25	1.1	○			●		16
		N9MT080201W-60								
90°	 99616-10...SW		0.25	2.0	○			●		16
		N9MT080201W								
90°	 99616-06-6		1	6	●			●		20
		N9MT05T1								

*Open circle = suitable application, Filled circle = preferred application.

NC Spot Drill

60°	 99616-14...P60		2	6.2	●	●		●		17
		N9MT11T3P60								
60°	 99616-13V		2	13	●	●	●	●		18
		V9MT12T3								
82°	 99619-V082-3/8		2 (0.079")	9 (0.354")	●	●	●	●		19
		V0820802								
82°	 99619-V082-5/8		2 (0.079")	14 (0.551")	●	●	●	●		19
		V08212T3								
90°	 99616-06-6		1 (0.039")	6 (0.236")	●	●		●		20
		N9MT05T1								
90°	 99616-10...		2 (0.079")	10 (0.394")	●	●	●	●		21
		N9MT0802								
90°	 99616-10-M5		3 (0.118")	14 (0.551")	●	●	●	●		23
		N9MT11T3								
90°	 99616-14...		3 (0.118")	22 (0.866")	●	●	●			25
		N9MT1704								
90°	 99616-22		4 (0.157")	25 (0.984")	●	●				26
		TCMT2204								
90°	 99616-25-CT28		4 (0.157")	25 (0.984")	●	●				26
		TCMT2204								

NC Spot Drill

Angle	Holder	Inserts	D min.	D max.	Spotting	Chamfering	Grooving	Engraving	Drilling	Page
100°	 99616-20-100		6	16	●	●				28
		N9MT11T3CT2T-H								
120°	 99616-20-120		5	17	●	●				28
		N9MT11T3CT2T-H								
142°	 99616-20-142		3	18	●	●				28
		N9MT11T3CT2T-H								
142°	 99619-V142		2	32	●	●				29
		V1421604								

Corner Rounding

 99616-16-25R		R1.0	R3.0	●						30
	N9MT11T3R (4 cutting edges)									
 99616-14...RC		R1.0 R1/64"	R3.0 R1/8"	●						31
	N9MT11T3RC (2 cutting edges)									
 99616-22...RC		R4.0	R6.0	●						32
	N9MT1704RC (2 cutting edges)									

Large 45° Chamfering

 99616-18		6	18	●						34
	N9MT11T308LA									
 99616-28		16	28	●	*					34
	N9MT11T308LA									

* Side grooving

Center Drilling

 99616-14...PR		2.0	3.15					●		33
	N9MT11T3PR *Similar to DIN 332 Form R									
 99616-IC		1.0	10					●		3
	DIN332 Form R									
 99616-IC		1.0	10					●		3
	DIN332 Form A+B									
 99616-IC		5/64"	3/8"					●		3
	ANSI 60°									

Various Applications of NC Spot Drill

We Focus: • Higher efficiency • Long tool life • Position accuracy • Total cycle time

Multifunctional Cutting Tool

- Universal, Easy handling and Material saving!
- One holder to cover so many different applications!

Now and Future >

Traditional >



A new concept of drilling !

- **0.5xD of spotting.**

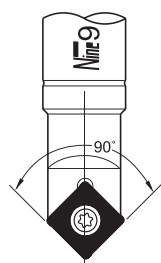
“The high performance solid carbide drill or HSS drill with web thinning do not need any centering!”

“Drilling from solid!” most of the drills manufacturers and suppliers quote that.

However, if you applied NC Spot Drill to drill a spot which is half of the drilling diameter, you can look forward to the following benefits.

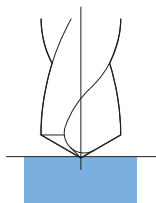
• Benefits:

- Higher feed rate of drill!!
Why? Because the drill is guided at the strongest part of cutting edge.
- Better center position of drill!!
Why? Because the spotting is done by single cutting edge which is out of center, and similar to boring operation.
- Increase the tool life of drill!!



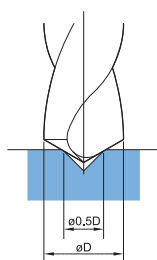
Without Spotting

Less positional accuracy of drill, and diameter tolerance.
Lower feed rate.
Unstable tool life.



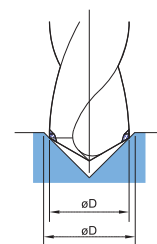
0.5xD Spotting

Best result!
Higher speed and feed rate.
More accuracy of positioning and diameter tolerance.



Larger Spotting

Longer spotting time!
Guided at the weakest corner of drill.
Shorter tool life.



Mini Spotting

• The application of the engraving insert as a spotting drill for the minor size of drill.

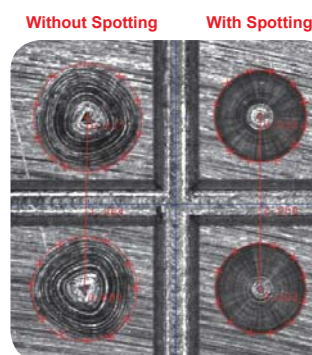
• Benefits:

- Best positioning accuracy!
- Better surface with spotting by NC Spot Drill in advance.

• Working example of spotting:

Spindle speed: 3000-25000 r.p.m.
Feed rate : 0.01-0.02 mm/rev.
Tool : 99616-10
Insert : N9MT080201W-NC40

*Better center position !
Longer tool life !*



Engraving Tool



Inserts >>

Features:

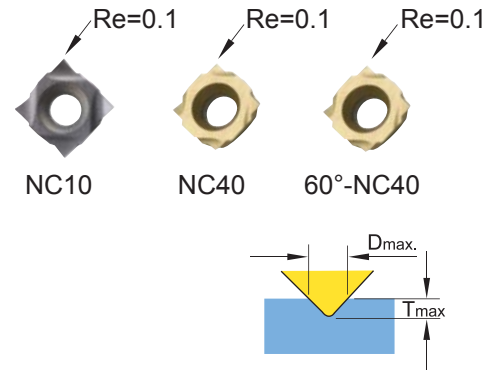
- 90° Indexable engraving insert with 4 cutting edges.
- No resharpener required.
- For marking all types of work pieces.



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

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

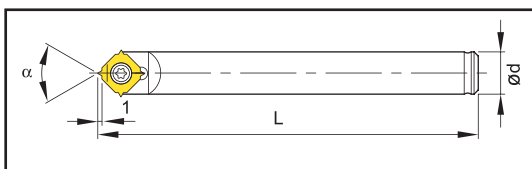
N9MT080201W-60-NC40 : • Submicron carbide insert, TiN coated, very positive angle for 60° engraving for all kind of steel and cast iron.



