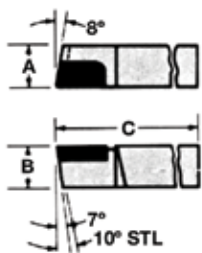
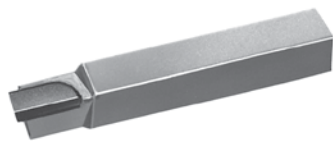


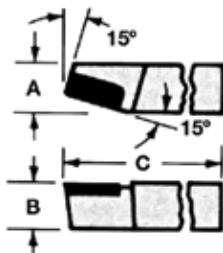
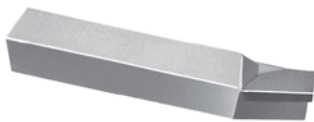
Brazed Tools

For Cast Iron/Non-Ferrous (C2) and Steel (C5/C6)

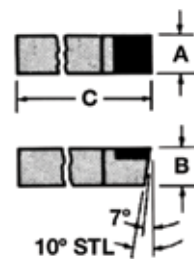
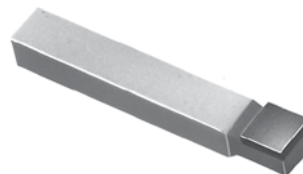
STYLE A



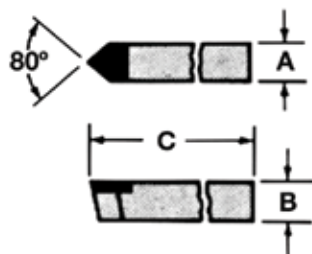
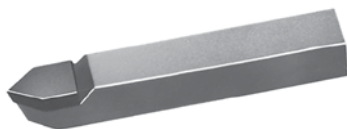
STYLE B



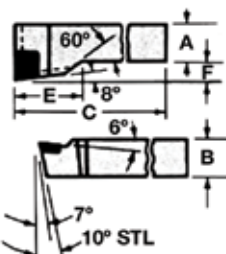
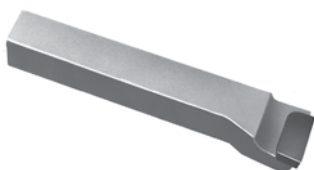
STYLE C



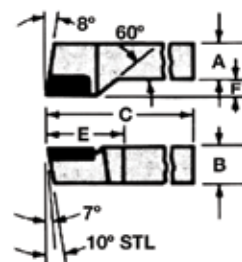
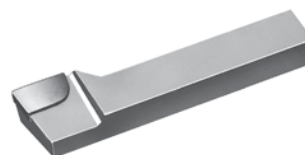
STYLE D



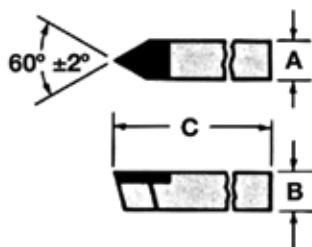
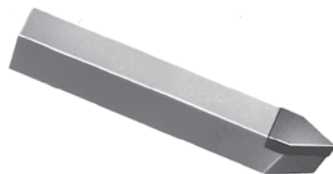
STYLE F



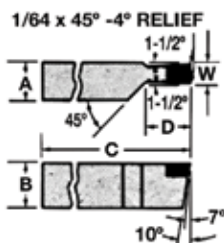
STYLE G



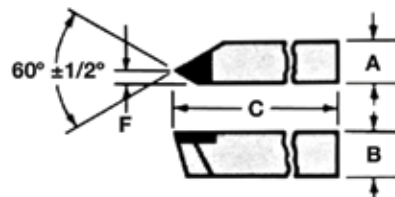
STYLE E



STYLE CT



STYLE ER
60° Offset V-Threading



Brazed Tools (continued)

For Cast Iron/Non-Ferrous (C2) and Steel (C5/C6)

