

Superior Solutions for Sheet Metal Fabricators

MURATA WIEDEMANN

Turret Punch Press Tooling

- MARATHON PLUS™
- 114
- 114 HEAVY DUTY
- 112
- VARITOOL/AUTO INDEX
- VULCAN
- SLUG FREE® DIES
- SPECIAL SHAPES



PN 2011

WORLDWIDE HEADQUARTERS:

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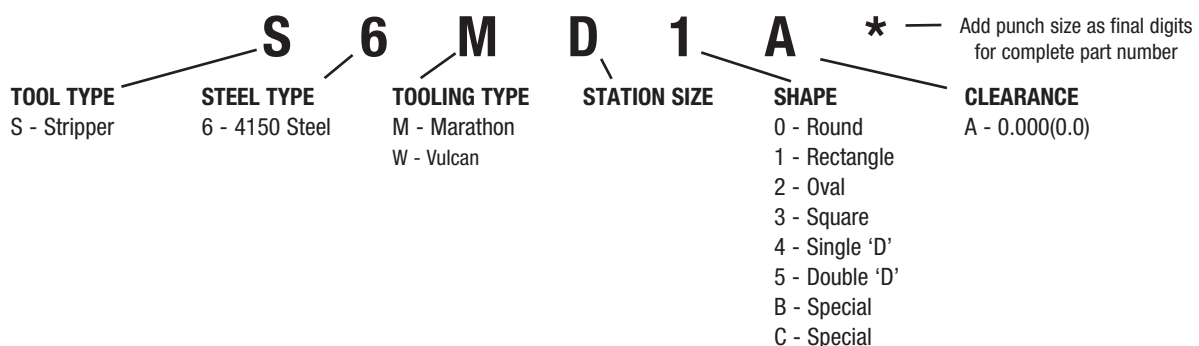
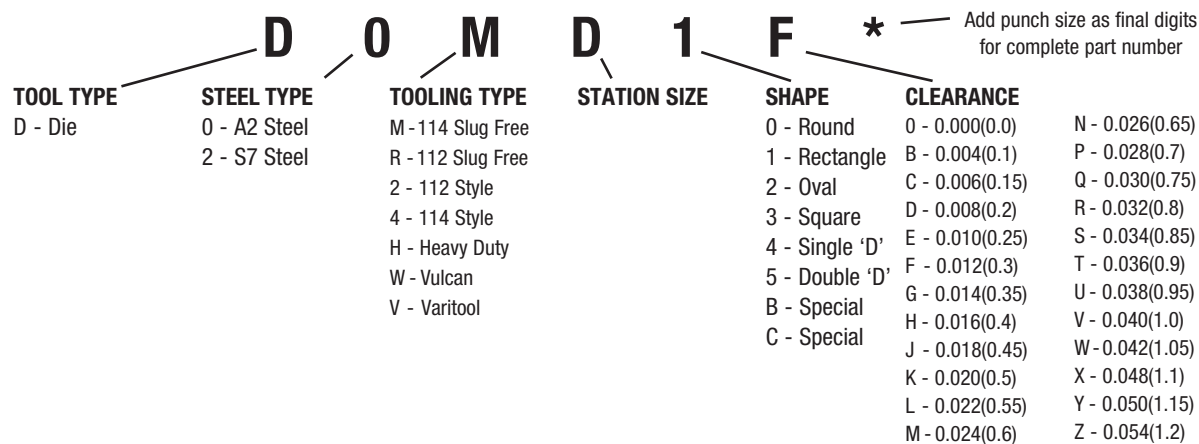
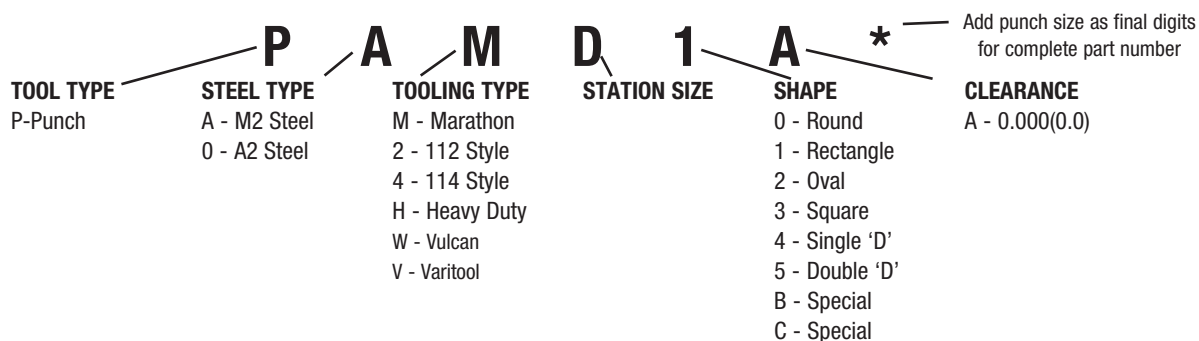
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M
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PART NUMBER INDEX



EXAMPLES...

A 0.500(12.7) x 1.500(38.1) rectangular Marathon® punch, die and stripper for 0.060(1.5) mild steel will have the following part numbers:

Punch	PAMD1A	0.500 X 1.500
Die	DOMD1F**	0.500 X 1.500
Stripper	S6MD1A	0.500 X 1.500

In metric:

Punch	PAMD1A	12.70 M 38.10
Die	DOMD1F**	12.70 M 38.10
Stripper	S6MD1A	12.70 M 38.10

** For best piece-part quality, MATE recommends a die clearance to be 20% of material thickness.

A 1.125(28.6) square Marathon® punch, die and stripper for 0.040(1.0) mild steel will have the following part numbers:

Punch	PAMD3A	1.125
Die	DOMD3D**	1.125
Stripper	S6MD3A	1.125

In metric:

Punch	PAMD3A	28.60M
Die	DOMD3D**	28.60M
Stripper	S6MD3A	28.60M

STANDARD SHAPES:



[Dimensions in Inches(mm)]



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[Dimensions in Inches(mm)]

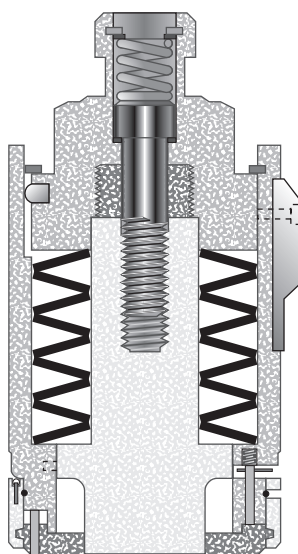


SIDE BY SIDE COMPARISON

MARATHON PLUS™ AND MARATHON®

A Comparison of Punching Systems...

STANDARD 112 AND 114 STYLES



Punching force and motion are contained inside a sleeve with lubricated punch guides, punch press bore suffers no wear and stays accurate.



Captive

Built-in fine thread adjustable shim

Marathon Plus™ offers external adjustment

Premium M2 high speed steel for high speed punching compatibility

Three way positive guided action – top, middle and punch point

Steel stripper for positive stripping action, flatter sheets

New self-releasing "pop-up" stripper

Built-in angles for 0°, 45° left, 45° right and 90°

Spring loaded stripper pops in or out without tools

SLUG FREE® Die with Stress Free Relief™ improves slug control and die strength

DRAWBOLT

Not captive

LENGTH ADJUSTMENT

Metal shims must be added or separate adjustable length punch holder must be used

PUNCH

Premium air hardened tool steel

PUNCH GUIDING ACTION

Unguided

STRIPPER

Non-marring, resilient urethane stripper must be added

ANGLE ADJUSTMENT

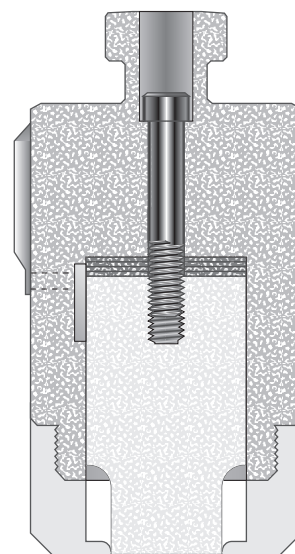
Single custom angle available, or separate adjustable angle punch holder must be used for settings other than 0° and 90°

ASSEMBLY

Drawbolt assembles punch and shims to punch holder. Force fit urethane stripper to punch holder holding spud

DIE

Stress Free Relief™ for high die strength



Punching force and motion are in direct contact with the punch press bore, causing bore walls to wear and lose accuracy.

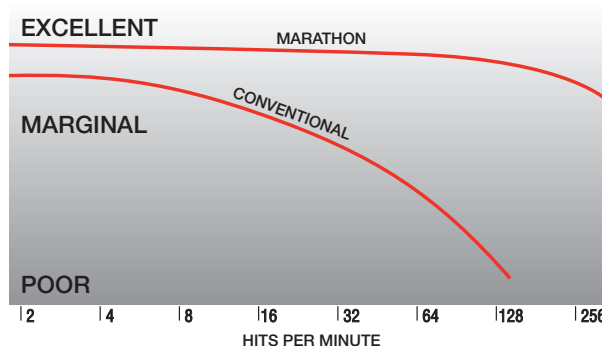


MARATHON PLUS™ TOOLING SYSTEM FEATURES:

- External length adjustment built into the punch holder
- Angle adjustment keyed to both punch and die holder
- Positive stripping to hold material flat
- Self-releasing "pop-up" stripper
- Eliminates slug pulling in the die
- Increases accuracy at the punch tip
- Customers frequently report producing over 1 million hits before needing to sharpen
- Attain a lower cost per hole compared to other available tooling systems
- Works with 114 and 112 dies

FLATNESS OF MATERIAL

MARATHON TOOLING SYSTEM VS. CONVENTIONAL TOOLS



[Dimensions in Inches(mm)]

