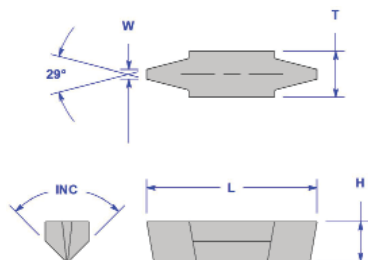


Threading Grade Descriptions			
Grade	Description	Uses	Stock
200	Uncoated tough submicron - wear resistant	Non-ferrous, stainless steel alloys, aluminum & composites at slower speeds	Standard
210	TiN coated tough submicron - wear resistant	Non-ferrous, stainless steel alloys, aluminum & composites at medium speeds	Item specific
230	TiAlN coated tough submicron - wear & heat resistant	Non-ferrous, stainless steel, nickel-based & high-temp alloys at medium to high speed	Standard
613	TiN coated premium substrate for threading	4140 and similar steels at slow to medium speeds - most popular threading grade	Standard
623	AlTiN coated premium substrate for threading	All steels at high speeds - maximum heat protection	Item specific
633	TiAlN coated premium substrate for threading	All steels at high speeds - medium heat protection - Best premium threading grade	Item specific

Grooving Grade Descriptions			
Grade	Description	Uses	Stock
200	Uncoated tough submicron - wear resistant	Non-ferrous, stainless steel alloys composites aluminum at slower speeds	Standard
210	TiN coated tough submicron - wear resistant	Non-ferrous, stainless steel alloys composites aluminum at medium speeds	Item specific
230	TiAlN coated tough submicron - wear & heat resistant	Non-ferrous, stainless steel, nickel-based & high-temp alloys at high speeds - most popular grooving grade	Standard
612	TiN coated medium tough - long lasting, smooth cutting	4140 and similar steels at medium speeds - most popular grooving grade	Standard
632	TiAlN coated medium tough - long lasting heat resistant	All steels at high speeds - best heat protection	Item specific

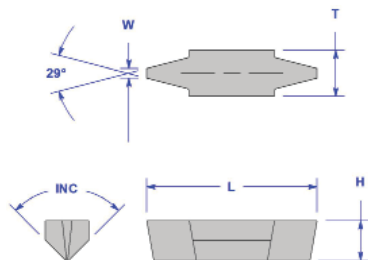


V-BOTTOM ACME



DESCRIPTION	EDP	PITCH	WIDTH	T	L	H	INC
V84 NT 16P	31600	16	.0206	.250	1.000	.250	90°
V84 NT 14P	31610	14	.0239	.250	1.000	.250	90°
V84 NT 12P	31620	12	.0283	.250	1.000	.250	90°
V84 NT 10P	31630	10	.0319	.250	1.000	.250	90°
V84 NT 8P	31640	8	.0411	.250	1.000	.250	90°
V84 NT 6P	31650	6	.0566	.250	1.000	.250	90°
V84 NT 5P	31660	5	.0689	.250	1.000	.250	90°
V84 NT 4P	31670	4	.0875	.250	1.000	.250	90°
V84 NT 3.5P	31680	3.5	.1007	.250	1.000	.250	90°
V84 NT 3P	31690	3	.1184	.250	1.000	.250	90°
V85 NT 2.5P	31700	2.5	.1431	.312	1.000	.250	90°
V85 NT 2P	31710	2	.1802	.312	1.000	.250	90°
V98 NT 1.5P	31720	1.5	.2419	.500	1.125	.350	90°
V120 NT 1.5P	31740	1.5	.2419	.750	1.5	.375	120°
V120 NT 1P	31750	1	.3655	.750	1.5	.375	120°