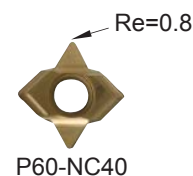
Code	Parts No.	α	Grade	Coating		Dimensions			Dmax.	Tmax.
						L	S	Re		
013404	N9MT080201W-60-NC40	60°	K20F	TiN		8	2.38	0.1	1.1	0.8
013405	N9MT080201W-NC40	90°	K20F	TiN		8	2.38	0.1	2.0	0.9
013406	N9MT080201W-NC10	90°	K20F	TiAlN		8	2.38	0.1	2.0	0.9

Holder >>

Code	Parts No.	ϕd	L	Screw	key
603001	00-99616-10	10	90	NS-30055 2.0 Nm	NK-T8
613001	00-99616-3/8	3/8"	90		



NC Spot Drill - N9MT11T3P60



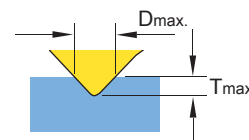
Inserts >>

Feature:

- Fully ground spotting insert, for 60 degree spotting and engraving.

NC40 : • P35 grade, TiN coated

- Each insert has 2 cutting edges.



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

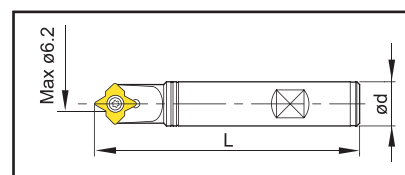
Holder >>

Features:

- 60 degree spotting drill with indexable insert.
- Using standard NC Spot Drill shank.
- A single cutting edge design creates higher precision and position when spotting.

Applications:

- For spotting, engraving, small grooving on milling machines, machining centers.
- For carbon steel, alloy steel and cast iron, general purpose.



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		

NC Spot Drill - V9MT12T3



Inserts >>

Feature:

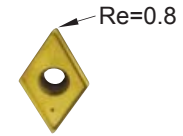
- 60 degree indexable spotting insert, Dmax 13mm.
- Special geometry with supporting edges for using in high speed machining.
- Excellent tool for grooving, save machining time !

NC2071 : • K20F grade, TiN coated, high positive ground cutting edge and relief angle.

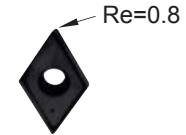
- Universal grade for carbon steel, alloy steel and cast iron.
- Each insert has 2 cutting edges.

NC9076 : • High positive geometry and sharpen edge.

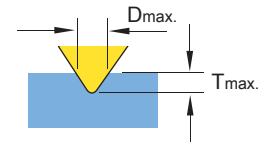
- DLC coated, super good for Al, Al-alloy, copper, brass and bronze.
- Perform excellent surface on non-ferrous metal.
- Each insert has 2 cutting edges.



NC2071



NC9076



Code	Parts No.	Grade	Coating	Diagram	Dimensions			Dmax.	Tmax.
					L	S	Re		
015201	V9MT12T3CT-NC2071	K20F	TiN		12.7	3.97	0.8	13	11.7
015202	V9MT12T3CT-NC9076	K20F	DLC						

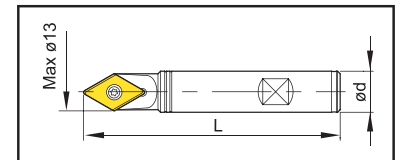
Holder >>

Feature:

- 60° degree spotting drill with indexable insert.
- A single cutting edge creates higher precision and position when spotting.

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

Code	Parts No.	ød	L	Screw	Key
605001	00-99616-13V	16	100	NS-35080 2.5 Nm	NK-T15
615001	00-99616-13V-5/8	5/8"	100	NS-35080 2.5 Nm	NK-T15



Single Set >>

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

Code	Parts No.	Shank ø	Total Length	Insert fitted	Dmax.	Tmax.
605101-5201	00-99616-13V-02S	16	100	V9MT12T3CT-NC2071	13	11.7
605101-5202	00-99616-13V-02SAL	16	100	V9MT12T3CT-NC9076	13	11.7



NC Spot Drill

NC Spot Drill-V0820802 / V08212T3



Shank
Ø3/8"

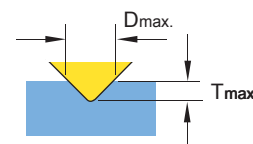
Shank
Ø5/8"

Inserts >>

- Feature:**
- 82 degree indexable spotting insert.
 - Match the geometry of **American standard screw hole**.
 - Special geometry with supporting edges for use in high speed machining.

- NC2071 :**
- K20F grade, TiN coated, high positive ground cutting edge and relief angle.
 - Universal grade for carbon steel, alloy steel and cast iron.
 - Each insert has 2 cutting edges.

- NC9076 :**
- High positive geometry and sharp edge.
 - DLC coated, super good for Al, Al-alloy, copper, brass and bronze.
 - Produces excellent surface finish on non-ferrous metal.
 - Each insert has 2 cutting edges.



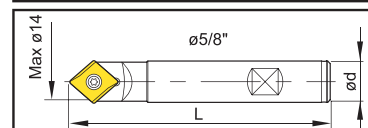
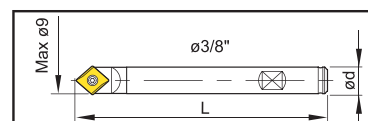
Code	Parts No.	Grade	Coating		Dimensions			Dmax.	Tmax.
					L	S	Re		
0108201	V0820802-NC2071	K20F	TiN		8	2.38	0.4	9	4.8
0108202	V0820802-NC9076	K20F	DLC		8	2.38	0.4	9	4.8
0108211	V08212T3-NC2071	K20F	TiN		12.7	3.97	0.8	14	7.5
0108212	V08212T3-NC9076	K20F	DLC		12.7	3.97	0.8	14	7.5

Holder >>

- Features:**
- 82 degree spotting drill with indexable insert.
 - Special cutting edge design gives higher precision and position when spotting

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

Code	Parts No.	Insert type	ød	L	Screw	Key
693001	00-99619-V082-3/8	V0820802	3/8"	90	NS-30055 2.0 Nm	NK-T8
693002	00-99619-V082-5/8	V08212T3	5/8"	100	NS-35080 2.5 Nm	NK-T15



NC Spot Drill - N9MT05T1



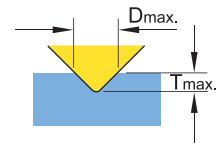
Inserts >>

Features: Mini spotting drill with indexable insert, low cutting power required. Especially good for **Swiss type automatic lathes and CNC lathes.**

- NC2071 :**
- K20F grade, TiN coated, fully ground cutting edge and relief angle.
 - Geometry with supporting edges to stable the cutting condition on low power machine.
 - Each insert has 2 cutting edges, for carbon steel, alloy steel and cast iron.