SIDE BY SIDE COMPARISON

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SIDE BY SIDE COMPARISON

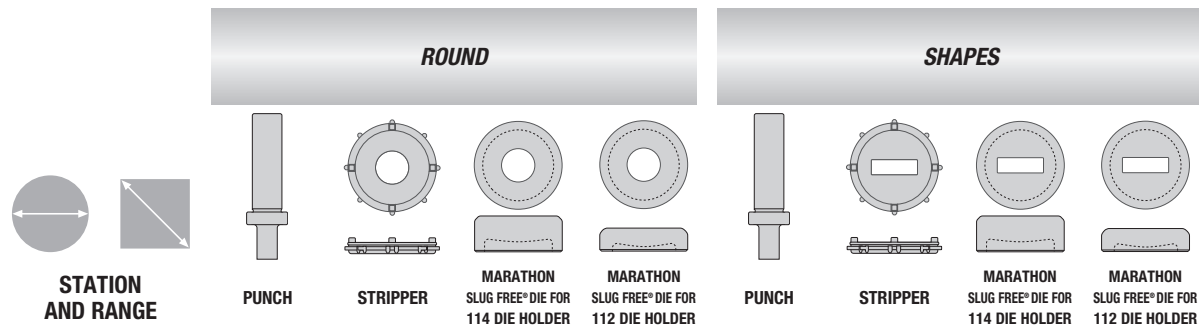
	MARATHON PLUS™ TOOLING SYSTEM	114 TOOLING SYSTEM	114 HEAVY DUTY TOOLING SYSTEM FOR THICK MATERIAL AND/OR HIGH TONNAGE APPLICATIONS	112 TOOLING SYSTEM
PUNCH HOLDER	• External length adjustment • Built in adjustment – no shims needed • Built in lubrication and cooling vents • Eight angle settings at 45 degree intervals • Spring loaded stripping • Full length guiding at three points	• Standard holder for general use • Adjustable angle holder available • Adjustable length holder available for forming tools	• Standard holder for general use • Adjustable angle holder available • Adjustable length holder available for forming tools	• Standard holder for general use • Adjustable angle holder available • Adjustable length holder available for forming tools
PUNCH SHIM	• No shims needed	• Premium grade steel holds accurate dimensions	• Premium grade steel holds accurate dimensions	• Premium grade steel holds accurate dimensions
PUNCH	• Premium M2 High Speed Steel • Punch point, shoulder and shank guided for stability • Optional Maxima™ coating • Optional Nitride treatment	• Premium grade tool steel • Also available in High Speed Steel • Optional Maxima™ coating • Optional Nitride treatment	• Premium grade tool steel hardened for long life and superior performance	• Premium grade tool steel hardened for long life and superior performance
STRIPPER	• Self releasing “pop-up” stripper • Quick tool change – no wrenches needed • Multiple angle settings • Hardened steel for long life	• Urethane strippers available in push-on or custom molded • Available in two durometers to custom fit your application	• Urethane strippers available in push-on or custom molded • Available in two durometers to custom fit your application	• Urethane strippers available in push-on or custom molded • Available in two durometers to custom fit your application
SLUG SHEDDER	• Not needed	• Provides additional measure to prevent slug pulling • Fits shedder holes in all Mate punches	• Provides additional measure to prevent slug pulling • Fits shedder holes in all Mate punches	• Provides additional measure to prevent slug pulling • Fits shedder holes in all Mate punches
DIE	• SLUG FREE® die eliminates slug pulling • Premium grade hardened tool steel • Stress Free Relief™ • Clearance radius in die corners	• SLUG FREE® die option eliminates slug pulling • Premium grade hardened tool steel • Stress Free Relief™ • Clearance radius in die corners	• SLUG FREE® die eliminates slug pulling • Premium grade hardened tool steel • Stress Free Relief™ • Clearance radius in die corners	• SLUG FREE® die option eliminates slug pulling • Premium grade hardened tool steel • Stress Free Relief™ • Clearance radius in die corners
DIE SHIM	• Precise uniform design • Premium grade steel	• Precise uniform design • Premium grade steel	• Precise uniform design • Premium grade steel	• Precise uniform design • Premium grade steel
DIE HOLDER	• High grade alloy steel • Quick, easy, accurate installation	• High grade alloy steel • Quick, easy, accurate installation	• High grade alloy steel • Quick, easy, accurate installation	• High grade alloy steel • Quick, easy, accurate installation

More information available. Request these literature items:
 LIT00573 Marathon Plus Installation & Maintenance
 LIT00594 Marathon Plus Maintenance Fixture Installation & Use
 LIT00228 Marathon Installation & Maintenance
 LIT00359 Marathon Lock Ring Replacement
 LIT00371 Marathon Punch Holder Tang Replacement

[Dimensions in Inches(mm)]



MATE MARATHON® SYSTEM PUNCHES, STRIPPERS, AND DIES



STATION AND RANGE	PUNCH	STRIPPER	MARATHON SLUG FREE® DIE FOR 114 DIE HOLDER	MARATHON SLUG FREE® DIE FOR 112 DIE HOLDER	PUNCH	STRIPPER	MARATHON SLUG FREE® DIE FOR 114 DIE HOLDER	MARATHON SLUG FREE® DIE FOR 112 DIE HOLDER
B INNER TRACK XB thru 0.500(12.7)		S6MX0A*						
B thru 1.000(25.4)	PAMB0A*	S6MB0A*	DOMB00*	DORB00*	PAMB_A*	S6MB_A*	DOMB_0*	DORB_0*
C over 1.000(25.4) thru 1.500(38.1)	PAMC0A*	S6MC0A*	DMC00*	DORC00*	PAMC_A*	S6MC_A*	DMC_0*	DORC_0*
D over 1.500(38.1) thru 2.000(50.8)	PAMD0A*	S6MD0A*	DOMD00*	DORD00*	PAMD_A*	S6MD_A*	DOMD_0*	DORD_0*
E over 2.000(50.8) thru 2.500(63.5)	PAME0A*	S6ME0A*	DOME00*	DORE00*	PAME_A*	S6ME_A*	DOME_0*	DORE_0*
F over 2.500(63.5) thru 3.000(76.2)	PAMF0A*	S6MF0A*	DOMF00*	DORF00*	PAMF_A*	S6MF_A*	DOMF_0*	DORF_0*
G over 3.000(76.2) thru 3.500(88.9)	PAMG0A*	S6MG0A*	DOMG00*	DORG00*	PAMG_A*	S6MG_A*	DOMG_0*	DORG_0*
H over 3.500(88.9) thru 4.125(104.8)	PAMH0A*	S6MH0A*	DOMH00*		PAMH_A*	S6MH_A*	DOMH_0*	
J over 4.125(104.8) thru 4.750(120.7)	PAMJ0A*	S6MJ0A*	DOMJ00*		PAMJ_A*	S6MJ_A*	DOMJ_0*	
K over 4.750(120.7) thru 5.500(139.7)	PAMK0A*	S6MK0A*	D2MK00*		PAMK_A*	S6MK_A*	D2MK_0*	

*Add punch sizes as final digits of complete part number. Fifth character represents shape.

See page 52
for Add-Ons

STANDARD SHAPES:



[Dimensions in Inches(mm)]



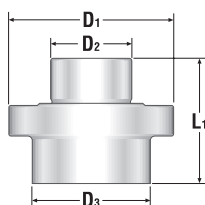
MATE MARATHON® PUNCHES, STRIPPERS, AND DIES CRITICAL DIMENSIONS

6

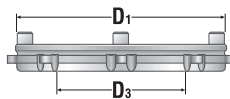
CRITICAL DIMENSIONS

LEGEND
D1 - Width/Outside Diameter
D2 - Punch Shank Diameter
D3 - Maximum Station Range
D4 - Outside Diameter - 112 Die
L1 - Overall Length/Height
L2 - Overall Height - 114 Die
L3 - Overall Height - 112 Die

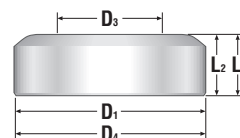
PUNCH DIMENSIONS



STRIPPER DIMENSIONS



DIE DIMENSIONS

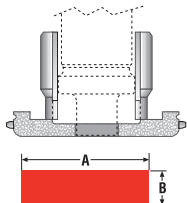


STATION

MARATHON PUNCH

	D1	D2	D3	L1
B	1.060(26.9)	0.750(19.1)	1.000(25.4)	3.750(95.3)
C	2.031(51.6)	1.312(33.3)	1.500(38.1)	3.750(95.3)
D	2.031(51.6)	1.312(33.3)	2.000(50.8)	3.750(95.3)
E	3.061(77.8)	1.500(38.1)	2.500(63.5)	2.375(60.3)
F	3.061(77.8)	1.500(38.1)	3.000(76.2)	2.375(60.3)
G	4.155(105.5)	1.500(38.1)	3.500(88.9)	2.375(60.3)
H	4.155(105.5)	1.500(38.1)	4.125(104.8)	2.375(60.3)
J	4.779(121.4)	1.500(38.1)	4.750(120.7)	2.375(60.3)
K	5.513(140.0)	1.500(38.1)	5.500(139.7)	2.375(60.3)

MARATHON STRIPPER

	D1	D3	Stabilized stripper
B	1.493(37.9)	1.000(25.4)	Stripper Clearance: All Marathon round .0025(9.843) shapes .0017(6.693) Stabilized strippers are made with two vertical locators providing support to hold small narrow punches in alignment. This configuration is automatically provided when punch dimensions fall into the ranges defined below. "B" Range Width ≤ 0.099(2.5) 0.100(2.5)-0.156(4.0) 0.157(4.0)-0.375(9.5) "A" Range Length NOT LIMITED ≤ 0.625(15.9) ≤ 0.375(9.5) 
C	2.680(68.1)	1.500(38.1)	
D	2.680(68.1)	2.000(50.8)	
E	3.618(91.9)	2.500(63.5)	
F	3.618(91.9)	3.000(76.2)	
G	4.711(119.7)	3.500(88.9)	
H	4.711(119.7)	4.125(104.8)	
J	5.337(135.6)	4.750(120.7)	
K	6.071(154.2)	5.500(139.7)	

MARATHON SLUG FREE® DIE

	D1 - 114	D4 - 112	D3	L2 - 114	L3 - 112
B	1.563(39.7)	1.563(39.7)	1.000(25.4)*	1.125(28.6)	0.594(15.1)
C	2.250(57.2)	2.250(57.2)	1.500(38.1)*	1.125(28.6)	0.594(15.1)
D	2.750(69.9)	2.750(69.9)	2.000(50.8)*	1.125(28.6)	0.750(19.1)
E	3.500(88.9)	3.500(88.9)	2.500(63.5)*	1.125(28.6)	0.750(19.1)
F	4.000(101.6)	4.250(108.0)	3.000(76.2)*	1.125(28.6)	0.750(19.1)
G	4.500(114.3)	4.750(120.7)	3.500(88.9)*	1.125(28.6)	0.750(19.1)
H	5.250(133.4)		4.125(104.8)*	1.125(28.6)	
J	6.000(152.4)		4.750(120.7)*	1.125(28.6)	
K	7.000(177.8)		5.500(139.7)*	1.125(28.6)	

* Total Die Clearance Maximums:

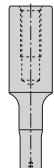
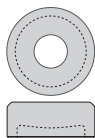
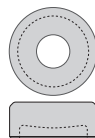
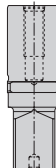
Rounds, Ovals, 'D', 'DD' - 0.054(1.4)

Squares, Rectangles - 0.024(0.6)

[Dimensions in Inches(mm)]



114 SYSTEM PUNCHES AND DIES

	ROUND			SHAPES			
	 STATION AND RANGE	 PUNCH	 114 DIE	 114 SLUG FREE® DIE	 PUNCH	 114 DIE	 114 SLUG FREE® DIE
A	thru 0.500(12.7) rounds only	P04A0A*	D04B00*	D0MB00*			
B	thru 1.000(25.4)	P04B0A*	D04B00*	D0MB00*	P04B_A*	D04B_0*	D0MB_0*
C	over 1.000(25.4) thru 1.500(38.1)	P04C0A*	D04C00*	D0MC00*	P04C_A*	D04C_0*	D0MC_0*
D	over 1.500(38.1) thru 2.000(50.8)	P04D0A*	D04D00*	D0MD00*	P04D_A*	D04D_0*	D0MD_0*
E	over 2.000(50.8) thru 2.500(63.5)	P04E0A*	D04E00*	D0ME00*	P04E_A*	D04E_0*	D0ME_0*
F	over 2.500(63.5) thru 3.000(76.2)	P04F0A*	D04F00*	D0MF00*	P04F_A*	D04F_0*	D0MF_0*
G	over 3.000(76.2) thru 3.500(88.9)	P04G0A*	D04G00*	D0MG00*	P04G_A*	D04G_0*	D0MG_0*
H	over 3.500(88.9) thru 4.125(104.8)	P04H0A*	D04H00*	D0MH00*	P04H_A*	D04H_0*	D0MH_0*
J	over 4.125(104.8) thru 4.750(120.7)	P04J0A*	D04J00*	D0MJ00*	P04J_A*	D04J_0*	D0MJ_0*
K	over 4.750(120.7) thru 5.500(139.7)	P04K0A*	D24K00*	D2MK00*	P04K_A*	D24K_0*	D2MK_0*
L	over 5.500(139.7) thru 6.000(152.4)	P04L0A*	D24L00*	D2ML00*	P04L_A*	D24L_0*	D2ML_0*

*Add punch sizes as final digits of complete part number. Fifth character represents shape.