A (Inch)	B (Inch)	C (Inch)	W (Inch)	Right Hand			Left Hand		
				Type	C5/C6	C2	Type	C5/C6	C2
					Code	Code		Code	Code
1/4	1/4	2	–	AR4	313208	313215	AL4	313222	313229
5/16	5/16	2-1/4	–	AR5	313209	313216	AL5	313223	313230
3/8	3/8	2-1/2	–	AR6	313210	313217	AL6	313224	313231
7/16	7/16	3	–	AR7	313211	313218	AL7	313225	313232
1/2	1/2	3-1/2	–	AR8	313212	313219	AL8	313226	313233
5/8	5/8	4	–	AR10	313213	313220	AL10	313227	313234
3/4	3/4	4-1/2	–	AR12	313214	313221	AL12	313228	313235
1/4	1/4	2	–	BR4	313236	313243	BL4	313250	313257
5/16	5/16	2-1/4	–	BR5	313237	313244	BL5	313251	313258
3/8	3/8	2-1/2	–	BR6	313238	313245	BL6	313252	313259
7/16	7/16	3	–	BR7	313239	313246	BL7	313253	313260
1/2	1/2	3-1/2	–	BR8	313240	313247	BL8	313254	313261
5/8	5/8	4	–	BR10	313241	313248	BL10	313255	313262
3/4	3/4	4-1/2	–	BR12	313242	313249	BL12	313256	313263
1/4	1/4	2	–	C4	313278	313285	C4	313278	313285
5/16	5/16	2-1/4	–	C5	313279	313286	C5	313279	313286
3/8	3/8	2-1/2	–	C6	313280	313287	C6	313280	313287
7/16	7/16	3	–	C7	313281	313288	C7	313281	313288
1/2	1/2	3-1/2	–	C8	313282	313289	C8	313282	313289
5/8	5/8	4	–	C10	313283	313290	C10	313283	313290
3/4	3/4	4-1/2	–	C12	313284	313291	C12	313284	313291
1/4	1/4	2	–	D4	313292	313299	D4	313292	313299
5/16	5/16	2-1/4	–	D5	313293	313300	D5	313293	313300
3/8	3/8	2-1/2	–	D6	313294	313301	D6	313294	313301
7/16	7/16	3	–	D7	313295	313302	D7	313295	313302
1/2	1/2	3-1/2	–	D8	313296	313303	D8	313296	313303
5/8	5/8	4	–	D10	313297	313304	D10	313297	313304
3/4	3/4	4-1/2	–	D12	313298	313305	D12	313298	313305
1/2	1/2	3-1/2	–	FR8	313322	313326	FL8	313330	313334
5/8	5/8	4	–	FR10	313323	313327	FL10	313331	313335
3/4	3/4	4-1/2	–	FR12	313324	313328	FL12	313332	313336
1	1	7	–	FR16	313325	313329	FL16	313333	313337
1/2	1/2	3-1/2	–	GR8	313338	313342	GL8	313346	313350
5/8	5/8	4	–	GR10	313339	313343	GL10	313347	313351
3/4	3/4	4-1/2	–	GR12	313340	313344	GL12	313348	313352
1	1	7	–	GR16	313341	313345	GL16	313349	313353
1/4	1/4	2	–	E4	313264	313271	E4	313264	313271
5/16	5/16	2-1/4	–	E5	313265	313272	E5	313265	313272
3/8	3/8	2-1/2	–	E6	313266	313273	E6	313266	313273
7/16	7/16	3	–	E7	313267	313274	E7	313267	313274
1/2	1/2	3-1/2	–	E8	313268	313275	E8	313268	313275
5/8	5/8	4	–	E10	313269	313276	E10	313269	313276
3/4	3/4	4-1/2	–	E12	313270	313277	E12	313270	313277
1/2	1	5	1/8	CTR11	313306	313307	CTL11	313308	313309
1/2	1	5	3/16	CTR22	313310	313311	CTL22	313312	313313
1/2	1	5	1/4	CTR33	313314	313315	CTL33	313316	313317
1/2	1	5	5/16	CTR44	313318	313319	CTL44	313320	313321
1/4	1/4	2	–	ER4	313354	313360	EL4	021824	313371
5/16	5/16	2-1/4	–	ER5	313355	313361	EL5	313366	313372
3/8	3/8	2-1/2	–	ER6	313356	313362	EL6	313367	313373
1/2	1/2	3-1/2	–	ER8	313357	313363	EL8	313368	313374
5/8	5/8	4	–	ER10	313358	313364	EL10	313369	313375
3/4	3/4	4-1/2	–	ER12	313359	313365	EL12	313370	313376