- NC9076 :**
- High positive geometry and sharp edge.
 - DLC coated, super good for Al, Al-alloy, copper, brass and bronze.
 - Produces an excellent surface finish on non-ferrous metal.
 - Each insert has 2 cutting edges.



Code	Parts No.	Grade	Coating	Diagram	Dimensions			Dmax.	Tmax.
					L	S	Re		
011201	N9MT05T1CT-NC2071	K20F	TiN		5	1.8	0.4	6	3.5
011202	N9MT05T1CT-NC9076	K20F	DLC						

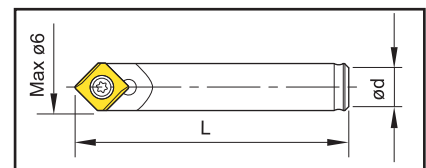
Holder >>

Features:

- Smallest indexable spotting drill holder.
- A single cutting edge creates higher precision and position when spotting.

Applications:

- Spotting, engraving, and chamfering on milling machines, machining centers.
- Spotting, facing on CNC Lathes.

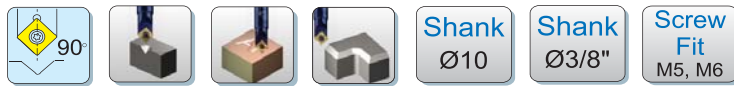


Code	Parts No.	ød	L	Screw	key
601001	00-99616-06-6	6	35	NS-20036 0.8 Nm	NK-T6
601002	00-99616-06-5	5	35		
601003	00-99616-06-6L	6	60		

Note:601003 is carbide shank holder.

NC Spot Drill - N9MT0802

Attention :



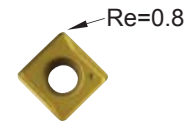
Inserts >>

- H-NC40** : • Best choice for spotting application.
- Special geometry with supporting edges for use in high speed machining.
 - Sharp edge good for long cutting chip metals, such as low carbon steel, stainless steel and Ti, Ti-alloy.
 - Each insert has 2 cutting edges.

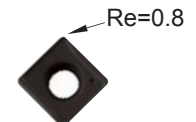
- H-NC9076** : • High positive geometry and sharp edge.
- DLC coated, super good for Al, Al-alloy, copper, brass and bronze.
 - Produces excellent surface finish when chamfering non-ferrous metal.
 - Each insert has 2 cutting edges.

- NC40** : • General purpose, universal grade for all unhardened steel and cast iron.
- Each insert has 4 cutting edges.

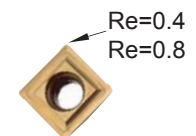
- NC10** : • High positive angle and fully ground cutting edge and relief angle.
- Universal grade for Al, Al-alloy, non-ferrous metal and stainless steel.
 - Each insert has 4 cutting edges.



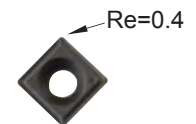
H-NC40



H-NC9076

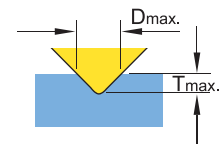


NC40



NC10

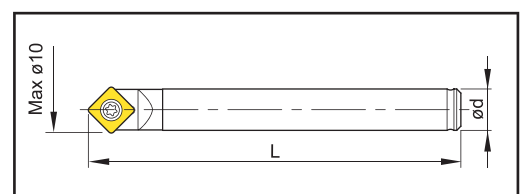
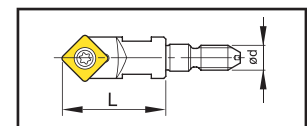
Code	Parts No.	Grade	Coating	Re	Dimensions			Dmax.	Tmax.
					L	S	Re		
013201	N9MT0802CT2T-H-NC40	K20F	TiN		8	2.38	0.8	10	4
013202	N9MT0802CT2T-H-NC9076	K20F	DLC		8	2.38	0.8	10	4
013401	N9MT080208CT-NC40	K20F	TiN		8	2.38	0.8	10	4
013402	N9MT080204CT-NC40	K20F	TiN		8	2.38	0.4	10	4
013403	N9MT080204CT-NC10	K20F	TiAlN		8	2.38	0.4	10	4



Holder >>

- Features:**
- Indexable spotting drill holder.
 - Single cutting edge design gives higher precision when spotting.

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



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

Note: • 603003 with side lock flat on shank.
• Nine9 extension bar for M5,M6 screw fit holder, see page 43.

NC Spot Drill - N9MT0802



Single Set >>



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

Code	Parts No.	Shank ø	Total Length	Insert fitted	Dmax.	Tmax.
603101-3401	00-99616-10-02S	10	90	N9MT080208CT-NC40	10	4
603101-3403	00-99616-10-02SAL	10	90	N9MT080204CT-NC10	10	4
603101-3201	00-99616-10-H-02S	10	90	N9MT0802CT2T-H-NC40	10	4
613101-3401	00-99616-10-3/8-02S	3/8"	3.54"	N9MT080208CT-NC40	0.394"	0.157"
613101-3403	00-99616-10-3/8-02SAL	3/8"	3.54"	N9MT080204CT-NC10	0.394"	0.157"

Starter Package >>

- Selected package for starter who wants to try **NC Spot Drill**.
- Included one insert on tool holder and five inserts in the pocket.
- Total 6 inserts are equal to 24 spot drills.



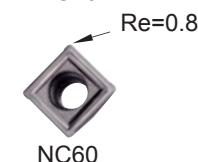
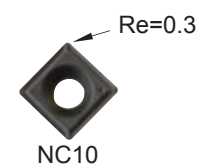
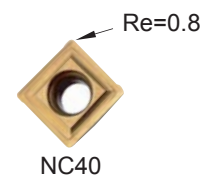
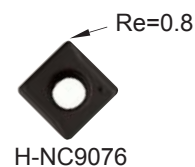
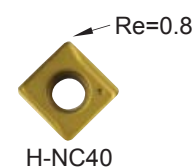
Code	Parts No.	Shank ø	Insert included	Content
603201-3401	00-99616-10-ME6	10	N9MT080208CT-NC40	1 tool holder + 6 inserts + 1 key
603201-3403	00-99616-10-ME6AL	10	N9MT080204CT-NC10	
603201-3201	00-99616-10-H-ME6	10	N9MT0802CT2T-H-NC40	
613201-3401	00-99616-10-IN6	3/8"	N9MT080208CT-NC40	
613201-3403	00-99616-10-IN6AL	3/8"	N9MT080204CT-NC10	

NC Spot Drill - N9MT11T3

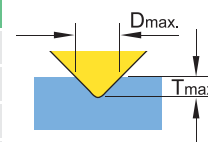


▣ Inserts >>

- H-NC40** : • Best choice for spotting application.
 • Special geometry with supporting edges for use in high speed machining.
 • Sharp edge good for long cutting chip metals, such as low carbon steel, stainless steel and Ti, Ti-alloy.
 • Each insert has 2 cutting edges.
- H-NC9076** : • High positive geometry and sharp edge same as grade H-NC40.
 DLC coated, super good for Al, Al-alloy, copper, brass and bronze.
 • Produces excellent surface finish when chamfering non-ferrous metal.
 • Each insert has 2 cutting edges.
- NC40** : • General purpose, universal grade for all unhardened steel and cast iron.
 • Each insert has 4 cutting edges.
- NC10** : • High positive angle and fully ground cutting edge and relief angle.
 • Universal grade 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..



