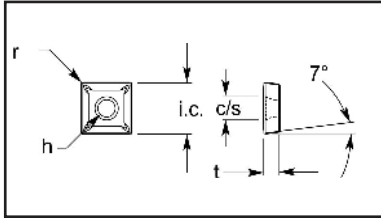


**Square Positive**

TURNING

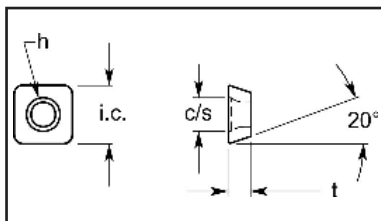
**Square Positive F5 Chipbreaker With ISO Style Hole**



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

MILLING

**Square Positive With ISO Style Hole**

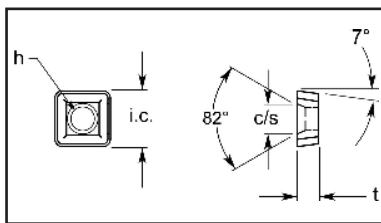


Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
SERW43A	.514/.520	.198/.206	.213/.219	.293/.299

GROOVING

DRILLING

**Square Positive Chipbreaker With Hole And Countersink**

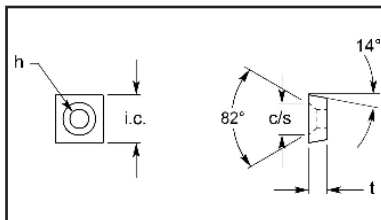


Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-3767	.514/.520	.240/.246	.198/.202	.289/.295

THREADING

BRAZED  
BLANKS

**Square Positive With Hole And Countersink**

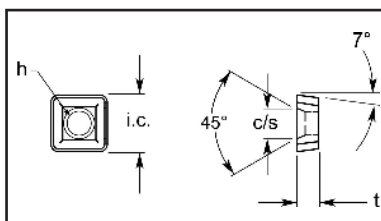


Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-4856	1.026/1.036	.392/.397	.260/.270	.598/.608

RECTANGLES  
STB

WOOD  
WORKING

**Square Positive Chipbreaker With Hole And Countersink**



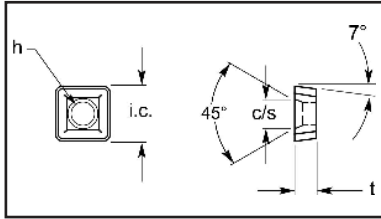
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U-4171-MOD	.514/.520	.212/.218	.212/.218	.275/.281

OIL & GAS  
MINING

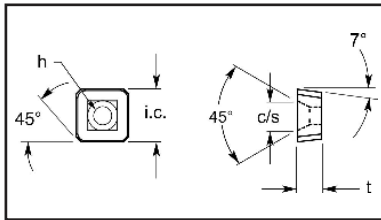
MISC.  
SHAPES

TURNING  
MILLING  
GROOVING  
DRILLING  
THREADING  
BRAZED BLANKS  
RECTANGLES STB  
WOOD WORKING  
OIL & GAS MINING  
MISC. SHAPES

**Square Positive Chipbreaker With Hole And Countersink**

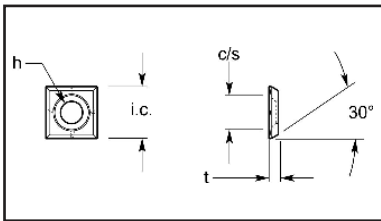


Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U4171ZPF	.517/.523	.200/.206	.212/.218	.275/.281



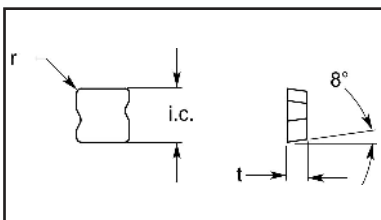
Part No.	Dimensional Specifications			
	i.c.	t	h	c/s
DWG#U4171	.514/.520	.200/.206	.212/.218	.275/.281

