



Indexable Engraving 45°/ 60°

A Revolutionary New Concept
Engraving Tools with
Indexable Carbide Inserts

THE ACCURATE &
ADVANTAGED SOLUTION

www.jic-tools.com.tw

2011-06



BRAND
Global Marketing

WE HAVE INVESTED RESOURCES
IN THE DESIGN AND MANUFACTURE



LASTING
RUN WITH THE BEST



Our innovative tooling design upgrades productivity and competitive capability while reducing production requirements in a wide range of industries.

The tooling system is designed to benefit users of machining centers and CNC lathe, turning center and special purpose machines.

Our outstanding R&D capabilities combined with fast delivery provide a strong competitive edge.

SOURCES MANUFACTURE OF INSERTED CUTTERS



OUR CLAIM

ENGRAVING 45° 60°

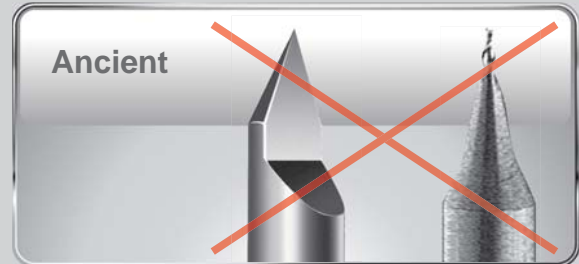
This is a revolutionary new concept of engraving tools with indexable carbide inserts.

They offer you the ability to produce **HIGH QUALITY ENGRAVING** in most materials.

The latest coated carbide grades help you to obtain higher speed and feed rate, dramatically reducing your cycle time.



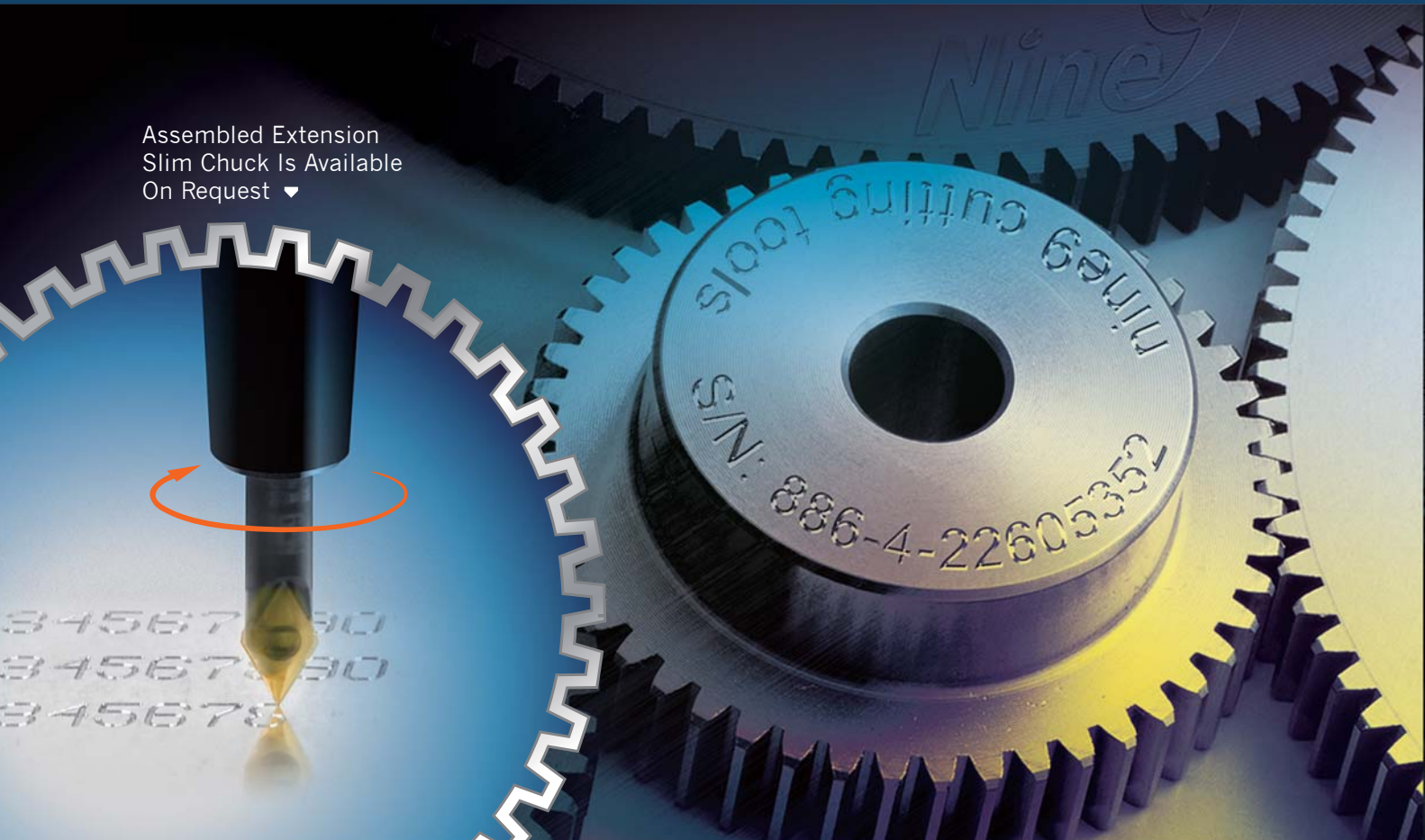
V.S.