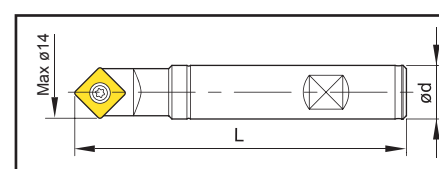
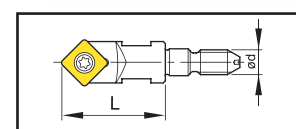
Code	Parts No.	Grade	Coating	Re	Dimensions			Dmax.	Tmax.
					L	S	Re		
014202	N9MT11T3CT2T-H-NC40	K20F	TiN		11	3.97	0.8	14	7
014203	N9MT11T3CT2T-H-NC9076	K20F	DLC		11	3.97	0.8	14	7
014401	N9MT11T3CT-NC40	P35	TiN		11	3.97	0.8	14	7
014402	N9MT11T3CT-NC10	K10F	TiAlN		11	3.97	0.3	14	7
014403	N9MT11T3CT-NC60	CERMET			11	3.97	0.8	14	7



▣ Holders >>

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

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



Code	Parts No.	ød	L	Screw	Key
604002	00-99616-14-12	12	100		
604004	00-99616-14	16	100		
604007	00-99616-14-150L	16	150		
604009	00-99616-14-220L	20	220		
614001	00-99616-14-1/2	1/2"	4"		
614002	00-99616-14-5/8	5/8"	4"		
624001	00-99616-14-M8	M8	30		

Note: • Nine9 extension bar for M8 screw fit holder, see page 43.

NC Spot Drill - N9MT11T3



Single Set >>

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

Code	Parts No.	Shank ø	Total Length	Insert fitted	Dmax.	Tmax.
604102-4401	00-99616-14-12-02S	12	100	N9MT11T3CT-NC40	14	7
604102-4402	00-99616-14-12-02SAL			N9MT11T3CT-NC10		
604102-4202	00-99616-14-12-H-02S			N9MT11T3CT2T-H-NC40		
604104-4401	00-99616-14-02S	16	100	N9MT11T3CT-NC40	14	7
604104-4402	00-99616-14-02SAL			N9MT11T3CT-NC10		
604104-4202	00-99616-14-H-02S			N9MT11T3CT2T-H-NC40		
614101-4401	00-99616-14-1/2-02S	1/2"	4"	N9MT11T3CT-NC40	0.6"	0.275"
614101-4402	00-99616-14-1/2-02SAL			N9MT11T3CT-NC10		
614102-4401	00-99616-14-5/8-02S	5/8"	4"	N9MT11T3CT-NC40	0.6"	0.275"
614102-4402	00-99616-14-5/8-02SAL			N9MT11T3CT-NC10		



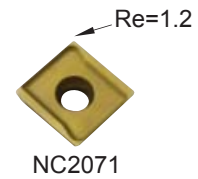
Starter Package >>

- Selected package for starter who wants to try NC Spot Drill.
- Included one insert on tool holder and five inserts in the pocket.
- Total 6 inserts are equal to 24 spot drills.



Code	Parts No.	Shank ø	Insert included	Content
604202-4401	00-99616-14-12-ME6	12	N9MT11T3CT-NC40	1 tool holder + 6 inserts + 1 key
604202-4402	00-99616-14-12-ME6AL		N9MT11T3CT-NC10	
604204-4401	00-99616-14-12-ME6		N9MT11T3CT2T-H-NC40	
604204-4402	00-99616-14-12-ME6AL	16	N9MT11T3CT-NC40	
604204-4202	00-99616-14-H-ME6		N9MT11T3CT-NC10	
614202-4401	00-99616-14-IN6		N9MT11T3CT2T-H-NC40	
614202-4402	00-99616-14-IN6AL	5/8"	N9MT11T3CT-NC40	
614202-4402	00-99616-14-IN6AL		N9MT11T3CT-NC10	

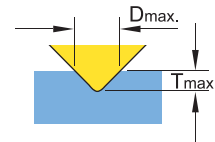
NC Spot Drill - N9MT1704



▣ Inserts >>

Feature: • 90 degree indexable spot drill insert, Dmax 22mm.

- NC2071:**
- K20F grade, TiN coated, high positive geometry, fully ground cutting edge and relief angle.
 - Each insert has 2 cutting edges.
 - Universal grade for all unhardened steel and cast iron.

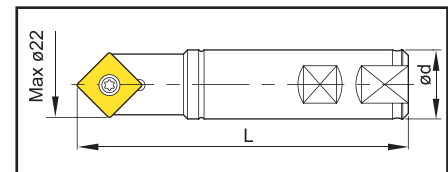


Code	Parts No.	Grade	Coating		Dimensions			Dmax.	Tmax.
					L	S	Re		
016201	N9MT1704CT-NC2071	K20F	TiN		17	4.76	1.2	22	10

▣ Holders >>

- Features:**
- 90 degree spotting drill with indexable insert.
 - A single cutting edge creates higher precision and position when spotting.