Fly Cutter Sets

Hardened Steel



- No need for expensive end mills and end mill sharpening
- Counterbalanced for smoother finishes and faster feeds
- 3 sizes per set
- Machines up to a 6" wide surface with a standard tool bit

Shank Diameter (Inch)	Head Diameter (Inch)	Tool Bit Size (Inch)	Code
1/2	3/4; 1-1/8; 1-1/2	3/16; 1/4; 5/16	505400
3/4	1-1/2; 2; 2-1/2	5/16; 5/16; 5/16	505401

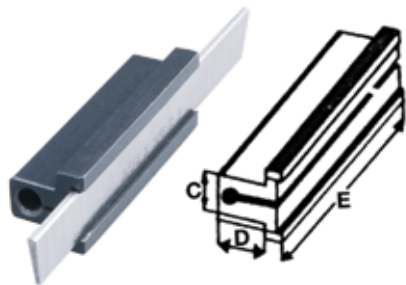
Turning Tool Holders

For High Speed Steel Toolbits



Model	Holder Size (Inch)	Square Tool (Inch)	Approx. Swing	Right Hand	Left Hand	Straight
				Code	Code	
TH/3	3/16 x 3/4 x 4-1/2	3/16	7-10	577470	577486	577484
TH/4	3/8 x 7/8 x 5	1/4	10-12	577471	577485	577486
TH/5	1/2 x 1-1/8 x 6	5/16	14-16	577472	577487	577488
TH/6	5/8 x 1-3/8 x 7	3/8	16-18	577473	577489	577490
TH/7	3/4 x 1-5/8 x 8	7/16	18-20	577474	577491	577492
TH/8	7/8 x 1-3/4 x 9	1/2	24-36	577475	577493	577494

Part-Off Tool Holders



Model	Blade Size (Inch)	Blade Reference	C (Inch)	D (Inch)	E (Inch)	Code
PT/1	3/32 x 1/2 x 4	180274	1/2	1/2	2-3/4	180271
PT/2	3/32 x 5/8 x 5	180275	1/2	9/16	2-3/4	180272
PT/3	1/8 x 3/4 x 6	180276	11/16	3/4	3-3/8	180273

Replacement Blades

Model	Blade Size (Inch)	Code
COB/0-2	3/32 x 1/2 x 4	180274
COB/0-3	3/32 x 5/8 x 5	180275
COB/0-4	1/8 x 3/4 x 6	180276

Part-Off Tool Holders



Model	Shank Size (Inch)	Blade Size (Inch)	Blade Reference	Right Hand	Left Hand	Straight
				Code	Code	
CT/0	5/16 x 9/16 x 3-11/16	1/16 x 5/16	-	577476	577495	577496
CT/1	5/16 x 3/4 x 4-1/2	3/32 x 1/2	516120	577477	577497	577498
CT/2	3/8 x 7/8 x 5	3/32 x 5/8	516121	577478	577499	577500
CT/3	1/2 x 1-1/8 x 6	1/8 x 3/4	516122	577479	577501	577502
CT/4	5/8 x 1-3/8 x 7	1/8 x 7/8	516123	577480	577503	577504
CT/5	3/4 x 1-5/8 x 8	3/16 x 1	516124	577481	577505	577506
CT/6	7/8 x 1-3/4 x 9	3/16 x 1-1/8	516125	577482	577507	577508

