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Grade Technology

With literally dozens of grades or formulations in its repertoire, the Ultra-met Company maintains an active grade development program and the capability to produce custom tungsten carbide grade powders “in house”. Why?... Because like many other materials technologies, the laws of chemistry and physics continually force tradeoffs to achieve a particular balance of properties. Increasing the cobalt binder content increases apparent toughness at the sacrifice of wear resistance. Finer tungsten carbide grains increase hardness and finish capability but increase brittleness as well. This section is intended to enhance your understanding of the tradeoffs one must consider when selecting a grade or formulation to fulfill an application need.

Cemented Tungsten Carbide is the resultant product of a powder metallurgical process that sinters or binds grains or crystals of hard tungsten carbide together with cobalt as a binder or “glue”. Adding or blending in carbides of other elements of the groups 4, 5 and 6 of the periodic table, and perhaps with other binders from the iron group enhances specific characteristics of the resultant hard metal.

The term straight grades refers to blends of tungsten carbide with from three to twenty-five percent cobalt. Wear resistance decreases and toughness increases as cobalt content increases. Six to ten percent cobalt content is most cost effective (the cost of cobalt is several times that of tungsten carbide) and is commonly used in metalworking applications. In the sintering process, liquefied cobalt flows to bind the grains of tungsten carbide. Larger grains improve transverse rupture strength and impact resistance but tend to dislodge easier while metalworking or being finish ground. Finer grain materials tend to be harder and more brittle and do not fare well when subjected to adverse machining conditions such as interrupted cuts or less rigid set-ups. The following terms are commonly utilized to describe WC grain size.

Description	Range of Grain Sizes
Extra Coarse	over 5.0 microns
Coarse	3.5 up to 5.0 microns
Medium Coarse	2.0 up to 3.5 microns
Medium	1.5 up to 2.0 microns
Fine	1.1 up to 1.4 microns
Extra Fine or Micrograin	0.6 up to 1.0 microns
Ultra Fine or Nanograin	below 0.6 microns

Ultra Fine

Extra Fine

Fine

Medium

Medium Course

Coarse

Carbides of other metals are often alloyed with tungsten carbide and are referred to as complex grades. Although tantalum carbide is quite expensive, it is often employed to enhance high temperature wear resistance as required in steel machining applications. Often titanium carbide can be included in steel cutting grades to achieve a more cost effective balance of properties.

Lesser quantities of these and other carbides such as vanadium, niobium and chromium are used to control WC grain growth during sintering, or to enhance other characteristics such as corrosion resistance.

Cobalt is the preferred binder for optimum strength. Nickel is alloyed with cobalt when corrosion resistance is to be optimized, or in some cermet or high titanium carbide formulations.

Numerous coatings and coating processes are available to improve the usable life of tungsten carbide metalworking tools. Thin single or multiple layers of titanium carbide, titanium nitride, aluminum oxide, titanium carbonitride or various other materials enhance lubricity and protect the cutting edge from thermal and corrosive wear. With the degree of protection afforded by coating, it is often not necessary to alloy the tungsten carbide to the same extent as uncoated steel grades and thus one may opt for stronger, less expensive so called “substrate grades”. Generally these formulations have a stronger edge strength and better resist surface degradation inherent in most coating processes.

“Substrate Grade”	Suggested Application (All Standard Steels*)
ZS-16	Roughing, Difficult Conditions
ZS-17	General Purpose / Finishing
ZS-19	Preferred for PVD Coatings (milling & turn broaching)

* Can also be used for cast irons when aluminum oxide coated.

There exists the potential for metallurgical damage in the processing of parts subsequent to the sintering operations. Aside from obvious physical damage, allowing a part to stand in water or coolant may result in cobalt being leached from the surface of the part (sometimes referred to as corrosion). Also there is the potential for the surface of a part to be decarbonized during the CVD coating process. Any of the above situations would be manifest in a loss of expected service life.

Grade Application

	Ultra-met Grade	A.N.S.I. Code	ISO Code	Percent (%)					Density (g/cc)	TRS (KSI)	Grain Size
				CO	TIC	TA/NBC	WC	HRA			
CERMET	ZC3	C7/C8	P01-P05					93.0	6.10	225	
CERMET	ZC14	C6/C7	P05-P25					92.0	6.70	325	
STEEL (P)	UF110	C2	K25	10.00			90.00	92.3	14.44	525	Ultra Fine
STEEL (P)	Z76	C8	P05	5.00	12.00	15.75	67.25	91.7	11.80	240	Extra Fine
STEEL (P)	Z72	C7	P15/M10	10.00	8.13	6.50	75.38	91.8	12.27	300	Fine
STEEL (P)	Z60	C6	P20/M15	8.00	6.00	4.50	81.50	92.1	12.95	325	Fine
STEEL (P)	Z50	C5	P30	8.70	8.25	8.80	74.25	91.3	12.27	310	Medium
STEEL (P)	ZS17	C5/C6 *	P25/K30	6.50	4.50	6.50	82.50	91.8	13.35	250	Medium
STEEL (P)	ZS16	C5/C6 *	P30/K30	5.50	3.00	5.00	86.50	91.3	13.84	270	Medium
STEEL (P)	Z1	C1/C2	K25	8.00			92.00	91.7	14.70	450	Extra Fine
STEEL (P)	Z9	C1/C2	K30	10.00			90.00	91.3	14.50	480	Extra Fine
STEEL (P)	Z14	C5/C6	P40/M30	12.00	0.50	2.50	85.00	90.2	14.07	540	Fine/Medium
STEEL (P)	Z56	C5	P35/M35	10.10	7.05	12.70	70.15	91.4	12.22	330	Medium/Coarse
STEEL (P)	Z55	C5	P35/M25	10.50	6.00	14.50	66.00	91.3	12.38	350	Fine/Medium
STEEL (P)	Z52	C5	P40/M30	11.50	4.50	5.50	78.50	91.2	12.99	350	Fine/Medium
STEEL (P)	Z54	C5	P50/M50	12.50	4.00	9.00	74.50	90.3	12.79	380	Medium
STAINLESS STEELS (M)	Z72	C7	P15/M10	10.00	8.13	6.50	75.38	91.8	12.27	300	Fine
STAINLESS STEELS (M)	Z60	C6	P20/M15	8.00	6.00	4.50	81.50	92.1	12.95	325	Fine
STAINLESS STEELS (M)	Z23	C3	K10	6.00			94.00	92.8	14.94	360	Extra Fine
STAINLESS STEELS (M)	Z22	C2	K20	6.00			94.00	91.8	14.94	350	Fine
STAINLESS STEELS (M)	Z1	C1/C2	K25	8.00			92.00	91.7	14.70	450	Extra Fine
STAINLESS STEELS (M)	UF110	C2	K25	10.00			90.00	92.3	14.44	525	Ultra Fine
STAINLESS STEELS (M)	Z9	C1/C2	K30	10.00			90.00	91.3	14.50	480	Extra Fine
STAINLESS STEELS (M)	Z55	C5	P35/M25	10.50	6.00	14.50	66.00	91.3	12.38	350	Fine/Medium
STAINLESS STEELS (M)	Z13	C1	K40	11.00		0.50	88.50	89.8	14.26	360	Medium/Coarse
STAINLESS STEELS (M)	Z14	C5/C6	P40/M30	12.00	0.50	2.50	85.00	90.2	14.07	540	Fine/Medium
STAINLESS STEELS (M)	Z52	C5	P40/M30	11.50	4.50	5.50	78.50	91.2	12.99	350	Fine/Medium
STAINLESS STEELS (M)	Z56	C5	P35/M35	10.10	7.05	12.70	70.15	91.4	12.22	330	Medium/Coarse
STAINLESS STEELS (M)	Z54	C5	P50/M50	12.50	4.00	9.00	74.50	90.3	12.79	380	Medium
NON-FERROUS (K) CAST IRON / ALUMINUM	Z4	C3/C4	K01	3.75			96.25	92.8	15.18	275	Extra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	UF306	C2/C3	K10	6.00			94.00	93.5	14.82	400	Ultra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z23	C3	K10	6.00			94.00	92.8	14.94	360	Extra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	UF108	C1/C2	K20	8.00			92.00	92.6	14.65	475	Ultra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z1	C1/C2	K25	8.00			92.00	91.7	14.70	450	Extra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z20	C2	K20	6.25		4.25	89.50	92.0	14.73	340	Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z22	C2	K20	6.00			94.00	91.8	14.94	350	Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	UF110	C2	K25	10.00			90.00	92.3	14.44	525	Ultra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z1	C1	K25	8.00			92.00	91.7	14.70	450	Extra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	UF112	C1	K30	12.00			88.00	91.8	14.20	550	Ultra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	Z9	C1/C2	K30	10.00			90.00	91.3	14.50	480	Extra Fine
NON-FERROUS (K) CAST IRON / ALUMINUM	UF115	C1	K35	15.00			85.00	91.2	13.94	600	Ultra Fine
HIGH TEMP ALLOY (S)	Z23	C3	K10	6.00			94.00	92.8	14.94	360	Extra Fine
HIGH TEMP ALLOY (S)	UF110	C2	K25	10.00			90.00	92.3	14.44	525	Ultra Fine
HIGH TEMP ALLOY (S)	Z9	C1/C2	K30	10.00			90.00	91.3	14.50	480	Extra Fine

WEAR RESISTANCE
TOUGHNESS

TUNGSTEN CARBIDE GRADES

Ultra-met Grade	A.N.S.I. Code	ISO Code	Percent (%)					Density (g/cc)	TRS (KSI)	Grain Size
			CO	TIC	TA/NBC	WC	HRA			
Z1	C2/C3	K15-K30	8.00			92.00	91.7	14.70	450	Extra Fine
Z4	C4/C9	K05-K10	3.75			96.25	92.8	15.18	275	Extra Fine
Z9	C2/C3	K20-K40	10.00			90.00	91.3	14.50	480	Extra Fine
Z13	C5/C6	P30-P40/K40	11.00		0.50	88.50	89.8	14.26	360	Medium/Coarse
Z14	C5/C6	P35-P40/M40	12.00	0.50	2.50	85.00	90.2	14.07	540	Fine/Medium
Z20	C7/C8	P05-P15	6.25		4.25	89.50	92.0	14.73	340	Fine
Z22	C2	K15-K20	6.00			94.00	91.8	14.94	350	Fine
Z23	C2/C3	K10-K30	6.00			94.00	92.8	14.90	360	Extra Fine
Z50	C6	P20-P30	8.70	8.25	8.80	74.25	91.3	12.23	310	Medium
Z52	C5	P35-P40/M40	11.50	4.50	5.50	78.50	91.2	12.96	350	Fine/Medium
Z54	C5	P35-P50/M50	12.50	4.00	9.00	74.50	90.3	12.85	380	Medium
Z55	C5	P35-P40	10.50	6.00	14.50	69.00	91.3	12.36	350	Fine/Medium
Z56	C5	P35-P40/M40	10.10	7.05	12.70	70.15	91.4	12.22	330	Medium/Coarse
Z57	C15	C15A	14.00		20.00	66.00	87.8	13.22	380	Medium/Coarse
Z60	C6	P20-P30/M20	8.00	6.00	4.50	81.50	92.1	12.95	325	Fine
Z72	C6	P20-P35/M40	10.00	8.130	6.50	75.380	91.8	12.27	300	Fine
ZS16	C8*	P05-P10/M10	5.50	3.00	5.00	86.50	91.3	13.84	270	Medium
ZS17	C6*	P20-P25/M10	6.50	4.50	6.50	82.50	91.8	13.35	250	Medium
ZS19	C1/C6 *	K30-K40/P20-P35	9.75		7.60	82.65	90.9	14.15	370	Fine
ZC9	C14		9.50			90.50	87.5	14.57	400	Coarse
ZM6	C9/C12		6.00			94.00	90.0	14.94	350	Coarse
ZM12	C14		12.00			88.00	88.3	14.31	390	Medium/Coarse
ZM15	C14		15.00			85.00	87.0	14.02	450	Medium/Coarse
ZM18	C14		18.00			82.00	85.5	13.74	475	Coarse
UF306	C3/C4	K5-K10	6.00			94.00	93.5	14.82	400	Ultra Fine
UF108	C2/C4	K10-K20	8.00			92.00	92.6	14.60	475	Ultra Fine
UF110	C1/C2	K15-K40	10.00			90.00	92.3	14.40	525	Ultra Fine
UF112	C1/C2	K20-K40	12.00			88.00	91.8	14.18	550	Ultra Fine
UF115	C1	K30-K40	15.00			85.00	91.2	13.88	600	Ultra Fine
Z15	Wear	Wear	6.0-10.0	0-3.0	0-3.0	Balance	91.4	14.10	N/A	Fine/Coarse
ZW12	Wear	Wear	10.0-14.0	0-3.0	0-3.0	Balance	88.3	14.30	N/A	Fine/Coarse

CERMET AND NICKEL GRADES

Ultra-met Grade	A.N.S.I. Code	ISO Code	Percent (%)					Density (g/cc)	TRS (KSI)	Grain Size
			Ni	TiMoCn	Mo	WC	HRA			
ZC3	C7/C8	P05-P10	11.90	87.00	1.10		93.0	6.10	285	Medium
ZC14	C6/C7	P05-P25	13.05	85.00	1.95		92.5	6.13	290	Medium
ZN8		K10	8.00		1.15	90.85	91.8	14.65	325	Medium

ANSI Designations

T N R A 4 3 0

T = SHAPE | N = RELIEF ANGLE | R = TOLERANCES | A = TYPE | 4 = SIZE I.C. | 3 = THICKNESS | 0 = RADIUS

SHAPE

A-Parallelogram 85°
B-Parallelogram 82°
C-Diamond 80°
D-Diamond 55°
E-Parallelogram 55°
F-Coffin
H-Hexagon 120°
L-Rectangle 90°
M-Diamond 86°
O-Octagon 135°
P-Pentagon 108°
R-Round
S-Square 90°
T-Triangle 60°
V-Diamond 35°
W-Trigon 80°

TOLERANCES

INSERT BLANKS

R=Blank with grind Stock on all surfaces

S=Blank with grind stock on top and bottom surfaces only

INSERTS GROUND TO TOLERANCES FROM BLANKS

	I.C.	Thick.
A	±.001	±.001
B	±.001	±.005
C	±.001	±.001
D	±.001	±.005
E	±.001	±.001
G	±.001	±.005
H	±.005	±.001
M	±.002-.004	±.005

SIZE I.C.

Regular Polygons and Diamonds -Number of eighths of an inch in the inscribed circle as follows:

Examples

5/32	inch I.C.	=1.2
3/16	inch I.C.	=1.5
7/32	inch I.C.	=1.8
1/4	inch I.C.	=2
5/16	inch I.C.	=2.5
3/8	inch I.C.	=3
1/2	inch I.C.	=4
5/8	inch I.C.	=5
3/4	inch I.C.	=6
1	inch I.C.	=8

Rectangles and Parallelograms- Use two digits to size:

First digit-Number of eighths Of an inch in width

Second digit-Number of fourths of an inch in length.

CUTTING POINTS RADIUS

0 = Sharp Corner
1 = 1/64 Radius
2 = 1/32 Radius
3 = 3/64 Radius
4 = 1/16 Radius
6 = 3/32 Radius
8 = 1/8 Radius

RELIEF ANGLE

N-0°
A-3°
B-5°
C-7°
P-11°
D-15°
E-20°
F-25°
G-30°

INSERT TYPE

A - With hole
B - With hole and one countersink (70° - 90°)
C - With hole and two countersinks (70° - 90°)
D - Smaller than 1/4" I.C. With hole
E - Smaller than 1/4" I.C. Without hole
F - Without hole with chip grooves on two rake faces
G - With hole and chip grooves on two rake faces
H - With hole, one c'sink (70° - 90°) and chip groove on one rake face
J - With hole, two c'sinks (70° -90°) and chip grooves on two rake faces
K - Smaller than 1/4" I.C. With hole and chip groove
L - Smaller than 1/4" I.C. Without hole and chip groove
M - With hole and chip groove on one rake face
N - Without hole
P - 10° Positive surface contour with hole and chip groove
Q - With hole and two countersinks (40°-60°)
S - 20° Positive surface contour with hole and chip groove
T - Hole, one c'sink (40° - 60°) and chip groove on rake face
W - With hole and one countersink (40° - 60°)
X - Special design

INSERT THICKNESS

Regular Polygons, Diamonds, Rectangles and Parallelograms - Number of sixteenths of an inch in thickness as follows:

Examples

-		*= variable*
1/16	*inch*	*= 1*
3/32	*inch*	*= 1.5*
1/8	*inch*	*= 2*
5/32	*inch*	*= 2.5*
3/16	*inch*	*= 3*
7/32	*inch*	*= 3.5*
1/4	*inch*	*= 4*
5/16	*inch*	*= 5*
3/8	*inch*	*= 6*
7/16	*inch*	*= 7*
1/2	*inch*	*= 8*

Generally variable thickness available on all tooling listed.
Call 1-800-543-9952 for quote request.

THICKNESS GRIND STOCK *

FOR I.C. SMALLER THAN 1" = .010 / .018
FOR 1" I.C. AND LARGER = .017 / .023

NOTE: BLANKS WITH GRIND STOCK ON TOP AND BOTTOM

I.C. GRIND STOCK

FOR I.C. SMALLER THAN 1" = .014 / .020
FOR 1" I.C. AND LARGER = .020 / .030
TRIANGLES = .017 / .030

I.C. TOLERANCES = ±.002 - ±.010

ISO Designations

A-Parallelogram 85°
B-Parallelogram 82°
C-Diamond 80°
D-Diamond 55°
E-Parallelogram 55°
F-Coffin
H-Hexagon 120°
L-Rectangle 90°
M-Diamond 86°
O-Octagon 135°
P-Pentagon 108°
R-Round
S-Square 90°
T-Triangle 60°
V-Diamond 35°
W-Trigon 80°

SHAPE

INSERT BLANKS

R=Blank with grind Stock on all surfaces

S=Blank with grind stock on top and bottom surfaces only

INSERTS GROUND TO TOLERANCES FROM BLANKS

	I.C.	Thick.
A	±.001	±.001
B	±.001	±.005
C	±.001	±.001
D	±.001	±.005
E	±.001	±.001
G	±.001	±.005
H	±.005	±.001
M	±.002-.004	±.005

TOLERANCES

Size I.C.

inch	I.C.		metric cutting edge length						
	in	mm	C	D	R	S	T	V	W
1.2 (5)	5/32	3,97	04	04	03	03	06		
1.5 (6)	3/16	4,76	04	05	04	04	08	08	S3
1.8 (7)	7/32	5,56	05	06	05	05	09	09	03
	.236	6,00			06				
2	1/4	6,35	06	07	06	06	11	11	04
2.5	5/16	7,94	08	09	07	07	13	13	05
	.315	8,00			08				
3	3/8	9,52	09	11	09	09	16	16	06
	.394	10,00			10				
3.5	7/16	11,11	11	13	11	11	19	19	07
	.472	12,00			12				
4	1/2	12,70	12	15	12	12	22	22	08
4.5	9/16	14,29	14	17	14	14	24	24	09
5	5/8	15,88	16	19	15	15	27	27	10
	.630	16,00			16				
5.5	11/16	17,46	17	21	17	17	30	30	11
6	3/4	19,05	19	23	19	19	33	33	13
	.787	20,00			20				
7	7/8	22,22	22	27	22	22	38	38	15
	.984	25,00			25				
8	1	25,40	25	31	25	25	44	44	17
10	1 1/4	31,75	32	38	31	31	54	54	21
	1.260	32,00			32				

T	N	R	A	16	04	00
SHAPE	RELIEF ANGLE	TOLERANCES	TYPE	SIZE I.C.	THICKNESS	RADIUS

RELIEF ANGLE

N-0°
A-3°
B-5°
C-7°
P-11°
D-15°
E-20°
F-25°
G-30°

INSERT TYPE

A	M
G	R
N	W
T	X Special Design

THICKNESS

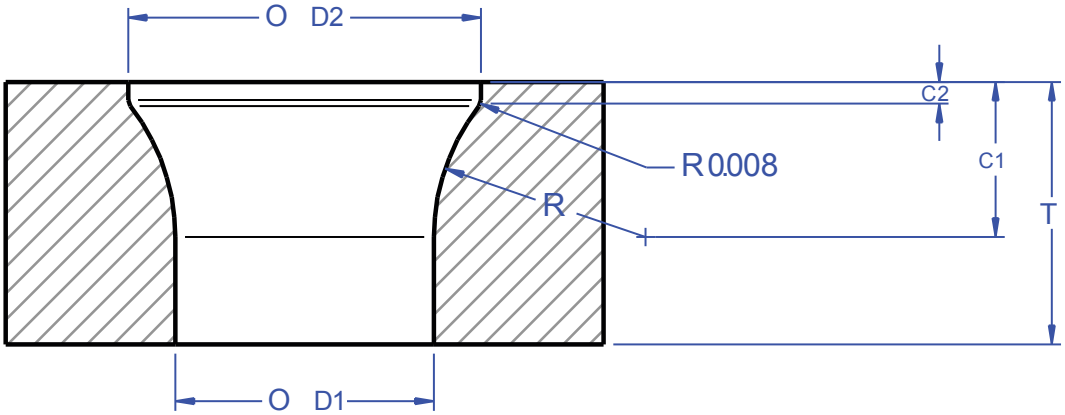
symbol		thickness	
in	metric	in	mm
.5 (1)		1/32	0,79
.6	T0	.040	1,00
1 (2)	01	1/16	1,59
1.2	T1	5.64	1,98
1.5 (3)	02	3/32	2,38
2	03	1/8	3,18
2.5	T3	5/32	3,97
3	04	3/16	4,76
3.5	05	7/32	5,56
4	06	1/4	6,35
5	07	5/16	7,94
6	09	3/8	9,52
7	11	7/16	11,11
8	12	1/2	12,70

CORNER RADIUS

symbol		corner radius	
in	metric	in	mm
0	01	.004	0,1
.5	02	.008	0,2
1	04	1/64	0,4
2	08	1/32	0,8
3	12	3/64	1,2
4	16	1/16	1,6
5	20	5/64	2,0
6	24	3/32	2,4
7	28	7/64	2,8
8	32	1/8	3,2
	00	round insert (inch)	
	M0	round insert (metric)	

ISO Holes

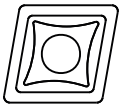
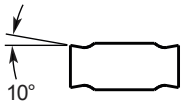
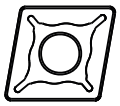
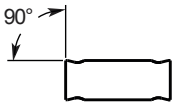
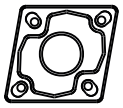
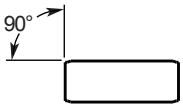
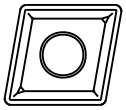
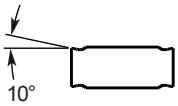
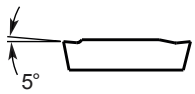
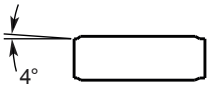
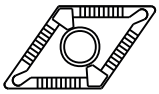
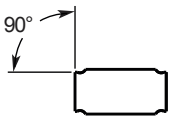
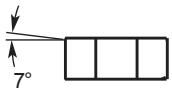
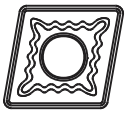
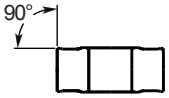
ISO Partly cylindrical hole, in order to guarantee interchangeability when mounting the insert by a countersunk head screw having a head taper angle between 40° and 60°, the form of the hole is partly cylindrical and its dimensions are related to the diameter of the inscribed circle (I.C.) of the insert. The Figure and Table below give the elements of definition of the fixing hole.



ISO 6987 PARTLY CYLINDRICAL HOLE (200-120E)							
I.C.	T	SCREW THREAD	D1	D2	C1	C2	R
0.187	0.078	M 1.8	0.085	0.114	0.070	0.008	0.106
0.219	0.094	M 2.2	0.100	0.130	0.054	0.008	0.079
0.250	0.094	M 2.5	0.110	0.146	0.057	0.008	0.079
0.312	0.125	M 3	0.134	0.177	0.071	0.012	0.098
0.375	0.125 / 0.156	M 3.5	0.173	0.236	0.106	0.018	0.138
0.500	0.187	M 4.5	0.216	0.295	0.129	0.018	0.177
0.625	0.219	M 4.5	0.216	0.295	0.129	0.018	0.177
0.750		M 6	0.256	0.354			0.197

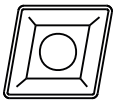
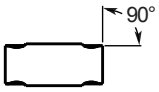
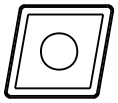
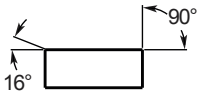
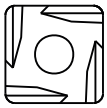
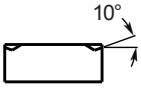
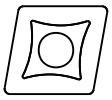
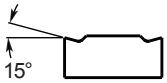
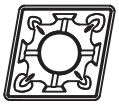
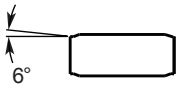
Chipbreaker Details

Topography after grinding.

Operation	Geometries	Chipbreaker profile	Designation	Description
General Purpose			GP1	Double Sided Chipbreaker: ("V" & "D" Styles Single Sided) IPR = .006 - .020 DOC = .040 - .175
General Purpose			GP2	Double Sided Chipbreaker: IPR = .010 - .025 DOC = .075 - .200
General Purpose			GP3	Double Sided Chipbreaker: IPR = .006 - .022 DOC = .050 - .185
General Purpose			GP4	Double Sided Chipbreaker: IPR = .006 - .020 DOC = .040 - .200
General Purpose			GP5	Single Sided Chipbreaker: IPR = .006 - .022 DOC = .040 - .175
General Purpose			GP6	Double Sided Chipbreaker: IPR = .006 - .020 DOC = .040 - .240
General Purpose			GP8	Double Sided Chipbreaker: IPR = .006 - .025 DOC = .075 - .200
General Purpose			SA	Double Sided Chipbreaker: IPR = .006 - .024 DOC = .025 - .250
General Purpose			EXA	Double Sided Chipbreaker: IPR = .010 - .025 DOC = .075 - .300

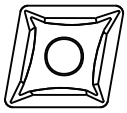
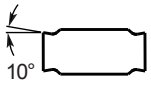
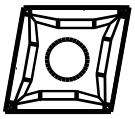
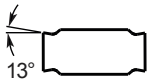
Chipbreaker Details

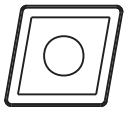
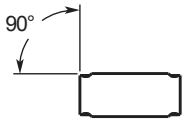
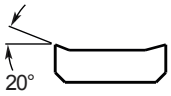
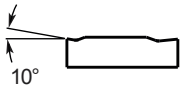
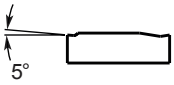
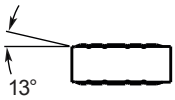
Topography after grinding.

Operation	Geometries	Chipbreaker profile	Designation	Description
Roughing			R1	Double Sided Chipbreaker: IPR = .008 - .028 DOC = .090 - .220
Roughing			R3	Single Sided Chipbreaker: IPR = .008 - .032 DOC = .050 - .300
Roughing			R4	Single Sided Chipbreaker: IPR = .008 - .032 DOC = .100 - .300
Roughing			R5	Single Sided Chipbreaker: IPR = .006 - .020 DOC = .040 - .175
Roughing			RA	Double Sided Chipbreaker: IPR = .010 - .030 DOC = .085 - .300

Chipbreaker Details

Topography after grinding.

Operation	Geometries	Chipbreaker profile	Designation	Description
Semi Finishing			F2	Double Sided Chipbreaker: IPR = .004 - .014 DOC = .015 - .080
Semi Finishing			F2A	Double Sided Chipbreaker: IPR = .004 - .014 DOC = .015 - .080

Operation	Geometries	Chipbreaker profile	Designation	Description
Finishing			F1	Double Sided Chipbreaker: IPR = .004 - .014 DOC = .007 - .060
Finishing			F3	Single Sided Chipbreaker: IPR = .003 - .015 DOC = .010 - .080
Finishing			F4	Single Sided Chipbreaker: IPR = .003 - .015 DOC = .010 - .080
Finishing			F5	Single Sided Chipbreaker: IPR = .006 - .020 DOC = .025 - .100
Finishing			FA	Double Sided Chipbreaker: IPR = .003 - .015 DOC = .005 - .050

Ultra-met®
carbide technologies

Turning

DIAMOND NEGATIVE
- 80 DEGREE
- 86 & 87 DEGREE
- 55 DEGREE
- 35 DEGREE

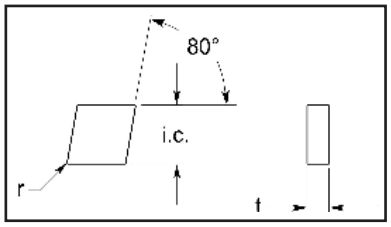
DIAMOND POSITIVE
- 80 DEGREE
- 85, 86 & 87 DEGREE
- 55 DEGREE
- 35 DEGREE

ROUND NEGATIVE
ROUND POSITIVE
SQUARE NEGATIVE
SQUARE CBN
SQUARE POSITVE
TRIANGLE NEGATIVE
TRIANGLE NEGATIVE OS
POSITIVE TRIANGLES
TRIGONS
HEAVY DUTY
- BAR PEELING
- RAILROAD

Ultra-met®
carbide technologies

80° Diamond Negative

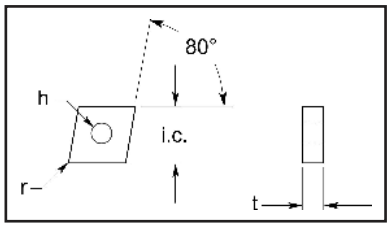
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
CNR320	.389/.395	.135/.143	0
CNR420	.514/.520	.135/.143	0
CNR430	.514/.520	.198/.206	0
CNR440	.514/.520	.260/.268	0
CNR4620	.478/.484	.135/.143	0
CNR520	.639/.645	.135/.143	0
CNR530	.639/.645	.198/.206	0
CNR540	.639/.645	.260/.268	0
CNR630	.764/.770	.198/.206	0
CNR638	.764/.770	.198/.206	1/8
CNR640	.764/.770	.260/.268	0

80° Diamond Negative With Hole

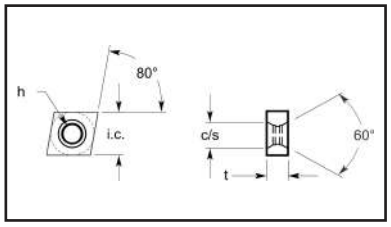
• variable thickness quoted on request



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNRA32.50	.389/.395	.166/.174	.147/.153	0
CNRA320	.389/.395	.135/.143	.147/.153	0
CNRA330	.389/.395	.198/.206	.148/.152	0
CNRA420	.514/.520	.135/.143	.200/.206	0
CNRA430	.514/.520	.198/.206	.200/.206	0
* CNRA430-030X45°	.515/.525	.195/.205	.200/.206	0
CNRA440	.514/.520	.260/.268	.200/.206	0
CNRA520	.639/.645	.135/.143	.248/.252	0
CNRA530	.639/.645	.198/.206	.248/.252	0
CNRA540	.639/.645	.260/.268	.247/.253	0
CNRA543	.639/.645	.260/.268	.247/.253	3/64
CNRA630	.764/.770	.198/.206	.309/.315	0
CNRA640	.764/.770	260/.268	.309/.315	0
CNRA660	.764/.770	.390/.398	.310/.314	0

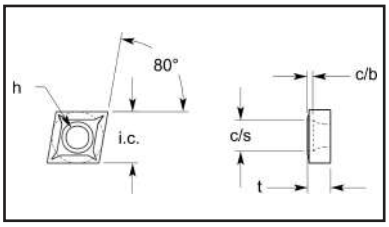
* with chamf. both sides of hole

80° Diamond Negative With Hole & Countersinks



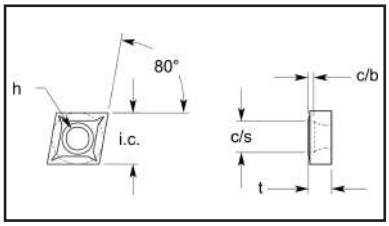
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
CNRQ3.530-60	.451/.457	.198/.206	.163/.173	.258/.268
CNRQ3.540-60	.451/.457	.260/.268	.163/.173	.269/.279

80° Diamond Negative F5 Chipbreaker With ISO Style Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
CNRT1.81.50-F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT1.81.51-F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT21.51F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT21.52F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT22.52F5	.264/.270	.170/.176	.107/.113	.143/.149	.029/.035	0
CNRT221F5	.264/.270	.140/.146	.107/.113	.143/.149	.029/.035	0
CNRT32.51F5	.389/.395	.172/.178	.170/.176	.233/.239	.027/.033	0
CNRT32.52F5	.389/.395	.172/.178	.170/.176	.233/.239	.027/.033	0
CNRT431F5	.514/.520	.204/.210	.213/.219	.292/.298	.037/.043	0
CNRT432F5	.514/.520	.204/.210	.213/.219	.292/.298	.037/.043	0

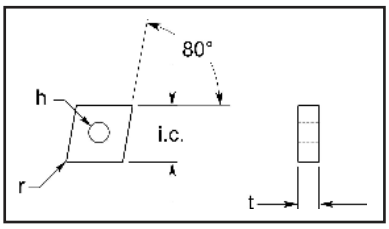
80° Diamond Negative With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
CNRW1.51.50	.199/.209	.106/.114	.082/.088	.111/.117	.017/.023
CNRW1.81.50	.233/.239	.104/.110	.095/.101	.127/.133	.036/.042
CNRW21.50	.264/.270	.104/.112	.107/.113	.143/.149	.036/.042
CNRW220	.264/.270	.136/.142	.107/.113	.143/.149	.036/.042
CNRW32.50	.389/.395	.167/.173	.170/.176	.233/.239	.034/.040
CNRW32.50R/L	.389/.395	.166/.174	.158/.164	.216/.222	.043
CNRW330	.389/.395	.199/.205	.170/.176	.233/.239	.037
CNRW430	.514/.520	.198/.206	.213/.219	.292/.298	.043/.049
CNRW53.50	.639/.645	.229/.237	.221/.227	.317/.323	.039/.045
CNRW530	.639/.645	.198/.206	.221/.227	.317/.323	.039/.045

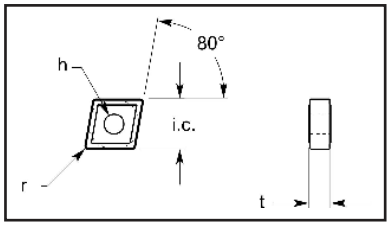
80° Utility Diamond Negative With Hole

• variable thickness quoted on request



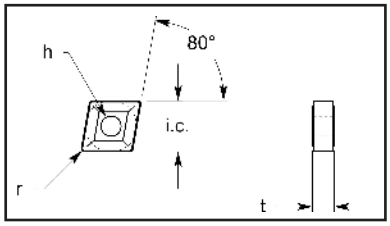
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSA431	.497/.503	.198/.206	.200/.206	1/64
CNSA432	.497/.503	.198/.206	.200/.206	1/32
CNSA433	.497/.503	.198/.206	.200/.206	3/64
CNSA434	.497/.503	.198/.206	.200/.206	1/16
CNSA436	.497/.503	.198/.206	.201/.205	3/32
CNSA443	.497/.503	.260/.268	.200/.206	3/64
CNSA446	.497/.503	.260/.268	.200/.206	3/32
CNSA542	.622/.628	.260/.268	.247/.253	1/32
CNSA543	.622/.628	.260/.268	.247/.253	3/64
CNSA642	.747/.753	.260/.268	.309/.315	1/32
CNSA643	.747/.753	.260/.268	.309/.315	3/64
CNSA644	.747/.753	.260/.268	.309/.315	1/16
CNSA646	.747/.753	.260/.268	.309/.315	3/32

80° Utility Diamond Negative F1 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG422F1	.497/.503	.129/.135	.200/.206	1/32
CNSG431F1	.497/.503	.191/.197	.200/.206	1/64
CNSG432F1	.497/.503	.191/.197	.200/.206	1/32
CNSG433F1	.497/.503	.191/.197	.200/.206	3/64
CNSG442F1	.497/.503	.254/.260	.200/.206	1/32

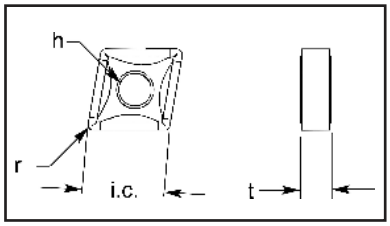
80° Utility Diamond Negative R1 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG422R1	.497/.503	.129/.135	.200/.206	1/32
CNSG432R1	.497/.503	.191/.197	.200/.206	1/32
CNSG434R1	.497/.503	.191/.197	.200/.206	1/16
CNSG442R1	.497/.503	.254/.260	.200/.206	1/32
CNSG532R1	.622/.628	.193/.199	.247/.253	1/32
CNSG542R1	.622/.628	.256/.262	.247/.253	1/32
CNSG543R1	.622/.628	.256/.262	.247/.253	3/64
CNSG544R1	.622/.628	.256/.262	.247/.253	1/16
CNSG548R1	.622/.628	.256/.262	.247/.253	1/8
CNSG634R1	.747/.753	.199/.205	.309/.315	1/16
CNSG642R1	.747/.753	.256/.262	.309/.315	1/32
CNSG643R1	.747/.753	.256/.262	.309/.315	3/64
CNSG644R1	.747/.753	.261/.267	.309/.315	1/16

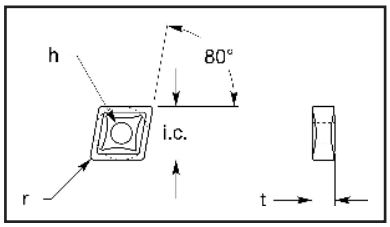
NEW

80° Diamond Negative 2B Chipbreaker With Hole



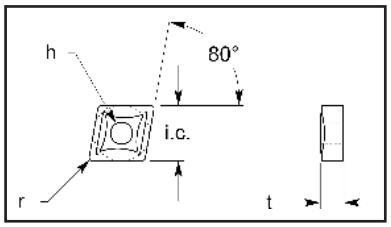
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG432-2B	.497/.503	.189/.195	.201/.205	1/32

80° Utility Diamond Negative GP1 Chipbreaker With Hole



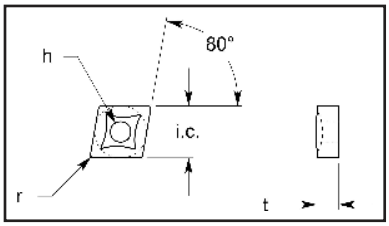
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSP421GP1	.497/.503	.138/.144	.201/.205	1/64
CNSP422GP1	.497/.503	.138/.144	.201/.205	1/32
CNSP431GP1	.497/.503	.200/.206	.200/.206	1/64
CNSP432GP1	.497/.503	.200/.206	.200/.206	1/32
CNSP542GP1	.622/.628	.259/.265	.247/.253	1/32
CNSP543GP1	.622/.628	.259/.265	.247/.253	3/64
CNSP632GP1	.747/.753	.200/.206	.309/.315	1/32
CNSP642GP1	.747/.753	.263/.269	.309/.315	1/32
CNSP643GP1	.747/.753	.263/.269	.309/.315	3/64
CNSP644GP1	.747/.753	.263/.269	.309/.315	1/16

80° Utility Diamond Negative One Sided GP1 Chipbreaker With Hole



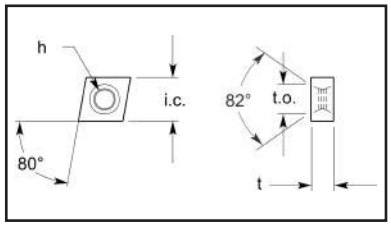
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSP542GP1-1C/B	.622/.628	.265/.271	.248/.252	1/32
CNSP543GP1-1C/B	.622/.628	.262/.268	.248/.252	3/64
CNSP644GP1/1-C/B	.747/.753	.265/.271	.310/.314	1/16

80° Utility Diamond Negative R5 Chipbreaker With Hole



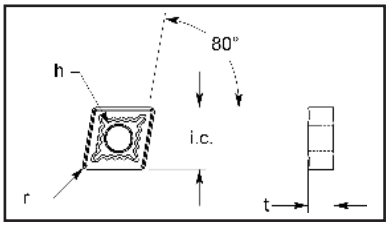
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSS432R5	.497/.503	.194/.200	.200/.206	1/32
CNSS642R5	.747/.753	.261/.267	.309/.315	1/32
CNSS643R5	.747/.753	.261/.267	.309/.315	3/64

80° Diamond Negative With Hole And Dbl. Countersinks



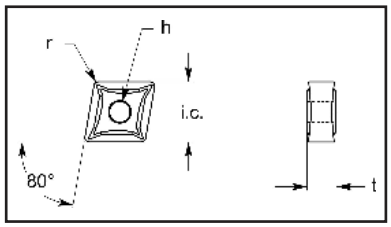
Part No.	Dimensional Specifications			
	i.c.	t	h	t.o.
SPR55R04-NEG	.580/.586	.261/.267	.207/.219	.328/.340

80° Utility Diamond Negative EXA Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG543-EXA	.622/.628	.259/.265	.247/.253	3/64

80° Utility Diamond Negative F2 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSP642F2	.747/.753	.263/.269	.309/.315	1/32

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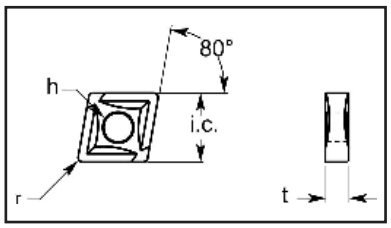
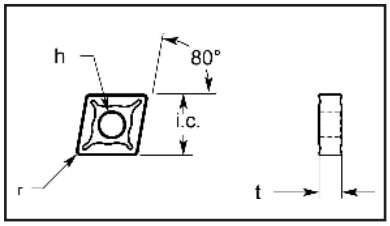
80° Utility Diamond Negative R4 Chipbreaker With Hole



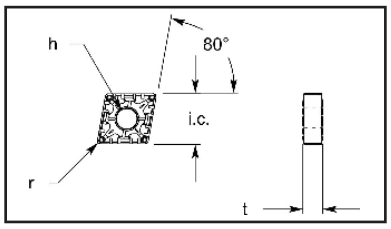
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSP643R4	.747/.753	.260/.266	.309/.315	3/64

80° Utility Diamond Negative GP2 Chipbreaker With Hole



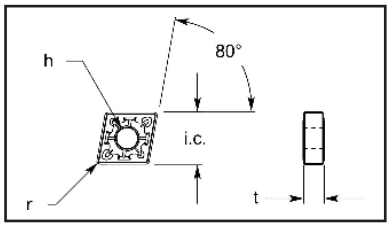
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSX432GP2	.497/.503	.189/.195	.200/.206	1/32

80° Utility Diamond Negative FA Chipbreaker With Hole



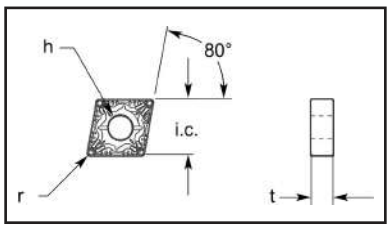
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG432-FA	.497/.503	.196/.202	.200/.206	1/32

80° Utility Diamond Negative RA Chipbreaker With Hole



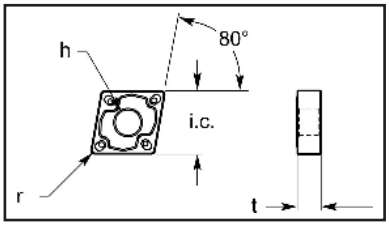
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG432-RA	.497/.503	.196/.202	.200/.206	1/32

80° Utility Diamond Negative SA Chipbreaker With Hole



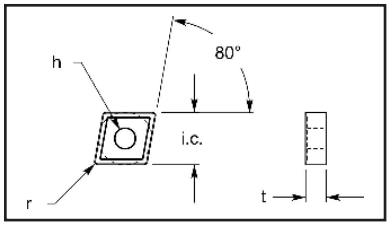
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG432-SA	.497/.503	.196/.202	.200/.206	1/32

80° Utility Diamond Negative GP3 Chipbreaker With Hole



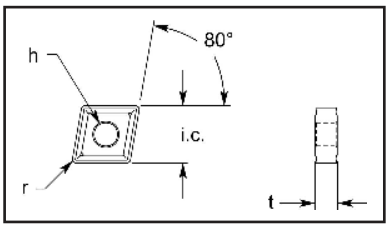
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSG432GP3	.497/.503	.195/.201	.200/.206	1/32

80° Utility Diamond Negative R3 Chipbreaker With Hole



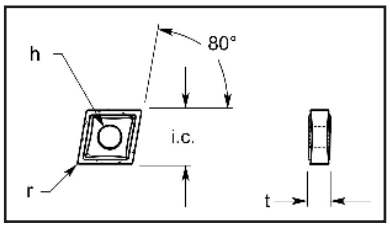
Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSM432R3	.497/.503	.191/.197	.200/.206	1/32
CNSM643R3	.747/.753	.254/.260	.309/.315	3/64

80° Utility Diamond Negative GP4 Chipbreaker With Hole

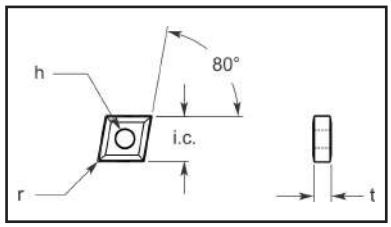


Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNSP432GP4	.497/.503	.197/.206	.200/.206	1/32

80° Diamond Negative Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNRP430	.514/.520	.203/.209	.201/.205	.0125



Part No.	Dimensional Specifications			
	i.c.	t	h	r
CNRG430F1	.514/.520	.197/.203	.200/.206	0

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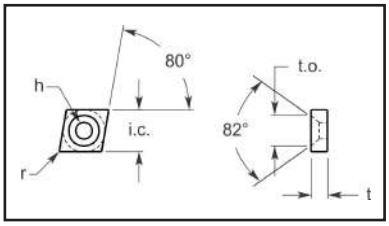
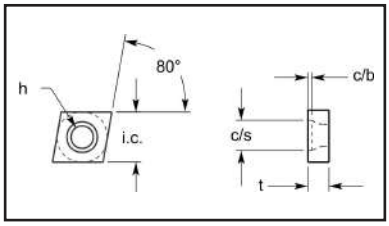
80° Diamond Negative With Hole & Countersink



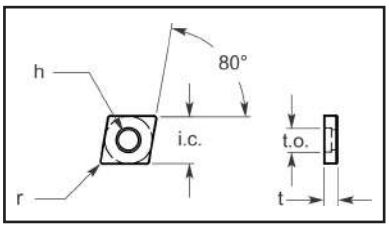
Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
CNRB50/51	.176/.186	.060/.070	.086/.090	.126/.130	90°	.007
CNRB430-#8FHCS	.514/.520	.198/.206	.175/.181	.373/.379	82°	0

80° Diamond Negative With ISO Style Hole



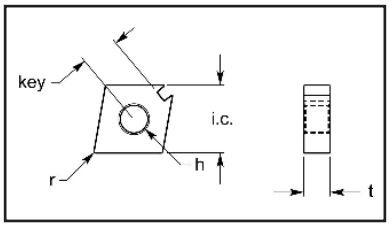
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DWG#IN-2191D	.639/.645	.236/.244	.221/.227	.317/.323	.039/.045

80° Diamond Negative With Hole And Counterbore



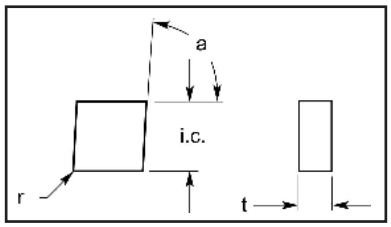
Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
USCN-64	.735/.745	.198/.206	.309/.315	.372/.378	3/64

80° Diamond Negative Indexable CBN Pocket



Part No.	Dimensional Specifications				
	i.c.	t	h	key	r
CH6450	.515/.525	.195/.205	.200/.210	.264/.270	.012

86° 87° Diamond Negative



MPR, NPR, PRPR and UP Styles may overlap in Dimensional Specifications Different nomenclature is only for individual customers reference.