See page 52
for Add-Ons

STANDARD SHAPES:

rectangle square quad "D" round hexagon octagon oval single "D" double "D" triangle diamond



[Dimensions in Inches(mm)]



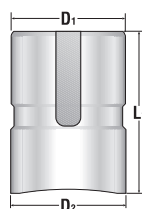
114 STYLE PUNCHES, STRIPPERS, AND DIES

CRITICAL DIMENSIONS

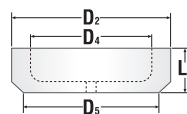
LEGEND

- D1 - Punch Shank Diameter
 D2 - Outside Diameter - OD
 D3 - Maximum Station Range
 D4 - Inside Diameter - ID
 D5 - Stripper Face Diameter
 L1 - Overall Length/Height

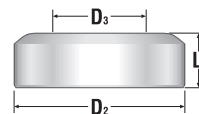
PUNCH DIMENSIONS

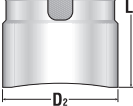
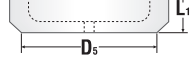
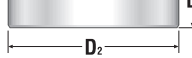


STRIPPER DIMENSIONS



DIE DIMENSIONS



STATION	D4 - Inside Diameter - ID D5 - Stripper Face Diameter L1 - Overall Length/Height					
	D1	D2	L1			
114 STYLE PUNCH	A**	1.063(27.0)	0.500(12.7)	2.719(69.1)		
	B	1.063(27.0)	1.000(25.4)	4.000(101.6)		
	C	1.313(33.4)	1.500(38.1)	4.063(103.2)		
	D	1.750(44.5)	2.000(50.8)	3.531(89.7)		
	E	2.500(63.5)	2.500(63.5)	3.531(89.7)		
	F	2.500(63.5)	3.000(76.2)	3.531(89.7)		
	G	4.125(104.8)	3.500(88.9)	3.531(89.7)		
	H	4.125(104.8)	4.125(104.8)	3.531(89.7)		
	J	4.125(104.8)	4.750(120.7)	3.531(89.7)		
	K	5.375(136.5)	5.500(139.7)	3.531(89.7)		
	L	5.375(136.5)	6.000(152.4)	3.531(89.7)		
URETHANE STRIPPER	D2	D4	D5	L1		
	B	1.970(50.0)	1.060(26.9)	1.130(28.7)	2.250(57.2)	
	C	2.500(63.5)	1.750(44.5)	1.720(43.7)	2.310(58.7)	
	D	3.000(76.2)	1.970(50.0)	2.220(56.4)	2.090(53.1)	
	E	4.000(101.6)	2.970(75.4)	2.910(73.9)	2.090(53.1)	
	F	4.000(101.6)	2.970(75.4)	3.280(83.3)	2.090(53.1)	
	G	5.160(131.1)	4.340(110.2)	3.770(95.8)	2.090(53.1)	
	H	5.160(131.1)	4.340(110.2)	4.530(115.1)	2.090(53.1)	
	J	5.810(147.6)	4.720(119.9)	5.340(135.6)	2.090(53.1)	
	K	6.630(168.4)†	5.720(145.3)†	6.380(162.1)***	2.090(53.1)	
	114 STYLE DIE	D2	D3	L1		
B		1.563(39.7)	1.000(25.4)*	1.125(28.6)		
C		2.250(57.2)	1.500(38.1)*	1.125(28.6)		
D		2.750(69.9)	2.000(50.8)*	1.125(28.6)		
E		3.500(88.9)	2.500(63.5)*	1.125(28.6)		
F		4.000(101.6)	3.000(76.2)*	1.125(28.6)		
G		4.500(114.3)	3.500(88.9)*	1.125(28.6)		
H		5.250(133.4)	4.125(104.8)*	1.125(28.6)		
J		6.000(152.4)	4.750(120.7)*	1.125(28.6)		
K		7.000(177.8)	5.500(139.7)*	1.125(28.6)		
L		7.500(190.5)	6.000(152.4)*	1.125(28.6)		

* Total Die Clearance Maximums:

Rounds, Ovals, 'D', 'DD' - 0.054(1.4)
 Squares, Rectangles - 0.024(0.6)

**A station - Rounds Only

*** K station stripper - rectangle

D5 - 6.000(152.4)

† K station Magnum 5000 stripper

D2 - 6.330(160.8)

D4 - 5.630(143.0)

[Dimensions in Inches(mm)]



114 HEAVY DUTY SYSTEM PUNCHES AND DIES

STATION	PUNCH RANGE				ROUND		SHAPES	
								
B	ROUND AND OVAL 0.250(6.4)** thru 0.938(23.8) Maximum clearance 0.054(1.4) for die at punch range maximum **Diameter/width less than 0.250(6.4) not available.	RECTANGLE AND SQUARE 0.250(6.4)** thru 0.813(20.7) Maximum clearance 0.024(0.6) for die at punch range maximum			POHB0A*	D2HB00*	POHB_A*	D2HB_0*
C	ROUND AND OVAL over 0.938(23.8) thru 1.438(36.5) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 0.813(20.7) thru 1.313(33.4) Maximum clearance 0.024(0.6) for die at punch range maximum			POHCOA*	D2HC00*	POHC_A*	D2HC_0*
D	ROUND AND OVAL over 1.438(36.5) thru 1.938(49.2) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 1.313(33.4) thru 1.750(44.5) Maximum clearance 0.024(0.6) for die at punch range maximum			POHDOA*	D2HD00*	POHD_A*	D2HD_0*
E	ROUND AND OVAL over 1.938(49.2) thru 2.438(61.9) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 1.750(44.5) thru 2.125(54.0) Maximum clearance 0.024(0.6) for die at punch range maximum			POHE0A*	D2HE00*	POHE_A*	D2HE_0*
F	ROUND AND OVAL over 2.438(61.9) thru 2.938(74.6) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 2.125(54.0) thru 2.750(69.9) Maximum clearance 0.024(0.6) for die at punch range maximum			POHFOA*	D2HF00*	POHF_A*	D2HF_0*
G	ROUND AND OVAL over 2.938(74.6) thru 3.438(87.3) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 2.750(69.9) thru 3.250(82.6) Maximum clearance 0.024(0.6) for die at punch range maximum			POHGOA*	D2HG00*	POHG_A*	D2HG_0*
H	ROUND AND OVAL over 3.438(87.3) thru 4.000(101.6) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 3.250(82.6) thru 3.750(95.3) Maximum clearance 0.024(0.6) for die at punch range maximum			POHH0A*	D2HH00*	POHH_A*	D2HH_0*
J	ROUND AND OVAL over 4.000(101.6) thru 4.625(117.5) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 3.750(95.3) thru 4.385(111.1) Maximum clearance 0.024(0.6) for die at punch range maximum			POHJOA*	D2HJ00*	POHJ_A*	D2HJ_0*
K	ROUND AND OVAL over 4.625(117.5) thru 5.250(133.3) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 4.385(111.1) thru 5.125(130.2) Maximum clearance 0.024(0.6) for die at punch range maximum			POHKO A*	D2HK00*	POHK_A*	D2HK_0*
L	ROUND AND OVAL over 5.250(133.3) thru 5.750(146.0) Maximum clearance 0.054(1.4) for die at punch range maximum	RECTANGLE AND SQUARE over 5.125(130.2) thru 5.625(142.9) Maximum clearance 0.024(0.6) for die at punch range maximum			POHLOA*	D2HL00*	POHL_A*	D2HL_0*

*Add punch sizes as final digits of complete part number. Fifth character represents shape.

STANDARD SHAPES:

rectangle square quad "D" round hexagon octagon oval single "D" double "D" triangle diamond



[Dimensions in Inches(mm)]

See page 52
for Add-Ons

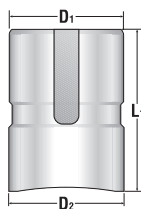
114 HEAVY DUTY STYLE PUNCHES, STRIPPERS, AND DIES CRITICAL DIMENSIONS

10

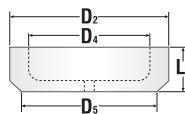
CRITICAL DIMENSIONS

LEGEND
D1 - Punch Shank Diameter
D2 - Outside Diameter - OD
D3 - Maximum Station Range
D4 - Inside Diameter - ID
D5 - Stripper Face Diameter
L1 - Overall Length/Height

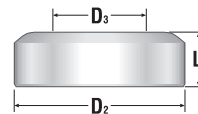
PUNCH DIMENSIONS



STRIPPER DIMENSIONS



DIE DIMENSIONS



STATION

114 HEAVY DUTY STYLE PUNCH

	D1	D2 - DIAMETERS*	D2 - DIAGONALS*	L1	
B	1.063(27.0)	0.938(23.8)	0.813(20.7)	4.000(101.6)	114 Heavy Duty Punches • 1° back taper per side to improve stripping • 0.031(0.8) radius on 90° angles to improve corner strength • D-L station rooftop shear to reduce punching force • Squares made without shear to reduce lateral movement
C	1.313(33.4)	1.438(36.5)	1.313(33.4)	4.063(103.2)	
D	1.750(44.5)	1.938(49.2)	1.750(44.5)	3.563(90.5)	
E	2.500(63.5)	2.438(61.9)	2.125(54.0)	3.625(92.1)	
F	2.500(63.5)	2.938(74.6)	2.750(69.9)	3.625(92.1)	
G	4.125(104.8)	3.438(87.3)	3.250(82.6)	3.625(92.1)	
H	4.125(104.8)	4.000(101.6)	3.750(95.3)	3.625(92.1)	
J	4.125(104.8)	4.625(117.5)	4.385(111.1)	3.625(92.1)	
K	5.375(136.5)	5.250(133.3)	5.125(130.2)	3.625(92.1)	
L	5.375(136.5)	5.750(146.0)	5.625(142.9)	3.625(92.1)	

URETHANE STRIPPER

	D2	D4	D5	L1	
B	1.970(50.0)	1.060(26.9)	1.130(28.7)	2.250(57.2)	
C	2.500(63.5)	1.750(44.5)	1.720(43.7)	2.310(58.7)	
D	3.000(76.2)	1.970(50.0)	2.220(56.4)	2.090(53.1)	
E	4.000(101.6)	2.970(75.4)	2.910(73.9)	2.090(53.1)	
F	4.000(101.6)	2.970(75.4)	3.280(83.3)	2.090(53.1)	
G	5.160(131.1)	4.340(110.2)	3.770(95.8)	2.090(53.1)	
H	5.160(131.1)	4.340(110.2)	4.530(115.1)	2.090(53.1)	
J	5.810(147.6)	4.720(119.9)	5.340(135.6)	2.090(53.1)	
K	6.630(168.4)†	5.720(145.3)†	6.380(162.1)**	2.090(53.1)	

114 HEAVY DUTY STYLE DIE

	D2	D3 - DIAMETERS*	D3 - DIAGONALS*	L1	
B	1.563(39.7)	0.992(25.2)*	0.837(21.3)*	1.125(28.6)	114 Heavy Duty Dies • 3° hold down flat standard • Stress Free Relief™ for added strength • SLUG FREE® die design for positive slug control
C	2.250(57.2)	1.492(37.9)*	1.337(34.0)*	1.125(28.6)	
D	2.750(69.9)	1.992(50.6)*	1.774(45.1)*	1.125(28.6)	
E	3.500(88.9)	2.492(63.3)*	2.149(54.6)*	1.125(28.6)	
F	4.000(101.6)	2.992(76.0)*	2.774(70.5)*	1.125(28.6)	
G	4.500(114.3)	3.492(88.7)*	3.274(83.2)*	1.125(28.6)	
H	5.250(133.4)	4.054(103.0)*	3.774(95.9)*	1.125(28.6)	
J	6.000(152.4)	4.679(118.9)*	4.409(112.0)*	1.125(28.6)	
K	7.000(177.8)	5.304(134.4)*	5.149(130.8)*	1.125(28.6)	
L	7.500(190.5)	5.804(147.5)*	5.649(143.5)*	1.125(28.6)	Recommended Total Die Clearance : 15-25% of material thickness up to 0.188(4.8). 25-35% of material thickness more than 0.188(4.8).



