



Corner Rounding >>>

Type of RC / Radius 0.5 ~ 10mm

Produces smooth and excellent surface finish on workpiece.

P M K N S

► Various Corner Radius Inserts
Can Fit On Same Holder.



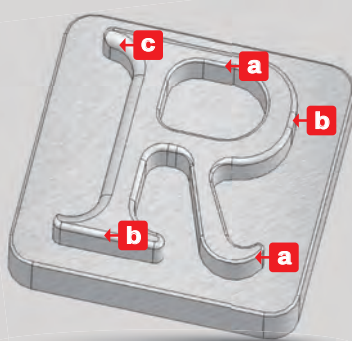
Features >

► Each Insert Has 2 Cutting Edges

- Carbide insert can stand very long tool life.
- Combination corner rounding and 45° chamfering application on same insert.
- Higher cutting speed and feed rate.
- Very small X offset, good for contour chamfering.
- Utilizes standard NC Spot Drill holders 99616-06, 99616-14, 99616-22 & 99616-32.

► Example

- a** Radius 0.5
- b** Radius 1.0
- c** Radius 2.0





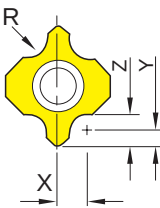
RC0.5 ~ RC1.0

► Inserts >>

- Various corner radius inserts can fit on same holder.
- Very small X offset 1.25mm for radius 0.5, the small x offset allows for profiling in small corners.

NC2071: • Universal grade for all unhardened steel and cast iron.
• Inserts are CNC ground for precision radius location.
• Each insert has 2 cutting edges.

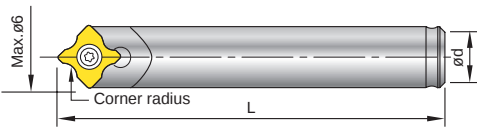
NC9036: • For non-ferrous material such as aluminum, acrylic, titanium, brass, copper and stainless steel.
• High positive geometry and sharp edge produces excellent surface finish.
• Each insert has 2 cutting edges.



Corner Radius ±0.05	Code	Parts No.		Coating	Grade	offset				Dimensions	
						X	Y	Z		L	S
0.5	011203	N9MT05T1RC05	NC2071	TiN	K20F	1.25	0.75	1.25		5	1.8
	011206		NC9036	DLC							
0.75	011204	N9MT05T1RC075	NC2071	TiN	K20F	1.50	0.75	1.50			
	011207		NC9036	DLC							
1.0	011205	N9MT05T1RC10	NC2071	TiN	K20F	1.75	0.75	1.75			
	011208		NC9036	DLC							

► Holder >>

- For corner rounding using **NC Spot Drill** basic holder.



Code	Parts No.	Ød	L	Screw	Key
601001	00-99616-06-6	6	35	*NS-20036 0.6 Nm	NK-T6
601002	00-99616-06-5	5	35		
601003	00-99616-06-6L	6	60		

Note: 601003 is carbide shank holder.

*Torque screwdriver is recommended.

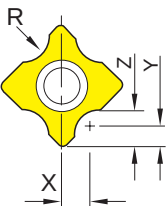
RC N9MT11T3RC

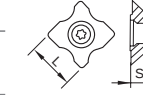


RC1.0 ~ RC3.0

► Inserts >>

- Combination corner rounding and 45° chamfering application on same insert.
 - Each insert has 2 cutting edges.
- NC40:** • Universal grade for all unhardened steel and cast iron.
• Inserts are CNC ground for precision radius location.
- NC9036:** • For non-ferrous material such as aluminum, acrylic, titanium, brass, copper and stainless steel.
• High positive geometry and sharp edge produces excellent surface finish.