Part No.	Dimensional Specifications			
	i.c.	t	r	a
MNR420	.514/.520	.135/.143	0	86°
MNR430	.514/.520	.198/.206	0	86°
MNR430/87	.514/.520	.198/.206	0	87°
MNR52.50	.639/.645	.166/.174	0	86°
MNR52.52	.639/.645	.166/.174	1/32	86°
MNR520	.639/.645	.135/.143	0	86°
MNR530	.639/.645	.198/.206	0	86°
MNR532	.639/.645	.198/.206	1/32	86°
MNR550	.639/.645	.166/.174	0	86°
MNR552	.639/.645	.166/.174	1/32	86°
MNR630	.764/.770	.198/.206	0	86°
MNR640	.764/.770	.260/.268	0	86°

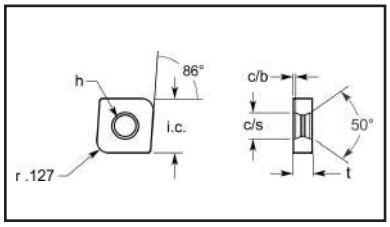
Part No.	Dimensional Specifications			
	i.c.	t	r	a
NNR630	.764/.770	.198/.206	0	87°
NNR640	.764/.770	.260/.268	0	87°

Part No.	Dimensional Specifications			
	i.c.	t	r	a
PRNR630	.764/.770	.198/.206	0	87°

Part No.	Dimensional Specifications			
	i.c.	t	r	a
UP66N	.764/.770	.198/.206	0	87°

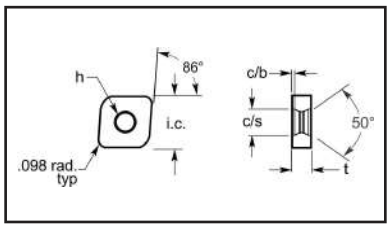
Part No.	Dimensional Specifications			
	i.c.	t	r	a
UFMB90N19	.769/.775	.232/.238	0	87°

86° 87° Diamond Negative With Hole & Countersinks



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DWG#E-22072-020BLANK	.605/.611	.207/.215	.230/.236	.286/.292	.025/.031

86° 87° Diamond Negative With Hole and Dbl. Countersinks



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DWG#E23139	.642/.652	.209/.215	.228/.232	.295/.299	.098

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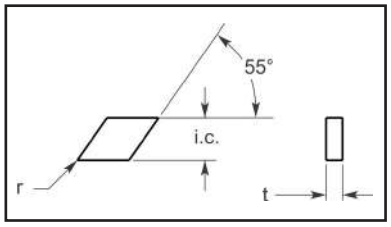
55° Diamond Negative

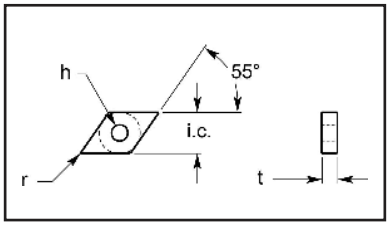
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
DNR32.50	.389/.395	.166/.174	0
DNR320	.389/.395	.135/.143	0
DNR330	.389/.395	.198/.206	0
DNR430	.514/.520	.198/.206	0
DNR530	.639/.645	.198/.206	0
DNR540	.639/.645	.260/.268	0

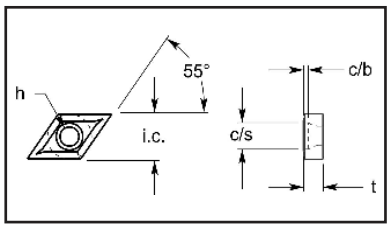
55° Diamond Negative With Hole

• variable thickness quoted on request



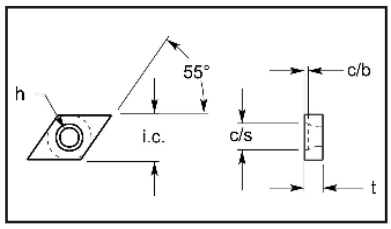
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNRA2.530	.328/.338	.200/.208	.147/.153	0
DNRA32.50	.389/.395	.166/.174	.148/.152	0
DNRA320	.389/.395	.135/.143	.147/.153	0
DNRA330	.389/.395	.198/.206	.147/.153	0
DNRA360	.389/.395	.385/.393	.147/.153	0
DNRA430	.514/.520	.198/.206	.200/.206	0
DNRA440	.514/.520	.260/.268	.200/.206	0
DNRA4630	.478/.484	.198/.206	.200/.206	0
DNRA530	.639/.645	.198/.206	.248/.252	0
DNRA530.635IC	.649/.655	.198/.206	.185/.189	0
DNRA540	.639/.645	.260/.268	.248/.252	0
DNRA540.635	.649/.655	.260/.268	.185/.189	0
DNRA560.635	.649/.655	.285/.393	.185/.189	0

55° Diamond Negative F5 Chipbreaker With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DNRT21.51F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035
DNRT21.52F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035
DNRT32.51F5	.389/.395	.172/.178	.170/.176	.233/.239	.040/.046
DNRT32.52F5	.389/.395	.172/.178	.170/.176	.233/.239	.040/.046
DNRT431F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043
DNRT432F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043

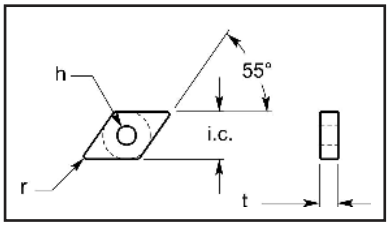
55° Diamond Negative With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DNRW21.50	.264/.270	.104/.112	.107/.113	.143/.149	.036/.042
DNRW220	.264/.270	.135/.143	.107/.113	.143/.149	.036/.042
DNRW32.50	.389/.395	.166/.174	.170/.176	.233/.239	.046/.052
DNRW330	.389/.395	.198/.206	.170/.176	.233/.239	.046/.052
DNRW430	.514/.520	.198/.206	.213/.219	.292/.298	.043/.049

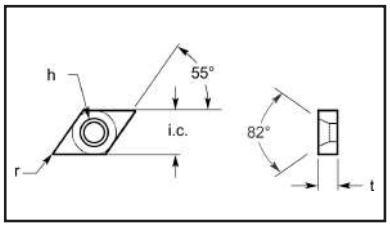
55° Utility Diamond Negative With Hole

• variable thickness quoted on request



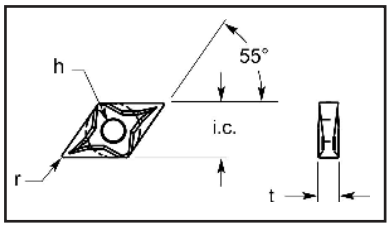
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSA431	.497/.503	.198/.206	.200/.206	1/64
DNSA432	.497/.503	.198/.206	.200/.206	1/32
DNSA433	.497/.503	.198/.206	.200/.206	3/64
DNSA434	.497/.503	.198/.206	.200/.206	1/16
DNSA443	.497/.503	.260/.268	.200/.206	3/64
DNSA444	.497/.503	.260/.268	.200/.206	1/16
DNSA533	.622/.628	.198/.206	.247/.253	3/64
DNSA542	.622/.628	.260/.268	.247/.253	1/32
DNSA543	.622/.628	.260/.268	.247/.253	3/64
DNSA544	.622/.628	.267/.273	.247/.253	1/16

55° Diamond Negative With Hole



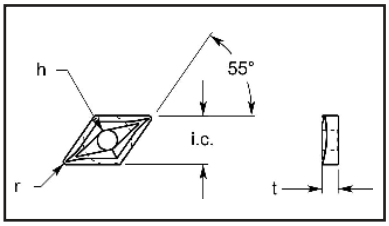
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNRB320	.393/.399	.135/.143	.153/.159	0

55° Diamond Negative With P Top Form and Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNRP430	.514/.520	.193/.194	.200/.206	.0125

55° Utility Diamond Negative R5 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSS432R5	.497/.503	.195/.201	.200/.206	1/32
DNSS442R5	.497/.503	.258/.264	.200/.206	1/32
DNSS532R5	.622/.628	.200/.206	.247/.253	1/32
DNSS542R5	.622/.628	.260/.266	.248/.252	1/32

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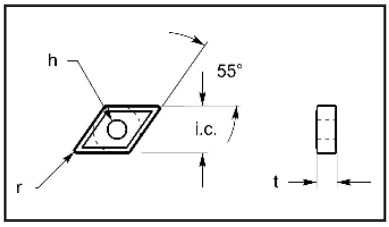
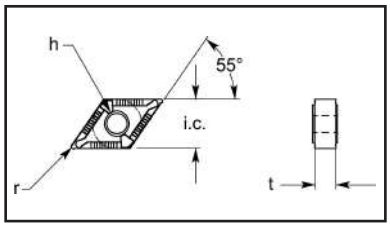
55° Utility Diamond Negative F1 Chipbreaker With Hole



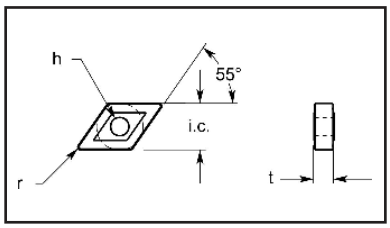
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSG431F1	.497/.503	.191/.197	.200/.206	1/64
DNSG432F1	.497/.503	.191/.197	.200/.206	1/32
DNSG441F1	.497/.503	.254/.260	.200/.206	1/64
DNSG442F1	.497/.503	.254/.260	.200/.206	1/32

55° Utility Diamond Negative GP8 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSG433GP8	.497/.503	.202/.208	.201/.205	3/64
DNSG443GP8	.497/.503	.264/.270	.201/.205	3/64

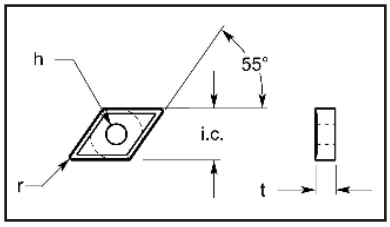
55° Utility Diamond Negative R1 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSG532R1	.622/.628	.196/.202	.247/.253	1/32
* DNSG532R1-OS	.635/.650	.196/.202	.247/.253	1/32
DNSG533R1	.622/.628	.196/.202	.247/.253	3/64
DNSG542R1	.622/.628	.261/.267	.247/.253	1/32
DNSG543R1	.622/.628	.261/.267	.247/.253	3/64

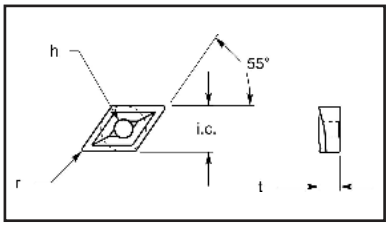
* No grind stock on periphery

55° Utility Diamond Negative R3 Chipbreaker With Hole



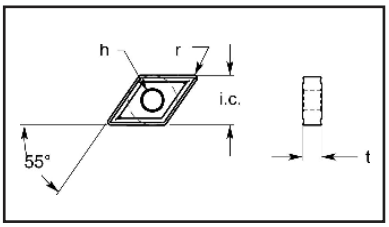
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSM432R3	.497/.503	.192/.198	.200/.206	1/32
DNSM542R3	.622/.628	.254/.260	.248/.253	1/32
DNSM543R3	.622/.628	.254/.260	.248/.253	3/64

55° Utility Diamond Negative GP1 Chipbreaker With Hole



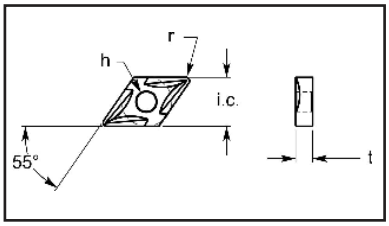
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSP431GP1	.497/.503	.198/.204	.200/.206	1/64
DNSP432GP1	.497/.503	.198/.204	.200/.206	1/32
DNSP433GP1	.497/.503	.198/.204	.200/.206	3/64
DNSP442GP1	.497/.503	.261/.267	.200/.206	1/32
DNSP532GP1	.622/.628	.198/.204	.247/.253	1/32
DNSP533GP1	.622/.628	.198/.204	.247/.253	3/64
DNSP542GP1	.622/.628	.261/.267	.247/.253	1/32
DNSP543GP1	.622/.628	.261/.267	.247/.253	3/64

55° Utility Diamond Negative GP4 Chipbreaker With Hole



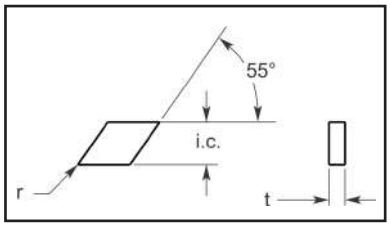
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSP431GP4	.497/.503	.193/.199	.200/.206	1/64
DNSP432GP4	.497/.503	.193/.199	.200/.206	1/32

55° Utility Diamond Negative R4 Chipbreaker With Hole



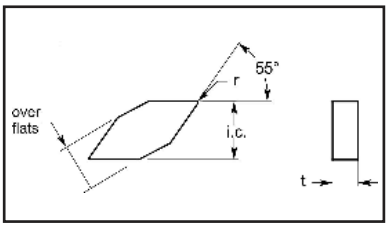
Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNSP543R4	.622/.628	.260/.266	.247/.253	3/64

55° Diamond Negative



Part No.	Dimensional Specifications		
	i.c.	t	r
DNS544	.622/.628	.267/.273	1/16

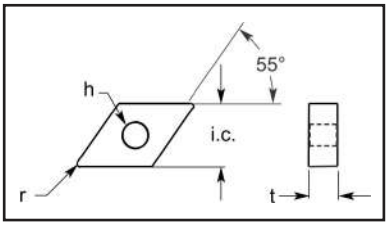
55° Diamond Negative With Flats



Part No.	Dimensional Specifications			
	i.c.	t	over flats	r
DNR320F	.389/.395	.135/.143	.295/.301	0
DNR531F	.639/.645	.198/.206	.464/.470	1/64
DNRT320F	.410/.416	.135/.143	.263/.269	0
DNR4620F	.478/.484	.135/.143	.483	0
DNR4630F	.478/.484	.198/.206	.483	0

55° Utility Diamond Negative With Hole

Variable thickness quoted on request



Part No.	Dimensional Specifications			
	i.c.	t	h	r
DNXA431	.504/.508	.198/.206	.200/.206	1/64

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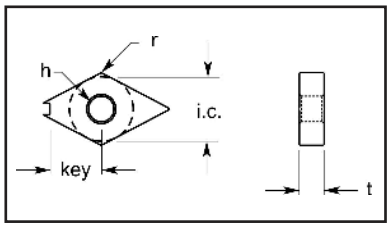
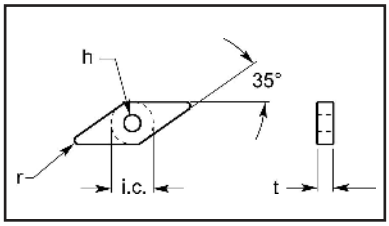
55° Diamond Negative Indexable CBN Pocket



Part No.	Dimensional Specifications				
	i.c.	t	h	key	r
LX-0881-3	.512/.522	.195/.205	.200/.210	.412/.418	.012
LX-0604-1T	.512/.522	.195/.205	.200/.210	.388/.394	.012

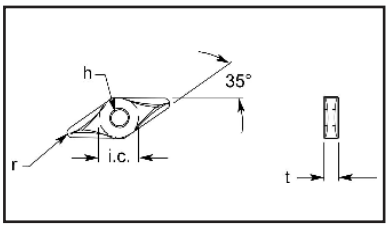
35° Diamond Negative With Hole

• variable thickness quoted on request



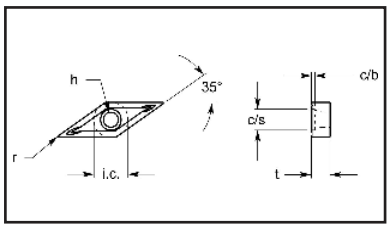
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNRA321	.389/.395	.135/.143	.147/.153	1/64
VNRA330	.389/.395	.202/.207	.147/.153	0
VNRA331	.389/.395	.202/.207	.147/.153	1/64
VNRA331/CITD	.389/.395	.202/.207	.148/.152	1/64
VNRA421	.514/.520	.140/.145	.201/.205	1/64
VNRA43.51	.520/.525	.230/.236	.200/.206	1/64
VNRA431	.520/.525	.202/.208	.200/.206	1/64
VNRA441	.520/.525	.265/.270	.201/.205	1/64

35° Diamond Negative With P Top Form and Hole



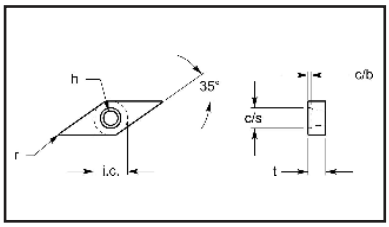
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNRP330	.389/.395	.194/.200	.148/.152	.0125
VNRP332	.389/.395	.194/.200	.148/.152	.040

35° Diamond Negative F5 Chipbreaker With ISO Style Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
VNRT21.51F5	.264/.270	.109/.115	.108/.112	.143/.149	.028/.036	1/64
VNRT21.52F5	.264/.270	.109/.115	.108/.112	.143/.149	.028/.036	1/64
VNRT221F5	.264/.270	.141/.147	.108/.112	.143/.149	.028/.036	1/64
VNRT222F5	.264/.270	.141/.147	.108/.112	.143/.149	.028/.036	1/64
VNRT32.51F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT32.52F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT32.53F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT331F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0
VNRT332F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0
VNRT333F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0

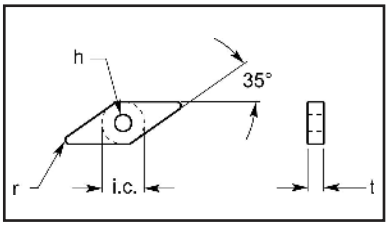
35° Diamond Negative With ISO Style Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
VNRW21.51	.264/.270	.104/.112	.107/.113	.155/.160	.019/.027	1/64
VNRW221	.264/.270	.135/.143	.107/.113	.155/.160	.019/.027	1/64
VNRW32.50	.389/.395	.166/.174	.170/.176	.233/.239	.046/.052	0
VNRW330	.389/.395	.198/.206	.170/.176	.233/.239	.046/.052	0

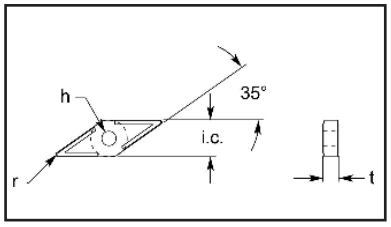
35° Utility Diamond Negative With Hole

• variable thickness quoted on request



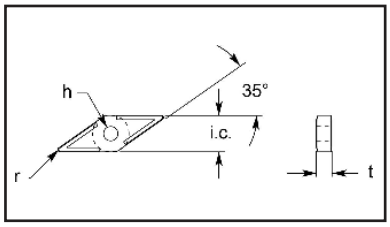
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSA331	.373/.377	.198/.206	.147/.153	1/64
VNSA332	.373/.377	.198/.206	.147/.153	1/32
VNSA333	.373/.377	.198/.206	.147/.153	3/64
VNSA432	.497/.503	.202/.207	.200/.206	1/32
VNSA442	.497/.503	.265/.270	.200/.206	1/32

35° Utility Diamond Negative F1 Chipbreaker With Hole



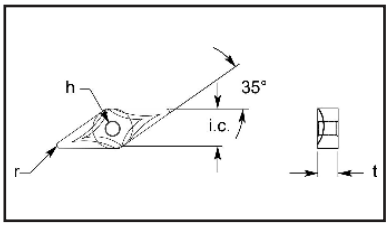
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSG331F1	.373/.377	.193/.199	.148/.152	1/64
VNSG332F1	.373/.377	.193/.199	.148/.152	1/32
VNSG333F1	.373/.377	.191/.197	.148/.152	3/64
VNSG432F1	.497/.503	.194/.200	.200/.206	1/32
VNSG442F1	.497/.503	.259/.265	.200/.206	1/32

35° Utility Diamond Negative F1-3 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSG432F1-3	.497/.503	.194/.200	.230/.236	1/32
VNSG433F1-3	.497/.503	.194/.200	.230/.236	3/64
VNSG434F1-3	.497/.503	.194/.200	.230/.236	1/16
VNSG442F1-3	.497/.503	.259/.265	.230/.236	1/32

35° Utility Diamond Negative GP1 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSP322GP1	.373/.377	.138/.144	.148/.152	1/32
VNSP331GP1	.373/.377	.194/.200	.148/.152	1/64
VNSP332GP1	.373/.377	.194/.200	.148/.152	1/32

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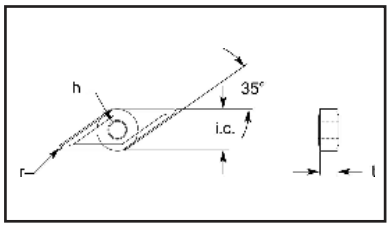
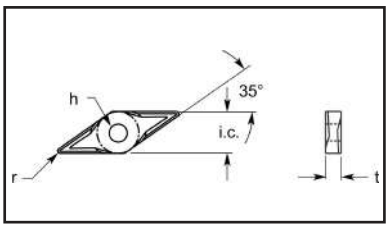
35° Utility Diamond Negative GP4 Chipbreaker With Hole



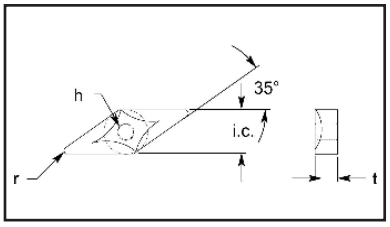
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSP331GP4	.373/.377	.192/.198	.148/.152	1/64
VNSP332GP4	.373/.377	.192/.198	.148/.152	1/32

35° Utility Diamond Negative F2 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSP332F2	.373/.377	.200/.206	.148/.152	1/32

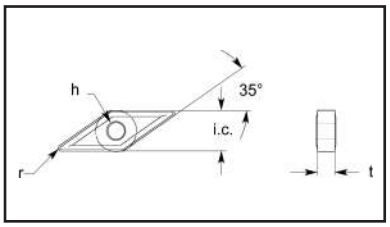
35° Utility Diamond Negative R5 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNSS322R5	.373/.377	.132/.138	.148/.152	1/32
VNSS331R5	.373/.377	.194/.200	.148/.152	1/64
VNSS332R5	.373/.377	.194/.200	.148/.152	1/32
VNSS333R5	.373/.377	.194/.200	.148/.152	3/64

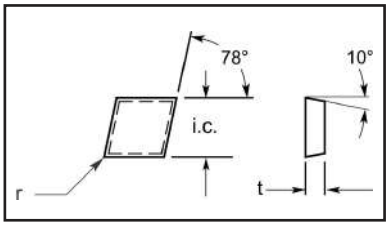
NEW

35° Diamond Negative F1 Chipbreaker With Hole



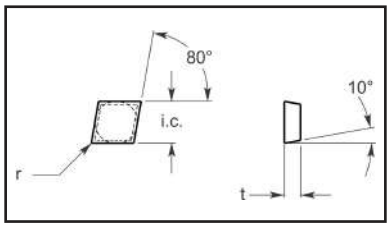
Part No.	Dimensional Specifications			
	i.c.	t	h	r
VNRG330F1	.389/.395	.192/.198	.145/.152	0

78° Diamond Positive



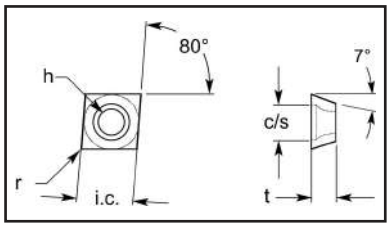
Part No.	Dimensional Specifications		
	i.c.	t	r
1160AS	.645/.651	.208/.214	0

80° Diamond Positive



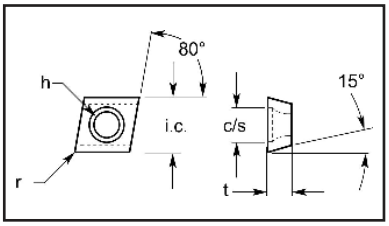
Part No.	Dimensional Specifications		
	i.c.	t	r
CPR320	.389/.395	.135/.143	0
CPR322	.389/.395	.135/.143	1/32
CPR420	.514/.520	.135/.143	0
CPR630	.764/.770	.198/.206	0

80° Diamond Positive With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
CCRW32.50	.389/.395	.166/.174	.171/.175	.233/.239	0

80° Diamond Positive With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
CDRW32.50LH	.389/.395	.171/.176	.160/.164	.216/.222	0

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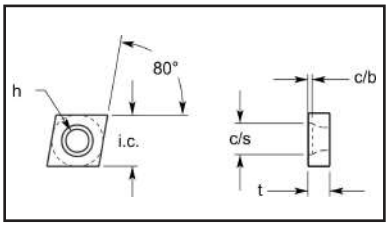
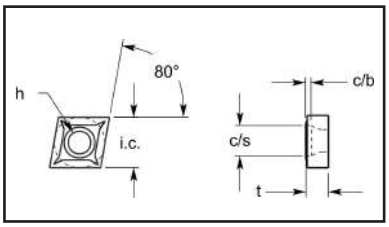
80° Diamond Negative With ISO Style Hole



- to be ground positive

Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
CNRW1.51.50	.199/.209	.106/.114	.082/.088	.111/.117	.017/.023
CNRW1.81.50	.233/.239	.104/.110	.095/.101	.127/.133	.036/.042
CNRW21.50	.264/.270	.104/.112	.107/.113	.143/.149	.036/.042
CNRW220	.264/.270	.136/.142	.107/.113	.143/.149	.036/.042
CNRW32.50	.389/.395	.167/.173	.170/.176	.233/.239	.034/.040
CNRW32.50R/L	.389/.395	.166/.174	.158/.164	.216/.222	.043
CNRW330	.389/.395	.199/.205	.170/.176	.233/.239	.037
CNRW430	.514/.520	.198/.206	.213/.219	.292/.298	.043/.049
CNRW53.50	.639/.645	.229/.237	.221/.227	.317/.323	.039/.045
CNRW530	.639/.645	.198/.206	.221/.227	.317/.323	.039/.045

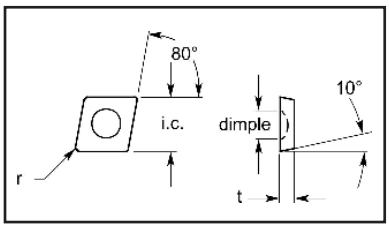
80° Diamond Negative F5 Chipbreaker With ISO Style Hole



- to be ground positive

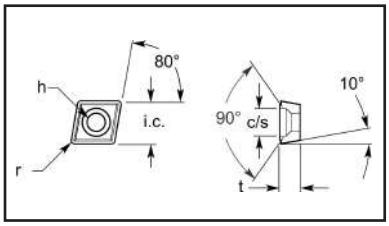
Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
CNRT1.81.50-F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT1.81.51-F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT21.51F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT21.52F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035	0
CNRT22.52F5	.264/.270	.170/.176	.107/.113	.143/.149	.029/.035	0
CNRT221F5	.264/.270	.140/.146	.107/.113	.143/.149	.029/.035	0
CNRT32.51F5	.389/.395	.172/.178	.170/.176	.233/.239	.027/.033	0
CNRT32.52F5	.389/.395	.172/.178	.170/.176	.233/.239	.027/.033	0
CNRT431F5	.514/.520	.204/.210	.213/.219	.292/.298	.037/.043	0
CNRT432F5	.514/.520	.204/.210	.213/.219	.292/.298	.037/.043	0

80° Diamond Positive With Dimple



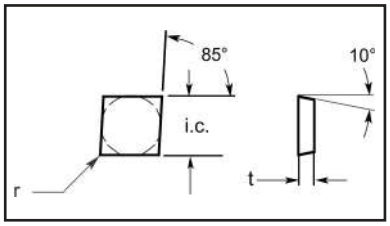
Part No.	Dimensional Specifications			
	i.c.	t	dimple dia.	r
DWG#U-4154	.389/.395	.135/.143	.187	1/32

80° Diamond Positive Chipbreaker With Hole



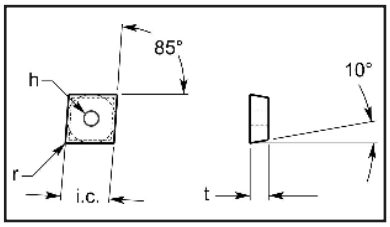
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
DWG#C-6066	.389/.395	.186/.191	.157/.163	.247/.253	1/32

85° Diamond Positive

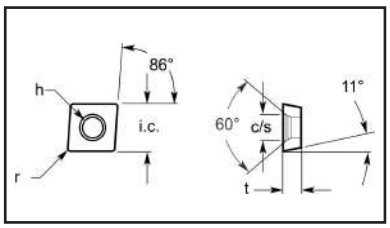


Part No.	Dimensional Specifications		
	i.c.	t	r
APR533	.643/.648	.198/.206	3/64

85° 86° Diamond Positive With Hole

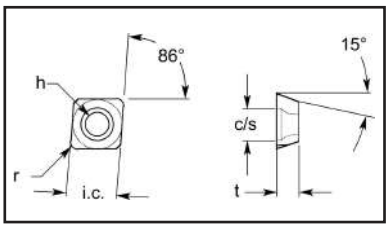


Part No.	Dimensional Specifications			
	t	i.c.	h	r
APRA533.125HOLE	.198/.206	.643/.648	.125/.135	3/64

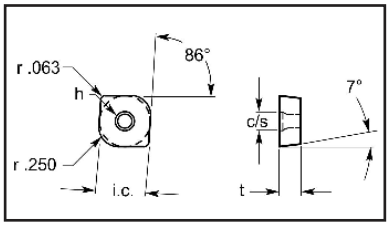


Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
E-21560	.511/.519	.194/.200	.219/.223	.276/.282	1/32

86° Diamond Positive With ISO Style Hole

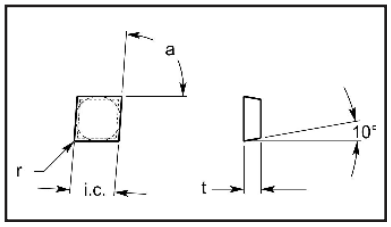


Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
MDRW5-16.197T	.639/.645	.208/.214	.217/.221	.297/.301	1/4
MDRW438	.514/.520	.198/.206	.216/.222	.296/.301	1/8



Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
MCRW5416	.639/.645	.260/.268	.173/.177	.234/.238

86° 87° Diamond Positive



MPR, NPR, PRPR and UP Styles may overlap in Dimensional Specifications Different nomenclature is only for individual customers reference.

Part No.	Dimensional Specifications			
	i.c.	t	r	a
MPR532/87	.639/.645	.198/.206	1/32	87°
MPR551/87	.639/.645	.166/.174	1/64	87°
MPR630	.764/.770	.198/.206	0	86°

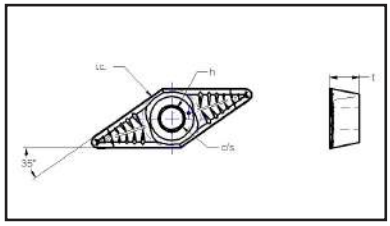
Part No.	Dimensional Specifications			
	i.c.	t	r	a
NPR430	.514/.520	.198/.206	0	87°
NPR532	.639/.645	.198/.206	1/32	87°
NPR630	.764/.770	.198/.206	0	87°

Part No.	Dimensional Specifications			
	i.c.	t	r	a
PRPR430	.514/.520	.198/.206	0	87°
PRPR630	.764/.770	.198/.206	0	87°

Part No.	Dimensional Specifications			
	i.c.	t	r	a
UP33	.369/.375	.164/.170	1/64	87°
UP43	.474/.480	.198/.206	1/64	87°
UP53	.699/.705	.198/.206	1/64	87°
UP63	.764/.770	.198/.206	0	87°
UP66N	.764/.770	.198/.206	0	87°

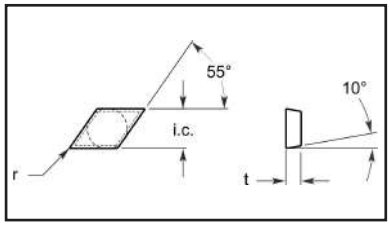
NEW

55° Diamond Positive Aluminum Top Form



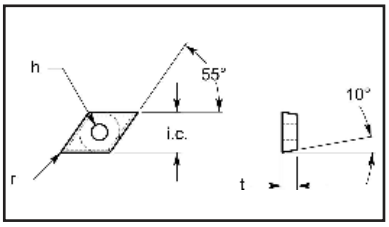
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
VPRT220612	.518/.524	.278/.284	.200/.206	.237/.243	.058

55° Diamond Positive



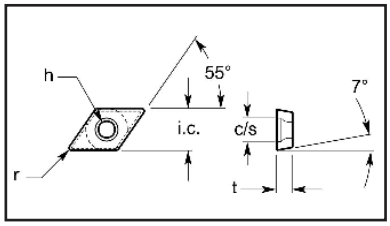
Part No.	Dimensional Specifications		
	i.c.	t	r
DPR430	.514/.520	.198/.206	0

55° Diamond Positive With Hole

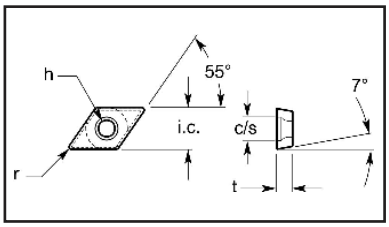


Part No.	Dimensional Specifications			
	i.c.	t	h	r
DPRA320	.389/.395	.135/.143	.148/.152	0
DPRA430	.514/.520	.198/.206	.201/.205	0
DPRA530	.639/.645	.198/.206	.248/.252	0

55° Diamond Positive With ISO Style Hole



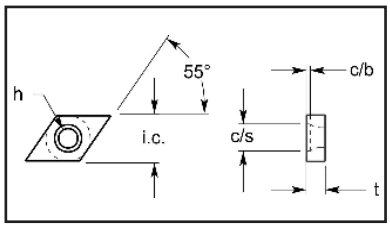
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
DCSW32.50	.373/.377	.167/.173	.168/.174	.233/.239	.008



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
DCRW32.50	.380/.390	.166/.174	.168/.174	.233/.239	.008

55° Diamond Negative With ISO Style Hole

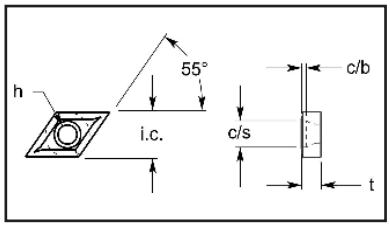
- to be ground positive



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DNRW21.50	.264/.270	.104/.112	.107/.113	.143/.149	.036/.042
DNRW220	.264/.270	.135/.143	.107/.113	.143/.149	.036/.042
DNRW32.50	.389/.395	.166/.174	.170/.176	.233/.239	.046/.052
DNRW330	.389/.395	.198/.206	.170/.176	.233/.239	.046/.052
DNRW430	.514/.520	.198/.206	.213/.219	.292/.298	.043/.049

55° Diamond Negative F5 Chipbreaker With ISO Style Hole

- to be ground positive



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
DNRT21.51F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035
DNRT21.52F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035
DNRT32.51F5	.389/.395	.172/.178	.170/.176	.233/.239	.040/.046
DNRT32.52F5	.389/.395	.172/.178	.170/.176	.233/.239	.040/.046
DNRT431F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043
DNRT432F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043

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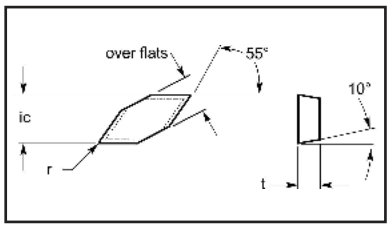
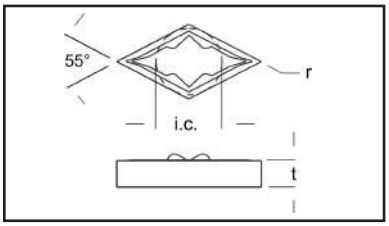
55° Diamond Positive With Flats



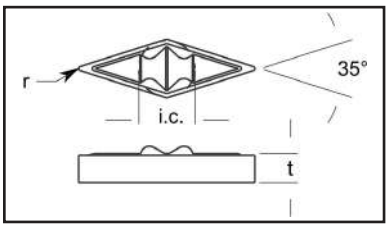
Part No.	Dimensional Specifications			
	i.c.	t	over flats	r
DPR531F	.639/.645	.198/.206	.464/.470	1/64

55° U-Notch Style



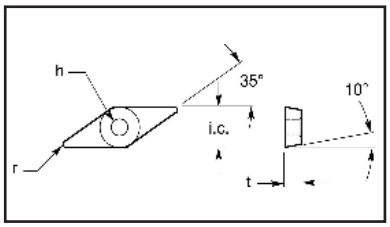
Part No.	Dimensional Specifications		
	t	i.c.	r
DNRR430	.200/.206	.514/.520	0

35° U-Notch Style



Part No.	Dimensional Specifications		
	t	i.c.	r
VNRR331	.200/.206	.389/.395	1/64
VNRR332	.200/.206	.389/.395	1/64
VNRR333	.200/.206	.389/.395	1/64

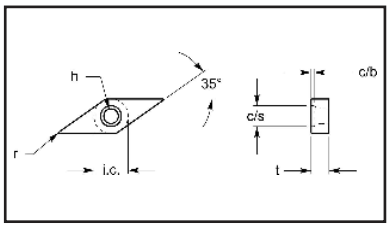
35° Diamond Positive With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
VPRA441	.517/.523	.265/.271	.201/.205	1/64

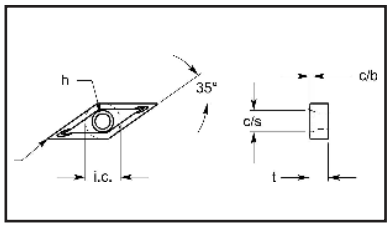
35° Diamond Negative With ISO Style Hole

- to be ground positive



Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
VNRW21.51	.264/.270	.104/.112	.107/.113	.155/.160	.019/.027	1/64
VNRW221	.264/.270	.135/.143	.107/.113	.155/.160	.019/.027	1/64
VNRW32.50	.389/.395	.166/.174	.170/.176	.233/.239	.046/.052	0
VNRW330	.389/.395	.198/.206	.170/.176	.233/.239	.046/.052	0

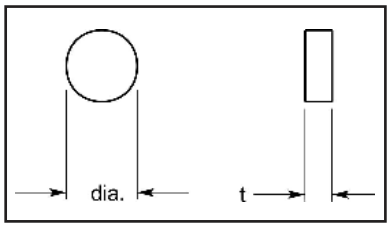
35° Diamond Negative F5 Chipbreaker With ISO Style Hole



- to be ground positive

Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	c/b	r
VNRT21.51F5	.264/.270	.109/.115	.108/.112	.143/.149	.028/.036	1/64
VNRT21.52F5	.264/.270	.109/.115	.108/.112	.143/.149	.028/.036	1/64
VNRT221F5	.264/.270	.141/.147	.108/.112	.143/.149	.028/.036	1/64
VNRT222F5	.264/.270	.141/.147	.108/.112	.143/.149	.028/.036	1/64
VNRT32.51F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT32.52F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT32.53F5	.389/.395	.173/.179	.170/.176	.233/.239	.038/.044	0
VNRT331F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0
VNRT332F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0
VNRT333F5	.389/.395	.204/.211	.170/.176	.233/.239	.038/.044	0

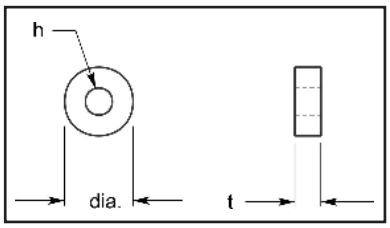
Round Negative • variable thickness quoted on request



Part No.	Dimensional Specifications t	dia.
RNRN45	.322/.330	.514/.520
RNR1.21.5	.104/.112	.171/.181
RNR1.51	.072/.077	.197/.207
RNR1.51.5	.104/.112	.199/.205
RNR2.51.5	.104/.112	.326/.332
RNR2.54	.260/.268	.326/.332
RNR21	.073/.081	.262/.268
RNR21.5	.104/.112	.262/.268
RNR22	.135/.143	.262/.268
RNR23	.198/.206	.262/.268
RNR31	.072/.080	.389/.395
RNR32	.135/.143	.389/.395
RNR32.5	.166/.174	.389/.395
RNR33	.198/.206	.389/.395
RNR34	.260/.268	.389/.395
RNR35	.323/.331	.389/.395
RNR36	.385/.393	.389/.395
RNR42	.135/.143	.514/.520
RNR43	.198/.206	.514/.520
RNR44	.260/.268	.514/.520
RNR45	.322/.330	.514/.520
RNR5.51	.070/.080	.687/.712
RNR51	.072/.080	.639/.645
RNR52	.135/.143	.639/.645
RNR53	.198/.206	.639/.645
RNR54	.260/.268	.639/.645
RNR55	.322/.330	.639/.645
RNR56	.385/.393	.639/.645
RNR62	.135/.143	.764/.770
RNR63	.198/.206	.764/.770
RNR64	.260/.268	.764/.770
RNR66	.385/.393	.764/.770
RNR78	.516/.524	.890/.900
RNR82	.142/.147	1.020/1.030
RNR83	.205/.210	1.020/1.030
RNR84	.267/.272	1.020/1.030
RNR86	.393/.398	1.020/1.030
RNR106	.390/.400	1.272/1.292
RNR108	.530/.540	1.272/1.292
RNR124	.259/.269	1.515/1.535
RNR126	.390/.400	1.515/1.535
RNR168	.516/.524	2.045/2.065

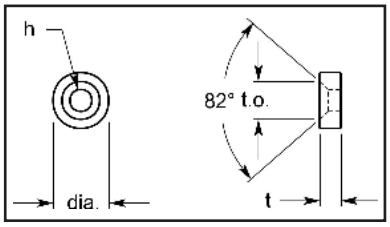
Round Negative With Hole

• variable thickness quoted on request



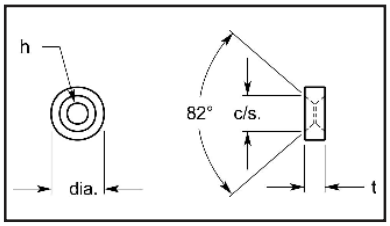
Part No.	Dimensional Specifications		
	t	dia.	h
RNRA1.25	.323/.331	.170/.176	.064/.070
RNRA2.5	.323/.331	.322/.328	.111/.117
RNRA3.128H	.040/.055	.385/.400	.120/.110
RNRA3.25	.323/.331	.400/.406	.128/.134
RNRA32	.135/.143	.389/.395	.147/.153
RNRA33	.198/.206	.389/.395	.147/.153
RNRA34	.260/.268	.389/.395	.147/.153
RNRA41.125HOLE	.072/.080	.514/.520	.123/.127
RNRA42	.135/.143	.514/.520	.201/.205
RNRA43	.198/.206	.514/.520	.200/.206
RNRA44	.260/.268	.514/.520	.200/.206
RNRA46	.385/.393	.514/.520	.200/.206
RNRA5.5.233H	.070/.080	.687/.712	.232/.240
RNRA52	.135/.143	.639/.645	.247/.253
RNRA54	.260/.268	.639/.645	.247/.253
RNRA63	.198/.206	.764/.770	.309/.315
RNRA64	.260/.268	.764/.770	.309/.315
RNRA64.251HOLE	.260/.268	.764/.770	.251/.256
RNRA65	.323/.331	.764/.770	.309/.315
RNRA65.251H	.322/.330	.763/.773	.248/.254
RNRA66	.385/.393	.764/.770	.309/.315
RNRA78	.515/.525	.830/.840	.309/.315

Round Negative With Hole And Countersink



Part No.	Dimensional Specifications			
	t	dia.	h	t.o.
RNRB32.5-#4	.166/.174	.389/.395	.123/.127	.267/.273
RNRB33-#4	.198/.206	.389/.395	.123/.127	.267/.273
RNRB43-#8	.198/.206	.514/.520	.177/.183	.373/.379

Round Negative With Hole



Part No.	Dimensional Specifications			
	t	dia.	h	c/s
RNRC43	.198/.206	.514/.520	.200/.206	.326/.332
RNRC43-40	.198/.206	.514/.520	.174/.180	.233/.239
RNRC43.209HOLE	.198/.206	.514/.520	.206/.212	.326/.332

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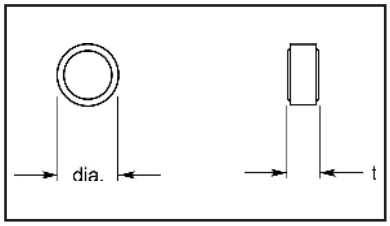
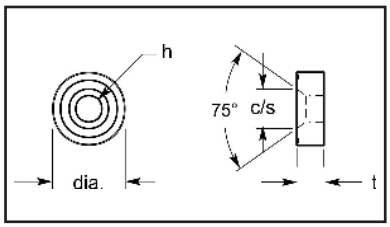
Round Negative With Chipbreaker



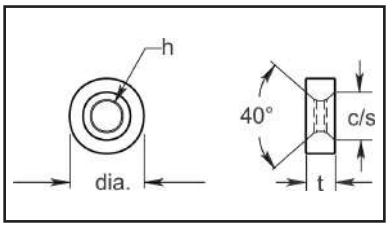
Part No.	Dimensional Specifications			
	t	dia.	h	c/s
RNRF55	.322/.330	.639/.645	0	0

Round Negative With Hole



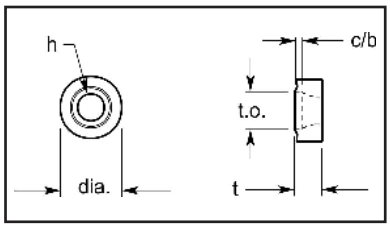
Part No.	Dimensional Specifications			
	t	dia.	h	c/s
RNRH43	.193/.199	.514/.520	.213/.219	.313/.319
RNRH85	.320/.326	1.026/1.034	.356/.362	.539/.545
RNRH86	.382/.388	1.026/1.034	.356/.362	.539/.545

Round Negative With Dbl Countersink Hole



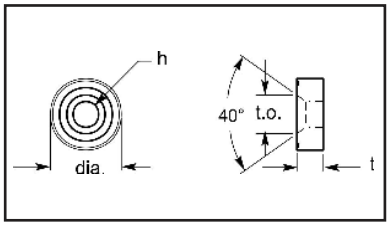
Part No.	Dimensional Specifications			
	t	dia.	h	c/s
RNRQ44-40°.177H	.260/.268	.514/.520	.175/.179	.233/.239

Round Negative F5 Chipbreaker With ISO Style Hole



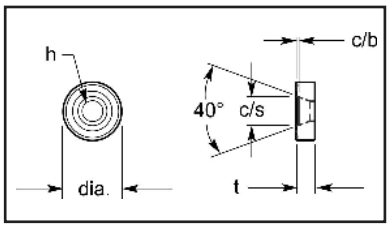
Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c/b
RNRT21.51F5	.109/.115	.262/.268	.107/.113	.143/.149	.029/.035
RNRT21.5F5	.109/.115	.262/.268	.107/.113	.143/.149	.029/.035
RNRT22F5	.141/.147	.262/.268	.107/.113	.143/.149	.029/.035
RNRT32.5F5	.169/.175	.389/.395	.170/.176	.233/.239	.040/.046
RNRT32F5	.138/.144	.389/.395	.170/.176	.233/.239	.040/.046
RNRT43F5	.204/.210	.514/.520	.213/.219	.292/.298	.037/.043
RNRT53F5	.205/.211	.639/.645	.213/.219	.292/.298	.040
RNRT54F5	.267/.273	.639/.645	.213/.219	.292/.298	.040
RNRT10T3MO	.169/.175	.407/.413	.170/.176	.233/.239	.040/.046

Round Negative With Chipbreaker Hole and Countersink



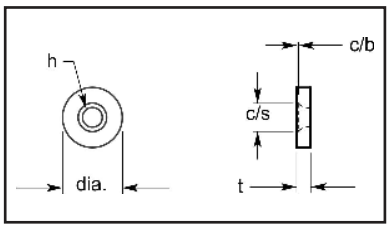
Part No.	Dimensional Specifications			
	t	dia.	h	t.o.
RNRT2507MO	.318/.328	.995/1.005	.339/.345	.475/.481

Round Negative With Chipbreaker And Hole



Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c/b
RNRT2507MO-UM	.318/.328	.995/1.005	.299/.305	.432/.438	.037/.043

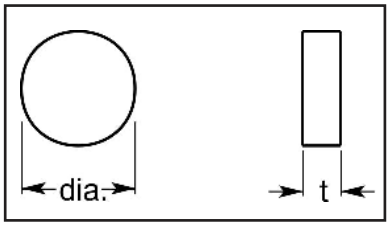
Round Negative With ISO Style Hole



Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c/b
RNRW21.5	.105/.111	.262/.268	.107/.113	.143/.149	.036/.042
RNRW22	.135/.143	.262/.268	.107/.113	.143/.149	.036/.042
RNRW32.5	.166/.174	.389/.395	.170/.176	.233/.239	.046/.052
RNRW42.5	.166/.174	.514/.520	.213/.219	.292/.298	.042/.050
RNRW43	.198/.206	.514/.520	.213/.219	.292/.298	.042/.050
RNRW53	.198/.206	.644/.650	.213/.219	.292/.298	.042/.050
RNRW53.5	.228/.236	.644/.650	.213/.219	.292/.298	.042/.050
RNRW160400	.198/.206	.644/.650	.205/.211	.301/.307	.023/.031
RNRW1604MO	.198/.206	.644/.650	.213/.219	.292/.298	.042/.050
RNRW1605MO	.228/.236	.644/.650	.213/.219	.292/.298	.042/.050

Utility Round Negative

• variable thickness quoted on request



Part No.	Dimensional Specifications	
	t	dia.
RNS32	.135/.143	.372/.378
RNS33	.198/.206	.372/.378
RNS43	.198/.206	.497/.503
RNS84	.265/.270	.996/1.004
1.000DIAX187THK	.182/.192	.996/1.004
RNS104	.265/.275	1.240/1.260

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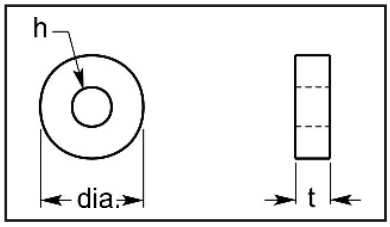
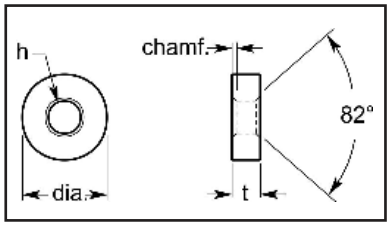
Utility Round Negative With Hole • variable thickness quoted on request



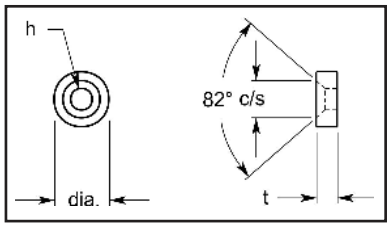
Part No.	Dimensional Specifications		
	t	dia.	h
RNSA32	.135/.143	.373/.377	.147/.153
RNSA33	.198/.206	.373/.377	.147/.153
RNSA34	.260/.268	.373/.377	.147/.153
RNSA43	.198/.206	.497/.503	.200/.206
RNSA44	.260/.268	.497/.503	.200/.206
RNSA54	.260/.268	.622/.628	.247/.253
RNSA56	.385/.393	.622/.628	.247/.253
RNSA.749DIAX250THK	.260/.268	.743/.749	.310/.314
RNSA63	.198/.206	.747/.753	.309/.315
RNSA64	.260/.268	.747/.753	.309/.315
RNSA65	.322/.330	.747/.753	.309/.315
RNSA83	.203/.208	.996/1.004	.361/.365
RNSA84	.265/.270	.996/1.004	.360/.366
RNSA86	.392/.397	.996/1.004	.360/.366
RNSA104	.260/.268	1.234/1.244	.497/.503

Round Negative With Hole Dbl Chamfer



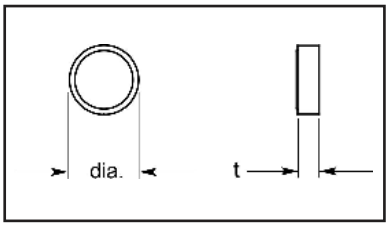
Part No.	Dimensional Specifications			
	t	dia.	h	chamf.
RNSA106	.385/.395	1.246/1.254	.497/.503	.030 X 45°

Round Negative With Hole And Countersink



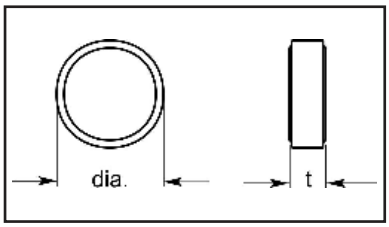
Part No.	Dimensional Specifications		
	t	dia.	h
RNSB108	.515/.525	1.240/1.250	.262/.268

Utility Round Negative With (1) Chipbreaker • variable thickness quoted on request



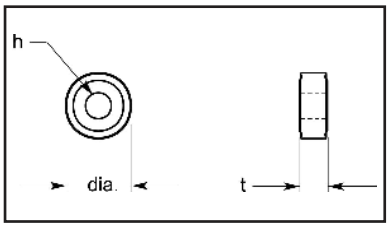
Part No.	Dimensional Specifications	
	t	dia.
RNSF106-1C/B	.417/.423	1.245/1.255

Utility Round Negative With Chipbreakers

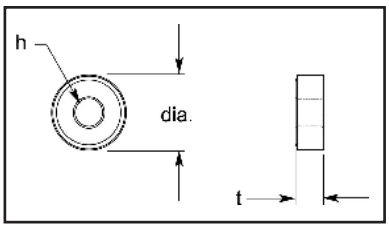


Part No.	Dimensional Specifications	
	t	dia.
RNSF106	.417/.423	1.245/1.255

Utility Round Negative F1 Chipbreakers and Hole

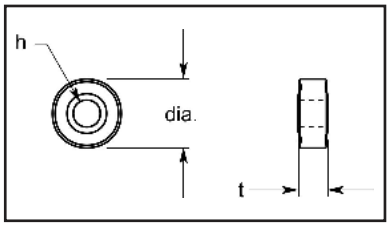


Part No.	Dimensional Specifications		
	t	dia.	h
RNSG32F1	.129/.135	.373/.377	.147/.153
RNSG33F1	.191/.197	.373/.377	.147/.153
RNSG42F1	.129/.135	.497/.503	.200/.206
RNSG43F1	.191/.197	.497/.503	.200/.206



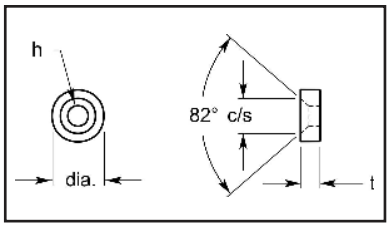
Part No.	Dimensional Specifications		
	t	dia.	h
RNSG43F1-1C/B	.191/.197	.497/.503	.201/.205

Utility Round Negative R1 Chipbreakers and Hole



Part No.	Dimensional Specifications		
	t	dia.	h
RNSG43R1	.191/.197	.497/.503	.200/.206
RNSG54R1	.256/.262	.622/.628	.247/.253
RNSG55R1	.318/.324	.622/.628	.247/.253
RNSG64R1	.256/.262	.747/.753	.309/.315
RNSG65R1	.318/.324	.747/.753	.309/.315
RNSG84R1	.256/.262	.996/1.004	.360/.366
RNSG85R1	.318/.324	.996/1.004	.360/.366
RNSG86R1	.381/.387	.996/1.004	.360/.366
RNSG106R1	.370/.380	1.246/1.254	.497/.503

Round Negative With Hole And Countersink



Part No.	Dimensional Specifications			
	dia.	t	h	c/s
URD6.156THK	.389/.395	.166/.174	.123/.127	.267/.273
URD6P-NEG	.389/.395	.135/.143	.122/.128	.267/.273
URD8P-NEG	.514/.520	.135/.143	.122/.128	.267/.273
URD10P-NEG	.639/.645	.135/.143	.175/.181	.373/.379
URD16P-NEG	1.020/1.030	.266/.272	.275/.281	.556/.562

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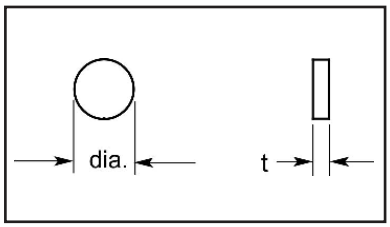
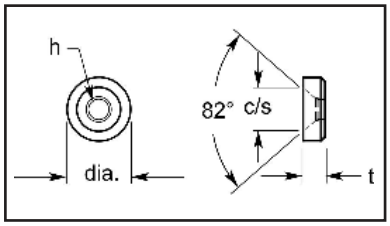
Round Negative