*** Total Die Clearance Maximums:**

Diameters - Standard Rounds, Ovals,
 'D's, 'DD's, - 0.054(1.4)

Diagonals - Standard Squares,
 Rectangles - 0.024(0.6)

**** K station stripper - rectangle**

D5 - 6.000(152.4)

† K station Magnum 5000 stripper

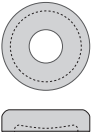
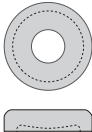
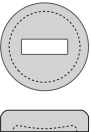
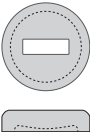
D2 - 6.330(160.8)

D4 - 5.630(143.0)

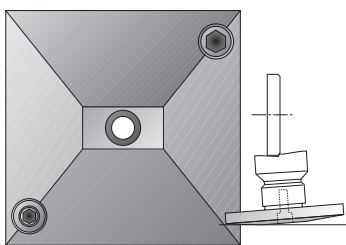
[Dimensions in Inches(mm)]



112 SYSTEM PUNCHES AND DIES

		ROUND			SHAPES		
							
STATION AND RANGE		PUNCH	112 DIE	112 SLUG FREE® DIE	PUNCH	112 DIE	112 SLUG FREE® DIE
A	thru 0.344(8.7) rounds only	P02A0A*	D02A00**	D0RA00**		D02A_0**	D0RA_0**
B	thru 1.000(25.4)	P02B0A*	D02B00*	D0RB00*	P02B_A*	D02B_0*	D0RB_0*
C	over 1.000(25.4) thru 1.500(38.1)	P02C0A*	D02C00*	D0RC00*	P02C_A*	D02C_0*	D0RC_0*
D	over 1.500(38.1) thru 2.000(50.8)	P02D0A*	D02D00*	D0RD00*	P02D_A*	D02D_0*	D0RD_0*
E	over 2.000(50.8) thru 2.500(63.5)	P02E0A*	D02E00*	D0RE00*	P02E_A*	D02E_0*	D0RE_0*
F	over 2.500(63.5) thru 3.125(79.4)	P02F0A*	D02F00*	D0RF00*	P02F_A*	D02F_0*	D0RF_0*
G	over 3.125(79.4) thru 3.500(88.9)	P02G0A*	D02G00*	D0RG00*	P02G_A*	D02G_0*	D0RG_0*

112/114 SYSTEM MISCELLANEOUS ACCESSORIES



112/114 PUNCH SHARPENING FIXTURE
TS0000

*Add punch sizes as final digits of complete part number. Fifth character represents shape.

**A station die is 1.062(26.97) outside diameter. Some presses can use A station punches with B station dies.

See page 52
for Add-Ons

STANDARD SHAPES:



[Dimensions in Inches(mm)]



112 STYLE PUNCHES, STRIPPERS, AND DIES CRITICAL DIMENSIONS

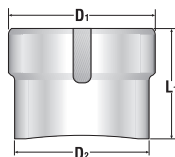
12

CRITICAL DIMENSIONS

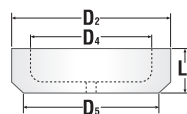
LEGEND

D1 - Punch Shank Diameter
D2 - Outside Diameter - OD
D3 - Maximum Station Range
D4 - Inside Diameter - ID
D5 - Stripper Face Diameter
L1 - Overall Length/Height

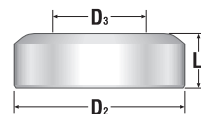
PUNCH DIMENSIONS

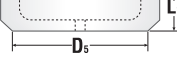


STRIPPER DIMENSIONS



DIE DIMENSIONS



STATION	D4 - Inside Diameter - ID					
	D5 - Stripper Face Diameter					
L1 - Overall Length/Height						
	D1	D2	L1			
112 STYLE PUNCH	A**	0.563(14.3)	0.344(8.7)	1.813(46.1)		
	B	0.625(15.9)	1.000(25.4)	2.813(71.5)		
	C	0.938(23.8)	1.500(38.1)	3.156(80.2)		
	D	1.625(41.3)	2.000(50.8)	2.063(52.4)		
	E	2.750(69.9)	2.500(63.5)	2.063(52.4)		
	F	2.750(69.9)	3.125(79.4)	2.063(52.4)		
	G	3.125(79.4)	3.500(88.9)	2.063(52.4)		
	D2	D4	D5	L1		
URETHANE STRIPPER	B	2.000(50.8)	0.970(25.0)	1.160(29.5)	1.840(46.7)	
	C	2.500(63.5)	1.470(37.3)	1.720(43.7)	2.060(52.3)	
	D	3.000(76.2)	1.970(50.0)	2.220(56.4)	1.500(38.1)	
	E	4.280(108.7)	3.090(78.5)	2.910(73.9)	1.500(38.1)	
	F	4.280(108.7)	3.090(78.5)	3.690(93.7)	1.500(38.1)	
	G	4.780(121.4)	3.490(88.7)	4.190(106.0)	1.500(38.1)	
		D2	D3	L1		
112 STYLE DIE	A**	1.563(39.7)	0.344(8.7)*	0.594(15.1)		
	B	1.563(39.7)	1.000(25.4)*	0.594(15.1)		
	C	2.250(57.2)	1.500(38.1)*	0.594(15.1)		
	D	2.750(69.9)	2.000(50.8)*	0.750(19.1)		
	E	3.500(88.9)	2.500(63.5)*	0.750(19.1)		
	F	4.250(108.0)	3.125(79.4)*	0.750(19.1)		
	G	4.750(120.7)	3.500(88.9)*	0.750(19.1)		

* Total Die Clearance Maximums:

Rounds, Ovals, 'D', 'DD' - 0.054(1.4)

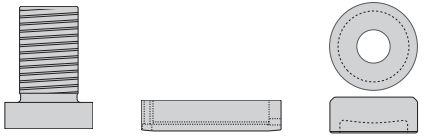
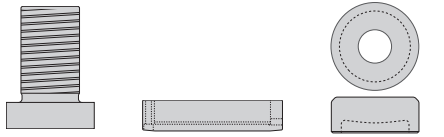
Squares, Rectangles - 0.024(0.6)

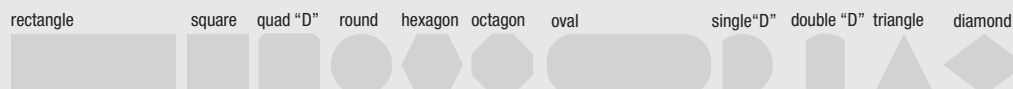
**A station - Rounds Only

[Dimensions in Inches(mm)]



VULCAN SYSTEM PUNCHES, STRIPPERS, AND DIES

ROUND				SHAPES		
 STATION AND RANGE	 PUNCH STRIPPER VULCAN SLUG FREE® DIE			 PUNCH STRIPPER VULCAN SLUG FREE® DIE		
X thru 0.500(12.7) rounds only	PAWX0A*	SOWX0A*	DOWB00*			
AB thru 0.984(25.0) LONG-4.741**	PAWA0A*	SOWB0A*	DOWB00*	PAWA_A*	SOWB_A*	DOWB_0*
B thru 0.984(25.0) SHORT-1.985**	PAWB0A*	SOWB0A*	DOWB00*	PAWB_A*	SOWB_A*	DOWB_0*
C over 0.984(25.0) thru 1.496(38.0)	PAWC0A*	SOWC0A*	DOWC00*	PAWC_A*	SOWC_A*	DOWC_0*
D over 1.496(38.0) thru 2.008(51.0)	PAWD0A*	SOWD0A*	DOWD00*	PAWD_A*	SOWD_A*	DOWD_0*
E over 2.008(51.0) thru 2.500(63.5)	PAWE0A*	SOWE0A*	DOWE00*	PAWE_A*	SOWE_A*	DOWE_0*
F over 2.500(63.5) thru 2.992(76.0)	PAWF0A*	SOWF0A*	DOWF00*	PAWF_A*	SOWF_A*	DOWF_0*
F VARISTATION over 2.500(63.5) thru 2.992(76.0)	PAWF0A*	SOWVOA*	DOWF00*	PAWF_A*	SOWV_A*	DOWF_0*
G over 2.992(76.0) thru 3.500(88.9)	PAWG0A*	SOWG0A*	DOWG00*	PAWG_A*	SOWG_A*	DOWG_0*
H over 3.500(88.9) thru 4.125(104.8)	PAWH0A*	SOWH0A*	DOWH00*	PAWH_A*	SOWH_A*	DOWH_0*
J over 4.125(104.8) thru 4.764(121.0)	PAWJ0A*	SOWJ0A*	DOWJ00*	PAWJ_A*	SOWJ_A*	DOWJ_0*
K over 4.764(121.0) thru 5.500(139.7)	PAWK0A*	SOWK0A*	D2WK00*	PAWK_A*	SOWK_A*	D2WK_0*
L over 5.500(139.7) thru 5.984(152.0)	PAWL0A*	SOWL0A*	D2WL00*	PAWL_A*	SOWL_A*	D2WL_0*

Stripper Bolt M4 x 25 - All Stations **SHC11914*****See page 52
for Add-Ons**STANDARD SHAPES:**

[Dimensions in Inches(mm)]

* Add punch sizes as final digits of complete part number. Fifth character represents shape.

** Overall Length

*** Minimum quantity required



VULCAN STYLE PUNCHES, STRIPPERS, AND DIES CRITICAL DIMENSIONS

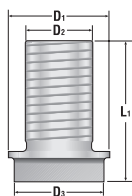
14

CRITICAL DIMENSIONS

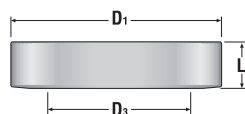
LEGEND

- D1** - Outside Diameter - OD
D2 - Punch Shank Diameter
D3 - Maximum Station Range
L1 - Overall Length/Height

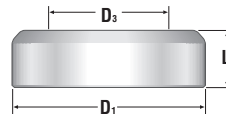
PUNCH DIMENSIONS



STRIPPER DIMENSIONS



DIE DIMENSIONS



VULCAN STYLE PUNCH

STATION

	D1	D2	D3	L1
X**	0.708(18.0)	0.713(18.1)	0.500(12.7)	2.004(50.9)
B	1.023(26.0)***	1.023(26.0)***	0.984(25.0)	1.985(50.4)***
C	1.516(38.5)	1.023(26.0)	1.496(38.0)	4.139(105.1)
D	2.028(51.5)	1.260(32.0)	2.008(51.0)	4.233(107.5)
E	3.012(76.5)	1.968(50.0)	2.500(63.5)	4.233(107.5)
F	3.012(76.5)	1.968(50.0)	2.992(76.0)	4.233(107.5)
G	4.784(121.5)	2.953(75.0)	3.500(88.9)	4.233(107.5)
H	4.784(121.5)	2.953(75.0)	4.125(104.8)	4.233(107.5)
J	4.784(121.5)	2.953(75.0)	4.764(121.0)	4.233(107.5)
K	6.004(152.5)	4.134(105.0)	5.500(139.7)	4.233(107.5)
L	6.004(152.5)	5.134(130.4)	5.984(152.0)	5.233(132.9)