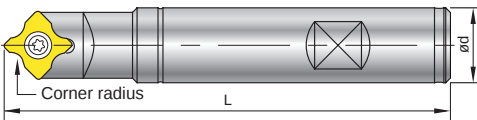


Corner Radius ±0.05	Code	Parts No.		Coating	Grade	offset				Dimensions	
						X	Y	Z		L	S
1.0	014209	N9MT11T3RC10	NC40	TiN	K20F	2.75	1.5	2.5		11.11	3.97
	014224		NC9036	DLC							
1.5	014210	N9MT11T3RC15	NC40	TiN	K20F	3.25	1.5	3			
	014225		NC9036	DLC							
2.0	014211	N9MT11T3RC20	NC40	TiN	K20F	3.75	1.5	3.5			
	014226		NC9036	DLC							
2.5	014212	N9MT11T3RC25	NC40	TiN	K20F	4.25	1.5	4			
	014227		NC9036	DLC							
3.0	014213	N9MT11T3RC30	NC40	TiN	K20F	4.75	1.4	4.4			
	014228		NC9036	DLC							
1/64	014214	N9MT11T3RC1/64	NC40	TiN	K20F	0.086"	0.059"	0.0747"			
	014229		NC9036	DLC							
1/32	014215	N9MT11T3RC1/32	NC40	TiN	K20F	0.101"	0.059"	0.090"			
	014230		NC9036	DLC							
1/16	014216	N9MT11T3RC1/16	NC40	TiN	K20F	0.133"	0.059"	0.122"			
	014231		NC9036	DLC							
3/32	014217	N9MT11T3RC3/32	NC40	TiN	K20F	0.164"	0.059"	0.153"			
	014232		NC9036	DLC							
1/8	014218	N9MT11T3RC 1/8	NC40	TiN	K20F	0.199"	0.055"	0.180"			
	014233		NC9036	DLC							

► Holder >>

- For corner rounding using **NC Spot Drill** basic holder.

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



► Starter Package >>

Code	Parts No.	Ød	Insert included	Content
604204-4200	00-99616-14-ME5RC	16	N9MT11T3RC10-NC40 N9MT11T3RC15-NC40 N9MT11T3RC20-NC40 N9MT11T3RC25-NC40 N9MT11T3RC30-NC40	1 tool holder + 5 inserts + 1 key



N9MT1704RC / N9MT2506RC

RC



RC4.0 ~ RC6.0 /
RC7.0 ~ RC10.0

► N9MT1704RC >>

- NC2071:** • Universal grade for all unhardened steel and cast iron.
- NC9036:** • High positive geometry and sharp edge produces excellent surface finish.
- For non-ferrous material such as aluminum, acrylic, titanium, brass, copper and stainless steel.

Corner Radius(R) ±0.05	Code	Parts No.		Coating	Grade	offset				Dimensions	
						X	Y	Z		L	S
4.0	016202	N9MT1704RC40	NC2071	TiN	K20F	6.15	2	6		17	4.76
	016208		NC9036	DLC							
5.0	016203	N9MT1704RC50	NC2071	TiN	K20F	7.1	2	7			
	016209		NC9036	DLC							
6.0	016204	N9MT1704RC60	NC2071	TiN	K20F	8.1	2	8			
	016210		NC9036	DLC							

► N9MT2506RC >>

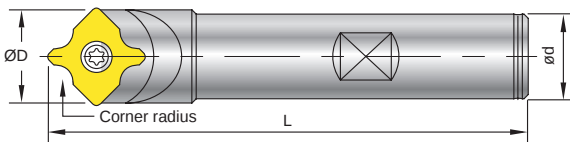
- NC2033:** • For carbon steel, alloy steel, high alloy steel, cast iron and hardened steel < HRC 50.
- XP9000:** • High positive geometry and sharp edge produces excellent surface finish.
- For non-ferrous material such as aluminum, titanium, brass, copper and long cutting chip metal.

Corner Radius(R) ±0.05	Code	Parts No.		Coating	Grade	offset				Dimensions	
						X	Y	Z		L	S
7.0	018203	N9MT2506RC70	NC2033	TiAlN	K20F	9.5	3	10		25	6.35
	018204		XP9000	Uncoated							
8.0	018205	N9MT2506RC80	NC2033	TiAlN	K20F	10.5	3	11			
	018206		XP9000	Uncoated							
9.0	018207	N9MT2506RC90	NC2033	TiAlN	K20F	11.5	3	12			
	018208		XP9000	Uncoated							
10.0	018209	N9MT2506RC100	NC2033	TiAlN	K20F	12.5	3	13			
	018210		XP9000	Uncoated							
5/16	018213	N9MT2506RC5/16	NC2033	TiAlN	K20F	0.411"	0.118"	0.430"			
	018214		XP9000	Uncoated							
3/8	018211	N9MT2506RC3/8	NC2033	TiAlN	K20F	0.474"	0.118"	0.493"			
	018212		XP9000	Uncoated							

* 2 pcs per box.

