



NC Spot Drill >>

NC Spot Drill with indexable carbide insert.

High efficiency! Low cost!

CNC lathes, CNC turning centers and machining centers.

Features

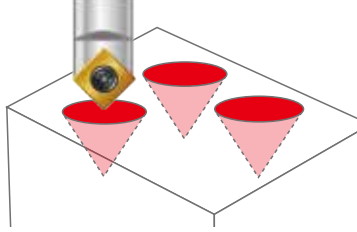
- ▶ Spotting produces better hole position and geometrically uniform holes
- ▶ Available shank diameter- Ø5, Ø6, Ø8, Ø10, Ø12, Ø16, Ø20, Ø25mm, Ø3/8", Ø1/2", Ø5/8", Ø1/4", Ø3/4", M5, M6 and M8.
- ▶ One tool will perform multiple applications
 - Long tool life.
 - Each insert has 2 or 4 cutting edges.
 - Suitable for spotting, chamfering, grooving and engraving.
 - 60° / 82° / 90° / 100° / 120° / 142° / 145° angle for different applications.
 - Increase cutting speed with coated carbide inserts.



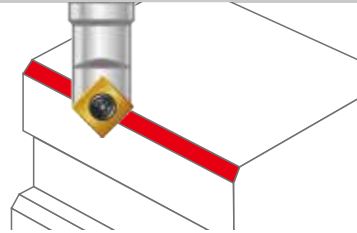
- ▲ Machining Center
 - a** Engraving
 - b** Spotting
 - c** Chamfering
 - d** Grooving

▼ ALL IN ONE!!

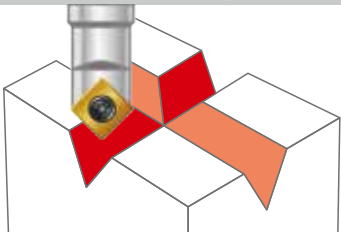
Spotting



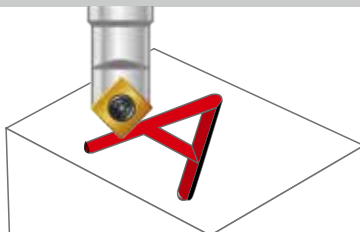
Chamfering



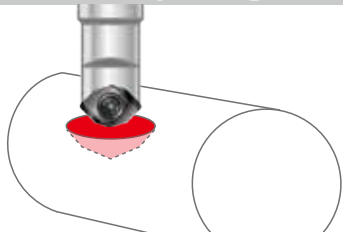
Grooving



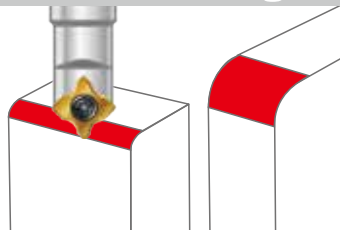
Engraving



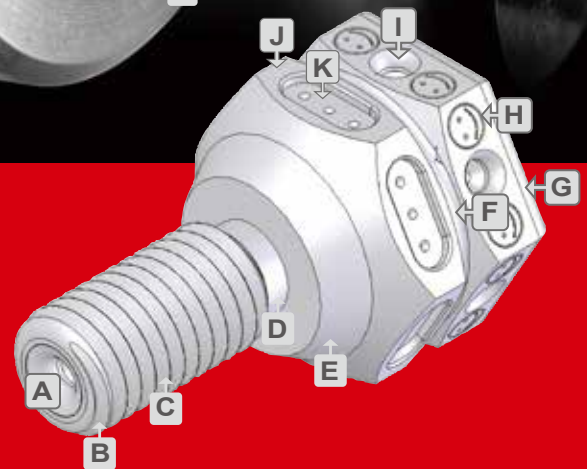
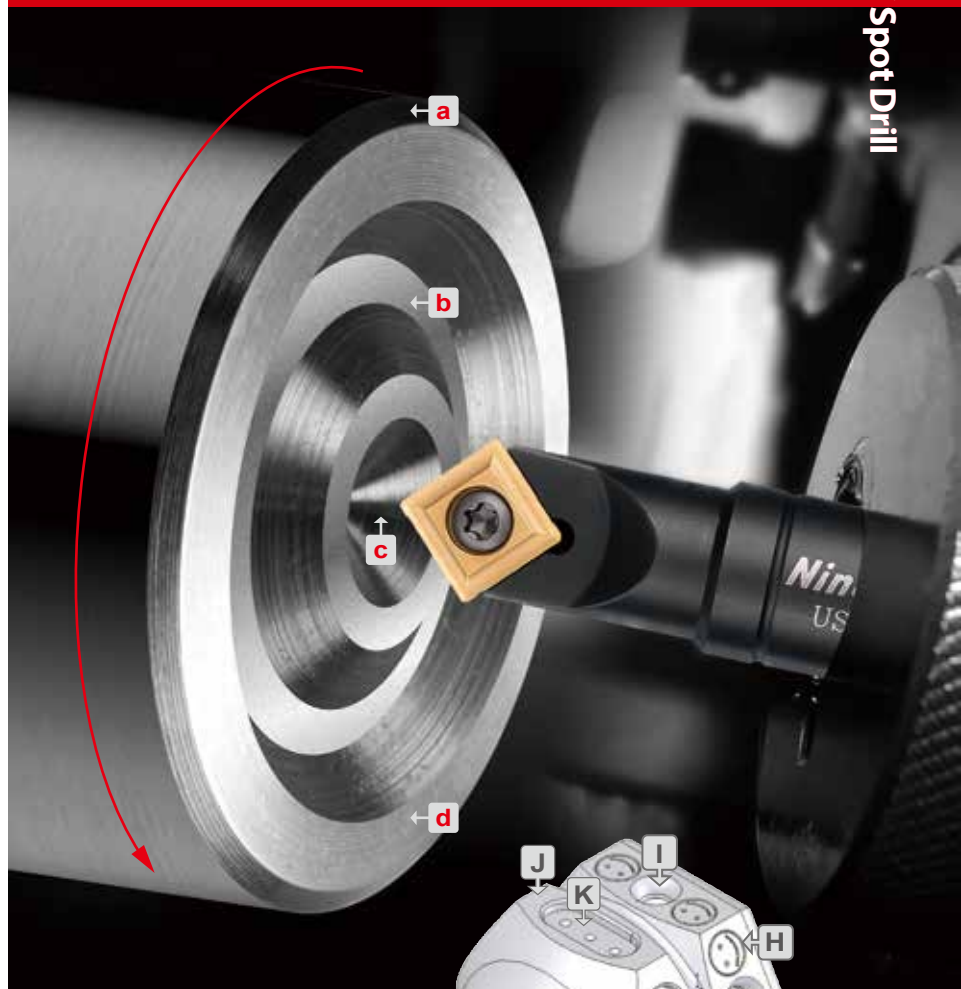
W Spotting



Corner Rounding



- ▲ CNC Lathes
- a** External and internal chamfering
 - b** Grooving
 - c** Centering
 - d** Facing



- Multifunctional:
- | | |
|--------------------------------------|--------------------------|
| A Center Drilling | B Corner rounding |
| C Thread turning | D Grooving |
| E Taper turning | F V-grooving |
| H Engraving | J Face milling |
| K Drilling & milling a groove | |