Nine⁹

PRECISION IS THE ONLY FAITH OF OUR EXCELLENT SOLUTION FOR YOU LONG-

Assembled Extension
Slim Chuck Is Available
On Request ▼



IT WORKS

ENGRAVING 45° 60°

► Tips

Use the V045 and V060 style engravers in materials that tend to push burrs such as stainless steels and high temp alloys. These inserts have a 0.2mm(0.008") radius with a very sharp cutting edge and cut very freely. Character widths widths start around 0.45mm(0.017").

This tool best replaces ball nose endmills. These tools are considered to be first choice for all but fine engraving.

► Engraving Applications

Engraving are widely used in metal cutting industries. Main focus areas are Medical components, Gun components, Mold and Die and anything that needs serialized, letter and logo engraving or components requiring lot traceability markings.

In addition to apply for the industries such as Hardware, Automobile, Aviation, Dairy Equipments, Cutlery, Cutting Tools, Electric motors, Gears, Bearings...etc.

RS
-TERM SUCCESS



FEATURES

ENGRAVING 45° 60°



► High Positive Rake Angle

- Indexable insert.
- Suitable for engraving all types of materials, such as plastic, non-ferrous metal, aluminum, carbon steel and stainless steel.

► Multi-Side Grinding

- Full peripherally ground insert to ensure efficient repeatability.
- It performs excellently without producing any burrs, especially in aluminum and stainless steel.

► High Speed, High Feed Rate

- Designed to run at high speed, up to 20000 r.p.m.
- Feed rate 0.08mm (0.003") / rev. apply to aluminum; 0.05mm (0.002") / rev. apply to stainless steel.
- Reduces engraving cycle time!

► Economical

- Each indexable insert has 2 cutting edges.
- No resharpener required. Tool length is unchanged.
- No need to reset after changing insert or cutting edge.
- Excellent repeatability!

► Applications

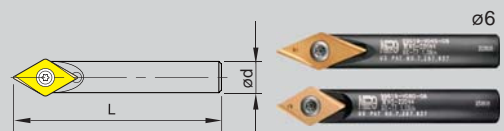
- Universal for marking number and almost any character.
- 45°, 60° engraving inserts which can be used for marking serial numbers ; product codes ; dial scales ; signs ; logo outlines and almost any character which can be created by the NC programming system.

HOLDER

ENGRAVING 45° 60°

► Made of steel

Code	Parts No.	Angle	Ød h7	L	Screw / Key
691001	00-99619-V045-06	45°	6	40	NS-22044 1.0Nm NK-T7
692001	00-99619-V060-06	60°			



► Made of solid carbide.

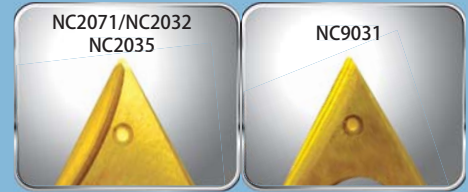
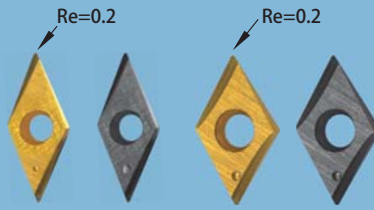
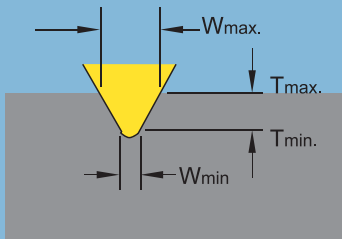
► XL (100mm length) is only for AI, AI-alloy cutting.