**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**

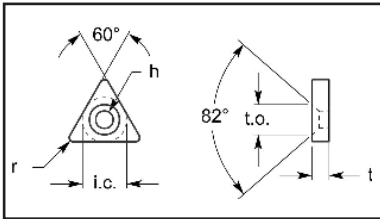


Part No.	Dimensional Specifications		
	i.c.	t	r
DWG#5PP-1-CT	.373/.377	.135/.143	1/32

Triangle Negative

TURNING

Triangle Negative With Hole

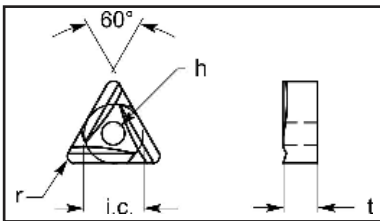


Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
ATPR430-NEG	.269/.275	.104/.112	.115/.121	.199/.205	0
ATPR440-NEG	.269/.275	.135/.143	.115/.121	.199/.205	0
ATPR540-NEG	.331/.337	.135/.143	.141/.147	.262/.268	0
ATPR642-NEG	.392/.398	.135/.143	.167/.173	.324/.330	1/32

MILLING

GROOVING

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

DRILLING

THREADING

BRAZED  
BLANKS

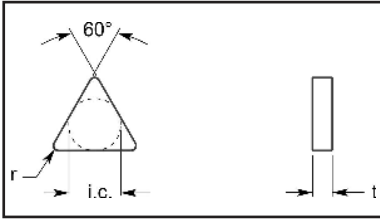
RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

## Triangle Negative • variable thickness quoted on request

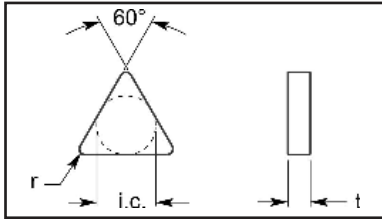


Part No.	Dimensional Specifications		
	i.c.	t	r
TNR.650ICX375THK	.670/.676	.390/.396	0
TNR1.21.50	.170/.176	.104/.112	0
TNR1.210	.170/.176	.070/.076	0
TNR1.51.50	.200/.206	.105/.111	0
TNRE7-0.050THK	.235/.245	.045/.055	0
TNR1.81.50	.235/.245	.104/.112	0
TNR1.82.50	.235/.245	.167/.173	0
UTM8-3-0	.265/.270	.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**

TURNING

**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

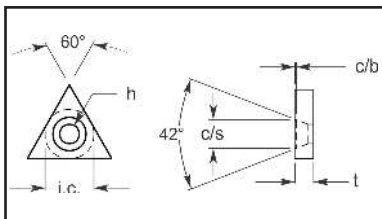
MILLING

GROOVING

DRILLING

THREADING

**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

BRAZED  
BLANKS

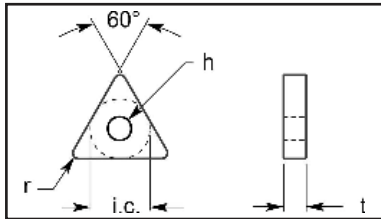
RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

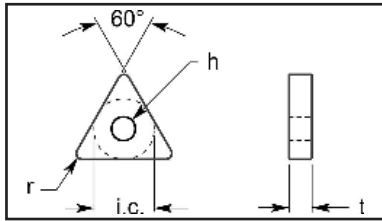
## Triangle Negative With Hole • variable thickness quoted on request



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

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

TURNING

MILLING

GROOVING

DRILLING

THREADING

BRAZED  
BLANKS

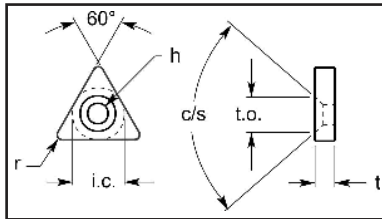
RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

## Triangle Negative With Hole

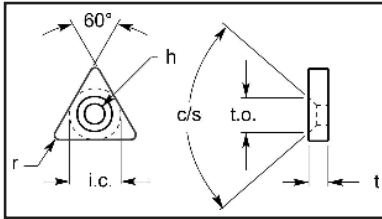


Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TB-507	.165/.175	.073/.083	.078/.083	.118/.129	60°	0
TNRB1.2-0.047THK	.170/.176	.057/.065	.089/.099	.132/.142	80°	0
TNRB50/51	.170/.176	.057/.061	.093/.099	.128.138	90°	.002
TNRB1.8-0.098THK	.238/.244	.108/.116	.112/.118	.142/.154	70°	0
TNRB2.5-0	.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