VULCAN STYLE STRIPPER

	D1	D3	L1
X**	1.614(41.0)	0.500(12.7)	0.870(22.1)
B	1.949(49.5)	0.984(25.0)	0.970(24.6)***
C	2.748(69.8)	1.496(38.0)	0.870(22.1)
D	3.071(78.0)	2.008(51.0)	0.964(24.5)
E	4.212(107.0)	2.500(63.5)	0.964(24.5)
F	4.212(107.0)†	2.992(76.0)	0.964(24.5)†
G	5.872(148.0)	3.500(88.9)	0.964(24.5)
H	5.872(148.0)	4.125(104.8)	0.964(24.5)
J	5.872(148.0)	4.764(121.0)	0.964(24.5)
K	6.732(171.0)	5.500(139.7)	0.996(25.3)
L	6.732(171.0)	5.984(152.0)	0.996(25.3)

VULCAN STYLE DIE

	D1	D3	L1
X**	1.563(39.7)	0.500(12.7)*	1.125(28.6)
B	1.563(39.7)	0.984(25.0)*	1.125(28.6)
C	2.250(57.2)	1.496(38.0)*	1.125(28.6)
D	2.750(69.9)	2.008(51.0)*	1.125(28.6)
E	3.500(88.9)	2.500(63.5)*	1.125(28.6)
F	4.000(101.6)	2.992(76.0)*	1.125(28.6)
G	4.500(114.3)	3.500(88.9)*	1.125(28.6)
H	5.250(133.4)	4.125(104.8)*	1.125(28.6)
J	6.000(152.4)	4.764(121.0)*	1.125(28.6)
K	7.000(177.8)	5.500(139.7)*	1.125(28.6)
L	7.500(190.5)	5.984(152.0)*	1.125(28.6)

* Total Die Clearance Maximums:
Rounds, Ovals, 'D', 'DD' - 0.054(1.4)
Squares, Rectangles - 0.024(0.6)

**X station - Rounds Only

*** Station AB -
Long Punch:
D1 - 1.004(25.5)
D2 - 0.744(18.9)
L1 - 4.741(120.4)

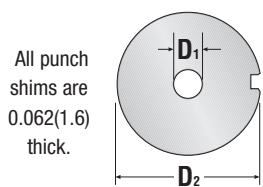
*** Station AB -
Stripper:
L1 - 0.870(22.1)

† Station F -
VARISTATION
Stripper
D1 - 3.858(98.0)
L1 - 0.622(15.8)

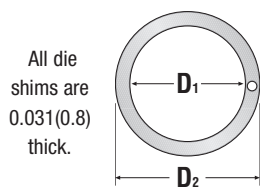
[Dimensions in Inches(mm)]



114 SYSTEM PUNCH AND DIE SHIMS



**114
PUNCH SHIM
PACKAGE**

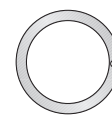


**114/MARATHON®
DIE SHIM
PACKAGE**



**114 KIT
PUNCH/DIE SHIM
PIECE COUNT**

Punch shims not required
with MARATHON® system



**MARATHON® KIT
DIE SHIM
PIECE COUNT**

STATION

A Quantity bag of 24
Shim D₁ 0.53(13.5)
Shim D₂ 1.03(26.2) **PS4B**

B Quantity bag of 24
Shim D₁ 0.53(13.5) **PS4B** bag of 12
Shim D₂ 1.03(26.2) 1.15(29.2) **DS6B**
1.54(39.1)

C Quantity bag of 24
Shim D₁ 0.53(13.5) **PS4C** bag of 12
Shim D₂ 1.28(32.5) 1.65(41.9) **DS6C**
2.23(56.6)

D Quantity bag of 12
Shim D₁ 0.53(13.5) **PS4D** bag of 12
Shim D₂ 1.72(43.7) 2.15(54.6) **DS6D**
2.73(69.3)

E Quantity bag of 12
Shim D₁ 0.53(13.5) **PS4F** bag of 12
Shim D₂ 2.47(62.7) 2.77(70.4) **DS6E**
3.48(88.4)

F Quantity bag of 12
Shim D₁ 0.53(13.5) **PS4F** bag of 12
Shim D₂ 2.47(62.7) 3.15(80.0) **DS4F**
3.98(101.1)

G Quantity bag of 12
Shim D₁ 0.78(19.8) **PS4J** bag of 6
Shim D₂ 4.09(103.9) 3.65(92.7) **DS4G**
4.48(113.8)

H Quantity bag of 12
Shim D₁ 0.78(19.8) **PS4J** bag of 6
Shim D₂ 4.09(103.9) 4.28(108.7) **DS4H**
5.23(132.8)

J Quantity bag of 12
Shim D₁ 0.78(19.8) **PS4J** bag of 6
Shim D₂ 4.09(103.9) 4.90(124.5) **DS4J**
5.98(151.9)

K Quantity bag of 6
Shim D₁ 0.78(19.8) **PS4L** bag of 6
Shim D₂ 5.34(135.6) 5.65(143.5) **DS4K**
6.98(177.3)

L Quantity bag of 6
Shim D₁ 0.78(19.8) **PS4L** bag of 6
Shim D₂ 5.34(135.6) 6.15(156.2) **DS4L**
7.48(190.0)

STATION

A A Station
order B Package A Station
order B Package

B 60 A Station
B Station Die Shim 60 B Station
Punch Shim Die Shim

C 24 C Station
C Station Die Shim 12 C Station
Punch Shim Die Shim

D 12 D Station
D Station Die Shim 12 D Station
Punch Shim Die Shim

E 6 E Station
E Station Die Shim 12 E Station
Punch Shim Die Shim

F 6 F Station
F Station Die Shim 12 F Station
Punch Shim Die Shim

G 4 G Station
G Station Die Shim 6 G Station
Punch Shim Die Shim

H 4 H Station
H Station Die Shim 6 H Station
Punch Shim Die Shim

J 4 J Station
J Station Die Shim 6 J Station
Punch Shim Die Shim

120
Total

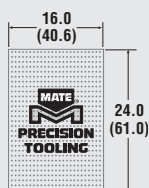
126
Total

PK4J
246 piece
package

126
Total

PKMJ
126 piece
package

SHIM ORGANIZER PEGBOARD...



NOTE:

Package PK4J and PKMJ
includes pegboard, shim hooks
and miscellaneous hardware
necessary to set
up the shim organizer.

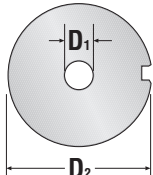
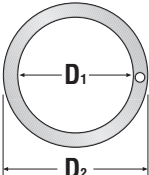
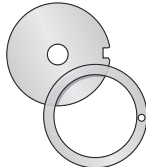


[Dimensions in Inches(mm)]

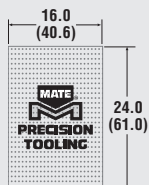
112 SYSTEM PUNCH AND DIE SHIMS

16

112 SYSTEM PUNCH AND DIE SHIMS

STATION	 112 PUNCH SHIM PACKAGE		 112 DIE SHIM PACKAGE		 112 KIT PUNCH/DIE SHIM PIECE COUNT	
	Quantity		Quantity			
A	bag of 24		bag of 12		A	48
	Shim D ¹ 0.34(8.6)	PS2B	0.69(17.5)	DS2A	B Station	A Station
	Shim D ² 0.59(15.0)		1.04(26.4)		Punch Shim	Die Shim
B	bag of 24		bag of 12		B	48
	Shim D ¹ 0.34(8.6)	PS2B	1.15(29.2)	DS6B	B Station	B Station
	Shim D ² 0.59(15.0)		1.54(39.1)		Punch Shim	Die Shim
C	bag of 24		bag of 12		C	24
	Shim D ¹ 0.34(8.6)	PS2C	1.65(41.9)	DS6C	C Station	C Station
	Shim D ² 0.90(22.9)		2.23(56.6)		Punch Shim	Die Shim
D	bag of 12		bag of 12		D	12
	Shim D ¹ 0.34(8.6)	PS2D	2.15(54.6)	DS6D	D Station	D Station
	Shim D ² 1.59(40.4)		2.73(69.3)		Punch Shim	Die Shim
E	bag of 12		bag of 12		E	6
	Shim D ¹ 0.34(8.6)	PS2F	2.77(70.4)	DS6E	E Station	E Station
	Shim D ² 2.72(69.1)		3.48(88.4)		Punch Shim	Die Shim
F	bag of 12		bag of 12		F	6
	Shim D ¹ 0.34(8.6)	PS2F	3.25(82.6)	DS2F	F Station	F Station
	Shim D ² 2.72(69.1)		4.23(107.4)		Punch Shim	Die Shim
G	bag of 12		bag of 6		96 96 Total Total PK2F 192 piece package	
	Shim D ¹ 0.34(8.6)	PS2G	3.65(92.7)	DS2G		
	Shim D ² 3.09(78.5)		4.73(120.1)			
H	bag of 12		bag of 6			
	Shim D ¹ 0.54(13.6)	PS2H	4.19(106.3)	DS2H		
	Shim D ² 3.48(88.3)		5.09(129.3)			

SHIM ORGANIZER PEGBOARD...



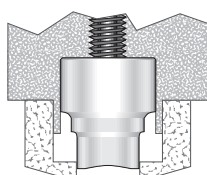
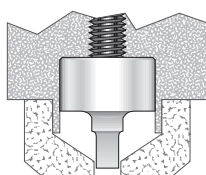
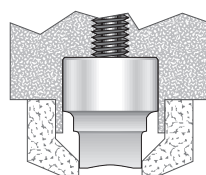
NOTE:

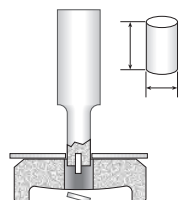
Package PK2F includes pegboard, shim hooks and miscellaneous hardware necessary to set up the shim organizer.

[Dimensions in Inches(mm)]



114 SYSTEM URETHANE STRIPPERS

			Urethane Stripper Profile for Round Punches - Thicker Walls				Urethane Stripper Profile for Rectangle Punches - Two Walls Reinforced				Urethane Stripper Profile for Square Punches - Four Walls Reinforced
STATION	SHAPE OPTION	SHORE HARDNESS: 92dA (standard)	less 15% quantities 12 or more	STATION	SHAPE OPTION	SHORE HARDNESS: 70dA	less 15% quantities 12 or more				
A	STANDARD	U4A562		A	STANDARD	U4B7					
B	STANDARD MOTORUM 2000 MAGNUM 2125 VECTRUM 3000α	U4B9 U4X9		B	STANDARD MOTORUM 2000 MAGNUM 2125 VECTRUM 3000α	U4B7 U4X7					
C	STANDARD	U4C9		C	STANDARD	U4C7					
D	STANDARD RECTANGLE 1" SQUARE	U4D9 U4DR59 U4DSQ9		D	STANDARD RECTANGLE 1" SQUARE	U4D7 U4DR57 U4DSQ7					
E	STANDARD RECTANGLE	U4E9 U4ER59		E	STANDARD RECTANGLE	U4E7 U4ER57					
F	STANDARD RECTANGLE 2" SQUARE	U4F9 U4FR59 U4FSQ9		F	STANDARD RECTANGLE 2" SQUARE	U4F7 U4FR57 U4FSQ7					
G	STANDARD RECTANGLE 2" SQUARE	U4G9 U4GR59 U4GSQ9		G	STANDARD RECTANGLE 2" SQUARE	U4G7 U4GR57 U4GSQ7					
H	STANDARD RECTANGLE	U4H9 U4HR59		H	STANDARD RECTANGLE	U4H7 U4HR57					
J	STANDARD RECTANGLE	U4J9 U4JR59		J	STANDARD RECTANGLE	U4J7 U4JR57					
K	STANDARD RECTANGLE MAGNUM 5000 VECTRUM 5000	U4K9 U4KR59 U4KM		K	STANDARD RECTANGLE	U4K7 U4KR57					
FOR MURATA MANUFACTURED PUNCH HOLDERS				FOR MURATA MANUFACTURED PUNCH HOLDERS							
B	STANDARD	WS0BB4UU		B	STANDARD	WS0BB3UU					
XB	STANDARD	WS0BB1UU		XB	STANDARD	WS0BB2UU					



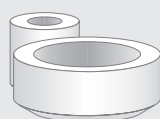
114 SYSTEM SLUG SHEDDERS

SMALL SLUG SHEDDERS 0.078(2.0) (50 minimum)

USE078

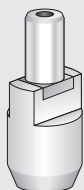
LARGE SLUG SHEDDERS 0.250(6.4) (50 minimum)

USE250



PUSH-ON STYLE STRIPPERS
When ordering specify machine model and station

[Dimensions in Inches(mm)]



CUSTOM MOLDED STYLE STRIPPERS
Stripper is molded directly on the punch and is specified with the punch. Also specify angle setting and whether radial or tangent orientation.