Boring Bar Holders

Square

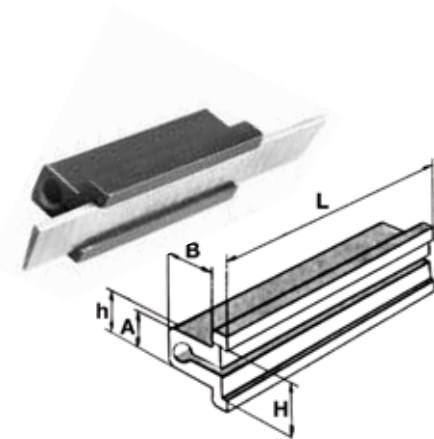


Model	Holder Size (Inch)	Bar Size (Inch)	Code
BH/3-8	9/16 x 9/16 x 2-1/4	3/8	180281
BH/1-2	3/4 x 3/4 x 3	1/2	180282
BH/5-8	7/8 x 7/8 x 3-1/4	5/8	180283
BH/3-4	1 x 1 x 3-1/4	3/4	180284

Part-Off Tools

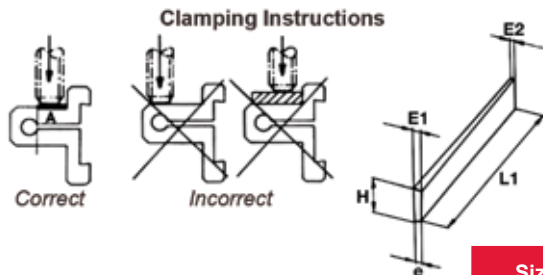
Holder & Blades

Holders – Model 259



Size	H (Inch)	h (Inch)	A (Inch)	B (Inch)	L (Inch)	Code
1	1/2	1/2	1/2	9/16	2-3/4	515411
2	11/16	1/2	1/2	1/2	2-3/4	515412
3	1	7/8	13/16	3/4	3-1/8	515413

Blades – for Model 259



- Made of a special high speed steel with 5% cobalt
- Extremely wear resistant
- Side clearance and back tapered from front to back for minimum friction on deep cuts

Size	H (Inch)	L1 (Inch)	E1 (Inch)	E2 (Inch)	e (Inch)	Code
1	1/2	4	0.118	0.087	0.085	515421
2	11/16	5-1/2	0.157	0.110	0.107	515422
3	1	6	0.177	0.125	0.108	515423

Blade size 3 will fit holder size 3

Part-Off Blades

High Speed Steel

- T-shaped
- Ground



Not compatible with holders above

Style	Size W x H (Inch)	Length (Inch)	Code	Style	Size W x H (Inch)	Length (Inch)	Code
P1	1/16 x 1/2	4-1/2	516101	P5N	5/32 x 7/8	6	516111
P2	3/32 x 1/2	4-1/2	516102	P4X	5/32 x 1-1/8	6-1/2	516112
P3N	3/32 x 11/16	5	516103	P5S	3/16 x 11/16	5	516113
P3S	1/8 x 1/2	4-1/2	516104	P5W	3/16 x 3/4	5	516114
P3	1/8 x 11/16	5	516105	P5	3/16 x 7/8	6	516115
P3W	1/8 x 3/4	5	516106	P8	3/16 x 1-1/8	6-1/2	516116
P5X	1/8 x 7/8	6	516107	P6	1/4 x 7/8	6	516117
P8X	1/8 x 1-1/8	6-1/2	516108	P9	1/4 x 1-1/8	6-1/2	516118
P4	5/32 x 11/16	5	516109				
P4W	5/32 x 3/4	5	516110				

Part-Off Blades

Cobalt

• Ground



End View

Size W x H (Inch)	Length (Inch)	Code	Size W x H (Inch)	Length (Inch)	Code	Size W x H (Inch)	Length (Inch)	Code
3/32 x 1/2	4	516120	1/8 x 3/4	5	516122	3/16 x 1	6	516124
3/32 x 5/8	5	516121	1/8 x 7/8	6	516123	3/16 x 1-1/8	6	516125