• variable thickness quoted on request

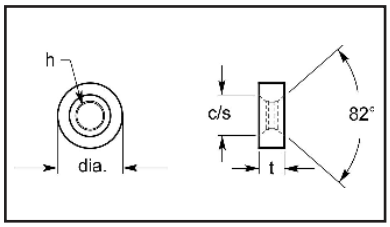


Part No.	Dimensional Specifications	
	t	dia.
.063 DIAX.187T	.191/.215	.074/.080
UDS42	.072/.080	.166/.172
DSP-83-041	.031/.051	.250/.280
250DIAX050THK	.070/.076	.265/.271
250DIAX125LG	.135/.143	.265/.271
DWG#B1310362	.285/.290	.389/.395
DSP204	.135/.143	.639/.645
UDSP-326	.205/.210	1.020/1.030

Round Negative With Hole And Countersink

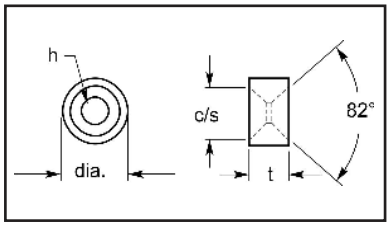


Part No.	Dimensional Specifications			
	t	dia.	h	c/s
USM45	.135/.143	.497/.503	.123/.129	.267/.273



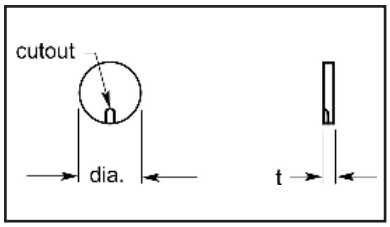
Part No.	Dimensional Specifications			
	t	dia.	h	c/s
RBIR43	.198/.206	.514/.520	.206/.212	.326/.332

Round Negative With Hole and Dbl Countersinks



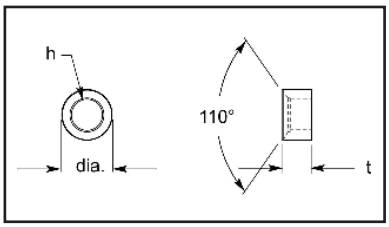
Part No.	Dimensional Specifications			
	t	dia.	h	c/s
9ZE1674D	.198/.206	.514/.520	.200/.206	.324/.334
9ZE1674D-1	.198/.206	.514/.520	.201/.205	.326/.332

Round Negative With Cutout



Part No.	Dimensional Specifications		
	t	dia.	cutout
RNR2.045THK-SIZE#3	.040/.050	.262/.268	.040 X .060

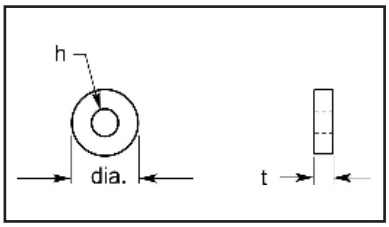
Round Negative With Hole And Countersink



Part No.	Dimensional Specifications		
	t	dia.	h
DWG#W195	.222/.228	.389/.395	.237/.243

Utility Round Negative With Hole

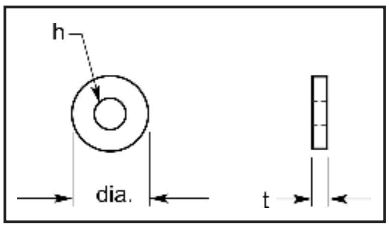
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	t	dia.	h
SK-7223	.130/.140	.465/.475	.251/.255

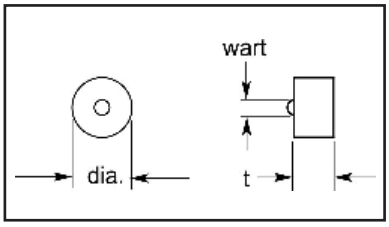
Round Negative With Hole

• variable thickness quoted on request



Part No.	Dimensional Specifications		
	t	dia.	h
GC.171DIA.W/.0515H	.050/.053	.168/.174	.049/.054
GC.233D-.080THK	.0775/.0825	.230/.236	.049/.054
GC.233D-W.0515H	.050/.053	.230/.236	.049/.054

Round Negative With Dimple



Part No.	Dimensional Specifications		
	t	dia.	wart
DWG#42892	.247/.253	.372/.378	3/32 DIA

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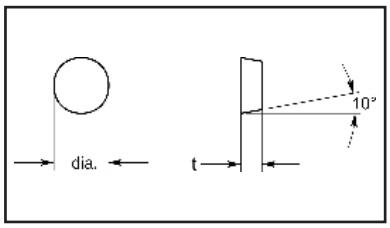
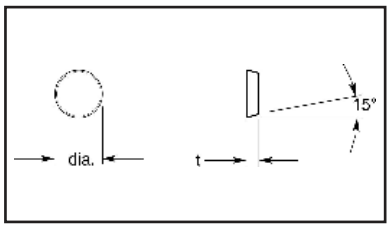
Round Positive



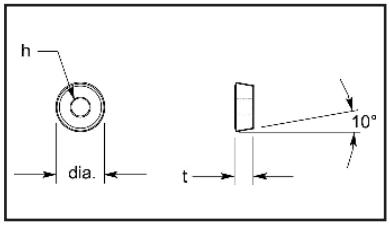
Part No.	Dimensional Specifications	
	t	dia.
RPR32	.135/.143	.389/.395
RPR33	.198/.206	.389/.395
RPR42	.135/.143	.514/.520
RPR43	.198/.206	.514/.520
RPR63	.198/.206	.764/.770
RPR83	.205/.210	1.020/1.030
RPR84	.265/.270	1.020/1.030
RPS43	.202/.207	.496/.504

Utility Round Positive



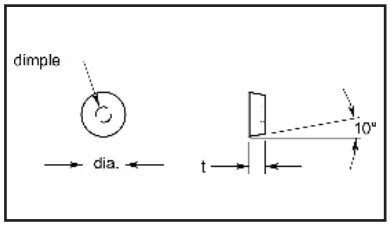
Part No.	Dimensional Specifications	
	t	dia.
RDS84T025-11	.260/.268	.997/1.003

Round Positive With Hole



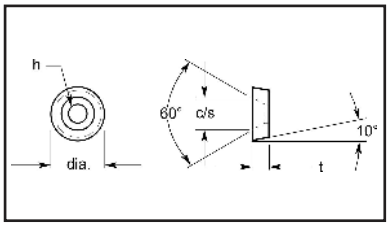
Part No.	Dimensional Specifications		
	t	dia.	h
RPRG32	.129/.135	.379/.385	.148/.152

Round Positive With Dimple



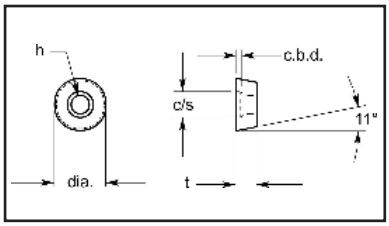
Part No.	Dimensional Specifications		
	t	dia.	dimple
RPR32-DIMPLE	.135/.143	.389/.395	.137/.138

Round Positive With Hole & Countersink



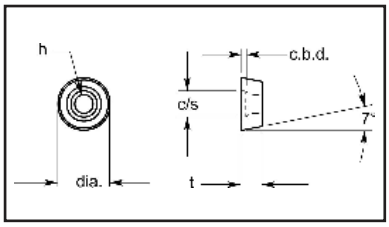
Part No.	Dimensional Specifications				
	t	dia.	h	c/s	a
RPRW43-60	.198/.206	.514/.520	.200/.206	.275/.281	10°

Utility Round Positive With ISO Style Hole



Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c.b.d
RPSW1204MO	.198/.206	.469/.475	.170/.176	.233/.239	.022/.028
RPSW1605MO	.229/.237	.627/.633	.214/.220	.292/.298	.022/.028

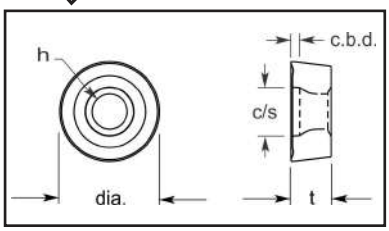
Round Positive With Chipbreaker and ISO Hole



Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c.b.d.
RCRX1204MOF1	.191/.197	.486/.492	.170/.176	.233/.239	.037/.043

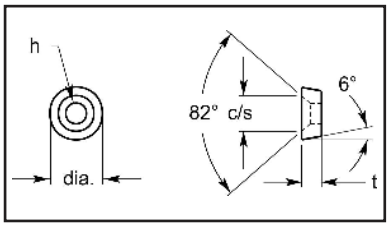
NEW

Round Positive With HP Chipbreaker



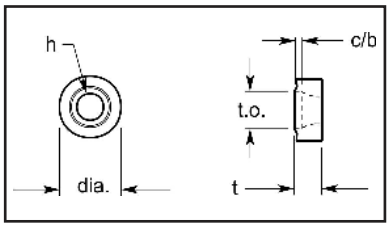
Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c.b.d
RCRT1204MOHP	.194/.200	.486/.492	.170/.176	.233/.239	.032/.038

Round Positive With Hole



Part No.	Dimensional Specifications			
	t	dia.	h	c/s
URD12P	.198/.206	.764/.770	.201/.207	.425/.431

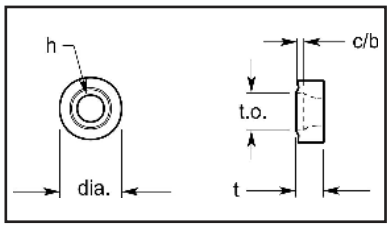
Round Negative F5 Chipbreaker With ISO Style Hole



- to be ground positive

Part No.	Dimensional Specifications				
	t	dia.	h	t.o.	c/b
RNRT32.5F5	.169/.175	.389/.395	.170/.176	.233/.239	.040/.046
RNRT32F5	.138/.144	.389/.395	.170/.176	.233/.239	.040/.046
RNRT43F5	.204/.210	.514/.520	.213/.219	.292/.298	.037/.043
RNRT53F5	.205/.211	.639/.645	.213/.219	.292/.298	.040
RNRT54F5	.267/.273	.639/.645	.213/.219	.292/.298	.040
RNRT21.51F5	.109/.115	.262/.268	.107/.113	.143/.149	.029/.035
RNRT21.5F5	.109/.115	.262/.268	.107/.113	.143/.149	.029/.035
RNRT22F5	.141/.147	.262/.268	.107/.113	.143/.149	.029/.035
RNRT32.5F5	.169/.175	.389/.395	.170/.176	.233/.239	.040/.046
RNRT32F5	.138/.144	.389/.395	.170/.176	.233/.239	.040/.046
RNRT43F5	.204/.210	.514/.520	.213/.219	.292/.298	.037/.043
RNRT53F5	.205/.211	.639/.645	.213/.219	.292/.298	.040
RNRT54F5	.267/.273	.639/.645	.213/.219	.292/.298	.040

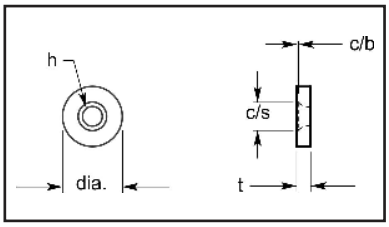
Round Negative Chipbreaker With ISO Style Hole



- to be ground positive

Part No.	Dimensional Specifications				
	t	dia.	h	t.o.	c/b
RNRT10T3MO	.169/.175	.407/.413	.170/.176	.233/.239	.040/.046

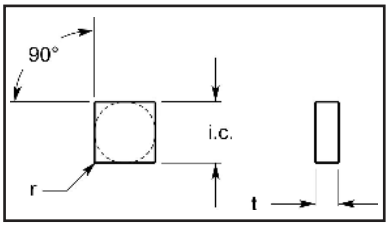
Round Negative With ISO Style Hole



- to be ground positive

Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c/b
RNRW21.5	.105/.111	.262/.268	.107/.113	.143/.149	.036/.042
RNRW22	.135/.143	.262/.268	.107/.113	.143/.149	.036/.042
RNRW32.5	.166/.174	.389/.395	.170/.176	.233/.239	.046/.052
RNRW42.5	.166/.174	.514/.520	.213/.219	.292/.298	.042/.050
RNRW43	.198/.206	.514/.520	.213/.219	.292/.298	.042/.050
RNRW53	.198/.206	.644/.650	.213/.219	.292/.298	.042/.050
RNRW53.5	.228/.236	.644/.650	.213/.219	.292/.298	.042/.050
RNRW160400	.198/.206	.644/.650	.205/.211	.301/.307	.023/.031
RNRW1604MO	.198/.206	.644/.650	.213/.219	.292/.298	.042/.050
RNRW1605MO	.228/.236	.644/.650	.213/.219	.292/.298	.042/.050

Square Negative • variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
SNR1.81.50	.233/.239	.104/.112	0
SNR1.810	.233/.239	.073/.081	0
SNR1.820	.233/.239	.135/.143	0
DWG#CD-0775	.252/.268	.135/.145	0
SNR21.50	.265/.271	.104/.112	0
SNR210	.265/.271	.077/.082	0
SNR220	.265/.271	.135/.143	0
SNR240	.265/.271	.265/.271	0
SNR2.51.50	.327/.333	.104/.112	0
SNR2.52.50	.327/.333	.166/.186	0
SNR2.520	.327/.333	.135/.143	0
SNR2.530	.327/.333	.198/.206	0
SNR321	.383/.389	.135/.143	1/64
SNR310	.389/.395	.072/.080	0
SNR32.50	.389/.395	.166/.174	0
SNR320	.389/.395	.135/.143	0
SNR322	.389/.395	.135/.143	1/32
SNR330	.389/.395	.198/.206	0
SNR34.50	.389/.395	.291/.299	0
SNR340	.389/.395	.260/.268	0
SNR380	.389/.395	.515/.523	0
SNR420	.514/.520	.135/.143	0
SNR422	.514/.520	.135/.143	1/32
SNR424	.514/.520	.135/.143	1/16
SNR428	.514/.520	.135/.143	1/8
SNR43.118RAD	.514/.520	.198/.206	.118
SNR430	.514/.520	.198/.206	0
SNR432	.514/.520	.198/.206	1/32
SNR433	.514/.520	.198/.206	3/64
SNR434	.514/.520	.198/.206	1/16
SNR438	.514/.520	.198/.206	1/8
SNR440	.514/.520	.260/.268	0
SNR450	.514/.520	.322/.330	0
SNR460	.514/.520	.385/.393	0

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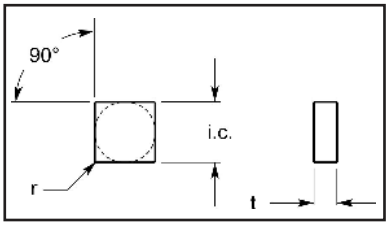
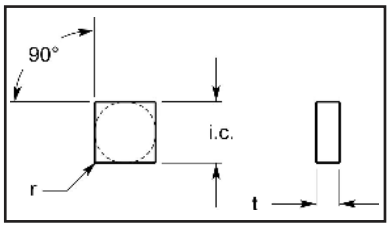
Square Negative • variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
SNR520	.639/.645	.135/.143	0
SNR526	.639/.645	.135/.143	3/32
SNR530	.639/.645	.198/.206	0
SNR536	.639/.645	.198/.206	3/32
SNR540	.639/.645	.260/.268	0
SNR546	.639/.645	.260/.268	3/32
SNR550	.639/.645	.322/.330	0
SNR560	.639/.645	.385/.393	0
SNU642-MOD	.745/.755	.265/.270	1/32
S66NR2U	.762/.772	.198/.206	1/32
SNR61.50	.764/.770	.104/.112	0
SNR620	.764/.770	.135/.143	0
SNR628	.764/.770	.135/.143	1/8
SNR630	.764/.770	.198/.206	0
SNR630-OS	.840/.846	.198/.206	0
125X750CB-BLK	.764/.770	.137/.143	0
SNR632	.764/.770	.198/.206	1/32
SNR633	.764/.770	.198/.206	3/64
SNR634	.764/.770	.198/.206	1/16
SNR636	.764/.770	.198/.206	3/32
SNR638	.764/.770	.198/.206	1/8
SNR640	.764/.770	.260/.268	0
SNR642	.764/.770	.260/.268	1/32
SNR643	.764/.770	.260/.268	3/64
SNR644	.764/.770	.260/.268	1/16
SNR646	.764/.770	.260/.268	3/32
SNR648	.764/.770	.260/.268	1/8
SNR650	.764/.770	.322/.330	0
SNR654	.764/.770	.322/.330	1/16
SNR656	.764/.770	.322/.330	3/32
SNR720	.889/.895	.135/.143	0
SNR730	.889/.895	.198/.206	0
SNR740	.889/.895	.267/.272	0
SNR760	.889/.895	.385/.393	0
SNR.975SQX188T	.990/1.000	.202/.207	0

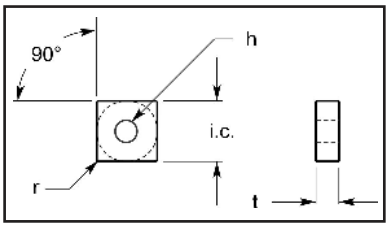
Square Negative • variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
SNR81.50	1.020/1.030	.109/.117	0
SNR82.50	1.020/1.030	.176/.184	0
SNR820	1.020/1.030	.142/.150	0
SNR830	1.020/1.030	.205/.213	0
SNR833	1.020/1.030	.205/.213	3/64
SNR834	1.020/1.030	.205/.213	1/16
SNR840	1.020/1.030	.267/.275	0
SNR843	1.020/1.030	.267/.275	3/64
SNR844	1.020/1.030	.267/.275	1/16
SNR850	1.020/1.030	.329/.335	0
SNR853	1.020/1.030	.329/.335	3/64
SNR854	1.020/1.030	.329/.335	1/16
SNR860	1.020/1.030	.392/.397	0
SNR864	1.020/1.030	.392/.397	1/16
SNR880	1.020/1.030	.515/.521	0
SNR10120	1.270/1.290	.765/.775	0
SNR1030	1.270/1.290	.205/.210	0
SNR1050	1.270/1.290	.323/.331	0
SNR1230	1.520/1.540	.203/.211	0
SNR1240	1.520/1.540	.267/.272	0
SNR1280	1.520/1.540	.517/.522	0
SNR1680	2.020/2.040	.515/.525	0

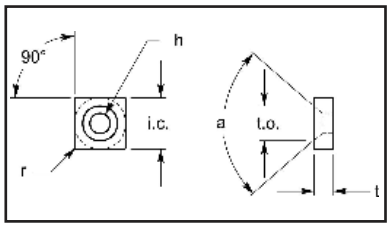
Square Negative With Hole

• variable thickness quoted on request



Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNRA.635SQ.250THK	.649/.655	.260/.268	.246/.256	0
SNRA32.50	.389/.395	.166/.174	.147/.153	0
SNRA320	.389/.395	.135/.143	.147/.153	0
SNRA322	.389/.395	.135/.143	.147/.153	1/32
SNRA330	.389/.395	.198/.206	.147/.153	0
SNRA332	.389/.395	.198/.206	.147/.153	1/32
SNRA336	.389/.395	.198/.206	.147/.153	3/32
SNRA340	.389/.395	.260/.268	.147/.153	0
SNRA360	.389/.395	.385/.393	.147/.153	0
SNRA420	.514/.520	.135/.143	.200/.206	0
SNRA430	.514/.520	.198/.206	.200/.206	0
SNRA440	.514/.520	.260/.268	.200/.206	0
SNRA520	.639/.645	.135/.143	.247/.253	0
SNRA530	.639/.645	.198/.206	.247/.253	0
SNRA540	.639/.645	.260/.268	247/.253	0
SNRA540.202HOLE	.639/.645	.260/.268	.199/.205	0
SNRA540.254HOLE	.639/.645	.260/.268	.254/.262	0
SNRA620	.764/.770	.135/.143	.309/.315	0
SNRA63-252/257H	.764/.770	.198/.206	.252/.257	0
SNRA630	.764/.770	.198/.206	.309/.315	0
SNRA630.250HOLE	.764/.770	.198/.206	.247/.253	0
SNRA640	.764/.770	.260/.268	.309/.315	0
SNRA640.250HOLE	.764/.770	.260/.268	.247/.253	0
SNRA830	1.020/1.030	.205/.210	.360/.366	0
SNRA830.250HOLE	1.020/.1.030	.205/.210	.247/.253	0
SNRA840	1.020/1.030	.267/.275	.360/.366	0
SNRA840.250HOLE	1.020/1.030	.267/.275	.247/.253	0
SNRA840.312HOLE	1.020/1.030	.267/.275	.309/.315	0
SNRA850	1.020/1.030	.329/.334	.360/.366	0
SNRA850.250H	1.020/1.030	.329/.337	.248/.252	0
SNRA860	1.020/1.030	.392/.397	.360/.366	0
SNRA860.250HOLE	1.020/1.030	.392/.397	.247/.253	0

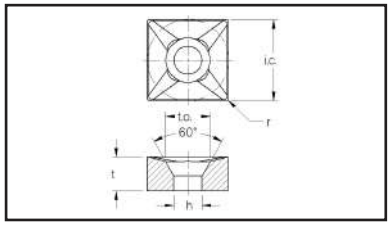
Square Negative With Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	a	r
SNRB2.61.50	.341/.347	.101/.107	.138/.142	.229/.235	90°	0
SNRB21.50	.264/.270	.104/.112	.102/.108	.185/.191	82°	0
SNRB220	.264/.270	.135/.143	.102/.108	.185/.191	82°	0
SNRB32.50	.389/.395	.166/.174	.147/.153	.297/.307	82°	0
SNRB32.50-90°	.389/.395	.166/.174	.155/.161	.249/.255	90°	0
SNRB320	.389/.395	.135/.143	.146/.156	.297/.307	82°	0
SNRB320-40	.389/.395	.135/.143	.169/.175	.214/.220	40°	0
SNRB320-90°	.389/.395	.135/.143	.156/.160	.249/.255	90°	0
SNRB330	.389/.395	.198/.206	.146/.156	.297/.307	82°	0
SNRB330-40	.389/.395	.198/.206	.169/.175	.214/.220	40°	0
SNRB42.50-#4FHCS	.514/.520	.166/.174	.123/.129	.267/.273	82°	0
SNRB420-#4FHCS	.514/.520	.135/.143	.123/.129	.267/.273	82°	0
SNRB420-#8	.514/.520	.145/.152	.175/.181	.373/.379	82°	0
SNRB430-#4FHCS	.514/.520	.198/.206	.123/.129	.267/.273	82°	0
SNRB430-#8	.514/.520	.198/.206	.175/.181	.373/.379	82°	0
SNRB440	.514/.520	.260/.268	.176/.180	.373/.379	82°	0
SNRB440-#8SCREW	.514/.520	.260/.268	.175/.181	.373/.379	82°	0
DWG#122193-01A	.515/.525	.265/.275	.209/.214	.329/.339		0
SNR-44-03/ICS	.566/.572	.260/.268	.171/.175	.254/.260	60°	0.005
SNRB520-#8	.639/.645	.135/.143	.175/.181	.373/.379		0
SNRB530-#10	.639/.645	.198/.206	.200/.206	.452/.458	82°	0
SNRB530-#8FHCS	.639/.645	.198/.206	.175/.181	.373/.379	82°	0
SNRB540-#10	.639/.645	.260/.268	.200/.206	.452/.458	82°	0
SNRB630-#10	.764/.770	.198/.206	.200/.206	.435/.441	82°	0
SNRB640-#10	.764/.770	.260/.268	.200/.206	.435/.441	82°	0
SNRB840UM	1.020/1.030	.267/.272	.274/.280	.583/.589	82°	0
SNRB850UM	1.020/1.030	.3295/.3345	.274/.280	.583/.590	82°	0
SNRB860UM	1.020/1.030	.392/.397	.274/.280	.583/.589	82°	0

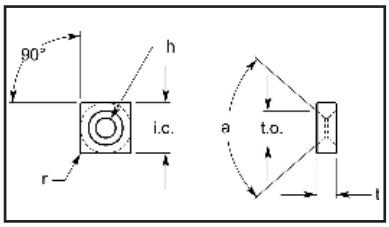
NEW

Square Negative With Hole



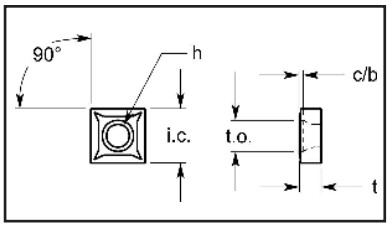
Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	a	r
SNRB2.521P	.322/.332	.131/.141	.108/.118	.173/.183	60°	.003/.013

Square Negative With Hole And Dbl Countersinks



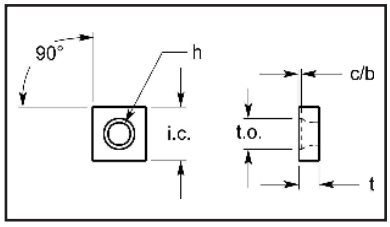
Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	a	r
SNRC3.540-60	.451/.457	.260/.268	.165/.171	.257/.263	60°	0
SNRC330-60	.389/.395	.200/.206	.162/.174	.247/.259	60°	0
SNRC4-0.310T209H	.514/.520	.321/.327	.206/.212	.326/.332	82°	0
SNRC430-60-MOD	.557/.562	.202/.207	.171/.175	.254/.260	60°	0
SNRC430.209HOLE	.514/.520	.198/.206	.206/.212	.326/.332	82°	0
SNRC440	.514/.520	.260/.268	.216/.222	.379/.385	82°	0
SNRC440-60	.514/.520	.260/.268	.163/.173	.259/.271	60°	0
SNRC440.209HOLE	.514/.520	.260/.268	.206/.212	.326/.332	82°	0
SNRC440.217HOLE	.515/.525	.266/.274	.214/.220	.341/.347	82°	0
SNRC450.209HOLE	.514/.520	.322/.330	.206/.212	.326/.332	82°	0
SNRC450.219HOLE	.514/.520	.322/.330	.217/.221	.379/.385	82°	0
SNRC460.209HOLE	.514/.520	.392/.398	.206/.212	.326/.332	82°	0
SNRC550	.639/.645	.322/.330	.203/.209	.452/.458	82°	0
SNRC630	.764/.770	.198/.206	.309/.315	.432/.438	82°	0
SNRC640.248HOLE	.764/.770	.260/.268	.245/.251	.439/.445	82°	0
SNRC640.312HOLE	.764/.770	.260/.268	.309/.315	.432/.438	82°	0
SNRC650	.764/.770	.322/.330	.206/.212	.432/.438	82°	0

Square Negative F5 Chipbreaker With ISO Style Hole



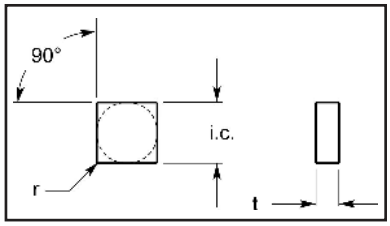
Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	c/b
SNRT21.51F5	.264/.270	.109/.115	.107/.113	.143/.149	.029/.035
SNRT32.51F5	.389/.395	.173/.179	.164/.170	.233/.239	.030/.036
SNRT32.52F5	.389/.395	.173/.179	.164/.170	.233/.239	.030/.036
SNRT32.53F5	.389/.395	.173/.179	.164/.170	.233/.239	.030/.036
SNRT321F5	.389/.395	.142/.148	.164/.170	.233/.239	.030/.036
SNRT322F5	.389/.395	.142/.148	.164/.170	.233/.239	.030/.036
SNRT431F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043
SNRT432F5	.514/.520	.205/.211	.213/.219	.292/.298	.037/.043

Square Negative With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	c/b
SNRW2.51.50	.327/.333	.104/.112	.131/.137	.174/.180	.031
SNRW2.52.50	.327/.333	.166/.174	.131/137	.174/.180	0.034
SNRW2.520	.327/.333	.135/.143	.131/.137	.174/.180	.028/.034
SNRW2.530	.327/.333	.198/.206	.131/.137	.174/.180	.028/.034
SNRW21.50	.264/.270	.104/.112	.111/.117	.145/.151	.036/.042
SNRW220	.264/.270	.135/.143	.111/.117	.145/.151	.036/.042
SNRW32.50	.389/.395	.166/.174	.171/.177	.233/.239	.046/.052
SNRW32.50-MOD	.389/.395	.176/.184	.171/.177	.233/.239	.046/.052
SNRW320	.389/.395	.140/.146	.171/.177	.233/.239	.046/.052
SNRW330	.389/.395	.198/.206	.171/.177	.233/.239	.046/.052
SNRW42.50	.514/.520	.166/.174	.213/.219	.292/.298	.043/.049
SNRW43.50	.514/.520	.228/.236	.213/.219	.292/.298	.043/.049
SNRW430	.514/.520	.198/.206	.213/.219	.292/.298	.043/.049
SNRW430-M3.5	.514/.520	.198/.206	.170/.176	.233/.239	0.138
SNRW440	.514/.520	.260/.268	.213/.219	.292/.298	.043/.049
SNRW530-M3.5	.639/.645	.198/.206	.173/.177	.233/.239	.038/.046
SNRW540-M3.5	.639/.645	.260/.268	.173/.177	.233/.239	.038/.046
ELPR-125	1.020/1.030	.144/.154	.210/.220	.360/.370	.032/.042
ELPR-250	1.020/1.030	.269/.279	.210/.220	.360/370	.032/.042

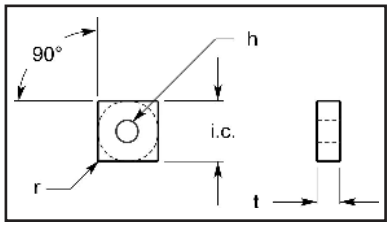
Utility Square Negative • variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
SNS322	.372/.378	.135/.143	1/32
SNS332	.372/.378	.198/.206	1/32
SNS422	.495/.505	.135/.143	1/32
SNS424	.495/.505	.135/.143	1/16
SNS432	.495/.505	.198/.206	1/32
SNS433	.495/.505	.198/.206	3/64
SNS434	.495/.505	.198/.206	1/16
SNS436	.495/.505	.198/.206	3/32
SNS532	.620/.630	.198/.206	1/32
SNS533	.620/.630	.198/.206	3/64
SNS544	.620/.630	.260/.268	1/16
SNS632	.743/.757	.198/.206	1/32
SNS633	.743/.757	.198/.206	3/64
SNS634	.743/.757	.198/.206	1/16
SNS64-4.0RAD	.747/.753	.260/.268	4.0 MM
SNS643	.743/.757	.260/.268	3/64
SNS644	.743/.757	.260/.268	1/16
SNS654	.743/.757	.322/.330	1/16
SNS6616	.743/.757	.392/.398	1/4
SNS844	.990/1.010	.267/.272	1/16
SNS852	.980/1.000	.326/.334	1/32
SNS854	.990/1.010	.326/.334	1/16
SNS866	.990/1.010	.392/.400	3/32

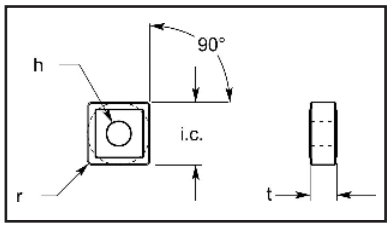
Utility Square Negative With Hole

• variable thickness quoted on request



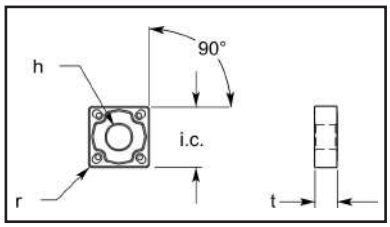
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSA322	.372/.378	.135/.143	.147/.153	1/32
SNSA323	.372/.378	.135/.143	.147/.153	3/64
SNSA332	.372/.378	.198/.206	.147/.153	1/32
SNSA422	.497/.503	.135/.143	.200/.206	1/32
SNSA432	.497/.503	.198/.206	.200/.206	1/32
SNSA433	.497/.503	.198/.206	.200/.206	3/64
SNSA434	.497/.503	.198/.206	.200/.206	1/16
SNSA443	.497/.503	.260/.268	.200/.206	3/64
SNSA542	.622/.628	.260/.268	.247/.253	1/32
SNSA543	.622/.628	.260/.268	.247/.253	3/64
SNSA544	.622/.628	.260/.268	.247/.253	1/16
SNSA548	.622/.628	.260/.268	.247/.253	1/8
SNSA634	.747/.753	.198/.206	.309/.315	1/16
SNSA642	.747/.753	.260/.268	.309/.315	1/32
SNSA643	.747/.753	.260/.268	.309/.315	3/64
SNSA644	.747/.753	.260/.268	.309/.315	1/16
SNSA846	.996/1.004	.267/.272	.360/.366	3/32
SNSA856	.996/1.004	.324/.332	.361/.365	3/32
SNSA866	.996/1.004	.381/.387	.360/.366	3/32

Utility Square Negative F1 Chipbreaker With Hole



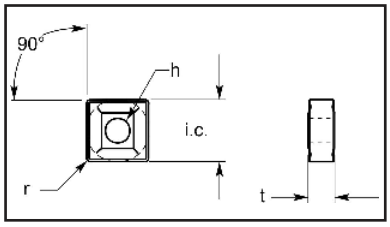
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG321F1	.373/.377	.129/.135	.147/.153	1/64
SNSG322F1	.373/.377	.129/.135	.147/.153	1/32
SNSG332F1	.373/.377	.191/.197	.147/.153	1/32
SNSG432F1	.497/.503	.191/.197	.200/.206	1/32
SNSG433F1	.497/.503	.191/.197	.200/.206	3/64
SNSG542F1	.622/.628	.256/.262	.247/.253	1/32
SNSG543F1	.622/.628	.256/.262	.247/.253	3/64
SNSG544F1	.622/.628	.256/.262	.247/.253	1/16
SNSG643F1	.747/.753	.256/.262	.309/.315	3/64
SNSG644F1	.747/.753	.256/.262	.309/.315	1/16

Utility Square Negative GP3 Chipbreaker With Hole



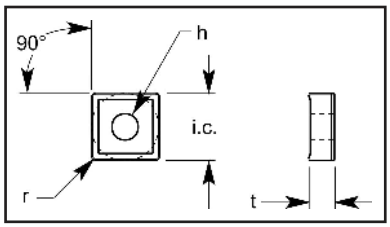
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG432GP3	.497/.503	.197/.203	.200/.206	1/32

Utility Square Negative R1 Chipbreaker With Hole



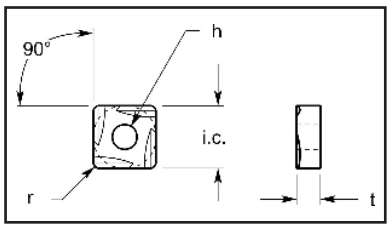
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG432R1	.497/.503	.191/.197	.200/.206	1/32
SNSG433R1	.497/.503	.191/.197	.200/.206	3/64
SNSG434R1	.497/.503	.191/.197	.200/.206	1/16
SNSG442R1	.497/.503	.254/.260	.200/.206	1/32
SNSG533R1	.622/.628	.194/.200	.247/.253	3/64
SNSG543R1	.622/.628	.256/.262	.247/.253	3/64
SNSG544R1	.622/.628	.256/.262	.247/.253	1/16
SNSG633R1	.747/.753	.193/.199	.309/.315	3/64
SNSG634R1	.747/.753	.193/.199	.309/.315	1/16
SNSG642R1	.747/.753	.256/.262	.309/.315	1/32
SNSG643R1	.747/.753	.256/.262	.309/.315	3/64
SNSG644R1	.747/.753	.256/.262	.309/.315	1/16
SNSG6610R1	.747/.753	.387/.393	.309/.315	3/32
SNSG664R1	.747/.753	.380/.385	.309/.315	1/16
SNSG856R1	.996/1.004	.318/.324	.360/.366	3/32
SNSG866R1	.996/1.004	.386/.392	.360/.366	3/32

Utility Square Negative R3 Chipbreaker With Hole



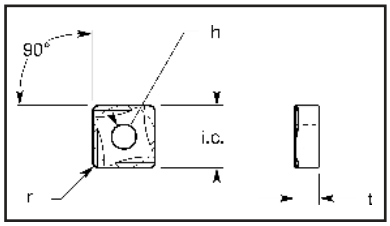
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSM432R3	.497/.503	.199/.205	.200/.206	1/32
SNSM433R3	.497/.503	.199/.205	.200/.206	3/64
SNSM434R3	.497/.503	.199/.205	.200/.206	1/16
SNSM543R3	.622/.628	.254/.260	.247/.253	3/64
SNSM643R3	.747/.753	.254/.260	.309/.315	3/64
SNSM644R3	.747/.753	.254/.260	.309/.315	1/16

Utility Square Negative R4 Chipbreaker With Hole



Right Hand Shown

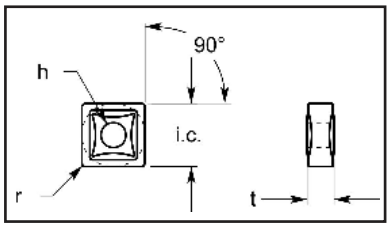
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSM322ER-R4	.373/.377	.132/.138	.147/.153	1/32
SNSM323ER-R4	.373/.377	.132/.138	.147/.153	3/64
SNSM432ER-R4	.497/.503	.199/.205	.200/.206	1/32
SNSM433ER-R4	.497/.503	.199/.205	.200/.206	3/64
SNSM542ER-R4	.622/.628	.263/.269	.247/.253	1/32
SNSM543ER-R4	.622/.628	.263/.269	.247/.253	3/64
SNSM544ER-R4	.622/.628	.263/.269	.247/.253	1/16



Left Hand Shown

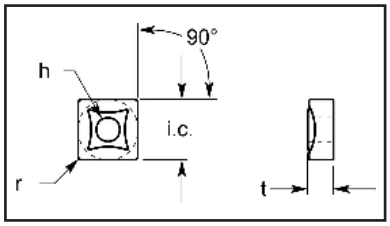
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSM321EL-R4	.373/.377	.132/.138	.147/.153	1/64
SNSM322EL-R4	.373/.377	.132/.138	.147/.153	1/32
SNSM323EL-R4	.373/.377	.132/.138	.147/.153	3/64
SNSM432EL-R4	.497/.503	.199/.205	.200/.206	1/32
SNSM433EL-R4	.497/.503	.199/.205	.200/.206	3/64
SNSM542EL-R4	.622/.628	.263/.269	.247/.253	1/32
SNSM543EL-R4	.622/.628	.263/.269	.247/.253	3/64
SNSM544EL-R4	.622/.628	.263/.269	.247/.253	1/16

Utility Square Negative GP1 Chipbreaker With Hole



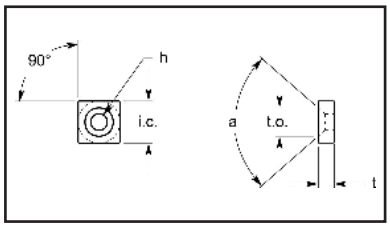
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSP431GP1	.497/.503	.200/.206	.200/.206	1/64
SNSP432GP1	.497/.503	.200/.206	.200/.206	1/32
SNSP433GP1	.497/.503	.200/.206	.200/.206	3/64
SNSP434GP1	.497/.503	.200/.206	.200/.206	1/16
SNSP532GP1	.622/.628	.200/.206	.247/.253	1/32
SNSP533GP1	.622/.628	.200/.206	.247/.253	3/64
SNSP542GP1	.622/.628	.263/.269	.247/.253	1/32
SNSP543GP1	.622/.628	.263/.269	.247/.253	3/64
SNSP632GP1	.747/.753	.200/.206	.309/.315	1/32
SNSP633GP1	.747/.753	.192/.198	.309/.315	3/64
SNSP642GP1	.747/.753	.263/.269	.309/.315	1/32
SNSP643GP1	.747/.753	.263/.269	.309/.315	3/64
SNSP6610GP1	.747/.753	.405/.411	.309/.315	5/32

Utility Square Negative R5 Chipbreaker With Hole



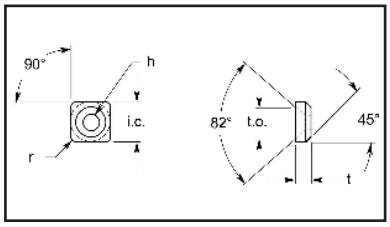
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSS432R5	.497/.503	.194/.200	.200/.206	1/32
SNSS433R5	.497/.503	.194/.200	.200/.206	3/64
SNSS643R5	.747/.753	.257/.263	.309/.315	3/64

Square Negative With Hole and Dbl Countersink



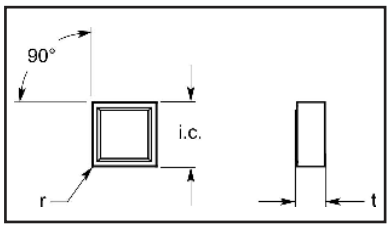
Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	a
USD12P-NEG	.764/.770	.202/.207	.200/.206	.435/.441	82°
USD320P-NEG	.389/.395	.135/.143	.156/.160	.249/.255	90°
USD330P-NEG	.389/.395	.135/.143	.155/.161	.249/.255	90°
USD420P-NEG	.514/.520	.135/.143	.175/.181	.289/.295	90°
USD430P-NEG	.514/.520	.198/.206	.175/.181	.289/.295	90°
USD8P-NEG	.514/.520	.135/.143	.175/.181	.373/.379	82°
USD9P-NEG	.577/.583	.135/.143	.175/.181	.373/.379	82°

Utility Square Negative With Hole And Countersink



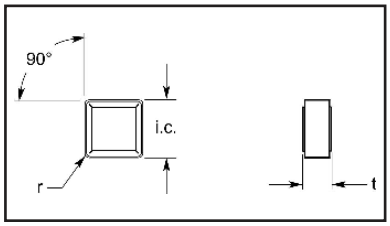
Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
USST1222	.360/.370	.140/.145	.123/.127	.294/.300	.030
USST1624	.485/.495	.138/.148	.138/.142	.327/.333	.060
USST1634	.485/.495	.202/.207	.138/.142	.327/.333	.060

Square Negative Chipbreaker



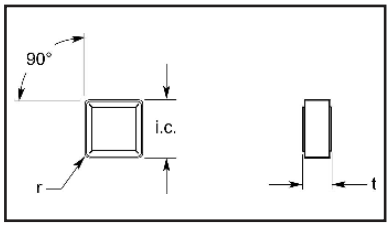
Part No.	Dimensional Specifications		
	i.c.	t	r
SNRR320	.389/.395	.147/.153	0

Utility Square Negative Chipbreaker



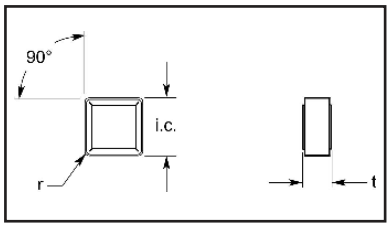
Part No.	Dimensional Specifications		
	i.c.	t	r
SNSF322	.373/.377	.129/.135	1/32
SNSF433	.497/.503	.191/.197	3/64
SNSF534	.620/.630	.200/.208	1/16
SNSF544	.620/.630	.284/.290	1/16
SNSF634	.747/.753	.193/.199	1/16

Utility Square Negative F1 Chipbreaker



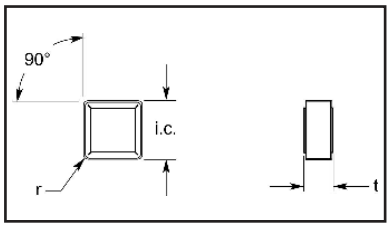
Part No.	Dimensional Specifications		
	i.c.	t	r
SNSF633F1	.747/.753	.193/.199	3/64

Utility Square Negative Wide Chipbreaker



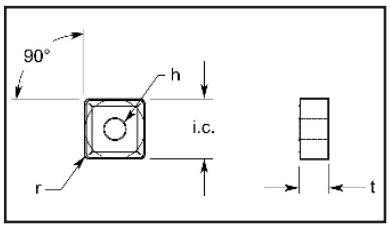
Part No.	Dimensional Specifications		
	i.c.	t	r
SNSF634W	.747/.753	.193/.199	1/16

Utility Square Negative R1 Chipbreaker



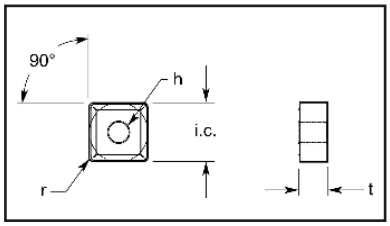
Part No.	Dimensional Specifications		
	i.c.	t	r
SNSF856R1	.996/1.004	.318/.324	3/32
SNSF866R1	.996/1.004	.385/.391	3/32

Utility Square Negative R1 Chipbreaker Single Sided With Hole



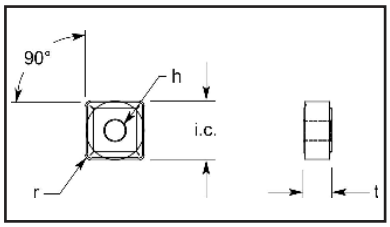
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG856R1-1C/B	.996/1.004	.321/.327	.361/.365	3/32
SNSG866R1-1C/B	.996/1.004	.383/.389	.361/.365	3/32

Utility Square Negative Wide Chipbreaker On One Side With Hole



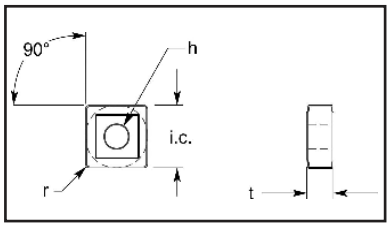
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG433W-1C/B	.497/.503	.197/.203	.201/.205	3/64

Utility Square Negative FS Chipbreaker With Hole



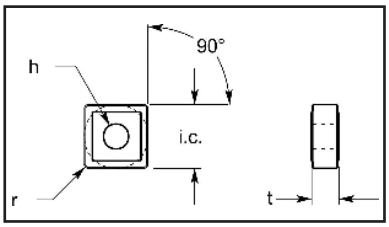
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSG434FS	.497/.503	.196/.202	.201/.205	1/16

Utility Square Negative Chipbreaker With Hole



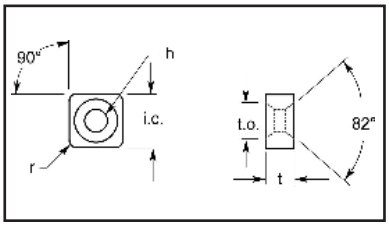
Part No.	Dimensional Specifications			
	t	l	h	r
SNSG866K	.386/.394	.996/1.004	.360/.366	3/32

Square Negative Chipbreaker With Hole



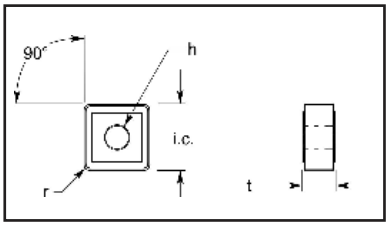
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNMG866EW	.996/1.004	.370/.380	.356/.362	3/32

Utility Square Negative With Hole And Countersinks



Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
SNRQ550SQX250T	.566/.572	.265/.270	.171/.175	.254/.260	.005
DWG#M59783-131	.764/.770	.325/.333	.210/.220	.458/.463	0
SNMC834	.992/1.008	.182/.194	.375/.385	.495/.505	1/16
SNMC864	.992/1.008	.369/.381	.375/.385	.495/.505	1/16

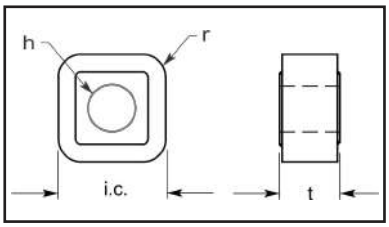
Utility Square Negative Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSP643E36	.747/.753	.259/.265	.310/.314	3/64

NEW

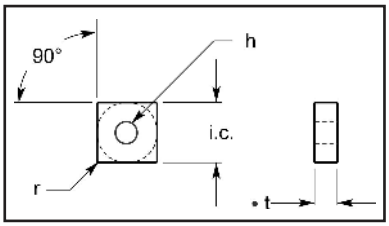
Utility Square Negative Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
SNSP6610	.747/.753	.405/.411	.309/.315	0.156

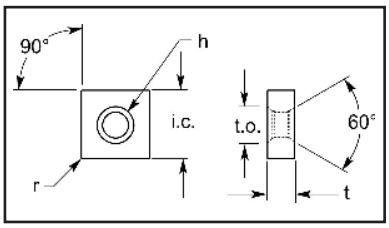
Square Negative With Hole

• variable thickness quoted on request

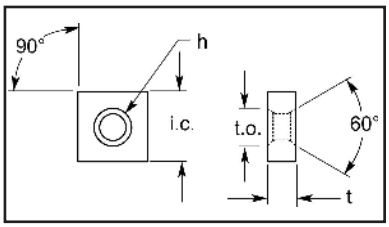


Part No.	Dimensional Specifications		
	i.c.	h	r
SNMA8-2	.996/1.004	.252/.258	1/32

Square Negative With Hole and Dbl. Countersinks

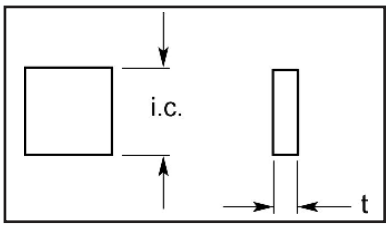


Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
SNR-34-01	.448/.458	.260/.268	.163/.173	.269/.279	0
SNR-44-03	.571/.583	.260/.268	.171/.175	.254/.260	.005
SNR-44-08	.561/.573	.260/.268	.163/.173	.251/.261	.005



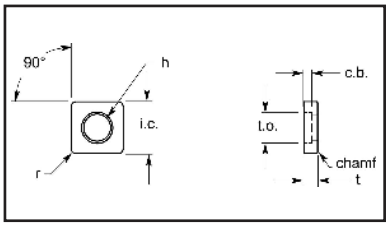
Part No.	Dimensional Specifications			
	i.c.	t	h	t.o.
SNRQ3.540	.451/.457	.260/.268	.165/.171	.271/.277
107DD-136845	.514/.520	.195/.200	.194/.200	.284/.290
#T372670	.514/.520	.203/.211	.206/.212	.326/.332
DWG#95103-1	.515/.525	.266/.274	.214/.220	.341/.347
DWG#U-4368	.764/.770	.260/.268	.245/.251	.439/.445
U9ZE2095-1	.764/.770	.340/.345	.209/.215	.431/.437

Utility Square Negative • variable thickness quoted on request



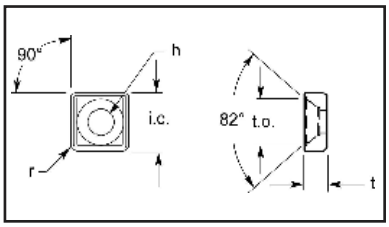
Part No.	Dimensional Specifications	
	i.c.	t
USM10-3-0	.327/.333	.104/.112

Square Negative With Hole



Part No.	Dimensional Specifications						
	i.c.	t	h	t.o.	c/b	r	chamf
UISSN433	.485/.495	.201/.207	.285/.293	.311/.323	.108/.116	3/64	.036x45°
USSN64C	.735/.745	.202/.207	.376/.380	.438/.442	.107/.113	1/16	.021X45°

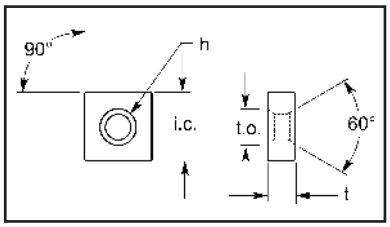
Utility Square Negative Chipbreaker With Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
USN4334520C	.497/.503	.194/.198	.200/.206	.342/.348	.047

Square Negative

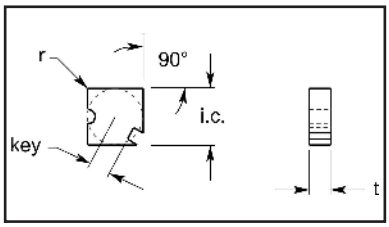
NEW Square Negative With Dbl. ISO Countersinks



Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	c/b
NAC42-MOD	.639/.645	.265/.270	.220/.224	.295/.301	.030
21.001800.100.2	.639/.645	.322/.330	.226/.230	.292/.298	.065

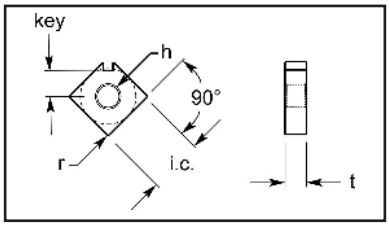
Square CBN

Square Negative Indexable CBN Pocket



Part No.	Dimensional Specifications			
	i.c.	t	key	r
CH4121	.515/.525	.195/.205	.195/.205	0

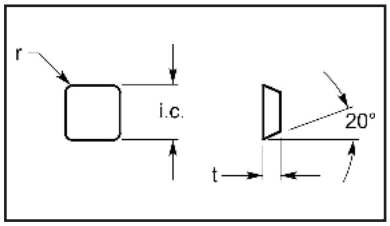
Square Negative With Hole Indexable CBN Pocket