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

TURNING

MILLING

GROOVING

DRILLING

THREADING

BRAZED  
BLANKS

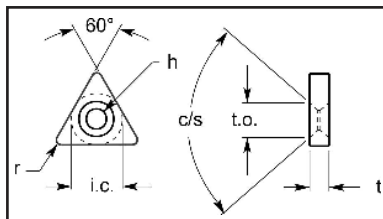
RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

## Triangle Negative With Hole

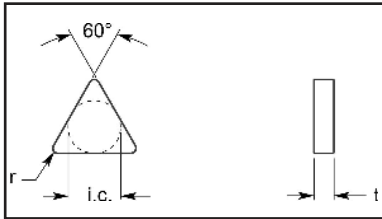


Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
TNRC2.52.50	.331/.337	.166/.174	.125/.130	.189/.195	60°	0
TNRC2.520	.331/.337	.145/.151	.125/.130	.189/.195	60°	0
TNRC21.50	.265/.270	.104/.112	.134/.140	.193/.199	82°	0
TNRC220	.265/.270	.135/.143	.134/.140	.193/.199	82°	0
AS50	.269/.275	.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

TURNING

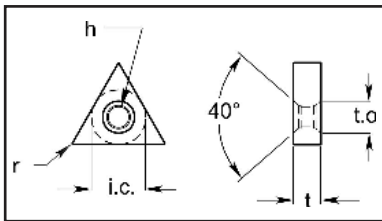
Triangle Negative • variable thickness quoted on request



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

MILLING

Triangle Negative With Hole

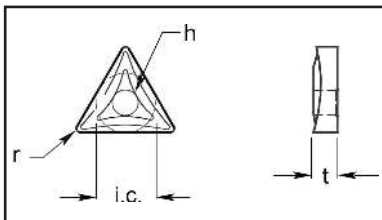


Part No.	Dimensional Specifications				
	i.c.	t	h	t.o.	r
TNRQ.636I.C.	.648/.668	.257/.261	.216/.224	.291/.295	.197
TNRQ220	.269/.275	.135/.143	.105/.110	.164/.170	0
TNRQ2.641-ES	.370/.380	.261/.267	.172/.182	.233/.239	1/16
TNRQ343.177H	.392/.398	.260/.268	.175/.179	.233/.239	3/64
TNRQ44.170R.220H	.512/.532	.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

GROOVING

DRILLING

Triangle Negative R5 Chipbreaker With Hole

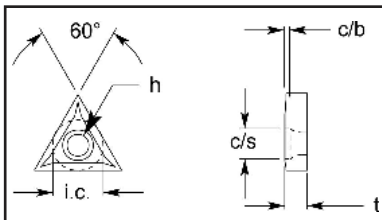


Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRS432R5	.514/.520	.195/.201	.201/.205	1/32