► Holder >>

- For corner rounding using **NC Spot Drill** basic holder.



00-99616-22-25

Code	Parts No.	Ød	L	ØD	Insert Type	Screw	Key
606001	00-99616-22	20	100	23.25	N9MT1704	NS-50125 5.5 Nm	NK-T20
606002	00-99616-22-25	25	150				
608001	00-99616-32-25	25	120	32.56	N9MT2506	NS-60180 5.5 Nm	NK-UT25
618001	00-99616-32-1	1"	120				



Corner Rounding >>>

Type of R / Radius 1.0~3.0mm

Produces smooth and excellent surface finish on workpiece.



- For Front And Back Chamfering (By LA Insert),
And Corner Rounding (By R Insert)



► Each Insert Has 4 Cutting Edges

- Carbide insert can stand very long tool life.
- R1.0 ~ R3.0 inserts are interchangeable on same holder.
- For front and back chamfering.
- Tool offset can be set after measuring tool length by tool presetter or Z-Zero Setter.
- Inserts are CNC ground for precision radius and location.
- Optimizes the tool performance and reduces the cutting time.

N9MT11T3R

R



R1.0~R3.0

▶ Inserts >>

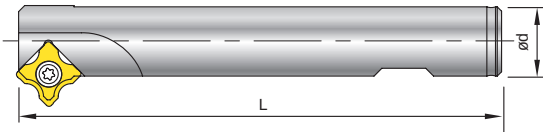
- For front and back corner rounding.
- Various corner radius inserts can fit on same holder.
- Coated carbide inserts for excellent tool life.
- Each insert has 4 cutting edges.

NC2071: • Universal grade for all unhardened steel and cast iron.
• Inserts are CNC ground for precision radius location.

Corner Radius(R) ±0.05	Code	Parts No.	Coating	Grade		Dimensions	
						L	S
1.0	014404	N9MT11T3R10-NC2071	TiN	P35		11.11	3.97
1.5	014405	N9MT11T3R15-NC2071	TiN	P35			
2.0	014406	N9MT11T3R20-NC2071	TiN	P35			
2.5	014407	N9MT11T3R25-NC2071	TiN	P35			
3.0	014408	N9MT11T3R30-NC2071	TiN	P35			

▶ Holder >>

- 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	⌚ Z	Screw	Key
604015	00-99616-16-25R	16	100	1	NS-35080 2.5 Nm	NK-T15
604019	00-99616-16-30R	16	120	1		
604020	00-99616-25-40R	25	150	4		

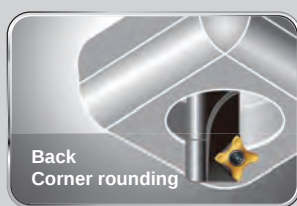
▶ More >>

- Also can fit with N9MT11T308LA inserts for front and back chamfering. (Please see page 49)