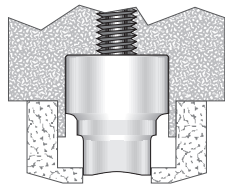
Radial Orientation Tangent Orientation



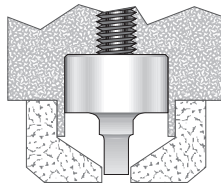
112 SYSTEM URETHANE STRIPPERS

18

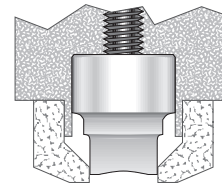
112 SYSTEM URETHANE STRIPPERS



Urethane Stripper Profile for Round Punches - Thicker Walls

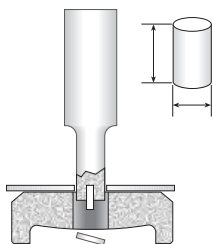


Urethane Stripper Profile for Rectangle Punches - Two Walls Reinforced



Urethane Stripper Profile for Square Punches - Four Walls Reinforced

STATION	SHAPE OPTION	SHORE HARDNESS: 92dA (standard)	less 15% quantities 12 or more	STATION	SHAPE OPTION	SHORE HARDNESS: 70dA	less 15% quantities 12 or more
A	STANDARD	U2A187		A			
	STANDARD	U2A250					
	STANDARD	U2A312					
	STANDARD	U2A343					
	STANDARD	U2A375					
B	STANDARD	U2B9		B	STANDARD	U2B7	
	MOTORUM 2000				MOTORUM 2000		
	MAGNUM 2125	U2X9			MAGNUM 2125	U2X7	
	VECTRUM 3000 α				VECTRUM 3000 α		
C	STANDARD	U2C9		C	STANDARD	U2C7	
D	STANDARD	U2D9		D	STANDARD	U2D7	
	RECTANGLE	U2DR59			RECTANGLE	U2DR57	
	1" SQUARE	U2DSQ9			1" SQUARE	U2DSQ7	
E	STANDARD	U2E9		E	STANDARD	U2E7	
	RECTANGLE	U2ER59			RECTANGLE	U2ER57	
F	STANDARD	U2F9		F	STANDARD	U2F7	
	RECTANGLE	U2FR59			RECTANGLE	U2FR57	
	2" SQUARE	U2FSQ9			2" SQUARE	U2FSQ7	
G	STANDARD	U2G9		G	STANDARD	U2G7	
	RECTANGLE	U2GR59			RECTANGLE	U2GR57	



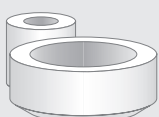
112 SYSTEM SLUG SHEDDERS

SMALL SLUG SHEDDERS 0.078(2.0) (50 minimum)

USE078

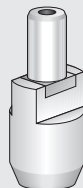
LARGE SLUG SHEDDERS 0.250(6.4) (50 minimum)

USE250



PUSH-ON STYLE STRIPPERS

When ordering specify machine model and station



CUSTOM MOLDED STYLE STRIPPERS

Stripper is molded directly on the punch and is specified with the punch. Also specify angle setting and whether radial or tangent orientation.

Radial Orientation Tangent Orientation



Front of Press



Front of Press

[Dimensions in Inches(mm)]



VARITOOL PUNCHES, STRIPPERS, AND DIES



12 Station VARITOOL
12 - MT500 Punches



10 Station VARITOOL
4 - MT750 Punches
6 - MT500 Punches

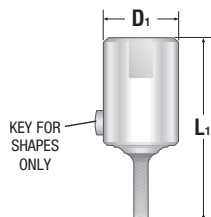


8 Station VARITOOL
8 - MT750 Punches



6 Station VARITOOL
6 - MT1000 Punches

MT500™ PUNCHES AND SLUG FREE® DIES
Range 0.030 - 0.500(0.8 - 12.7)



PUNCH D1 0.562(14.3) L1 1.375(34.9)

MT500™ Punch

ROUND POVTOA*

SHAPES POVT_A*

Key - for Shapes

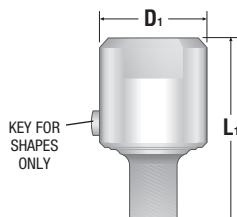
KPVT

Shim Assortment

VSVT12

bag of 36, 12 each of 0.015(0.38),
0.030(0.76) and 0.060(1.52)

MT750™ PUNCHES AND SLUG FREE® DIES
Range 0.030 - 0.750(0.8 - 19.1)



PUNCH D1 0.812(20.6) L1 1.375(34.9)

MT750™ Punch

ROUND POVVOA*

SHAPES POVV_A*

Key - for Shapes

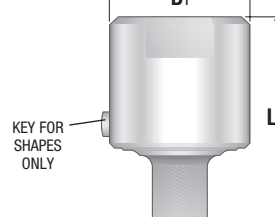
KPVT

Shim Assortment

VSVT08

bag of 24, 8 each of 0.015(0.38),
0.030(0.76) and 0.060(1.52)

MT1000™ PUNCHES AND SLUG FREE® DIES
Range 0.030 - 1.000(0.8 - 25.4)



PUNCH D1 1.063(27.0) L1 1.563(39.8)

MT1000™ Punch

ROUND POVWOA*

SHAPES POVW_A*

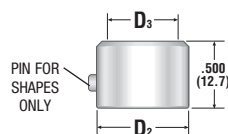
Key - for Shapes

KPVT

Shim Assortment

VSVT06

bag of 24, 8 each of 0.015(0.38),
0.030(0.76) and 0.060(1.52)



DIE D2 0.687(17.5) D3 0.530(13.5)

SLUG FREE® Die

ROUND DOVTO0*

SHAPES DOVT_0*

Pin - for Shapes

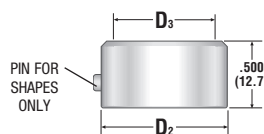
(10 minimum)

DPI16547**

Shim Assortment

MSVT12

bag of 36, 9 each of 0.004(0.10),
0.006(0.15), 0.008(0.20) and
0.020(0.51)



DIE D2 0.937(20.6) D3 0.780(19.8)

SLUG FREE® Die

ROUND DOVV00*

SHAPES DOVV_0*

Pin - for Shapes

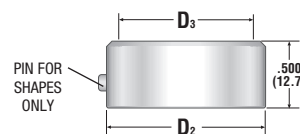
(10 minimum)

DPI16547**

Shim Assortment

MSVT08

bag of 24, 6 each of
0.004(0.10), 0.006(0.15),
0.008(0.20) and 0.020(0.51)



DIE D2 1.187(30.2) D3 1.030(26.2)

SLUG FREE® Die

ROUND DOVW00*

SHAPES DOVW_0*

Pin - for Shapes

(10 minimum)

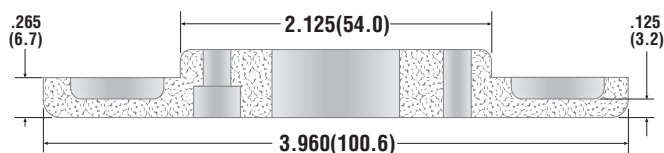
DPI16547**

Shim Assortment

MSVT06

bag of 24, 6 each of
0.004(0.10), 0.006(0.15),
0.008(0.20) and 0.020(0.51)

URETHANE STRIPPERS



12 STATION VARITOOL
U771436

10 STATION VARITOOL
U760967

8 STATION VARITOOL
U760954

6 STATION VARITOOL
U760936

MT™ punches and dies are capable of one setting per set. When ordering shapes specify 0°, 90° or special angle setting (die view).



**MAXIMUM PUNCHING
FORCE:**
5(44.5) tons(kiloNewtons)

**MAXIMUM MATERIAL
THICKNESS:**
0.134(3.4) mild steel

TOTAL PUNCH GRIND LIFE:
0.060(1.5) for up to 12
sharpenings

TOTAL DIE GRIND LIFE:
0.060(1.5) for up to 12
sharpenings

*Standard shapes
**Minimum quantity required

**See page 52
for Add-Ons**

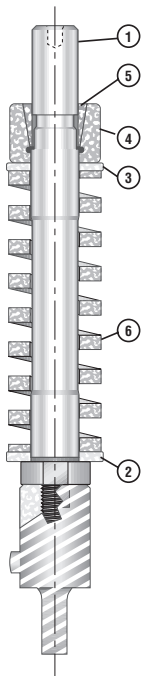
[Dimensions in Inches(mm)]

VARITool PUNCH STEM ASSEMBLY

20

VARITool PUNCH STEM ASSEMBLY

Punch **NOT** included with
Punch Stem Assembly



1 PUNCH STEM,
Centrum 2000

1 PUNCH STEM,
Centrum 3000

2 WASHER,
all assemblies

3 WASHER,
MT500 only

4 PUNCH BUSHING,
Centrum 2000

4 PUNCH BUSHING,
Centrum 3000

5 COTTER**

**6 COMPRESSION
SPRING**

STEM ASSEMBLY,
Centrum 2000
(compatible with
Centrum-2500)

STEM ASSEMBLY,
Centrum 3000
(compatible with
Centrum 3500,
Motorum 2000,
Vectrum 3000α)

MT500™ PUNCH STEM ASSEMBLY Range 0.030-0.500(0.8-12.7)	MT750™ PUNCH STEM ASSEMBLY Range 0.030-0.750(0.8-19.1)	MT1000™ PUNCH STEM ASSEMBLY Range 0.030-1.000(0.8-25.4)
XAV760772	XAV760946	XAV760925
XAV771585	XAV772052	XAV772032
WA771443	WA760948	WA760927
WA771444		
BU760741	BU760947	BU760926
BU771472	BU772053	BU772033
MIS59811	MIS59811	MIS59811
SPR33304	SPR33523	SPR33603
XAV760775	XAV760958	XAV760939
XAV771587	XAV772056	XAV772041

VARIMARK MARKING PUNCH SET

VARIMARK
MARKING
PUNCH

CENTRUM
2000
2500
3000
3500

MOTORUM
2000

VECTRUM
3000α
5000



ABCDEFGHIJKLMNOPQRSTUVWXYZ23456789&/.-()

ACTUAL SIZE

1.000(25.4)

"O" AND "I" ARE DUAL PURPOSE CHARACTERS

Full set of 40 punch inserts, size 0.094(2.4)

ANMS2MW

Individual characters (*designate character to complete part number)

ANMP2_*

Blank die anvil

DTN400

ABCDEFGHIJKLMNOPQRSTUVWXYZ23456789&/.-()

ACTUAL SIZE

1.000(25.4)

"O" AND "I" ARE DUAL PURPOSE CHARACTERS

Full set of 40 punch inserts, size 0.125(3.2)

ANMS3MW

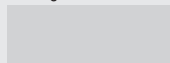
Individual characters (*designate character to complete part number)

ANMP3_*

VARIMARK punches are capable of only one setting. When ordering specify 0° or 90°.

STANDARD SHAPES:

rectangle



square



quad "D"



round



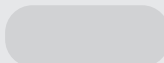
hexagon



octagon



oval



single "D"



double "D"



triangle



diamond



**Minimum quantity required

[Dimensions in Inches(mm)]

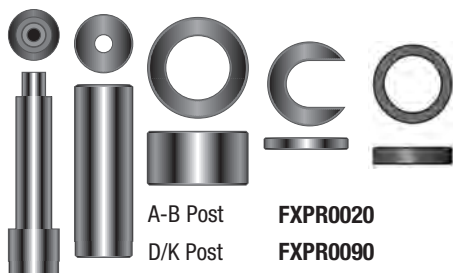


MATE MARATHON® MAINTENANCE FIXTURES AND TOOLS

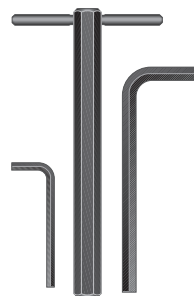


MARATHON® EJECTOR RETAINING RING ASSEMBLY TOOL

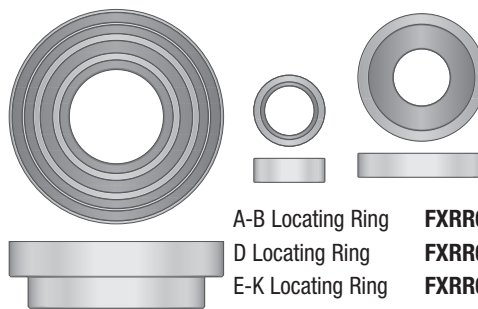
B Auto Index Set	FX20S
Plunger	FXPL0020
Guide Sleeve	FXG50020
D Auto Index Set	FX40S
Plunger	FXPL0040
Guide Sleeve	FXG50040
D-K Set	FX90S
D-K Plunger	FXPL0090
D-K Guide Sleeve	FXG50090



A-B Post	FXPR0020
D/K Post	FXPR0090
Lifter Cap	FXCR0000
"C" Washer	FXWR0000
Marathon Plus™ B Collar	MATE01143



1/4" Hex Wrench	ALW18964
3/8" Hex Wrench	ALW19000
B Station Length Adjustment Wrench	VPWR0020
C-K Station Length Adjustment Wrench	VPWR0090
Wrench Handle	FXHR0000
1/4-20 x 1/2" Socket Head Cap Screw	SHC09881*



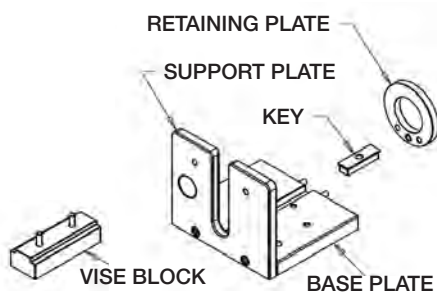
A-B Locating Ring	FXRR0020
D Locating Ring	FXRR0040
E-K Locating Ring	FXRR0090
Base Plate	FXBR0000

MARATHON PLUS™ ACCESSORIES

MARATHON PLUS™ TORQUE STAND

The Marathon Plus™ Torque Stand is **highly recommended** when changing a punch to avoid damaging the tang mechanism. It allows the punch holder to be held securely during punch installation. This convenient torque stand can be machine or vise mounted.

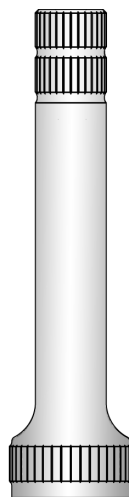
MATE01293



MARATHON PLUS™ TOOL

To assist with B and C Station Platen installation and removal.

MATE01894



MAINTENANCE FIXTURE

Marathon Plus™ punch holder assemblies require very little routine maintenance. However, every few months the punch-receiver/tang should be disassembled from the punch holder to be inspected and cleaned. Disassembly is accomplished using this maintenance fixture.

FXAR0000



*Minimum quantity required



[Dimensions in Inches(mm)]

MATE MARATHON® REPLACEMENT KITS

22

MATE MARATHON® REPLACEMENT KITS

MARATHON PLUS™ TANG CONVERSION KIT

Tang conversion kits allow existing MARATHON® punch holders to be converted to use the new Marathon Plus™ external length adjustment mechanism.

Station	MARATHON® Punch Holder	Marathon Plus™ Punch Holder	Use Tang Kit
B Inner Track - Magnum 5000	VAMR5M2250	MATE01144	MATE01142
B, B Inner Track - Vectrum, Motorum	VAMB5V2250 VAMB5M2250	MATE01141	MATE01142
XB round only - Vectrum, Motorum	VAMB5V1692	MATE01159	MATE01158
C, D - Vectrum, Motorum, Magnum 5000 with max. Diag. 1.500(38.10)	VAMD5V3125 VAMD5M3125	MATE01090	MATE01088
C, D - Vectrum, Motorum, Magnum 5000 with max. Diag. 2.000(50.80)	VAMD5V3375 VAMD5M3375	MATE01132	MATE01088
D Auto-Index - Magnum 5000	VAMX5M3375	MATE01145	MATE01088
D Varistation - Vectrum, Motorum	VAMD5V4172AV	MATE01091	MATE01088
E, F - Motorum 5.938(150.83) Upper Turret Bore Diameter	VAMF5V5938	MATE01137	MATE01135
E, F - Vectrum, Motorum, Magnum 5000	VAMF5V4562 VAMF5M4562	MATE01136	MATE01135
G, H - Vectrum, Motorum, Magnum 5000 with 5.938(150.83) Upper Turret Bore Diameter	VAMH5V5938 VAMH5M5938	MATE01154	MATE01149
G, H - Magnum 5000	VAMH5M6750	MATE01155	MATE01149
J - Magnum 5000 with 6.750(171.45) Upper Turret Bore Diameter	VAMJ5M6750	MATE01300	MATE01301
J - Vectrum, Motorum, Magnum 5000	VAMJ5V5938	MATE01299	MATE01301

MARATHON® LOCK RING REPLACEMENT KITS

Station	Kit
B	MATE00595
C	MATE00596
D	MATE00597
F	MATE00598
F Varistation	MATE01148
H	MATE00599
J (With Outside Diameter slots)	MATE00600
J (No Outside Diameter slots)	MATE00601
K (With Outside Diameter slots)	MATE00602
K (No Outside Diameter slots)	MATE00603

[Dimensions in Inches(mm)]



*Minimum quantity required	Part Number	MACHINE STYLES							
		114 Style Centrum 1000, 2000, 2500, Magnum 1250	112 Style Centrum 1000, 2000, 2500, Magnum 1250	114 Style Centrum 3000, 3500, 34,36,40 Single Track	112 Style Centrum 3000, 3500, 34,36,40 Single Track	114 Style Centrum 3000, 3500, 54 Double Track	112 Style Centrum 3000, 3500, 54 Double Track	114 Style Magnum 2125	112 Style Magnum 2125
Marathon Punch Holder Springs:									
B Station (20 required per unit)	MIS61305*	●	●	●	●	●	●	●	●
XB Station (14 required per unit)	MIS61620*								
C/D Station (12 required per unit)	MIS61321*	●	●	●	●	●	●	●	●
F Varistation (10 required per unit)	MATE01099*								
E/F Station (10 required per unit)	MIS61356*	●	●	●	●	●	●	●	●
G/H Station (10 required per unit)	MIS61372*	●	●	●	●	●	●		
J Station (8 required per unit)	MIS61399*			●		●			
K Station (6 required per unit)	MIS61428*			●		●			
Thread Adapter:									
114D Varitool	VA4D771502	●	●	●	●				
114D Auto Index	VTAM000					●	●	●	●
Self Adhesive Urethane Stripper Pads for Marathon:									
B Station (bag of 6) 1.32(33.5) O.D.	SAMBSF	●	●	●	●	●	●	●	●
C/D Station (bag of 6) 2.56(65.0) O.D.	SAMDSF	●	●	●	●	●	●	●	●
E/F Station (bag of 6) 3.45(87.6) O.D.	SAMFSF	●	●	●	●	●	●	●	●
G/H Station (bag of 4) 4.59(116.6) O.D.	SAMHSF	●	●	●	●	●	●		
J Station (bag of 4) 5.22(132.6) O.D.	SAMJSF			●		●			
K Station (bag of 4) 5.94(150.9) O.D.	SAMKSF			●		●			
Punch Holder Keys:									
Internal 114	VKI4S000	●		●		●		●	
Internal 112	VKI2S000		●		●		●		●
Internal 112 B station	VKI2M000						●		
External 112 auto index	VKE4M000				●	●	●	●	●
External 112 auto index	VKE4M010		●						
External 114 auto index	VKE5C000			●		●	●		
External Varitool	VKE771430			●	●	●	●	●	●
External 112/114	VKE4S811			●	●	●	●	●	●
External 112/114 (B-G station)	VKE4S810	●	●						
External 112/114 Varistation	VKE760738	●	●						
External MATE MARATHON® (B-G station)	VKE4R000	●	●			●	●	●	●
External MATE MARATHON® (B-G station) for C-3000 and M-5000	VKE4R001			●	●	●	●	●	●
External MATE MARATHON® Varistation for C-3000	VKE771546			●	●			●	●
Punch Holder Retaining Screws:									
114 B-C station 1/2-12x2-1/2	SHC11199*			●		●		●	
114 D-L station 1/2-13x3	SHC11228*			●		●		●	
114 D station 1/2-13x3-1/2	SHC11244*							●	
114 1/2-13 x 2-1/4	SHC11180*	●							
Washer, 114	WAS17881*	●		●		●		●	
Washer, 112	WAS17849*		●		●		●		●
112 B station 5/16-18x3	SHC10348*				●		●		●
112 B-C station 5/16-18x2-1/2	SHC10313*		●		●		●	●	
112 D-F station 5/16-18x3-1/2	SHC10364*		●		●		●		●
M5 x 14	SHC12052*					●	●		