* Some features produced with a special insert



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No Need To Choose Nine9 Does It All! >>

NC Spot Drill



Cost Saving



Time Saving

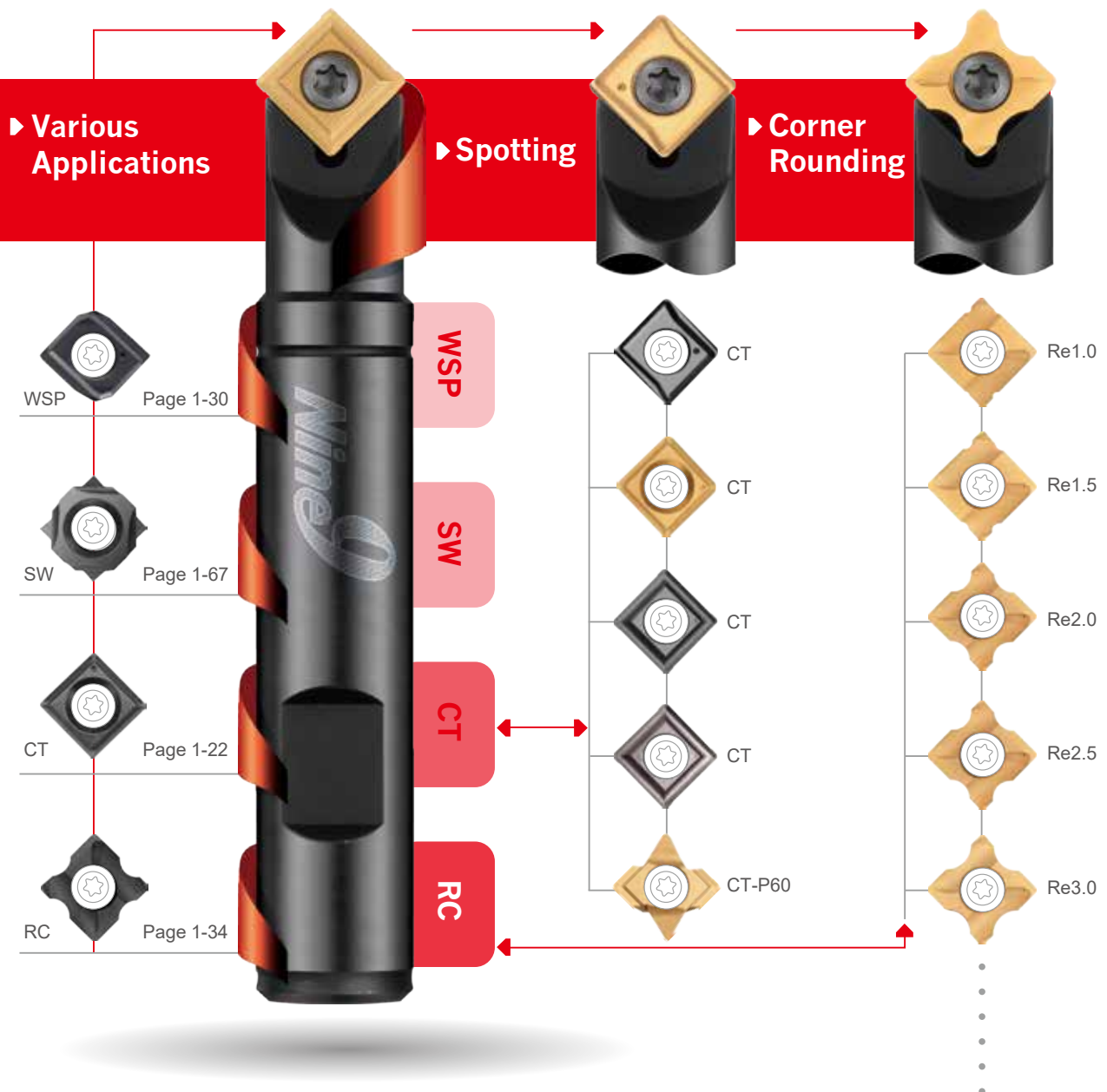


Highly Efficient



Long Tool Life

► Various inserts can fit on the same tool holder




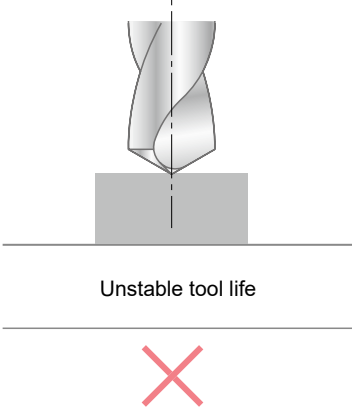
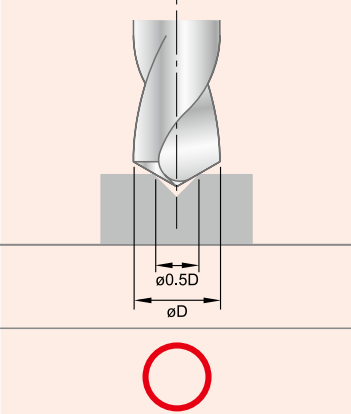
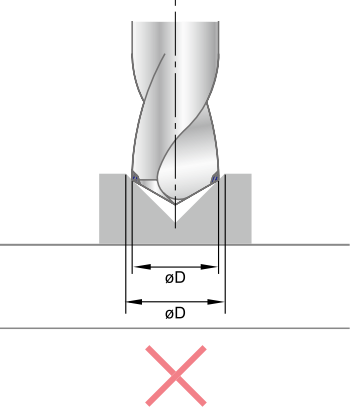
A New Drilling Concept!

0.5xD of spotting

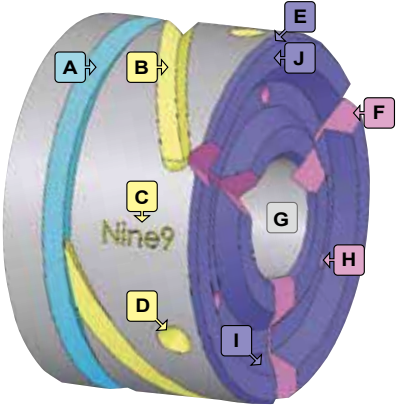
Many drill manufacturers and suppliers state that their drills start drilling on the solid material. You can look forward to the following benefits when using the NC Spot Drill to drill a spot that is half of the drilling diameter.

► Drill Benefits >>

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

NC Spot Drill	Without Spotting	0.5xD Spotting	Larger Spotting
<ul style="list-style-type: none"> • Better center position! • Longer tool life! 	<ul style="list-style-type: none"> • Drill has less position accuracy and diameter tolerance. 	<ul style="list-style-type: none"> • Best result! • Higher speed and feed rate. • Better position accuracy and diameter tolerance. 	<ul style="list-style-type: none"> • Longer spotting time! • Guided at the weakest corner of drill. • Shorter tool life
			

► Various Applications of NC Spot Drill >>

Turning Center	Fig	Applications	Multifunctional Cutting Tool
	A	Grooving	Use on CNC lathes CNC turning centers Machining centers Milling machines SPM machines
	B	Helical groove milling	
	C	Engraving	
	D	Spot drilling	
	E	Chamfer turning	
	F	Face groove milling	
	G	Internal turning	
	H	Spot drilling on end surface	
	I	Internal Chamfering	
	J	Face grooving	



60° N9MT11T3P60



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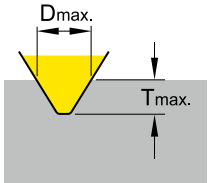
NC Spot Drill

► Inserts >>

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

NC40: • Universal grade for all unhardened steel and cast iron.