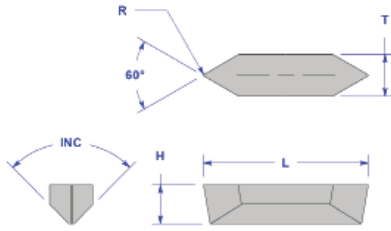
V-BOTTOM STUB ACME



DESCRIPTION	EDP	PITCH	WIDTH	T	L	H	INC
V84 NT 16P STUB	31800	16	.0238	.250	1.000	.250	90°
V84 NT 14P STUB	31810	14	.0276	.250	1.000	.250	90°
V84 NT 12P STUB	31820	12	.0326	.250	1.000	.250	90°
V84 NT 10P STUB	31830	10	.0370	.250	1.000	.250	90°
V84 NT 8P STUB	31840	8	.0476	.250	1.000	.250	90°
V84 NT 6P STUB	31850	6	.0652	.250	1.000	.250	90°
V84 NT 5P STUB	31860	5	.0793	.250	1.000	.250	90°
V84 NT 4P STUB	31870	4	.1004	.250	1.000	.250	90°
V84 NT 3.5P STUB	31880	3.5	.1155	.250	1.000	.250	90°
V84 NT 3P STUB	31890	3	.1356	.250	1.000	.250	90°
V85 NT 2.5P STUB	31900	2.5	.1638	.312	1.000	.250	90°
V85 NT 2P STUB	31910	2	.2060	.312	1.000	.250	90°
V98 NT 1.5P STUB	31920	1.5	.2764	.500	1.125	.350	90°
V120 NT 1.5P STUB	31940	1.5	.2764	.750	1.5	.375	120°
V120 NT 1P STUB	31950	1	.4172	.750	1.5	.375	120°

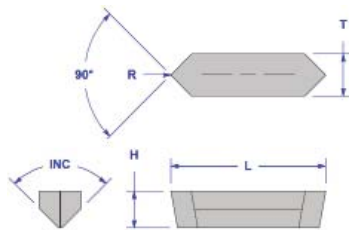
V-Bottom

V-BOTTOM 60° V-THREADING



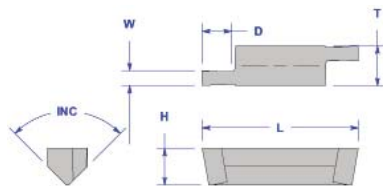
DESCRIPTION	EDP	PITCH	R	T	L	H	INC
V84 NV	32000	5-20	.005	.250	1.000	.250	90°
V84 NV .010R	32010	4-20	.010	.250	1.000	.250	90°
V84 NV .020R	32020	4-12	.020	.250	1.000	.250	90°
V84 NV .025R	32030	4-8	.025	.250	1.000	.250	90°
V84 NV .038R	32040	4-6	.038	.250	1.000	.250	90°
V85 NV	32050	5-20	.005	.312	1.000	.250	90°
V85 NV .038R	32060	4-6	.038	.312	1.000	.250	90°

V-BOTTOM 90° V-THREADING



DESCRIPTION	EDP	R	D	T	L	H	INC
V84 NV 90	32500	.005	.125	.250	1.000	.250	90°
V84 NV 90 .010R	32510	.010	.120	.250	1.000	.250	90°
V84 NV 90 .090W (BPV)	32520	.090W	.080	.250	1.000	.250	90°
V85 NV 90	32530	.005	.155	.312	1.000	.250	90°
V85 NV 90 .010R	32540	.010	.150	.312	1.000	.250	90°
V85 NV 90 .090W (BPV)	32550	.090W	.110	.312	1.000	.250	90°

V-BOTTOM RH GROOVING

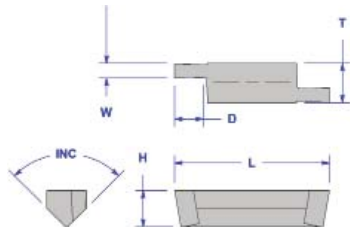


DESCRIPTION	EDP	W	D	T	L	H	INC
V84 NGR .031W	32103	.031	.100	.250	1.000	.250	90°
V84 NGR .047W	32113	.047	.125	.250	1.000	.250	90°
V84 NGR .062W	32123	.0625	.156	.250	1.000	.250	90°
V84 NGR .094W	32133	.094	.250	.250	1.000	.250	90°
V84 NGR .125W	32143	.125	.250	.250	1.000	.250	90°
V84 NGR .150W	32153	.150	.296	.250	1.000	.250	90°
V84 NGR .187W	32163	.1875	.296	.250	1.000	.250	90°

