X060 SERIES

Vol. 01

One holder supports the entire X060 series insert

Engraving

30° / 45° / 60° / 90°
Burr-Free!

- No need to reset tool length.
- High positive rake angle.
- Multi-side grinding.
- High speed, high feed rate.

Spotting

90° / 120° / 142°
0.1mm & 0.2mm tips

- Ensures a consistent performance for micro drills to enter workpieces smoothly and accurately.
- Extending the tool life of micro drill, keeping position and distance of holes accurate.
- High efficiency! Long tool life! Cost saving!

Deburring

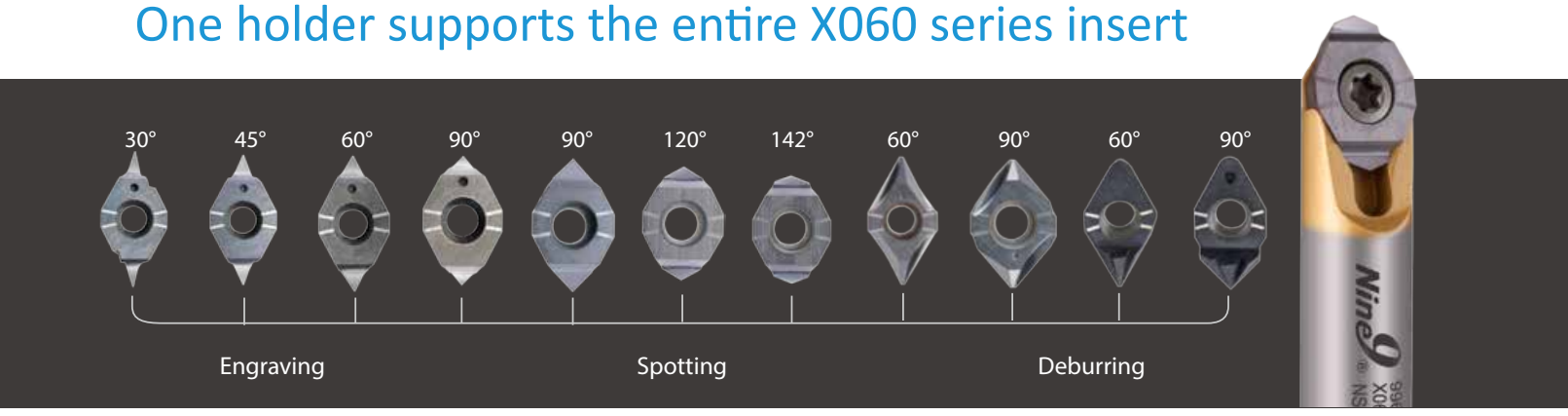
60° / 90°
Fast deburring!

- Ideal for fine hole deburring.
- Smallest chamfer diameter ø0.5mm.
- High precision ground carbide insert.
- High speed and high feed rate.

X060 Series

Patent US 9,579,812 B2
US 9,764,396 B2

One holder supports the entire X060 series insert



X060 Insert

NC2032
• For all kinds of steel from < HRC 40, carbon steel, alloy steel,and cast iron.

NC2035
• ALDURA coating, reduces heat and tool wear.
• For steel with heat treatment up to HRC 50.

XP9001
• For non-ferrous metal, aluminum, brass, copper, plastic, acrylic.

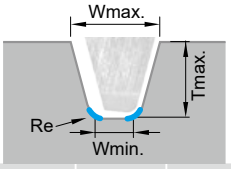

NC2032 NC2035 XP9001

Products	Grade	Coating	P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous	H Hardened Steel Up to 50 HRC	S Titanium
Engraving	NC2032	TiAlN	●		●			
	NC2035	ALDURA	◎		○		●	
	XP9001	Uncoated		○		●		
Micro Spot Drill	NC2032	TiAlN	●	◎	●			
	NC2035	ALDURA	◎		○		●	
	XP9001	Uncoated		○		●		
NC Deburring	NC2032	TiAlN	●	○	◎	◎		
	XP9001	Uncoated				●		

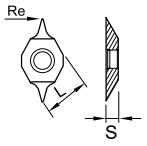
● Best ◎ Suit ○ Possible

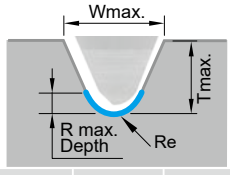
Engraving | 30° / 45° / 60° /90°

- Multi-side grinding, excellent performance.
- Higher cutting speed and DOC.
- No need to reset tool length.
- Each insert has 2 cutting edges.
- Widely used for marking on machine components, medical components, gun components, mold and die, automotive parts, gears, bearings and luxury goods.