Part No.	Dimensional Specifications				
	i.c.	t	h	key	r
LX-0846-1	.512/.522	.195/.205	.202/.208	.235/.241	.012

Square Positive

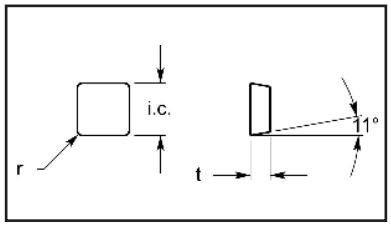
Square Positive



Part No.	Dimensional Specifications		
	i.c.	t	r
SER631	.764/.770	.198/.206	1/64
DWG#U-4487	.514/.522	.135/.140	.039
SERN43AFN	.514/.520	.198/.206	.075
SERN53AFN	.638/.646	.198/.206	.075

Ultra-met®
carbide technologies

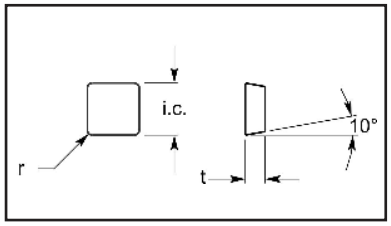
Utility Square Positive



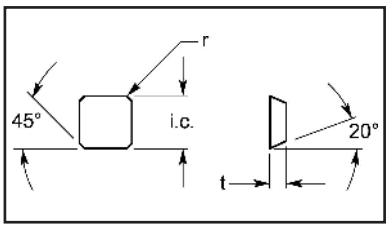
Part No.	Dimensional Specifications		
	i.c.	t	r
SPS322	.372/.378	.135/.140	1/32
SPS422	.495/.505	.135/.140	1/32
SPS424	.495/.505	.135/.140	1/16
SPS632	.743/.757	.198/.203	1/32
SPS633	.743/.757	.198/.203	3/64
SPS634	.743/.757	.198/.203	1/16
* SPS634T025-11	.747/.753	.198/.206	1/16
SPS638	.743/.757	.198/.203	1/8
SPS844	.993/1.007	.265/.270	1/16

* with .064 X 11° T-Land

Square Positive

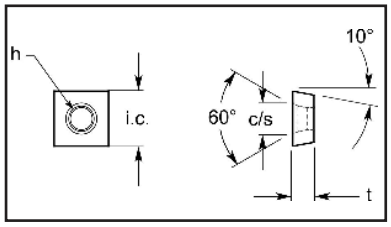


Part No.	Dimensional Specifications		
	i.c.	t	r
SPR320	.389/.395	.135/.143	0
SPR322	.389/.395	.135/.143	1/32
SPR420	.514/.520	.135/.143	0
SPR422	.514/.520	.135/.143	1/32
SPR430	.514/.520	.198/.206	0
SPR432	.514/.520	.198/.206	1/32
SPR433	.514/.520	.198/.206	3/64
SPR530	.639/.645	.198/.206	0
SPR534	.639/.645	.198/.206	1/16
SPR538	.639/.645	.198/.206	1/8
SPR630	.764/.770	.198/.206	0
SPR6312	.764/.770	.198/.206	3/16
SPR632	.764/.770	.198/.206	1/32
SPR634	.764/.770	.198/.206	1/16
SPR636	.764/.770	.198/.206	3/32
SPR638	.764/.770	.198/.206	1/8
SPR738	.889/.895	.198/.206	1/8
SPR830	1.020/1.030	.205/.210	0
SPR833	1.020/1.030	.205/.210	3/64
SPR840	1.020/1.030	.267/.272	0



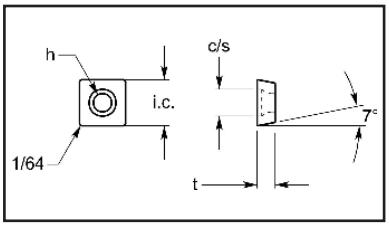
Part No.	Dimensional Specifications		
	i.c.	t	r
SERN42AFN	.517/.522	.135/.140	.039

Square Positive With Hole And Countersink



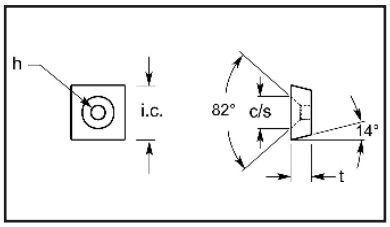
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-3905	.517/.523	.198/.206	.203/.207	.286/.292

Square Positive With ISO Style Hole



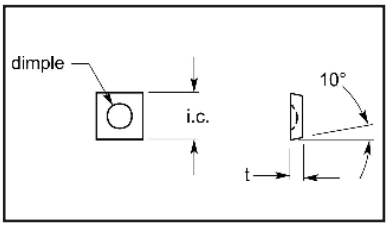
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SCRW53.51	.639/.645	.228/.236	.214/.218	.293/.297
SCRW531	.639/.645	.198/.206	.214/.218	.293/.297
SCRW541	.639/.645	.260/.268	.214/.218	.293/.297

Square Positive Hole



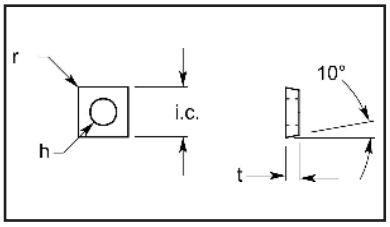
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SDRB-86.40	1.026/1.036	.404/.412	.260/.270	.598/.608
SDRB8-2.190THK	1.018/1.032	.206/.214	.276/.282	.568/.574
SDRB860	1.026/1.036	.392/.397	.260/.270	.598/.608

Square Positive With Dimple



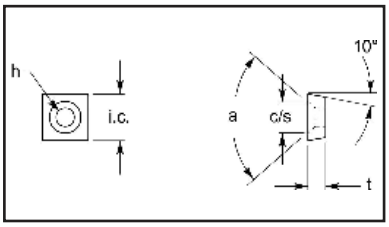
Part No.	Dimensional Specifications		
	i.c.	t	dimple
DWG#U-4153	.389/.395	.135/.143	.187

Square Positive With Hole



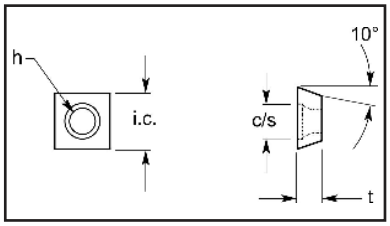
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SPRA422.125H	.514/.521	.137/.145	.122/.128	0
SPRA530	.639/.645	.198/.206	.248/.252	0
SPRA634.125HOLE	.764/.770	.198/.206	.127/.137	1/16

Square Positive With Hole



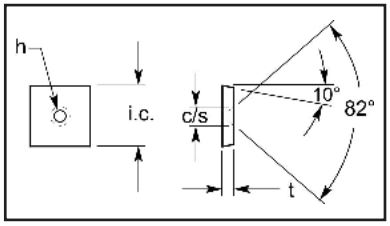
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
USD12P	.764/.770	.202/.207	.201/.205	.435/.441
USD320P	.389/.395	.135/.143	.152/.158	.249/.255
USD320P-82°	.389/.395	.135/.143	.155/.161	.264/.270
USD420P	.514/.520	.135/.143	.176/.180	.289/.295
USD420P-82°	.514/.520	.135/.143	.175/.181	.289/.295
USD530P	.639/.645	.198/.206	.215/.219	.332/.338
USD7P	.452/.458	.135/.143	.123/.127	.267/.273

Square Positive With ISO Style Hole



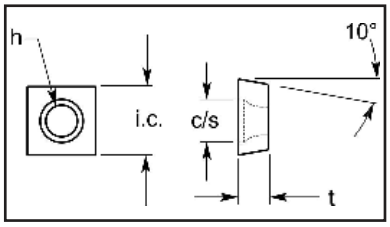
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
819020R1.2	.514/.520	.198/.206	.217/.221	.297/.301

Square Positive With Hole And Countersink On Bottom



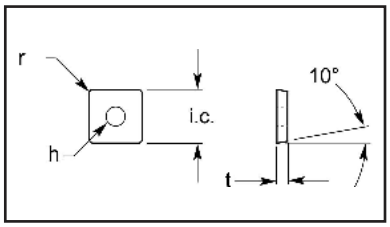
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SPRB630-1127AS	.764/.770	.198/.206	.185/.189	.327/.333
SPRB830-1126AS	1.020/1.030	.205/.210	.185/.189	.327/.333

Square Positive With ISO Style Hole



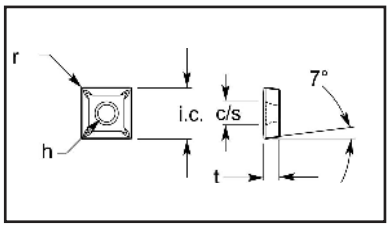
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SPRW430	.514/.520	.198/.206	.213/.219	.295/.305

Utility Square Positive With Hole



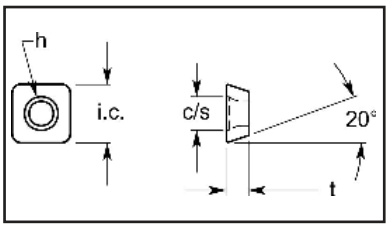
Part No.	Dimensional Specifications			
	i.c.	t	h	r
SPSA322	.370/.380	.135/.140	.148/.152	1/32

Square Positive F5 Chipbreaker With ISO Style Hole



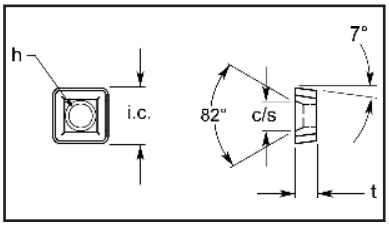
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
SCRT532F5	.639/.645	.204/.212	.213/.219	.292/.298	1/64

Square Positive With ISO Style Hole



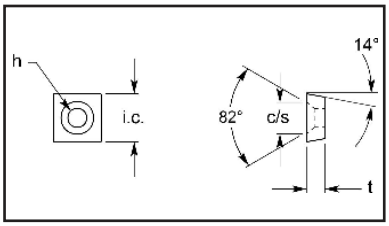
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SERW43A	.514/.520	.198/.206	.213/.219	.293/.299

Square Positive Chipbreaker With Hole And Countersink



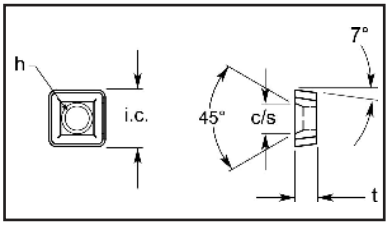
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-3767	.514/.520	.240/.246	.198/.202	.289/.295

Square Positive With Hole And Countersink



Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-4856	1.026/1.036	.392/.397	.260/.270	.598/.608

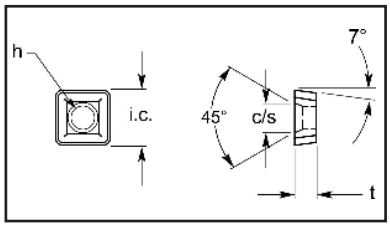
Square Positive Chipbreaker With Hole And Countersink



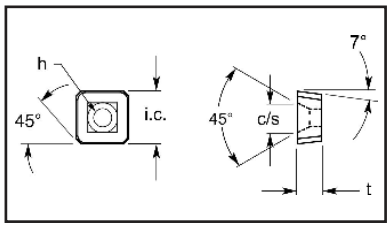
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-4171-MOD	.514/.520	.212/.218	.212/.218	.275/.281

Ultra-met®
carbide technologies

Square Positive Chipbreaker With Hole And Countersink

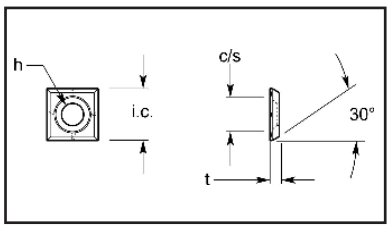


Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U4171ZPF	.517/.523	.200/.206	.212/.218	.275/.281



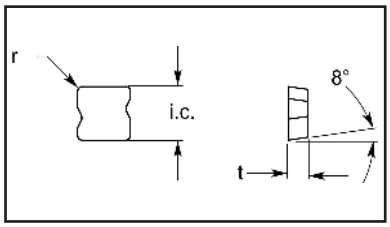
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U4171	.514/.520	.200/.206	.212/.218	.275/.281

Square Positive Chipbreaker With Hole



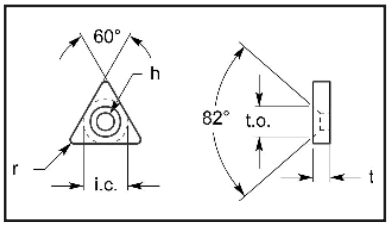
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SGRB1-2-3-4	.607/.617	.108/.116	.260/.266	.399/.405

Square Positive



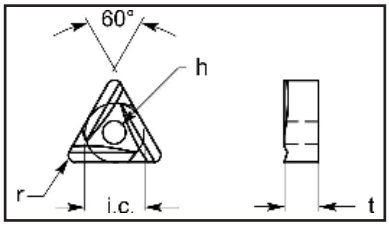
Part No.	Dimensional Specifications		
	i.c.	t	r
DWG#5PP-1-CT	.373/.377	.135/.143	1/32

Triangle Negative With Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
ATPR430-NEG	.269/.275	.104/.112	.115/.121	.199/.205	0
ATPR440-NEG	.269/.275	.135/.143	.115/.121	.199/.205	0
ATPR540-NEG	.331/.337	.135/.143	.141/.147	.262/.268	0
ATPR642-NEG	.392/.398	.135/.143	.167/.173	.324/.330	1/32

Utility Triangle Negative R4 Chipbreaker With Hole

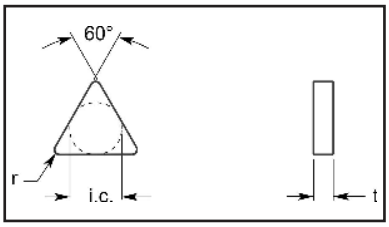


Right hand shown

Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNFM222ER-R4	.248/.252	.141/.147	.091/.095	1/32

Triangle Negative

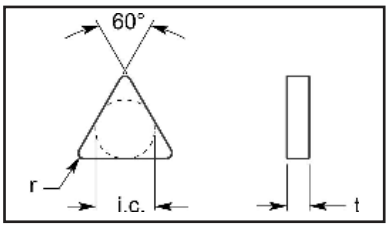
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
TNR.650ICX375THK	.670/.676	.390/.396	0
TNR1.21.50	.170/.176	.104/.112	0
TNR1.210	.170/.176	.070/.076	0
TNR1.51.50	.200/.206	.105/.111	0
TNRE7-0.050THK	.235/.245	.045/.055	0
TNR1.81.50	.235/.245	.104/.112	0
TNR1.82.50	.235/.245	.167/.173	0
UTM8-3-0	.265/.270	.104/.112	0
TNR2.520	.331/.337	.135/.143	0
TNR21.50	.269/.275	.104/.112	0
TNR220	.269/.275	.135/.143	0
TNR31.50	.392/.398	.104/.112	0
TNR310	.392/.398	.074/.082	0
TNR32.50	.392/.398	.166/.174	0
TNR320	.392/.398	.135/.143	0
TNR322	.392/.398	.135/.143	1/32
TNR323	.392/.398	.135/.143	3/64
TNR330	.392/.398	.198/.206	0
TNR332	.392/.398	.198/.206	1/32
TNR333	.392/.398	.198/.206	3/64
TNR340	.392/.398	.260/.268	0
TNR343	.392/.398	.260/.268	3/64
TNR350	.392/.398	.322/.330	0
TNR41.50	.517/.523	.104/.112	0
TNR420	.517/.523	.135/.143	0
TNR423	.517/.523	.135/.143	3/64
TNR430	.517/.523	.198/.206	0
TNR432	.517/.523	.198/.206	1/32
TNR433	.517/.523	.198/.206	3/64
TNR436	.517/.523	.198/.206	1/32
TNR438	.517/.523	.198/.206	1/8
TNR440	.517/.523	.260/.268	0
TNR442	.517/.523	.260/.268	1/32
TNR443	.517/.523	.260/.268	3/64
TNR446	.517/.523	.260/.268	3/32
TNR450	.517/.523	.322/.330	0
TNR460	.517/.523	.385/.393	0
TNR470	.517/.523	.448/.456	0
TNR480	.517/.523	.515/.520	0

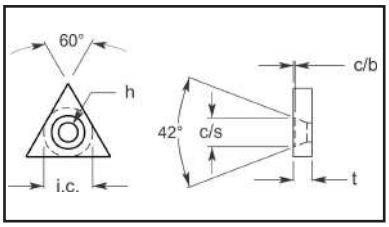
Triangle Negative

• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
1083AS	.585/.591	.260/.268	.125
TNR52.50	.645/.651	.166/.174	0
TNR520	.645/.651	.135/.143	0
TNR530	.645/.651	.198/.206	0
TNR540	.645/.651	.260/.268	0
TNR542	.645/.651	.260/.268	1/32
TNR544	.645/.651	.260/.268	1/16
TNR552	.645/.651	.322/.330	1/32
TNR590	.651/.659	.578/.586	0
TNR620	.770/.776	.135/.143	0
TNR630	.770/.776	.198/.206	0
TNR640	.770/.776	.260/.268	0
TNR646	.770/.776	.260/.268	3/32
TNR650	.770/.776	.322/.330	0
TNR654	.770/.776	.322/.330	1/16
TNR660	.770/.776	.385/.393	0
TNR860	1.020/1.030	.392/.400	0

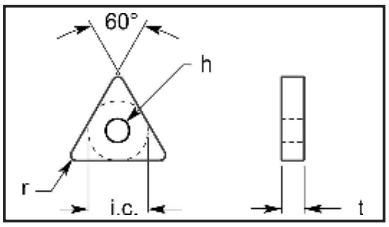
Triangle Negative With Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRA0902042K	.238/.244	.109/.115	.100/.104	.149/.155	.015

Triangle Negative With Hole

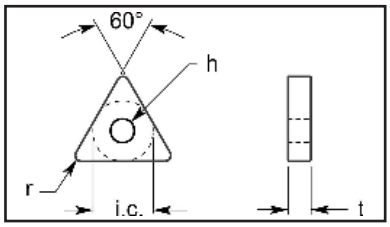
• variable thickness quoted on request



Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRA.643ICX187T.251H	.664/.672	.198/.206	.248/.254	0
TNRA1.21.50	.170/.176	.104/.112	.090/.096	0
TNRA1.210	.170/.176	.070/.076	.090/.096	0
TNRA2.5.2T-0.15H	.331/.337	.210/.218	.147/.153	0
TNRA2.520	.331/.337	.135/.143	.123/.129	0
TNRA2.520.150H	.331/.337	.135/.143	.147/.153	0
TNRA2.530	.331/.337	.198/.206	.123/.129	0
TNRA21.50	.269/.275	.104/.112	.122/.128	0
DWG#U-4540	.269/.275	.104/.112	.123/.127	0
TNRA21.50.136H	.269/.275	.104/.112	.133/.139	0
TNRA21.50.150H	.264/.270	.104/.114	.147/.153	0
TNRA210	.269/.275	.077/.083	.090/.096	0
TNRA210.125HOLE	.269/.275	.072/.080	.123/.129	0
37951	.269/.275	.109/.119	.123/.128	0
TNRA220	.269/.275	.135/.143	.090/.096	0
TNRA220.126HOLE	.269/.275	.135/.143	.124/.128	0
TNRA220.135HOLE	.269/.275	.135/.143	.133/.137	0
TNRA220.150HOLE	.264/.270	.135/.143	.147/.153	0
DWG#U-4873	.269/.275	.143/.151	.091/.095	0
TNRA230	.269/.275	.198/.206	.091/.095	0
TNRA3.564MOD	.454/.460	.385/.393	.200/.205	1/16
TNRA32.5.170HOLE	.392/.398	.166/.174	.168/.172	0
TNRA32.50	.392/.398	.166/.174	.147/.153	0
TNRA320	.392/.398	.135/.143	.147/.153	0
TNRA320.163HOLE	.392/.398	.135/.143	.160/.166	0
TNRA320.170HOLE	.392/.398	.135/.143	.167/.173	0
TNRA324	.392/.398	.135/.143	.147/.153	1/16
TNRA330	.392/.398	.198/.206	.147/.153	0
TNRA334	.392/.398	.198/.206	.147/.153	1/16
TNRA340	.392/.398	.260/.268	.147/.153	0
TNRA3475/9/4	.392/.398	.260/.268	.148/.152	0
TNRA344	.392/.398	.260/.268	.147/.153	1/16
TNRA350	.392/.398	.322/.330	.147/.153	0
TNRA420	.517/.523	.135/.143	.200/.206	0
TNRA430	.517/.523	.198/.206	.200/.206	0

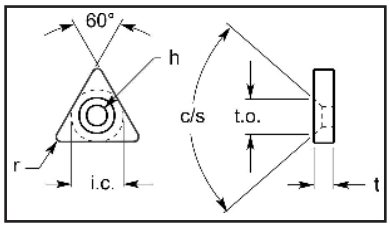
Triangle Negative With Hole

• variable thickness quoted on request



Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRA433	.517/.523	.198/.206	.200/.206	3/64
TNRA436	.517/.523	.198/.206	.200/.206	3/32
DWG#28771	.517/.523	.220/.228	.201/.205	0
TNRA440	.517/.523	.260/.268	.200/.260	0
TNRA443	.517/.523	.260/.268	.200/.206	3/64
TNRA450	.517/.523	.322/.330	.200/.206	0
TNRA460	.517/.523	.385/.393	.200/.206	0
TNRA510	.645/.651	.073/.081	.248/.252	0
TNRA52.50	.645/.650	.166/.174	.247/.253	0
TNRA520	.645/.650	.135/.143	.247/.253	0
TNRA530	.645/.650	.198/.206	.248/.252	0
TNRA54.50	.645/.650	.298/.306	.248/.252	0
TNRA540	.645/.650	.260/.268	.248/.252	0
TNRA544	.645/.650	.260/.268	.248/.252	1/16
TNRA550	.645/.650	.322/.330	.248/.252	0
TNRA554	.645/.650	.322/.330	.248/.252	1/16
TNRA560	.645/.650	.385/.393	.248/.252	0
TNRA564	.645/.650	.385/.393	.248/.252	1/16
TNRA630	.770/.776	.198/.206	.310/.314	0
TNRA630.250HOLE	.770/.776	.198/.206	.249/.253	0
TNRA640	.770/.776	.260/.268	.310/.314	0
TNRA640.250HOLE	.770/.776	.260/.268	.248/.252	0
TNRA640.251HOLE	.770/.776	.260/.268	.249/.253	0
TNRA644	.770/.776	.260/.268	.310/.314	1/16
TNRA650	.770/.776	.322/.330	.310/.314	0
TNRA650.250HOLE	.770/.776	.322/.330	.248/.252	0
DWG#U-4502	.770/.775	.359/.364	.249/.253	0
TNRA660	.770/.776	.385/.393	.310/.314	0
TNRA664	.770/.776	.385/.393	.310/.314	1/16
TNRA670	.770/.776	.450/.458	.310/.314	0
TNRA680	.770/.776	.515/.523	.310/.314	0
TNRA81.50	1.020/1.030	.110/.118	.360/.366	0
TNRA840	1.025/1.030	.267/.272	.360/.366	0
TNRA860	1.020/1.030	.392/.400	.361/.365	0

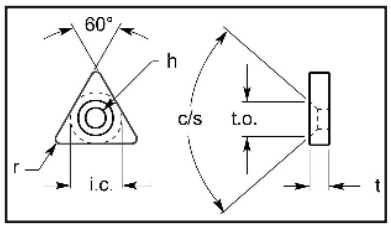
Triangle Negative With Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TB-507	.165/.175	.073/.083	.078/.083	.118/.129	60°	0
TNRB1.2-0.047THK	.170/.176	.057/.065	.089/.099	.132/.142	80°	0
TNRB50/51	.170/.176	.057/.061	.093/.099	.128.138	90°	.002
TNRB1.8-0.098THK	.238/.244	.108/.116	.112/.118	.142/.154	70°	0
TNRB2.5-0	.328/.338	.135/.145	.141/.147	.265/.275	82°	0
TNRB2.520-UM	.331/.337	.135/.143	.141/.146	.262/.268	82°	0
TNRB2.530-9ZE4514-1	.331/.337	.222/.230	.140/.145	.262/.268	n/a	0
TNRB21.50	.265/.270	.104/.112	.134/.140	.193/.199	82°	0
TNRB3-0.140US	.400/.410	.154/.164	.151/.161	.310/.330	82°	0
TNRB32.50-#6	.392/.398	.166/.174	.147/.153	.328/.334	82°	0
TNRB32.50-60	.392/.398	.166/.174	.147/.153	.246/.252	60°	0
TNRB320-#4	.392/.398	.135/.143	.122/.128	.267/.273	82°	0
TNRB320-#5	.400/.410	.203/.213	.151/.161	.310/.330	82°	0
TNRB320-LS	.392/.398	.135/.143	.148/.152	.275/.281	82°	0
TNRB320-#6	.392/.398	.135/.143	.147/.153	.328/.334	82°	0
TNRB320-VAL	.392/.398	.135/.143	.147/.153	.228/.234	90°	0
TNRB320.150HOLE	.392/.398	.135/.143	.147/.153	.244/.250	82°	0
DWG#U-2961-A	.392/.398	.140/.145	.176/.180	.333/.339	n/a	1/32
TNRB330-#5	.400/.410	.203/.213	.151/.161	.310/.330	82°	0
TNRB330-#6	.392/.398	.198/.206	.147/.153	.328/.334	82°	0
TNRB330-60	.392/.398	.198/.206	.147/.153	.246/.251	60°	0
TNRB330-VAL	.392/.398	.198/.206	.147/.153	.228/.234	90°	0
TNRB330.150HOLE	.392/.398	.198/.206	.147/.153	.244/.250	82°	0
TNRB340-VAL	.392/.398	.260/.268	.147/.153	.228/.234	90°	0
TNRB3.522	.460/.470	.135/.143	.171/.177	.307/.313	82°	1/32
TNRB4-0.275THK-SD-2	.514/.520	.285/.293	.200/.206	.342/.348	90°	0
TNRB420-#4	.517/.523	.135/.143	.122/.128	.267/.273	82°	0
TNRB420-#5	.517/.523	.135/.143	.137/.143	.308/.314	82°	0
TNRB420-#8	.517/.523	.135/.143	.176/.182	.383/.389	82°	0
TNRB420-VAL	.517/.523	.135/.143	.200/.206	.342/.348	90°	0
DWG#U-5534	.517/.523	.163/.169	.137/.143	.308/.314	n/a	0
TNRB430-#10	.517/.523	.198/.206	.200/.206	.439/.445	82°	0
TNRB430-#5	.517/.523	.198/.206	.137/.143	.308/.314	82°	0
TNRB430-#8	.517/.523	.198/.206	.176/.182	.383/.389	82°	0
TNRB430-VAL	.517/.523	.198/.206	.200/.206	.342/.348	90°	0
TNRB440-#8	.517/.523	.260/.268	.176/.182	.383/.389	82°	0
TNRB440-VAL	.517/.523	.260/.268	.200/.206	.342/.348	90°	0
TNRB450-#10	.517/.523	.322/.330	.200/.206	.439/.445	82°	0
TNRB450-VAL	.517/.523	.323/.331	.200/.205	.352/.358	90°	0
TNRB460-VAL	.517/.523	.385/.393	.201/.205	.342/.348	90°	0
TNRB470-VAL	.517/.523	.448/.456	.200/.206	.352/.358	90°	0

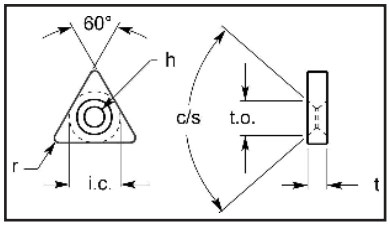
Triangle Negative With Hole

• variable thickness quoted on request



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TNRB520-VAL	.645/.650	.135/.143	.248/.252	.405/.411	90°	0
TNRB52.50-VAL	.645/.650	.166/.174	.247/.253	.405/.411	90°	0
TNRB530-VAL	.645/.650	.198/.206	.247/.253	.406/.410	90°	0
TNRB540-VAL	.645/.650	.260/.268	.247/.253	.406/.410	90°	0
TNRB550-VAL	.645/.650	.322/.330	.248/.252	.406/.410	82°	0
TNRB630-#10	.770/.775	.202/.207	.209/.215	.467/.473	82°	0
TNRB640	.770/.775	.260/.268	.309/.315	.449/.455	90°	0
TNRB660-#10	.770/.775	.385/.393	.209/.215	.467/.473	82°	0

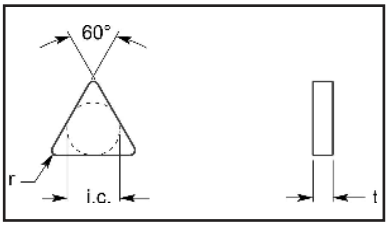
Triangle Negative With Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TNRC2.52.50	.331/.337	.166/.174	.125/.130	.189/.195	60°	0
TNRC2.520	.331/.337	.145/.151	.125/.130	.189/.195	60°	0
TNRC21.50	.265/.270	.104/.112	.134/.140	.193/.199	82°	0
TNRC220	.265/.270	.135/.143	.134/.140	.193/.199	82°	0
AS50	.269/.275	.104/.109	.135/.141	.194./.200	n/a	0
AS50-.125THK	.269/.275	.135/.143	.135/.141	.194/.200	n/a	0
DWG#31161	.392/.398	.160/.165	.148/.152	.228/.234	n/a	0
TNRC32.50	.392/.398	.166/.174	.147/.153	.228/.234	90°	0
TNRC320	.392/.398	.135/.143	.147/.153	.228/.234	90°	0
TNRC330	.392/.398	.198/.206	.147/.153	.228/.234	90°	0
TNRC330-60	.392/.398	.198/.206	.147/.153	.246/.252	60°	0
DWG#G722-1	.392/.398	.198/.206	.174/.180	.233/.239	n/a	3/64
TNRC340	.392/.398	.260/.268	.147/.153	.228/.234	90°	0
#106278TF-05	.392/.398	.260/.268	.174/.180	.233/.239	n/a	3/64
593AS	.392/.398	.260/.268	.175/.179	.233/.239	40°	3/64
TNRC350	.392/.398	.322/.330	.147/.153	.228/.234	90°	0
BSK-1533	.395/.405	.365/.375	.151/.161	.301/.321	81°	0
TNRC3.542	.460/.470	.265/.273	.171/.177	.307/.313	82°	1/32
22-000059-100-1	.512/.530	.257/.261	.216/.224	.291/.295	n/a	0
22-000109-100-1	.512/.532	.257/.261	.216/.224	.291/.295	n/a	.170
#CBP-8910220	.515/.525	.265/.275	.078/.083	.118/.129	40°	0
TNRC430	.517/.523	.198/.206	.200/.206	.342/.348	90°	0
TNRC44.50	.517/.523	.291/.299	.200/.206	.342/.348	90°	0
594AS	.517/.523	.260/.268	.174/.180	.233/.239	n/a	3/64
TNRC440	.517/.523	.260/.268	.200/.206	.342/.348	90°	0
TNRC450	.517/.523	.322/.330	.200/.206	.342/.348	90°	0
TNRC460	.517/.523	.385/.393	.201/.205	.342/.348	90°	0
TNRC480	.517/.523	.510/.518	.200/.206	.352/.358	90°	0
TNRC530	.645/.650	.198/.206	.247/.253	.405/.411	90°	0
589AS	.645/.650	.260/.268	.215/.219	.292/.298	n/a	5/32
TNRC540	.645/.650	.260/.268	.247/.253	.405/.411	90°	0
TNRC550	.645/.650	.322/.330	.247/.253	.405/.411	90°	0
TNRC560	.645/.650	.385/.393	.247/.253	.405/.411	90°	0
TNRC580	.645/.650	.513/.521	.245/.255	.400/.416	90°	0
22-000058-100-1	.648/.668	.257/.261	.216/.224	.291/.295	n/a	.197
TNRC640	.770/.775	.260/.268	.309/.315	.449/.455	90°	0
TNRC650	.770/.775	.322/.330	.309/.315	.449/.455	90°	0
TNRC660	.770/.775	.385/.393	.309/.315	.449/.455	90°	0
TNRC670	.770/.775	.452/.458	.310/.314	.449/.455	90°	0
TNRC680	.770/.775	.510/.518	.309/.315	.449/.455	90°	0
TNRC660UST	.780/.790	.385/.393	.307/.317	.440/.460	90°	0

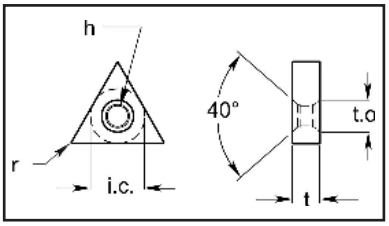
Triangle Negative

• variable thickness quoted on request



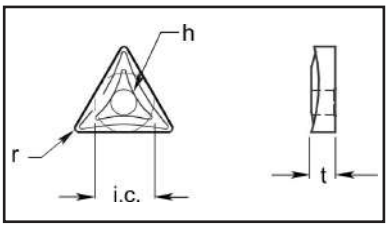
Part No.	Dimensional Specifications	
	i.c.	r
TNRE4-0	.137/.143	0

Triangle Negative With Hole



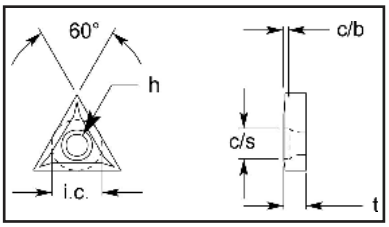
Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
TNRQ.636I.C.	.648/.668	.257/.261	.216/.224	.291/.295	.197
TNRQ220	.269/.275	.135/.143	.105/.110	.164/.170	0
TNRQ2.641-ES	.370/.380	.261/.267	.172/.182	.233/.239	1/16
TNRQ343.177H	.392/.398	.260/.268	.175/.179	.233/.239	3/64
TNRQ44.170R.220H	.512/.532	.257/.261	.216/.224	.291/.295	.170
TNRQ440.220H	.512/.530	.257/.261	.216/.224	.291/.295	0
TNRQ441-ES	.535/.545	.267/.273	.172/.182	.231/.241	1/16
TNRQ443.177H	.517/.523	.260/.268	.174/.180	.233/.239	3/64
TNRQ570-ES	.645/.650	.430/.438	.248/.252	.405/.411	0

Triangle Negative R5 Chipbreaker With Hole



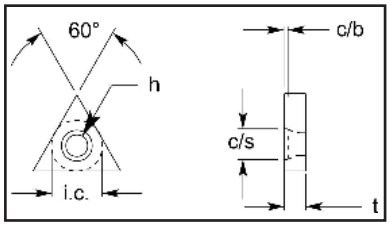
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRS432R5	.514/.520	.195/.201	.201/.205	1/32

Triangle Negative F5 Chipbreaker With ISO Style Hole

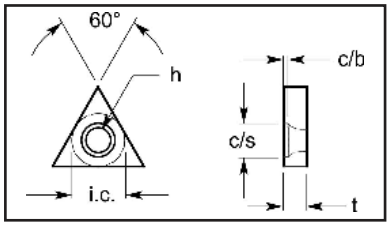


Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRT1.21.21F5	.170/.176	.088/.094	.084/.090	.119/.125	.024/.030
TNRT1.81.51F5	.238/.244	.106/.112	.095/.101	.127/.133	.029/.035
TNRT1.821F5	.238/.244	.138/.144	.095/.101	.127/.133	.029/.035
TNRT21.51F5	.269/.275	.106/.112	.107/.113	.143/.149	.029/.035
TNRT21.52F5	.269/.275	.106/.112	.107/.113	.143/.149	.029/.035
TNRT221F5	.269/.275	.141/.147	.107/.113	.143/.149	.029/.035
TNRT222F5	.269/.275	.141/.147	.107/.113	.143/.149	.029/.035
TNRT32.51F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT32.52F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT32.53F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT321F5	.392/.398	.140/.148	.170/.176	.233/.239	.040/.046
TNRT332F5	.392/.398	.203/.211	.170/.176	.233/.239	.040/.046
TNRT431F5	.517/.523	.194/.200	.213/.219	.292/.298	.037/.043
TNRT432F5	.517/.523	.194/.200	.213/.219	.292/.298	.037/.043

Triangle Negative With ISO Style Hole



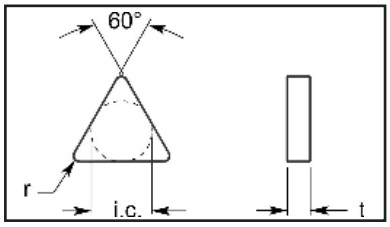
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRW1.21.20	.170/.176	.104/.112	.084/.090	.119/.125	.031/.037
TNRW1.21.50	.170/.176	.104/.112	.084/.090	.119/.125	.031/.037
TNRW1.220	.170/.176	.135/.143	.084/.090	.119/.125	.031/.037
TNRW1.81.50	.238/.244	.104/.112	.095/.101	.127/.133	.036/.042
TNRW1.820	.238/.244	.135/.143	.095/.100	.127/.133	.036/.042



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRW2.520	.327/.333	.135/.143	.131/.137	.174/.180	.028/.034
TNRW090200	.238/.244	.104/.112	.095/.101	.127/.133	.036/.042
TNRW110200	.269/.275	.104/.112	.107/.113	.143/.149	.036/.042
TNRW21.50	.269/.275	.104/.112	.107/.113	.145/.151	.036/.042
TNRW21.70	.265/.270	.114/.120	.108/.112	.160/.164	.030
TNRW220	.269/.275	.135/.143	.107/.113	.145/.151	.036/.042
TNRW32.50	.392/.398	.166/.174	.170/.176	.233/.239	.046/.052
TNRW320	.392/.398	.135/.143	.170/.176	.233/.239	.046/.052
TNRW330	.392/.398	.198/.206	.170/.176	.233/.239	.046/.052
TNRW340	.392/.398	.260/.268	.170/.176	.233/.239	.046/.052
DWG#J401	.454/.460	.251/.259	.214/.220	.296/.302	.039/.045
TNRW43.50	.517/.523	.229/.237	.213/.219	.292/.298	.043/.049
TNRW430	.517/.523	.198/.206	.213/.219	.292/.298	.043/.049
TNRW440	.517/.523	.260/.270	.213/.219	.292/.298	.057/.063

Utility Triangle Negative

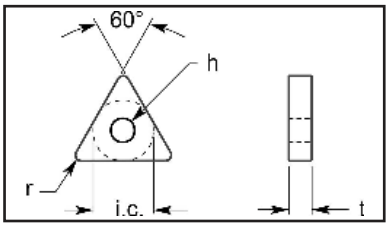
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	t	r
TNS21.51	.245/.255	.120/.130	1/64
TNS222	.248/.252	.135/.143	1/32
TNS322	.372/.378	.135/.143	1/32
TNS324	.373/.377	.135/.145	1/16
TNS332	.372/.378	.198/.206	1/32
TNS333	.372/.378	.198/.206	3/64
TNS432	.495/.505	.198/.206	1/32
TNS433	.495/.505	.198/.206	3/64
TNS434	.495/.505	.198/.206	1/16
TNS542	.618/.632	.260/.268	1/32
TNS543	.618/.632	.260/.268	3/64
TNS544	.618/.632	.260/.268	1/16
TNS554	.618/.632	.322/.330	1/16
TNS638	.736/.742	.198/.206	1/8
TNS654	.743/.757	.328/.336	1/16
TNS664	.743/.757	.385/.393	1/16
TNS666	.743/.757	.385/.393	3/32

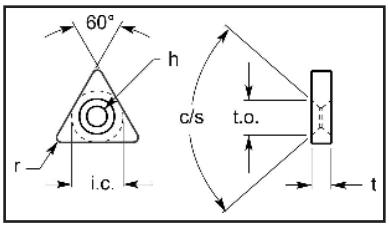
Utility Triangle Negative With Hole

• variable thickness quoted on request



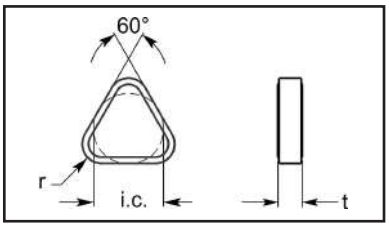
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSA222	.248/.252	.135/.143	.090/.096	1/32
TNSA222.150HOLE	.248/.252	.134/.143	.147/.153	1/32
TNSA321	.373/.377	.135/.143	.147/.153	1/64
TNSA322	.373/.377	.135/.143	.147/.153	1/32
TNSA323	.373/.377	.135/.143	.147/.153	3/64
TNSA324	.373/.377	.135/.145	.147/.153	1/16
TNSA331	.373/.377	.198/.206	.147/.153	1/64
TNSA332	.373/.377	.198/.206	.147/.153	1/32
TNSA333	.373/.377	.198/.206	.147/.153	3/64
TNSA422	.497/.503	.135/.143	.200/.206	1/32
TNSA43-.020R	.499/.5015	.197/.202	.203/.208	1/50
TNSA431	.497/.503	.198/.206	.200/.206	1/64
TNSA432	.497/.503	.198/.206	.200/.206	1/32
TNSA433	.497/.503	.198/.206	.200/.206	3/64
TNSA434	.497/.503	.198/.206	.200/.206	1/16
TNSA436	.497/.503	.198/.206	.200/.206	3/32
TNSA438	.497/.503	.198/.206	.200/.206	1/8
TNSA448	.497/.503	.260/.268	.200/.206	1/8
TNSA532	.622/.628	.198/.206	.247/.253	1/32
TNSA54-020R	.624/.6265	.260/.265	.250/.255	1/50
TNSA542	.622/.628	.260/.268	.247/.253	1/32
TNSA543	.622/.628	.260/.268	.247/.253	3/64
TNSA544	.622/.628	.260/.268	.247/.253	1/16
TNSA666	.747/.753	.385/.393	.309/.315	3/32

Utility Triangle Negative With Hole And Dbl. Countersinks



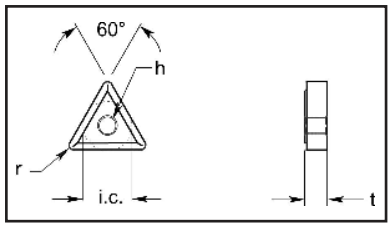
Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
A-16914	.248/.252	.104/.112	.132/.142	.197/.203	82°	1/32
TNSC21.52	.248/.252	.104/.112	.136/.142	.197/.203	82°	1/32
TNSC222	.248/.252	.140/.145	.136/.142	.197/.203	82°	1/32
TNSC.270IC1.52	.267/.273	.107/.113	.134/.140	.200/.210	82°	1/32

Utility Triangle Negative With Chipbreaker



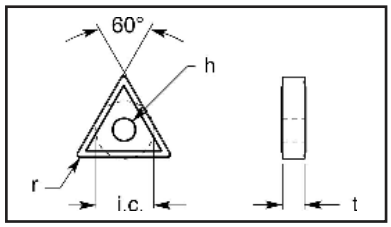
Part No.	Dimensional Specifications		
	i.c.	t	r
TNSF333	.373/.377	.191/.197	3/64
TNSF433	.497/.503	.191/.197	3/64
TNSF96	1.120/1.130	.410/.416	5/16

Utility Triangle Negative Chipbreaker With Hole



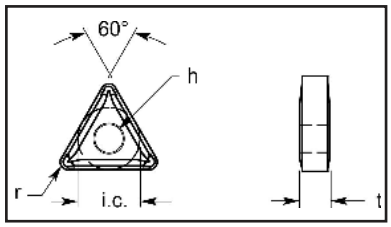
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG221-1C/B	.252/.258	.131/.137	.091/.095	1/64
TNSG321-1C/B	.377/.383	.131/.137	.148/.152	1/64
TNSG654-1C/B	.747/.753	.326/.331	.310/.314	1/16

Utility Triangle Negative F1 Chipbreaker With Hole



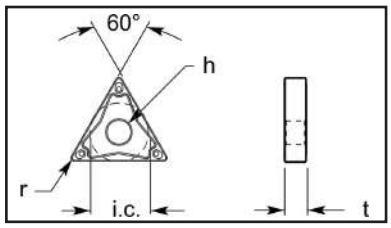
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG221F1	.248/.252	.129/.135	.090/.096	1/64
TNSG321F1	.373/.377	.129/.135	.147/.153	1/64
TNSG322F1	.373/.377	.129/.135	.147/.153	1/32
TNSG323F1	.373/.377	.129/.135	.147/.153	3/64
TNSG324F1	.373/.377	.129/.135	.147/.153	1/16
TNSG331F1	.373/.377	.191/.197	.147/.153	1/64
TNSG332F1	.373/.377	.191/.197	.147/.153	1/32
TNSG333F1	.373/.377	.191/.197	.147/.153	3/64
TNSG334F1	.373/.377	.191/.197	.147/.153	1/16
TNSG421F1	.497/.503	.129/.135	.200/.206	1/64
TNSG431F1	.497/.503	.191/.197	.200/.206	1/64
TNSG432F1	.497/.503	.191/.197	.200/.206	1/32
TNSG543F1	.622/.628	.256/.262	.247/.253	3/64
TNSG544F1	.622/.628	.256/.262	.247/.253	1/16
TNSG564F1	.622/.628	.381/.387	.247/.253	1/16
TNSG666F1	.747/.753	.381/.387	.309/.315	3/32

Utility Triangle Negative F2 Chipbreaker With Hole



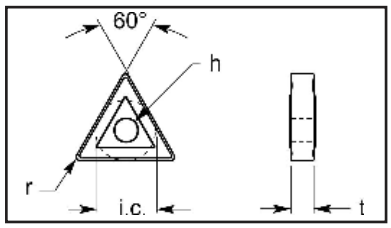
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG433F2	.497/.503	.199/.205	.201/.205	3/64

Utility Triangle Negative GP3 Chipbreaker With Hole



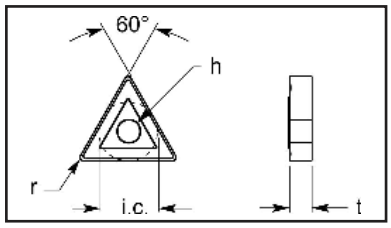
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG432GP3	.497/.503	.197/.203	.200/.206	1/32

Utility Triangle Negative R1 Chipbreaker With Hole



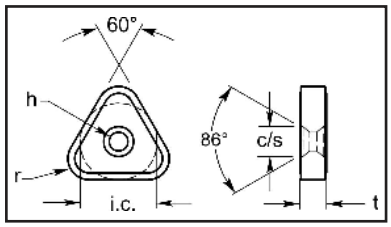
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG323R1	.373/.377	.129/.135	.147/.153	3/64
TNSG333R1	.373/.377	.191/.197	.147/.153	3/64
TNSG432R1	.497/.503	.191/.197	.200/.206	1/32
TNSG433R1	.497/.503	.191/.197	.200/.206	3/64
TNSG434R1	.497/.503	.191/.197	.200/.206	1/16
TNSG436R1	.497/.503	.191/.197	.200/.206	3/32
TNSG438R1	.497/.503	.191/.197	.200/.206	1/8
TNSG443R1	.497/.503	.254/.260	.200/.206	3/64
TNSG532R1	.622/.628	.194/.200	.247/.253	1/32
TNSG542R1	.622/.628	.256/.262	.247/.253	1/32
TNSG543R1	.622/.628	.256/.262	.247/.253	3/64
TNSG544R1	.622/.628	.256/.262	.247/.253	1/16
TNSG548R1	.622/.628	.256/.262	.247/.253	1/8
TNSG644R1	.747/.753	.256/.262	.309/.315	1/16
TNSG654R1	.747/.753	.319/.325	.309/.315	1/16
TNSG664R1	.747/.753	.381/.387	.309/.315	1/16
TNSG666R1	.747/.753	.318/.387	.309/.315	3/32

Utility Triangle Negative R1 Chipbreaker With Hole and Countersink



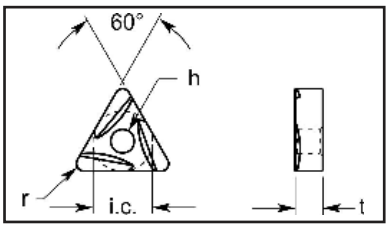
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRG432R1-1C/B	.502/.508	.199/.205	.199/.205	1/32
TNSG432R1-1C/B	.502/.508	.197/.203	.200/.206	1/32

Utility Triangle Negative Chipbreaker With Hole and Dbl. Countersinks



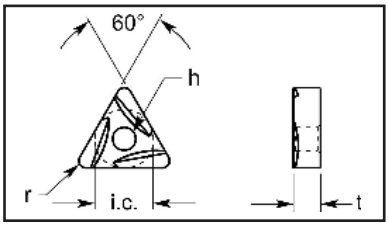
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
TNSJ96	1.120/1.130	.410/.416	.270/.276	.434/.440	5/16

Utility Triangle Negative R4 Chipbreaker With Hole



Right hand shown

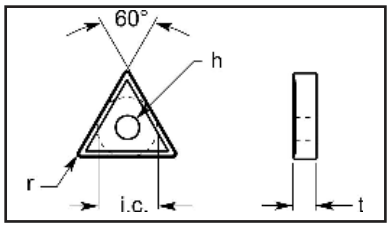
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSM321ER-R4	.373/.377	.141/.147	.147/.153	1/64
TNSM322ER-R4	.373/.377	.142/.148	.147/.153	1/32
TNSM323ER-R4	.373/.377	.138/.144	.147/.153	3/64
TNSM331ER-R4	.373/.377	.203/.209	.147/.153	1/64
TNSM332ER-R4	.373/.377	.203/.209	.147/.153	1/32
TNSM333ER-R4	.373/.377	.203/.209	.147/.153	3/64
TNSM431ER-R4	.497/.503	.200/.206	.200/.206	1/64
TNSM432ER-R4	.497/.503	.200/.206	.200/.206	1/32
TNSM433ER-R4	.497/.503	.200/.206	.200/.206	3/64
TNSM542ER-R4	.622/.628	.260/.266	.247/.253	1/32
TNSM543ER-R4	.622/.628	.260/.266	.247/.253	3/64
TNSM544ER-R4	.622/.628	.260/.266	.247/.253	1/16



Left hand shown

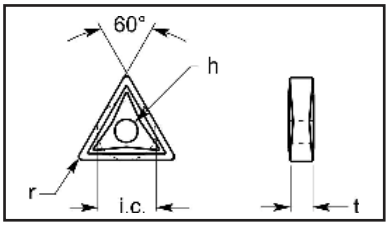
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSM221EL-R4	.248/.252	.137/.143	.090/.096	1/64
TNSM321EL-R4	.373/.377	.141/.147	.147/.153	1/64
TNSM322EL-R4	.373/.377	.142/.148	.147/.153	1/32
TNSM323EL-R4	.373/.377	.138/.144	.147/.153	3/64
TNSM331EL-R4	.373/.377	.203/.209	.147/.153	1/64
TNSM332EL-R4	.373/.377	.203/.209	.147/.153	1/32
TNSM333EL-R4	.373/.377	.203/.209	.147/.153	3/64
TNSM431EL-R4	.497/.503	.200/.206	.200/.206	1/64
TNSM432EL-R4	.497/.503	.200/.206	.200/.206	1/32
TNSM433EL-R4	.497/.503	.200/.206	.200/.206	3/64
TNSM542EL-R4	.622/.628	.260/.266	.247/.253	1/32
TNSM543EL-R4	.622/.628	.260/.266	.247/.253	3/64
TNSM544EL-R4	.622/.628	.260/.266	.247/.253	1/16

Utility Triangle Negative R3 Chipbreaker With Hole



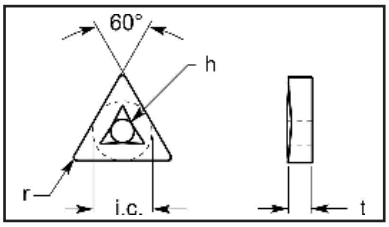
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSM322R3	.373/.377	.138/.144	.147/.153	1/32
TNSM332R3	.373/.377	.201/.205	.147/.153	1/32
TNSM432R3	.497/.503	.200/.206	.200/.206	1/32
TNSM433R3	.497/.503	.200/.206	.200/.206	3/64
TNSM543R3	.622/.628	.260/.266	.247/.253	3/64
TNSM544R3	.622/.628	.260/.266	.247/.253	1/16
TNSM666R3	.747/.753	.384/.390	.309/.315	3/32