2

Corner Rounding

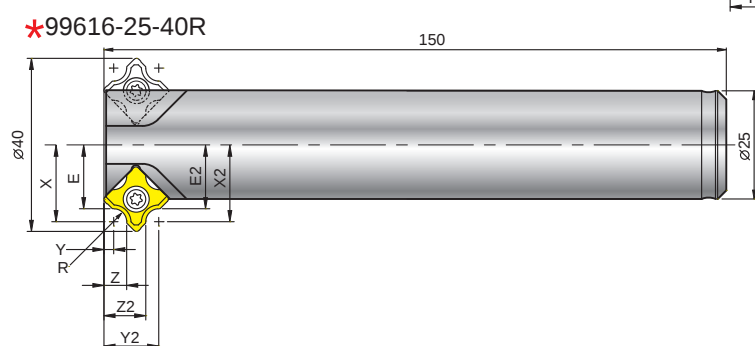
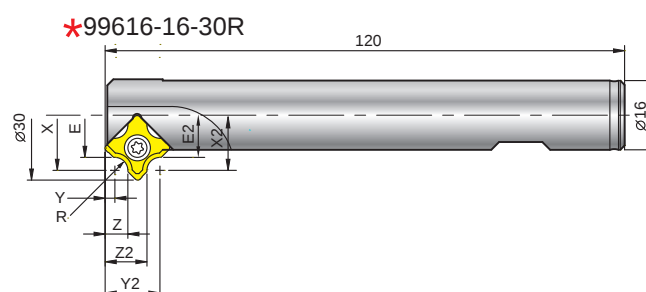
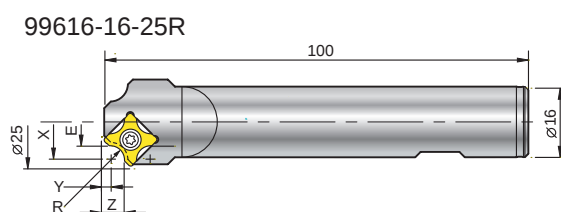
R N9MT11T3R



► Cutting Position ►►

2

Corner Rounding



* 99616-16-30R & 99616-25-40R
For front and back corner rounding.
Eliminates 2nd operation or deburring time.

Corner Radius ±0.05	Holder	Front Chamfering				Back Chamfering				Z
		E	X	Y	Z	E2	X2	Y2	Z2	
R1.0	00-99616-16-25R	8.25	9.25	3.25	4.25	---	---	---	---	1
	00-99616-16-30R	10.75	11.75	3.25	4.25	10.75	11.75	11.65	10.65	1
	00-99616-25-40R	15.75	16.75	3.25	4.25	15.75	16.75	11.65	10.65	4
R1.5	00-99616-16-25R	8	9.5	3	4.5	---	---	---	---	1
	00-99616-16-30R	10.5	12	3	4.5	10.5	12	11.9	10.4	1
	00-99616-25-40R	15.5	17	3	4.5	15.5	17	11.9	10.4	4
R2.0	00-99616-16-25R	7.75	9.75	2.75	4.75	---	---	---	---	1
	00-99616-16-30R	10.25	12.25	2.75	4.75	10.25	12.25	12.15	10.15	1
	00-99616-25-40R	15.25	17.25	2.75	4.75	15.25	17.25	12.15	10.15	4
R2.5	00-99616-16-25R	7.5	10	2.5	5	---	---	---	---	1
	00-99616-16-30R	10	12.5	2.5	5	10	12.5	12.4	9.9	1
	00-99616-25-40R	15	17.5	2.5	5	15	17.5	12.4	9.9	4
R3.0	00-99616-16-25R	7.25	10.25	2.25	5.25	---	---	---	---	1
	00-99616-16-30R	9.75	12.75	2.25	5.25	9.75	12.75	12.65	9.65	1
	00-99616-25-40R	14.75	17.75	2.25	5.25	14.75	17.75	12.65	9.65	4

N9MT11T308LA 45° Chamfering Tool

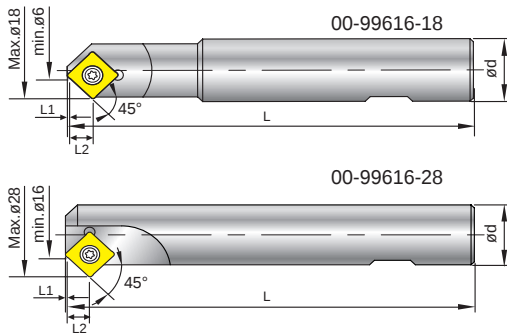


► Inserts >>

- 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 Al, Al-alloy, non-ferrous metal, cast iron and stainless steel.
 - Each insert has 4 cutting edges.
- NC60:**
- Cermet insert, for hardened steel up to HRC 56 .
 - Each insert has 4 cutting edges.