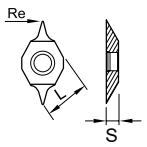


• Radius Angled Form

Angle	Code	Parts No.		Coating	Grade		Dimensions			Wmin.	Wmax.	Tmax.
							L	S	Re			
30°	01X0140	X060A30W020R	NC2032	TiAlN	K20F		6	2.05	0.04	0.20	0.52	0.6
	01X0141		NC2035	ALDURA								
	01X0142		XP9001	Uncoated								
45°	01X0021	X060A45W020R	NC2032	TiAlN	K20F		6	2.05	0.04	0.20	0.86	0.8
	01X0153		NC2035	ALDURA								
	01X0154		XP9001	Uncoated								
60°	01X0063	X060A60W020R	NC2032	TiAlN	K20F		6	2.05	0.04	0.20	1.36	1.0
	01X0165		NC2035	ALDURA								
	01X0166		XP9001	Uncoated								
90°	01X0207	X060A90W020R	NC2032	TiAlN	K20F		6	2.05	0.04	0.2	2.2	1.0
	01X0208		NC2035	ALDURA								
	01X0209		XP9001	Uncoated								

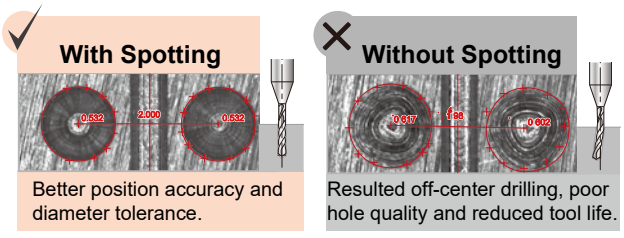


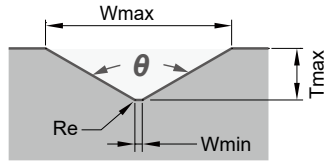
• Radius Form

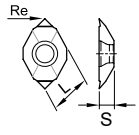
Angle	Code	Parts No.		Coating	Grade		Dimensions			R max. Depth	Wmax.	Tmax.
							L	S	Re			
30°	01X0119	X060A30R020	NC2032	TiAlN	K20F		6	2.05	0.2	0.15	0.63	0.6
	01X0132		NC2035	ALDURA								
	01X0134		XP9001	Uncoated								
45°	01X0013	X060A45R020	NC2032	TiAlN	K20F		6	2.05	0.2	0.12	0.93	0.8
	01X0149		NC2035	ALDURA								
	01X0150		XP9001	Uncoated								
60°	01X0117	X060A60R020	NC2032	TiAlN	K20F		6	2.05	0.2	0.10	1.39	1.0
	01X0158		NC2035	ALDURA								
	01X0159		XP9001	Uncoated								

0.1 and 0.2mm
Spotting | 90° / 120° / 142°

- It produces a consistent surface for micro drill success fully to enter the workpiece, especially for round, angled or curved surfaces.
- To improve hole location and tool life of a deep hole drill or micro drill.
- High efficiency! Long tool life! Cost saving!
- Each insert has 2 cutting edges.



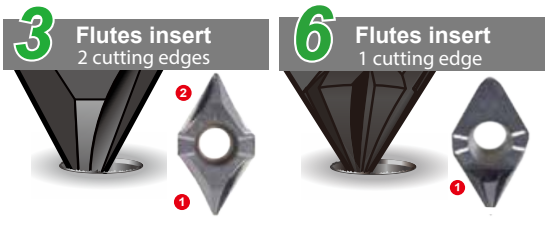


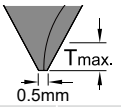
Angle ±0.5	Code	Parts No.		Coating	Grade		Dimensions L	Dimensions S	Dimensions Re	Wmin.	Wmax.	Tmax.
90°	01X0082	X060A90W010R	NC2032	TiAlN	K20F		6	2.05	0.02	0.1	1.1	0.5
	01X0221		NC2035	ALDURA								
	01X0220		XP9001	Uncoated								
90°	01X0207	*X060A90W020R	NC2032	TiAlN	K20F				0.04	0.2	2.2	1.0
	01X0208		NC2035	ALDURA								
	01X0209		XP9001	Uncoated								
120°	01X0222	X060A120W010R	NC2032	TiAlN	K20F				0.02	0.1	2.53	0.7
142°	01X0223	X060A142W010R	NC2032	TiAlN	K20F				0.02	0.1	2.42	0.4

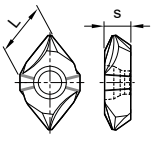
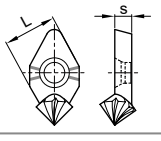
* X060A90W020R is also good for engraving.