V-Bottom

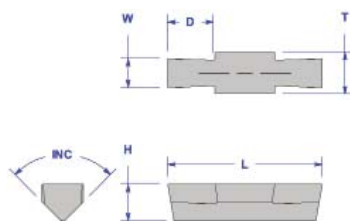


V-BOTTOM LH GROOVING



DESCRIPTION	EDP	W	D	T	L	H	INC
V84 NGL .031W	32204	.031	.100	.250	1.000	.250	90°
V84 NGL .047W	32214	.047	.125	.250	1.000	.250	90°
V84 NGL .062W	32224	.0625	.156	.250	1.000	.250	90°
V84 NGL .094W	32234	.094	.250	.250	1.000	.250	90°
V84 NGL .125W	32244	.125	.250	.250	1.000	.250	90°
V84 NGL .150W	32254	.150	.296	.250	1.000	.250	90°
V84 NGL .187W	32254	.1875	.296	.250	1.000	.250	90°

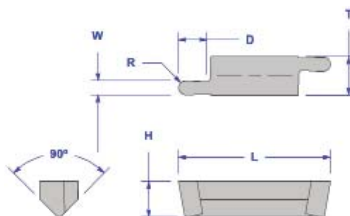
V-BOTTOM CENTERED GROOVING



DESCRIPTION	EDP	W	D	T	L	H	INC
V84 NGC .031W	32300	.031	.100	.250	1.000	.250	90°
V84 NGC .047W	32310	.047	.125	.250	1.000	.250	90°
V84 NGC .062W	32320	.0625	.156	.250	1.000	.250	90°
V84 NGC .094W	32330	.094	.250	.250	1.000	.250	90°
V84 NGC .125W	32340	.125	.250	.250	1.000	.250	90°
V84 NGC .150W	32350	.150	.296	.250	1.000	.250	90°
V84 NGC .187W	32360	.1875	.296	.250	1.000	.250	90°
V84 NGC .250W	32370	.250	.296	.250	1.000	.250	90°
V85 NGC .312W	32380	.312	.312	.312	1.000	.250	90°
V96 NGC .375W	32390	.375	.375	.375	1.250	.375	90°
V98 NGC .500W	32400	.500	.500	.500	1.250	.375	90°
V120 NGC .625W	32410	.625	.750	.750	1.250	.375	120°
V120 NGC .750W	32420	.750	.750	.750	1.250	.375	120°

V-BOTTOM RH GROOVING

FULL NOSE RADIUS

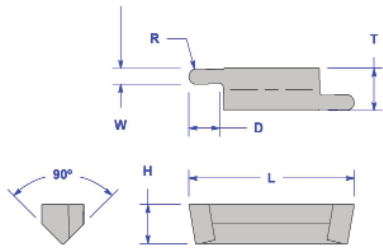


DESCRIPTION	EDP	W	R	D	T	L	H
V84 NGR .047W-FNR	34203	.047	.0235	.125	.250	1.000	.250
V84 NGR .062W-FNR	34213	.0625	.031	.156	.250	1.000	.250
V84 NGR .094W-FNR	34223	.094	.047	.187	.250	1.000	.250
V84 NGR .125W-FNR	34233	.125	.0625	.187	.250	1.000	.250
V84 NGR .150W-FNR	34243	.150	.075	.296	.250	1.000	.250
V84 NGR .188W-FNR	34253	.1875	.094	.296	.250	1.000	.250

V-Bottom

V-BOTTOM LH GROOVING

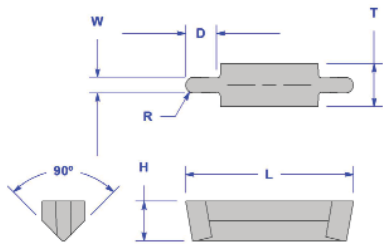
FULL NOSE RADIUS



DESCRIPTION	EDP	W	R	D	T	L	H
V84 NGL .047W-FNR	34304	.047	.0235	.125	.250	1.000	.250
V84 NGL .062W-FNR	34314	.0625	.031	.156	.250	1.000	.250
V84 NGL .094W-FNR	34324	.094	.047	.187	.250	1.000	.250
V84 NGL .125W-FNR	34334	.125	.0625	.187	.250	1.000	.250
V84 NGL .150W-FNR	34344	.150	.075	.296	.250	1.000	.250
V84 NGL .188W-FNR	34354	.1875	.094	.296	.250	1.000	.250