Utility Triangle Negative GP1 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSP321GP1	.373/.377	.140/.146	.147/.153	1/64
TNSP322GP1	.373/.377	.140/.146	.147/.153	1/32
TNSP323GP1	.373/.377	.134/.140	.148/.152	3/64
TNSP331GP1	.373/.377	.202/.208	.147/.153	1/64
TNSP332GP1	.373/.377	.202/.208	.147/.153	1/32
TNSP333GP1	.373/.377	.202/.208	.147/.153	3/64
TNSP431GP1	.497/.503	.196/.202	.200/.206	1/64
TNSP432GP1	.497/.503	.196/.202	.200/.206	1/32
TNSP433GP1	.497/.503	.196/.202	.200/.206	3/64
TNSP434GP1	.497/.503	.200/.207	.200/.206	1/16
TNSP438GP1	.497/.503	.196/.202	.200/.206	1/8
TNSP542GP1	.622/.628	.264/.270	.247/.253	1/32
TNSP543GP1	.622/.628	.264/.270	.247/.253	3/64
TNSP544GP1	.622/.628	.264/.270	.247/.253	1/16

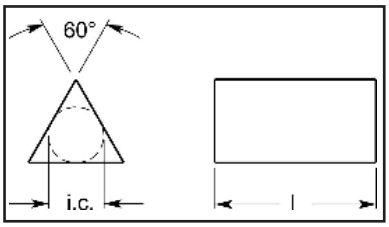
Utility Triangle Negative R5 Chipbreaker With Hole



Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSS321R5	.373/.377	.133/.139	.147/.153	1/64
TNSS322R5	.373/.377	.133/.139	.147/.153	1/32
TNSS332R5	.373/.377	.204/.210	.147/.153	1/32
TNSS333R5	.373/.377	.195/.201	.147/.153	3/64
TNSS431R5	.497/.503	.202/.208	.200/.206	1/64
TNSS432R5	.497/.503	.195/.201	.200/.206	1/32
TNSS433R5	.497/.503	.195/.201	.200/.206	3/64
TNSS542R5	.622/.628	.261/.267	.247/.253	1/32
TNSS543R5	.622/.628	.261/.267	.247/.253	3/64
TNSS544R5	.622/.628	.261/.267	.247/.253	1/16

Triangle Negative

- variable thickness quoted on request



Part No.	Dimensional Specifications	
	i.c.	l
UTB120.880LG	.389/.403	.895/.905

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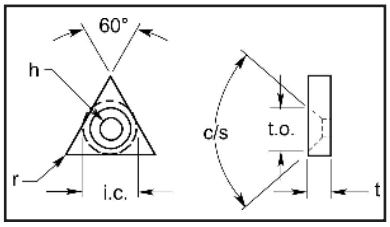
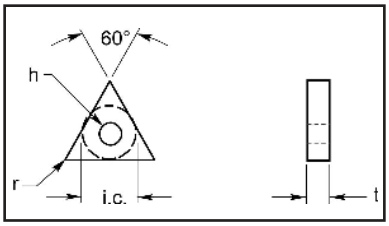
Triangle Negative Chipbreaker With Hole



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
UTD7P-NEG	.454/.460	.135/.143	.122/.128	.267/.273	82°	1/32
UTD8P-NEG	.517/.523	.202/.207	.176/.182	.383/.389	82°	0

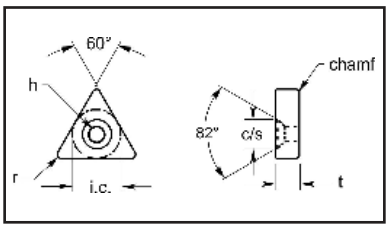
Triangle Negative With Hole

• variable thickness quoted on request



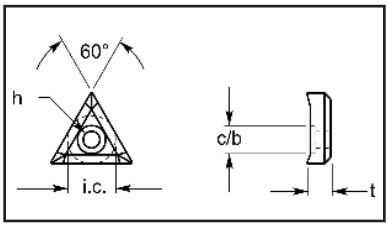
Part No.	Dimensional Specifications			
	i.c.	t	h	r
UTN20	.170/.176	.077/.082	.091/.095	0
UTN40	.269/.275	.140/.112	.135/.139	0
UTN60	.392/.398	.135/.143	.161/.165	0

Utility Triangle Negative With Hole And Countersink



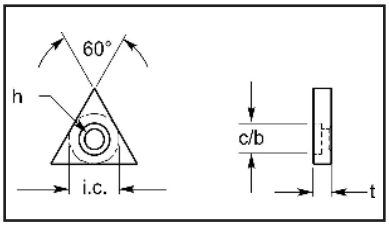
Part No.	Dimensional Specifications					
	i.c.	t	h	c/s	r	chamf
UTST1233	.360/.370	.196/.201	.122/.128	.263/.269	.047	.042X45°
UTST1624	.485/.495	.136/.141	.137/.141	.328/.334	.060	.037X45°
UTST1634	.485/.495	.202/.207	.137/.141	.328/.334	.060	.037X45°

Triangle Negative F3 Chipbreaker With Hole



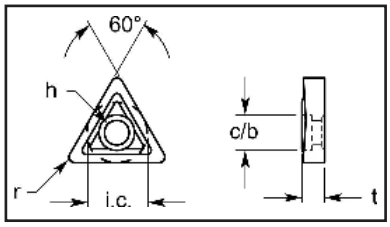
Part No.	Dimensional Specifications				
	i.c.	t	h	c/b	r
UT220F-F3	.265/.270	.129/.135	.091/.095	.155/.161	0

Triangle Negative Chipbreaker With Hole



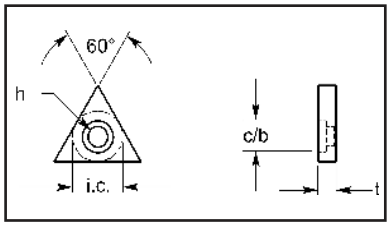
Part No.	Dimensional Specifications				
	i.c.	t	h	c/b	r
UT220NW/OCHAMFER	.265/.275	.142/.148	.090/.096	.151/.157	0

Utility Triangle Negative F4 Chipbreaker With Hole



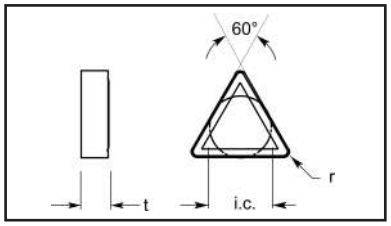
Part No.	Dimensional Specifications				
	i.c.	t	h	c/b	r
UT221P-F4	.248/.252	.140/.145	.091/.095	.155/.161	1/64
UT321P-F4	.373/.377	.140/.145	.148/.152	.242/.248	1/64

Triangle Negative With Hole And Counterbore

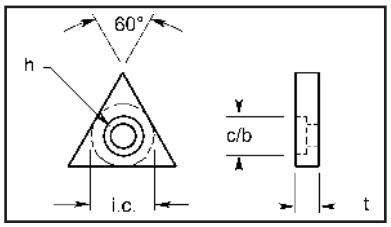


Part No.	Dimensional Specifications				
	i.c.	t	h	c/b	r
UT-221-N	.265/.275	.142/.148	.090/.096	.151/.157	0
UT-321-N	.390/.400	.142/.148	.147/.153	.238/.244	0

Triangle Negative Chipbreaker Single Sided With hole



Part No.	Dimensional Specifications		
	i.c.	t	r
DWG#U-3761	.389/.395	.147/.153	1/32



Part No.	Dimensional Specifications			
	i.c.	t	h	c/b
DWG#DTC375	.390/.400	.142/.148	.147/.153	.238/.244

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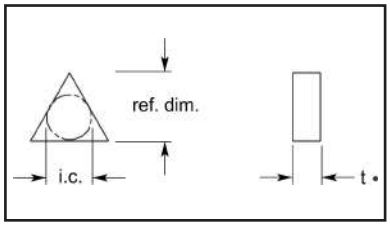
Triangle Oversized Negative

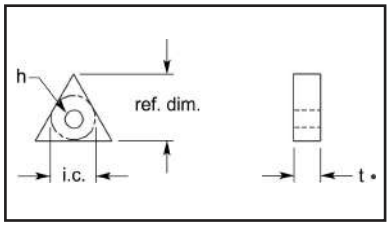
• variable thickness quoted on request



Part No.	Dimensional Specifications	
	i.c.	ref. dim
TNR2-0UST	.270/.280	.405
TNR3-0UST	.400/.410	.608
TNR4-0UST	.525/.535	.795
TNR5-0UST	.655/.665	.990
TNR6-0UST	.780/.790	1.177

Triangle Oversized Negative With Hole

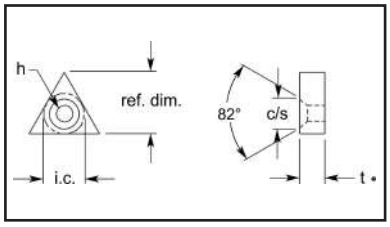
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	h	ref. dim
TNRA3-0UST	.400/.410	.147/.153	.608
TNRA4-0UST	.525/.535	.200/.206	0.795

Triangle Oversized Negative With Hole And Countersink

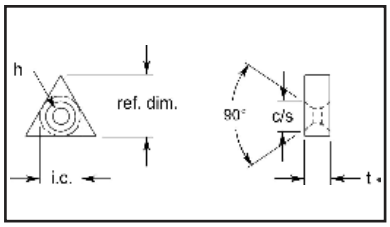
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	h	c/s
TNRB3-0UST-#5	.400/.410	.151/.161	.301/.321
TNRB4-0UST-#5	.525/.535	.151/.161	.301/.321
TNRB5-0UST-#10	.655/.665	.215/.221	.438/.444
TNRB6-0UST-#10	.780/.790	.213/.223	.421/.441

Triangle Oversized Negative With Hole and Dbl. Countersinks

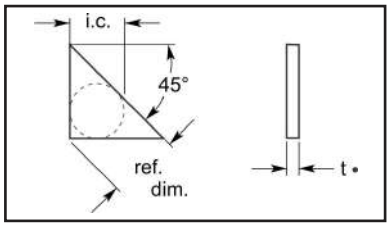
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	i.c.	h	c/s
TNRC330-UST	.400/.410	.145/.155	.230/.250
TNRC3-0-VAL-OS	.400/.410	.147/.153	.240/.260
TNRC430UST	.525/.535	.199/.205	.342/.362
TNRC4-0-VAL-OS	.525/.535	.200/.205	.350/.370
TNRC5-0UST-#10	.655/.665	.248/.253	.415/.435

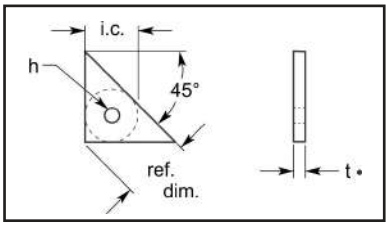
Triangle Oversized Negative

• variable thickness quoted on request



Part No.	Dimensional Specifications	
	i.c.	ref. dim
XTNR340UST	.405/.415	.495
XTNR4-0UST	.535/.545	.657
XTNR5-0UST	.660/.670	.802

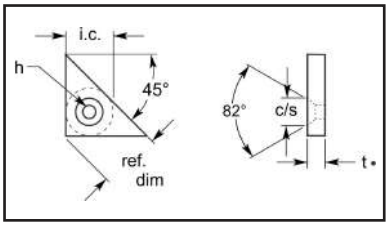
Triangle Oversized Negative With Hole



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	i.c.	h	ref. dim
XTNRA4-0UST	.535/.545	.151/.161	.651
XTNRA5-0UST	.660/.670	.151/.161	.802

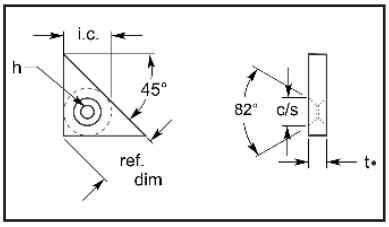
Triangle Oversized Negative With Hole And Countersink



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	i.c.	h	ref. dim
XTNRB4-0UST-#5	.535/.545	.153/.159	.651

Triangle Oversized Negative With Hole and Dbl. Countersinks



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	i.c.	h	ref. dim
XTNRC340	.405/.415	.151/.161	n/a
XTNRC4-0UST-#5	.535/.545	.151/.161	.651
XTNRC5-0UST-#5	.620/.630	.151/.161	.802

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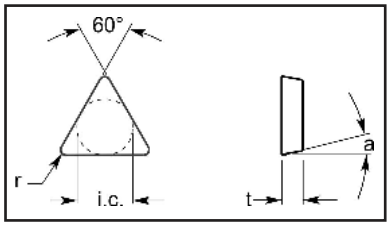
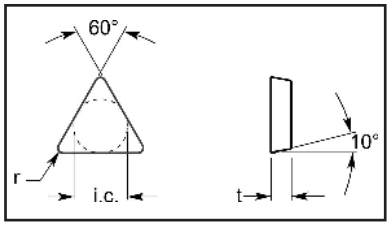
Triangle Positive



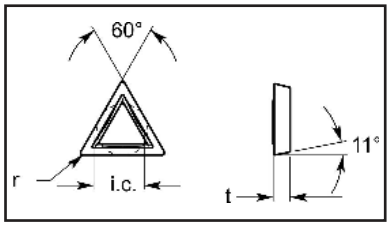
Part No.	Dimensional Specifications			
	i.c.	t	r	a
TPR2.52.020RAD	.331/.337	.135/.143	1/16	10°
TPR2.521	.330/.338	.148/.152	1/64	11°
TPR220	.265/.270	.135/.143	0	10°
TPR222	.265/.270	.135/.143	1/32	10°
TPR320	.392/.398	.135/.143	0	10°
TPR322	.392/.398	.135/.143	1/32	10°
TPR332	.392/.398	.198/.206	1/32	10°
TPR42.51	.517/.523	.166/.174	1/64	10°
TPR420	.517/.523	.135/.143	0	10°
TPR430	.517/.523	.198/.206	0	10°
TPR432	.517/.523	.198/.206	1/32	10°
TPR434	.517/.523	.198/.206	1/16	10°
TPR438	.517/.523	.198/.206	1/8	10°
TPR444	.517/.523	.260/.268	1/16	10°
TPR530	.645/.650	.198/.206	0	11°
TPR532	.645/.650	.198/.206	1/32	10°
TPR54(16)	.645/.650	.260/.268	1/4	10°
TPR540	.645/.650	.260/.268	0	10°
TPR542	.645/.650	.261/.269	1/32	10°
TPR544	.645/.650	.260/.268	1/16	10°
TPR640	.770/.775	.260/.268	0	10°
TPR644	.770/.775	.260/.268	1/16	10°

Utility Triangle Positive



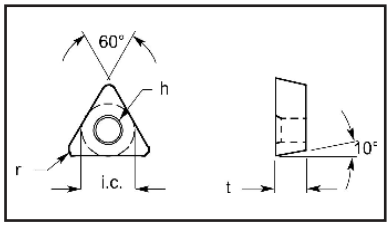
Part No.	Dimensional Specifications		
	i.c.	t	r
TPS222	.247/.253	.135/.140	1/32
TPS321	.322/.378	.140/.145	1/64
TPS322	.372/.378	.140/.145	1/32
TPS431	.495/.505	.198/.203	1/64
TPS432	.495/.505	.198/.203	1/32
TPS433	.495/.505	.198/.203	3/64
TPS434	.495/.505	.198/.203	1/16
TPS436	.495/.505	.198/.203	3/32

Triangle Positive GP5 Chipbreaker

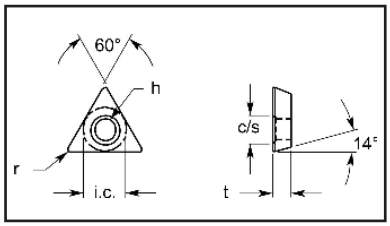


Part No.	Dimensional Specifications		
	i.c.	t	r
TPRR221.5GP5	.267/.273	.140/.146	.043
TPRR321GP5	.389/.395	.134/.140	1/64
TPRR322GP5	.389/.395	.134/.140	1/32
TPRR431.5GP5	.520/.528	.203/.209	.045

Triangle Positive With Hole

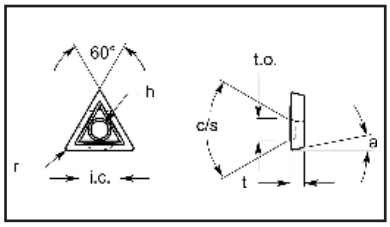


Part No.	Dimensional Specifications			
	i.c.	t	h	r
TPRA2.52.02R15H	.331/.337	.135/.143	.145/.155	.020
TPRA2.521	.330/.338	.148/.152	.118/.124	1/64
TPRA430	.514/.520	.200/.208	.200/.206	0



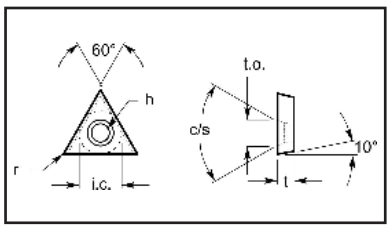
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
TDRA2.521	.331/.337	.135/.143	.145/.155	.224/.234	1/64

Triangle Positive Chipbreaker With Hole And Countersink



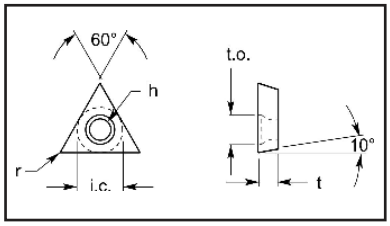
Part No.	Dimensional Specifications						
	i.c.	t	h	t.o.	c/s	r	a
TPRH21.51GP5	.265/.270	.104/.110	.113/.119	.172/.178	82°	1/64	10°
TPRH21.52GP5	.265/.270	.104/.110	.113/.119	.172/.178	82°	1/32	10°
TPRH221GP5	.265/.270	.140/.148	.113/.119	.172/.178	82°	1/64	11°
TPRH222GP5	.265/.270	.135/.143	.114/.118	.172/.178	82°	1/32	10°
TPRH32.51GP5	.389/.395	.165/.171	.166/.172	.227/.233	60°	1/64	11°
TPRH321GP5	.389/.395	.134/.140	.166/.172	.227/.233	60°	1/64	11°
TPRH322GP5	.389/.395	.134/.140	.166/.172	.227/.233	60°	1/32	11°

Triangle Positive With Hole And Countersink



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TPRW320-60	.392/.398	.135/.143	.173/.177	.250/.256	60°	0
TPRW322-60	.392/.398	.135/.143	.173/.177	.250/.256	60°	1/32

Triangle Positive With Hole And Countersink



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TPRW430	.517/.523	.198/.206	.213/.219	.292/.298	ISO	0

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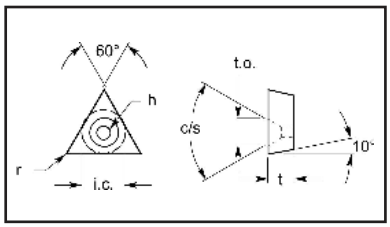
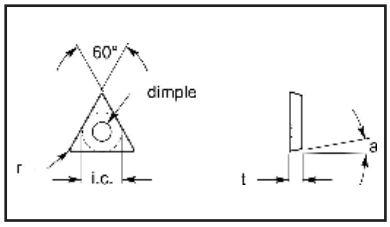
Triangle Positive With Hole And Countersink



Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TPRB21.51	.266/.274	.104/.114	.124/.130	.198/.208	82°	1/64
ATPR541	.331/.337	.135/.143	.141/.147	.262/.268	82°	1/64
ATPR642	.392/.398	.135/.143	.167/.173	.324/.330	82°	1/32
* USM41	.329/.335	.135/.143	.124/.128	.267/.273	82°	1/64
TPRB320-EMP	.385/.389	.136/.142	.125/.130	.259/.265	82°	.006
UTD6P	.392/.398	.139/.147	.122/.128	.267/.273	82°	0
UTD8P	.517/.523	.198/.206	.176/.182	.383/.389	82°	0

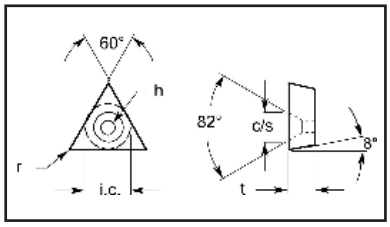
* No grind stock on periphery

Triangle Positive With Dimple



Part No.	Dimensional Specifications				
	i.c.	t	dimple	a	r
DWG#U-4593	.392/.398	.140/.145	.185	10°	0

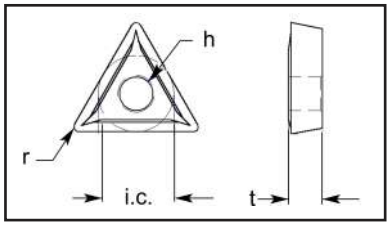
Triangle Positive With Hole And Countersink



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
DWG#U-3445-1	.265/.270	.135/.140	.091/.095	.152/.158	1/32
DWG#U-3445-2	.265/.270	.135/.140	.091/.095	.152/.158	1/64

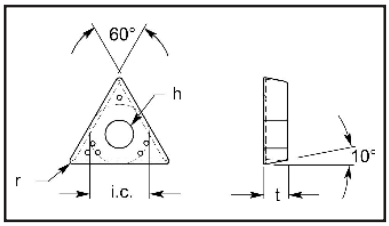
NEW

Triangle Positive F5 Chipbreaker And ISO Hole



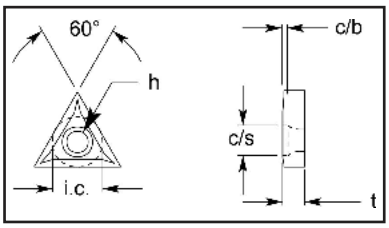
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TPRM432F5	.514/.520	.214/.220	.200/.206	1/32

NEW Triangle Positive With ISO Hole



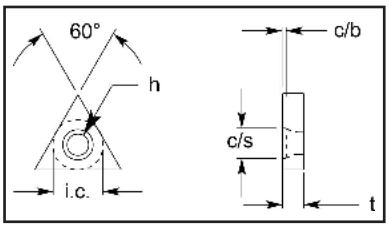
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TPRA21.51	.266/.274	.104/.114	.124/.130	1/64

Triangle Negative F5 Chipbreaker With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRT1.21.21F5	.170/.176	.088/.094	.084/.090	.119/.125	.024/.030
TNRT1.81.51F5	.238/.244	.106/.112	.095/.101	.127/.133	.029/.035
TNRT1.821F5	.238/.244	.138/.144	.095/.101	.127/.133	.029/.035
TNRT21.51F5	.269/.275	.106/.112	.107/.113	.143/.149	.029/.035
TNRT21.52F5	.269/.275	.106/.112	.107/.113	.143/.149	.029/.035
TNRT221F5	.269/.275	.141/.147	.107/.113	.143/.149	.029/.035
TNRT222F5	.269/.275	.141/.147	.107/.113	.143/.149	.029/.035
TNRT32.51F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT32.52F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT32.53F5	.392/.398	.171/.179	.170/.176	.233/.239	.040/.046
TNRT321F5	.392/.398	.140/.148	.170/.176	.233/.239	.040/.046
TNRT332F5	.392/.398	.203/.211	.170/.176	.233/.239	.040/.046
TNRT431F5	.517/.523	.194/.200	.213/.219	.292/.298	.037/.043
TNRT432F5	.517/.523	.194/.200	.213/.219	.292/.298	.037/.043

Triangle Negative With ISO Style Hole



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRW1.21.20	.170/.176	.104/.112	.084/.090	.119/.125	.031/.037
TNRW1.21.50	.170/.176	.104/.112	.084/.090	.119/.125	.031/.037
TNRW1.220	.170/.176	.135/.143	.084/.090	.119/.125	.031/.037
TNRW1.81.50	.238/.244	.104/.112	.095/.101	.127/.133	.036/.042
TNRW1.820	.238/.244	.135/.143	.095/.100	.127/.133	.036/.042

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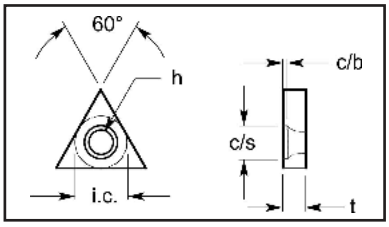
Triangle Positive

Triangle Negative With ISO Style Hole

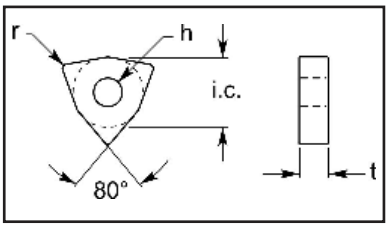


Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	c/b
TNRW2.520	.327/.333	.135/.143	.131/.137	.174/.180	.028/.034
TNRW090200	.238/.244	.104/.112	.095/.101	.127/.133	.036/.042
TNRW110200	.269/.275	.104/.112	.107/.113	.143/.149	.036/.042
TNRW21.50	.269/.275	.104/.112	.107/.113	.145/.151	.036/.042
TNRW21.70	.265/.270	.114/.120	.108/.112	.160/.164	.030
TNRW220	.269/.275	.135/.143	.107/.113	.145/.151	.036/.042
TNRW32.50	.392/.398	.166/.174	.170/.176	.233/.239	.046/.052
TNRW320	.392/.398	.135/.143	.170/.176	.233/.239	.046/.052
TNRW330	.392/.398	.198/.206	.170/.176	.233/.239	.046/.052
TNRW340	.392/.398	.260/.268	.170/.176	.233/.239	.046/.052
DWG#J401	.454/.460	.251/.259	.214/.220	.296/.302	.039/.045
TNRW43.50	.517/.523	.229/.237	.213/.219	.292/.298	.043/.049
TNRW430	.517/.523	.198/.206	.213/.219	.292/.298	.043/.049
TNRW440	.517/.523	.260/.270	.213/.219	.292/.298	.057/.063

Trigons

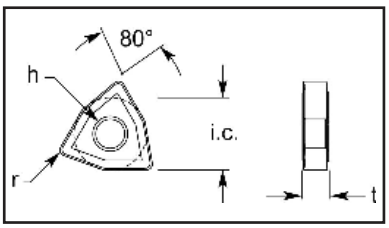
Trigon Negative With Hole

• variable thickness quoted on request



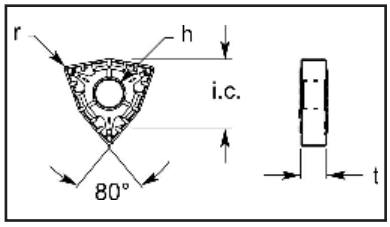
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNRA332	.198/.206	.309/.400	.147/.153	1/32
WNRA432	.198/.206	.520/.530	.200/.206	1/32
WNRA643	.265/.275	.765/.780	0.312	3/64
WNSA322	.132/.138	.372/.378	.147/.153	1/16
WNSA433	.200/.208	.497/.503	.200/.206	3/64
WNSA432	.198/.206	.497/.503	.200/.206	1/32
WNSA648	.265/.275	.745/.755	.307/.317	1/8

Utility Trigon Negative Chipbreaker With Hole



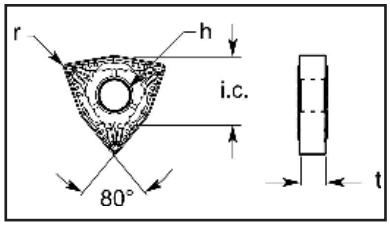
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG322	.132/.138	.372/.378	.147/.153	1/16

Utility Trigon Negative FA Chipbreaker With Hole



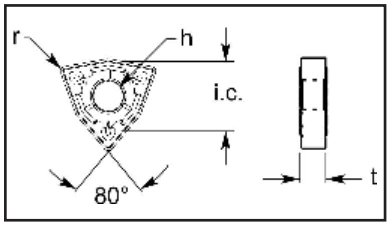
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG432-FA	.196/.202	.497/.503	.200/.206	1/32

Utility Trigon Negative SA Chipbreaker With Hole



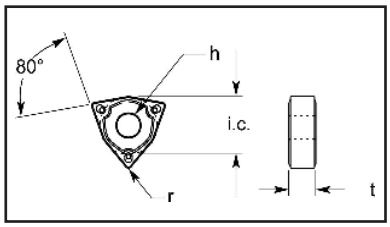
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG432-SA	.196/.202	.497/.503	.200/.206	1/32

Utility Trigon Negative RA Chipbreaker With Hole



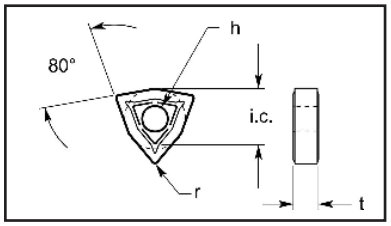
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG432-RA	.196/.202	.497/.503	.200/.206	1/32

Utility Trigon Negative GP3 Chipbreaker With Hole



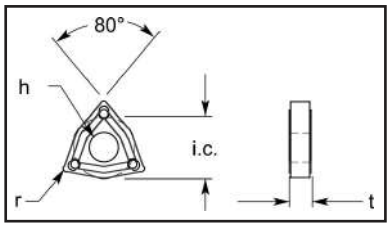
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG432GP3	.197/.203	.497/.503	.200/.206	1/32

Utility Trigon Negative GP6 Chipbreaker With Hole



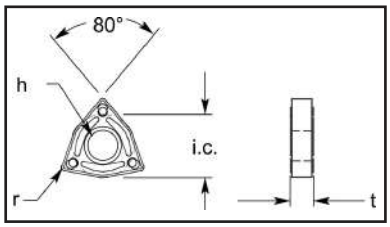
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSG433GP6	.190/.196	.497/.503	.200/.206	1/32
WNSG443GP6	.252/.257	.497/.503	.201/.205	3/64

Utility Trigon Negative Chipbreaker With Hole



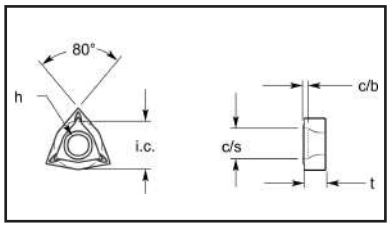
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSZ643	.267/.273	.745/.755	.310/.314	3/64

Trigon Negative Chipbreaker With Hole



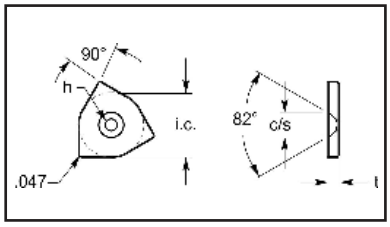
Part No.	Dimensional Specifications			
	t	i.c.	h	r
WNSJ643	.257/.263	.745/.755	.310/.314	3/64

Trigon Negative F5 Chipbreaker With ISO Style Hole



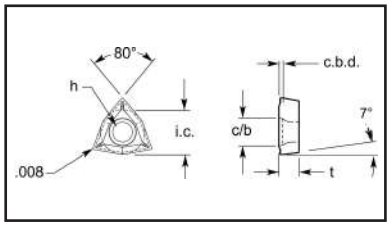
Part No.	Dimensional Specifications					
	t	i.c.	h	c/b	c.b.d.	design for rad.
WNRT1.51.20F5	.094/.100	.201/.207	.082/.088	.111/.117	.017/.023	(1) or smaller
WNRT1.510F5	.078/.084	.201/.207	.082/.088	.111/.117	.017/.023	(1) or smaller
WNRT21.50F5	.109/.115	.264/.270	.107/.113	.143/.149	.029/.035	(1) or smaller
WNRT21.52F5	.109/.115	.264/.270	.107/.113	.143/.149	.029/.035	2

Utility Trigon Negative With Hole and Countersink



Part No.	Dimensional Specifications				
	t	i.c.	r	h	c/s
WSS93CS	.203/.209	1.105/1.125	3/64	.194/.202	.443/.451

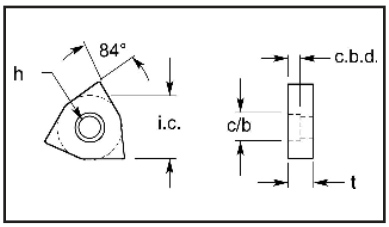
Trigon Positive With Chipbreaker And ISO Hole



Part No.	Dimensional Specifications					
	t	i.c.	h	c/b	c.b.d.	design for rad.
WCRT32.50F5	.173/.179	.387/.393	.170/.176	.233/.239	.029/.035	(1) or smaller
WCRT32.51F5	.173/.179	.387/.393	.170/.176	.233/.239	.029/.035	1
WCRT32.52F5	.173/.179	.387/.393	.170/.176	.233/.239	.029/.035	2

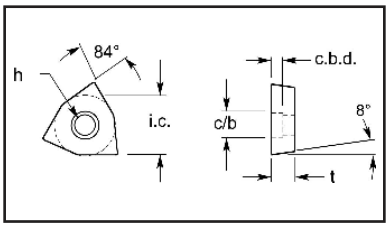
Trigons

Trigon Negative With Hole And Countersink



Part No.	Dimensional Specifications					
	t	i.c.	h	c/b	c.b.d.	r
DWG#OUT177	.129/.135	.407/.410	.147/.151	.210/.214	.061	0
DWG#U-5317	.128/.136	.327/.333	.104/.108	.142/.146	.061	.008
P01800.150T	.161/.167	.407/.413	.147/.151	.210/.214	.061	0
P018002	.129/.135	.407/.413	.147/.151	.210/.214	.061	0
P02800	.135/.143	.327/.333	.098/.110	.137/.149	.070	.008

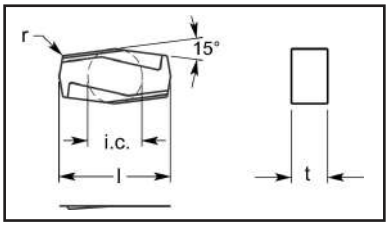
Trigon Positive With Hole And Countersink



Part No.	Dimensional Specifications					
	t	i.c.	h	c/b	c.b.d.	r
P1-800	.160/.165	.486/.492	.183/.187	.241/.247	.057	0

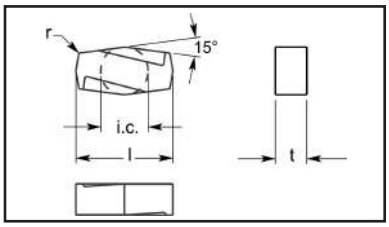
Heavy Duty

Bar Peeling



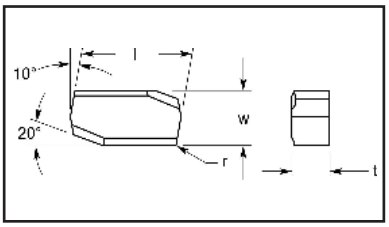
- variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	i.c.	l	r
DWG#U5227	.487/.497	.704/.714	1.447/1.467	1/32



- variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	i.c.	l	r
ZNSX181215L	.487/.497	.704/.714	1.447/1.467	1/32
XNMX25799	.484/.490	.717/.723	1.437/1.443	1/32



- variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	r
25553 MOD C	.469/.475	.710/.720	1.430/1.444	.010

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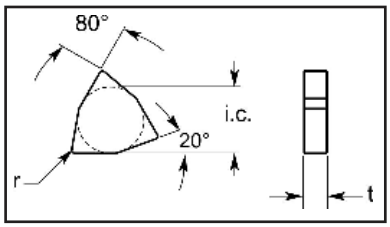
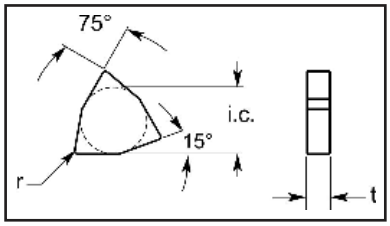
Trigon Negative



• variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	i.c.	r
WNR642	.260/.268	.764/.770	.034
* WNS643	.260/.268	.747/.753	3/64

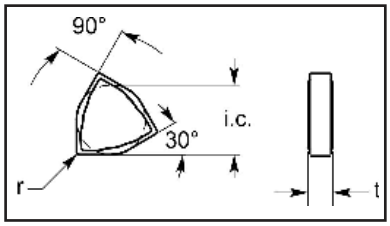
* No grind stock on periphery



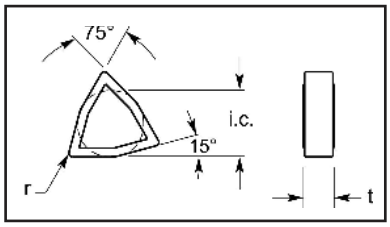
• variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	i.c.	r
WNS-96	.370/.380	1.120/1.130	3/64

Utility Trigon Negative Chipbreaker

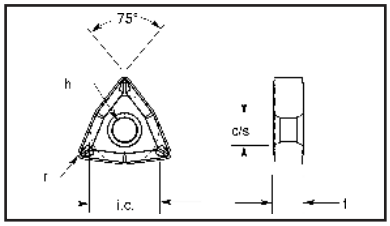


Part No.	Dimensional Specifications		
	t	i.c.	r
WNMF96EW	.385/.395	1.120/1.130	3/64
WNSF-96	.390/.400	1.120/1.130	3/64
WNSF-96EW	.390/.400	1.120/1.130	3/64
WNSF96	.385/.395	1.120/1.130	3/64
WNSF96-UNG	.387/.393	1.120/1.130	3/64



Part No.	Dimensional Specifications		
	t	i.c.	r
WNSP76	.403/.413	.870/.880	3/64

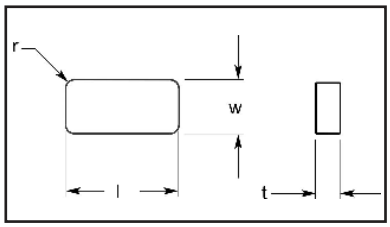
Trigon Negative With Chipbreaker And Hole



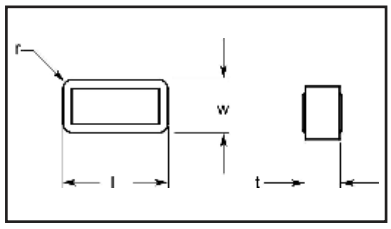
Part No.	Dimensional Specifications				
	t	i.c.	r	h	c/s
WNRX764BMOD	.389/.399	.890/.900	.072	.318/.324	.439/.445

Utility Railroad Heavy Turning

• variable thickness quoted on request

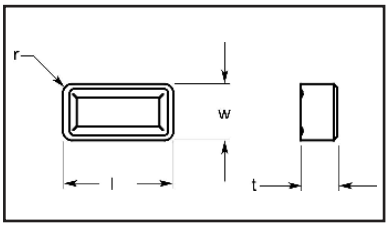


Part No.	Dimensional Specifications			
	t	w	l	r
LNS4444	.264/.270	.514/.524	1.014/1.034	1/16
LNS5444	.265/.270	.643/.657	1.015/1.035	1/16
LNS5464	.390/.395	.643/.657	1.015/1.035	1/16
LNS510128	.765/.775	.630/.640	2.615/2.645	1/8
LNS510128(12)	.765/.775	.630/.640	2.615/2.645	1/8
LNS68812T060-10	.515/.525	.768/.782	2.020/2.040	3/16
LNS6688T060-10	.515/.525	.768/.782	1.515/1.535	1/8
LNS6688-SHIM	.506/.514	.744/.758	1.485/1.505	1/8
LNS6688	.515/.525	.768/.782	1.515/1.535	1/8



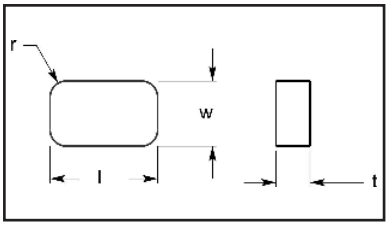
• variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	r
LNSF68812	.525/.535	.768/.775	2.020/2.040	3/16
LNSF6688	.525/.535	.768/.775	1.515/1.535	1/8
LNSF6688-1C/B	.525/.535	.768/.775	1.515/1.535	1/8
LNSF6688GE	.510/.520	.775/.785	1.525/1.535	1/8



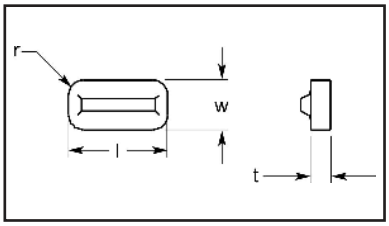
• variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	r
LNSM6688	.507/.513	.768/.775	1.515/1.535	1/8



• variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	r
URR12K	.390/.400	.743/.757	1.238/1.262	3/16
URR6566-MOD	.505/.511	.743/.757	1.238/1.262	3/16



• variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	r
URRC55412	.365/.371	.622/.628	1.247/1.253	3/16
URRC551012	.616/.622	.622/.628	1.247/1.253	3/16

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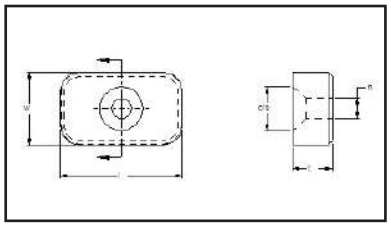
Railroad

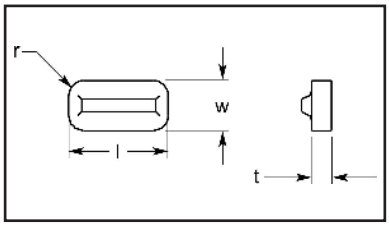
NEW



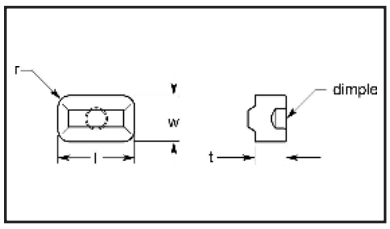
Part No.	Dimensional Specifications				
	t	w	l	h	c/s
RRSH65812-SHIM	.390/.400	.723/.733	1.215/1.235	.201/.211	.438/.448

Utility Railroad Heavy Turning

• variable thickness quoted on request

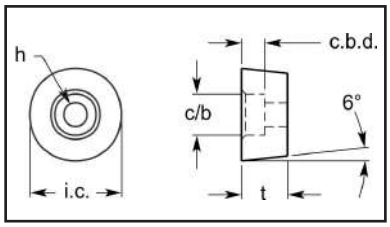


Part No.	Dimensional Specifications			
	t	w	l	r
URRCH65612W/O-HOLE	.449/.455	.743/.757	1.247/1.253	3/16
URRCH651012UM	.618/.624	.745/.755	1.247/1.253	3/16

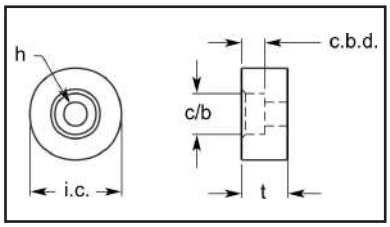


Part No.	Dimensional Specifications				
	t	w	l	r	dimple
1078	.495/.505	.745/.755	1.245/1.255	3/16	.312 dia. X .250 deep

Railroad Heavy Turning

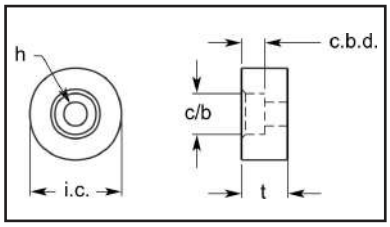


Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	cbd
UCDH42	.517/.523	1.020/1.030	.266/.272	.399/.405	.259/.265

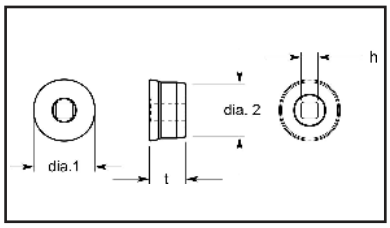


Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	cbd
UCDH42-NEG	.517/.523	1.020/1.030	.266/.272	.399/.405	.259/.265
UCDH43-NEG	.767/.773	1.020/1.030	.266/.272	.399/.405	.509/.515
UCDH53-NEG	.767/.773	1.270/1.280	.390/.396	.587/.593	.382/.388

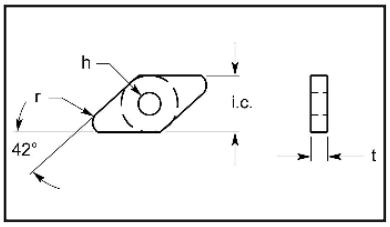
Railroad Heavy Turning



Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	cbd
UFDH33-NEG	.389/.395	.764/.770	.252/.258	.387/.393	.194/.200
UFDH44-NEG	.514/.520	1.025/1.030	.312/.315	.457/.463	.259/.265

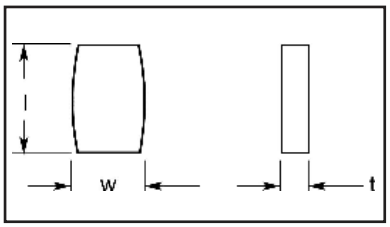


Part No.	Dimensional Specifications			
	t	h	dia1	dia2
WTT-10	.372/.378	.171/.175	.625/.630	.5395/.5445



- variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	i.c.	h	r
UJA5A	.198/.206	.649/.655	.248/.252	.120



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
BP2971REVB	.198/.206	.515/.520	.764/.770

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Milling

ON EDGE MILLING
PARALLELOGRAMS
SQUARE SHOULDER MILLING
GEAR BLANK
WEDGE BLANK PCD
HEXAGONS
OCTOGONS
PENTAGONS
ROUND
SQUARE
TRIANGLE

Ultra-met®
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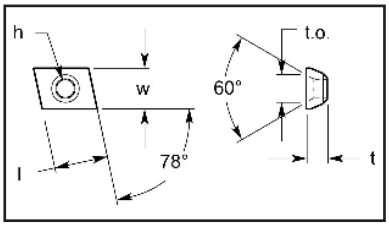
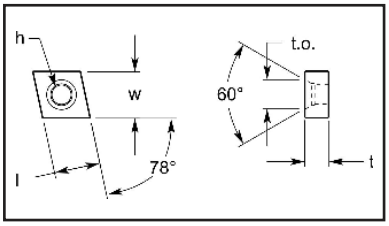
Positive On Edge Milling With Hole and Chamfers



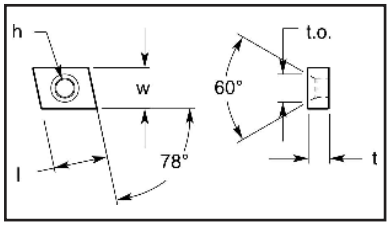
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CDR322L	.160/.168	.385/.395	.510/.522	.162/.174	.257/.269
CDR322R	.160/.168	.385/.395	.510/.522	.162/.174	.257/.269
CDR323L	.200/.208	.385/.395	.510/.522	.162/.174	.257/.269
CDR323R	.200/.208	.385/.395	.510/.522	.162/.174	.257/.269

On Edge Milling With Hole

• variable thickness quoted on request



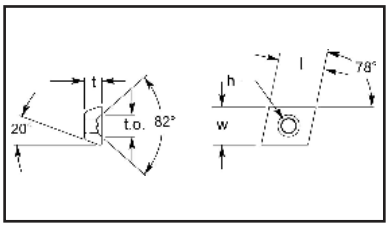
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CDR313L32-NEG	.198/.206	.391/.401	.391/.401	.160/.170	.245/.255



• variable thickness quoted on request

Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CDR322L-NEG	.160/.168	.385/.395	.510/.522	.162/.174	.257/.269
CDR322R-NEG	.160/.168	.385/.395	.510/.522	.162/.174	.257/.269
CDR323L-NEG	.200/.208	.385/.395	.510/.522	.162/.174	.257/.269
CDR323R-NEG	.200/.208	.385/.395	.510/.522	.162/.174	.257/.269
CDR324L25-NEG	.260/.268	.385/.395	.510/.522	.162/.174	.257/.269
CDR324R25-NEG	.260/.268	.385/.395	.510/.522	.162/.174	.257/.269

Positive On Edge Milling With Hole And Chamfers

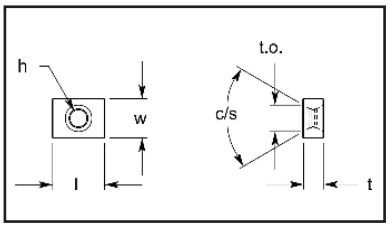


Left hand shown

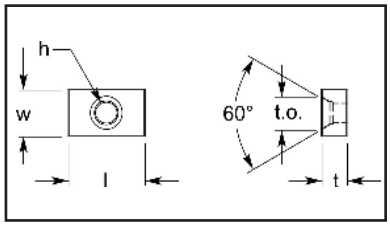
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CDR424L30	.263/.271	.578/.586	.702/712	.207/.219	.331/.337
CDR424R30	.263/.271	.578/.586	.702/.712	.207/.219	.331/.337

On Edge Milling With Hole

• variable thickness quoted on request



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/s
LNR313	.202/.207	.389/.395	.515/.525	.162/.174	.257/.269	60°
LNR314	.265/.270	.389/.395	.515/.525	.162/.174	.257/.269	60°
LNR323	.202/.207	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR323-01	.202/.207	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR323-02	.202/.207	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR323-03	.232/.240	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR323-24	.232/.240	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR323MOD	.202/.207	.389/.395	.639/.645	.197/.209	.322/.334	82°
LNR324	.265/.270	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR324-01	.265/.270	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR325	.322/.330	.389/.395	.640/.650	.162/.174	.257/.269	60°
LNR423	.202/.207	.515/.525	.640/.650	.207/.219	.328/.340	82°
LNR423-20	.202/.207	.515/.525	.640/.650	.207/.219	.328/.340	82°
LNR424	.265/.270	.515/.525	.640/.650	.207/.219	.328/.340	82°
LNR425	.324/.330	.515/.525	.640/.650	.207/.219	.328/.340	82°
LNR425-MOD	.324/.330	.515/.525	.640/.650	.207/.219	.306/.318	82°
LNR433	.202/.207	.515/.525	.765/.775	.207/.219	.328/.340	82°
LNR433-16	.198/.206	.579/.585	.765/.775	.207/.219	.328/.340	82°
LNR434-02	.265/.270	.579/.585	.765/.775	.207/.219	.328/.340	82°
LNR434-05	.265/.270	.579/.585	.765/.775	.207/.219	.328/.340	82°
LNR434-20	.265/.270	.515/.525	.765/.775	.207/.219	.328/.340	82°
LNR435	.322/.330	.515/.525	.765/.775	.207/.219	.328/.340	82°
LNR436	.385/.393	.579/.585	.765/.775	.207/.219	.328/.340	82°
LNR443-01	.202/.207	.579/.585	1.020/1.040	.207/.219	.328/.340	82°
LNR443-20	.202/.207	.515/.525	1.020/1.040	.207/.219	.328/.340	82°
LNR444	.265/.270	.515/.525	1.020/1.040	.207/.219	.328/.340	82°
LNR445	.327/.322	.515/.525	1.020/1.040	.207/.219	.328/.340	82°
LNR445-.250RAD	.328/.333	.577/.587	1.020/1.040	.207/.219	.328/.340	82°
LNRQ3.524.177H	.265/.270	.450/.456	.516/.524	.174/.180	.233/.239	40°
LNRQ42.54.220H	.257/.261	.512/.530	.642/.662	.216/.224	.291/.295	40°
LNRY32.53	.203/.208	.390/.395	.640/.645	.165/.171	.257/.263	60°

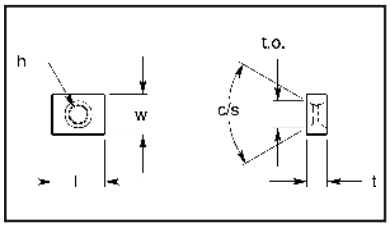


• variable thickness quoted on request

Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
LNRW-200X375X625	.210/.218	.390/.395	.640/.645	.162/.174	.260/.266
LNRW125X375X625	.135/.143	.389/.395	.640/.650	.163/.173	.258/.268
LNRW14X375X625DU	.151/.157	.389/.395	.652/.662	.162/.174	.260/.266
LNRW170X375X625	.181/.187	.389/.395	.640/.645	.165/.171	.260/.266
LNRW222X375X625	.233/.239	.389/.395	.640/.650	.165/.171	.260/.266
LNRW32.530	.198/.203	.390/.395	.640/.645	.165/.171	.257/.263

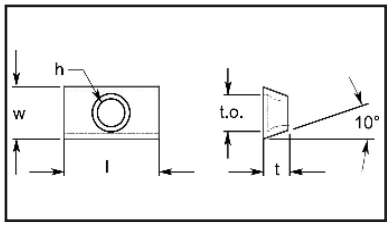
NEW

On Edge Milling With Hole



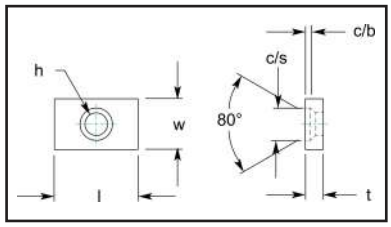
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
LNRW187X312X7750	.197/.205	.327/.337	.768/.778	.165/.171	.260/.266