Deburring | 60° / 90°

- Ideal for fine hole deburring.
- Smallest chamfer diameter ø0.5mm.
- Achieve high speed and feed rate on CNC machine.
- Retain exceptional positional accuracy of the deburring depth and diameter.

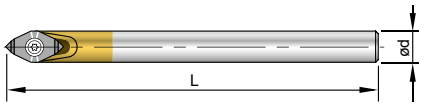




Angle	Code	Part No.		Coating	Grade	Flutes		Dimensions L	Dimensions S	Tmin.	Tmax.
60°	01X611	X060A60T3	NC2032	TiAlN	K20F	3		6	2.8	0.1	0.9
	01X612		XP9001	Uncoated							
90°	01X911	X060A90T3	NC2032	TiAlN							
	01X912		XP9001	Uncoated							
60°	01X601	X060A60T6	NC2032	TiAlN	K20F	6		6	2.0	0.1	1.8
90°	01X901	X060A90T6	NC2032							0.5	1.5

Holder

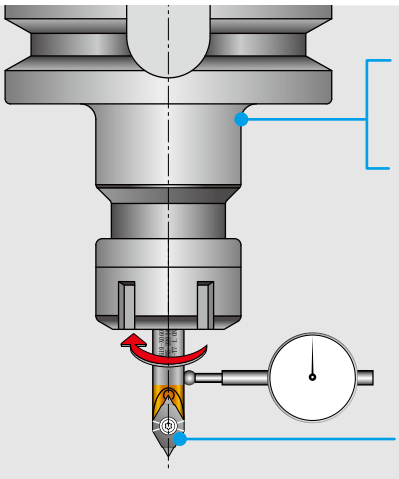
• One holder supports the entire X060 series of carbide inserts.
• XL (100mm length) is only for Al, Al-alloy cutting, unbalanced <0.6gm.



Code	Parts No.	Shank	Ød	L	Screw	Key
69X001	00-99619-X060-06	Steel	6	40	*NS-22044 0.9Nm	NK-T7
69X002	00-99619-X060-06L	Carbide	6	60		
69X003	00-99619-X060-06LS	Steel	6			
69X004	00-99619-X060-06XL	Carbide	6	100		
69X005	00-99619-X060-08	Steel	8	60		

Technical guide

Before you start, please pay attention the following conditions



1 Recommended of tool holders
High precision spring collet chucks, shrink fit chucks, hydraulic chuck.

2 Pre-balance the tool holder
minimum **G6.3/10,000 r.p.m.** is necessary.

3 The downward feed rate of the Z-axis
should be **reduced to 50%** of the table feed rate.

4 Tool shank runout:
below 0.01 mm.

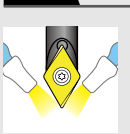
5 Torque screwdriver is recommended

6 Cutting fluid and cooling condition

Emusion / Oil

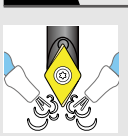
P Steel
M Stainless Steel
S Titanium
H Hardened Steel

Oil



N Non-Ferrous

Air



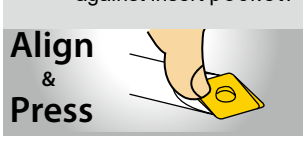
K Cast Iron

Clamping insert

• Place and hold the insert in the insert pocket against the positioning side.

1. Place the insert in the insert pocket.

2. Align and push insert against insert pocket.



3. Insert the screw and tighten it at 0.9Nm.

Cutting Data

30° Engraving insert - X060A30W020R / X060A30R020 (Tmax. : 0.6mm)

Workpiece Material		S (r.p.m)	f (mm/rev.)		Depth of cut (mm)						Grade of Insert
			Radius Angled	Radius	1st	2nd	3rd	4th	5th ~	Finishing	
P	Carbon steel	8000 ~ 40000	0.001 ~ 0.010	0.002 ~ 0.015	0.15	0.1	0.05	0.05	0.05	0.02	NC2032
P	Alloy steel		0.001 ~ 0.006	0.002 ~ 0.010	0.15	0.1	0.05	0.05	0.03	0.02	NC2032, NC2035
M	Stainless steel		0.001 ~ 0.006	0.002 ~ 0.010	0.1	0.05	0.05	0.03	0.03	0.02	NC2032
K	Cast Iron		0.001 ~ 0.006	0.002 ~ 0.010	0.15	0.1	0.05	0.05	0.03	0.02	NC2032
N	Non-ferrous metal		0.001 ~ 0.012	0.002 ~ 0.020	0.2	0.1	0.1	0.05	0.05	0.02	XP9001
H	Hardened steel < HRC50		0.001 ~ 0.005	0.002 ~ 0.006	0.1	0.05	0.03	0.03	0.02	0.01	NC2035