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



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

▣ Single Set >>

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

Code	Parts No.	Shank ø	Total Length	Insert fitted	Dmax.	Tmax.
606101-6201	00-99616-22-02S	20	100	N9MT1704CT-NC2071	22	10



NC Spot Drill - N9MT220408



Shank
Ø25

Shank
1"

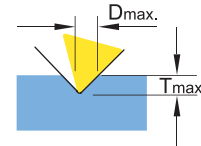


NC40

Inserts >>

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

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

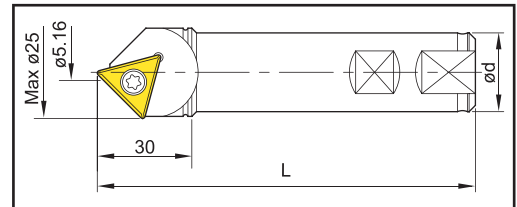


Code	Parts No.	Grade	Coating	Diagram	Dimensions		Dmax.	Tmax.
					L	S		
017301	N9MT220408CT-NC40	P35	TiN		20.83	4.76	25	12.2

Holders >>

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

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



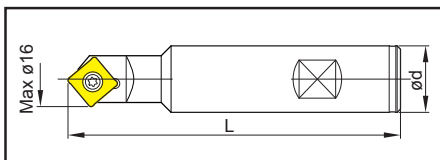
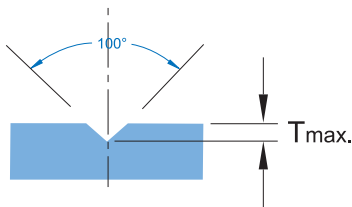
Code	Parts No.	ød	L	Screw	Key
607001	00-99616-25-CT28	25	120	NS-40100 3.8 Nm	NK-T15
617001	00-99616-1-CT28	25.4	120		



NC Spot Drill - N9MT11T3

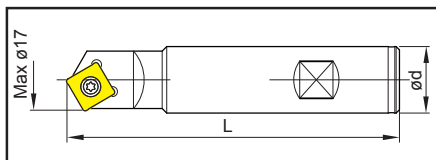
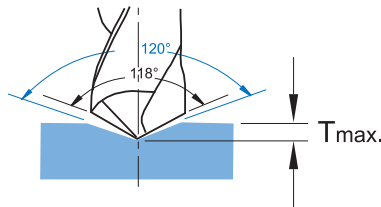


• 100 degree



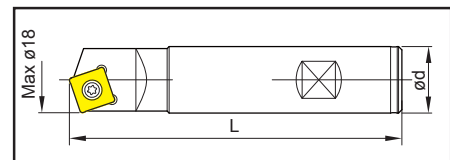
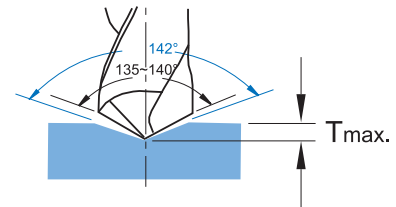
- For aircraft 100° normal rivet hole and screw hole.

• 120 degree



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

• 142 degree

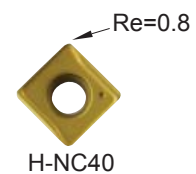


- For spotting before drilling by 135~140° point angle high performance drilling.

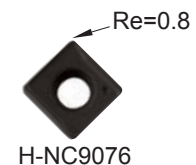
▣ Inserts >>

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

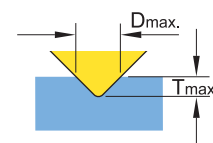
H-NC40 : • K20F grade, TiN coated.
 • General purpose for all kinds of steel and cast iron.
 • Each insert has 2 cutting edges.



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 metal.
 • Each insert has 2 cutting edges.



Code	Parts No.	Grade	Coating	Image	Dimensions		
					L	S	Re
014202	N9MT11T3CT2T-H-NC40	K20F	TiN		11	3.97	0.8
014203	N9MT11T3CT2T-H-NC9076	K20F	DLC		11	3.97	0.8



NC Spot Drill - N9MT11T3



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

▣ **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"			

Attention :



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

▣ **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 five 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"		



NC Spot Drill

NC Spot Drill - V14208 / V14216



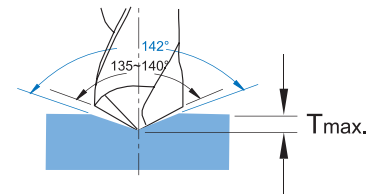
*Save cutting and changing time !
Excellent tool life.*

▣ Inserts >>

Feature:

- For spotting before drilling by 135° - 140° point angle high performance drill.
- 142 degree indexable spotting drills. Maximum diameter up to 32mm.

- NC2071:**
- K20F grade, TiN coated, high positive geometry, fully ground cutting edge and relief angle.
 - Each insert has 2 cutting edges.
 - Universal grade for all unhardened steel and cast iron.

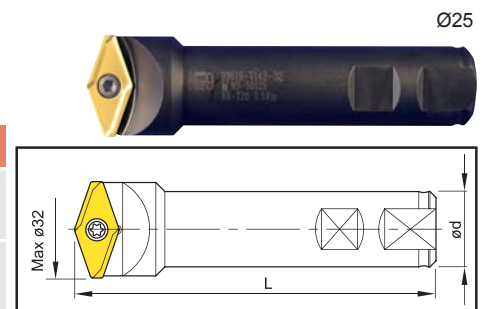
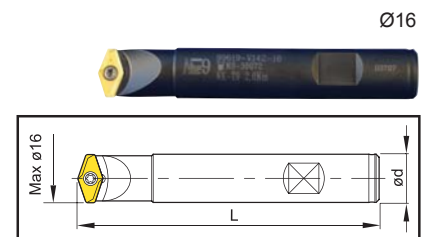


Code	Parts No.	Grade	Coating	Diagram	Dimensions			Dmax.	Tmax.	Image
					L	S	Re			
0114201	V1420803-NC2071	K20F	TiN		8	2.38	0.8	16	2.8	V1420803-NC2071
0114211	V1421604-NC2071	K20F	TiN		14	4.76	1.2	32	5.5	V1421604-NC2071

▣ Holders >>

Feature:

- Using spotting first may increase higher speed and feed rate of the after drills.
- Saving total machining time !
- Longer tool life of the after drills. Money saving !
- Higher accuracy of positioning and diameter tolerance !



Code	Parts No.	Insert Type	ød	L	Screw	Key
696001	00-99619-V142-16	V1420803-NC2071	16	100	NS-30072	NK-T9
696002	00-99619-V142-32	V1421604-NC2071	25	120	NS-50125	NK-T20

Corner Rounding Cutter (4 cutting edges)



Shank
Ø16

*R1.0~R3.0
All are interchangeable
on same holder.*

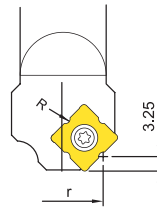
▣ Inserts >>

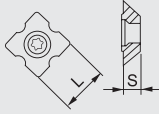
Features:

- 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.