Positive On Edge Milling With ISO Style Hole



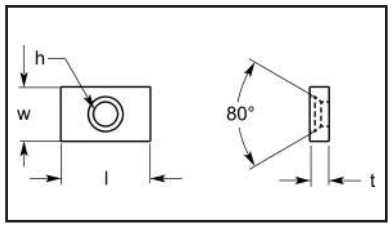
Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/s
21.000473.100.2	.260/.268	.517/.523	.891/.897	.173/.177	.234/.238	iso
LNRW21.001593	.260/.268	.517/.523	.986/.992	.173/.177	.234/.238	iso

NEW On Edge Milling



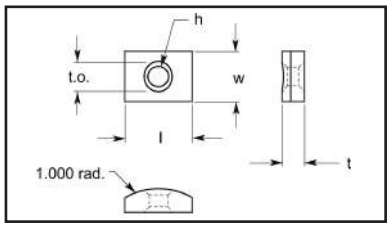
Part No.	Dimensional Specifications					
	t	w	l	h	c/s	c/b
LNRB32.52-UM	.135/.143	.387/.393	.640/.650	.165/.185	.240/.260	.033/.041

NEW On Edge Milling

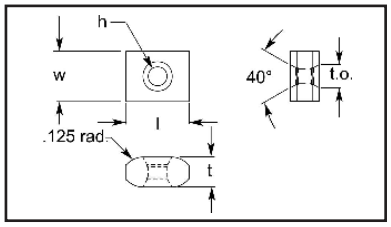


Part No.	Dimensional Specifications			
	t	w	l	h
059X297X472-BLK	.075/.083	.294/.300	.468/.476	.151/.157

On Edge Milling With Hole

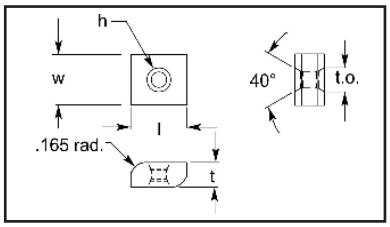


Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
LNR434-1.000RAD	.265/.270	.579/.585	.765/.775	.207/.219	.349/.361

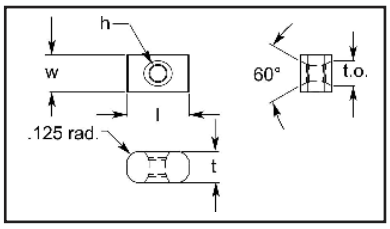


Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	r
D-21-1457-00	.325/.331	.445/.455	.512/.522	.161/.167	.249/.259	.081/.091
LNRQ11.14.06.00	.267/.273	.449/.457	.566/.576	.174/.180	.233/.239	0.125

On Edge Milling With Hole

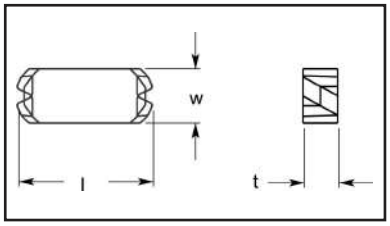


Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
LNRQ13.15.06.00	.267/.273	.548/.556	.610/.620	.167/.180	.233/.239



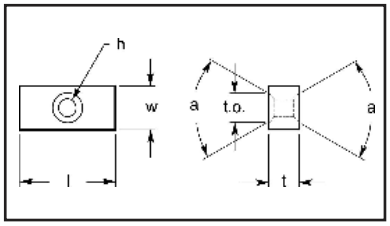
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
LNR325.125R	.322/.330	.389/.395	.640/.650	.164/.172	.259/.267

On Edge Milling

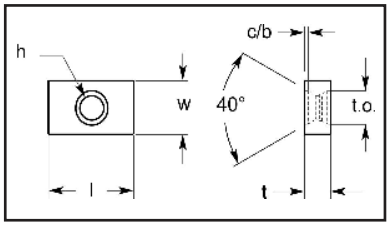


Part No.	Dimensional Specifications		
	t	w	l
LNRX1806AZL11	.265/.275	.408/.418	.972/.982
LNRX1806AZR11	.265/.275	.408/.418	.972/.982

On Edge Milling With Hole



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	a
1035AS	.327/.337	.765/.775	1.270/1.290	.216/.221	.439/.445	82°
22-000060-100-1	.257/.261	.512/.530	.642/.662	.216/.224	.291/.295	40°
9ZE2448-1	.329/.335	.515/.525	.765/.775	.201/.206	.350/.358	82°
DWG#M8932C	.198/.206	.389/.395	.640/.650	.201/.205	.306/.316	82°
DWG#M8932-DET#3A	.185/.191	.389/.395	.640/.650	.201/.205	.306/.316	82°
DWG#T604207	.202/.207	.390/.395	.642/.648	.167/.171	.297/.313	82°
DWG#U-4682	.265/.270	.450/.456	.516/.524	.174/.180	.233/.239	40°
SCBI353A	.202/.207	.390/.400	.644/.654	.202/.210	.323/.333	82°
SK#2329-7	.322/.330	.515/.525	.640/.650	.207/.219	.331/.337	82°
SK#DT-30	.198/.206	.389/.395	.640/.650	.200/.206	.325/.331	82°
TD-11950-2	.257/.261	.512/.530	.642/.662	.216/.224	.291/.295	40°



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
M56288-07	.305/.311	.447/.453	.514/.520	.172/.182	.223/.233	.053/.059
M56288-25	.309/.315	.488/.498	.725/.735	.172/.182	.224/.234	.044/.054
M56288-26	.313/.319	.453/.463	.571/.581	.172/.182	.224/.234	.049/.054

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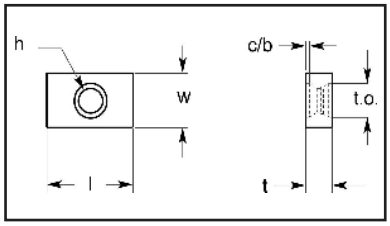
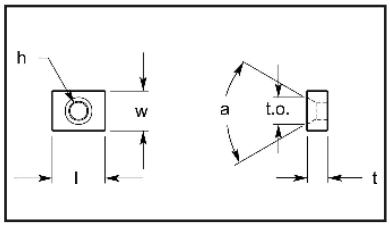
On Edge Milling

On Edge Milling With ISO Style Hole



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
A-102-0703	.263/.271	.389/.395	.640/.650	.168/.178	.234/.244	.030
DWG#E-17099-020BLANK	.198/.206	.389/.395	.640/.650	.170/.176	.236/.242	.030

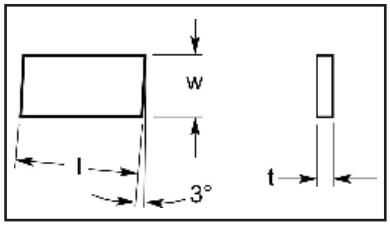
On Edge Milling With Hole And Countersink



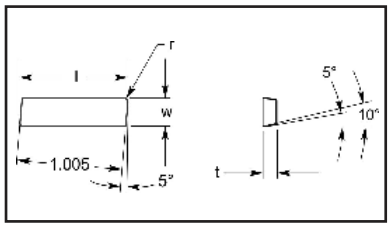
Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	a
MTB8761-31B	.135/.143	.389/.395	.640/.650	.163/.173	.258/.268	60°
U-4150-NEG	.200/.206	.389/.395	.515/.525	.158/.162	.237/.243	50°

Parallelogarms

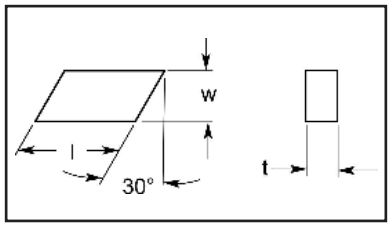
Parallelogram



Part No.	Dimensional Specifications		
	t	w	l
UBCBP15"0"-NEG	.140/.145	.517/.523	1.028.1.035

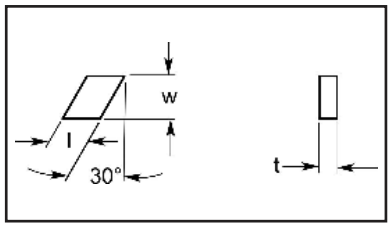


Part No.	Dimensional Specifications			
	t	w	l	r
UABC2442	.136/.142	.263/.269	1.020/1.030	1/32
UABC2448	.136/.142	.263/.269	1.006/1.016	1/8

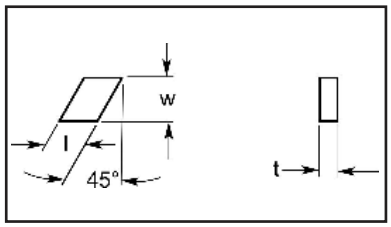


Part No.	Dimensional Specifications		
	t	w	l
OSP-5	.198/.206	.425/.431	.640/.650
OSP-6	.229/.237	.425/.431	.642/.648
UOSP5	.202/.207	.428/.433	.640/.645

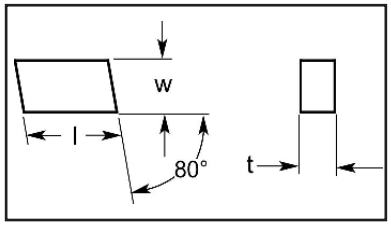
Parallelogram



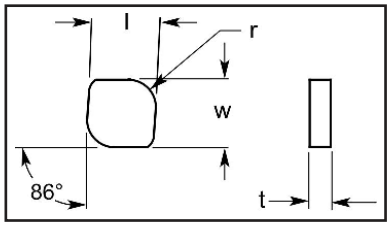
Part No.	Dimensional Specifications		
	t	w	l
DWG#U-5616	.105/.111	.200/.206	.262/.268



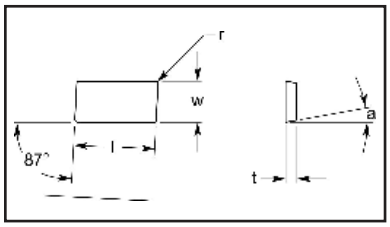
Part No.	Dimensional Specifications		
	t	w	l
DWG#U-5617	.105/.111	.200/.206	.262/.268



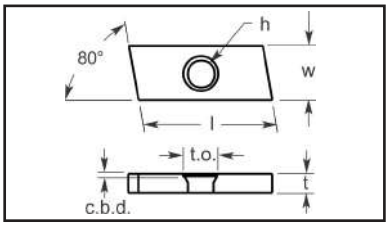
Part No.	Dimensional Specifications		
	t	w	l
UM-1376	.262/.268	.392/.398	.702/.710



Part No.	Dimensional Specifications			
	t	w	l	r
#2558-5972	.327/.332	1.020/1.030	1.028/1.038	16/39



Part No.	Dimensional Specifications				
	t	w	l	r	a
BCBP15-NEG	.140/.145	.517/.523	1.025/1.035	0	0°
BCBP15RH	.140/.145	.517/.523	1.020/1.035	3/64	10°



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
SK-1783-EMP	.100/.106	.276/.284	.685/.695	.131/.137	.174/.180	.009/.015

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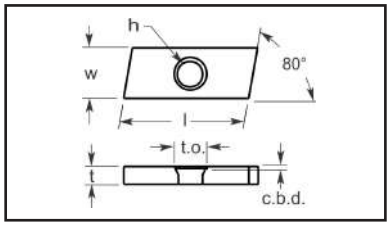
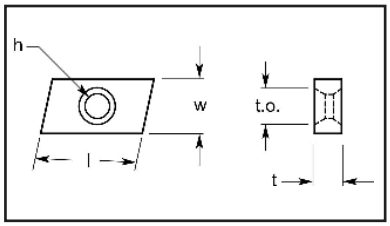
Parallelograms

Parallelogram



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
SK-1783-L-EMP	.100/.106	.276/.284	.685/.695	.131/.137	.174/.180	.009/.015

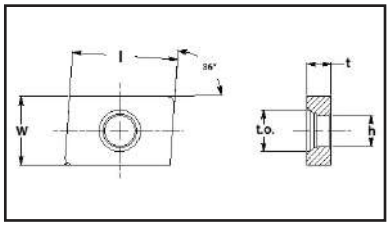
Parallelogram Milling Blank With ISO Style Hole



Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CNR343-02	.260/.268	.448/.458	1.152/1.164	.163/.173	.251/.261

NEW

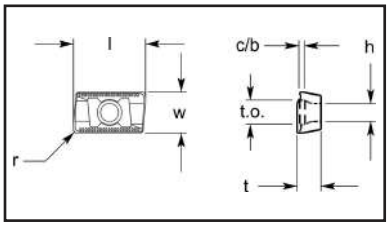
Parallelogram



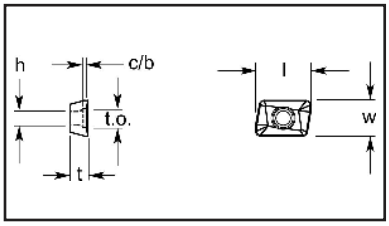
Part No.	Dimensional Specifications				
	t	w	l	h	t.o.
CNDR322	.135/.145	.387/.397	.601/.611	.173/.183	.244/.254

Square Shoulder

Square Shoulder Milling Blank With Chipbreaker And ISO Style Hole

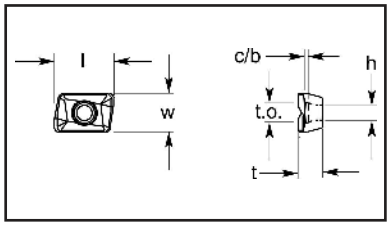


Part No.	Dimensional Specifications						
	t	w	l	h	t.o.	c/b	r
APRX1604PDR-ME12	.227/.233	.389/.395	.690/.696	.170/.176	.233/.239	.047/.053	.031

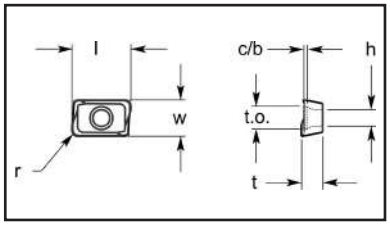


Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
ADRT100308	.140/.146	.277/.283	.406/.412	.107/.113	.143/.149	.037/.043

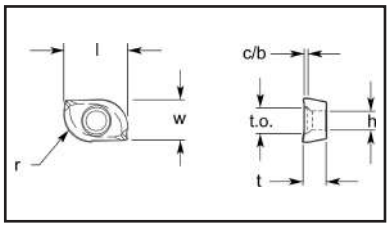
Square Shoulder Milling Blank With Chipbreaker And ISO Style Hole



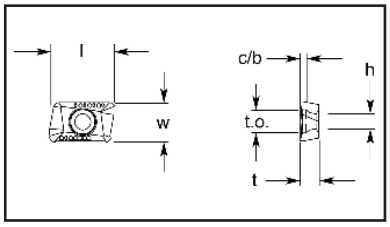
Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
ADRT100304HM	.174/.180	.277/.283	.406/.412	.107/.113	.143/.149	.037/.043



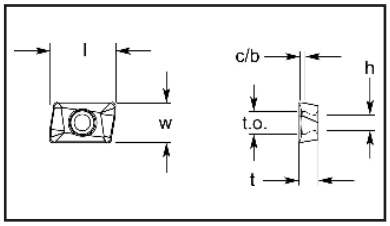
Part No.	Dimensional Specifications						
	t	w	l	h	t.o.	c/b	r
ADST150516RHM	.224/.228	.373/.377	.612/.616	.176/.182	.244/.250	.027/.033	.063



Part No.	Dimensional Specifications						
	t	w	l	h	t.o	c/b	r
ADRT150564RHM	.212/.216	.390/.394	.593/.597	.177/.183	.245/.251	.027/.033	.250

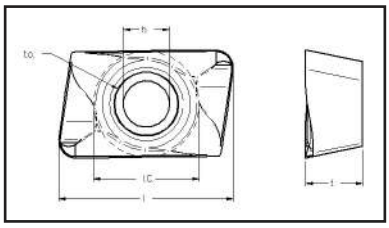


Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
APRT160412EXM	.193/.199	.408/.414	.644/.650	.157/.163	.233/.239	.022/.028



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
APRT160412	.193/.199	.408/.414	.644/.650	.157/.163	.233/.239	.052/.058

NEW



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	c/b
APST434	.209/.215	.393/.399	.649/.655	.168/.178	.231/.241	0.031

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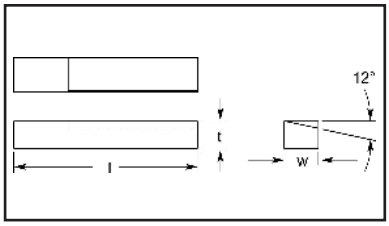
Gear Blank

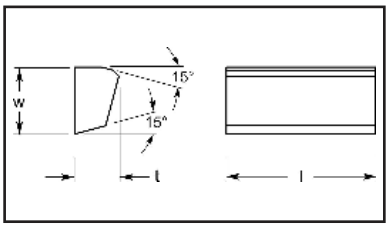
NEW Stick Blank Gear Blanks



Part No.	Dimensional Specifications		
	t	w	l
4X5X4.0-12LH	.420/.430	.520/.530	4.000/4.030
4X5X4.0-12RH	.420/.430	.520/.530	4.000/4.030
6/775/4.25/12L	.620/.630	.795/.805	4.250/4.280
6/775/4.25/12R	.620/.630	.795/.805	4.250/4.280

Wedge Blank PCD

Wedge Style Milling Blank

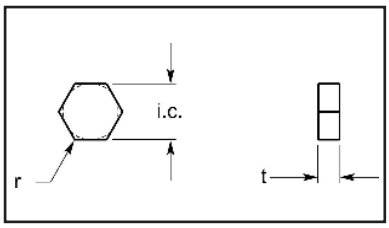


Part No.	Dimensional Specifications		
	t	w	l
UDLB1	.262/.272	.390/.400	.890/.900

Hexagons

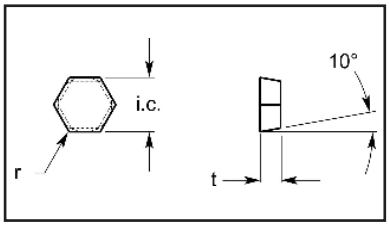
Negative Hexagon

- variable thickness quoted on request



Part No.	Dimensional Specifications		
	t	i.c.	r
HNR532	.195/.200	.638/.642	1/32
HNR530	.198/.206	.639/.645	0
HNR630	.198/.206	.764/.770	0
HNR633	.198/.206	.764/.770	3/64

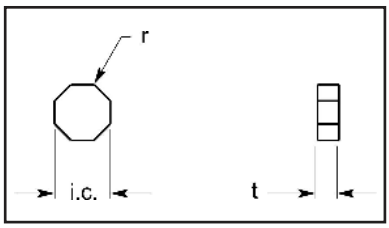
Positve Hexagon



Part No.	Dimensional Specifications		
	t	i.c.	r
HPR531	.198/.206	.639/.645	1/64
HPR631	.198/.206	.764/.770	1/64
WHPR532	.202/.207	.663/.673	1/32
WHPR633	.202/.207	.788/.798	3/64

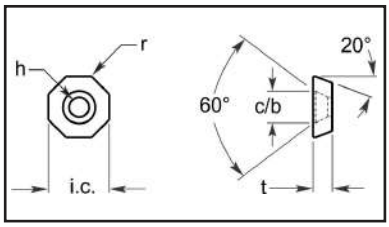
Negative Octagon

- variable thickness quoted on request



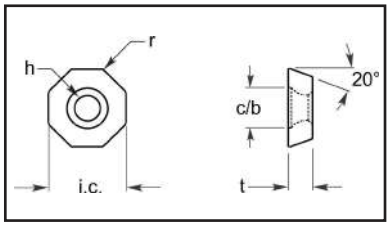
Part No.	Dimensional Specifications		
	t	i.c.	r
ONR320	.137/.143	.390/.396	0
ONR420	.135/.143	.514/.520	0
ONR430	.202/.207	.514/.520	0
ONR630	.198/.206	.760/.766	0
ONR640	.260/.268	.764/.770	0

Positive Octagon With Hole And Countersink



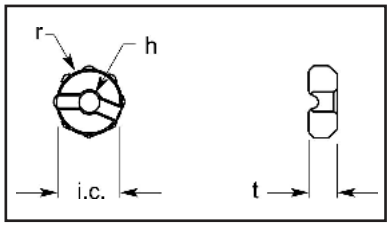
Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	r
OERW532-UM	.198/.206	.639/.645	.211/.217	.307/.313	1/32

Positive Octagon With ISO Style Hole



Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	r
OERB532-UM	.205/.213	.639/.645	.201/.207	.327/.333	1/32

Negative Octagon With Hole



Part No.	Dimensional Specifications			
	t	i.c.	h	r
853OCTX343T	.360/.366	.848/.858	.245/.255	.317/.327
997OCTX445T	.462/.468	.992/1.002	.290/.300	.560/.570

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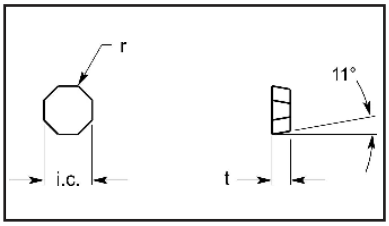
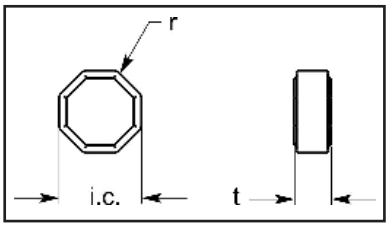
Positive Octagon



Part No.	Dimensional Specifications		
	t		
OPR430	.198/.206	.514/.520	0
OPR640	.260/.268	.764/.770	0

Negative Octagon With Chipbreakers

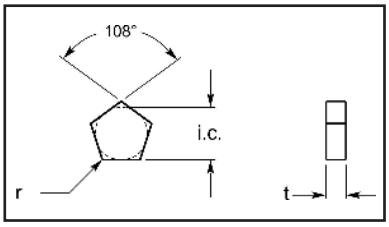
• variable thickness quoted on request



Part No.	Dimensional Specifications		
	t	i.c.	r
ONSF544F	.276/.282	.620/.630	1/16

Negative Pentagon

• variable thickness quoted on request

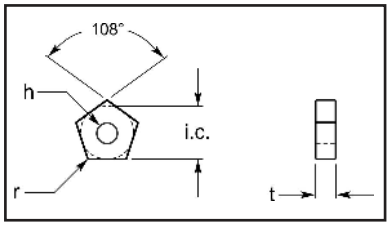


	Part No.	Dimensional Specifications t	i.c.	r
	PM10-3-0	.104/.112	.325/.332	0
	PNR220	.104/.114	.260/.268	0
	PNR320	.135/.143	.389/.395	0
	PNR420	.135/.143	.514/.520	0
	PNR430	.198/.206	.514/.520	0
	PNR432	.198/.206	.514/.520	1/32
	PNR630	.200/.208	.767/.777	0
	PNR634	.202/.208	.767/.777	1/16
✻	PNS332	.200/.208	.372/.378	1/32
✻	PNS433	.199/.205	.497/.503	3/64

✻ No grind stock on periphery

Negative Pentagon With Hole

• variable thickness quoted on request

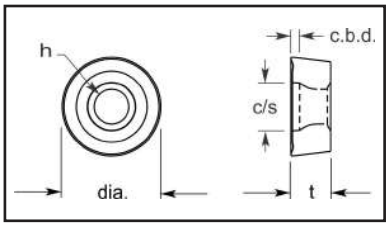


	Part No.	Dimensional Specifications t	i.c.	r	h
	PNRA640	.265/.275	.767/.777	0	.247/.253
✻	PNSA332	.200/.208	.372/.378	1/32	.148/.152
✻	PNSA433	.199/.205	.497/.503	3/64	.200/.206

✻ No grind stock on periphery

NEW

Round Positive Milling Insert



Part No.	Dimensional Specifications t	dia.	h	c/s	c.b.d
RCRT1204MOHP	.194/.200	.486/.492	.170/.176	.233/.239	.032/.038

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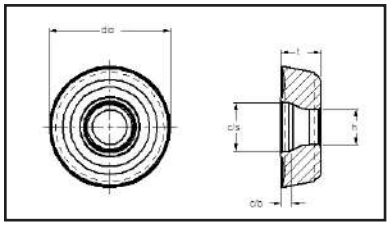
Round

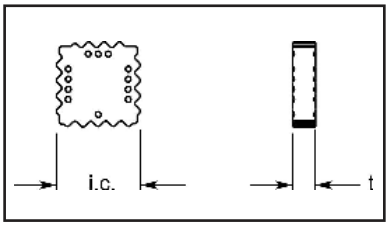
NEW Round Positive Milling Insert



Part No.	Dimensional Specifications				
	t	dia.	h	c/s	c/b
RPLH190500TN-B	.243/.253	.748/.754	.213/.219	.292/.298	.062/.072

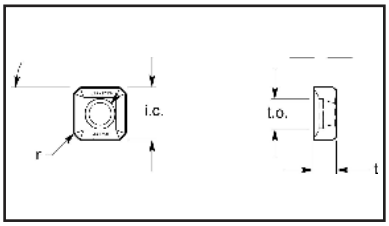
Square

Square Negative Serrated Milling



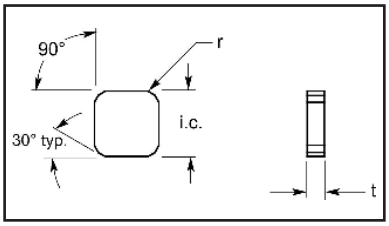
Part No.	Dimensional Specifications	
	i.c.	t
U4T75	.747/.753	.202/.206
U4T75Q	.747/.753	.265/.269

Utility Square Negative Chipbreaker With ISO Style Hole



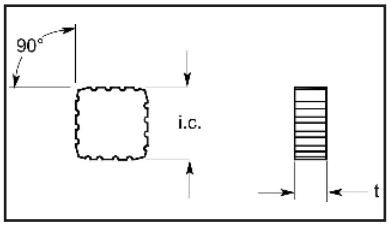
Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/b	r
SNSX1305AN	.509/.515	.224/.230	.214/.220	.292/.298	.016 deep	.016

Square Negative Double Facets



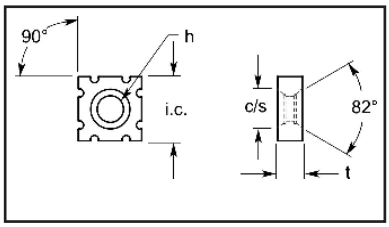
Part No.	Dimensional Specifications		
	i.c.	t	r
SNR63K	.764/.770	.198/.206	0

Utility Serrated Square Negative • variable thickness quoted on request



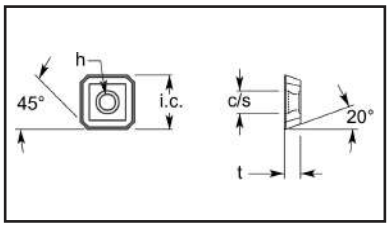
Part No.	Dimensional Specifications	
	i.c.	t
DWG#U-3326.187T	.752/.758	.202/.207
DWG#U-3326.250T	.752/.758	.265/.270

Serrated Square With Hole And Dbl Countersink



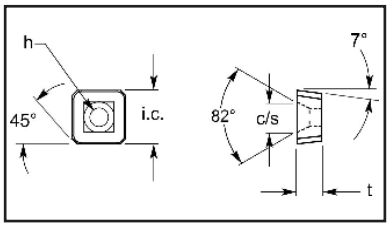
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SCBIR430-MOD	.514/.520	.198/.206	.206/.212	.320/.326

Square Positive Chipbreaker With ISO Style Hole



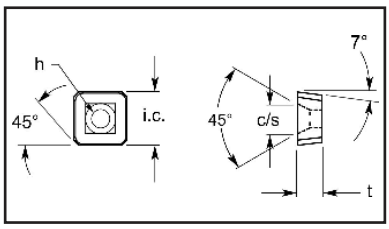
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SERX.528IC.156T	.542/.548	.161/.167	.178/.164	.229/.235
SERX1304AFN	.527/.533	.193/.199	.214/.220	.292/.298

Square Positive Chipbreaker With Hole And Countersink



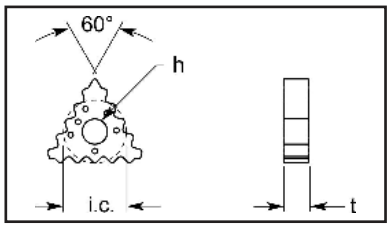
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-3766	.514/.520	.200/.206	.198/.202	.289/.295

Square Positive Chipbreaker With Hole And Countersink



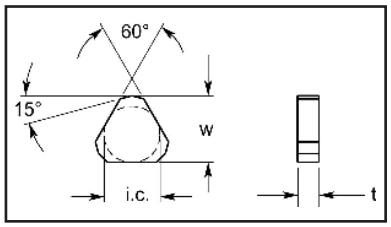
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U4171	.514/.520	.200/.206	.212/.218	.275/.281

Triangle Negative Serrated Milling With Hole • variable thickness quoted on request



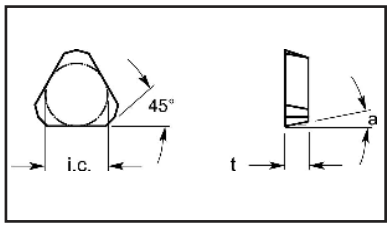
Part No.	Dimensional Specifications		
	i.c.	t	h
U3T50	.497/.503	.202/.206	.200/.206
U3T50Q	.497/.503	.264/.268	.200/.206

Triangle Negative Double Facet



Part No.	Dimensional Specifications		
	i.c.	t	w
TNRN1204AN	.520/.527	.198/.206	.609/.623

Triangle Positive Double Facet



Part No.	Dimensional Specifications			
	i.c.	t	clear	flat
TPK43PDR/PDL	.497/.503	.198/.202	11° 30'	.008 max

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Grooving

CUT OFF
DOGBONES
INTERPOLATE GROOVER
U-NOTCH
VEE BOTTOMS

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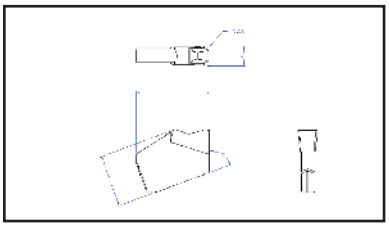
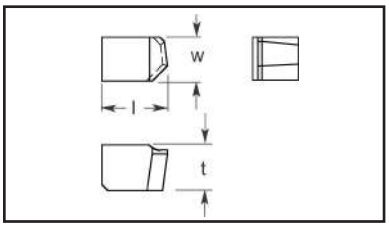
NEW Cut Offs - GTN Self Grip



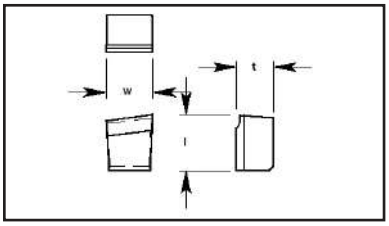
Part No.	Dimensional Specifications		
	t	w	l
UGTN-2.4	.245/.255	.091/.097	.353/.363
UGTN-3	0.287	.1155/.1205	0.425
UGTN-4.8	.308/.318	.186/.192	.418/.428
UGTN-5	.290/.300	.198/.204	.428/.438
UGTN-6	.290/.300	.249/.255	.428/438

NEW Cut Offs



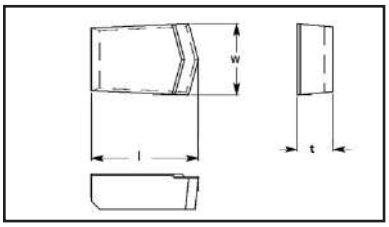
Part No.	Dimensional Specifications		
	t	w	l
250X260X375-BT	.257/.263	.247/.253	.372/.378

NEW Cut Offs



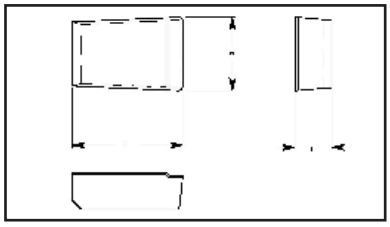
Part No.	Dimensional Specifications		
	t	w	l
250X312X375-UM	.247/.253	.309/.315	.372/.378

NEW Cut Offs



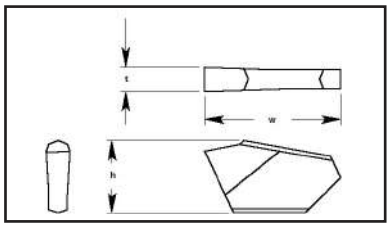
Part No.	Dimensional Specifications		
	t	w	l
D&T225	.245/.255	.495/.505	.745/.755

NEW Cut Offs



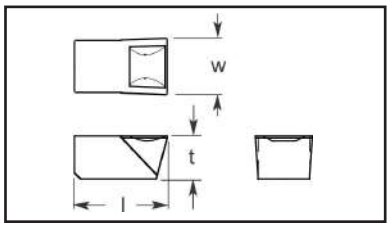
Part No.	Dimensional Specifications		
	t	w	l
D&T576	.245/.255	.495/.505	.745/.755

NEW Cut Offs



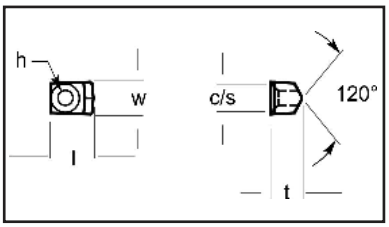
Part No.	Dimensional Specifications		
	t	w	l
DWG#6019	.368	.1205/.1265	.687/.697

NEW Cut Offs



Part No.	Dimensional Specifications		
	t	w	l
SK-1770	.139/.145	.185/.189	.301/.311
SK-1672	.139/.145	.185/.189	.301/.311

Cutoff Vee Bottom With Hole And Countersink



Part No.	Dimensional Specifications				
	t	w	l	h	c/s
DWG#U-5223	.476/.482	.497/.503	.653/.659	.215/.221	427/.433

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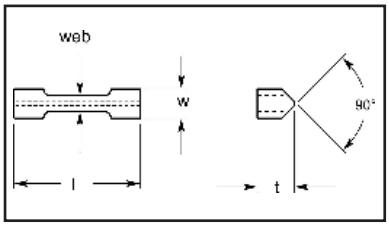
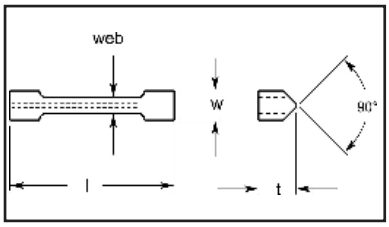
Dog Bones

Dog Bone Style



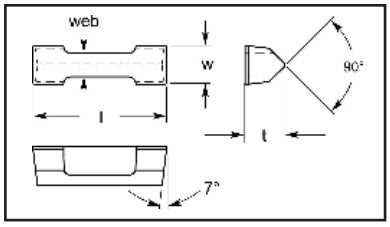
Part No.	Dimensional Specifications			
	t	w	l	web
UDB125	.261/.267	.139/.145	1.145/1.155	.102/.110
UDB156	.261/.267	.170/.176	1.145/1.155	.102/.110
UDB188	.261/.267	.200/.210	1.145/1.155	.140/.148
UDB218	.261/.267	.231/.241	1.145/1.155	.140/.148
UDB250A	.261/.267	.262/.272	1.145/1.155	.140/.148
UDB250B	.338/.344	.262/.272	1.145/1.155	.140/.148
UDB281A	.261/.267	.296/.304	1.145/1.155	.198/.206
UDB281B	.338/.344	.296/.304	1.145/1.155	.198/.206
UDB312	.338/.344	.324/.334	1.145/1.155	.198/.206
UDB375	.338/.344	.398/.408	1.145/1.155	.272/.280
UGC4187	.342/.352	.202/.212	1.020/1.040	.140/.148

Dog Bone Style - Long



Part No.	Dimensional Specifications			
	t	w	l	web
UDB188-1.500LG	.200/.210	.203/.213	1.520/1.540	.096/.106
UDB250-1.500LG	.255/.265	.265/.275	1.520/1.540	.134/.144
UDB250B-1.500LG	.336/.346	.265/.275	1.520/1.540	.134/.144
UDB312-1.500LG	.350/.360	.327/.337	1.520/1.540	.192/.202
UDB375-1.500LG	.350/.360	.401/.501	1.520/1.540	.266/.276

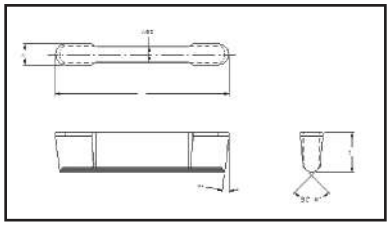
NEW Positive Dog Bone Style



Part No.	Dimensional Specifications			
	t	w	l	web
UDB125-7DEG	.260/.268	.137/.147	1.140/1.160	.101/.111
UDB156-7DEG	.260/.268	.168/.178	1.140/1.160	.101/.111
UDB188-7DEG	.260/.268	.200/.210	1.145/1.165	.139/.149
UDB218-7DEG	.260/.268	.231/.241	1.140/1.160	.139/.149
UDB312-7DEG	.337/.345	.328/.338	1.145/1.165	.197/.207
UDB375-7DEG	.337/.345	.398/.408	1.140/1.160	.271/.281
UDB250A-7DEG	.260/.268	.262/.272	1.140/1.160	.139/.149
UDB250B-7DEG	.337/.345	.265/.275	1.145/1.165	.139/.149
UDB281A-7DEG	.260/.268	.295/.305	1.140/1.160	.197/.207
UDB281B-7DEG	.337/.345	.295/.305	1.140/1.160	.197/.207

Dog Bones

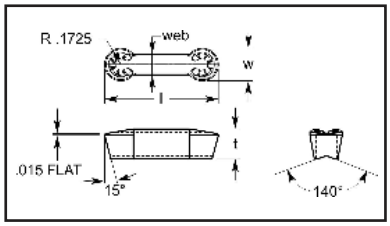
NEW Positive Dog Bone Style - Full Radius



Part No.	Dimensional Specifications			
	t	w	l	web
UDB125FR-7DEG	.260/.268	.137/.145	1.140/1.160	.099/.109
UDB156FR-7DEG	.260/.268	.168/.178	1.140/1.160	.099/.109
UDB188FR-7DEG	.260/.268	.200/.210	1.145/1.165	.139/.149
UDB250BFR-7DEG	.337/.345	.265/.275	1.145/1.165	.139/.149
UDB260BFR-7DEG	.337/.345	.275/.285	1.140/1.160	.139/.149
UDB375FR-7DEG	.337/.345	.398/.408	1.140/1.160	.271/.281

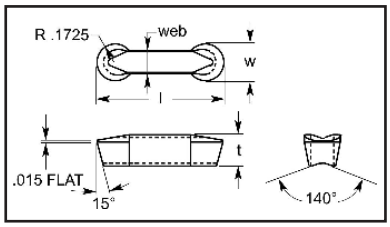
Inverted Vee Style

Inverted Vee Style



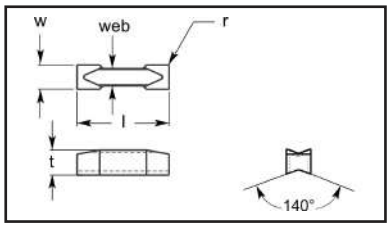
Part No.	Dimensional Specifications			
	t	w	l	web
UGDMY840FR	.319/.325	.342/.348	1.205/1.215	.218/.226

Inverted Vee Style



Part No.	Dimensional Specifications			
	t	w	l	web
UGIDA8040-FR	.319/.325	.342/.348	1.205/1.215	.218/.226

Inverted Vee Style



Part No.	Dimensional Specifications			
	t	w	l	web
UGIDA8040-MOD	.331/.339	.319/.325	1.195/1.205	.218/.226

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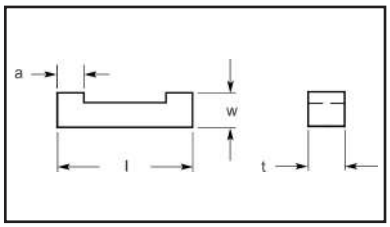
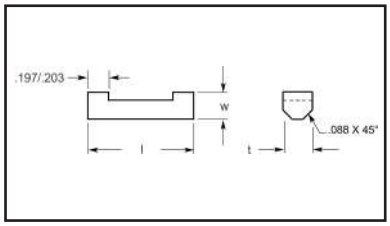
Drop Down Style

Drop Down Style



Part No.	Dimensional Specifications			
	t	w	l	a
UMB125	.148/.154	.267/.273	.890/.900	.177/.183
UMB156	.179/.185	.267/.273	.890/.900	.177/.183
UMB188	.211/.217	.257/.263	1.020/1.030	.197/.203
UMB218	.241/.247	.257/.263	1.020/1.030	.197/.203

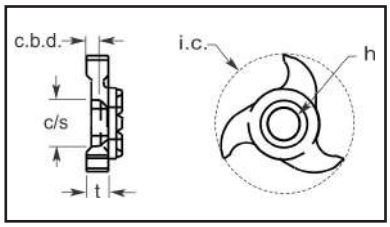
Drop Down Style



Part No.	Dimensional Specifications			
	t	w	l	l
UMB250	.273/.279	.257/.263	1.020/1.030	1.020/1.030

Interpolate Groover

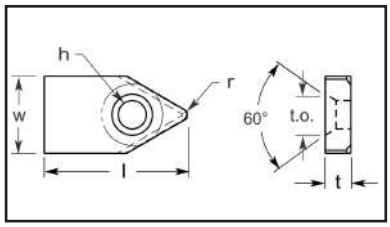
Interpolate Groover



Part No.	Dimensional Specifications				
	i.c.	t	h	c.s.	c.b.d
SW.125WD	.877/.887	.136/.144	.199/.207	.292/.302	.055/.065
SW.250WD	.877/.887	.261/.269	.199/.207	.292/.302	.055/.065

Elongated Plunge Groove Blank

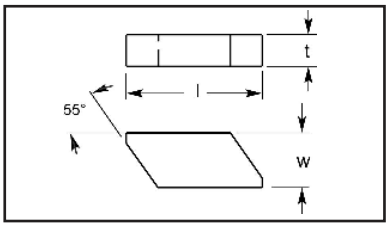
NEW Elongated Plunge Groove Blank



Part No.	Dimensional Specifications					
	t	w	l	h	t.o.	r
TNRW-ED2-208T	.205/.211	.613/.623	1.148/1.158	.225/.231	.326/.332	0

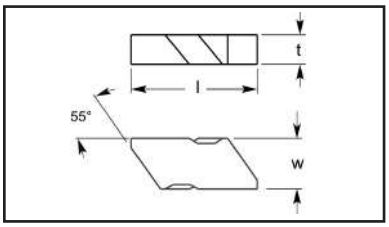
U-Notch Style Flat Top

• variable thickness quoted on request



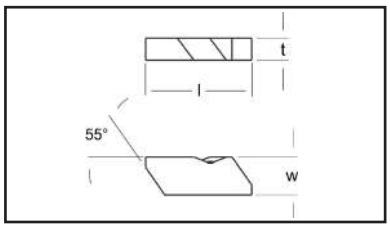
Part No.	Dimensional Specifications		
	t	w	l
ER2	.162/.168	.231/.237	.563/.573
ER3	.207/.213	.356/.362	.951/.959
ER4	.270/.275	.468/.473	1.165/1.175
ER5	.396/.404	.703/.713	1.628/1.648
ER6	.397/.403	.468/.473	1.165/1.175

U-Notch Style



Part No.	Dimensional Specifications		
	t	w	l
ERL2	.162/.168	.231/.237	.589/.595
ERR2	.162/.168	.231/.237	.589/.595
ERL3	.207/.213	.359/.365	.983/.989
ERR3	.207/.213	.359/.365	.983/.989
ERL4	.267/.273	.470/.476	1.190/1.200
ERR4	.267/.273	.470/.476	1.190/1.200
ERL5	.366/.404	.703/.713	1.628/1.648
ERR5	.366/.404	.703/.713	1.628/1.648
ERL6	.366/.404	.468/.474	1.185/1.195
ERR6	.366/.404	.468/.474	1.185/1.195

U-Notch Style Extra Deep



Part No.	Dimensional Specifications		
	t	w	l
ERL2-ED	.162/.168	.229/.239	.669/.689
ERR2-ED	.162/.168	.229/.239	.669/.689
ERL3-ED	.207/.213	.359/.365	1.035/1.045
ERR3-ED	.207/.213	.359/.365	1.035/1.045
ERL4-ED	.270/.276	.470/.476	1.400/1.410
ERR4-ED	.270/.276	.470/.476	1.400/1.410

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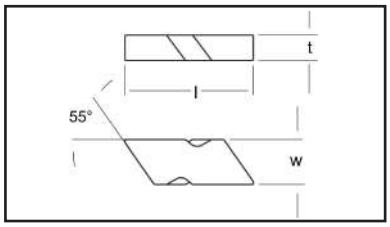
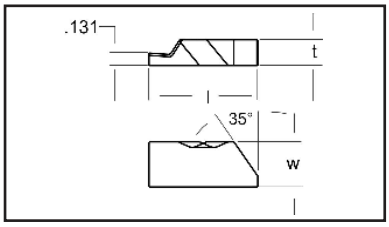
U-Notch Semi-Finished Style

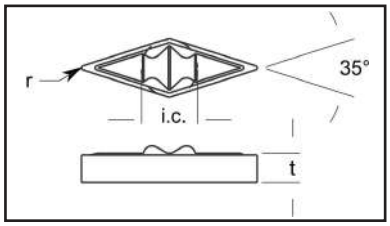


Part No.	Dimensional Specifications		
	t	w	l
ERL2GTB/PER	.149/.151	.218/.220	0.568
ERR2GTB/PER	.149/.151	.218/.220	0.568
ERL3GTB/PER	.194/.196	.343/.345	0.983
ERR3GTB/PER	.194/.196	.343/.345	0.983
ERL4GTB/PER	.254/.256	.452/.454	1.170
ERR4GTB/PER	.254/.256	.452/.454	1.170
ERL5GTB/PER	.379/.381	.687/.689	1.638
ERR5GTB/PER	.379/.381	.687/.689	1.638

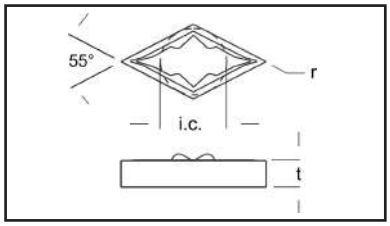
U-Notch Style



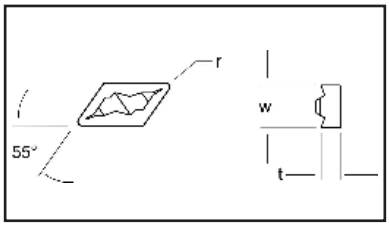
Part No.	Dimensional Specifications		
	t	w	l
ERL4.116WD	.267/.275	.468/.478	1.143/1.148



Part No.	Dimensional Specifications		
	t	i.c.	r
VNRR331	.200/.206	.389/.395	1/64
VNRR332	.200/.206	.389/.395	1/64
VNRR333	.200/.206	.389/.395	1/64



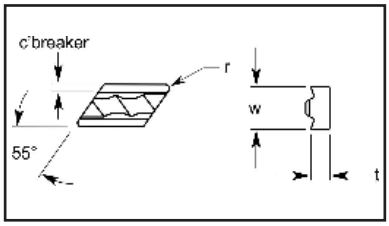
Part No.	Dimensional Specifications		
	t	i.c.	r
DNRR430	.200/.206	.514/.520	0



Part No.	Dimensional Specifications		
	t	w	r
EPRR51R-NEG	.171/.177	.262/.268	1/64

U-Notch Styles

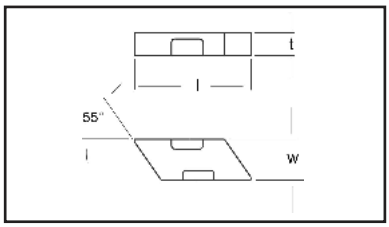
U-Notch Style



Part No.	Dimensional Specifications			
	t	w	r	c'breaker
EPL51NEG	.171/.177	.262/.268	1/64	.068
EPR51NEG	.171/.177	.262/.268	1/64	.068
EPL131F-NEG	.197/.203	.389/.395	1/64	.088
EPR131F-NEG	.197/.203	.389/.395	1/64	.088
EPL331N-NEG	.197/.203	.389/.395	1/64	.107
EPR331N-NEG	.197/.203	.389/.395	1/64	.107
EPR331F-NEG	.197/.203	.389/.395	1/64	.088
EPR-331-NEG	.247/.253	.389/.395	1/64	.135

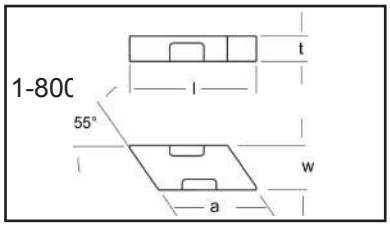
Top Lock Style

Top Lock Style



Part No.	Dimensional Specifications		
	t	w	l
ERL3-TL	.207/.213	.356/.362	.950/.960
ERR3-TL	.207/.213	.356/.362	.950/.960
ERL4-TL	.270/.275	.468/.473	1.165/1.175
ERR4-TL	.270/.275	.468/.473	1.165/1.175
EER6-TL	.397/.403	.4680/.4730	1.165/1.175

Top Lock Semi-Finished Style



Part No.	Dimensional Specifications			
	t	w	l	a
ERL3-TL-GTB/PER	.194/.196	.343/.345	0.983	.633/.635
ERR3-TL-GTB/PER	.194/.196	.343/.345	0.983	.633/.635
ERL4-TL-GTB/PER	.254/.256	.452/.454	1.170	.759/.761
ERR4-TL-GTB/PER	.254/.256	.452/.454	1.170	.759/.761

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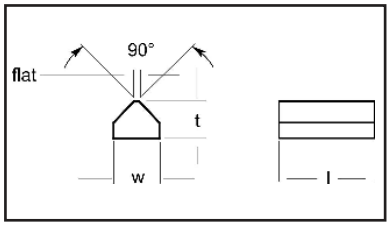
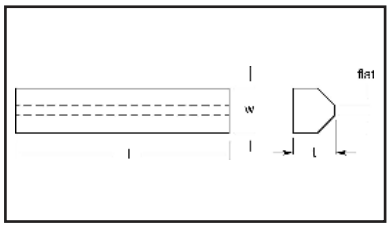
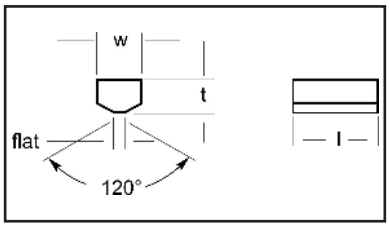
Vee Bottoms



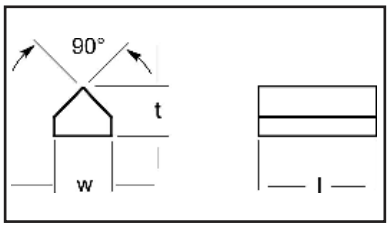
Part No.	Dimensional Specifications			
	t	w	l	flat
187X250X1.000-90°VEE	.201/.207	.263/.271	1.015/1.035	.040
190X251X1.000-90°VEE	.206/.214	.269/.277	1.015/1.035	.040
250X250X1-90°V	.270/.276	.269/.277	1.015/1.035	.040
DWG#101492-1	.270/.276	.270/.276	1.015/1.035	.040
DWG#87319	.335/.341	.417/.423	1.020/1.040	.030
UV84	.241/.249	.270/.276	1.020/1.030	.040
UBV85	.251/.259	.320/.326	1.010/1.020	.038



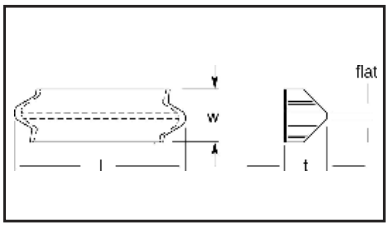
Part No.	Dimensional Specifications			
	t	w	l	flat
UV270	.246/.254	.265/.275	1.270/1.290	.053/.063
UV330	.301/.309	.326/.336	1.270/1.290	.031/.041
UV400	.362/.370	.395/.405	1.270/1.290	.031/.041



Part No.	Dimensional Specifications			
	t	w	l	flat
312X500X750-120°VEE	.312/.322	.515/.525	.765/.775	.056
DWG#23651A	.312/.322	.515/.525	.765/.775	.056

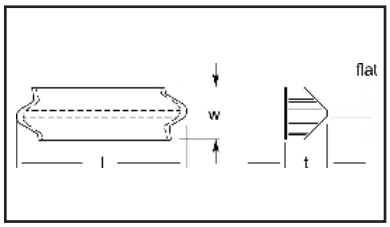


Part No.	Dimensional Specifications		
	t	w	l
375X750X900-90°V	.385/.395	.760/.780	.913/.923