45° Engraving insert - X060A45W020R / X060A45R020 (Tmax. : 0.8mm)

Workpiece Material		S (r.p.m)	f (mm/rev.)		Depth of cut (mm)						Grade of Insert
			Radius Angled	Radius	1st	2nd	3rd	4th	5th ~	Finishing	
P	Carbon steel	8000 ~ 40000	0.002 ~ 0.012	0.002 ~ 0.015	0.25	0.15	0.1	0.05	0.05	0.03	NC2032
P	Alloy steel		0.002 ~ 0.010	0.002 ~ 0.010	0.2	0.1	0.05	0.05	0.05	0.03	NC2032, NC2035
M	Stainless steel		0.002 ~ 0.008	0.002 ~ 0.010	0.2	0.1	0.05	0.05	0.05	0.03	NC2032
K	Cast Iron		0.002 ~ 0.010	0.002 ~ 0.010	0.2	0.1	0.1	0.05	0.05	0.03	NC2032
N	Non-ferrous metal		0.002 ~ 0.015	0.002 ~ 0.020	0.3	0.2	0.1	0.1	0.05	0.03	XP9001
H	Hardened steel < HRC50		0.002 ~ 0.006	0.002 ~ 0.006	0.15	0.1	0.05	0.05	0.03	0.02	NC2035

60° Engraving insert - X060A60W020R / X060A60R020 (Tmax. : 1.0mm)

Workpiece Material		S (r.p.m)	f (mm/rev.)		Depth of cut (mm)						Grade of Insert
			Radius Angled	Radius	1st	2nd	3rd	4th	5th ~	Finishing	
P	Carbon steel	8000 ~ 40000	0.002 ~ 0.012	0.002 ~ 0.015	0.3	0.2	0.1	0.1	0.05	0.03	NC2032
P	Alloy steel		0.002 ~ 0.010	0.002 ~ 0.010	0.3	0.1	0.1	0.05	0.05	0.03	NC2032, NC2035
M	Stainless steel		0.002 ~ 0.008	0.002 ~ 0.010	0.2	0.1	0.1	0.05	0.05	0.03	NC2032
K	Cast Iron		0.002 ~ 0.010	0.002 ~ 0.010	0.3	0.1	0.1	0.05	0.05	0.03	NC2032
N	Non-ferrous metal		0.002 ~ 0.015	0.002 ~ 0.020	0.3	0.2	0.1	0.1	0.05	0.03	XP9001
H	Hardened steel < HRC50		0.002 ~ 0.006	0.002 ~ 0.006	0.2	0.1	0.05	0.05	0.03	0.02	NC2035

90° Engraving insert - X060A90W020R (Tmax. : 1.0mm)

Workpiece Material		S (r.p.m)	f (mm/rev.)	Depth of cut (mm)						Grade of Insert
				1st	2nd	3rd	4th	5th ~	Finishing	
P	Carbon steel	8000 ~ 40000	0.002 ~ 0.015	0.3	0.2	0.1	0.1	0.05	0.03	NC2032
P	Alloy steel		0.002 ~ 0.010	0.3	0.1	0.1	0.05	0.05	0.03	NC2032, NC2035
M	Stainless steel		0.002 ~ 0.010	0.2	0.1	0.1	0.05	0.05	0.03	NC2032
K	Cast Iron		0.002 ~ 0.010	0.3	0.1	0.1	0.05	0.05	0.03	NC2032
N	Non-ferrous metal		0.002 ~ 0.020	0.4	0.3	0.2	0.1	0.05	0.03	XP9001
H	Hardened steel < HRC50		0.002 ~ 0.006	0.2	0.1	0.05	0.05	0.03	0.02	NC2035