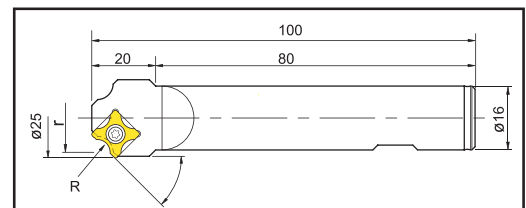


Code	Parts No.	Grade	Coating	Corner radius(R)	Tool radius offset (r)		Dimensions	
							L	S
014404	N9MT11T3R10-NC40	P35	TiN	1.0	9.25		11.11	3.97
014405	N9MT11T3R15-NC40	P35	TiN	1.5	9.5		11.11	3.97
014406	N9MT11T3R20-NC40	P35	TiN	2.0	9.75		11.11	3.97
014407	N9MT11T3R25-NC40	P35	TiN	2.5	10		11.11	3.97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

Corner Rounding Cutter (2 cutting edges)



Shank
Ø12
Ø16

Shank
Ø1/2"
Ø5/8"

▣ Inserts >>

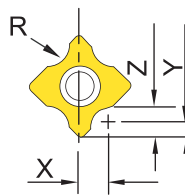
Features:

- 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 material.
- Inserts are CNC ground for precision radius location.

*R1.0~R3.0
All are interchangeable
on same holder.*



Code	Parts No.	Grade	Coating	Corner radius(R)	offset			Dimensions	L	S
					X	Y	Z			
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"

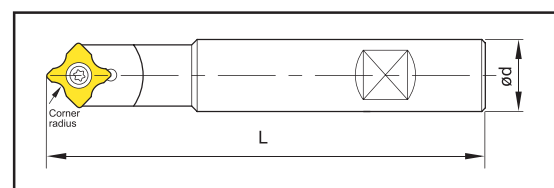
• Other sizes also available upon request.

▣ Holders >>

Features:

- **For corner rounding using NC Spot Drill shank.**
- Good for small work pieces.

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"		



Corner Rounding Cutter (2 cutting edges)



Shank
Ø20

Shank
Ø25

*R4.0~R6.0
All are interchangeable
on same holder.*

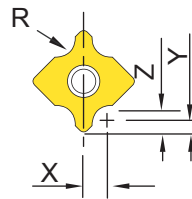
▣ Inserts >>

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 material.
- Inserts are CNC ground for precision radius location.
- Each insert has two cutting edges.



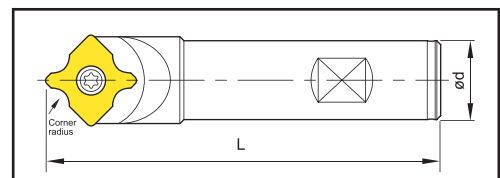
Code	Parts No.	Grade	Coating	Corner radius(R)	offset			Diagram	Dimensions	
					X	Y	Z		L	S
016202	N9MT1704RC40-NC2071	K20F	TiN	4.0	5.95	2	6		17	4.76
016203	N9MT1704RC50-NC2071	K20F	TiN	5.0	6.90	2	7		17	4.76
016204	N9MT1704RC60-NC2071	K20F	TiN	6.0	7.90	2	8		17	4.76

▣ Holders >>

Features:

- **For corner rounding using NC Spot Drill shank.**
- Good for small work pieces, which need large corner rounding.

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



- Other sizes also available upon request.

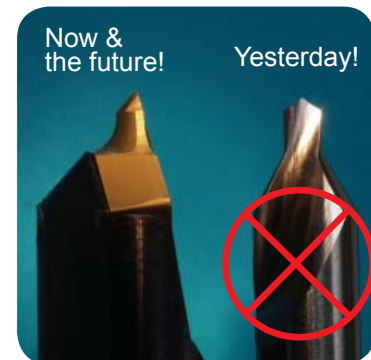
NC Spot Drill - N9MT11T3PR



Inserts >>

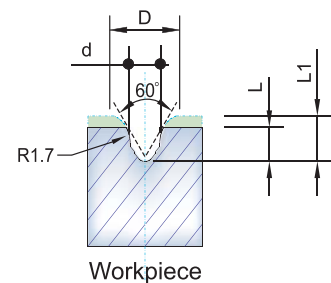
Features:

- 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.
- Carbide insert can stand very long tool life.
- Indexable insert saves pre-setting time of tool change.



N9MT11T3PRXX-NC40 :

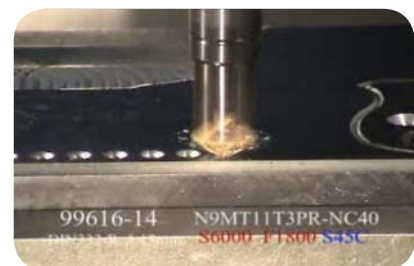
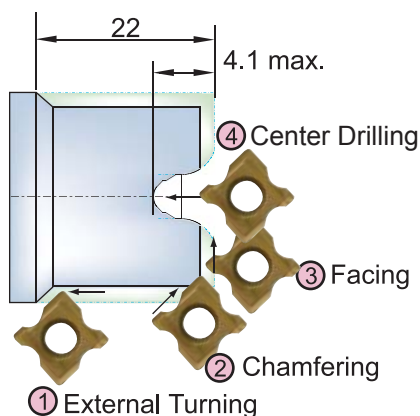
- Carbide insert, P35, TiN coated, for all steel and cast iron, general purpose.
- Each insert has two cutting edges.
- Radius curve eliminates the sharp transition from drill point to countersink angle. The risk of breakage is reduced.



Code	Parts No.	Grade	Coating	Rotation	Dimensions				
					d	D	L	L1	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

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

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
604004PR	00-99616-14-PR	16	100	NS-35080 2.5 Nm	NK-T15

- Especially holder for PR inserts.

45° Chamfering Tool-N9MT11T308LA



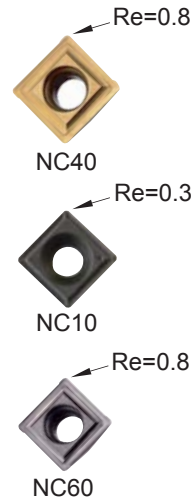
*Higher feed rate.
Excellent tool life.*



▣ Inserts >>

Feature:

- Patented square insert, each insert has 4 cutting-edges.
- 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°.