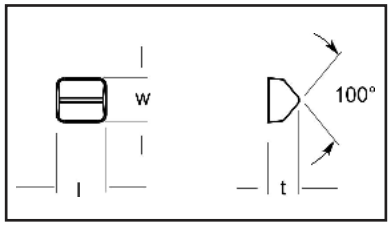


Part No.	Dimensional Specifications			
	t	w	l	flat
A417	.250/.260	.309/.319	1.020/1.040	.038

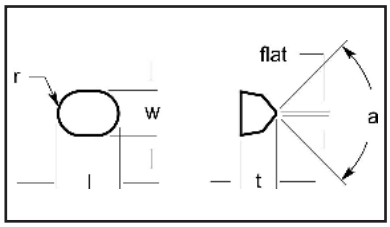
Vee Bottoms



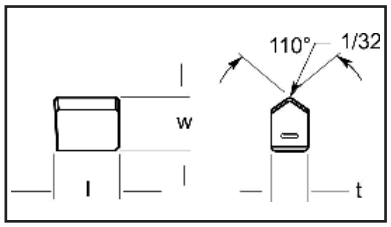
Part No.	Dimensional Specifications			
	t	w	l	flat
A448	.250/.260	.309/.319	1.020/1.040	.038



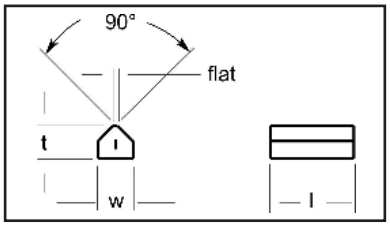
Part No.	Dimensional Specifications		
	t	w	l
K17926	.2315/.2375	.328/.334	.369/.381



Part No.	Dimensional Specifications					
	t	w	l	flat	r	a
K18627	.244/.256	.362/.368	.494/.506	.060/.070	3/16	90°
DWG#U3282	.244/.256	.417/.423	.494/.506	.060/.070	1/4	90°
DWG#U-3282W/STOCK	.261/.273	.417/.423	.494/.506	.060/.070	1/4	90°
DWG#U-3283	.256/.262	.372/.378	.494/.506	.060/.070	3/16	100°
DWG#U-3283W/STOCK	.272/.278	.372/.378	.494/.506	.060/.070	3/16	100°

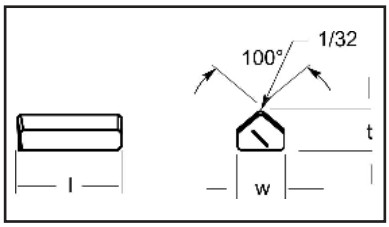


Part No.	Dimensional Specifications		
	t	w	l
K-120499J	.300/.304	.429/.445	.534/.549
K-120501J	.300/.304	.429/.445	.472/.487

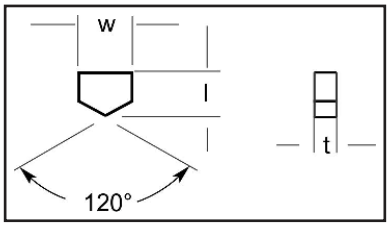


Part No.	Dimensional Specifications			
	t	w	l	flat
KC8632	.247/.253	.262/.268	.640/.650	.031/.041

Vee Bottoms

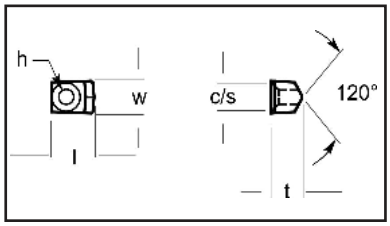


Part No.	Dimensional Specifications		
	t	w	l
K-106358B	.250/.260	.301/.309	.552/.560
K-120405B	.250/.260	.301/.309	.757/.765
K-120425B	.250/.260	.301/.309	.614/.622
K-120449B	.250/.260	.301/.309	.677/.685
K-120509B	.250/.260	.301/.309	.489/.497
K-120591B	.250/.260	.301/.309	.379/.387
K-129222B	.250/.260	.301/.309	.441/.449
DWG#AM-118552	.250/.260	.301/.309	.489/.497



Part No.	Dimensional Specifications		
	t	w	l
WMD5	.050/.055	.338/.358	.368/.388
WMD6	.050/.055	.400/.420	.368/.388
WMD7	.050/.055	.468/.488	.468/.488
WMD8	.081/.086	.535/.555	.472/.492

Cutoff Vee Bottom With Hole And Countersink



Part No.	Dimensional Specifications				
	t	w	l	h	c/s
DWG#U-5223	.476/.482	.497/.503	.653/.659	.215/.221	.427/.433

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Drilling

SPADE DRILLS
TRIGON
GUIDE PADS

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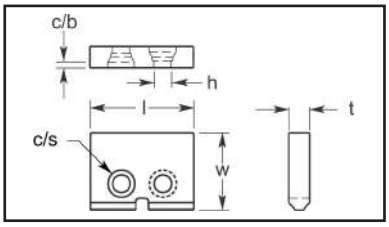
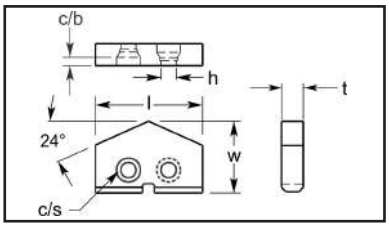
Spade Drills

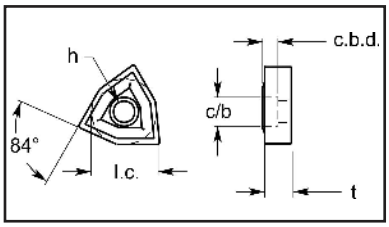


Part No.	Dimensional Specifications					
	t	w	l	h	c/s	c/b
SDB500	.1035/.1135	.390/.400	.525/.535	.084/.094	.132/.142	.022/.032



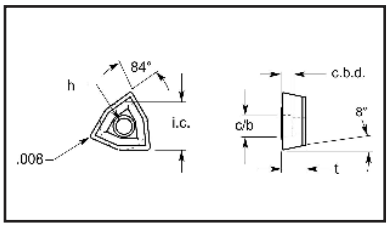
Part No.	Dimensional Specifications					
	t	w	l	h	c/s	c/b
SDB688	.135/.145	.469/.479	.705/.715	.099/.104	.152/.162	.0495/.0595
SDB938	.165/.175	.585/.595	.970/.980	.125/.135	.175/.185	.0372/.0472
SDB1.375	.197/.207	.675/.685	1.390/1.410	.164/.174	.215/.225	.0585/.0685
SDB1.875	.260/.270	.841/.851	1.890/1.910	.213/.223	.280/.290	.063/.073

Trigon Negative Chipbreaker With Hole And Counterbore



Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	c.b.d.
DWG#U-4533.150T	.162/.166	.406/.414	.147/.149	.210/.214	.061
DWG#U-5026	.162/.166	.327/.333	.104/.108	.142/.146	.061
WNRX030204	.109/.113	.248/.254	.104/.108	.142/.146	.061
WNRX030304	.130/.134	.248/.254	.104/.108	.142/.146	.061
WNRX050304	.130/.134	.327/.333	.104/.108	.142/.146	.061
WNRX050404	.162/.166	.327/.333	.104/.108	.142/.146	.061
WNRX05T304	.162/.166	.327/.333	.104/.108	.142/.146	.061
WNRX060302	.109/.113	.248/.254	.103/.109	.141/.147	.058/.064
WNRX060304	.130/.134	.406/.414	.147/.151	.210/.214	.061
WNRX06T304	.162/.166	.406/.414	.147/.151	.210/.214	.061
WNRX080302	.130/.134	.327/.333	.103/.109	.141/.147	.058/.064
WNRX080402	.162/.166	.327/.333	.103/.109	.141/.147	.058/.064
WNRX100302	.130/.134	.406/.414	.146/.152	.209/.215	.058/.064
WNRX100402	.162/.166	.406/.414	.146/.152	.209/.215	.058/.064
WNRX180502	.214/.220	.707/.713	.225/.231	.292/.298	.090/.096
WNRX180602	.253/.259	.707/.713	.225/.231	.292/.298	.090/.096

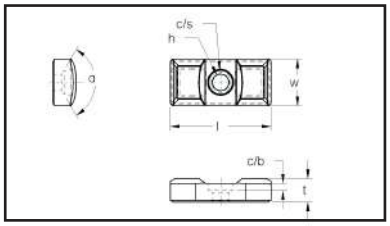
Trigon Positive With Hole And Counterbore



Part No.	Dimensional Specifications				
	t	i.c.	h	c/b	c.b.d.
DWG#U-5027	.202/.206	.486/.492	.193/.199	.257/.263	.069/.077
WCRX070404	.163/.167	.486/.492	.193/.199	.257/.263	.069/.077
WCRX070504	.202/.206	.486/.492	.193/.199	.257/.263	.069/.077
WCRX090404	.184/.188	.605/.611	.193/.199	.257/.263	.069/.077
WCRX120402	.163/.167	.486/.292	.193/.199	.257/.263	.070/.076
WCRX120502	.202/.206	.486/.292	.193/.199	.257/.263	.070/.076
WCRX150502	.202/.206	.605/.611	.193/.199	.257/.263	.070/.076
WCRX150602	.224/.228	.605/.611	.193/.199	.257/.263	.070/.076

NEW

Solid Carbide Guide Pads



Part No.	Dimensional Specifications						
	t	w	l	h	c/s	c/b	a
UWP8	.186/.196	.330/.340	.974/.994	.130/.138	.173/.181	.045/.055	60°
UWP10	.245/.255	.409/.419	1.368/1.388	.169/.177	.232/.240	.027/.037	60°
UWP14	.307/.317	.564/.574	1.565/1.585	.216/.224	.306/.316	.056/.066	82°
UWP18	.366/.376	.728/.738	1.570/1.580	.254/.262	.370/.380	.107/.117	120°

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Threading

THREADERS

Ultra-met®
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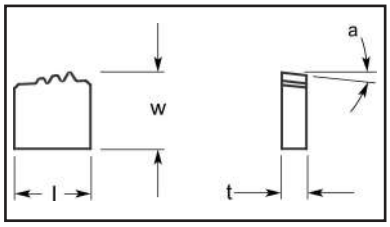
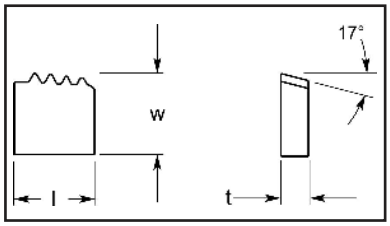
Chaser



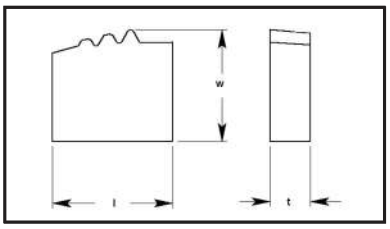
Part No.	Dimensional Specifications			
	t	w	l	a
DWG#U-4650	.199/.205	.634/.640	.634/.640	6°
#3-8RD-EXT-.620THK	.215/.221	.615/.625	.649/.659	4°



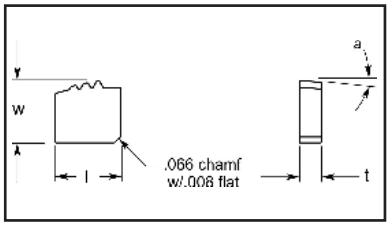
Part No.	Dimensional Specifications		
	t	w	l
DWG#RDE4-625H	.635/.645	.217/.223	.635/.645

NEW

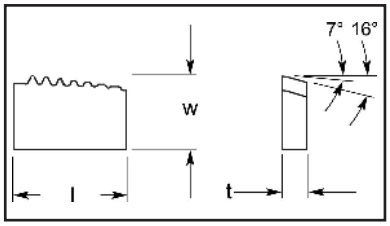
Chaser



Part No.	Dimensional Specifications		
	t	w	l
DWG#U-5327	.215/.221	.607/.613	.651/.657

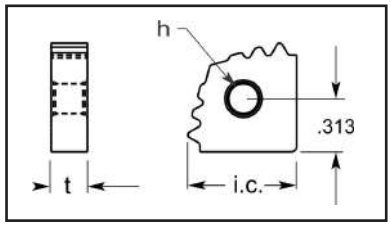


Part No.	Dimensional Specifications			
	t	w	l	a
DWG#U-5327-45°	.215/.221	.617/.623	.655/.660	4°



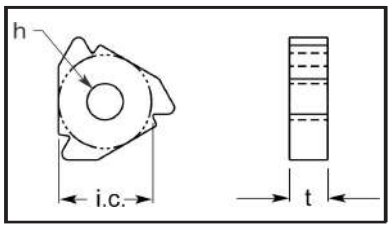
Part No.	Dimensional Specifications		
	t	w	l
8RD-INTBLANK	.215/.225	.655/.665	1.010/1.020

NEW Chaser



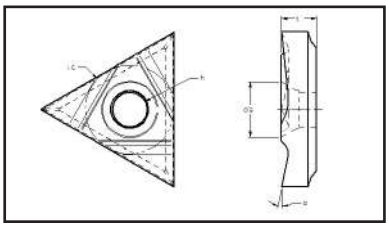
Part No.	Dimensional Specifications		
	t	i.c.	h
3T8RD75ED	.210/.214	.635/.645	.170/.180

NEW Triangle Laydown Threader Blank



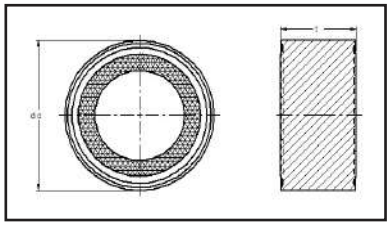
Part No.	Dimensional Specifications		
	i.c.	t	h
TNRA54-VTHD-ST	.642/.648	.261/.269	.247/.253

NEW Triangle Lay Down Threader Blank



Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	a
TNRX22ER	.517/.523	.203/.209	.199/.205	.321/.327	10°/12°
TNRX22NR	.517/.523	.203/.209	.199/.205	.321/.327	14.5°/16.5°

NEW Round



Part No.	Dimensional Specifications	
	t	dia.
RNMF55	.309/.315	.6220/.6275
RNMF55W	.309/.315	.622/.628

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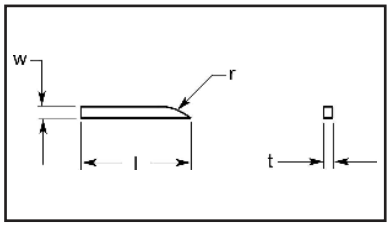
Brazed Blanks

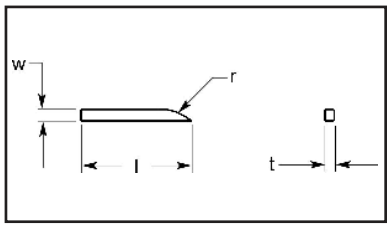
REAMERS

Ultra-met®
carbide technologies

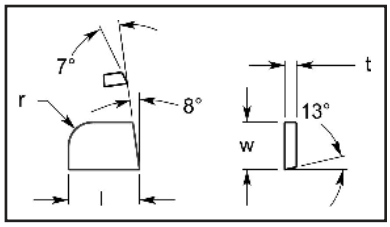
Reamers • variable thickness quoted on request



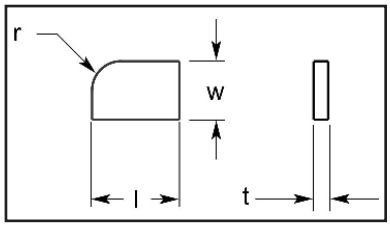
Part No.	Dimensional Specifications			
	t	w	l	r
LX-05786	.130/.140	.100/.110	1.255/1.275	3/8
LX-0723-3	.130/.140	.150/.160	1.255/1.275	3/8
LX05788	.098/.106	.132/.138	1.255/1.275	5/16



Part No.	Dimensional Specifications			
	t	w	l	r
20409-150	.053/.061	.101/.109	1.520/1.540	0.250
20925-087	.110/.118	.265/.275	.885/.905	.380/.390
URT0	.031/.039	.046/.061	.500/.520	1/4
URT1	.039/.045	.068/.078	.515/.525	1/4
URT2	.055/.060	.100/.115	.504/.522	1/4
URT3	.050/.055	.100/.109	.653/.663	1/4
URT4	.063/.075	.125/.135	.755/.775	1/4
URT5	.083/.093	.161/.171	.880/.895	1/4
URT6	.099/.107	.195/.202	.875/.899	5/16
URT7	.067/.077	.210/.218	.755/.775	5/16
URT8	.070/.076	.274/.280	.760/.770	3/8
URT9	.072/.078	.315/.325	.755/.775	3/8
URT10	.070/.076	.382/.388	.764/.770	3/8
URT11	.053/.061	.100/.108	.880/.887	1/4
URT11A	.053/.061	.101/.109	1.020/1.040	0.250
URT12	.070/.075	.135/.140	1.014/1.034	1/4
URT13	.134/.144	.265/.275	1.020/1.040	1/4
URT18	.097/.107	.195/.205	1.255/1.275	5/16



Part No.	Dimensional Specifications			
	t	w	l	r
P3170	.132/.138	.322/.328	.635/.645	3/16
P4170	.132/.138	.322/.328	.635/.645	3/16



Part No.	Dimensional Specifications			
	t	w	l	r
25825	.097/.107	.130/.140	1.255/1.275	5/16

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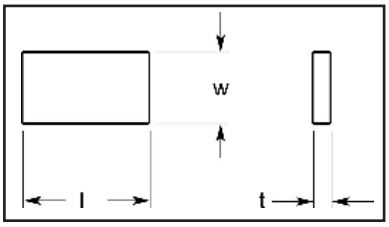
Rectangles STB

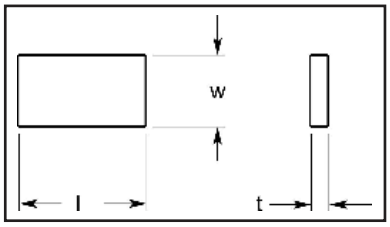
1000 SERIES
2000 SERIES
RECTANGLES
STB

1000 Series Rectangles



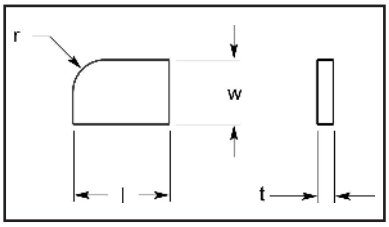
Part No.	Description	Dimensional Specifications		
		t	w	l
1010	(1/16X1/8X5/8)	.069/.075	.132/.138	.640/.650
1015	(1/16X5/32X1/4)	.069/.075	.167/.173	.262/.268
1020	(1/16X3/16X1/4)	.070/.076	.199/.205	.262/.268
1025	(1/16X1/4X1/4)	.069/.075	.265/.271	.265/.271
1030	(1/16X1/4X5/16)	.069/.075	.262/.268	.325/.331
1035	(3/32X1/8X3/4)	.099/.105	.132/.138	.765/.775
1040	(3/32X3/16X5/16)	.099/.105	.194/.200	.325/.331
1050	(3/32X3/16X1/2)	.099/.105	.194/.200	.515/.525
1060	(3/32X1/4X3/8)	.099/.105	.262/.268	.387/.393
1070	(3/32X1/4X1/2)	.099/.105	.262/.268	.515/.525
1080	(3/32X5/16X3/8)	.099/.105	.325/.331	.387/.393
1090	(3/32X3/8X3/8)	.099/.105	.389/.395	.389/.395
1100	(3/32X3/8X1/2)	.099/.105	.389/.395	.515/.525
1105	(3/32X7/16X1/2)	.099/.105	.449/.455	.515/.525
1110	(1/8X3/16X3/4)	.132/.138	.194/.200	.765/.770
1120	(1/8X1/4X1/2)	.132/.138	.262/.268	.515/.525
1130	(1/8X1/4X5/8)	.132/.138	.262/.268	.640/.650
1140	(1/8X1/4X3/4)	.132/.138	.262/.268	.765/.775
1150	(1/8X5/16X7/16)	.132/.138	.325/.331	.449/.455
1160	(1/8X5/16X1/2)	.132/.138	.325/.331	.517/.525
1170	(1/8X5/16X5/8)	.132/.138	.325/.331	.640/.650
1180	(1/8X3/8X1/2)	.132/.138	.387/.393	.515/.525
1190	(1/8X3/8X3/4)	.132/.138	.387/.393	.765/.775
1200	(1/8X1/2X1/2)	.132/.138	.515/.525	.515/.525
1210	(1/8X1/2X3/4)	.132/.138	.515/.525	.765/.775
1215	(1/8X3/4X3/4)	.132/.138	.765/.775	.765/.775
1220	(5/32X3/8X9/16)	.163/.169	.387/.393	.577/.587
1230	(5/32X3/8X3/4)	.163/.169	.387/.393	.765/.775
1240	(5/32X5/8X5/8)	.163/.169	.640/.650	.640/.650
1250	(3/16X5/16X7/16)	.202/.207	.327/.332	.452/.457
1260	(3/16X5/16X5/8)	.202/.207	.327/.332	.640/.650
1270	(3/16X3/8X1/2)	.202/.207	.387/.393	.515/.525

1000 Series Rectangles



Part No.	Description	Dimensional Specifications		
		t	w	l
1280	(3/16X3/8X5/8)	.194/.200	.387/.393	.640/.650
1290	(3/16X3/8X3/4)	.194/.200	.387/.393	.765/.775
1300	(3/16X7/16X5/8)	.194/.200	.449/.455	.640/.650
1310	(3/16X7/16X13/16)	.198/.206	.449/.455	.827/.837
1320	(3/16X1/2X1/2)	.194/.200	.515/.525	.515/.525
1330	(3/16X1/2X3/4)	.194/.200	.515/.525	.765/.775
1340	(3/16X3/4X3/4)	.194/.200	.765/.775	.765/.775
1350	(1/4X3/8X9/16)	.260/.268	.387/.393	.577/.587
1360	(1/4X3/8X3/4)	.262/.268	.387/.393	.765/.775
1370	(1/4X7/16X5/8)	.262/.268	.449/.455	.640/.650
1380	(1/4X1/2X3/4)	.265/.270	.515/.525	.765/.775
1390	(1/4X9/16X1)	.265/.270	.577/.587	1.020/1.040
1400	(1/4X5/8X5/8)	.262/.268	.640/.650	.640/.650
1405	(1/4X3/4X3/4)	.265/.270	.765/.775	.765/.775
1410	(1/4X3/4X1)	.262/.268	.765/.775	1.020/1.040
1415	(1/4X1X1)	.265/.270	1.020/1.030	1.020/1.030
1420	(5/16X7/16X5/8)	.322/.330	.449/.455	.640/.650
1430	(5/16X7/16X15/16)	.322/.330	.450/.460	.953/.963
1440	(5/16X1/2X3/4)	.325/.331	.515/.525	.765/.775
1450	(5/16X1/2X1)	.325/.331	.515/.525	1.020/1.040
1460	(5/16X5/8X1)	.329/.325	.640/.650	1.020/1.040
1470	(5/16X3/4X3/4)	.322/.330	.765/.775	.765/.775
1475	(5/16X3/4X1)	.325/.331	.765/.775	1.020/1.040
1480	(5/16X3/4X1 1/4)	.327/.333	.765/.775	1.270/1.290
1490	(3/8X1/2X3/4)	.387/.393	.515/.525	.765/.775
1500	(3/8X1/2X1)	.387/.393	.515/.525	1.020/1.040
1510	(3/8X5/8X1)	.387/.393	.640/.650	1.020/1.040
1515	(3/8X5/8X1 1/4)	.387/.393	.634/.644	1.257/1.277
1520	(3/8X3/4X1 1/4)	.387/.393	.765/.775	1.270/1.290
1525	(3/8X3/4X1 1/2)	.387/.393	.765/.775	1.520/1.540
1530	(1/2X3/4X1)	.517/.523	.765/.775	1.020/1.040
1540	(1/2X3/4X1 1/4)	.517/.523	.765/.775	1.270/1.290
1550	(1/2X3/4X1 1/2)	.515/.520	.765/.775	1.520/1.540

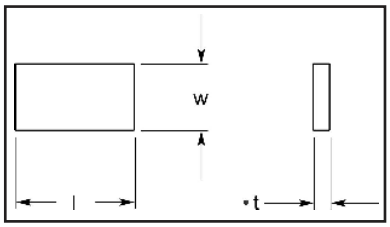
2000 Series Rectangles



Part No.	Description	Dimensional Specifications			
		t	w	l	r
2020	(1/16x3/16x1/4)	.067/.073	.193/.201	.258/.266	1/8
2030	(1/16X1/4X5/16)	.045/.050	.255/.265	.318/.328	1/8
2040	(3/32X3/16X5/16)	.099/.105	.194/.200	.325/.331	1/8
2060	(3/32X1/4X3/8)	.103/.111	.258/.268	.384/.402	1/8
2070	(3/32X1/4X1/2)	.099/.105	.262/.268	.515/.525	1/8
2080	(3/32X5/16X3/8)	.094/.108	.313/.327	.375/.390	3/16
2090	(3/32X3/8X3/8)	.099/.105	.380/.386	.380/.386	3/16
2100	(3/32X3/8X1/2)	.104/.114	.385/.395	.510/.520	1/16
2105	(3/32X7/16X1/2)	.098/.108	.448/.458	.515/.525	1/4
2120	(1/8X1/4X1/2)	.132/.138	.262/.268	.515/.525	1/8
2130	(1/8X1/4X5/8)	.125/.140	.250/.265	.625/.645	1/8
2140	(1/8X1/4X3/4)	.135/.140	.264/.270	.764/.779	1/8
2150	(1/8X5/16X7/16)	.129/.135	.325/.331	.449/.455	3/16
2160	(1/8X5/16X1/2)	.125/.140	.323/.333	.500/.520	3/16
2170	(1/8X5/16X5/8)	.132/.138	.325/.331	.640/.650	3/16
2180	(1/8X3/8X1/2)	.131/.139	.381/.391	.511/.521	3/16
2190	(1/8X3/8X3/4)	.125/.140	.375/.390	.750/.770	3/16
2200	(1/8X1/2X1/2)	.135/.145	.510/.520	.510/.520	1/4
2210	(1/8X1/2X3/4)	.132/.138	.515/.525	.765/.770	1/4
2215	(1/8X3/4X3/4)	.130/.140	.755/.770	.755/.770	1/4
2220	5/32X3/8X9/16)	.161/.167	.384/.392	.568/.576	3/16
2230	(5/32X3/8X3/4)	.156/.171	.380/.390	.755/.765	3/16
2250	(3/16X5/16X7/16)	.188/.203	.312/.327	.438/.458	3/16
2260	(3/16X5/16X5/8)	.188/.204	.318/.328	.630/.640	3/16
2270	(3/16X3/8X1/2)	.184/.190	.380/.390	.510/.520	3/16
2280	(3/16X3/8X5/8)	.200/.208	.375/.390	.625/.640	3/16
2290	(3/16X3/8X3/4)	.187/.202	.380/.390	.755/.765	3/16
2300	(3/16X7/16X5/8)	.188/.203	.453/.463	.640/.650	1/4
2310	(3/16X7/16X13/16)	.197/.203	.443/.453	.822/.832	1/4
2320	(3/16X1/2X1/2)	.187/.203	.500/.520	.500/.520	1/4
2330	(3/16X1/2X3/4)	.197/.203	.515/.525	.765/.775	1/4
2340	(3/16X3/4X3/4)	.200/.208	.755/.770	.755/.770	1/4
2360	(1/4X3/8X3/4)	.255/.265	.380/.390	.755/.770	3/16

Rectangles

• variable thickness quoted on request



Part No.	Dimensional Specifications	
	w	l
063X750	.079/.085	.769/.779
062X1.750	.070/.076	1.774/1.794
063X1.000	.070/.076	1.007/1.027
063X1.500	.077/.087	1.527/1.547
063X3.000	.078/.088	3.030/3.060
078X750	.080/.086	.765/.785
079X315	.089/.097	.330/.340
093X187	.110/.116	.202/.212
093X500	.102/.108	.511/.521
093X1.000	.102/.107	1.010/1.020
094X2.000	.104/.114	2.030/2.050
109X312	.114/.120	.322/.328
125X250	.136/.142	.256/.262
125X312	.132/.138	.321/.331
125X500	.135/.141	.509/.519
125X625	.132/.138	.640/.650
125X750	.135/.145	.765/.775
125X890	.141/.147	.898/.908
125X1.000	.135/.145	1.010/1.035
125X1.250	.140/.150	1.270/1.290
125X1.375	.142/.150	1.411/1.431
125X1.500	.135/.145	1.525/1.550
125X1.625	.140/.150	1.640/1.655
125X2.000	.135/.145	2.015/2.025
125X2.312	.142/.148	2.312/2.332
125X3.000	.135/.145	3.030/3.060
140X562	.156/.162	.600/.610
156X250	.167/.173	.262/.268
156X875	.166/.175	.890/.900

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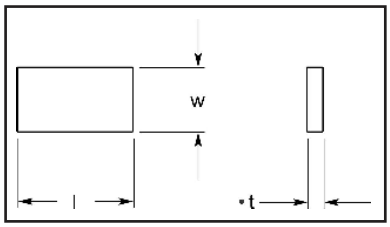
Rectangles

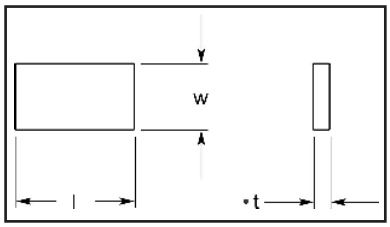
• variable thickness quoted on request



Part No.	Dimensional Specifications w	l
156X1.500	.172/.182	1.510/1.550
156X2.875	.172/.178	2.920/2.940
187X250	.199/.205	.262/.268
187X312	.198/.206	.325/.331
187X375	.202/.207	.390/.395
187X500	.194/.200	.515/.525
187X625	.198/.206	.642/.652
187X750	.199/.205	.765/.775
187X1.000	.199/.209	1.028/1.048
187X1.250	.197/.207	1.267/1.287
187X1.375	.192/.198	1.393/1.413
187X2.500	.203/.213	2.516/2.540
188X3.000	.200/.210	3.090/3.120
218X1.500	.235/.245	1.510/1.550
218X1.625	.231/.237	1.644/1.664
236X787	.244/.254	.778/.788
250X312	.262/.268	.325/.331
250X375	.265/.270	.389/.395
250X500	.265/.275	.510/.530
250X562	.265/.270	.577/.587
250X625	.265/.271	.640/.650
250X750	.265/.270	.765/.775
250X781	.244/.254	.778/.788
250X875	.267/.273	.890/.900
250X1.000	.265/.270	1.020/1.040
250X1.187	.268/.278	1.200/1.220
250X1.250	.265/.275	1.270/1.290
250X1.500	.260/.270	1.520/1.540
250X2.312	.260/.270	2.330/2.340

Rectangles

• variable thickness quoted on request



Part No.	Dimensional Specifications	
	w	l
250X3.000	.260/.270	3.010/3.080
MA-70381	.262/.268	.515/.525
DWG#5WB2042	.265/.270	.390/.400
265X515	.277/.283	.531/.539
265X750	.279/.285	.764/.779
281X375	.300/.306	.395/.401
297X472	.295/.299	.470/.474
312X375	.325/.331	.386/.392
312X437	.325/.331	.449/.455
312X500	.324/.330	.513/.519
312X625	.325/.331	.640/.650
312X750	.328/.336	.768/.778
312X1.000	.320/.226	1.010/1.020
312X1.500	.327/.333	1.520/1.540
312X2.312	.327/.337	2.330/2.340
312X3.000	.328/.338	3.015/3.060
343X437	.358/.368	.453/.463
343X750	.358/.366	.770/.780
375X437	.387/.393	.455/.461
375X500	.387/.393	.515/.525
375X562	.387/.393	.577/.587
375X625	.385/.395	.640/.650
375X656	.395/.403	.656/.666
375X750	.387/.393	.765/.775
375X875	.390/.400	.890/.900
375X1.000	.390/.400	1.020/1.030
375X1.125	.391/.399	1.145/1.165
375X1.250	.387/.397	1.288/1.308
375X1.375	.388/.396	1.392/1.412
375X1.500	.381/.391	1.536/1.576
375X5.000	.390/.400	5.020/5.100

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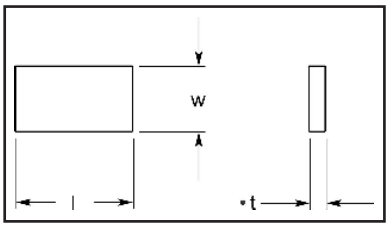
Rectangles

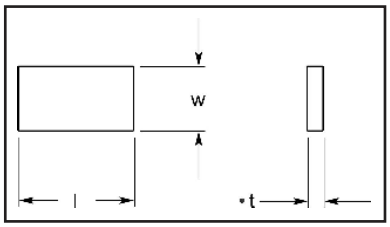
• variable thickness quoted on request



Part No.	Dimensional Specifications	
	w	l
375X6.000	.390/.400	6.020/6.100
406X625	.391/.403	.617/.633
437X500	.449/.455	.515/.525
437X625	.449/.455	.640/.650
437X750	.456/464	.765/.775
437X812	.449/.455	.827/.837
437X937	.450/.456	.950/.960
440X750	.456/.464	.765/.775
453X687	.466/.472	.718/.728
492X1.1811	.507/.517	1.196/1.206
500X531	.509/.519	.545/.555
500X593	.512/.524	.601/.611
500X625	.515/.525	.640/.650
500X750	.515/.525	.765/.775
500X875	.515/.525	.890/.900
500X1.000	.515/.525	1.020/1.040
500X1.062	.511/.521	1.080/1.100
500X1.250	.515/.525	1.270/1.290
500X1.500	.514/.522	1.525/1.545
500X2.500	.525/.535	2.535/2.565
500X3.000	.511/.521	3.020/3.050
500X3.500	.525/.535	3.515/3.545
500X4.000	.512/.518	4.027/4.075
500X6.000	.515/.525	6.020/6.100
515X1.921	.524/.534	1.941/1.961
531X1.062	.541/.551	1.073/1.083
546X875	.540/.550	.865/.885
562X875	.560/.570	.870/.880
562X1.000	.577/.587	1.020/1.040
562X1.125	.579/.587	1.145/1.165

Rectangles

• variable thickness quoted on request



Part No.	Dimensional Specifications w	l
625X750	.636/.644	.760/.768
141X625X750	.650/.660	.765/.775
625X1.000	.640/.650	1.020/1.040
625X1.062	.656/.666	1.052/1.072
625X1.125	.650/.660	1.145/1.165
625X1.250	.634/.644	1.257/1.277
625X1.375	.650/.660	1.3951.415
625X1.625	.634/.644	1.632/1.652
625X2.000	.650/.660	2.020/2.040
625X3.000	.630/.645	3.010/3.060
625X6.000	.640/.650	6.020/6.100
640X655X6.060	.650/.660	6.050/6.080
156X687X1.296	.795/.805	1.302/1.322
781X1.296	.792/.802	1.305/1.325
750X995	.745/.755	.990/1.000
750X1.000	.765/.775	1.020/1.040
750X1.125	.765/.775	1.145/1.165
750X1.250	.765/.775	1.270/1.290
750X1.500	.765/.775	1.520/1.540
750X1.750	.765/.775	1.770/1.790
750X2.500	.761/.771	2.533/2.563
750X6.000	.765/.775	6.020/6.100
812X1.125	.830/.840	1.117/1.137
875X2.000	.890/.900	2.030/2.060
875X6.000	.895/.905	6.020/6.100
984X1.250	.993/1.003	1.238/1.258
1.000X1.250	1.020/1.030	1.270/1.290
1.000X1.375	1.020/1.040	1.395/1.415
1.000X1.500	1.020/1.040	1.520/1.540
1.000X6.000	1.020/1.040	6.020/6.100
1.125X1.250	1.145/1.165	1.270/1.290
1.250X1.500	1.270/1.290	1.530/1.550
187X1.250X6.000	1.260/1.280	6.050/6.080
125X1.375X6.000-UG	1.385/1.405	6.050/6.080

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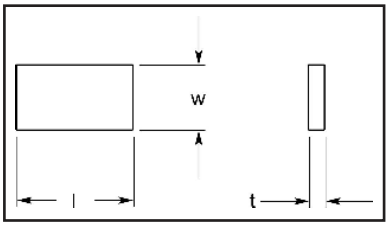
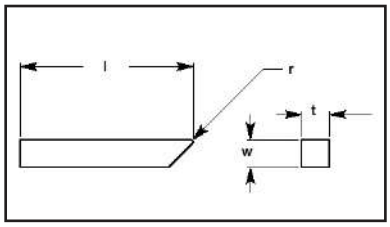
URRT Style Rectangles

• variable thickness quoted on request

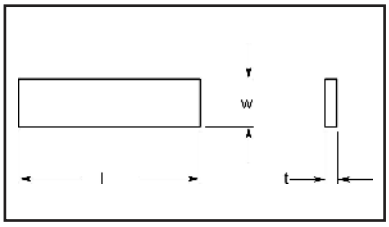


Part No.	Dimensional Specifications		
	t	w	l
URRT1	.036/.045	.068/.078	.515/.530
URRT2	.053/.059	.099/.105	.515/.530
URRT3	.052/.062	.104/.114	.635/.645
URRT4	.070/.077	.132/.138	.765/.775
URRT5	.084/.092	.168/.174	.900/.906
URRT7	.070/.077	.215/.225	.764/.770
URRT8	.070/.077	.275/.285	.764/.770
URRT9	.070/.077	.325/.335	.780/.790
URRT10	.070/.077	.387/.393	.765/.775
URRT12	.070/.077	.135/.145	1.000/1.027



Part No.	Dimensional Specifications		
	t	w	l
DWG#EN071592	.202/.210	.202/.210	1.290/1.310

STB Style Rectangles



Part No.	Description	Dimensional Specifications		
		t	w	l
STB12	(1/32X1/16X1)	.036/.046	.067/.078	1.005/1.020
STB13	(3/64X3/32X1)	.057/.062	.102/.107	1.010/1.020
STB24A	(1/16X1/8X1)	.073/.083	.135/.145	1.010/1.035
STB24B	(1/16X1/8X3)	.073/.083	.135/.145	3.010/3.060
STB24C	(1/16X1/8X1 1/4)	.073/.083	.135/.145	1.260/1.296
STB24D	(1/16X1/8X1 1/2)	.073/.083	.135/.145	1.525/1.550
STB26A	(1/16X3/16X1)	.073/.083	.198/.208	1.010/1.040
STB26C	(1/16X1/8X3)	.074/.082	.200/.210	3.090/3.120
STB28A	(1/16X1/4X1)	.073/.083	.265/.270	1.020/1.040
STB3101	(3/32X5/16X1)	.103/.111	.320/.326	1.010/1.020
STB312	(3/32X3/8X5)	.109/.115	.390/.400	5.020/5.100
STB3121	(3/32X3/8X1)	.109/.115	.390/.400	1.020/1.040
STB312C	(3/32X3/8X6)	.110/.120	.390/.400	6.050/6.080
STB316	(3/32X1/2X6)	.109/.115	.515/.525	6.020/6.100
STB3161	(3/32X1/2X1)	.109/.115	.515/.525	1.020/1.040
STB320	(3/32X5/8X6)	.109/.115	.640/.650	6.020/6.100
STB332	(3/32X1X6)	.111/.117	1.020/1.040	6.050/6.080
STB34A	(3/32X1/8X1)	.109/.115	.135/.145	1.010/1.040
STB36A	(3/32X3/16X1 1/4)	.109/.115	.193/.203	1.265/1.290
STB36B	(3/32X3/16X1)	.109/.115	.200/.208	1.015/1.040
STB38A	(3/32X1/4X1)	.109/.115	.265/.271	1.020/1.040
STB38B	(3/32X1/4X1 1/2)	.109/.115	.265/.271	1.510/1.540
STB4101	(1/8X5/16X1)	.140/.146	.320/.326	1.010/1.020
STB410B	(1/8X5/16X3)	.140/.150	.328/.338	3.015/3.060
STB412C	(1/8X3/8X6)	.140/.150	.390/.400	6.020/6.100
STB412D	(1/8X3/8X1)	.140/.150	.390/.400	1.020/1.040
STB416	(1/8X1/2X6)	.140/.150	.515/.525	6.020/6.100
STB416A	(1/8X1/2X1)	.140/.150	.515/.525	1.020/1.040
STB416B	(1/8X1/2X1 1/2)	.140/.150	.513/.523	1.510/1.540
STB416C	(1/8X1/2X3)	.140/.150	.511/.521	3.020/3.050
STB416D	(1/8X1/2X2 1/2)	.140/.150	.522/.530	2.516/2.546

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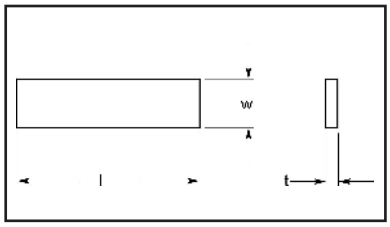
STB Style Rectangles



Part No.	Description	Dimensional Specifications		
		t	w	l
STB420	(1/8X5/8X6)	.140/.150	.640/.650	6.020/6.100
STB4201	(1/8X5/8X1)	.140/.150	.640/.650	1.020/1.040
STB424	(1/8X3/4X6)	.140/.150	.765/.775	6.020/6.100
STB4241	(1/8X3/4X1)	.140/.150	.765/.775	1.020/1.040
STB428	(1/8X7/8X6)	.140/.150	.895/.905	6.020/6.100
STB432	(1/8X1X6)	.140/.150	1.020/1.040	6.020/6.100
STB440	(1/8X1 1/4X6)	.141/.149	1.280/1.310	6.050/6.080
STB461	(1/8X3/16X1)	.135/.143	.199/.209	1.028/1.048
STB48A	(1/8X1/4X1)	.140/.150	.265/.270	1.020/1.040
STB48B	(1/8X1/4X1 1/4)	.140/.150	.270/.280	1.270/1.290
STB48C	(1/8X1/4X2 1/4)	.140/.150	.270/.280	2.270/2.290
STB48D	(1/8X1/4X3)	.140/.150	.270/.280	3.010/3.080
STB516	(3/16X1/2X6)	.172/.182	.515/.525	6.080/6.100
STB612	(3/16X3/8X6)	.203/.211	.390/.400	6.050/6.080
STB6121	(3/16X3/8X1)	.200/.208	.390/.400	1.020/1.040
STB616	(3/16X1/2X6)	.200/.208	.515/.525	6.020/6.100
STB6161	(3/16X1/2X1)	.200/.208	.515/.525	1.020/1.040
STB616A	(3/16X1/2X3)	.200/.208	.511/.521	3.018/3.053
STB620	(3/16X5/8X6)	.200/.208	.640/.650	6.020/6.100
STB6201	(3/16X5/8X1)	.200/.208	.642/.648	1.020/1.040
STB620A	(3/16X5/8X3)	.200/.208	.630/.645	3.010/3.060
STB624	(3/16X3/4X6)	.205/.211	.765/.775	6.050/.6080
STB6241	(3/16X3/4X1)	.200/.208	.765/.775	1.020/1.040
STB632	(3/16X1X6)	.205/.211	1.020/1.040	6.050/6.080
STB681	(3/16X1/4X1)	.200/.208	.265/.275	1.020/1.040
STB812	(1/4X3/8X6)	.266/.274	.390/.400	6.050/6.080
STB8121	(1/4X3/8X1)	.260/.270	.390/.400	1.020/1.040
STB816	(1/4X1/2X6)	.260/.270	.515/.525	6.020/6.100
STB8161	(1/4X1/2X1)	.260/.270	.515/.525	1.020/1.040
STB816A	(1/4X1/2X3)	.260/.270	.511/.521	3.023/3.053
STB820	(1/4X5/8X6)	.260/.270	.640/.650	6.020/6.100
STB8201	(1/4X5/8X1)	.260/.270	.642/.648	1.020/1.040
STB820A	(1/4X5/8X3)	.260/.270	.640/.650	3.020/3.060
STB824	(1/4X3/4X6)	.260/.270	.765/.775	6.020/6.100
STB840	(1/4X1 1/4X6)	.270/.280	1.280/1.310	6.020/6.100
STB840-312T	(5/16X1 1/4X6)	.326/.336	1.280/1.310	6.020/6.100
STB1216	(3/8X1/2X6)	.390/.400	.515/.525	6.080/6.110

Ultra-met®

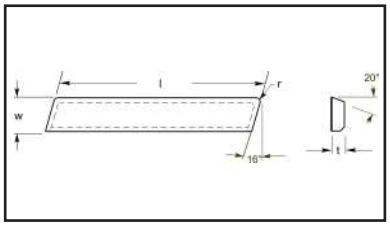
carbide technologies

Wood Working

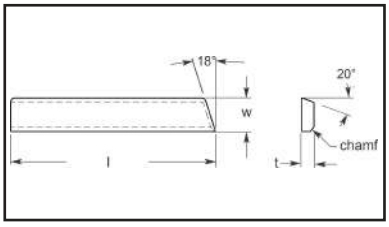
DEBARKERS
STUMP CUTTERS
SAW TIPS
CHIP SPLITTER

Ultra-met®
carbide technologies

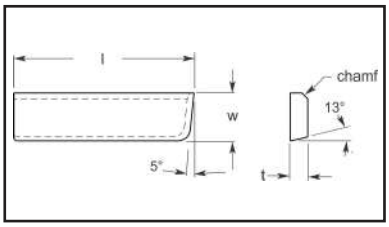
NEW Woodworking Debarkers



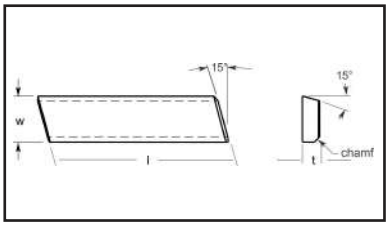
Part No.	Dimensional Specifications			
	t	w	l	r
UWD-15-3LH	.195/.205	.495/.505	2.949/2.979	1/16



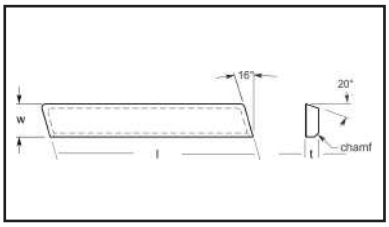
Part No.	Dimensional Specifications			
	t	w	l	r
UWD-11	.183/.193	.495/.505	3.078/3.108	1/16



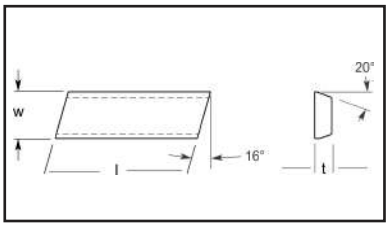
Part No.	Dimensional Specifications			
	t	w	l	chamf
UWD-4	.183/.193	.500/.510	1.890/1.910	.062X45°
UWD-2	.245/.255	.580/.590	2.920/2.950	.062X45°



Part No.	Dimensional Specifications			
	t	w	l	r
UWD-12	.183/.193	.495/.505	1.889/1.919	0

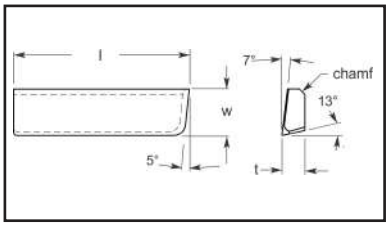


Part No.	Dimensional Specifications			
	t	w	l	r
UWD-13	.195/.205	.495/.505	2.949/2.979	1/16

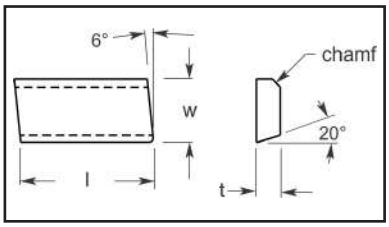


Part No.	Dimensional Specifications			
	t	w	l	r
UWD-14	.120/.130	.331/.341	.990/1.010	0

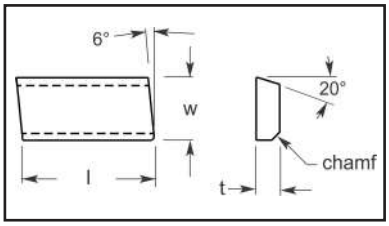
Woodworking Debarkers



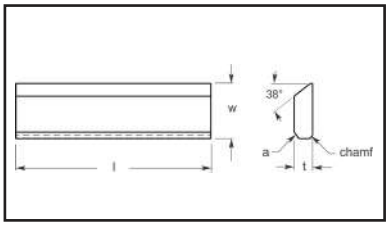
Part No.	Dimensional Specifications			
	t	w	l	chamf
UWD-4X	.244/.254	.500/.510	1.890/1.910	.062X45°
UWD-2X	.347/.357	.580/.590	2.920/2.950	.062X45°



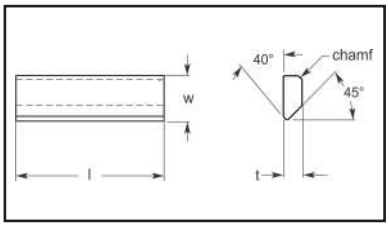
Part No.	Dimensional Specifications			
	t	w	l	chamf
UWD-3	.183/.193	.495/.505	1.043/1.063	.062X45°



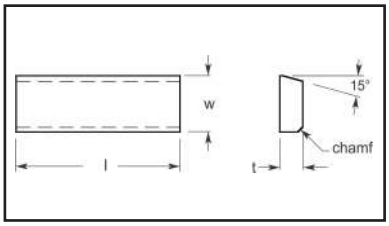
Part No.	Dimensional Specifications			
	t	w	l	chamf
UWD-5	.183/.193	.493/.507	1.660/1.690	.062X45°



Part No.	Dimensional Specifications				
	t	w	l	chamf	a
UWA-1	.177/.197	.553/.573	1.975/2.025	.030 X 45°	.050 X 37°
UWA-2	.177/.197	.640/.660	1.975/2.025	.030 X 45°	.050 X 37°



Part No.	Dimensional Specifications			
	t	w	l	chamf
UWA-3	.183/.193	.370/.380	1.865/1.895	.062 X 45°
UWA-3-125THK	.120/.130	.370/.380	1.865/1.895	.062 X 45°



Part No.	Dimensional Specifications			
	t	w	l	chamf
UWA-4	.1825/.1925	.495/.505	1.4275/1.4575	.047 X 45°

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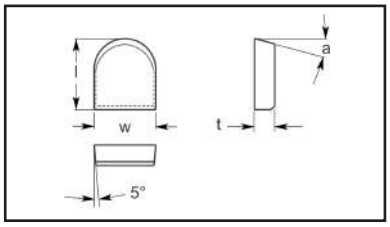
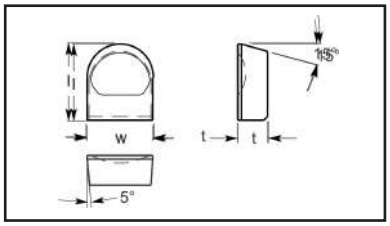
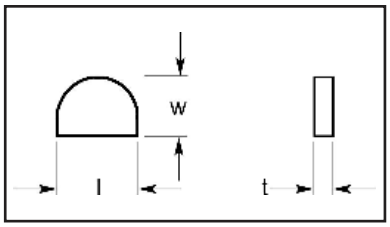
Stump Cutters



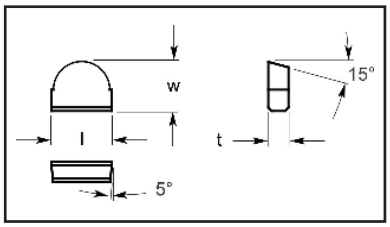
Part No.	Dimensional Specifications			
	t	w	l	a
B11	.179/.183	.535/.545	.630/.640	15°
B20	.179/.183	.535/.550	.630/.640	20°



Part No.	Dimensional Specifications		
	t	w	l
B12	.242/.246	.538/.548	.620/.630



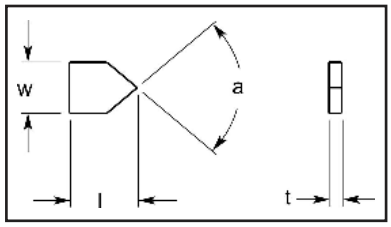
Part No.	Dimensional Specifications		
	t	w	l
DWG#1879-2	.140/.155	.480/.490	.673/.680
SK-1428	.068/.074	.187/.202	.141/.156



Part No.	Dimensional Specifications		
	t	w	l
DWG#U-3730	.179/.183	.535/.545	.435/.445