Code	Parts No.	Angle	Ød h7	L	Screw / Key
691002	00-99619-V045-06L	45°	6	60	NS-22044 1.0Nm NK-T7
691003	00-99619-V045-06XL			100	
692002	00-99619-V060-06L	60°	6	60	NK-T7
692003	00-99619-V060-06XL			100	



INSERTS

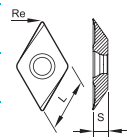
ENGRAVING 45° 60°



► Features

- NC2071:**
 - TiN coated. Good for low carbon steel, stainless steel, non-ferrous metal, and any kinds of steel $> \text{HRC}30^\circ$.
 - Strong edge on chip groove applies for Tmin. 0.2 mm.
- NC9031:**
 - TiN coated, Good for low carbon steel, stainless steel, non-ferrous metal, soft material and plastic, and any kinds of steel $< \text{HRC}30^\circ$.
 - Fully positive ground rake angle, very sharp edge apply for thin engraving.
- NC2032:**
 - TiAlN coated. Good for medium and high carbon steel, high alloy steel, casting iron, and any kinds of steel $30^\circ < \text{HRC} < 48^\circ$.
- NC2035:**
 - TiAlN coated. Good for all kinds of hardened steel, chilled casting iron, and any kind of steel $45^\circ < \text{HRC} < 56^\circ$.

Code	Parts No.	Angle	Grade	Coating	Dimensions			Wmin.	Wmax.	Tmin.	Tmax.
					L	S	Re				
0104501	V04506T1W06-NC2071	45°	K20F	TiN	6.35	2.0	0.2	0.65	2.1	0.20	2.0
0104502	V04506T1W06-NC2032			TiAlN				0.45		0.05	
new 0104504	V04506T1W06-NC9031			TiN				0.45		0.05	
0106001	V06006T1W06-NC2071	60°	K20F	TiN	6.35	2.0	0.2	0.65	2.7	0.20	2.0
0106002	V06006T1W06-NC2032			TiAlN				0.45		0.05	
new 0106003	V06006T1W06-NC2035			TiAlN				0.45		0.05	
new 0106004	V06006T1W06-NC9031			TiN				0.45		0.05	



STARTER KIT

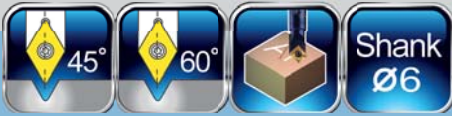
ENGRAVING 45° 60°

Code	Parts No.	Shankø	Angle	Insert included	Content
691201-4501	00-99619-V045-03K-71	6	45°	V04506T1W06-NC2071	1 x Holder 1 x T7 Key 3 x insert
691201-4502	00-99619-V045-03K-32			V04506T1W06-NC2032	
691201-4504	00-99619-V045-03K-31			V04506T1W06-NC9031	
692201-6001	00-99619-V060-03K-71		60°	V06006T1W06-NC2071	
692201-6002	00-99619-V060-03K-32			V06006T1W06-NC2032	
692201-6003	00-99619-V060-03K-35			V06006T1W06-NC2035	
692201-6004	00-99619-V060-03K-31			V06006T1W06-NC9031	



TEST RESULT

ENGRAVING 45° 60°



- ▶ **Work piece material**
 - Tool steel SKD 61 (JIS G 4404)
 - Hardness: HRB92~93 (≒ HB 200)
 - Engraving depth: 0.2 mm

Tool			
Cutting data	00-99616-V060	Engraving tool	Ball nose end mill Radius 0.4 mm
Spindle speed r.p.m.	10000	10000	10000
Feed rate mm/min.	100	100	300
Cutting depth Ap	0.2 mm	0.2 mm	0.05 mm, 4 times to cut to 0.2 mm
Roughness of bottom Ra	0.36 μm	0.83 μm	0.46 μm
Change and resetting	No need	Need	Need
Tool life	Long	Short	Short
Measured result by Alicona IFM system			