• Each insert has 2 cutting edges.

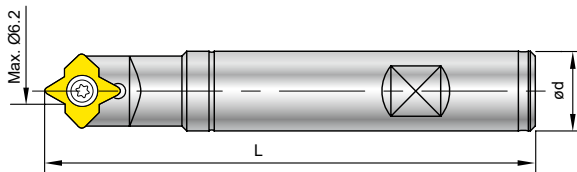


Code	Parts No.	Coating	Grade	Image	Dimensions			Dmax.	Tmax.
					L	S	Re		
014204	N9MT11T3P60-NC40	TiN	P35		11	3.97	0.8	6.2	4

► Holder >>

• A single cutting edge design creates higher precision and position when spotting.

• Applications: For spotting, engraving, small grooving on milling machines, machining centers.



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		

V9MT0802 / V9MT12T3

60°



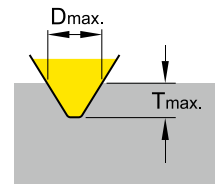
▶ Inserts >>

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

NC5071: • For high alloy steel and cast iron.
• Each insert has 2 cutting edges.

NC2071: • For carbon steel, low alloy steel, stainless steel, non-ferrous and titanium.
• Each insert has 2 cutting edges.

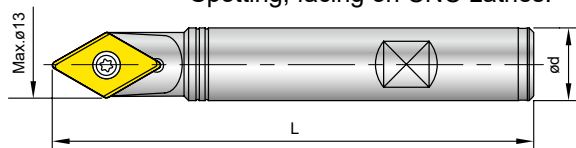
NC9076: • For non-ferrous material such as aluminum, al-alloy, titanium brass, copper and long cutting chip metal.
• Produces excellent surface finish on non-ferrous metal.
• Each insert has 2 cutting edges.



Code	Parts No.	Coating	Grade	Diagram	Dimensions			Dmax.	Tmax.	
					L	S	Re			
NEW 019202	V9MT0802CT	NC5071	TiAlN & TiN		8	2.38	0.4	9	7.3	
019201		NC2071	TiN							K20F
NEW 019203	NC9076	DLC								
NEW 015204	V9MT12T3CT	NC5071	TiAlN & TiN		12.7	3.97	0.8	13	10.3	
015201		NC2071	TiN							K20F
015202		NC9076	DLC							

▶ Holder >>

- 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.



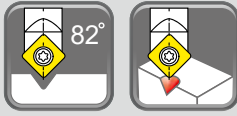
Code	Parts No.	Ød	L	Insert Type	Screw	Key
609001	00-99616-09V (Cylindrical shank)	8	60	V9MT08	*NS-25045 0.9 Nm	NK-T7
605001	00-99616-13V	16	100	V9MT12	NS-35080 2.5 Nm	NK-T15
615001	00-99616-13V-5/8	5/8"	100			

*Torque screwdriver is recommended.

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NC Spot Drill

82° V0820802 / V08212T3



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NC Spot Drill

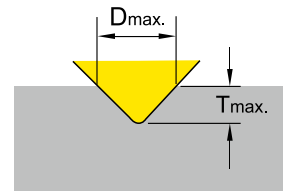
► Inserts >>

- 82 degree indexable spotting insert, Dmax 14mm (0.551")
- Match the geometry of American standard flat head screw hole.
- Special geometry with supporting edges for high speed machining.

NC5071: • For high alloy steel and cast iron.
• Each insert has 2 cutting edges.

NC2071: • For carbon steel, low alloy steel, stainless steel, non-ferrous and titanium.
• Each insert has 2 cutting edges.

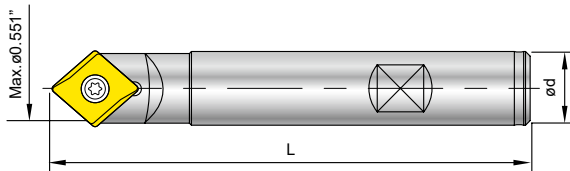
NC9076: • For non-ferrous material such as aluminum, al-alloy, titanium brass, copper and long cutting chip metal.
• Produces excellent surface finish on non-ferrous metal.
• Each insert has 2 cutting edges.



Code	Parts No.	Coating	Grade	Re	Dimensions			Dmax.	Tmax.	
					L	S	Re			
NEW 0108203	V0820802	NC5071	K20F		8	2.38	0.4	9 (0.354")	4.8 (0.189")	
0108201		NC2071								TiN
0108202		NC9076								DLC
NEW 0108213	V08212T3	NC5071	K20F		12.7	3.97	0.8	14 (0.551")	7.5 (0.295")	
0108211		NC2071								TiN
0108212		NC9076								DLC

► Holder >>

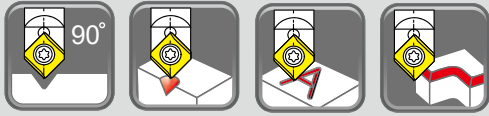
- Special cutting edge design gives higher precision and position when spotting.
- Applications : • Spotting, engraving, grooving and chamfering on milling machines, machining centers.
• Spotting, facing on CNC Lathes.



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

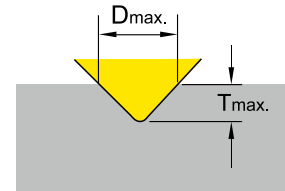
N9MT05T1 / N9MT0602

90°



▶ Inserts >>

- Mini spotting drill with indexable insert, low cutting power required.
- Especially good for Swiss type automatic lathes and CNC lathes.
- NC5071:**
 - For high alloy steel and cast iron.
 - Each insert has 2 cutting edges.
- NC2071:**
 - For carbon steel, low alloy steel, stainless steel, non-ferrous and titanium.
 - Geometry with supporting edges to stabilize the cutting condition on low power machine.
 - Each insert has 2 cutting edges.
- NC9076:**
 - For non-ferrous material such as aluminum, titanium, brass, copper and stainless steel.
 - Produces excellent surface finish on non-ferrous metal.
 - Each insert has 2 cutting edges.

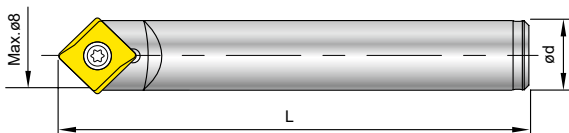


1
NC Spot Drill

Code	Parts No.	Coating	Grade	Re	Dimensions			Dmax.	Tmax.
					L	S	Re		
NEW 011209	N9MT05T1CT	NC5071	TiAlN & TiN	K20F	5	1.8	0.4	6	2.8
011201		NC2071	TiN						
011202		NC9076	DLC						
NEW 012204	N9MT0602CT	NC5071	TiAlN & TiN	K20F	6.35	2.38	0.4	8	3.8
012201		NC2071	TiN						
012202		NC9076	DLC						

▶ Holder >>

- Smallest indexable spotting drill holder.
- Single cutting edge design gives higher precision when spotting.
- Applications :
 - Spotting, engraving, and chamfering on milling machines, machining centers.
 - Spotting, facing on CNC Lathes.