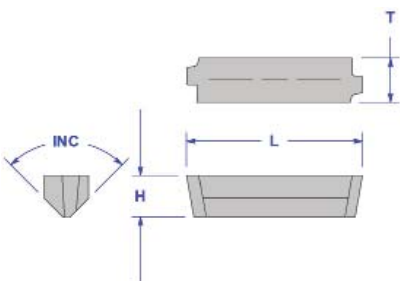
V-BOTTOM CENTERED GROOVING

FULL NOSE RADIUS



DESCRIPTION	EDP	W	R	D	T	L	H
V84 NGC .047W-FNR	34400	.047	.0235	.125	.250	1.000	.250
V84 NGC .062W-FNR	34410	.0625	.031	.156	.250	1.000	.250
V84 NGC .094W-FNR	34420	.094	.047	.187	.250	1.000	.250
V84 NGC .125W-FNR	34430	.125	.0625	.187	.250	1.000	.250
V84 NGC .150W-FNR	34440	.150	.075	.296	.250	1.000	.250
V84 NGC .188W-FNR	34450	.1875	.094	.296	.250	1.000	.250
V84 NGC .250W-FNR	34460	.250	.125	.296	.250	1.000	.250
V85 NGC .312W-FNR	34470	.312	.156	.296	.312	1.000	.250

V-BOTTOM API BUTTRESS THREADING

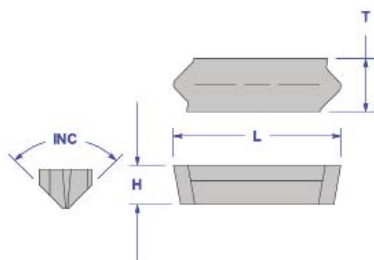


DESCRIPTION	EDP	PITCH	TPF	T	L	H	INC
V84 5B75 INT	42751	5	3/4	.250	1.000	.250	90°
V84 5B75 EXT	42742	5	3/4	.250	1.000	.250	90°
V84 5B1 INT	54361	5	1	.250	1.000	.250	90°
V84 5B1 EXT	54352	5	1	.250	1.000	.250	90°
V84 8B75 INT	74131	8	3/4	.250	1.000	.250	90°
V84 8B75 EXT	74132	8	3/4	.250	1.000	.250	90°

V-Bottom

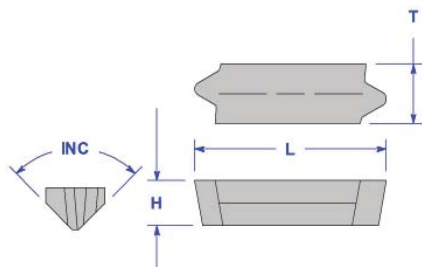


V-BOTTOM API HUGHES THREADING



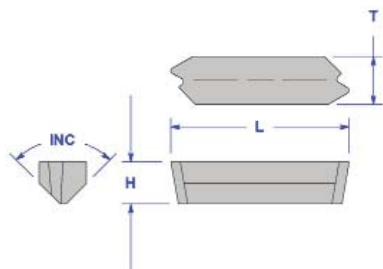
DESCRIPTION	EDP	PITCH	TPF	T	L	H	INC
V85 H902 INT	44121	3.5	2	.312	1.000	.250	90°
V85 H902 EXT	44122	3.5	2	.312	1.000	.250	90°
V85 H903 INT	43511	3.5	3	.312	1.000	.250	90°
V85 H903 EXT	43512	3.5	3	.312	1.000	.250	90°
V85 H90S INT	49541	3	1 1/4	.312	1.000	.250	90°
V85 H90S EXT	49542	3	1 1/4	.312	1.000	.250	90°