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

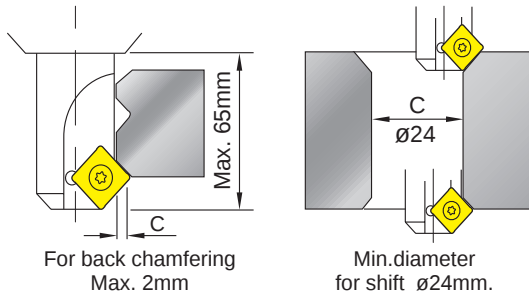
► Holder >>



Code	Parts No.	Chamfering	Ød	L	L1	L2	⊘ Z	Insert type	Screw / Key
604017	00-99616-18	Ø6-Ø18	20	120	1.15	7.55	1	N9MT11T308LA	NS-35080 2.5 Nm
604018	00-99616-28	Ø16-Ø28	20	120	1.15	7.55	1		NK-T15

► Example >>

- 00-99616-28 can be applied for machining back chamfering and side grooving.

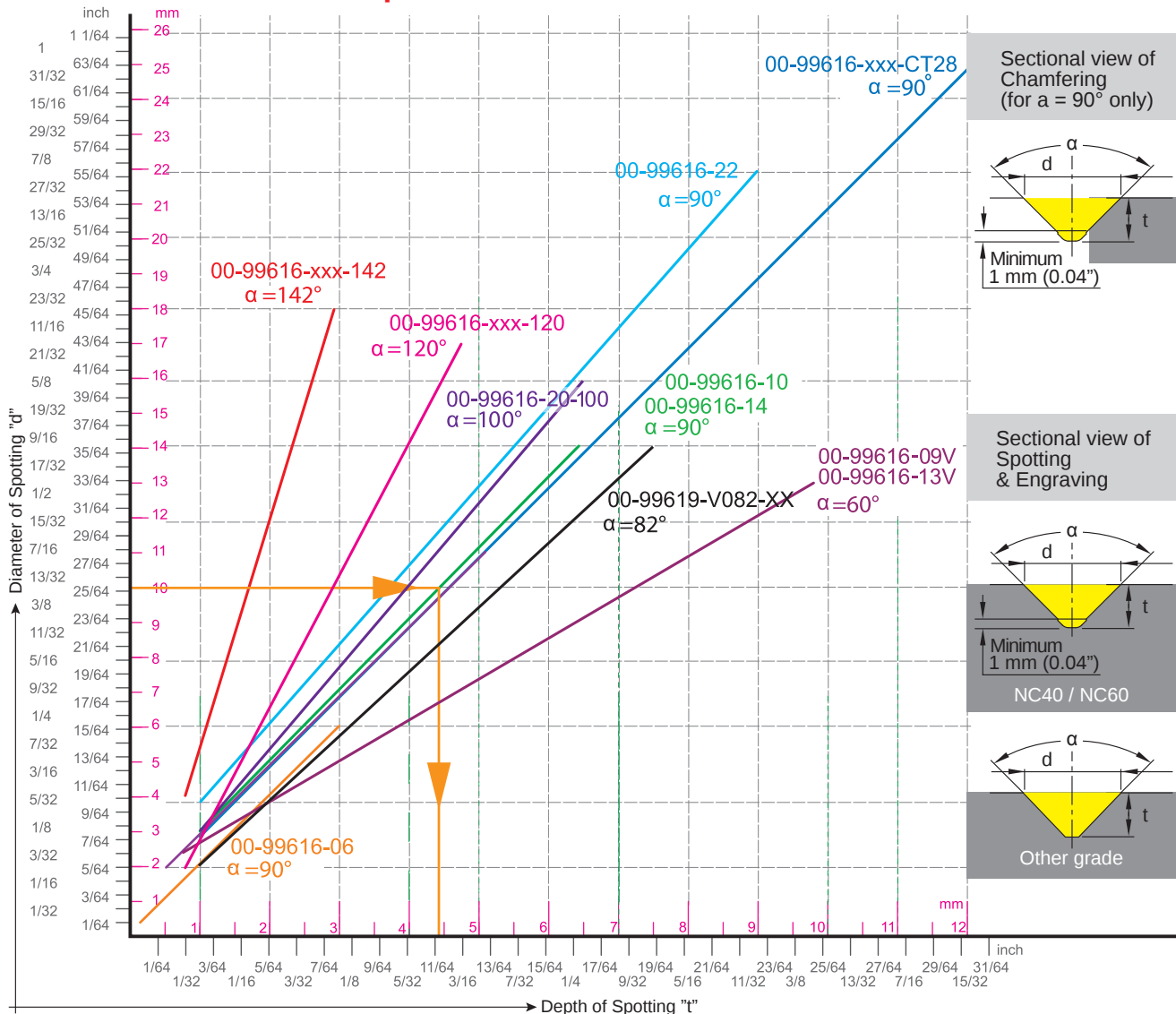


► More >>

- Also can fit with 99616-XX-25R/30R/40R holders. (Please see page 47)

Cutting Data

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



► Instruction >>

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.

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

Cutting Data

Determine spindle speed and feed rate:

- Choose spotting depth to decide spotting diameter according to the Diameter/Depth chart on page 50.
- 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	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	150 ~ 320	0.03 ~ 0.07	0.05 ~ 0.15	◎		●
S	Ti, Ti-alloy	40 ~ 80	0.02 ~ 0.06	0.02 ~ 0.06	●		◎
	Heat resistant alloy	30 ~ 60	-	0.03 ~ 0.07	○	◎	
H	Hardened steel < HRC50	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.

● 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	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	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.25		◎			◎	●
S	Ti, Ti-alloy	40 ~ 80	0.03 ~ 0.08	0.03 ~ 0.08					●	◎
	Heat resistant alloy	30 ~ 60	-	0.05 ~ 0.10				◎	○	