Code	Parts No.	Ød	L	Insert Type	Screw	Key
601001	00-99616-06-6	6	35	N9MT05	*NS-20036 0.6 Nm	NK-T6
601002	00-99616-06-5	5	35			
601003	00-99616-06-6L	6	60			
602001	00-99616-08-8	8	60	N9MT06	*NS-22044 0.9 Nm	NK-T7

Note:601003 is carbide shank holder.

*Torque screwdriver is recommended.

90° N9MT0802

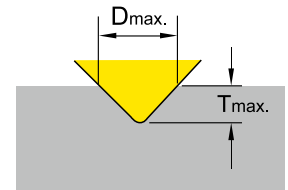


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NC Spot Drill

► Inserts >>

- NC40:**
 - General purpose, universal grade for all unhardened steel.
 - Each insert has 4 cutting edges.
- NC10:**
 - High positive angle and fully ground cutting edge and relief angle.
 - Universal grade for non-ferrous metal, cast iron and stainless steel.
 - Each insert has 4 cutting edges.
- H-NC5071:**
 - For carbon steel C>0.3%, high alloy steel C>0.3% and cast iron.
 - Each insert has 2 cutting edges.
- H-NC40:**
 - For carbon steel C<0.3%, low alloy steel C<0.3%, stainless steel, non-ferrous and titanium.
 - Each insert has 2 cutting edges.
- H-NC9076:**
 - High positive geometry and sharp edge.
 - For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.
 - Produces excellent surface finish on non-ferrous metal.
 - Each insert has 2 cutting edges.



Code	Parts No.	Coating	Grade	Image	Dimensions			Dmax.	Tmax.
					L	S	Re		
013401	N9MT080208CT	NC40	TiN		8.31	2.38	10	4.5	0.8
013402	N9MT080204CT	NC40	TiN						0.4
013403		NC10	TiAlN						0.4
NEW 013206	N9MT0802CT2T	H-NC5071	TiAlN & TiN						0.8
013201		H-NC40	TiN						0.8
013202		H-NC9076	DLC	0.8					

* H type is with supporting edge.

► Holder >>

- Single cutting edge design gives higher precision when spotting.
- Applications :
 - Spotting, engraving, grooving and chamfering on milling machines, machining centers.
 - Spotting, facing, turning on CNC Lathes.

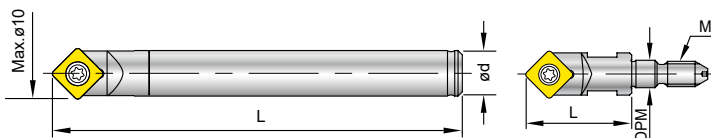
M5, M6



00-99616-10 / Ø10, Ø3/8"



00-99616-10-SL10 / Ø10



Code	Parts No.	Ød	L	M	DPM	Screw	Key
603001	00-99616-10	10	90	-	-	NS-30055 2.0 Nm	NK-T8
603003	00-99616-10-SL10 (Weldon shank)	10	90	-	-		
613001	00-99616-3/8	3/8"	90	-	-		
623001	00-99616-10-M5	-	25	M5xP0.8	5.5		
623002	00-99616-10-M6	-	25	M6xP1.0	6.5		

N9MT0802

90°



1
NC Spot Drill

► Single Set >>

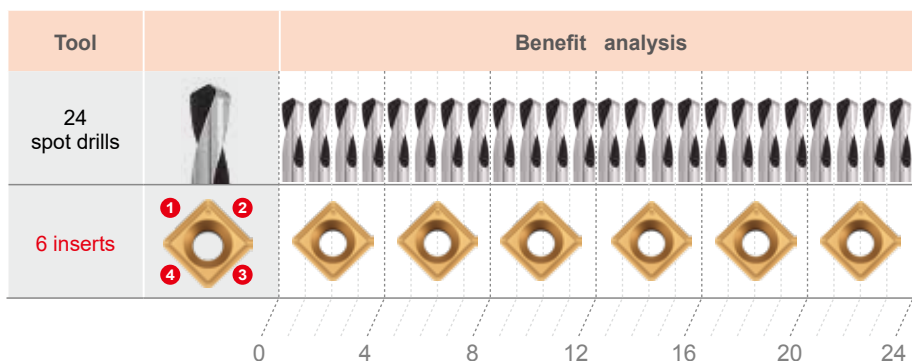
Code	Parts No.	Ød	Total Length	Insert fitted	Dmax.	Tmax.
603101-3401	00-99616-10-02S	10	90	N9MT080208CT-NC40	10	4.5
603101-3403	00-99616-10-02SAL	10	90	N9MT080204CT-NC10	10	4.5

► 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.	Ød	Insert included	Content
603201-3401	00-99616-10-ME6	10	N9MT080208CT-NC40	<p>1 tool holder + 6 inserts + 1 key</p>
603201-3403	00-99616-10-ME6AL	10	N9MT080204CT-NC10	
613201-3401	00-99616-10-IN6	3/8"	N9MT080208CT-NC40	
613201-3403	00-99616-10-IN6AL	3/8"	N9MT080204CT-NC10	

► Comparison >>



Low Cost! Economy!

1 2

3 4

6 inserts
12 inserts
24 inserts
⋮

=

24 spot drills
48 spot drills
96 spot drills
⋮

Note: N9MT080201W Engraving, see page 1-67.



90° N9MT11T3

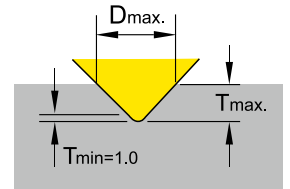


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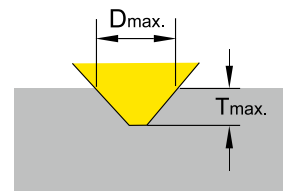
NC Spot Drill

► Inserts >>

- NC40:**
 - Wiper design, universal grade for all unhardened steel.
 - Each insert has 4 cutting edges.
- NC10:**
 - High positive angle and fully ground cutting edge and relief angle.
 - Universal grade for non-ferrous metal, cast iron and stainless steel.
 - Each insert has 4 cutting edges.
- NC60:**
 - Wiper design cermet insert, for hardened steel up to 56 HRC.
 - Each insert has 4 cutting edges.
- H-NC5071:**
 - For carbon steel C>0.3%, high alloy steel C>0.3% and cast iron.
 - Each insert has 2 cutting edges.
- H-NC40:**
 - For carbon steel C<0.3%, low alloy steel C<0.3%, stainless steel, non-ferrous and titanium.
 - Each insert has 2 cutting edges.
- H-NC9076:**
 - High positive geometry and sharp edge.
 - For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.
 - Produces excellent surface finish on non-ferrous metal.
 - Each insert has 2 cutting edges.