Tool Bits

High Speed Steel M2 & Cobalt

• Ground

Square



Size Square x Length (Inch)	HSS	Cobalt	Size Square x Length (Inch)	HSS	Cobalt	Size Square x Length (Inch)	HSS	Cobalt
	Code	Code		Code	Code		Code	Code
1/8 x 2-1/2	516130	516230	1/2 x 4	516136	516236	7/8 x 6	516140	516240
3/16 x 2-1/2	516131	516231	5/8 x 4-1/2	516137	516237	1 x 6	516141	516241
1/4 x 2-1/2	516132	516232	3/4 x 5	516138	516238	1 x 7	516142	516242
5/16 x 2-1/2	516133	516233	3/4 x 6	516139	516239	1 x 8	—	516243
3/8 x 3	516134	516234						
7/16 x 3-1/2	516135	516235						

Rectangular



Size W x H x L (Inch)	HSS	Size W x H x L (Inch)	HSS	Size W x H x L (Inch)	HSS
	Code		Code		Code
1/4 x 3/8 x 2-1/2	516350	5/16 x 1/2 x 4	516354	3/8 x 1 x 6	516358
1/4 x 1/2 x 4	516351	5/16 x 3/4 x 5	516355	1/2 x 3/4 x 5	516359
1/4 x 3/4 x 5	516352	3/8 x 1/2 x 4	516356	1/2 x 1 x 7	516360
1/4 x 1 x 6	516353	3/8 x 3/4 x 5	516357	5/8 x 1 x 7	516361
				3/4 x 1 x 7	516362

Round



Size Diameter x Length (Inch)	HSS	Cobalt	Size Diameter x Length (Inch)	HSS	Cobalt	Size Diameter x Length (Inch)	HSS	Cobalt
	Code	Code		Code	Code		Code	Code
1/8 x 2-3/4	516370	516390	3/8 x 3	516376	516396	5/8 x 3	516380	516400
3/16 x 3-1/2	516371	516391	3/8 x 5	516377	516397	5/8 x 6	516381	516401
1/4 x 2-1/2	516372	516392	1/2 x 4	516378	516398	3/4 x 6	516382	516402
1/4 x 4	516373	516393	1/2 x 6	516379	516399	1 x 6	516383	—
5/16 x 2	516374	516394						
5/16 x 4	516375	516395						

Knurling Tools Knurling Tool Holders



- KT2/KT6 requires RH and LH knurls to produce diamond pattern
- KTO produces diamond pattern with D knurls

Model	Shank Size (Inch)	Knurl Dimensions (Inch)	Code
KT/0-1	4 x 1/2 x 1/2	3/4 x 1/4 x 1/4	606100
KT/2-2	6-1/2 x 1-1/8 x 1/2	3/4 x 1/4 x 3/8	606101
KT/2-3	5-1/2 x 7/8 x 3/8	5/8 x 7/32 x 5/16	606102
KT/2-4	5 x 3/4 x 5/16	5/8 x 7/32 x 5/16	606103
KT/2-5	4-1/2 x 1/2 x 1/2	3/4 x 1/4 x 3/8	606104
KT/6-1	7-1/2 x 1-3/8 x 5/8	3/4 x 1/4 x 3/8	606105

Model	Shank Size (Inch)	Knurl Dimensions (Inch)	Code
KT/6-2	6-1/2 x 1-1/8 x 1/2	3/4 x 1/4 x 3/8	606106
KT/6-3	5-1/2 x 7/8 x 3/8	5/8 x 7/32 x 5/16	606107
KT/6-4	5 x 3/4 x 5/16	5/8 x 7/32 x 5/16	606108
KT/6-5M	20 x 27 x 18	20 x 6 x 8	606109