H	Hardened steel < HRC56	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.

* H-NC5071, H-NC40 and H-NC9076 inserts with supporting edges can increase feed rate 50%.

● Best ◎ Suit ○ Possible

2

NC Spot Drill

Cutting Data

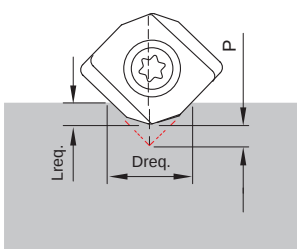
► For Insert V9MT12T3CT / V082... / N9MT1704CT / N9MT2204CT / N9MT2506CT / V142...

	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	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	150 ~ 320	0.05 ~ 0.10	0.10 ~ 0.25	◎		●			●
S	Ti, Ti-alloy	40 ~ 80	0.03 ~ 0.08	0.03 ~ 0.08	●		◎			
	Heat resistant alloy	30 ~ 60	-	0.05 ~ 0.10	○	◎				
H	Hardened steel < HRC50	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

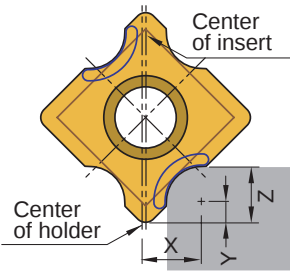
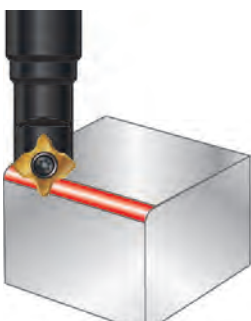
► For Insert N9MT0802M.. / N9MT11T3M.. / N9MT11T3UNC.. N9MT1704M..

WSP spotting	Formula										
	P = distance of theoretical intersection point to tip of insert.										
	0.5 = fixed factor for calculation										
	Lreq. = required drilling depth										
	Dreq. = required diameter										
	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

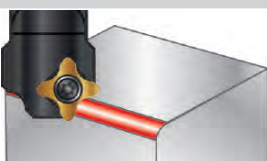
WSP spotting	Work Material		Vc (m/min)	f (mm/rev.)	Grade of Insert
P	Carbon steel		150 ~ 300	0.05 ~ 0.15	NC2033
	Alloy steel		120 ~ 250	0.05 ~ 0.10	NC2033
M	Stainless steel		80 ~ 150	0.04 ~ 0.08	NC2033
K	Cast Iron		100 ~ 200	0.05 ~ 0.10	NC2033
H	Hardened steel < HRC50		30 ~ 60	0.03 ~ 0.08	NC2033