NC40 / Wiper design / NC60



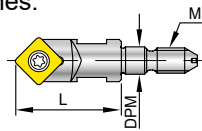
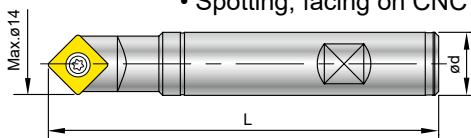
Other grade

Code	Parts No.	Coating	Grade		Dimensions			Dmax.	Tmax.	
					L	S	Re			
014401	N9MT11T3CT	NC40	TiN	P35		11.11	3.97	0.8	14	7
014402		NC10	TiAlN	K10F				(0.3)		
014403		NC60	CERMET					0.8		
NEW 014234	N9MT11T3CT2T	H-NC5071	TiAlN & TiN	K20F				0.8		
014202		H-NC40	TiN	K20F				0.8		
014203		H-NC9076	DLC	K20F				0.8		

* H type is with supporting edge.

► 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	M	DPM	Screw	Key
604002	00-99616-14-12	12	100	-	-	NS-35080 2.5 Nm	NK-T15
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"	100	-	-		
614002	00-99616-14-5/8	5/8"	100	-	-		
624001	00-99616-14-M8	-	30	M8xP1.25	8.5		

N9MT11T3

90°



1

NC Spot Drill

► Single Set >>

Code	Parts No.	Ød	Total Length	Insert fitted	Dmax.	Tmax.
604104-4401	00-99616-14-02S	16	100	N9MT11T3CT-NC40	14	7
604104-4402	00-99616-14-02SAL			N9MT11T3CT-NC10	14	7
614102-4401	00-99616-14-5/8-02S	5/8"	100	N9MT11T3CT-NC40	0.551"	0.276"
614102-4402	00-99616-14-5/8-02SAL			N9MT11T3CT-NC10	0.551"	0.276"

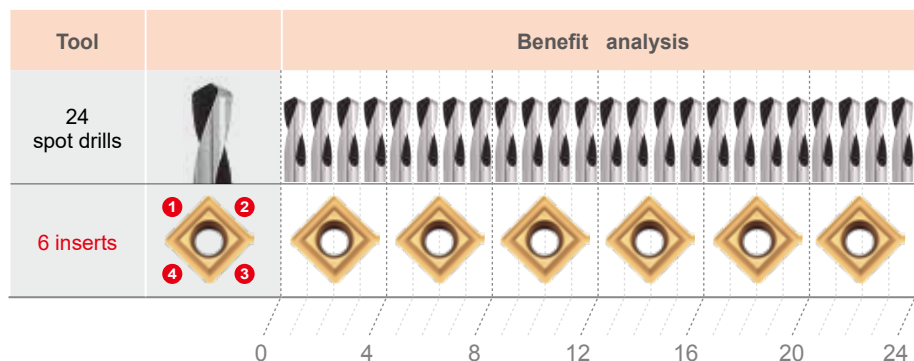
► Starter Package >>

- 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.	Ød	Insert included	Content
604204-4401	00-99616-14-ME6	16	N9MT11T3CT-NC40	1 tool holder + 6 inserts + 1 key
604204-4402	00-99616-14-ME6AL		N9MT11T3CT-NC10	
614202-4401	00-99616-14-IN6	5/8"	N9MT11T3CT-NC40	
614202-4402	00-99616-14-IN6AL		N9MT11T3CT-NC10	



► Comparison >>



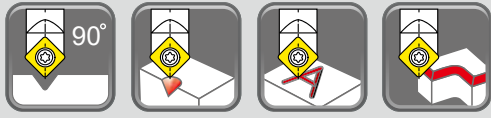
Low Cost! Economy!

1 2
4 3

6 inserts
12 inserts
24 inserts

24 spot drills
48 spot drills
96 spot drills

90° N9MT1704



1

NC Spot Drill

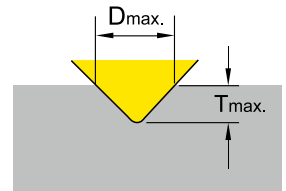
► Inserts >>

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

NC5071: • High positive geometry, fully ground cutting edge and relief angle.
• For high alloy steel and cast iron.
• Each insert has 2 cutting edges.

NC9036: • For non-ferrous material such as aluminum, acrylic, brass, copper, titanium and long cutting chip materials.
• High positive geometry and sharp edge produces excellent surface finish.
• Each insert has 2 cutting edges.

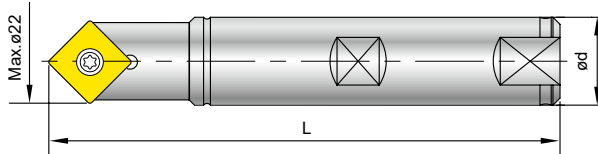
NC2071: • For carbon steel, low alloy steel, stainless steel, non-ferrous and titanium.
• Each insert has 2 cutting edges.



Code	Parts No.	Coating	Grade	Image	Dimensions			Dmax.	Tmax.
					L	S	Re		
NEW 016216	NC5071	TiAlN & TiN	K20F		17	4.76	1.2	22	10.4
NEW 016211	N9MT1704CT NC9036	DLC	K20F						
016201	NC2071	TiN	K20F						

► Holder >>

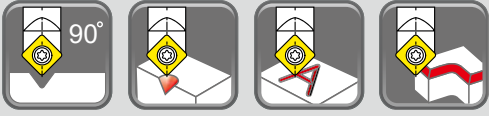
- Single cutting edge design gives high precision when spotting.
- Applications : • Spotting, engraving, grooving and chamfering on milling machines, machining centers.
• Spotting, facing on CNC Lathes.



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

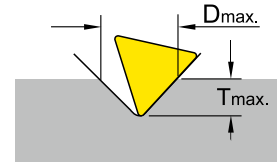
N9MT220408 / N9MT2506 **NEW**

90°

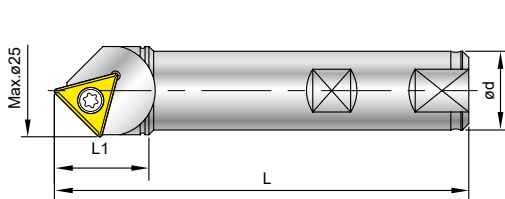


► N9MT220408

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



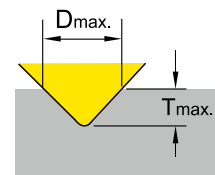
Code	Parts No.	Coating	Grade		Dimensions			Dmax.	Tmax.
					L	S	Re		
017301	N9MT220408CT-NC40	TiN	P35		20.83	4.76	---	25	12.2



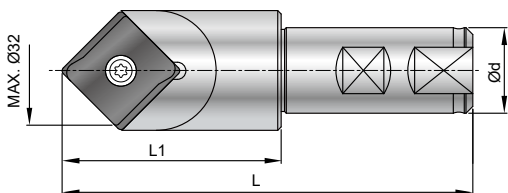
Code	Parts No.	Ød	L	L1	Screw	Key
607001	00-99616-25-CT28	25	120	30	NS-40100 3.5 Nm	NK-T15
617001	00-99616-1-CT28	1"				

► N9MT2506 >> **NEW**

- NC2033:**
- For carbon steel, alloy steel, high alloy steel, cast iron and hardened steel < 50 HRC.
 - Each insert has 2 cutting edges.
- XP9000:**
- High positive geometry and sharp edge produces excellent surface finish.
 - For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.
 - Each insert has 2 cutting edges.