High Speed Steel – Cutters



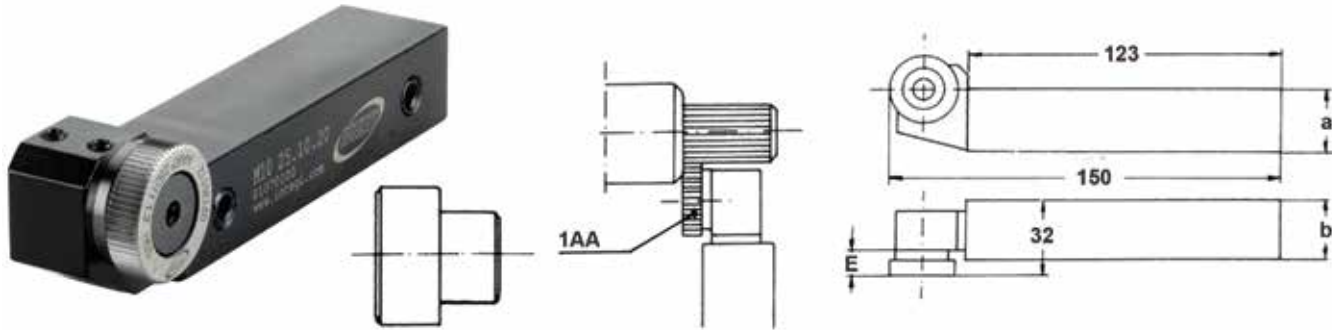
Type	Diameter	Hole Diameter	Width	TPI	Code
Right Hand	5/8"	7/32"	5/16"	Fine	606143
Right Hand	5/8"	7/32"	5/16"	Medium	606146
Right Hand	5/8"	7/32"	5/16"	Coarse	606149
Right Hand	3/4"	1/4"	3/8"	Fine	606152
Right Hand	3/4"	1/4"	3/8"	Medium	606155
Right Hand	3/4"	1/4"	3/8"	Coarse	606158
Right Hand	1"	5/16"	3/8"	Fine	606161
Right Hand	1"	5/16"	3/8"	Medium	606164
Right Hand	1"	5/16"	3/8"	Coarse	606167
Right Hand	20 mm	6 mm	8 mm	Fine	606170
Right Hand	20 mm	6 mm	8 mm	Medium	606173
Right Hand	20 mm	6 mm	8 mm	Coarse	606176
Left Hand	5/8"	7/32"	5/16"	Fine	606142
Left Hand	5/8"	7/32"	5/16"	Medium	606145
Left Hand	5/8"	7/32"	5/16"	Coarse	606148
Left Hand	3/4"	1/4"	3/8"	Fine	606151
Left Hand	3/4"	1/4"	3/8"	Medium	606154
Left Hand	3/4"	1/4"	3/8"	Coarse	606157
Left Hand	1"	5/16"	3/8"	Fine	606160
Left Hand	1"	5/16"	3/8"	Medium	606163
Left Hand	1"	5/16"	3/8"	Coarse	606166
Left Hand	20 mm	6 mm	8 mm	Fine	606169
Left Hand	20 mm	6 mm	8 mm	Medium	606172
Left Hand	20 mm	6 mm	8 mm	Coarse	606175
Diamond	3/4"	1/4"	1/4"	Fine	606110
Diamond	3/4"	1/4"	1/4"	Medium	606111
Diamond	3/4"	1/4"	1/4"	Coarse	606112
Diamond	5/8"	7/32"	5/16"	Fine	606113

Type	Diameter	Hole Diameter	Width	TPI	Code
Diamond	5/8"	7/32"	5/16"	Medium	606114
Diamond	5/8"	7/32"	5/16"	Coarse	606115
Diamond	3/4"	1/4"	3/8"	Fine	606116
Diamond	3/4"	1/4"	3/8"	Medium	606117
Diamond	3/4"	1/4"	3/8"	Coarse	606118
Diamond	1"	5/16"	3/8"	Fine	606119
Diamond	1"	5/16"	3/8"	Medium	606120
Diamond	1"	5/16"	3/8"	Coarse	606121
Diamond	20 mm	6 mm	8 mm	Fine	606122
Diamond	20 mm	6 mm	8 mm	Medium	606123
Diamond	20 mm	6 mm	8 mm	Coarse	606124
Straight	3/4"	1/4"	1/4"	Fine	606137
Straight	3/4"	1/4"	1/4"	Medium	606140
Straight	3/4"	1/4"	1/4"	Coarse	606141
Straight	5/8"	7/32"	5/16"	Fine	606144
Straight	5/8"	7/32"	5/16"	Medium	606147
Straight	5/8"	7/32"	5/16"	Coarse	606150
Straight	3/4"	1/4"	3/8"	Fine	606153
Straight	3/4"	1/4"	3/8"	Medium	606156
Straight	3/4"	1/4"	3/8"	Coarse	606159
Straight	1"	5/16"	3/8"	Fine	606162
Straight	1"	5/16"	3/8"	Medium	606165
Straight	1"	5/16"	3/8"	Coarse	606168
Straight	20 mm	6 mm	8 mm	Fine	606171
Straight	20 mm	6 mm	8 mm	Medium	606174
Straight	20 mm	6 mm	8 mm	Coarse	606177