Cutting Data

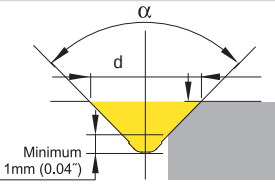
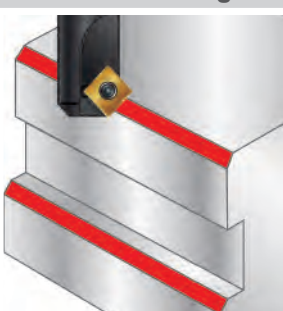
► For Insert N9MT05T1RC / N9MT11T3RC / N9MT1704RC / N9MT2506RC

Corner Rounding		Calculate spindle speed		
		$d = 2 \times X \quad \text{mm}$	$d =$ diameter of the tool	
		$S = \frac{Vc \times 1000}{d \times \pi} \quad \text{r.p.m.}$	$X =$ tool radius offset	
		$F = S \times f \quad \text{mm/min.}$	$Vc =$ Cutting Speed -m/min.	
			$S =$ Spindle Speed -r.p.m.	
			$F =$ mm/min.	
			$f =$ mm/rev.	
		Calculate tool length offset on machining center		
		$X, Y \text{ \& Z ref. to insert's spec}$	$X =$ tool radius offset	
			$Y =$ distance to the center of radius.	
			$Z =$ distance of cut	
RC Insert	Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
	C Carbon steel	150~320	0.05~0.10	NC40, NC2071, NC2033
	P Alloy steel	100~250	0.05~0.10	NC40, NC2071, NC2033
	H High alloy steel	80~150	0.04~0.08	NC40, NC2071, NC2033
	M Stainless steel	65~125	0.03~0.08	NC9036
	K Cast Iron	150~250	0.05~0.10	NC40, NC2071, NC2033
	A Al, Al-alloys(Si<12%)	150~320	0.05~0.10	NC9036, XP9000
	N Casting Al-alloys(Si>12%)	100~300	0.05~0.10	NC9036, XP9000
	Cu, Cu-alloy, casting Cu-alloy	150~250	0.05~0.10	NC9036, XP9000
	S Ti, Ti-alloy	40~80	0.03~0.08	NC9036
	H Hardened steel < HRC50	30~60	0.03~0.08	NC2033

► For N9MT-R Insert >> Corner Rounding (4 cutting edges)

R Insert	Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
	C Carbon steel	150~320	0.05~0.10	NC2071
	P Alloy steel	100~250	0.04~0.08	NC2071
	H High alloy steel	60~80	0.03~0.06	NC2071
	K Cast Iron	150~250	0.05~0.10	NC2071

► For LA Insert >> 45° Chamfering

45° Chamfering	Formula			
	$S = \frac{Vc \times 1000}{d \times \pi} \quad \text{r.p.m.}$	$\alpha =$ point angle 90°	$d =$ effective diameter	
	$F = S \times f \quad \text{mm/min.}$	$Vc =$ cutting speed-m/min.or ft/min.	$S =$ Spindle speed	
		$f =$ feed per rev.-mm/rev.		
45° Chamfering	Work Material	Vc (m/min)	f (mm/rev.)	Grade of Insert
	C Carbon steel	150~320	0.05~0.10	NC40
	P Alloy steel	100~250	0.04~0.08	NC40
	H High alloy steel	60~80	0.03~0.06	NC40
	M Stainless steel	65~125	0.03~0.06	NC10
	K Cast Iron	150~250	0.05~0.10	NC10, NC40
	A Al, Al-alloys(Si<12%)	150~320	0.05~0.10	NC10
	N Casting Al-alloys(Si>12%)	100~300	0.05~0.10	NC10
	Cu, Cu-alloy, casting Cu-alloy	150~250	0.05~0.10	NC10
	H Hardened steel < HRC56	60~80	0.05~0.10	NC60