Code	Parts No.	Coating	Grade		Dimensions			Dmax.	Tmax.
					L	S	Re		
018201	N9MT2506CT	NC2033	K20F		25	6.35	1.2	32	15.4
018202		XP9000							



Code	Parts No.	Ød	L	L1	Screw	Key
608001	00-99616-32-25	25	120	64	NS-60180 5.5 Nm	NK-T25
618001	00-99616-32-1	1"				

1

NC Spot Drill

100° 120° 142° N9MT11T3CT2T-H

1

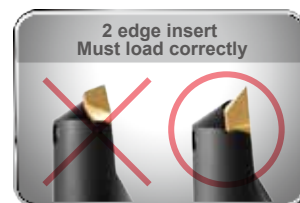
NC Spot Drill



100°	120°	142°
<ul style="list-style-type: none"> • For aircraft 100° normal rivet hole and screw hole. 	<ul style="list-style-type: none"> • For spotting before drilling by 118° point angle drill. • 60° chamfering. 	<ul style="list-style-type: none"> • For spotting before drilling by 135°~140° point angle high performance drill.

► Inserts >>

- H-NC5071:**
 - For carbon steel C>0.3%, high alloy steel C>0.3% and cast iron.
 - Each insert has 2 cutting edges.
- H-NC40:**
 - For carbon steel C<0.3%, low alloy steel C<0.3%, stainless steel, non-ferrous and titanium.
 - Each insert has 2 cutting edges.
- H-NC9076:**
 - High positive geometry and sharp edge.
 - For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.
 - Produces excellent surface finish when chamfering non-ferrous metal.
 - Each insert has 2 cutting edges.

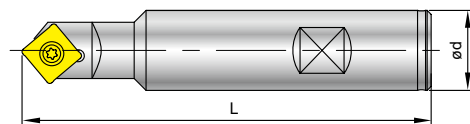


Code	Parts No.	Coating	Grade		Dimensions		
					L	S	Re
014234	N9MT11T3CT2T	H-NC5071	K20F		11	3.97	0.8
014202		H-NC40					
014203		H-NC9076					

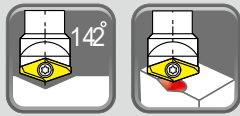
* H type is with supporting edge.

► Holder >>

- Indexable insert spotting drill holders for 100°/120°/142° spotting.
- Spotting produces better hole position and geometrically uniform holes.
- Increase tool life of the next drilling operation.



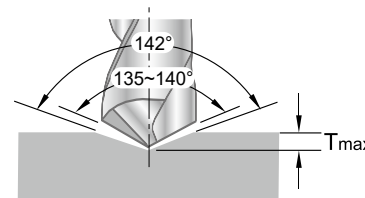
Code	Parts No.	Angle	Ød	L	Screw / Key	Dmax.	Tmax.	
604011	00-99616-20-100	100°	20	100	NS-35080 2.5 Nm	16	6.3	
604013	00-99616-20-120	120°	20	100		17	4.76	
614003	00-99616-3/4-120	120°	3/4"	100	NK-T15	0.669"	0.187"	
604014	00-99616-20-142	142°	20	100		18.5	3.16	
614004	00-99616-3/4-142	142°	3/4"	100		0.728"	0.124"	



► Inserts >>

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

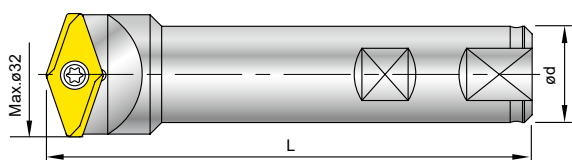
- NC2071:**
- High positive geometry, fully ground cutting edge and relief angle.
 - Universal grade for all unhardened steel and cast iron.
 - Each insert has 2 cutting edges.



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

► Holder >>

- Using spotting first may increase higher speed and feed rate of the after drills.
- Extend your drill life with 142° spotting. Reduce your drilling cost.
- Higher accuracy of positioning and diameter tolerance !



Code	Parts No.	Ød	L	Insert Type	Screw	Key
696001	00-99619-V142-16	16	100	V1420803	NS-30072 2.0 Nm	NK-T9
696002	00-99619-V142-32	25	120	V1421604	NS-50125 5.5 Nm	NK-T20

1
NC Spot Drill

145°
+
90°

WSP Spotting New Geometry of Spotting Tool

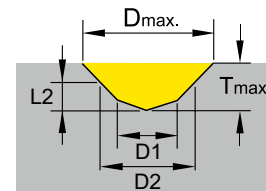


1

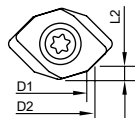
NC Spot Drill - WSP

▶ Inserts >>

- NC2033:**
- Fully ground cutting edge and relief angle.
 - Universal grade for steel, cast iron and hardened steel < 50 HRC.
 - Each insert has 2 cutting edges.



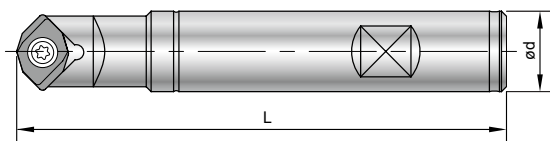
Code	Parts No.	Coating	Grade	Thread Size	*D1±0.05	D2	L2	Dmax.	Tmax.
013203	N9MT0802M04C-NC2033	TiAlN	K20F	M4x0.7	3.30	4.20	0.93	8	2.83
013204	N9MT0802M05C-NC2033			M5x0.8	4.20	5.25	1.14		2.52
013205	N9MT0802M06C-NC2033			M6x1.0	5.00	6.30	1.39		2.24
014219	N9MT11T3M08C-NC2033	TiAlN	K20F	M8x1.25	6.80	8.40	1.81	13	4.11
014220	N9MT11T3M10C-NC2033			M10x1.5	8.50	10.50	2.28		3.53
014221	N9MT11T3UNC25-NC2033	TiAlN	K20F	1/4-20 UNC	5.08	6.70	1.55	13	4.70
014222	N9MT11T3UNC31-NC2033			5/16-18 UNC	6.53	8.40	1.90		4.20
014223	N9MT11T3UNC38-NC2033			3/8-16 UNC	7.94	10.00	2.22		3.72
016205	N9MT1704M12C-NC2033	TiAlN	K20F	M12x1.75	10.25	12.60	2.91	20	6.61
016206	N9MT1704M14C-NC2033			M14x2.0	12.00	14.70	3.22		5.87
016207	N9MT1704M16C-NC2033			M16x2.0	14.00	16.80	3.51		5.11



Note: * D1 refer to the Tap Pre-drilling sizes. D2 : Thread size x 5%. L2 : Depth of D2., see page 1-31 for example.

▶ Holder >>

- Utilizes standard **NC Spot Drill** holders.
- Holders and inserts are interchangeable.