V-BOTTOM API ROTARY SHOULDER THREADING



DESCRIPTION	EDP	PITCH	TPF	T	L	H	INC
V85 425 INT	56711	4	2	.312	1.000	.250	90°
V85 425 EXT	56712	4	2	.312	1.000	.250	90°
V85 428 INT	56701	4	2	.312	1.000	.250	90°
V85 428 EXT	56702	4	2	.312	1.000	.250	90°
V85 435 INT	56731	4	3	.312	1.000	.250	90°
V85 435 EXT	56732	4	3	.312	1.000	.250	90°
V85 438 INT	56741	4	3	.312	1.000	.250	90°
V85 438 EXT	56742	4	3	.312	1.000	.250	90°
V85 530 INT	56721	5	3	.312	1.000	.250	90°
V85 530 EXT	56722	5	3	.312	1.000	.250	90°
V85 4P PAC INT	40581	4	1 1/2	.312	1.000	.250	90°
V85 4P PAC EXT	40582	4	1 1/2	.312	1.000	.250	90°

V-BOTTOM API ROUND THREADING

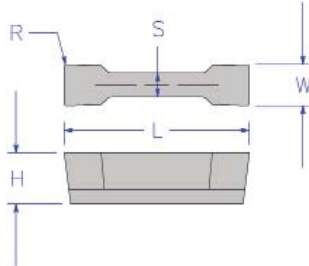


DESCRIPTION	EDP	PITCH	TPF	T	L	H	INC
V84 8RD INT	49001	8	3/4	.250	1.000	.250	90°
V84 8RD EXT	49002	8	3/4	.250	1.000	.250	90°
V84 10RD INT	41801	10	3/4	.250	1.000	.250	90°
V84 10RD EXT	41802	10	3/4	.250	1.000	.250	90°

V-Bottom



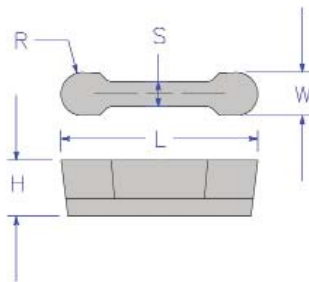
V-BOTTOM DOG BONE



DESCRIPTION	EDP	W	R	S	L	H
VDB 125 A015	44860	.125	.015	.106	1.125	.250
VDB 156 A015	46530	.156	.015	.106	1.125	.250
VDB 188 A015	43580	.188	.015	.144	1.125	.250
VDB 218 A015	85070	.218	.015	.144	1.125	.250
VDB 250 A015	75610	.250	.015	.144	1.125	.250
VDB 250 B015	42640	.250	.015	.144	1.125	.337
VDB 250 B030	57760	.250	.030	.144	1.125	.337
VDB 281 B015	45220	.281	.015	.202	1.125	.337
VDB 281 B030	85080	.281	.030	.202	1.125	.337
VDB 312 B015	85090	.312	.015	.202	1.125	.337
VDB 312 B030	46230	.312	.030	.202	1.125	.337
VDB 375 B015	43830	.375	.015	.276	1.125	.337
VDB 375 B030	85100	.375	.030	.276	1.125	.337

V-BOTTOM DOG BONE

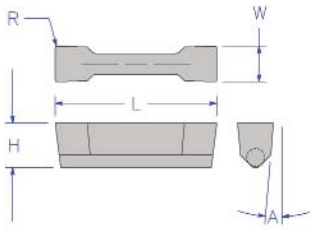
FULL NOSE RADIUS



DESCRIPTION	EDP	W	R	S	L	H
VDB 125 RA - FNR	46510	.125	.0625	.106	1.125	.250
VDB 156 RA - FNR	51480	.156	.078	.106	1.125	.250
VDB 188 RA - FNR	45410	.188	.094	.144	1.125	.250
VDB 218 RA - FNR	59260	.218	.109	.144	1.125	.250
VDB 250 RA - FNR	75620	.250	.125	.144	1.125	.250
VDB 250 RB - FNR	50630	.250	.125	.144	1.125	.337
VDB 281 RB - FNR	41040	.281	.1405	.202	1.125	.337
VDB 312 RB - FNR	70020	.312	.156	.202	1.125	.337
VDB 375 RB - FNR	85110	.375	.1875	.276	1.125	.337