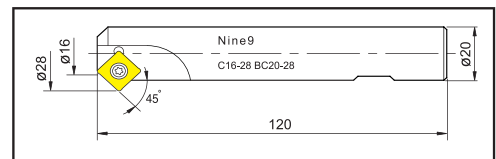
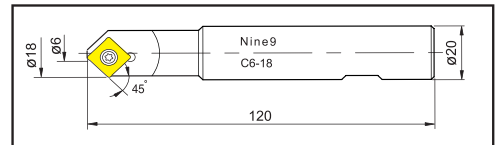
Code	Parts No.	Grade	Coating	Diagram	Dimensions		
					L	S	Re
014409	N9MT11T308LA -NC40	P35	TiN		11.11	3.97	0.8
014410	N9MT11T308LA -NC10	K10F	TiAN		11.11	3.97	0.3
014411	N9MT11T308LA -NC60	Cermet			11.11	3.97	0.8

▣ Holders >>

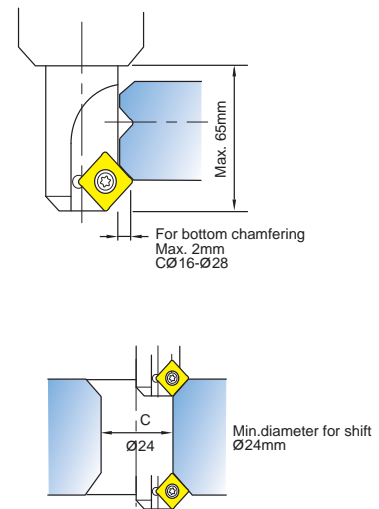
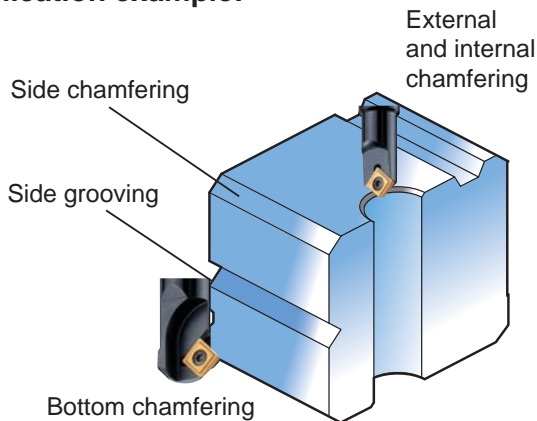
Features:

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

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				

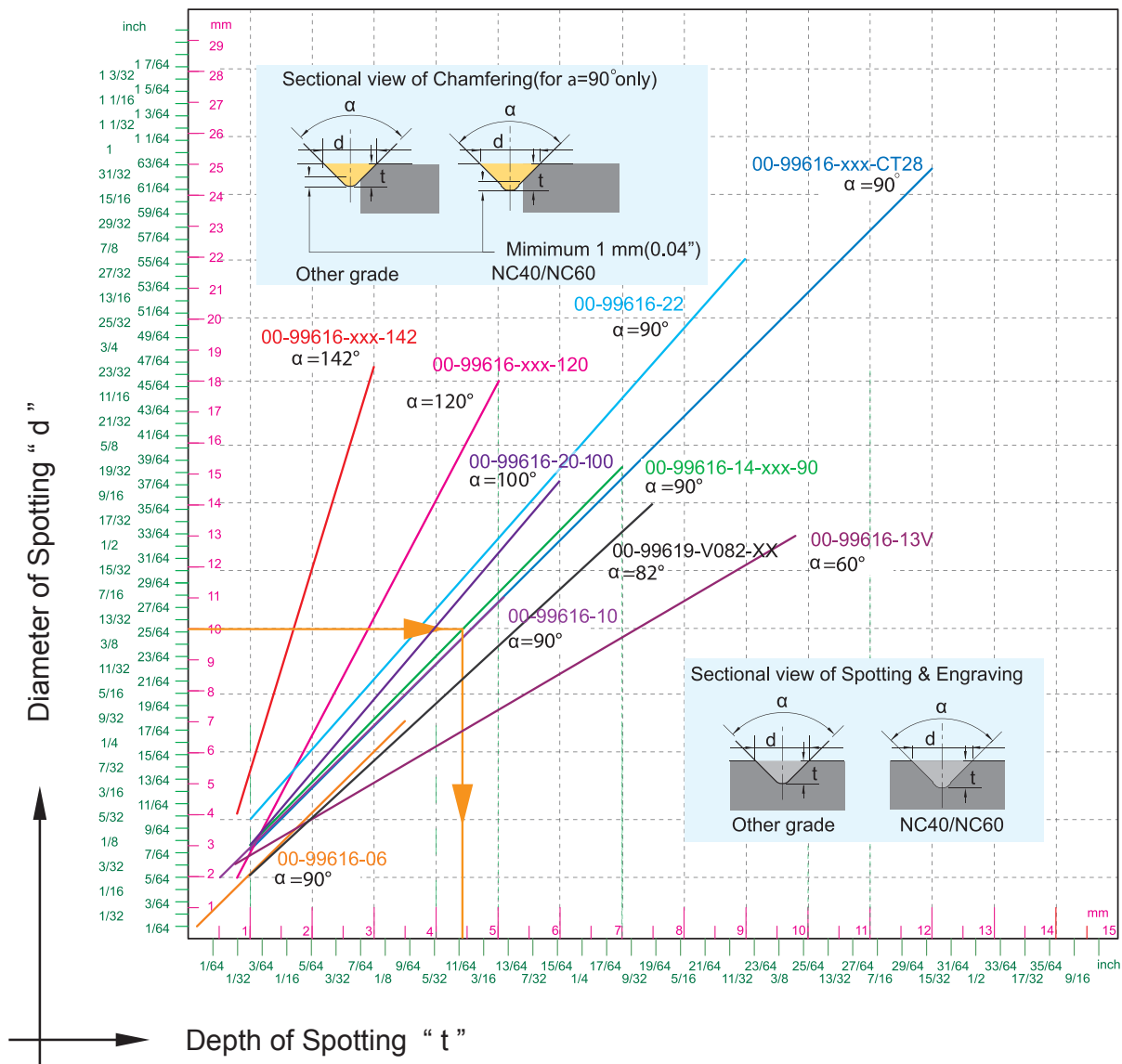


▣ Application example:



NC Spot Drill

Diameter/Depth Chart and Speed/Feed Rate Calculation of NC Spot Drill



▣ 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 36), calculate spindle speed "S"(RPM).
2. Feed rate per minute $F=f \times S = \text{RPM} \times \text{IPR}$

Metric

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

$$F = f \times S$$

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

SFM=Vc (m/min.)x3.28

IPR=f/25.4 - inches Per Revolution

F=IPM= inches Per Minute(Feed)

NC Spot Drill Cutting Data

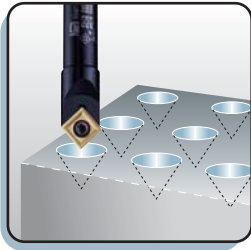
N9MT-CT Insert

Multi-function Insert

Determine spindle speed and feed rate:

- Choose spotting depth to decide spotting diameter according to the Diameter/Depth chart of page 35.
- The spindle speed should be calculated by the maximum diameter of spotting, chamfering and grooving.