Knurling Tools



Plain – Straight Knurl up to Face – Forming Style



Model	a (mm)	b (mm)	E (mm)	Code	Model	a (mm)	b (mm)	E (mm)	Code
M1025.10.20	20	25	10	180305	M1025.10.25	25	25	10	180307

Knurling Wheels for Plain Model Knurling Tools

Pitch (mm)	Code	Pitch (mm)	Code	Pitch (mm)	Code	Pitch (mm)	Code
0.4	180310	0.8	180318	1.5	180326	1.8	180330
0.5	180312	1.0	180320	1.6	180328	2.0	180332
0.6	180314	1.2	180322				
0.7	180316	1.4	180324				

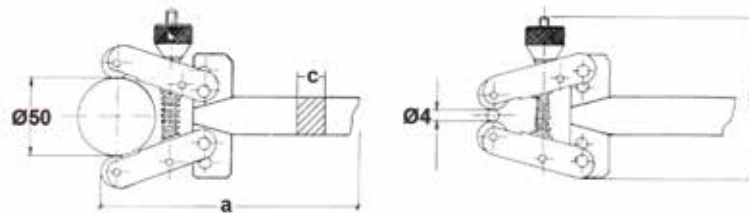
Model M2 – Balanced Forming Style



- Revolving head carries three pairs of knurls – fine, medium, and course – any of which can be turned into the operating position
- The two models are identical, except for the pattern of knurls employed

Model	Holder Size (Inch)	Cutter	Knurling Type	Net Weight	Code
M2-D	0.98 x 0.98 x 6-1/2	Spiral	Diamond	1 lb/10 oz	180165
M2-S	0.98 x 0.98 x 6-1/2	Straight	Straight	1 lb/10 oz	180170

Model M3 – Balanced Forming Style



- Adjustment to suit workpiece diameter
- Knurl small diameters without risk of deflection

Model	a (Inch)	b (Inch)	c (Inch)	Code
M3	9	4-1/4	3/4	180177

Knurling Tools (continued)



Knurling Wheels for Models M2 & M3

Diamond Pattern



Straight Line Pattern

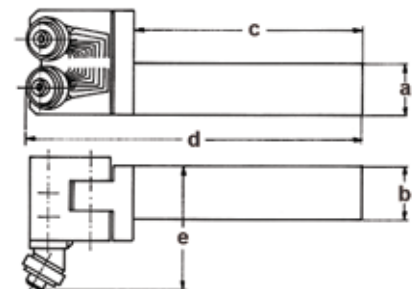
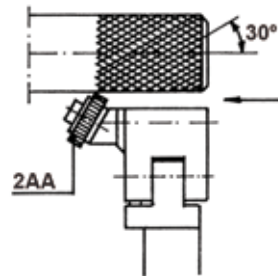


Diameter (mm)	Thickness (mm)	Bore (mm)	Pitch	Code
19.5	8	6	Coarse (18 TPI)	180166
19.5	8	6	Medium (32 TPI)	180167
19.5	8	6	Fine (45 TPI)	180168

Diameter (mm)	Thickness (mm)	Bore (mm)	Pitch	Code
19.5	8	6	Coarse (18 TPI)	180171
19.5	8	6	Medium (32 TPI)	180172
19.5	8	6	Fine (45 TPI)	180173