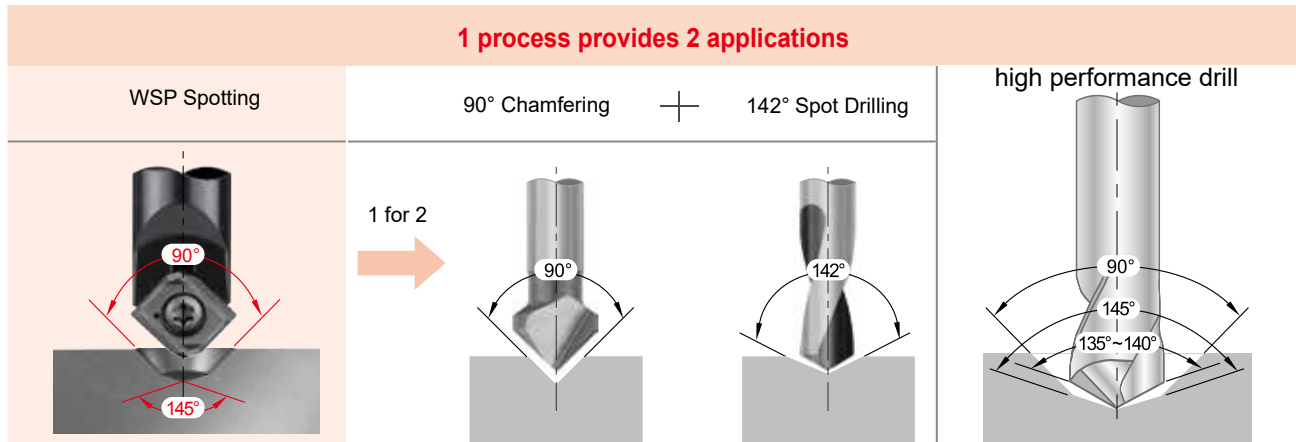


Code	Parts No.	Ød	L	Insert Type	Thread Size	Screw	Key
603001	00-99616-10	10	89.08±0.29	N9MT0802	M4~M6	NS-30055 2.0Nm	NK-T8
613001	00-99616-3/8	3/8"					
604004	00-99616-14	16	97.55±0.55	N9MT11T3	M8~M10 1/4~3/8 UNC	NS-35080 2.5Nm	NK-T15
614002	00-99616-14-5/8	5/8"					
606001	00-99616-22	20	96.24±0.64	N9MT1704	M12~M16	NS-50125 5.5Nm	NK-T20
616001	00-99616-22-3/4	3/4"					

Performance

► Combined spotting and chamfering 145° + 90° >>

- Reduces process to one operation. Shorten cycle time.
- Use to spot prior to drilling with high performance drills for higher accuracy of hole position.
- Good support spotting process for round parts.

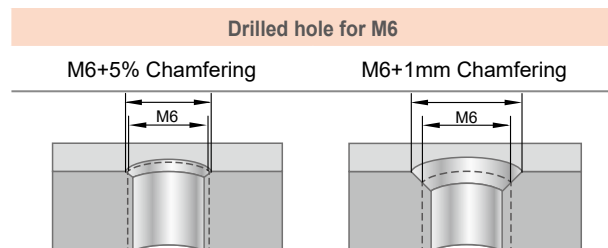


► Comparison >>

WSP Spotting + Drill	Drill + Spotting	Step Drill
<ul style="list-style-type: none"> • Shorter drilling time • Guided at the strongest corner of drill • Longer tool life • Good position accuracy 	<ul style="list-style-type: none"> • Longer drilling time • Guided at the weakest corner of drill • Shorter tool life 	<ul style="list-style-type: none"> • Tool cost is high • Shorter tool life • Can't drill directly from solid on round parts. • Bad position accuracy.

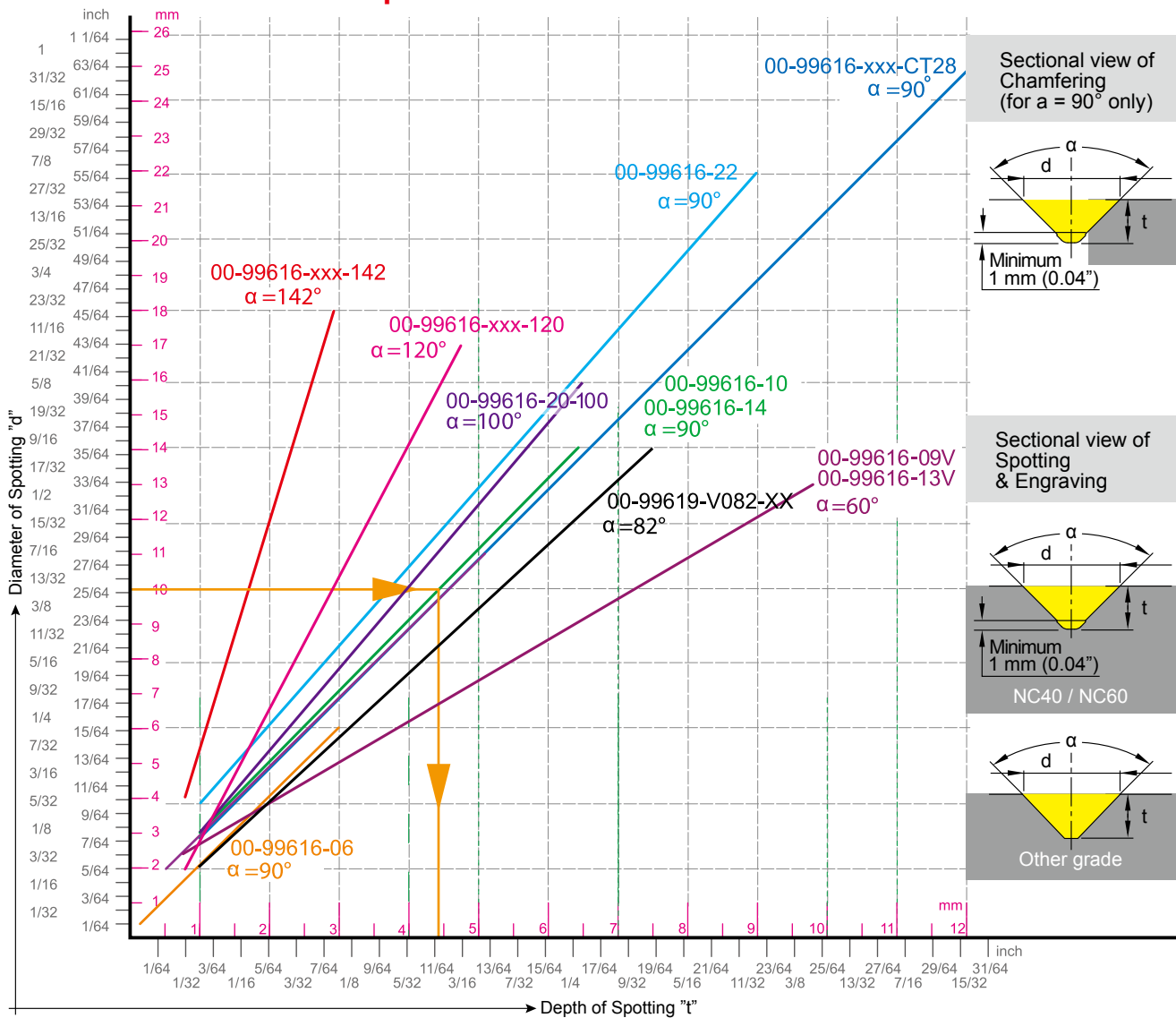
► Example >>

- The recommended chamfering is 5% of the nominal diameter of the thread, for example 6.3 mm for M6 thread.
- If you need larger chamfer, it can be calculated the required depth of spotting.