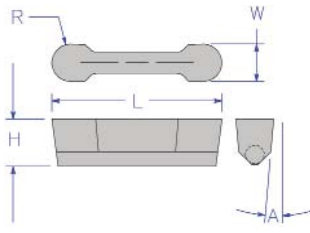


V-BOTTOM DOG BONE
DEEP GROOVING



DESCRIPTION	EDP	W	R	A	L	H
GC4125	41510	.125	.012	4°	1.000	.188
GC4187	42090	.187	.012	5°	1.000	.328
GC4250	41930	.250	.012	5°	1.000	.328
GC4312	85120	.312	.012	5°	1.000	.328
GC4375	42310	.375	.012	5°	1.000	.328
GC6187	41530	.187	.012	5°	1.500	.328
GC6250	43020	.250	.012	5°	1.500	.328
GC6312	85130	.312	.012	5°	1.500	.328

V-BOTTOM DOG BONE
FULL NOSE RADIUS
DEEP GROOVING

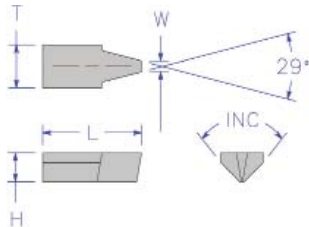


DESCRIPTION	EDP	W	R	A	L	H
GR4125	41960	.125	.0625	4°	1.000	.188
GR4187	85140	.187	.094	5°	1.000	.328
GR4250	43000	.250	.125	5°	1.000	.328

V-Bottom

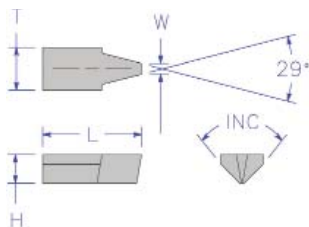


MLPE ACME THREADING



DESCRIPTION	EDP	PITCH	WIDTH	T	L	H	INC
MLPE 2532 NT 16P	17300	16	.0206	.250	.500	.150	90°
MLPE 2532 NT 14P	17310	14	.0239	.250	.500	.150	90°
MLPE 2532 NT 12P	17320	12	.0283	.250	.500	.150	90°
MLPE 2532 NT 10P	17330	10	.0319	.250	.500	.150	90°
MLPE 2532 NT 8P	17340	8	.0411	.250	.500	.150	90°
MLPE 2532 NT 6P	17350	6	.0566	.250	.500	.150	90°
MLPE 2532 NT 5P	17360	5	.0689	.250	.500	.150	90°
MLPE 2532 NT 4P	17370	4	.0875	.250	.500	.150	90°
MLPE 3425 NT 16P	17380	16	.0206	.250	.625	.188	90°
MLPE 3425 NT 14P	17390	14	.0239	.250	.625	.188	90°
MLPE 3425 NT 12P	17400	12	.0283	.250	.625	.188	90°
MLPE 3425 NT 10P	17410	10	.0319	.250	.625	.188	90°
MLPE 3425 NT 8P	17420	8	.0411	.250	.625	.188	90°
MLPE 3425 NT 6P	17430	6	.0566	.250	.625	.188	90°
MLPE 3425 NT 5P	17440	5	.0689	.250	.625	.188	90°
MLPE 3425 NT 4P	17450	4	.0875	.250	.625	.188	90°
MLPE 3425 NT 3P	17460	3	.1184	.250	.625	.188	90°