THREADING

BRAZED  
BLANKS

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

RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

TURNING

Ultra-met<sup>®</sup>

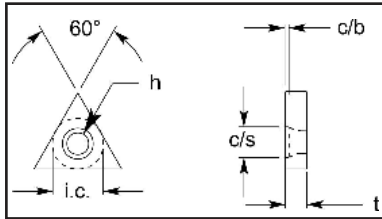
carbide technologies

FABRICATOR & TOOLMAKER  
Capabilities Catalog

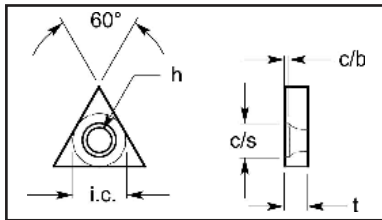
Triangle Negative

MILLING

## 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

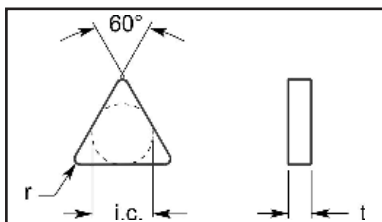
GROOVING

DRILLING

THREADING

BRAZED  
BLANKS

## Utility Triangle Negative • variable thickness quoted on request



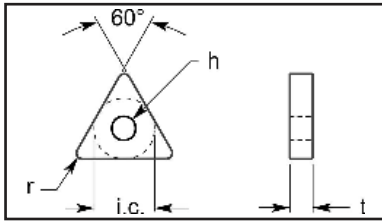
Part No.	Dimensional Specifications		
	i.c.	t	r
TNS21.51	.245/.255	.120/.130	1/64
TNS222	.248/.252	.135/.143	1/32
TNS322	.372/.378	.135/.143	1/32
TNS324	.373/.377	.135/.145	1/16
TNS332	.372/.378	.198/.206	1/32
TNS333	.372/.378	.198/.206	3/64
TNS432	.495/.505	.198/.206	1/32
TNS433	.495/.505	.198/.206	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

RECTANGLES  
STBWOOD  
WORKINGOIL & GAS  
MININGMISC.  
SHAPES

Triangle Negative

TURNING

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

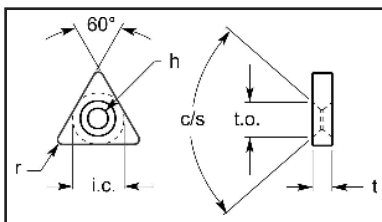
MILLING

GROOVING

DRILLING

THREADING

Utility Triangle Negative With Hole And Dbl. Countersinks

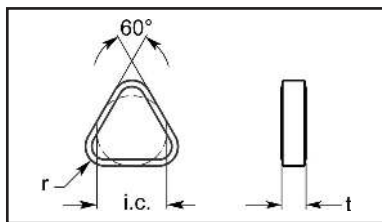


Part No.	Dimensional Specifications					
	i.c.	t	h	t.o.	c/s	r
A-16914	.248/.252	.104/.112	.132/.142	.197/.203	82°	1/32
TNSC21.52	.248/.252	.104/.112	.136/.142	.197/.203	82°	1/32
TNSC222	.248/.252	.140/.145	.136/.142	.197/.203	82°	1/32
TNSC.270IC1.52	.267/.273	.107/.113	.134/.140	.200/.210	82°	1/32

BRAZED  
BLANKS

RECTANGLES  
STB

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

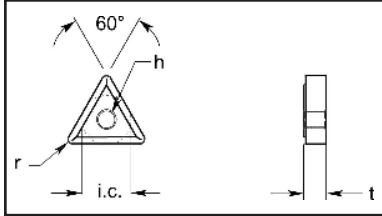
WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

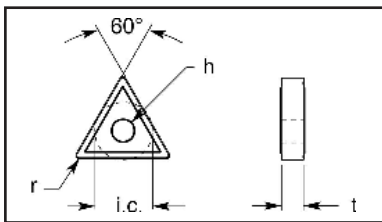
TURNING  
MILLING  
GROOVING  
DRILLING  
THREADING  
BRAZED BLANKS  
RECTANGLES STB  
WOOD WORKING  
OIL & GAS MINING  
MISC. SHAPES

### Utility Triangle Negative Chipbreaker With Hole



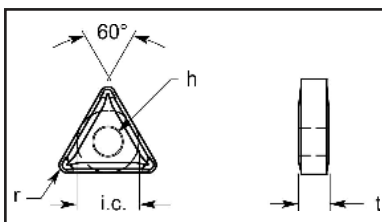
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG221-1C/B	.252/.258	.131/.137	.091/.095	1/64
TNSG321-1C/B	.377/.383	.131/.137	.148/.152	1/64
TNSG654-1C/B	.747/.753	.326/.331	.310/.314	1/16