CUTTING DATA

ENGRAVING 45° 60°

▶ Cutting Data

Work Material		S RPM	f (mm/rev.)	Grade of Insert
Steel	< 30°HRC	5000~20000	0.02~0.05	NC2071
	30° - 48°HRC	5000~20000	0.01~0.02	NC2032,NC9031
	46° - 56°HRC	5000~20000	0.01~0.02	NC2035
Stainless Steel		5000~20000	0.02~0.05	NC2071,NC9031
Cast iron		5000~20000	0.01~0.02	NC2032
Aluminum, Non-Ferrous Metal		5000~20000	0.02~0.08	NC2071,NC9031
Al, Al-alloy, etc		5000~20000	0.02~0.08	NC9031

▶ Depth of Per Cutting

Tmax.:2mm

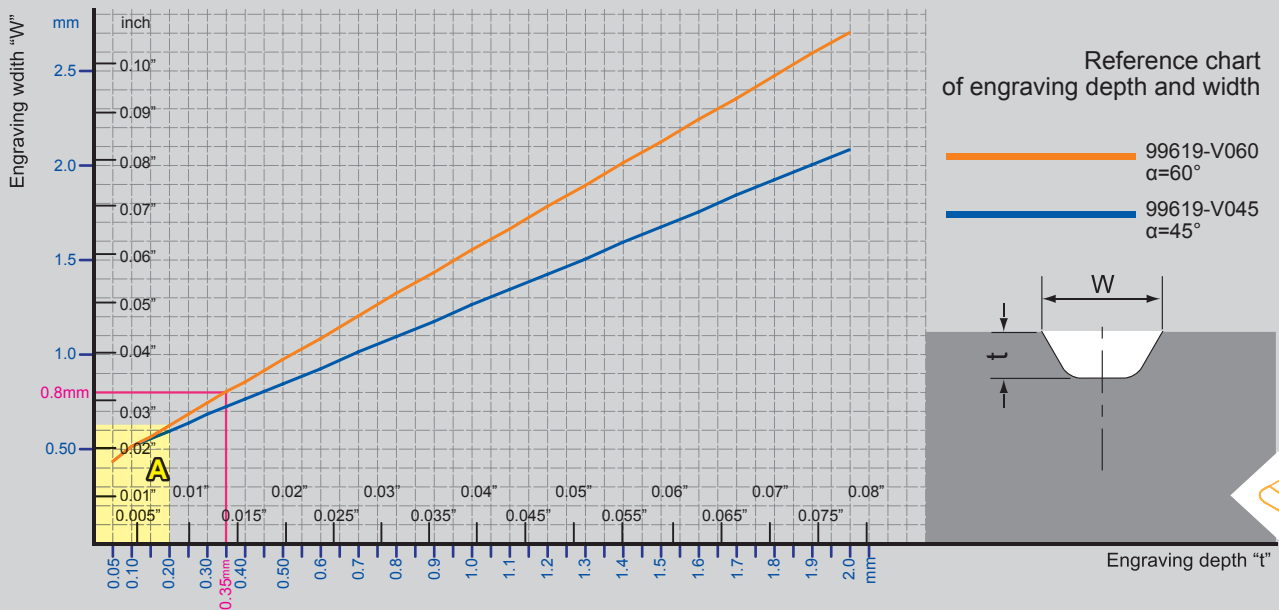
Material	Ap								~	Fine finishing
		1st	2nd	3rd	4th	5th	6th			
Carbon steel C<0.3%		0.6	0.4	0.3	0.2	0.2	0.2	0.1	0.1	
Carbon steel C>0.3%		0.8	0.6	0.3	0.2	0.1	~	~	0.1	
Low alloy steel C<0.3%		0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	
High alloy steel C>0.3%		0.3	0.3	0.2	0.2	0.15	0.15	0.1	0.05	
Alloy steel ≥HRC40°		0.2	0.2	0.15	0.15	0.1	0.1	0.1	0.05	
Stainless Steel		0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.05	
Casting iron		0.8	0.6	0.3	0.2	0.1	~	~	0.1	
Non-ferrous metal		1.0	0.8	0.2	~	~	~	~	0.1	

INSTRUCTIONS OF USING

ENGRAVING 45° 60°

▶ Engraving Depth and Width Reference Chart

- To use the engraving chart, select your engraving width (w) on the vertical axis. Select your engraving insert angle (45° or 60°), and follow the horizontal line from the (w) axis to the intersection with the insert angle. Follow the vertical line from this intersection point to the engraving depth (t) axis to determine the engraving depth.
- Grade NC2071 insert is not applicable on area “ A ”



ATTENTION

ENGRAVING 45° 60°

▶ Selecting the speed and feed rate

- Select the spindle speed and feed rate according to the selected material's cutting data.
- The downward feed rate of the Z-axis should be reduced to **50~70%** of the table feed rate.

▶ Cutting fluid and cooling condition

- Elmusion is recommended for engraving on steel, stainless steel, Al and Al-alloy.
- Blown cooled air is recommended for engraving on cast iron and plastic.

▶ Setting-up the tool holder

- The tool shank runout should be below 0.02 mm (0.0008”).
- Shrink fit chucks, hydraulic chuck and high precision spring collet chucks are recommended.
- Pre-balance the tool holder: G6.3/10,000 R.P.M. is recommended.

▶ Clamping the engraving insert

- Place and hold the insert in the insert pocket against the positioning side.
- Please fit the insert precisely while locking, see illustration below:
- Step-1
- Step-2
- Step-3

Place the insert in the insert pocket.



Push insert against the insert pocket, then put the screw on the screw.



Tighten the insert screw.

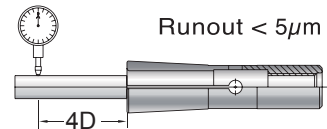
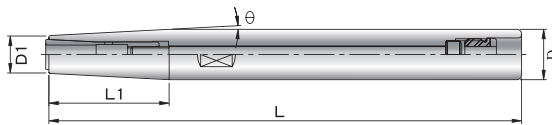


EXTENSION BAR

ENGRAVING 45° 60°



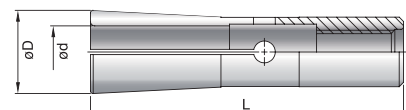
► DC Slim Chuck



Parts No.	Type of Holder	d	L	L1	øD	D1	θ	Collet	Back Screw	Stop Screw	Hexagon Key	Stop Nut	
0-329090-212	ST12-DC6-120	2~6	120	40	12	13	--	DC6	M5 * L95	--		TP-M12	
-222	ST16-DC6-150	2~6	150	38	16	13	3°		M5 * L100	OP-M10		0-301940~642	--
-232	ST20-DC6-200	2~6	200	70	20	13	3°		M5 * L100	OP-M10			--
-242	ST25-DC6-250	2~6	250	115	25	13	3°		M5 * L100	OP-M10		0-301940~643	--
0-329090-312	ST20-DC8-150	3~8	150	28	20	19	2°	DC8	M6 * L72	OP-M12	0-301940~652	--	
-322	ST20-DC8-200	3~8	200	28	20	19	2°		M6 * L120	OP-M12			--
0-329090-412	ST25-DC10-150	3~10	150	28	25	24	2°	DC10	M8 * L80	OP-M16		--	
-422	ST25-DC10-200	3~10	200	28	25	24	2°		M8 * L100	OP-M16		0-301940~662	--
-432	ST25-DC10-250	3~10	250	28	25	24	2°		M8 * L150	OP-M16			--

DC6-E		DC8-E		DC10-E	
Parts No.	Size(mm)	Parts No.	Size(mm)	Parts No.	Size(mm)
0-300090-203	3.0	0-300090-303	3.0	0-300090-403	3.0
0-300090-204	4.0	0-300090-304	4.0	0-300090-404	4.0
0-300090-206	6.0	0-300090-306	6.0	0-300090-406	6.0
		0-300090-308	8.0	0-300090-408	8.0
				0-300090-410	10.0

Type	DC6	DC8	DC10
D	9.6	15	19.1
L	36	45	52



THE ACCURATE & ADVANTAGED SOLUTION



Nine9 works with the global brand spirit, by way of headquarter foundation, sales network throughout Northern and Southern Hemisphere, spreads all the world.

We do our best to approach customers as far as possible, satisfy all market specific request and the need, work closely with customers, share the Nine9 unremittingly dedicated research and development innovation technology, help you to promote the enterprise competitiveness sustainability then to sharpen the whole profitability.



Engraving Highlight of Product



Jimmore International Corp.

Distributor