MLPE STUB ACME THREADING

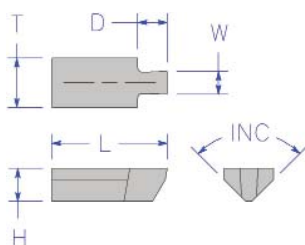


DESCRIPTION	EDP	PITCH	WIDTH	T	L	H	INC
MLPE 2532 NT 16P STUB	17500	16	.0238	.250	.500	.150	90°
MLPE 2532 NT 14P STUB	17510	14	.0276	.250	.500	.150	90°
MLPE 2532 NT 12P STUB	17520	12	.0326	.250	.500	.150	90°
MLPE 2532 NT 10P STUB	17530	10	.037	.250	.500	.150	90°
MLPE 2532 NT 8P STUB	17540	8	.0476	.250	.500	.150	90°
MLPE 2532 NT 6P STUB	17550	6	.0652	.250	.500	.150	90°
MLPE 2532 NT 5P STUB	17560	5	.0793	.250	.500	.150	90°
MLPE 2532 NT 4P STUB	17570	4	.1004	.250	.500	.150	90°
MLPE 3425 NT 16P STUB	17580	16	.0238	.250	.625	.188	90°
MLPE 3425 NT 14P STUB	17590	14	.0276	.250	.625	.188	90°
MLPE 3425 NT 12P STUB	17600	12	.0326	.250	.625	.188	90°
MLPE 3425 NT 10P STUB	17610	10	.037	.250	.625	.188	90°
MLPE 3425 NT 8P STUB	17620	8	.0476	.250	.625	.188	90°
MLPE 3425 NT 6P STUB	17630	6	.0652	.250	.625	.188	90°
MLPE 3425 NT 5P STUB	17640	5	.0793	.250	.625	.188	90°
MLPE 3425 NT 4P STUB	17650	4	.1004	.250	.625	.188	90°
MLPE 3425 NT 3P STUB	17660	3	.1356	.250	.625	.188	90°

V-Bottom

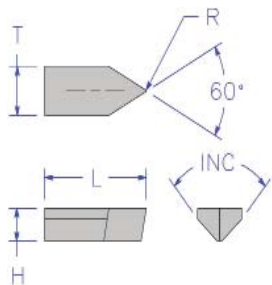


MLPE GROOVING



DESCRIPTION	EDP	W	D	T	L	H	INC
MLPE 1251 NGC .062	17700	.062	.085	.160	.340	.115	90°
MLPE 1251 NGC .094	17710	.094	.085	.160	.340	.115	90°
MLPE 1251 NGC .125	17720	.125	.085	.160	.340	.115	90°
MLPE 1251 NGC .156	17730	.156	.085	.160	.340	.115	90°
MLPE 2532 NGC .062	17740	.062	.120	.160	.500	.150	90°
MLPE 2532 NGC .094	17750	.094	.150	.160	.500	.150	90°
MLPE 2532 NGC .125	17760	.125	.150	.160	.500	.150	90°
MLPE 2532 NGC .156	17770	.156	.150	.160	.500	.150	90°
MLPE 2532 NGC .188	17780	.188	.150	.160	.500	.150	90°
MLPE 3425 NGC .062	17790	.062	.120	.250	.625	.188	90°
MLPE 3425 NGC .094	17800	.094	.150	.250	.625	.188	90°
MLPE 3425 NGC .125	17810	.125	.150	.250	.625	.188	90°
MLPE 3425 NGC .156	17820	.156	.150	.250	.625	.188	90°
MLPE 3425 NGC .188	17830	.188	.150	.250	.625	.188	90°
MLPE 3425 NGC .250	17840	.250	.150	.250	.625	.188	90°
MLPE 2532 NGR .125	17853	.125	.150	.160	.500	.150	90°
MLPE 2532 NGR .156	17863	.156	.150	.160	.500	.150	90°
MLPE 2532 NGR .188	17873	.188	.150	.160	.500	.150	90°
MLPE 3425 NGR .125	17883	.125	.150	.250	.625	.188	90°
MLPE 3425 NGR .156	17893	.156	.150	.250	.625	.188	90°
MLPE 3425 NGR .188	17903	.188	.150	.250	.625	.188	90°
MLPE 2532 NGL .125	17914	.125	.150	.160	.500	.150	90°
MLPE 2532 NGL .156	17924	.156	.150	.160	.500	.150	90°
MLPE 2532 NGL .188	17934	.188	.150	.160	.500	.150	90°
MLPE 3425 NGL .125	17944	.125	.150	.250	.625	.188	90°
MLPE 3425 NGL .156	17954	.156	.150	.250	.625	.188	90°
MLPE 3425 NGL .188	17964	.188	.150	.250	.625	.188	90°

MLPE 60° V-THREADING



DESCRIPTION	EDP	PITCH	R	T	L	H	INC
MLPE 1251 NV	50280	8-48	.003	.188	.340	.115	90°
MLPE 2532 NV	50270	8-48	.003	.188	.500	.150	90°
MLPE 3425 NV	43270	8-48	.003	.250	.625	.188	90°

V-Bottom