Cutting Data

► 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 determined 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 grades 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 and feed rate >>

1. Using your "d" value and cutting speed Vc from the data sheet, calculate spindle speed "S"(RPM).
2. "F" feed rate per minute $F = f \times S = \text{RPM} \times \text{IPR}$

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

1




NC Spot Drill - Cutting Data

Cutting Data

Determine spindle speed and feed rate:

- Choose spotting depth to decide spotting diameter according to the Diameter/Depth chart on page 1-40.
- The spindle speed should be calculated by the maximum diameter of spotting, chamfering and grooving.

► For Insert V9MT0802CT / N9MT05T1CT / N9MT0602CT




Workpiece material	Vc (m/min)	f (mm/rev.)		NC2071	NC5071	NC9076
		 				
P Carbon Steel C<0.3%	150 ~ 320	0.03 ~ 0.07	0.05 ~ 0.15	●		
Carbon Steel C>0.3%	100 ~ 250	0.02 ~ 0.06	0.03 ~ 0.12		●	
Low Alloy Steel C<0.3%	100 ~ 250	0.02 ~ 0.06	0.04 ~ 0.12	●		
High Alloy Steel C>0.3%	60 ~ 180	0.02 ~ 0.05	0.03 ~ 0.10		●	
M Stainless Steel	65 ~ 125	0.02 ~ 0.04	0.03 ~ 0.08	●	○	◎
K Cast iron	150 ~ 250	0.03 ~ 0.07	0.05 ~ 0.15	◎	●	
N Non-Ferrous Metal (Al, Cu)	150 ~ 320	0.03 ~ 0.07	0.05 ~ 0.15	◎		●
S Ti, Ti-alloy	40 ~ 80	0.02 ~ 0.06	0.02 ~ 0.06	●		◎
Ni-alloy	30 ~ 60	-	0.03 ~ 0.07	○	◎	
H Hardened steel HRC 40°~56°	30 ~ 60	0.02 ~ 0.06	0.02 ~ 0.06		○	

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

* Inserts with supporting edges can increase feed rate 50%.

● Best ◎ Suit ○ Possible

► For Insert N9MT0802 / N9MT11T3CT

Workpiece material	Vc (m/min)	f (mm/rev.)		NC40	NC10	NC60	H-NC5071	H-NC40	H-NC9076
		 							
P Carbon Steel C<0.3%	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.24	●				●	
Carbon Steel C>0.3%	100 ~ 250	0.04 ~ 0.08	0.08 ~ 0.20				●		
Low Alloy Steel C<0.3%	100 ~ 250	0.04 ~ 0.08	0.08 ~ 0.20	●		◎		●	
High Alloy Steel C>0.3%	60 ~ 180	0.03 ~ 0.07	0.05 ~ 0.15			◎	●		
M Stainless Steel	65 ~ 125	0.03 ~ 0.06	0.08 ~ 0.20	○	●		○	●	◎
K Cast iron	150 ~ 250	0.05 ~ 0.10	0.10 ~ 0.25	●	●		●	◎	
N Non-Ferrous Metal (Al, Cu)	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.25		◎			◎	●
S Ti, Ti-alloy	40 ~ 80	0.03 ~ 0.08	0.03 ~ 0.08					●	◎
Ni-alloy	30 ~ 60	-	0.05 ~ 0.10				◎	○	
H Hardened steel HRC 40°~56°	30 ~ 60	0.03 ~ 0.08	0.03 ~ 0.08			●	○		

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

* Inserts with supporting edges can increase feed rate 50%.

● Best ◎ Suit ○ Possible



NC Spot Drill

Cutting Data

► For Insert V9MT12T3CT / V082... / N9MT1704CT / N9MT2204CT / N9MT2506CT / V142...

1

Corner Rounding

Workpiece material	Vc (m/min)	f (mm/rev.)		NC2071	NC5071	NC9076 (NC9036)	NC40	NC2033	XP9000
		Spotting / Grooving	Chamfering						
P Carbon Steel C<0.3%	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.24	●			●		
Carbon Steel C>0.3%	100 ~ 250	0.04 ~ 0.08	0.08 ~ 0.20		●			●	
Low Alloy Steel C<0.3%	100 ~ 250	0.04 ~ 0.08	0.08 ~ 0.20	●			●		
High Alloy Steel C>0.3%	60 ~ 180	0.03 ~ 0.07	0.05 ~ 0.15		●			●	
M Stainless Steel	65 ~ 125	0.03 ~ 0.06	0.08 ~ 0.20	●	○	◎	○	○	
K Cast iron	150 ~ 250	0.05 ~ 0.10	0.10 ~ 0.25	◎	●		◎	●	
N Non-Ferrous Metal (Al, Cu)	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.25	◎		●			●
S Ti, Ti-alloy	40 ~ 80	0.03 ~ 0.08	0.03 ~ 0.08	●		◎			
Ni-alloy	30 ~ 60	-	0.05 ~ 0.10	○	◎				
H Hardened steel HRC 40°~56°	30 ~ 60	0.03 ~ 0.08	0.03 ~ 0.08		○			◎	

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

● Best ◎ Suit ○ Possible

* Inserts with supporting edges can increase feed rate 50%.

► WSP Spotting >> 145°+90° W Spotting

For Insert N9MT0802M.. / N9MT11T3M.. / N9MT11T3UNC.. / N9MT1704M..

WSP spotting	Formula																						
	$P =$ distance of theoretical intersection point to tip of insert.																						
	$0.5 =$ fixed factor for calculation																						
	$L_{req.} =$ required drilling depth																						
	$D_{req.} =$ required diameter																						
	<table border="1"> <thead> <tr> <th>M4</th> <th>M5</th> <th>M6</th> <th>M8</th> <th>M10</th> <th>M12</th> <th>M14</th> <th>M16</th> <th>1/4-20 UNC</th> <th>5/16-18 UNC</th> <th>3/8-16 UNC</th> </tr> </thead> <tbody> <tr> <td>P = 1.17</td> <td>1.48</td> <td>1.76</td> <td>2.39</td> <td>2.97</td> <td>3.59</td> <td>4.19</td> <td>4.88</td> <td>1.80</td> <td>2.30</td> <td>2.78</td> </tr> </tbody> </table>	M4	M5	M6	M8	M10	M12	M14	M16	1/4-20 UNC	5/16-18 UNC	3/8-16 UNC	P = 1.17	1.48	1.76	2.39	2.97	3.59	4.19	4.88	1.80	2.30	2.78
M4	M5	M6	M8	M10	M12	M14	M16	1/4-20 UNC	5/16-18 UNC	3/8-16 UNC													
P = 1.17	1.48	1.76	2.39	2.97	3.59	4.19	4.88	1.80	2.30	2.78													

WSP spotting	Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
P	Carbon steel	150 ~ 300	0.05 ~ 0.15	NC2033
	Alloy steel	120 ~ 250	0.05 ~ 0.10	NC2033
M	Stainless steel	80 ~ 150	0.04 ~ 0.08	NC2033
K	Casting iron	100 ~ 200	0.05 ~ 0.10	NC2033
H	Hardened steel up 50 HRC	30 ~ 60	0.03 ~ 0.08	NC2033