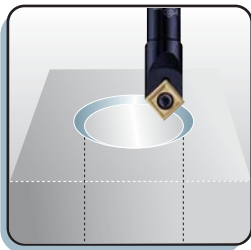
Centering



Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~250	0.05~0.10	NC40, H-NC40, NC2071
Alloy Steel	100~200	0.04~0.06	NC40, H-NC40, NC2071
Stainless Steel	65~125	0.03~0.06	NC10, NC60, H-NC40, NC2071
Cast iron	80~150	0.05~0.10	NC40, NC10, NC2071
Non-Ferrous Metal (Al, copper)	150~300	0.05~0.10	NC10, H-NC9076
Ti, Ti-alloy	60~80	0.03~0.06	NC9076

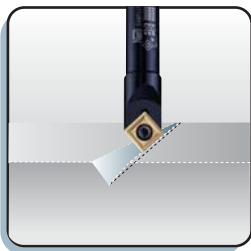
- * For technical construction reasons, the insert is not located on the center of the holder.
- * Inserts with supporting edges can increase feed rate 50%. (ex:NC2071, NC9076, H-NC40 type)

Chamfering



Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~320	0.15~0.24	NC40, H-NC40, NC2071
Alloy Steel	100~250	0.12~0.20	NC40, H-NC40, NC2071
Stainless Steel	65~125	0.1~0.20	NC10, NC60, H-NC40, NC2071
Cast iron	150~250	0.15~0.25	NC40, NC10, NC2071
Non-Ferrous Metal (Al, copper)	150~320	0.15~0.25	NC10, H-NC9076
Ti, Ti-alloy	60~80	0.03~0.06	NC9076

Grooving



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

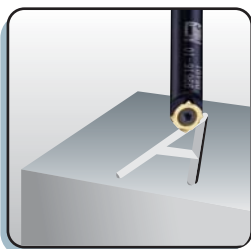
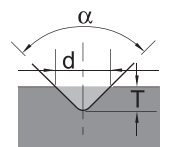
Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150~250	0.05~0.08	NC40, H-NC40, NC2071
Alloy Steel	100~200	0.04~0.06	NC40, H-NC40, NC2071
Stainless Steel	65~125	0.03~0.06	NC10, NC60, H-NC40, NC2071
Cast iron	80~150	0.05~0.08	NC40, NC10, NC2071
Non-Ferrous Metal (Al, copper)	150~320	0.05~0.08	NC10, H-NC9076
Ti, Ti-alloy	60~80	0.03~0.06	NC9076

N9MT-W Insert

Engraving Insert

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

- For $\alpha = 90^\circ$ insert, $d=2 \times T$
- For $\alpha = 60^\circ$ insert, $d=1.73 \times T$



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.

Corner Rounding Tool Cutting Data

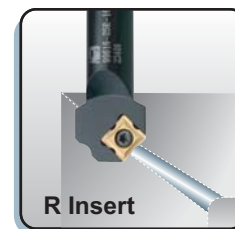
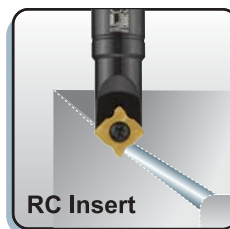
N9MT-R Insert N9MT-RC Insert Corner Rounding Tool

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:

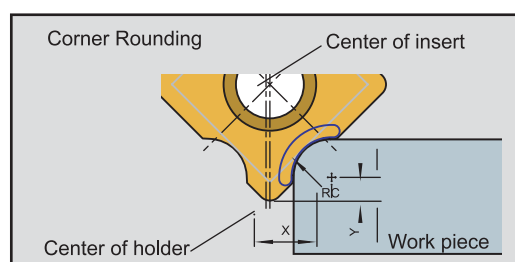
Calculate spindle speed

$d = 2 \times X$	mm	d = diameter of the tool for calculation purpose
$d = 2 \times r$	mm	X = tool radius offset (ref. page 31~32 for RC inserts)
$S = \frac{V_c \times 1000}{d \times \pi}$	r.p.m.	r = tool radius offset (ref. page 30 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 31~32 for RC inserts)
$H = X$ or r	r = tool radius offset (ref. page 30 for R inserts)
	Y = distance to the center of radius. (page 25~26 for RC inserts)
	TL' = tool length
	TL = tool length offset
	H = tool radius offset



Recommended cutting speed for different materials:

R Insert

Workpiece material	Vc (m/min.)	f (mm/rev.)	Grade of insert
Carbon Steel	150~320	0.05~0.10	NC40
Alloy steel	100~250	0.04~0.08	NC40
High alloy steel	60~80	0.03~0.06	NC40
Stainless steel	65~125	0.03~0.06	NC40
Gray cast iron	150~250	0.05~0.10	NC40
Aluminum, Al-alloy Si < 12%	150~320	0.05~0.10	NC40
Al-alloy Si > 12%	100~300	0.05~0.10	NC40
Copper	200~250	0.05~0.10	NC40
Brass and Bronze	150~250	0.05~0.10	NC40
Hardened steel <HRC40°	60~80	0.03~0.06	NC40

RC Insert

Workpiece material	Vc (m/min.)	f (mm/rev.)	Grade of insert
Carbon Steel	150~320	0.05~0.10	NC2071
Alloy steel	100~250	0.05~0.10	NC2071
High alloy steel	80~150	0.04~0.08	NC2071
Stainless steel	65~125	0.05~0.10	NC2071
Gray cast iron	150~250	0.05~0.10	NC2071
Aluminum, Al-alloy Si < 12%	150~320	0.05~0.10	NC2071
Al-alloy Si > 12%	100~300	0.05~0.10	NC2071
Copper	200~250	0.05~0.10	NC2071
Brass and Bronze	150~250	0.05~0.10	NC2071
Hardened steel <HRC40°	60~80	0.04~0.08	NC2071

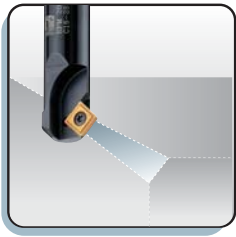
Center Drilling Tool Cutting Data



PR Insert

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

45° Chamfering Tool Cutting Data



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

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

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)

Minimum 1mm (0.04")

LA Insert

Workpiece material	Vc (m/min)	f (mm/rev.)	Grade of Insert
Carbon Steel	150-320	0.05~0.10	NC40
Alloy Steel	100-250	0.04~0.08	NC40
High alloy steel,	60-80	0.03~0.06	NC40
Stainless steel	65-125	0.03~0.06	NC10
Gray cast iron	150-250	0.05~0.10	NC40
Aluminum, Al-alloy Si < 12%	150-320	0.05~0.10	NC10
Al-alloy Si >12%	100-300	0.05~0.10	NC10
Copper	200-250	0.05~0.10	NC10
Brass and Bronze	150-250	0.05~0.10	NC10
Hardened steel HRC40°-55°	60-80	0.05~0.10	NC40

Application example:

