Heavy Turning

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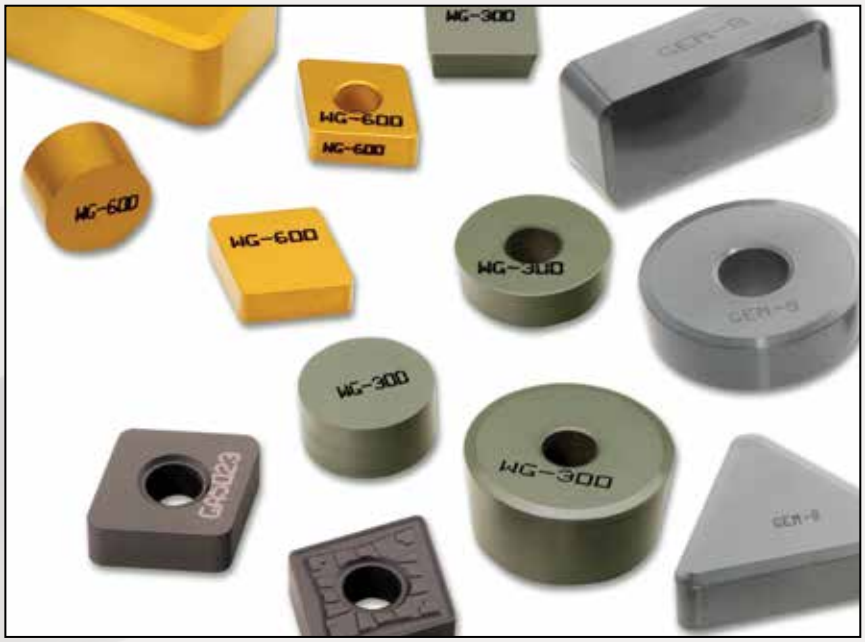
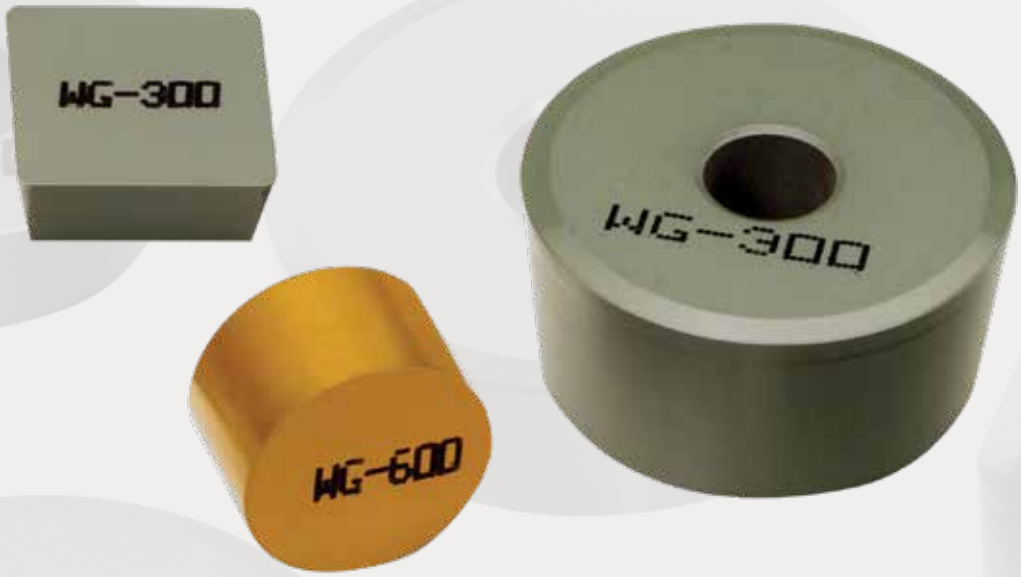
Heavy Turning

The manufacture of rolls for use in steel making is an area where machinability has been decreased significantly by the introduction of alloyed materials, especially chromium content. In addition, the use of forged rolls is increasing, and centrifugally cast products with high hardness levels and surface contamination are another challenge.

Ceramic cutting tools such as Greenleaf GEM-8™ composite material and WG-300® whiskered material are finding an important place in heavy turning when combined with rigid, well-designed holding systems. Greenleaf has extensive experience in the design and manufacture of heavy-turning tooling systems. For more than thirty years, we have supplied O.E.M. packages to many of the largest lathe manufacturers – both domestic and overseas. We will be pleased to quote tooling systems for any type of machine to effectively use ceramic or carbide inserts. Most of the options regularly manufactured are outlined on page HT 28.

Call a Greenleaf heavy-turning specialist at 800-458-1850 to discuss your particular needs.





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Insert Grades

Carbide

Greenleaf offers a comprehensive line of carbide inserts ranging from sub-micron C-1 through C-8 classifications. Carbide inserts are available in ANSI standard geometries with multi-purpose chipbreakers for heavy roughing through finishing.






CVD Coated

GA5023

A high-performance grade designed for the turning and milling of various grades of cast iron, GA5023 features an advanced MT-CVD coating specifically developed to withstand the abrasiveness of cast iron in machining. Applications range from roughing to finishing in most grades of cast iron, including gray, nodular, and others. The high wear resistance and toughness of GA5023 enable high-speed machining in a wide range of feed rates.

GA5035

A high-performance MT-CVD coated grade for turning all types of steels, GA5035 can be used for heavy roughing to finish-turning applications requiring resistance to heat deformation, thermal shock from interrupted cuts, and abrasion. GA5035 should be applied at high speeds and a moderate range of feeds. GA5035 is the primary choice for steel turning.

GA5036

A high-speed MT-CVD coated milling grade, GA5036 should be used when milling forged and cast steels and select ductile irons. GA5036 constitutes a unique combination of toughness and heat resistance, making it suitable for heavy and light-duty milling at high cutting speeds. It is a great first choice for all steel milling.

GA5125

A high-performance MT-CVD coated carbide used primarily for the milling and turning of manganese steel. GA5125 can also be applied in Cr-Mo steels, tool steels, and other alloyed steels in continuous and interrupted turning. GA5125 provides excellent resistance to abrasion, crater wear, thermal shock, deformation, and built-up edge. It performs best when applied at high speeds and moderate feed rates.

PVD Coated

G-915

A multi-layer PVD-coated grade, G-915 is exceptional for milling and interrupted turning of heat-resistant alloys, stainless steels, and low-carbon steels. The coating adds heat and abrasion resistance to the tough substrate. G-915 should be used at moderate speeds and moderate to high feeds. It is a versatile grade that performs well in a variety of materials and operations outside its primary application range, making it a great choice for general machining.

G-935

A multi-layer PVD-coated grade for steel milling and turning applications requiring additional resistance to mechanical and thermal shock. The multi-layered PVD coating raises the speed envelope and wear resistance in tough milling, indexable drilling, and interrupted turning applications.

Uncoated

G-02

An excellent general-purpose cast-iron grade, G-02 can be used for milling and turning cast iron at moderately high speeds and medium feeds. G-02 is also a good choice for machining aluminum with positive rakes and light roughing of some heat-resistant alloys and stainless steels.

G-20M

A sub-micron C-2 carbide grade suited for use in light-to-medium turning of titanium and heat-resistant super alloys, G-20M has the strength and edge wear characteristics to resist notching when turning high-strength materials.

G-50

A grade used for the heavy roughing of steel and steel castings in unstable conditions, and ferritic stainless steels in most applications, G-50 is tough enough to enable the use of positive rakes in turning.

G-60

Used for the heavy rough turning of steel, steel castings, and steel forgings. Apply G-60 at moderate speeds and heavy feed rates and depths of cut. G-60 is more wear-resistant than G-50 but is lower in toughness.

G-74

A roughing and finishing grade for steel and steel castings, G-74 should be applied at high speeds and moderate to heavy feeds. It is well-suited for the turning of steel rolls.

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Ceramic

Greenleaf is the industry leader in the development and manufacture of ceramic and coated ceramic inserts in ANSI standard and special geometries. Some of the most prominent include:

WG-300®

A SiC whisker-reinforced Al_2O_3 ceramic that is very effective at machining nickel- and cobalt-based super alloys, alloyed cast iron, and hardened steels at metal removal rates up to 10 times higher than carbide. Excellent chemical stability and wear resistance at very high cutting speeds make WG-300® the first choice worldwide for grooving and turning difficult materials.

WG-600®

A coated SiC whisker-reinforced Al_2O_3 ceramic that offers higher tool life and speed capabilities than uncoated whisker-reinforced ceramics due to the additional barrier to heat and mechanical abrasion. Application areas for WG-600® include rough and finish turning of alloys in the M, K, S, and H ISO material classes, as well as milling of hardened steels and select stainless steels. WG-600® is particularly well-suited for finish-turning and grooving of heat-resistant super alloys and is unmatched in both turning and milling of steels with a hardness above 60 HRc.

XSYTIN®-1

A phase-toughened ceramic grade capable of sustaining extreme cutting forces. The unprecedented strength, impact toughness, and resistance to thermal shock of XSYTIN®-1 make it ideal for use in interrupted cuts, forging scale removal, and milling. In continuous cuts, the strength of XSYTIN®-1 allows the use of significantly higher feed rates or depths of cut. In machining environments with severe interruptions and scale, the edge strength of XSYTIN®-1 allows the use of very light edge preparations, minimizing the force of impact and making for a much smoother cut.

GSN100™

An engineered blend of hot-pressed silicon nitride and proprietary toughening agents that excels in the machining of cast iron. GSN100™ delivers superior wear and toughness for turning, grooving, and milling applications. It is available in all standard geometries and engineered specials.

GEM-8™

An Al_2O_3 + TiC composite ceramic exhibiting excellent hardness and strength at elevated temperatures. GEM-8™ offers a high degree of predictability in roll turning and continuous cuts in ferrous alloys.

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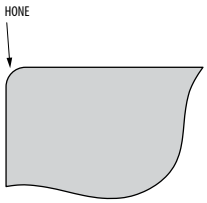
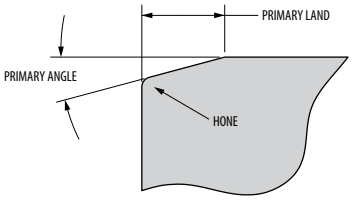
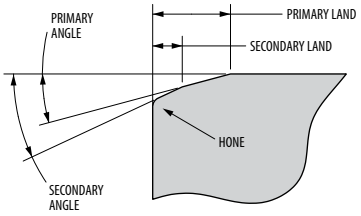
Edge Preparations



HONE



PRIMARY ANGLE



SECONDARY ANGLE

Edge Prep	Hone	Primary Land	Primary Angle	Secondary Land	Secondary Angle	Application
T2A	.0005 - .001" R.	.006 - .008"	20°			Scale applications, light interruptions, weld overlays, finish turning and milling of hardened materials.
T4A	.0005 - .001" R.	.065-.075"	10°	.006 - .008"	25°	Heavy machining <3/4"IC - Roll turning, 3V, 4V, CDH-22, CDH-33.
T4B	.001 - .002" R.	.065-.075"	10°	.006 - .008"	25°	Heavy machining <3/4"IC - Roll turning, 3V, 4V, CDH-22, CDH-33.
T10B	.001 - .002" R.	.090 - .100"	15°	.006 - .008"	30°	Heavy machining, iron and steel roll turning >3/4"IC, CDH-43, CDH-53.

NOTE: For additional edge preparations see page ATI 22-23.

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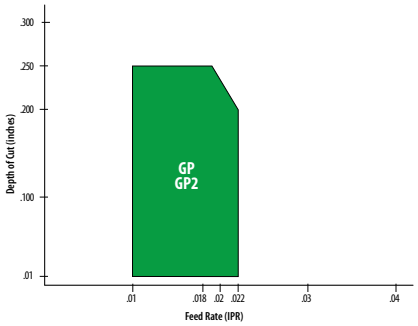
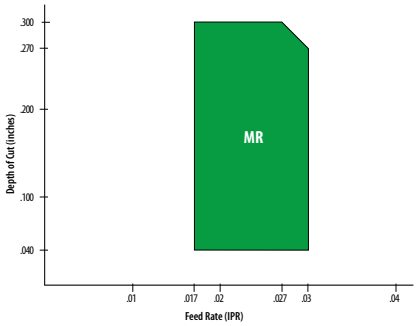
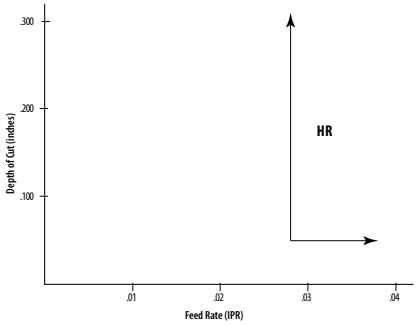
Chipform Application Range

GENERAL PURPOSE	GP and GP2 	General purpose chipbreaker. Feed rates up to 0.02"/rev and 0.25" depth of cut.	
MEDIUM ROUGHING	MR and MR2 	Used for medium roughing of all material. Feeds up to 0.028"/rev and depths up to 0.30".	
HEAVY ROUGHING	HR *single sided* 	Heavy roughing for all materials. Feeds above 0.023"/rev. One-sided chipbreaker for heaviest feeds (MM). *Example: CNMM 644 HR*	

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Round
Flat Top
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Round
Flat Top
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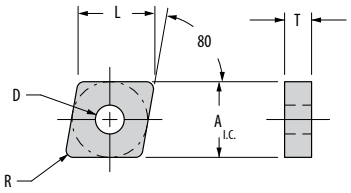
80° Diamond Inserts

Chip Control — CNMG, CNMM



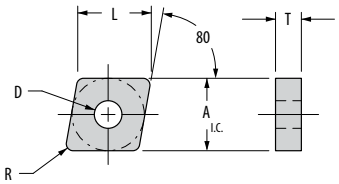
Shape: 80° Diamond		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
General Purpose		CNMG-643-GP	▲	●	◆	◆	▲	◆	▲		CNMG-190612-GP	0.750	0.761	0.250	0.312	0.047
Medium Roughing		CNMG-642-MR	▲	●	◆	◆	▲	◆	▲		CNMG-190608-MR	0.750	0.761	0.250	0.312	0.031
		CNMG-643-MR	▲	●	◆	◆	▲	◆	▲		CNMG-190612-MR	0.750	0.761	0.250	0.312	0.047
		CNMG-644-MR									CNMG-190616-MR	0.750	0.761	0.250	0.312	0.062
Heavy Roughing		CNMG-643-HR	▲	●	◆	◆	▲	◆	▲		CNMM-190612-HR	0.750	0.761	0.250	0.312	0.047

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Flat Top — CNMA

Shape: 80° Diamond		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
		CNMA-642	◆	●			◆	◆	●	◆	CNMA-190608	0.750	0.761	0.250	0.312	0.031
		CNMA-643	◆	●			◆	◆	●	◆	CNMA-190612	0.750	0.761	0.250	0.312	0.047
		CNMA-644	◆	●			◆	◆	●	◆	CNMA-190616	0.750	0.761	0.250	0.312	0.062
		CNMA-866	◆	●			◆	◆	●	◆	CNMA-250924	1.000	1.015	0.375	0.359	0.093

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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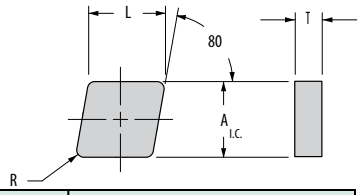
80° Diamond Inserts

Flat Top — CNGN



Shape: 80° Diamond	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	CNGN-632	◆	●			◆	◆	●	◆	CNGN-190408	0.750	0.761	0.187	0.031
	CNGN-633	◆	●			◆	◆	●	◆	CNGN-190412	0.750	0.761	0.187	0.047
	CNGN-634	◆	●			◆	◆	●	◆	CNGN-190416	0.750	0.761	0.187	0.062
	CNGN-643	◆	●			◆	◆	●	◆	CNGN-190612	0.750	0.761	0.250	0.047
	CNGN-644	◆	●			◆	◆	●	◆	CNGN-190616	0.750	0.761	0.250	0.062

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

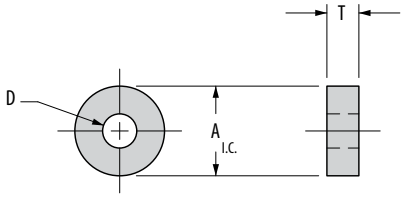
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions *— pages HT 4–5*

Round Inserts

Chip Control — RNMG, RNMM

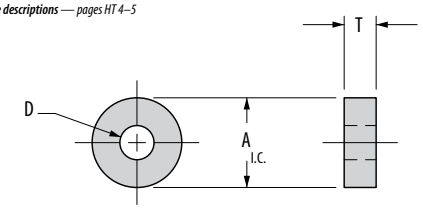


Shape: Round		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)		
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	T	D
Medium Roughing		RNMG-64-MR	◆	●			◆	◆	●	◆	RNMG-190600-MR	0.750	0.250	0.312
		RNMG-86-MR	◆	●			◆	◆	●	◆	RNMG-250900-MR	1.000	0.375	0.359
Heavy Roughing		RNMM-84-MR	◆	●			◆	◆	●	◆	RNMM-250600-MR	1.000	0.250	0.359

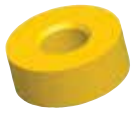
CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



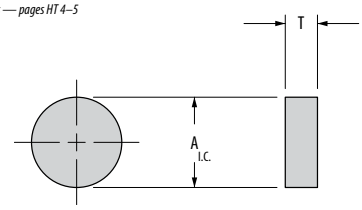
Flat Top — RNMA

Shape: Round		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)		
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	T	D
		RNMA-64-MR	◆	●			◆	◆	●	◆	RNMA-190600	0.750	0.250	0.312
		RNMA-86-MR	◆	●			◆	◆	●	◆	RNMA-250900	1.000	0.375	0.359

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Flat Top — RNGN

Shape: Round		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)	
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	T
		RNGN-63	◆	●			◆	◆	●	◆	RNGN-190400	0.750	0.187
		RNGN-84	◆	●			◆	◆	●	◆	RNGN-250600	1.000	0.250

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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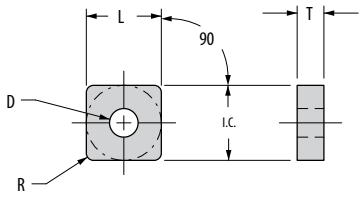
Square Inserts

Chip Control — SNMG, SNMM



Shape: Square		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
General Purpose		SNMG-643-GP2	▲	●			◆	◆	●	◆	SNMG-190612-GP2	0.750	0.750	0.250	0.312	0.047
		SNMG-644-GP2	▲	●			◆	◆	●	◆	SNMG-190616-GP2	0.750	0.750	0.250	0.312	0.062
Medium Roughing		SNMG-643-MR	▲	●			◆	◆	●	◆	SNMG-190612-MR	0.750	0.750	0.250	0.312	0.047
		SNMG-644-MR	▲	●			◆	◆	●	◆	SNMG-190616-MR	0.750	0.750	0.250	0.312	0.062
		SNMG-866-MR	▲	●			◆	◆	●	◆	SNMG-250924-MR	1.000	1.000	0.375	0.359	0.093
Heavy Roughing		SNMM-643-HR	▲	●			◆	◆	●	◆	SNMM-190612-HR	0.750	0.750	0.250	0.312	0.047
		SNMM-644-HR	▲	●			◆	◆	●	◆	SNMM-190616-HR	0.750	0.750	0.250	0.312	0.062

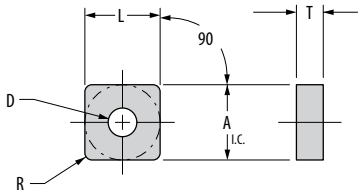
CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Flat Top — SNMA



Shape: Square		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
		SNMA-643	▲	●			◆	◆	●	◆	SNMA-190612	0.750	0.750	0.250	0.312	0.047
		SNMA-644	▲	●			◆	◆	●	◆	SNMA-190616	0.750	0.750	0.250	0.312	0.062
		SNMA-864	▲	●			◆	◆	●	◆	SNMA-250916	1.000	1.000	0.375	0.359	0.062
		SNMA-866	▲	●			◆	◆	●	◆	SNMA-250924	1.000	1.000	0.375	0.359	0.093

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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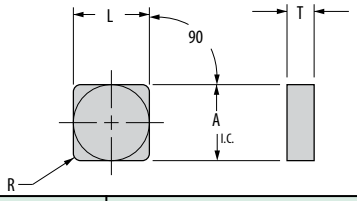
Square Inserts

Flat Top — SNGN / SNUN



Shape: Square	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	SNGN-633	▲	●			◆	◆	●	◆	SNGN-190412	0.750	0.750	0.187	0.047
	SNGN-634	▲	●			◆	◆	●	◆	SNGN-190416	0.750	0.750	0.187	0.062
	SNGN-638	▲	●			◆	◆	●	◆	SNGN-190432	0.750	0.750	0.187	0.125
	SNGN-643	▲	●			◆	◆	●	◆	SNGN-190612	0.750	0.750	0.250	0.047
	SNGN-644	▲	●			◆	◆	●	◆	SNGN-190616	0.750	0.750	0.250	0.062
	SNGN-646	▲	●			◆	◆	●	◆	SNGN-190624	0.750	0.750	0.250	0.093
	SNGN-844	▲	●			◆	◆	●	◆	SNGN-250616	1.000	1.000	0.250	0.062
	SNGN-854	▲	●			◆	◆	●	◆	SNGN-250716	1.000	1.000	0.312	0.062
	SNGN-10412	▲	●			◆	◆	●	◆	SNGN-310648	1.250	1.250	0.250	0.187
	SNGN-1066	▲	●			◆	◆	●	◆	SNGN-310924	1.250	1.250	0.375	0.093
	SNGN-1068	▲	●			◆	◆	●	◆	SNGN-310932	1.250	1.250	0.375	0.125
	SNGN-1288	▲	●			◆	◆	●	◆	SNGN-381232	1.500	1.500	0.500	0.125
	SNUN-633	▲	●			◆	◆	●	◆	SNUN-190412	0.750	0.750	0.187	0.047
	SNUN-634	▲	●			◆	◆	●	◆	SNUN-190416	0.750	0.750	0.187	0.062
	SNUN-844	▲	●			◆	◆	●	◆	SNUN-250616	1.000	1.000	0.250	0.062
	SNUN-848	▲	●			◆	◆	●	◆	SNUN-250632	1.000	1.000	0.250	0.125
	SNUN-854	▲	●			◆	◆	●	◆	SNUN-250716	1.000	1.000	0.312	0.062
	SNUN-1066	▲	●			◆	◆	●	◆	SNUN-310924	1.250	1.250	0.375	0.093
	SNUN-1068	▲	●			◆	◆	●	◆	SNUN-310932	1.250	1.250	0.375	0.125
	SNUN-1288	▲	●			◆	◆	●	◆	SNUN-381232	1.500	1.500	0.500	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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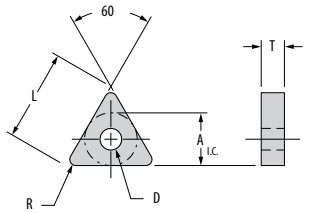
Triangle Inserts

Chip Control — TNMG



Shape: Triangle		Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
			GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
Medium Roughing		TNMG-666-MR	▲	●			◆	◆	●	◆	TNMG-330924-MR	0.750	1.299	0.375	0.312	0.094

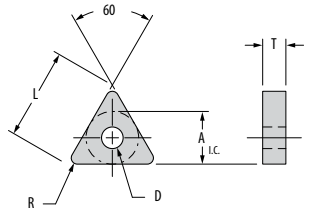
CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Flat Top — TNMA



Shape: Triangle	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)				
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	D	R
	TNMA-642	▲	●			◆	◆	●	◆	TNMA-330608	0.750	1.299	0.250	0.312	0.031
	TNMA-643	▲	●			◆	◆	●	◆	TNMA-330612	0.750	1.299	0.250	0.312	0.047
	TNMA-644	▲	●			◆	◆	●	◆	TNMA-330616	0.750	1.299	0.250	0.312	0.062
	TNMA-664	▲	●			◆	◆	●	◆	TNMA-330916	0.750	1.299	0.375	0.312	0.062
	TNMA-666	▲	●			◆	◆	●	◆	TNMA-330924	0.750	1.299	0.375	0.312	0.093
	TNMA-668	▲	●			◆	◆	●	◆	TNMA-330932	0.750	1.299	0.375	0.312	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

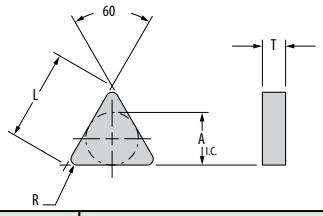
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Triangle Inserts

Flat Top — TNGN



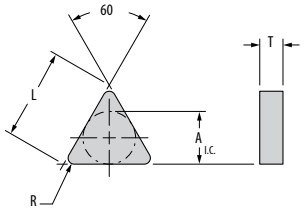
Shape: Triangle	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	TNGN-654	◆	●			◆	◆	●	◆	TNGN-330716	0.750	1.299	0.312	0.062
	TNGN-656	◆	●			◆	◆	●	◆	TNGN-330724	0.750	1.299	0.312	0.093
	TNGN-664	◆	●			◆	◆	●	◆	TNGN-330916	0.750	1.299	0.375	0.062
	TNGN-666	◆	●			◆	◆	●	◆	TNGN-330924	0.750	1.299	0.375	0.093
	TNGN-668	◆	●			◆	◆	●	◆	TNGN-330932	0.750	1.299	0.375	0.125
	TNGN-776	◆	●			◆	◆	●	◆	TNGN-381124	0.875	1.516	0.437	0.093
	TNGN-778	◆	●			◆	◆	●	◆	TNGN-381132	0.875	1.516	0.437	0.125
	TNGN-7710	◆	●			◆	◆	●	◆	TNGN-381140	0.875	1.516	0.437	0.156
	TNGN-878	◆	●			◆	◆	●	◆	TNGN-441132	1.000	1.732	0.437	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Flat Top — TNUN

Shape: Triangle	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	TNUN-654	◆	●			◆	◆	●	◆	TNUN-330716	0.750	1.299	0.312	0.062
	TNUN-656	◆	●			◆	◆	●	◆	TNUN-330724	0.750	1.299	0.312	0.093
	TNUN-664	◆	●			◆	◆	●	◆	TNUN-330916	0.750	1.299	0.375	0.062
	TNUN-666	◆	●			◆	◆	●	◆	TNUN-330924	0.750	1.299	0.375	0.093
	TNUN-668	◆	●			◆	◆	●	◆	TNUN-330932	0.750	1.299	0.375	0.125
	TNUN-776	◆	●			◆	◆	●	◆	TNUN-381124	0.875	1.516	0.437	0.093
	TNUN-778	◆	●			◆	◆	●	◆	TNUN-381132	0.875	1.516	0.437	0.125
	TNUN-7710	◆	●			◆	◆	●	◆	TNUN-381140	0.875	1.516	0.437	0.156
	TNUN-878	◆	●			◆	◆	●	◆	TNUN-441132	1.000	1.732	0.437	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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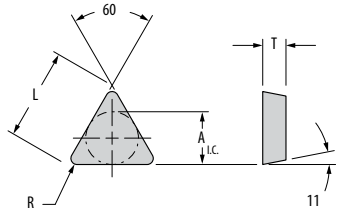
Triangle Inserts

Flat Top — TPGN/TPUN



Shape: Triangle	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	TPGN-666	◆	●			◆	◆	●	◆	TPGN-330924	0.750	1.299	0.375	0.093
	TPUN-664	◆	●			◆	◆	●	◆	TPUN-330916	0.750	1.299	0.375	0.062
	TPUN-666	◆	●			◆	◆	●	◆	TPUN-330924	0.750	1.299	0.375	0.093

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

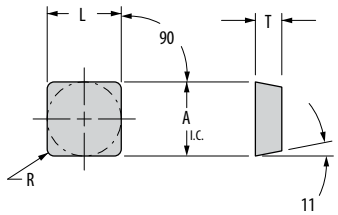
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Square Inserts

Flat Top — SPGN / SPUN



Shape: Square	Part Number ANSI	Steel P			Stainless Steel M		Cast Iron K	Heat-Resistant Super Alloys S		Part Number ISO	Dimensions (inches)			
		GA5035	GA-5125	GA5036	GA5023	G-915	GA5023	G-915	G-20M		A	L	T	R
	SPGN-633	◆	●			◆	◆	●	◆	SPGN-190412	0.750	0.750	0.187	0.047
	SPGN-634	◆	●			◆	◆	●	◆	SPGN-190416	0.750	0.750	0.187	0.062
	SPGN-636	◆	●			◆	◆	●	◆	SPGN-190424	0.750	0.750	0.187	0.093
	SPGN-638	◆	●			◆	◆	●	◆	SPGN-190432	0.750	0.750	0.187	0.125
	SPUN-633	◆	●			◆	◆	●	◆	SPUN-190412	0.750	0.750	0.187	0.047
	SPUN-634	◆	●			◆	◆	●	◆	SPUN-190416	0.750	0.750	0.187	0.062
	SPUN-643	◆	●			◆	◆	●	◆	SPUN-190612	0.750	0.750	0.250	0.047
	SPUN-644	◆	●			◆	◆	●	◆	SPUN-190616	0.750	0.750	0.250	0.062
	SPUN-864	◆	●			◆	◆	●	◆	SPUN-250916	1.000	1.000	0.375	0.062
	SPUN-866	◆	●			◆	◆	●	◆	SPUN-250924	1.000	1.000	0.375	0.093
	SPUN-868	◆	●			◆	◆	●	◆	SPUN-250932	1.000	1.000	0.375	0.125
	SPUN-1068	◆	●			◆	◆	●	◆	SPUN-310932	1.250	1.250	0.375	0.125
	SPUN-1288	◆	●			◆	◆	●	◆	SPUN-381232	1.500	1.500	0.500	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

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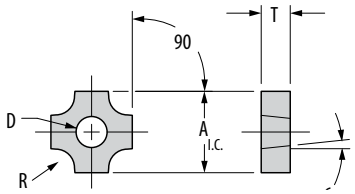
Radius Forming Inserts

SNMA



Shape: Square	Part Number ANSI	GA5035	GA5036	G-02	G-60	Part Number ISO	Dimensions (inches) A	D	T	R
	SNMA-64IR4	◆	●			SNMA-64IR4	0.750	0.250	0.312	0.062
	SNMA-64IR6	◆	●			SNMA-64IR6	0.750	0.250	0.312	0.093
	SNMA-64IR8	◆	●			SNMA-64IR8	0.750	0.250	0.312	0.125
	SNMA-64IR10	◆	●			SNMA-64IR10	0.750	0.250	0.312	0.156
	SNMA-84IR12	◆	●			SNMA-84IR12	1.000	0.250	0.359	0.187
	SNMA-84IR14	◆	●			SNMA-84IR14	1.000	0.250	0.359	0.218
	SNMA-84IR16	◆	●			SNMA-84IR16	1.000	0.250	0.359	0.250
	SNMA-106IR20	◆	●			SNMA-106IR20	1.250	0.375	0.500	0.312
	SNMA-106IR24	◆	●			SNMA-106IR24	1.250	0.375	0.500	0.375
	SNMA-126IR28	◆	●			SNMA-126IR28	1.500	0.375	0.500	0.437
	SNMA-126IR32	◆	●			SNMA-126IR32	1.500	0.375	0.500	0.500

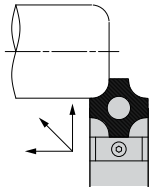
CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

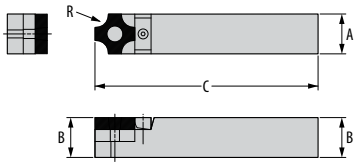
Grade descriptions — pages HT 4–5

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

Style GSRN



Neutral toolhoder shown



Part Number Neutral	Dimensions (inches) A	B	C	Standard Components Shim	Center Pin	Clamp	Clamp Screw	Tune-Up Kit	Insert Options Insert	R
GSRN-646	0.750	1.000	6.000	SR6	30309	30308-2	30301-1	TK-01117	SNMA-64IR4	0.062
GSRN-656	0.750	1.250	6.000	SR6	30309	30308-2	30301-1	TK-01117	SNMA-64IR6	0.093
GSRN-666	0.750	1.500	7.000	SR6	30309	30308-2	30301-1	TK-01117	SNMA-64IR8	0.125
									SNMA-64IR10	0.156
GSRN-168	1.000	1.000	6.000	SR8	30327-1	30308-2	30301-1	TK-00572	SNMA-84IR12	0.187
GSRN-858	1.000	1.250	7.000	SR8	30327-1	30308-2	30301-1	TK-00572	SNMA-84IR14	0.218
GSRN-868	1.000	1.500	8.000	SR8	30327-1	30308-2	30301-1	TK-00572	SNMA-84IR16	0.250
GSRN-2010	1.250	1.250	7.000	SR10	30454	30319-2	30320	TK-00573	SNMA-106IR20	0.312
GSRN-2410	1.500	1.500	8.000	SR10	30454	30319-2	30320	TK-00573	SNMA-106IR24	0.375
GSRN-2412	1.500	1.500	8.000	SR12	30545	30319-2	30320	TK-00574	SNMA-126IR28	0.437
									SNMA-126IR32	0.500

These toolholders are Greenleaf standard and do not conform to the ANSI identification system.

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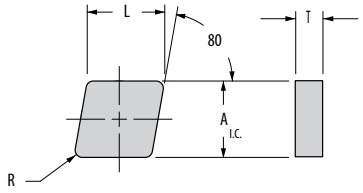
80° Diamond Inserts

CNGN



Shape: Diamond	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)			
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	L	T	R
	CNGN-642	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	CNGN-190608	0.750	0.761	0.250	0.031
	CNGN-643	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	CNGN-190612	0.750	0.761	0.250	0.047
	CNGN-644	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	CNGN-190616	0.750	0.761	0.250	0.062

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

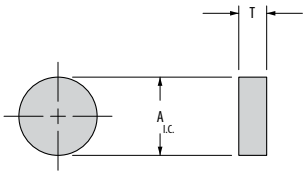
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Round Inserts

RNGN



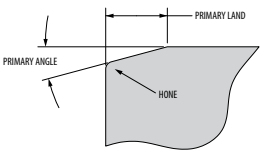
Shape: Round	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)	
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	T
	RNGN-64	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-190600	0.750	0.250
	RNGN-65	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-190700	0.750	0.312
	RNGN-84	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-250600	1.000	0.250
	RNGN-85	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-250700	1.000	0.312
	RNGN-86	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-250900	1.000	0.375
	RNGN-106	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RNGN-310900	1.250	0.375

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Edge preparations — page HT 06

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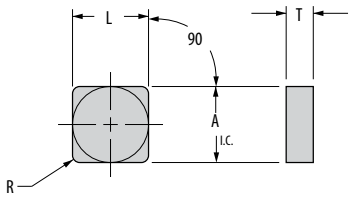
Square Inserts

SNGN



Shape: Square	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)			
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	L	T	R
	SNGN-642	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190608	0.750	0.750	0.250	0.031
	SNGN-643	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190612	0.750	0.750	0.250	0.047
	SNGN-644	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190616	0.750	0.750	0.250	0.062
	SNGN-653	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190712	0.750	0.750	0.312	0.047
	SNGN-654	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190716	0.750	0.750	0.312	0.062
	SNGN-655	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-190720	0.750	0.750	0.312	0.078
	SNGN-866	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-250924	1.000	1.000	0.375	0.094

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

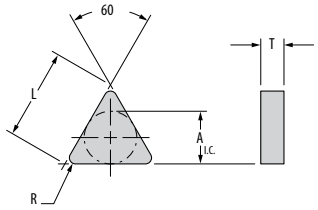
CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

Triangle Inserts

TNGN



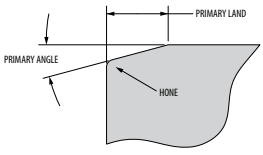
Shape: Triangle	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)			
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	L	T	R
	TNGN-666	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	TNGN-330924	0.750	1.299	0.375	0.094
	TNGN-868	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	TNGN-440932	1.000	1.732	0.375	0.125

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Edge preparations — page HT 06

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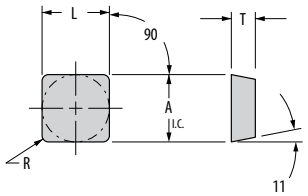
Square Inserts

SPGN



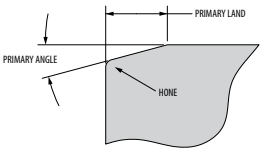
Shape: Square	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)			
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	L	T	R
	SPGN-633	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SPGN-190412	0.750	0.750	0.187	0.047
	SPGN-634	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SPGN-190416	0.750	0.750	0.187	0.062
	SPGN-642	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SPGN-190608	0.750	0.750	0.250	0.031

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

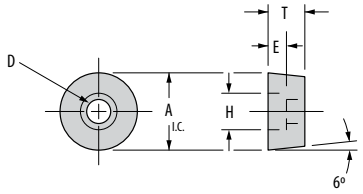
Grade descriptions *— pages HT 4–5*



Edge preparations *— page HT 06*

Roll Turning Inserts

Carbide — CDH



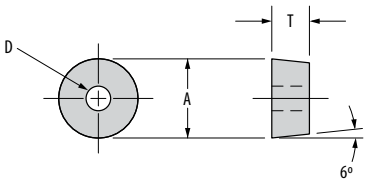
Shape: CDH	Part Number ANSI	GA5035	GA5036	G-02	G-60	Part Number ISO	Dimensions (inches) A	T	H	D	E
	CDH-42	▲	▲	▲	▲	CDH-42	1.000	0.500	0.406	0.265	0.250
	CDH-43	▲	▲	▲	▲	CDH-43	1.000	0.750	0.406	0.265	0.500
	CDH-51.5	▲	▲	▲	▲	CDH-51.5	1.250	0.375	0.593	0.390	0.375
	CDH-53	▲	▲	▲	▲	CDH-53	1.250	0.750	0.593	0.390	0.375

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC



Ceramic — C-CDH

Shape: C-CDH	Part Number ANSI	Steel P: WG-300	WG-600	XSYTIN-1	GEM-8	S Steel M: WG-600	Cast Iron K: WG-600	GSN100	XSYTIN-1	GEM-8	Heat-Resistant Super Alloys S: WG-300	WG-600	WG-700	XSYTIN-1	Hardened Steel H: WG-300	WG-600	XSYTIN-1	GEM-8	Part Number ISO	Dimensions (inches) A	T	D
	C-CDH-21	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-21	0.500	0.250	0.125
	C-CDH-22	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-22	0.500	0.500	0.125
	C-CDH-31	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-31	0.750	0.250	0.265
	C-CDH-31.5	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-31.5	0.750	0.375	0.265
	C-CDH-42	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-42	1.000	0.500	0.265
	C-CDH-43	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-43	1.000	0.750	0.265
	C-CDH-51.5	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-51.5	1.250	0.375	0.390
	C-CDH-53	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	C-CDH-5	1.250	0.750	0.390

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

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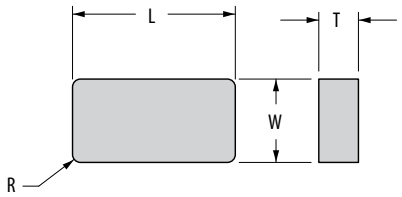
Roll Turning Inserts

LNUN



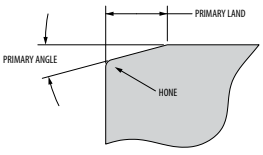
Shape: LNUN	Part Number ANSI	GA5035	G-935	G-50	G-74	Part Number ISO	Dimensions (inches) W	L	T	R
	LNUN-4442	▲	▲	▲	▲	LNUN-4442	0.500	1.000	0.250	0.031
	LNUN-4444	▲	▲	▲	▲	LNUN-4444	0.500	1.000	0.250	0.062
	LNUN-4452	▲	▲	▲	▲	LNUN-4452	0.500	1.000	0.312	0.031
	LNUN-4454	▲	▲	▲	▲	LNUN-4454	0.500	1.000	0.312	0.062
	LNUN-5444	▲	▲	▲	▲	LNUN-5444	0.625	1.000	0.250	0.062
	LNUN-5464	▲	▲	▲	▲	LNUN-5464	0.625	1.000	0.375	0.062
	LNUN-5564	▲	▲	▲	▲	LNUN-5564	0.625	1.250	0.375	0.062
	LNUN-6568	▲	▲	▲	▲	LNUN-6568	0.750	1.250	0.375	0.125
	LNUN-6684	▲	▲	▲	▲	LNUN-6684	0.750	1.500	0.500	0.062
	LNUN-6688	▲	▲	▲	▲	LNUN-6688	0.750	1.500	0.500	0.125
	LNUN-66812	▲	▲	▲	▲	LNUN-66812	0.750	1.500	0.500	0.187
	LNUN-68812	▲	▲	▲	▲	LNUN-68812	0.750	2.000	0.500	0.187

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions *— pages HT 4–5*



Edge preparations *— page HT 06*

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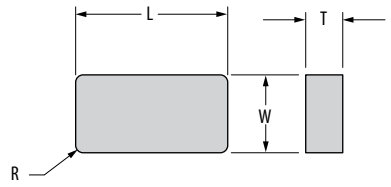
Roll Turning Inserts

LNMN



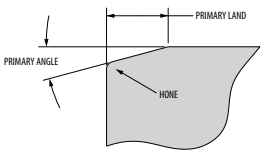
Shape: LNMN	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)			
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		W	L	T	R
	LNMN-4442	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-4442	0.500	1.000	0.250	0.031
	LNMN-4444	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-4444	0.500	1.000	0.250	0.062
	LNMN-4452	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-4452	0.500	1.000	0.312	0.031
	LNMN-4454	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-4454	0.500	1.000	0.312	0.062
	LNMN-5444	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-5444	0.625	1.000	0.250	0.062
	LNMN-5464	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-5464	0.625	1.000	0.375	0.062
	LNMN-5564	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-5564	0.625	1.250	0.375	0.062
	LNMN-6568	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-6568	0.750	1.250	0.375	0.125
	LNMN-6684	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-6684	0.750	1.500	0.500	0.062
	LNMN-6688	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-6688	0.750	1.500	0.500	0.125
	LNMN-66812	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	LNMN-66812	0.750	1.500	0.500	0.187

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions *— pages HT 4–5*



Edge preparations *— page HT 06*

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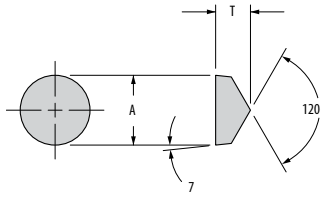
Round V-Bottom Inserts

RCGN-V



Shape: Round V-Bottom	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)	
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	T
	RCGN-2V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-060400	0.250	0.187
	RCGN-3V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-090700	0.375	0.312
	RCGN-4V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-120700	0.500	0.312
	RCGN-5V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-151000	0.625	0.394
	RCGX-106	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-191000	0.750	0.394
	RCGN-6V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RCGX-191000	0.750	0.500

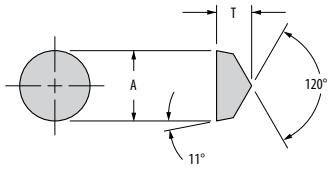
CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5

RPGN-V



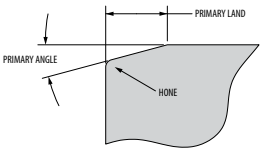
Shape: Round V-Bottom	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)	
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	T
	RPGN-2V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RPGX-060400	0.250	0.187
	RPGN-3V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RPGX-090700	0.375	0.312
	RPGN-4V	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	RPGX-120700	0.500	0.312

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Edge preparations — page HT 06

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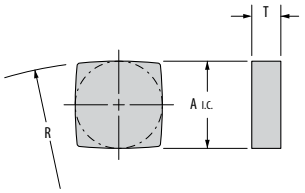
Square Inserts

SNGN



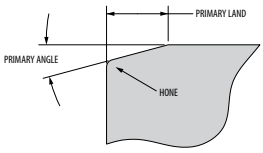
Shape: Square	Part Number ANSI	Steel P				S Steel M	Cast Iron K				Heat-Resistant Super Alloys S				Hardened Steel H				Part Number ISO	Dimensions (inches)		
		WG-300	WG-600	XSYTIN-1	GEM-8	WG-600	WG-600	GSN100	XSYTIN-1	GEM-8	WG-300	WG-600	WG-700	XSYTIN-1	WG-300	WG-600	XSYTIN-1	GEM-8		A	T	R
	SNGN-128-R4.5	▲	●	●	◆	◆	▲	●	❖	◆	●	◆	▲	❖	▲	●	❖	◆	SNGN-128-R4.5	1.500	0.500	4.500

CARBIDE COATINGS: MT-CVD Coated | PVD Coated | Uncoated

CERAMIC CLASSIFICATION: Whisker Ceramic | Phase-Toughened | Silicon Nitride | Alumina TiC

First Choice ◆ Second Choice ● Alternative ▲ Interrupted/Milling ❖

Grade descriptions — pages HT 4–5



Edge preparations — page HT 06

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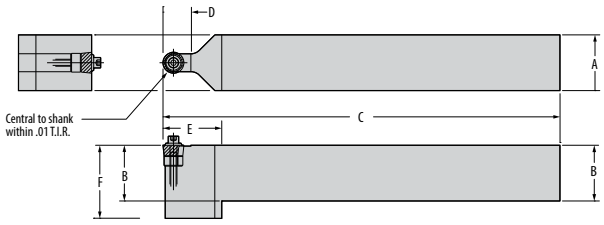
H-SROON

Neutral Carbide and Ceramic Inserts



Part Number	Gage Insert	Dimensions (inches)						Standard Components		
		A	B	C	D	E	F	Shim	Shim Thickness	Insert Screw
H-SROON-24-3-1	C-CDH-31	1.500	1.500	12.000	1.500	2.250	2.000	313665	0.125	SHCS 1/4-20 x 1.25 Long
H-SROON-32-3-1	CDH-31	2.000	2.000	12.000	1.500	N/A	N/A			
H-SROON-24-4-2	C-CDH-42	1.500	1.500	12.000	1.500	2.250	2.250	3291	0.250	SHCS 1/4-20 x 1.50 Long
H-SROON-32-4-2	CDH-42	2.000	2.000	12.000	1.500	2.250	2.250			
H-SROON-32-5-1.5	C-CDH-51.5	2.000	2.000	12.000	2.000	2.500	2.500	313690	0.375	SHCS 3/8-16 x 2.00 Long
	CDH-51.5	2.000	2.000	12.000	2.000	2.500	2.500			

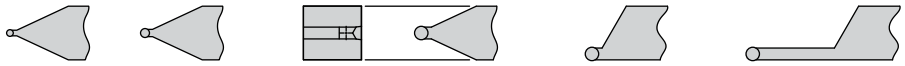
C-CDH and CDH inserts can be found on page HT 23.

Optional

Part Number	Gage Insert	Optional Inserts and Components			
		Shim	Shim Thickness	Insert Screw	Chip Breaker
H-SROON-24-3-1	C-CDH-31.5	N/A	N/A	SHCS 1/4-20 x 1.25 Long	306727
H-SROON-32-3-1	CDH-31.5				
H-SROON-24-4-2	C-CDH-43	N/A	N/A	SHCS 1/4-20 x 1.50 Long	304736
H-SROON-32-4-2	CDH-435				
H-SROON-32-5-1.5	C-CDH-53	N/A	N/A	SHCS 3/8-16 x 2.00 Long	313602
	CDH-53				

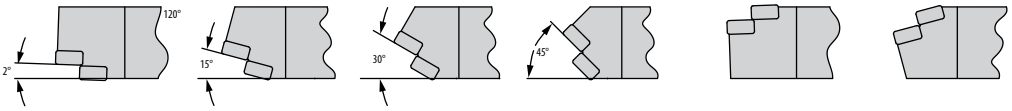
Inserts

Round V-Bottom
RPGN , RCGN STYLES



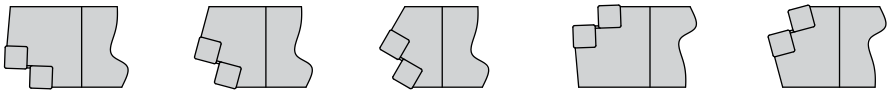
Single Rectangle
LNU STYLE

Double Rectangle
LNU STYLE

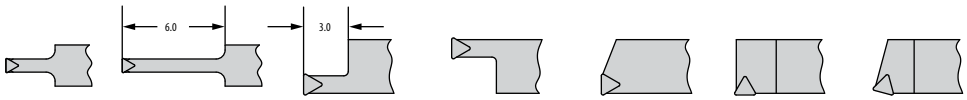


Single Square
NEGATIVE OR POSITIVE
SNUN , SPUN STYLES

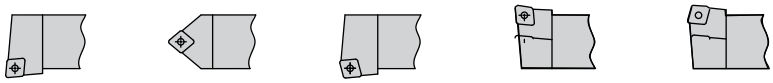
Double Square
NEGATIVE OR POSITIVE
SNUN , SPUN STYLES



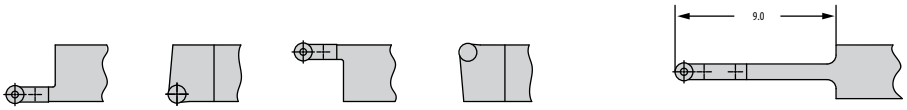
Triangular Insert
NEGATIVE OR POSITIVE
TPGN, TNUN STYLES



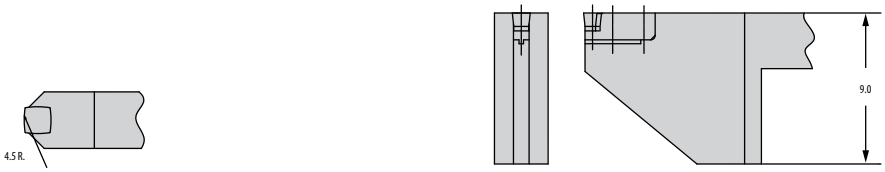
Diamond Insert
NEGATIVE OR POSITIVE
CNGN , CPGN STYLES



Round Insert
NEGATIVE OR POSITIVE
RNGN , RCGN STYLES
CDH STYLES



1½ I.C. Finishing Insert
SNGN-128R4.5



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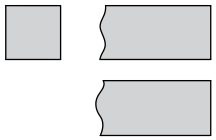
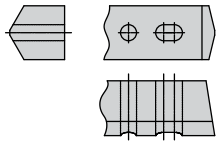
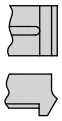
Shank Options



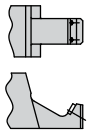
Straight Shank



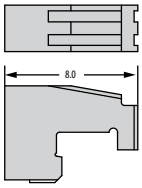
Customized V-Bottom Shank



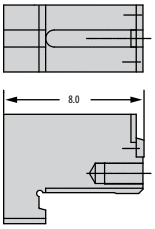
Farrel Quick Change



Greenleaf Cam Lock



Customized Shank for Herkules Lathes



Customized Shank for Waldrich Siegen Lathes