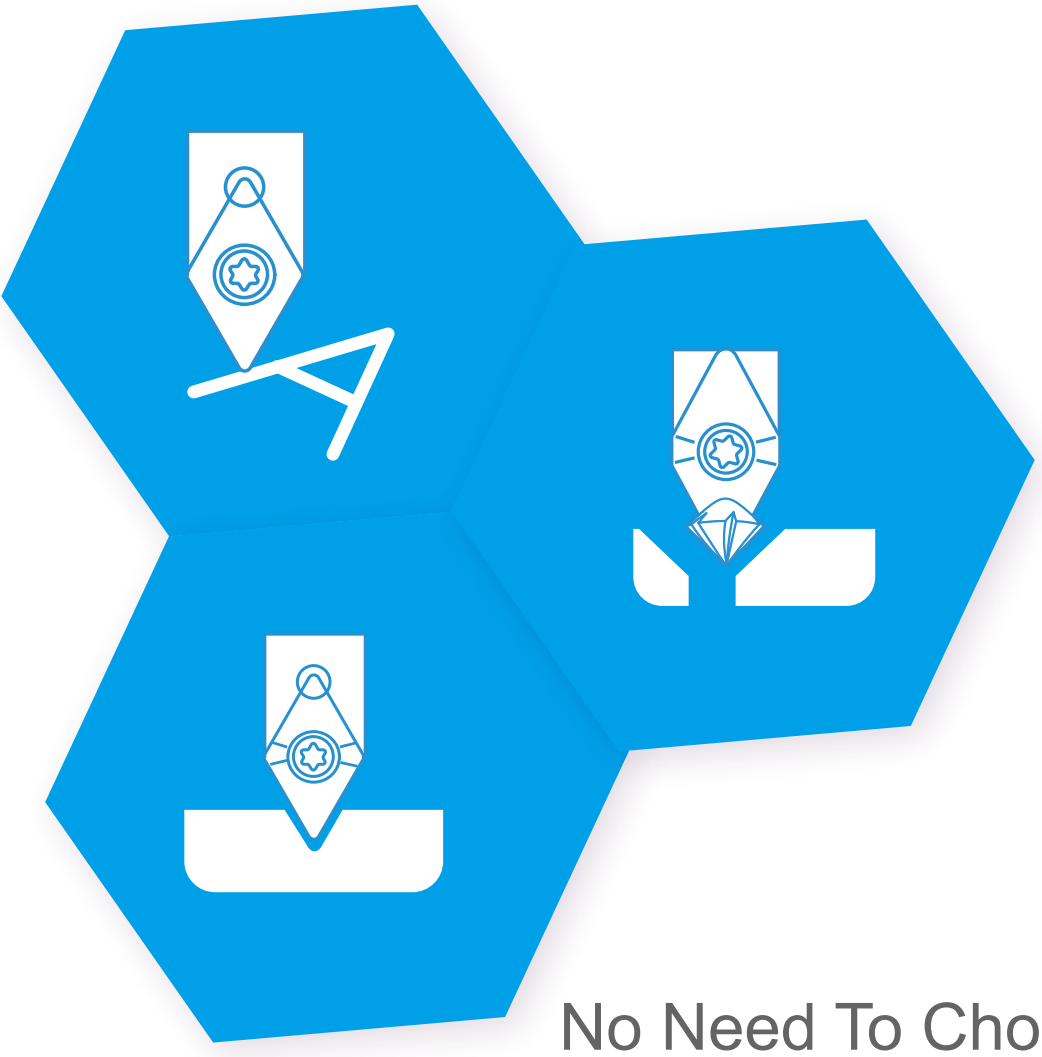
Cutting Data

Spotting insert - X060A90W010R / X060A90W020R / X060A120W010R / X060A142W010R

Workpiece Material		S (r.p.m)	f (mm/rev.)			Grade of Insert
			X060A90W010R	X060A90W020R	X060A120W010R X060A142W010R	
P	Carbon steel	8000 ~ 40000	0.002 ~ 0.012	0.002 ~ 0.015	0.002 ~ 0.015	NC2032
P	Alloy steel		0.002 ~ 0.010	0.002 ~ 0.010	0.002 ~ 0.010	NC2032, NC2035
M	Stainless steel		0.002 ~ 0.008	0.002 ~ 0.010	0.002 ~ 0.010	NC2032
K	Cast Iron		0.002 ~ 0.010	0.002 ~ 0.010	0.002 ~ 0.010	NC2032
N	Non-ferrous metal		0.002 ~ 0.015	0.002 ~ 0.020	-	XP9001
H	Hardened steel < HRC50		0.002 ~ 0.006	0.002 ~ 0.006	-	NC2035

Deburring insert - X060A60T3 / X060A60T6

Workpiece Material		S (r.p.m.)	Feed Rate (mm / tooth)	Grade of Insert
P	Carbon steel	8000~40000	0.005-0.05	NC2032
P	Alloy steel	6000~35000	0.005-0.04	
M	Stainless steel	6000~25000	0.005-0.03	
K	Cast Iron	6000~35000	0.005-0.03	
N	Non-ferrous metal	8000~40000	0.005-0.05	XP9001



No Need To Choose
Nine9 Does It All

Always Better
JIMMORE
International Corp.