### Utility Triangle Negative F1 Chipbreaker With Hole



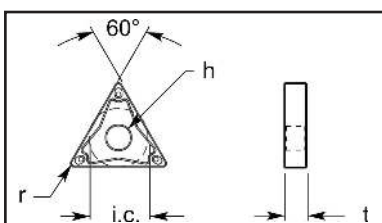
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG221F1	.248/.252	.129/.135	.090/.096	1/64
TNSG321F1	.373/.377	.129/.135	.147/.153	1/64
TNSG322F1	.373/.377	.129/.135	.147/.153	1/32
TNSG323F1	.373/.377	.129/.135	.147/.153	3/64
TNSG324F1	.373/.377	.129/.135	.147/.153	1/16
TNSG331F1	.373/.377	.191/.197	.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

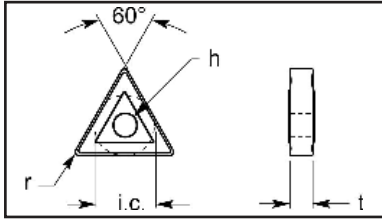


Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSG432GP3	.497/.503	.197/.203	.200/.206	1/32

Triangle Negative

TURNING

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

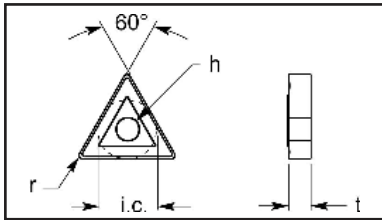
MILLING

GROOVING

DRILLING

THREADING

Utility Triangle Negative R1 Chipbreaker With Hole and Countersink

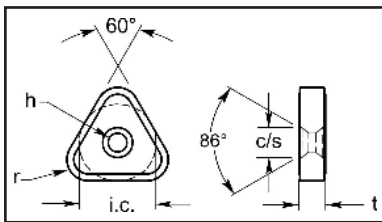


Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNRG432R1-1C/B	.502/.508	.199/.205	.199/.205	1/32
TNSG432R1-1C/B	.502/.508	.197/.203	.200/.206	1/32

BRAZED  
BLANKS

RECTANGLES  
STB

Utility Triangle Negative Chipbreaker With Hole and Dbl. Countersinks



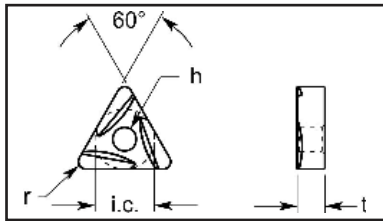
Part No.	Dimensional Specifications				
	i.c.	t	h	c/s	r
TNSJ96	1.120/1.130	.410/.416	.270/.276	.434/.440	5/16

WOOD  
WORKING

OIL & GAS  
MINING

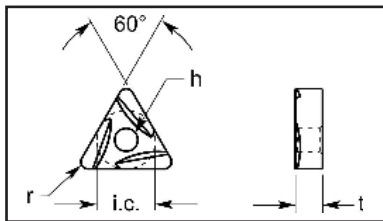
MISC.  
SHAPES

## Utility Triangle Negative R4 Chipbreaker With Hole



Right hand shown

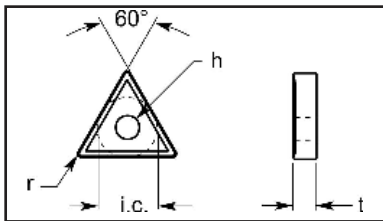
Part No.	Dimensional Specifications			
	i.c.	t	h	r
TNSM321ER-R4	.373/.377	.141/.147	.147/.153	1/64
TNSM322ER-R4	.373/.377	.142/.148	.147/.153	1/32
TNSM323ER-R4	.373/.377	.138/.144	.147/.153	3/64
TNSM331ER-R4	.373/.377	.203/.209	.147/.153	1/64
TNSM332ER-R4	.373/.377	.203/.209	.147/.153	1/32
TNSM333ER-R4	.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



1000 Series

Diamond Negative



TURNING

MILLING

GROOVING

DRILLING

THREADING

BRAZED  
BLANKS

RECTANGLES  
STB

WOOD  
WORKING

OIL & GAS  
MINING

MISC.  
SHAPES

TURNING

MILLING

GROOVING

DRILLING

THREADING

BRAZED  
BLANKS

RECTANGLES  
STB

WOOD  
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**1000 Series**

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**MILLING**

**GROOVING**

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