5000 / 6000 Series

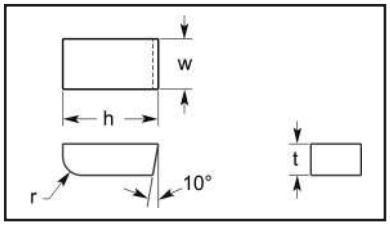
5000 / 6000 Series Rectangles



Part No.	Dimensional Specifications			
	t	w	l	a
5030	.063/.078	.225/.240	.313/.328	80°
5080	.101/.107	.314/.320	.365/.371	80°
5100	.101/.107	.365/.371	.512/.518	80°
5200	.137/.143	.512/.518	.512/.518	80°
6100	.101/.107	.365/.371	.512/.518	60°

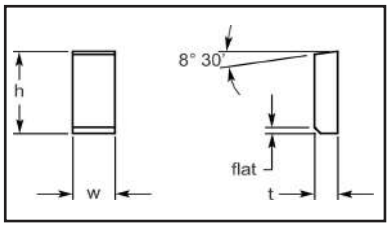
Saw Tip Styles

Saw Tip Style



Part No.	Dimensional Specifications			
	t	h	w	r
DWG#U-3713	.122/.128	.375/.385	.304/.314	.075
DWG#U-3771	.122/.128	.375/.385	.267/.273	.075
125X20X37-SAWTIP	.120/.130	.375/.385	.195/.205	.075
125X27X37-SAWTIP	.120/.130	.375/.385	.265/.275	.075
125X31X37-SAWTIP	.120/.130	.375/.385	.304/.314	.075
177X31X38-SAWTIP	.172/.182	.384/.394	.304/.314	.075
177X34X38-SAWTIP	.172/.182	.384/.394	.333/.343	.075

Saw Tip Style

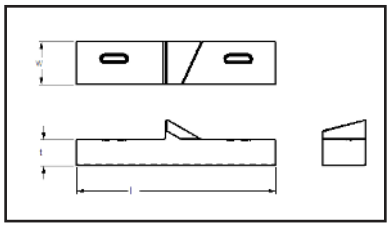


Part No.	Dimensional Specifications			
	t	h	w	flat
109X20X42-SAWTIP	.104/.114	.417/.427	.195/.205	.030X45°

Chip Splitter

NEW

Chip Splitter



Part No.	Dimensional Specifications			
	t	w	l	bit
SCORINGBIT	.240/.260	.390/.410	1.860/1.890	.187 X 30°

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Oil & Gas Mining

CONICALS
ROUND
SERRATED BUTTON
STARS
TRAPEZOID
ROOF BITS
GEOPHYSICAL /
DRAG BIT INSERTS

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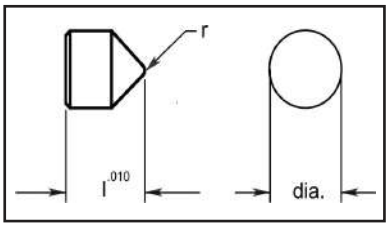
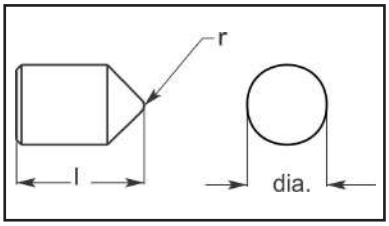
carbide technologies

Conicals

Cone Point

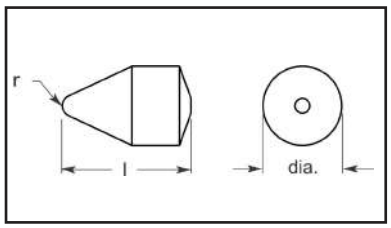


Part No.	Dimensional Specifications		
	dia.	l	r
CP1-90-1.125LG	1.015/1.020	1.115/1.135	3/32
CP1-90-1.250LG	1.015/1.020	1.240/1.260	3/32



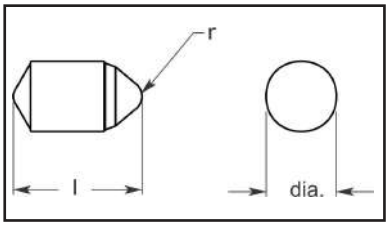
Part No.	Dimensional Specifications		
	dia.	l	r
CP308-90.636LG	.305/.310	.626/.646	.035/.045
CP308-90.698LG	.305/.310	.688/.708	.035/.045
CP317-70.655LG	.314/.320	.645/.665	.031/.041
CP352-90.611LG	.348/.355	.601/.621	.031/.041
CP352-90.673LG	.348/.355	.663/.683	.031/.041
CP755-75-1.000LG	.752/.758	.980/1.020	.090/.100
CP1018-90-1.125LG	1.015/1.020	1.105/1.145	.090/.100
CP1018-90-1.250LG	1.015/1.020	1.230/1.270	.090/.100

NEW Cone Point



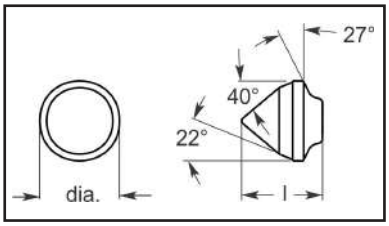
Part No.	Dimensional Specifications		
	dia.	l	r
CP265-50.434LG	.262/.268	.429/.439	.031/.041

Double Cone Point



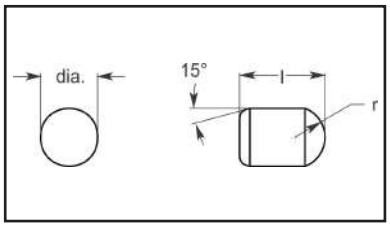
Part No.	Dimensional Specifications		
	dia.	l	r
DCP352-80.639LG	.348/.355	.629/.649	.073/.083
DCP478-90.792LG	.475/.481	.782/.802	.120/.130

Capped Valve Seat

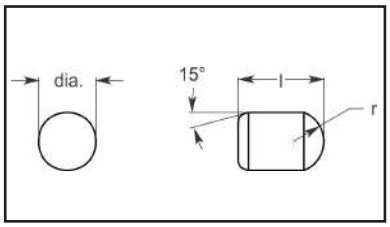


Part No.	Dimensional Specifications	
	dia.	l
CVS.646DIAX.651LG	.639/.653	.646/.656

Compact



Part No.	Dimensional Specifications		
	dia.	l	r
COM375X560LG	.375	.560	.203
COM438X650LG	.4375	.650	.234
COM500X747LG	.500	.747	.266
COM563X1.008LG	.5625	1.008	.297
COM625X937LG	.625	.937	.327
COM625X1.383LG	.625	1.383	.327
COM750X1.125LG	.750	1.125	.390



Part No.	Dimensional Specifications	
	dia.	l
500DIA-COM.725L	.515/.525	.715/.735
500DIA-COM.748L	.504/.514	.743/.753

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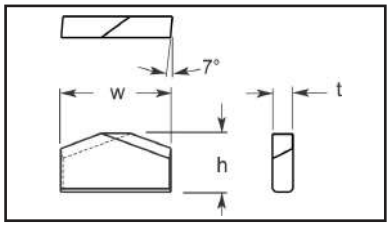
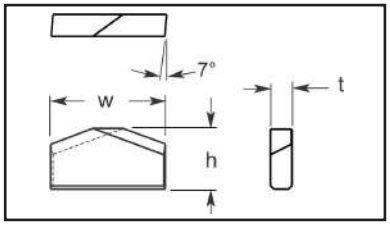
Roof Bits



include ∢ = 140°

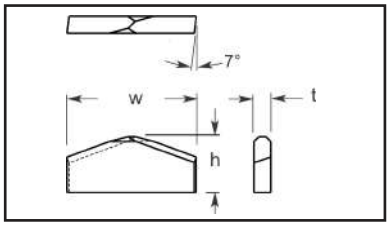
Part No.	Dimensional Specifications		
	w	h	t
RD1-.400H	1	.400	.175/.185
RD1-.400H.250THK	1	.400	.245/.255
RD1-.425H	1	.425	.175/.185
RD1-.450H	1	.450	.175/.185
RD1-.450H.195THK	1	.450	.190/.200
RD1-.475H	1	.475	.175/.185
RD1-.485H	1.010/1.030	.480/.490	.175/.185
RD1-.490H	1.010/1.030	.490/.510	.175/.185
RD1-.495H	1.010/1.030	.490/.500	.175/.185
RD1-.500H	1	.500	.175/.185
RD1-.500H.195THK	1	.500	.190/.200
RD1-.500H.250THK	1	.500	.245/.255
RD1-.510H	1.010/1.030	.505/.515	.175/.185
RD1-.520H	1	.520	.175/.185
RD1-.550H	1.010/1.030	.545/.555	.175/.185
RD1-1/32.400H	1 3/8	.550	.175/.185
RD1-1/32.425H	1 3/8	.600	.175/.185
RD1-1/32.450H	1 3/8	.650	.175/.185
RD1-1/32.475H	1 3/8	.700	.175/.185
RD1-1/32.500H	1 3/8	.725	.175/.185
RD1-1/32.520H	1.042/1.062	.515/.525	.175/.185
RD1-3/8.1.01H	1.385/1.405	.995/1.025	.175/.185
RD1-3/8.500H	1 3/8	.750	.175/.185
RD1-3/8.530H	1.385/1.405	.520/.540	.175/.185
RD1-3/8.550H	1 1/2	.500	.175/.185
RD1-3/8.562H	1.385/1.405	.562/.582	.175/.185
RD1-3/8.600H	1 1/2	.550	.175/.185
RD1-3/8.600H205T	1.385/1.405	.595/.605	.200/.210
RD1-3/8.625H205T	1.385/1.405	.620/.630	.200/.210
RD1-3/8.635H	1.385/1.405	.635/.655	.175/.185
RD1-3/8.645H205T	1.385/1.405	.640/.650	.200/.210
RD1-3/8.650H	1 1/2	.600	.175/.185
RD1-3/8.650H205T	1.385/1.405	.645/.655	.200/.210
RD1-3/8.655H	1.385/1.405	.650/.660	.175/.185
RD1-3/8.665H	1.385/1.405	.660/.670	.175/.185
RD1-3/8.670H	1.385/1.405	.660/.680	.175/.185
RD1-3/8.680H205T	1.385/1.405	.675/.685	.200/.210
RD1-3/8.700H	1 1/2	.650	.175/.185
RD1-3/8.715H	1.385/1.405	.710/.720	.175/.185
RD1-3/8.725H	1 1/2	.700	.175/.185
RD1-3/8.750H	1 1/2	.750	.175/.185
RD1-3/8.770H	1.635/1.655	.760/.780	.175/.185
RD1-1/2.500H	1 1/32	.400	.175/.185
RD1-1/2.530H	1.500/1.530	.520/.540	.175/.185
RD1-1/2.550H	1 1/32	.425	.175/.185
RD1-1/2.600H	1 1/32	.450	.175/.185
RD1-1/2.635H	1.500/1.530	.630/.640	.175/.185
RD1-1/2.650H	1 1/32	.475	.175/.185
RD1-1/2.655H	1.500/1.530	.650/.660	.175/.185
RD1-1/2.665H	1.500/1.530	.660/.670	.175/.185
RD1-1/2.700H	1 1/32	.500	.175/.185
RD1-1/2.750H	1 3/8	.500	.175/.185
RD1-5/8.700H	1.635/1.655	.690/.710	.175/.185
RD1-5/8.710H	1.635/1.655	.695/.725	.175/.185
RD1-5/8.760H	1.635/1.655	.745/.775	.175/.185
RD1-5/8.780H	1.635/1.655	.765/.795	.175/.185
RD1-7/8.700H	1 7/8	.700	.175/.185

Roof Bits



include ∢ = 140°

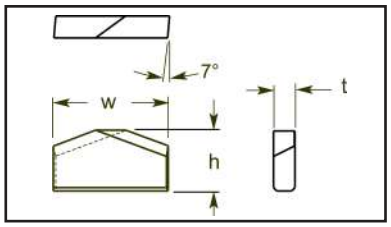
Part No.	Dimensional Specifications		
	w	h	t
RD1-.450H.195THK	1	.450	.190/.200
RD1-.500H.195THK	1	.500	.190/.200
RD1-.400H.250THK	1	.400	.245/.255
RD1-.500H.250THK	1	.500	.245/.255



include ∢ = 140°

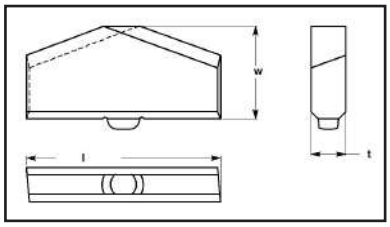
Part No.	Dimensional Specifications		
	w	h	t
RD1-3/8.600H-BP	1 3/8	.600	.175/.185
RD1-.500H-DA	1	.500	.175/.185
RD1-.520H-HIGH ATTACK	1	.520	.175/.185
RD1-.400H.250THK-MOD	1	.400	.245/.255
RD1-.500H-MOD	1	.500	.175/.185
RD1-1/32.400H.250THK-MOD	1 1/32	.400	.245/.255
RD1-.400H.250THK-SAN	1	.400	.245/.255
RD1-1/32.400H.250THK-SAN	1 1/32	.400	.245/.255
RD1-.475H-BH	1	.475	.175/.185
RD1-.500H-BH	1	.500	.175/.185
RD1-3/8.600H-BH	1 3/8	.600	.175/.185
RD1-3/8.700H-BH	1 3/8	.700	.175/.185
RD1-3/8.725H-BH	1 3/8	.725	.175/.185
RD1-3/8.750H-BH	1 3/8	.750	.175/.185

NEW Roof Bits



Part No.	Dimensional Specifications		
	w	h	t
RD1-.450H-RP	1.015/1.030	.445/.460	.183/.188
RD1-.500H-RP	1.015/1.030	.495/.510	.183/.188

NEW Roof Bits



Part No.	Dimensional Specifications		
	w	h	t
RD1-.500H-SP	1.010/1.030	.495/.505	.175/.185

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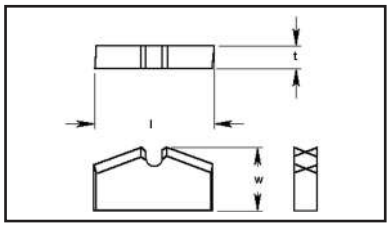
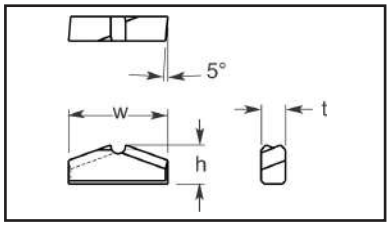
NEW Roof Bits



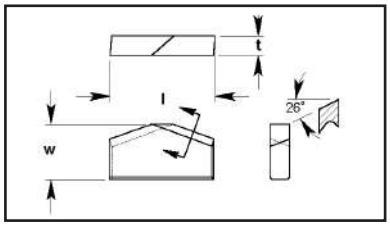
Part No.	Dimensional Specifications		
	w	h	t
RD1-.450H-PILOT	1.010/1.030	.445/.455	.175/.185
RD1-.475H-PILOT	1.010/1.030	.470/.480	.175/.185
RD1-.500H-PILOT	1.010/1.030	.495/.505	.175/.185
RD1-1/32.500H-PILOT	1.042/1.062	.495/.505	.175/.185

Roof Bits



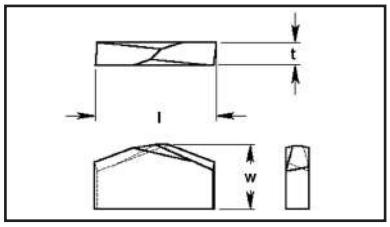
Part No.	Dimensional Specifications		
	w	h	t
RD1-40H25TSAN-26	1.010/1.030	.395/.405	.245/.255
RD1-500H25T-SAN	1.010/1.030	.495/.505	.245/.255
RD1.400H.25T-HT	1.015/1.030	.395/.405	.245/.255
RD1-485H.25T-SAN	1.010/1.030	.480/.490	.245/.255
RD1-1/32-4H.25SA	1.042/1.062	.395/.405	.245/.255

NEW Roof Bits



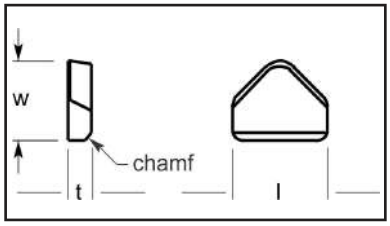
Part No.	Dimensional Specifications		
	w	h	t
RD1-.510H-26°	1.020/1.030	.505/.515	.175/.185
RD1-.520H-26°	1.020/1.030	.510/.520	.175/.185

NEW Roof Bits

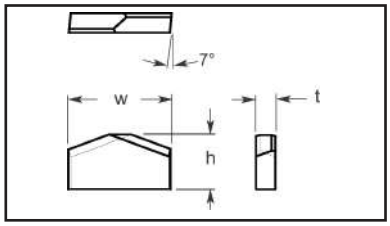


Part No.	Dimensional Specifications		
	w	h	t
RD1-450H.195T-MOD	1.010/1.030	.440/.460	.190/.200
RD1-485H.25T-MOD	1.015/1.030	.480/.490	.245/.255
RD1-.500H.195THK-MOD	1.010/1.030	.495/.505	.190/.200

NEW Roof Bits

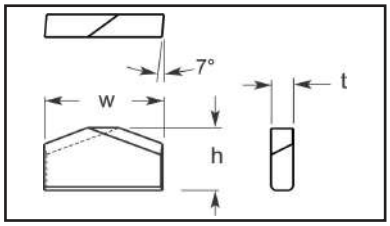


Part No.	Dimensional Specifications			
	t	w	l	chamf
SK#9309	.308/.318	1.045/1.059	1.240/1.260	.093 X 45°



include ∢ = 140°

Part No.	Dimensional Specifications		
	w	h	t
DWG#FS2900	1.500/1.525	.745/.775	.205/.215



include ∢ = 140°

Part No.	Dimensional Specifications		
	w	h	t
DWG138-700D	1.380/1.400	.692/.708	.179/.185

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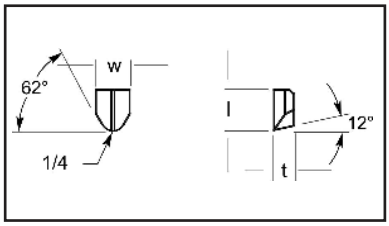
Wall Auger Bit

Wall Auger Bit Vee Bottom

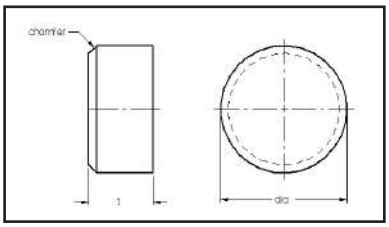


Part No.	Dimensional Specifications		
	t	w	l
DWG#U-5371	.430/.440	.745/.755	.895/.905
DWG#U-5371-.800LG	.430/.440	.745/.755	.795/.805
DWG#U5371-.825LG	.430/.440	.745/.755	.820/.830
DWG#U-5371-.835LG	.430/.440	.745/.755	.830/.840
U-6643-1.250LG	.430/.440	.745/.755	1.240/1.260

Rounds

NEW

Round Wear Buttons

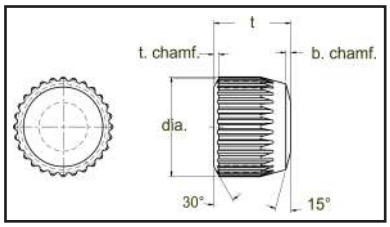


Part No.	Dimensional Specifications		
	t	dia.	chamf
368DX187T	.185/.189	.366/.370	.022 X 45°
368DX200T	.195/.205	.360/.370	.015/ X 45°

Serrated Button

NEW

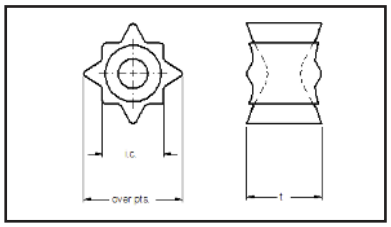
Serrated Button



Part No.	Dimensional Specifications			
	t	dia.	t. chamf	b. chamf
SRB2.5-200	.195/.205	.329/.339	.012 X 40°	.018 X 15°
SRB34	.245/.255	.3995/.4065	.020 X 30°	.020 X 15°
SRB35	.307/.317	.3995/.4065	.020 X 30°	.020 X 15°
SRB36	.370/.380	.3995/.4065	.020 X 30°	.020 X 15°
SRB5.54	.245/.255	.583/.593	.012 X 40°	.033 X 15°
SRB5.55	.3075/.3175	.583/.593	.012 X 40°	.033 X 15°
SRB5.56	.370/.380	.583/.593	.012 X 40°	.033 X 15°
SRB5.58	.495/.505	.583/.593	.012 X 40°	.033 X 15°

Stars

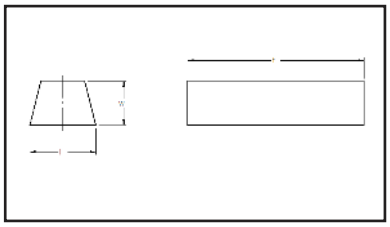
Stars



	Dimensional Specifications		
	i.c.	t	over pts.
188STAR	.143/.163	.178/.198	.239/.259
250STAR	.200/.220	.240/.260	.334/.354
312STAR	.241/.261	.302/.312	.413/.433
375STAR	.300/.320	.365/.385	.508/.528

Trapezoid

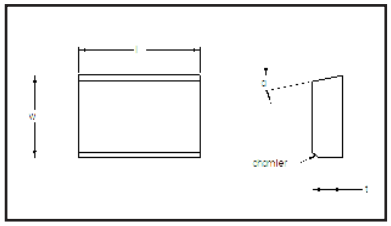
Trapezoid



Part No.	Dimensional Specifications		
	t	w	l
TRAP375X250X1	.990/1.010	.245/.255	.370/.380

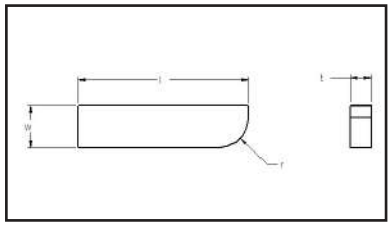
Geophysical / Drag Bit Inserts

Gage Block With Angle



Part No.	Dimensional Specifications				
	t	w	l	a	chamf
1114	.495/.505	.184/.192	.740/.760	10°/12°	.030 X 45°
1115	.370/.380	.183/.193	.615/.635	11°/13°	none

Gage Block With Radius



Part No.	Dimensional Specifications			
	t	w	l	r
1105-DB	.121/.129	.245/.255	.990/1.010	.170/.180

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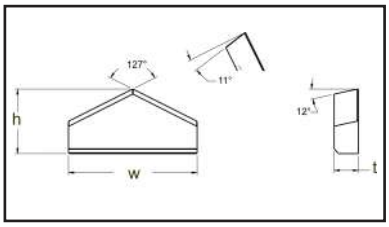
NEW

Symmetrical Apex



Part No.	Dimensional Specifications		
	w	h	t
1117	0.990/1.010	.495/.505	.184/.192
4011	1.115/1.135	.740/.760	.184/.192

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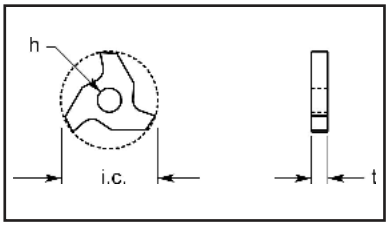
Miscellaneous

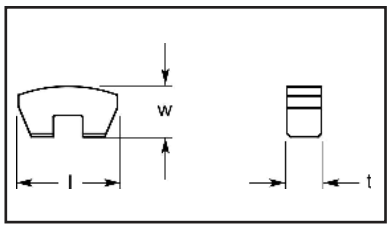
MISCELLANEOUS
GRIPPERS
ROUND SPECIAL
ROUND RODS
SCARFING
SQUARE RADIUS
SKI RUNNERS

Miscellaneous



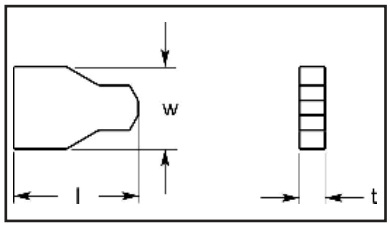
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	i.c.	t	h
25787	.505/.515	.169/.175	.247/.253



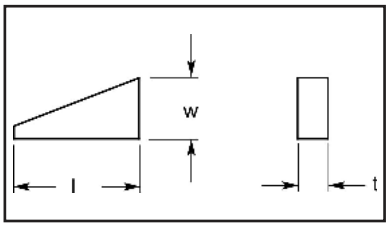
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
#8VT-5031	.260/.268	.378/.384	.745/.755



- variable thickness quoted on request

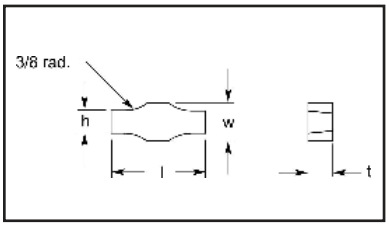
Part No.	Dimensional Specifications		
	t	w	l
002-CD-312-04	.102/.110	.334/.344	.509/.521



- variable thickness quoted on request

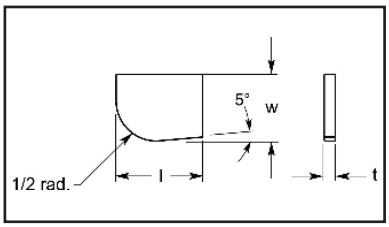
Part No.	Dimensional Specifications		
	t	w	l
115AS	.057/.067	.380/.390	.808/.818

Utility Miscellaneous



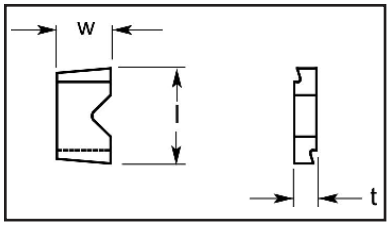
Part No.	Dimensional Specifications			
	t	h	w	l
167QC36220	.262/.268	.238/.242	.396/.406	.995/1.005

Miscellaneous



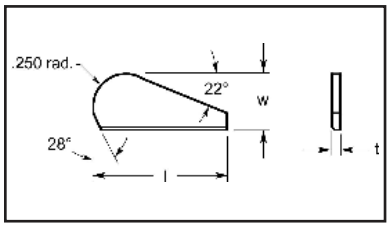
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
3-T-3709-L	.135/.145	.822/.832	1.077/1.087

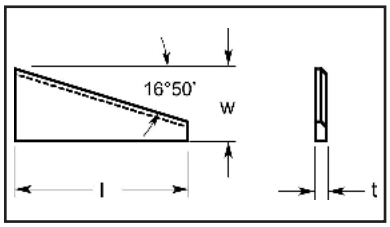


- variable thickness quoted on request

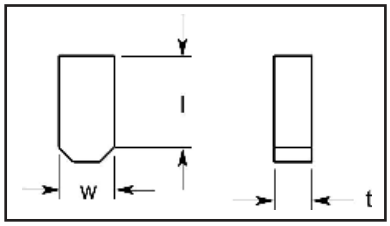
Part No.	Dimensional Specifications		
	t	w	l
9ZA5535-1	.131/.137	.318/.324	.560/.580



Part No.	Dimensional Specifications		
	t	w	l
BA60660A	.060/.070	.437/.457	1.094/1.114

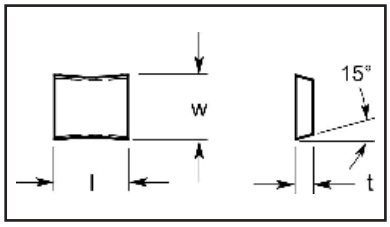


Part No.	Dimensional Specifications		
	t	w	l
BA68422	.052/.072	.406/.436	1.000/1.062



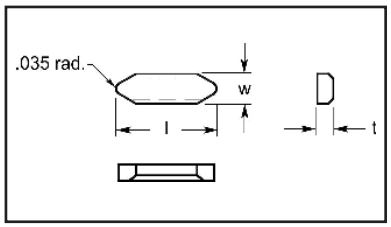
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
CS-5880-D	.080/.086	.129/.135	.250

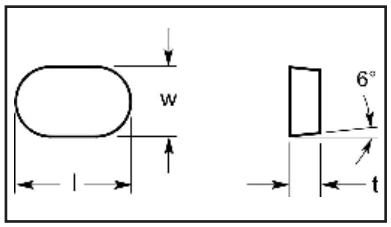


Part No.	Dimensional Specifications		
	t	w	l
DWG#101089	.155/.175	.605/.615	.700/.710

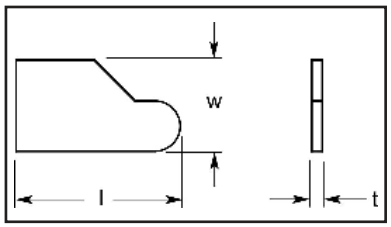
Miscellaneous



Part No.	Dimensional Specifications		
	t	w	l
DWG#A3136	.095/.103	.177/.187	.615/.625



Part No.	Dimensional Specifications		
	t	w	l
DWG#RR724	.327/.332	.765/.775	1.270/1.290



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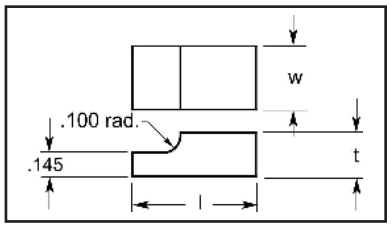
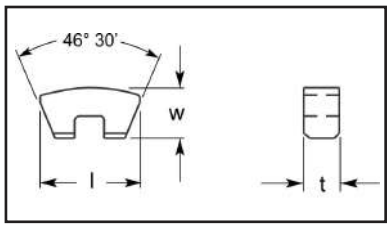
Part No.	Dimensional Specifications		
	t	w	l
DWG#U-4392	.071/.076	.615/.635	1.115/1.135



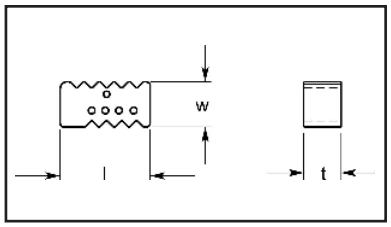
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
DWG#U-4548	.265/.275	.390/.400	.760/.780



- variable thickness quoted on request

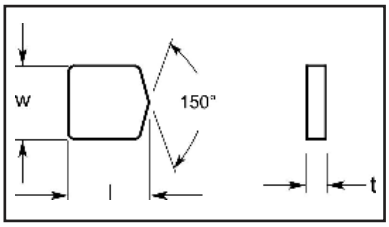
Part No.	Dimensional Specifications		
	t	w	l
DWG#U-5776	.260/.268	.378/.384	.745/.755



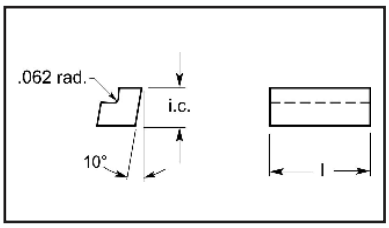
- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
ULNES335A	.322/.330	.372/.378	.746/.754

Miscellaneous • variable thickness quoted on request

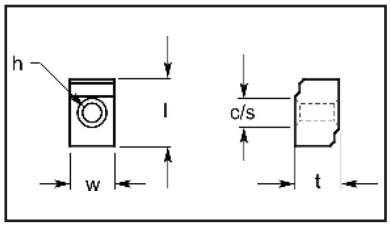


Part No.	Dimensional Specifications		
	t	w	l
UMF15-243P	.198/.206	.765/.775	.851/.861



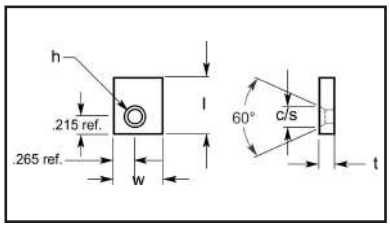
Part No.	Dimensional Specifications	
	i.c.	l
DWG#U-5230	.485/.493	1.110/1.140

Miscellaneous With Hole And Countersink



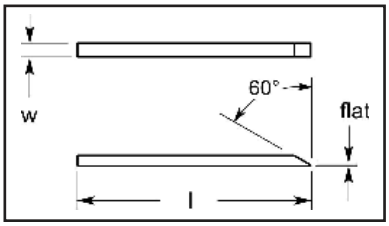
Part No.	Dimensional Specifications				
	t	w	l	h	c/s
DWG#U-3752	.517/.523	.515/.525	.770/.780	.215/.220	.328/.334

Miscellaneous With Offset Hole And Countersink



Part No.	Dimensional Specifications				
	t	w	l	h	c/s
MVT2116	.187/.193	.611/.619	.697/.705	.172/.178	.257/.263

Miscellaneous • variable thickness quoted on request



Part No.	Dimensional Specifications			
	w	l	flat	a
14730592	.055	1.206	.005	60°

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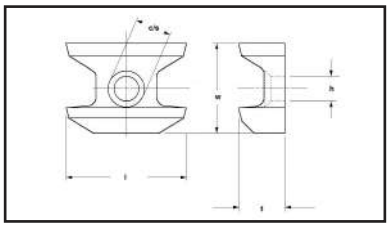
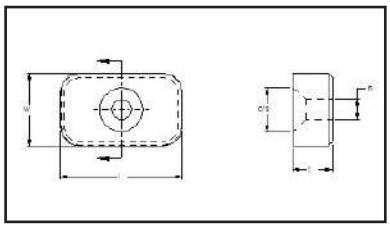
NEW Miscellaneous



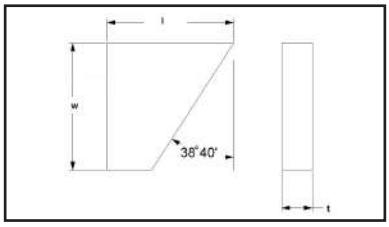
Part No.	Dimensional Specifications				
	t	w	l	h	c/s
#EIB187	.265/.275	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB250	.265/.275	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB312	.327/.337	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB375	.390/.400	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB437	.452/.462	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB500	.515/.525	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB562	.577/.587	.765/.775	1.020/1.040	.210/.216	.306/.318
#EIB625	.640/.650	.765/.775	1.020/1.040	.210/.216	.306/.318

NEW Miscellaneous



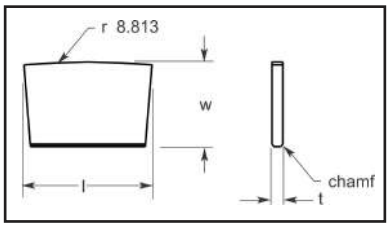
Part No.	Dimensional Specifications				
	t	w	l	h	c/s
RRSH65812-SHIM	.390/.400	.723/.733	1.215/1.235	.201/.211	.438/.448

NEW Miscellaneous



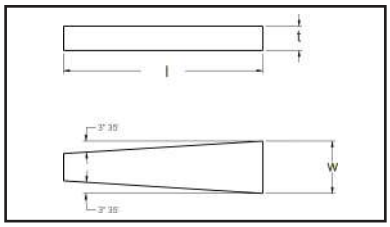
Part No.	Dimensional Specifications		
	t	w	l
B1	.202/.212	1.270/1.290	1.285/1.305

NEW Wear Tile



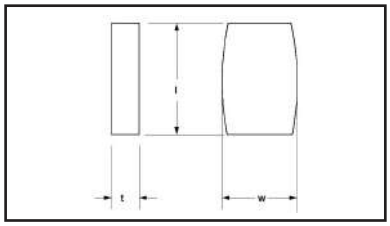
Part No.	Dimensional Specifications			
	t	w	l	chamf
LARGETILE	.126/.134	.95/1.005	1.511/1.521	.025/.035

NEW Miscellaneous



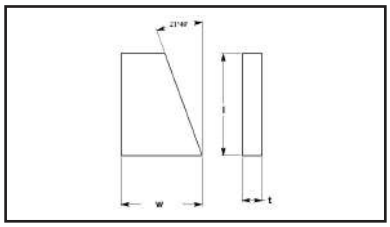
Part No.	Dimensional Specifications		
	t	w	l
BLANK#100-95	.121/.129	.265/.275	1.020/1.040

NEW Miscellaneous



Part No.	Dimensional Specifications		
	t	w	l
DWG#BP2971	.198/.206	.515/.520	.764/.770

NEW Miscellaneous



Part No.	Dimensional Specifications			
	t	w	l	ref. dim.
N1	.202/.212	1.027/.1047	1.270/1.290	0.525

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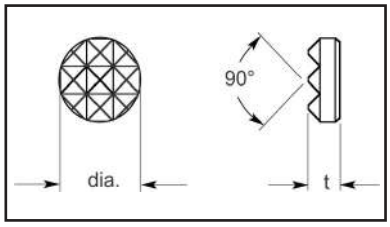
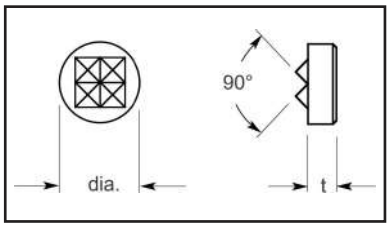
Gripper Style



- variable thickness quoted on request

Part No.	Dimensional Specifications t	dia.
DWG#GR3	.125/.130	.305/.310
GR-4	.125/.130	.361/.373
750DIAX200T-GRIPPER	.197/.203	.746/.754

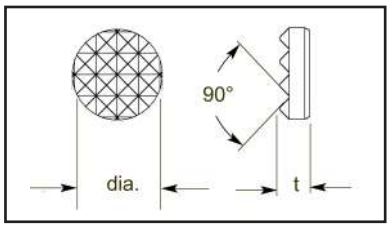


- variable thickness quoted on request

Part No.	Dimensional Specifications t	dia.
#GR-4-4PT	.187/.192	.361/.373
PC-080-4	.183/.193	.361/.373

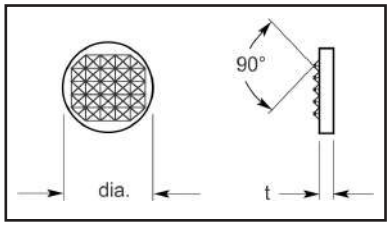
NEW

Gripper Style



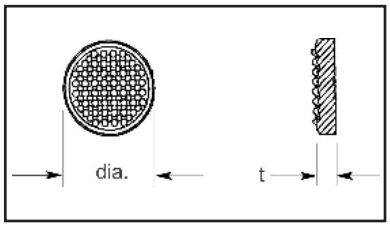
Part No.	Dimensional Specifications t	dia.
PC-080-12	.183/.193	.361/.373

Gripper Style



- variable thickness quoted on request

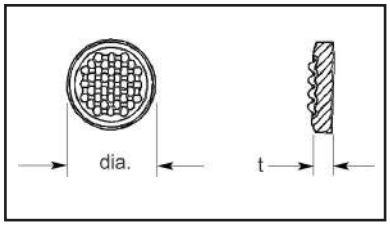
Part No.	Dimensional Specifications t	dia.
500DIAX125T-GRIPPER	.122/.128	.495/.500



- variable thickness quoted on request

Part No.	Dimensional Specifications t	dia.
PN#3755901	.206/.212	.830/.836

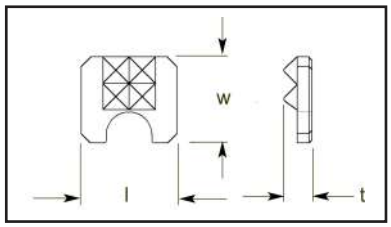
Gripper Style



- variable thickness quoted on request

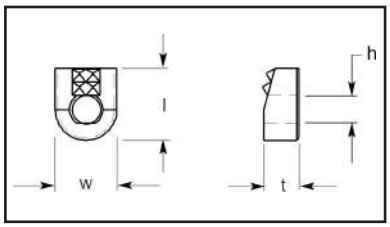
Part No.	Dimensional Specifications	
	t	dia.
PN#3755801	.165/.171	.589/.595

NEW Gripper Style



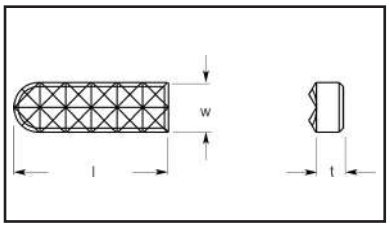
Part No.	Dimensional Specifications		
	t	w	l
PC-127BS	.125/.133	.405/.413	.451/.459

Gripper Style



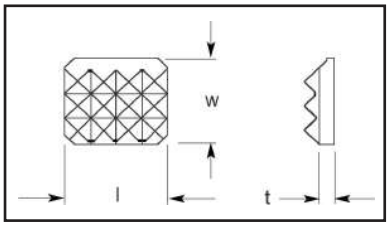
- variable thickness quoted on request

Part No.	Dimensional Specifications			
	t	w	l	h
#PC-127-4SC	.318/.326	.556/.564	.651/.659	.252/.258



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
020733D2	.240/.260	.350/.370	1.125/1.135



- variable thickness quoted on request

Part No.	Dimensional Specifications		
	t	w	l
DWG#1120-TAG	.120/.130	.395/.405	.447/.457
PC127B	.124/.131	.399/.409	.451/.459

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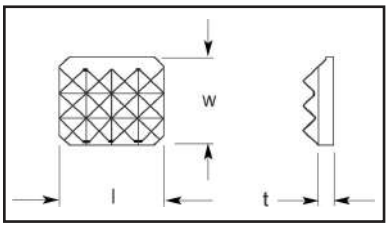
Grippers

Gripper Style

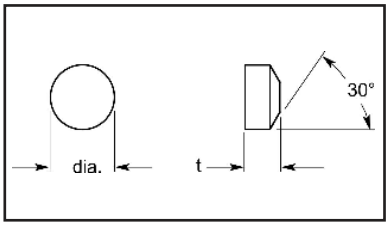
• variable thickness quoted on request



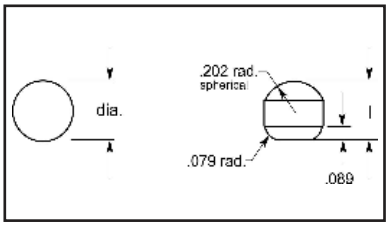
Part No.	Dimensional Specifications		
	t	w	l
DWG#SG-4-AC	.125/.131	.397/.406	.494/.500

Round Special

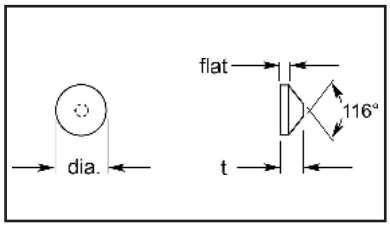
Round Special



Part No.	Dimensional Specifications	
	t	dia.
#A-4812DET#2	.258/.264	.389/.395
#A-4812DET#3	.279/.285	.514/.520

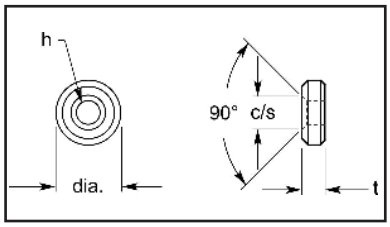


Part No.	Dimensional Specifications	
	dia.	l
30-011-1022	.370/.380	.370/.380



Part No.	Dimensional Specifications		
	dia.	t	flat
#102086A/B	.615/.625	.215/.225	.103/.109

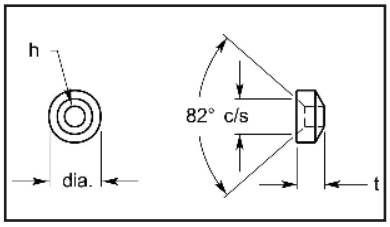
Round Special With Hole And Countersink



Part No.	Dimensional Specifications			
	dia.	t	h	c/s
#ES-9080	.323/.329	.108/.128	.113/.123	.170/.176

Rounds

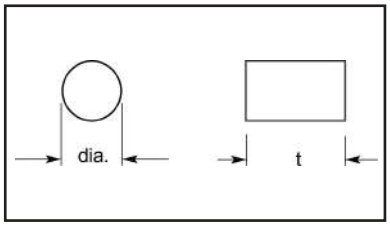
Round Special With Hole And Countersink



Part No.	Dimensional Specifications			
	dia.	t	h	c/s
URD6C	.389/.395	.260/.268	.122/.128	.267/.273
URD8C	.514/.520	.279/.285	.177/.183	.373/.379

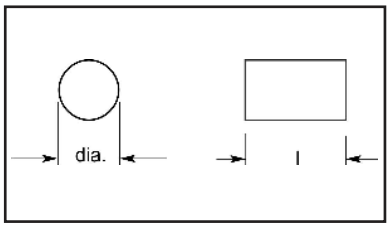
Round Rods

Round Rods



Part No.	Dimensional Specifications	
	dia.	l
156DIAX465LG	.171/.181	.480/.490
156DIAX768LG	.171/.181	.783/.793
250DIAX578LG	.265/.271	.593/.603
250DIAX590THK	.265/.271	.605/.615
250DIAX719LG	.265/.271	.734/.744
250DIAX750LG	.265/.271	.765/.775

Round Rods



Part No.	Dimensional Specifications	
	dia.	l
USR53	.166/.173	.390/.410
USR55	.166/.173	.594/.656
USR64	.195/.201	.510/.520

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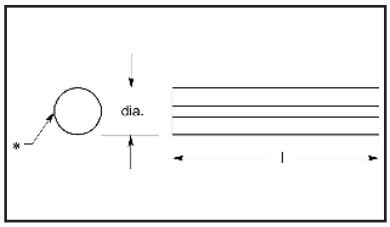
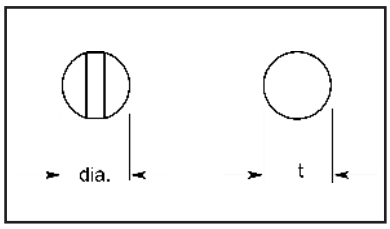
NEW Round Rods With Belly Band



Part No.	Dimensional Specifications		
	dia.	l	flat *
187DIAX1.270	.202/.212	1.290/1.310	.006 X .069
187DIAX3.000	.203/.211	3.030/3.060	
375DIAX4.000UG	.387/.393	4.027/4.075	.007 X .104
500DIACX3.000	.512/.518	3.030/3.060	
500DIAX4.000UG	.512/.518	4.027/4.075	.007 X .119
500DIAX5.000	.512/.518	5.030/5.050	
14mmDIAX4.00UG	.563/.569	4.027/4.025	.133
16mmDIAX5.00UG	.642/.648	5.027/5.075	.007 X .134
17MMDIAX5.00UG	.681/.6887	5.027/5.075	
1.00DIAX4.00	1.016/1.024	4.030/4.050	
115DIAX3.000	.139/.149	3.010/3.070	.062
183DIAX3.000	.207/.217	3.010/3.070	.076
263DIAX6.000	.291/.301	6.030/6.090	.090
315DIAX6.000	.335/.345	6.030/6.090	.097
380DIAX6.000	.400/.410	6.030/6.090	.106
440DIAX6.000	.460/.470	6.030/6.090	.113
490DIAX6.000	.510/.520	6.030/6.090	.119

Flat or Belly Band to be ground off.

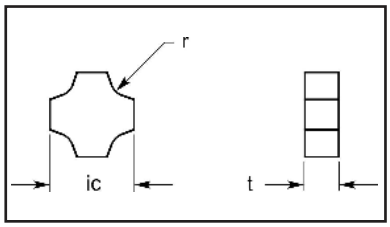
NEW Round Ball



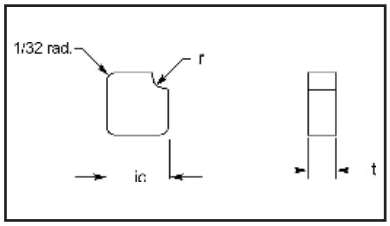
Part No.	Dimensional Specifications	
	t	dia.
15MM-BALL	.597/.611	.597/.611

Scarfing

Utility Scarfing Negative

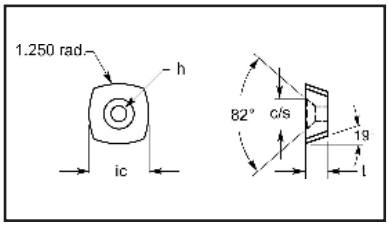


Part No.	Dimensional Specifications		
	t	i.c.	r
SNS43-1.2RAD	.202/.207	.497/.503	.047
SNS43-2.0RAD	.198/.206	.497/.503	.078
SNS43-2.5RAD	.202/.207	.497/.503	.098
SNS43-3.2RAD	.198/.206	.497/.503	.126
SNS63-2.5RAD	.202/.207	.747/.753	.098
SNS63-3.2RAD	.202/.207	.747/.753	.126
SNS63-4.0RAD	.198/.206	.747/.753	.158
SNS63-4.5RAD	.198/.206	.747/.753	.177
SNS63-5.0RAD	.198/.206	.747/.753	.197
SNS64-4.0RAD	.260/.268	.747/.753	.158
SNS64-6.0RAD	.260/.268	.747/.753	.236



Part No.	Dimensional Specifications		
	t	i.c.	r
SNS642-7.0RAD	.260/.268	.747/.753	.276

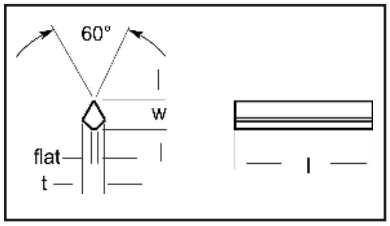
Utility Scarfing Positive With Hole And Countersink



Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-4852	1.063/1.071	.399/.405	.258/.268	.568/.578

Ski Runners

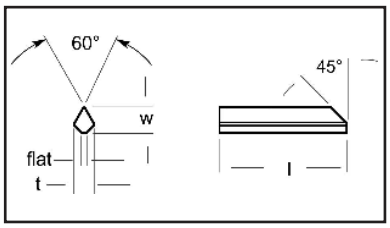
Ski Runner Styles



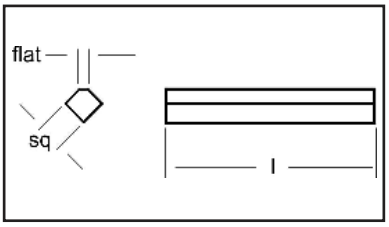
Part No.	Dimensional Specifications			
	t	w	l	flat
CBD12	.192/.197	.250/.260	1.235/1.265	.040/.045

Ultra-met®
carbide technologies

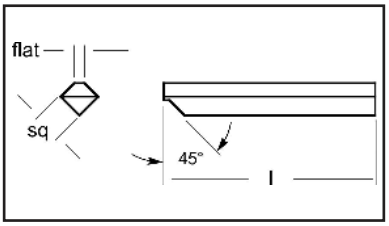
Ski Runner Styles



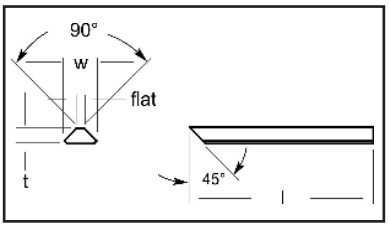
Part No.	Dimensional Specifications			
	t	w	l	flat
CBD12SA	.192/.197	.250/.260	1.235/1.265	.040/.045



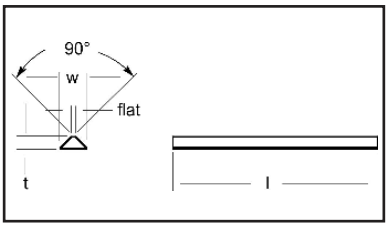
Part No.	Dimensional Specifications				
	t	w	l	flat	a
DWG#CBD2SREVB	.120/.130	.120/.130	.900/1.010	1/32	----
DWG#CBD3S	.1825/.1925	.1825/.1925	1.490/1.510	1/32	----



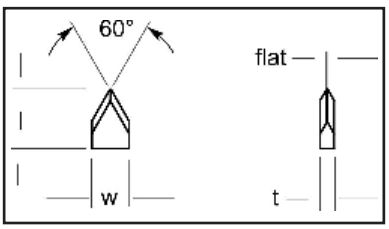
Part No.	Dimensional Specifications		
	sq	l	flat
DWG#CBD2SAREVB	.120/.130	.900/1.010	1/32 X 45°
DWG#CBD3SA	.1825/.1925	1.490/1.510	1/32 X 45°



Part No.	Dimensional Specifications			
	t	w	l	flat
DWG#CBD2TREVB	.162/.172	.083/.093	.900/1.010	1/32 X 45°
CBD3T	.128/.138	.260/.270	1.485/1.515	1/32 X 45°



Part No.	Dimensional Specifications			
	t	w	l	flat
CBD2TL	.083/.093	.1825/.1925	1.485/1.515	1/32



Part No.	Dimensional Specifications			
	t	w	l	flat
CBD14	.088/.092	.225/.240	.370/.380	.008 max

Ski Runners