NC Diamond Knurling Tools

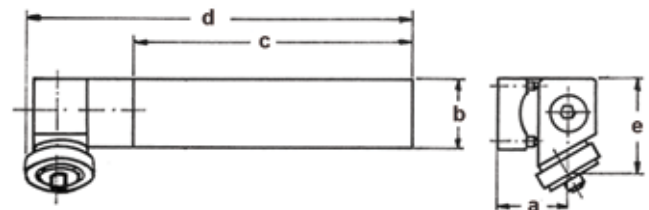
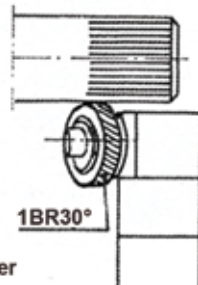
- Double knurling tool with adjustable knurl holder head
- For 30° crossed knurlings with scale indicator of knurling diameter
- For use on CNC, conventional, and automatic lathes



Model MFCNC/	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	Knurling Diameter Range (Inch)	Cutter Diameter mm (Inch)	Cutter Pitch (mm)	Code
145316LH	5/8	5/8	3	4-3/4	1-3/4	5/32 - 2	14.5 (9/16) x 90°	0.4 - 1.2	180179
215520RH	3/4	3/4	3-1/2	5-1/2	2-1/4	1/4 - 10	21.5 (13/16) x 90°	0.4 - 2.0	180180
215525RH	1	1	4-1/2	6-1/2	2-1/4	1/4 - 10	21.5 (13/16) x 90°	0.4 - 2.0	180182

Straight Right Hand Knurling Tools

- Simple knurling tool with reverse and adjustable knurl holder head
- For straight and helical knurling
- For use on CNC, conventional, and automatic lathes



Model MFCNC/	a (Inch)	b (Inch)	c (Inch)	d (Inch)	e (Inch)	Knurling Diameter Range (Inch)	Cutter Diameter mm (Inch)	Cutter Pitch (mm)	Code
010902	5/8	5/8	3	4	7/8	5/32 - 2	14.5 (9/16) x 30°	0.4 - 1.2	180184
215525	1	1	4-1/2	6	1-1/4	1/4 - 10	21.5 (13/16) x 30°	0.4 - 2.0	180187

Diameter of part being knurled should be turned to size for sake of concentricity and quality of knurl.

CUTTERS SOLD SEPARATELY

Knurling Tools *(continued)*



High Speed Steel – Cutters

Helical Cutters – 30°



TIN coated available upon request

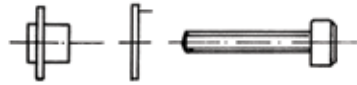
Straight Cutters – 90°



TIN coated available upon request

Approximate TPI	Pitch (Inch)	Pitch (mm)	High Speed Steel		Approximate TPI	Pitch (Inch)	Pitch (mm)	High Speed Steel	
			14.5 Diameter	21.5 Diameter				14.5 Diameter	21.5 Diameter
			Code	Code				Code	Code
85	0.012	0.3	–	175433	64	0.016	0.4	175304	175404
64	0.016	0.4	175295	175434	51	0.020	0.5	175305	175405
51	0.020	0.5	175296	175435	42	0.024	0.6	175306	175406
42	0.024	0.6	175297	175436	32	0.032	0.8	175308	175408
32	0.032	0.8	175298	175438	25	0.040	1.0	175310	175410
25	0.040	1.0	175299	175440	21	0.047	1.2	175312	175412
21	0.047	1.2	175300	175442	18	0.060	1.5	–	175415
18	0.060	1.5	–	175445	16	0.063	1.6	–	175416
16	0.063	1.6	–	175446	13	0.080	2.0	–	175420
13	0.080	2.0	–	175450					

Spare Bushings, Washers & Screws



Part	Size	Code	Part	Size	Code	Part	Size	Code
Bushing	14.5	175391	Washer	14.5	175392	Screw	14.5	175393
Bushing	21.5	175491	Washer	21.5	175492	Screw	21.5	175493