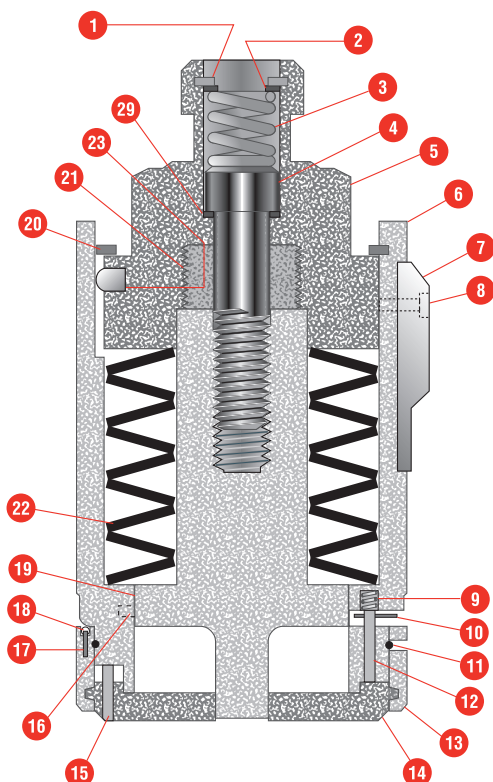
*Minimum quantity required	Part Number	MACHINE STYLES							
		114 Style Magnum 5000 Vectrum 5000 52 Station	112 Style Magnum 5000 Vectrum 5000 52 Station	114 Style Magnum 5000 36,46,60 Vectrum 5000 60 Station	112 Style Magnum 5000 36,46,60 Vectrum 5000 60 Station	114 Style Motorum 2000	112 Style Motorum 2000	114 Style Vectrum 3000	112 Style Vectrum 3000
Marathon Punch Holder Springs:									
B Station (20 required per unit)	MIS61305*	●	●	●	●	●	●	●	●
XB Station (14 required per unit)	MIS61620*					●	●	●	●
C/D Station (12 required per unit)	MIS61321*	●	●	●	●	●	●	●	●
F Varistation (10 required per unit)	MATE01099*					●		●	
E/F Station (10 required per unit)	MIS61356*	●	●	●	●	●	●	●	●
G/H Station (10 required per unit)	MIS61372*	●	●	●	●	●	●	●	●
J Station (8 required per unit)	MIS61399*	●		●				●	
K Station (6 required per unit)	MIS61428*	●		●					
Thread Adapter:									
114D Varitool	VA4D771502								
114D Auto Index	VTAM000	●	●	●	●	●	●	●	●
Self Adhesive Urethane Stripper Pads for Marathon:									
B Station (bag of 6) 1.32(33.5) O.D.	SAMBSF	●	●	●	●	●	●	●	●
C/D Station (bag of 6) 2.56(65.0) O.D.	SAMDSF	●	●	●	●	●	●	●	●
E/F Station (bag of 6) 3.45(87.6) O.D.	SAMFSF	●	●	●	●	●	●	●	●
G/H Station (bag of 4) 4.59(116.6) O.D.	SAMHSF	●	●	●	●	●	●	●	●
J Station (bag of 4) 5.22(132.6) O.D.	SAMJSF	●		●				●	
K Station (bag of 4) 5.94(150.9) O.D.	SAMKSF	●		●					
Punch Holder Keys:									
Internal 114	VK14S000	●		●		●		●	
Internal 112	VK12S000		●				●		●
Internal 112 B station	VK12M000				●				
External 112 auto index	VKE4M000	●	●	●	●	●	●	●	●
External 112 auto index	VKE4M010								
External 114 auto index	VKE5C000	●		●					
External Varitool	VKE771430					●	●	●	●
External 112/114	VKE4S811								
External 112/114 (B-G station)	VKE4S810								
External 112/114 Varistation	VKE760738								
External MATE MARATHON® (B-G station)	VKE4R000	●	●	●	●	●	●	●	●
External MATE MARATHON® (B-G station) for C-3000 and M-5000	VKE4R001	●	●	●	●				
External MATE MARATHON® Varistation for C-3000	VKE771546						●	●	●
Punch Holder Retaining Screws:									
114 B-C station 1/2-12x2-1/2	SHC11199*	●		●		●		●	
114 D-L station 1/2-13x3	SHC11228*	●							
114 D station 1/2-13x3-1/2	SHC11244*	●		●		●		●	
114 1/2-13 x 2-1/4	SHC11180*								
Washer, 114	WAS17881*	●		●		●		●	
Washer, 112	WAS17849*		●		●		●		●
112 B station 5/16-18x3	SHC10348*		●		●		●		●
112 B-C station 5/16-18x2-1/2	SHC10313*	●		●		●		●	
112 D-F station 5/16-18x3-1/2	SHC10364*		●		●		●		●
M5 x 14	SHC12052*	●	●	●	●				

*Minimum quantity required	Part Number	MACHINE STYLES							
		114 Style Centrum 1000, 2000, 2500, Magnum 1250	112 Style Centrum 1000, 2000, 2500, Magnum 1250	114 Style Centrum 3000, 3500, 34,36,40 Single Track	112 Style Centrum 3000, 3500, 34,36,40 Single Track	114 Style Centrum 3000, 3500, 54 Double Track	112 Style Centrum 3000, 3500, 54 Double Track	114 Style Magnum 2125	112 Style Magnum 2125
Locking Clamps:									
B station locking clamp for C-1000	MDC020	●	●						
C station locking clamp for C-1000	MDC030	●	●						
D station locking clamp for C-1000	MDC040	●	●						
B station locking clamp for C-3000	MDC023			●	●			●	●
C station locking clamp for C-3000	MDC033			●	●			●	●
D station locking clamp for C-3000	MDC043			●	●			●	●
B station locking clamp for M-5000	MDC025					●	●		
C station locking clamp for M-5000	MDC035					●	●		
D station locking clamp for M-5000	MDC045					●	●		
C Clamp:									
"C" clamp auto index	MDCAX	●	●	●	●	●	●	●	●
Locking Pins:									
114 Locking pin B, E-G station	MSP3C-01	●	●	●	●	●	●	●	●
Locking pin disc spring	MIS61460	●	●	●	●	●	●	●	●
Locking pin washer	MSP3C-03	●	●	●	●	●	●	●	●
Locking pin snap ring	MIS61487*	●	●	●	●	●	●	●	●
Cap Screws and Set Srews:									
M8 x 50 mm cap screw	SHC12095*	●	●					●	●
M8 x 65 mm cap screw	SHC12159*			●	●	●	●		
M8 x 12 mm set screw	SSS50198*	●	●	●	●	●	●	●	●
Wrenches:									
17 mm open end wrench	MIS60206	●	●					●	●
3/8" ratchet wrench	MIS60273			●	●	●	●		
5/32" hex wrench	ALW18921	●	●	●	●	●	●	●	●
17 mm socket	MARS			●	●	●	●		
5/16 allen wrench	ALW18980					●	●		
Ball Transfer:									
16 mm ball transfer	MIS97746					●	●		

*Minimum quantity required	Part Number	MACHINE STYLES							
		114 Style Magnum 5000 Vectrum 5000 52 Station	112 Style Magnum 5000 Vectrum 5000 52 Station	114 Style Magnum 5000 36,46,60 Vectrum 5000 60 Station	112 Style Magnum 5000 36,46,60 Vectrum 5000 60 Station	114 Style Motorum 2000	112 Style Motorum 2000	114 Style Vectrum 3000	112 Style Vectrum 3000
Locking Clamps:									
B station locking clamp for C-1000	MDC020								
C station locking clamp for C-1000	MDC030								
D station locking clamp for C-1000	MDC040								
B station locking clamp for C-3000	MDC023								
C station locking clamp for C-3000	MDC033								
D station locking clamp for C-3000	MDC043								
B station locking clamp for M-5000	MDC025	●	●	●	●				
C station locking clamp for M-5000	MDC035	●	●	●	●				
D station locking clamp for M-5000	MDC045	●	●	●	●				
C Clamp:									
"C" clamp auto index	MDCAX	●	●	●	●				
Locking Pins:									
114 Locking pin B, E-G station	MSP3C-01	●	●	●	●				
Locking pin disc spring	MIS61460	●	●	●	●				
Locking pin washer	MSP3C-03	●	●	●	●				
Locking pin snap ring	MIS61487*	●	●	●	●				
Cap Screws and Set Srews:									
M8 x 50 mm cap screw	SHC12095*								
M8 x 65 mm cap screw	SHC12159*	●	●	●	●				
M8 x 12 mm set screw	SSS50198*	●	●	●	●				
Wrenches:									
17 mm open end wrench	MIS60206								
3/8" ratchet wrench	MIS60273	●	●	●	●				
5/32" hex wrench	ALW18921	●	●	●	●				
17 mm socket	MARS	●	●	●	●				
5/16 allen wrench	ALW18980	●	●	●	●				
Ball Transfer:									
16 mm ball transfer	MIS97746	●	●	●	●				

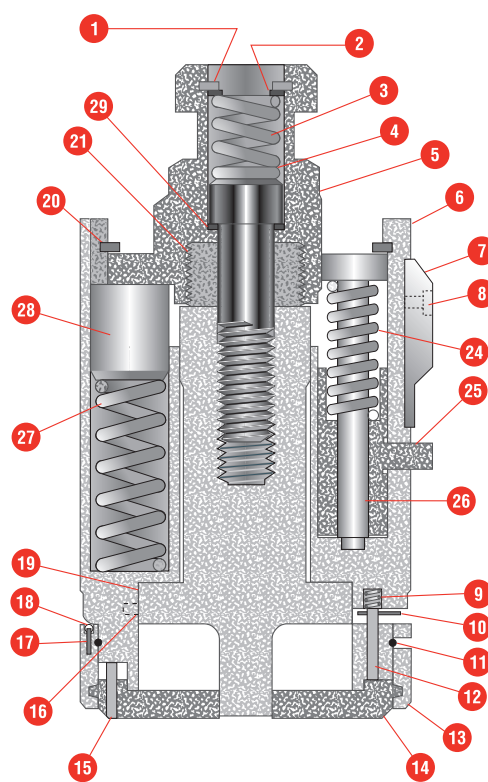
MATE MARATHON® PUNCH HOLDER PARTS AND SPECIFICATIONS

STANDARD



- | | |
|---------------------------|-------------------------|
| 1. Ejector Retaining Ring | 15. Zero Pin (pre 6/93) |
| 2. Ejector Washer | 16. Stop Pin |
| 3. Ejector Spring | (round punches only) |
| 4. Draw Bolt | 17. Stop Pins |
| 5. Tang | 18. Release Springs |
| 6. Punch Holder Body | 19. Punch |
| 7. Punch Holder Key | 20. Tang Retaining Ring |
| 8. Punch Holder Key Screw | 21. Platen |
| (metric as of 7/93) | 22. Disc Springs |
| 9. Lock Spring | 23. Tang Key |
| 10. Lock Pin | 29. Draw Bolt Washer |
| 11. Lock Pin Retainer | |
| 12. Release Pin | |
| 13. Locking Ring | |
| 14. Stripper | |

AUTO INDEX



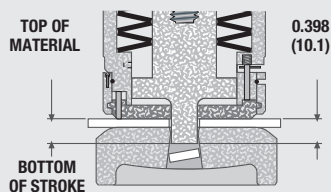
- | | |
|---------------------------|-------------------------|
| 1. Ejector Retaining Ring | 15. Zero Pin (pre 6/93) |
| 2. Ejector Washer | 16. Stop Pin |
| 3. Ejector Spring | (round punches only) |
| 4. Draw Bolt | 17. Stop Pins |
| 5. Tang | 18. Release Springs |
| 6. Punch Holder Body | 19. Punch |
| 7. Punch Holder Key | 20. Tang Retaining Ring |
| 8. Punch Holder Key Screw | 21. Platen |
| (metric as of 7/93) | 24. Lifter Springs |
| 9. Lock Spring | 25. Lifter |
| 10. Lock Pin | 26. Lifter Rod |
| 11. Lock Pin Retainer | 27. Coil Springs |
| 12. Release Pin | 28. Spring Posts |
| 13. Locking Ring | 29. Draw Bolt Washer |
| 14. Stripper | |

STRIPPING FORCE IN POUNDS(KILOGRAMS) INTO 0.250(6.4) MATERIAL

STATION	A	B	C	D	E/F	G	H	J	K
Standard	1033(468.6)	1033(468.6)	2161(980.2)	2161(980.2)	2643(1198.9)	1873(849.6)	1873(849.6)	3504(1589.4)	5577(2529.7)
Auto Index		742(337.3)		742(337.3)					
Heavy Duty		950(431.8)		950(431.8)		3561(1615.3)	3561(1615.3)		

**MAXIMUM TRAVEL from
top of material to bottom
of stroke is 0.398(10.1)**

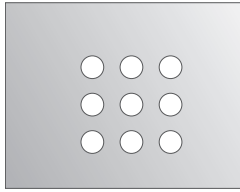
[Dimensions in Inches(mm)]



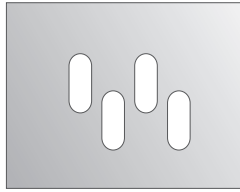
SPECIAL ASSEMBLIES

28

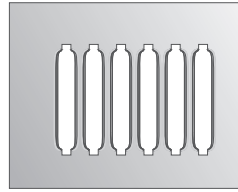
SPECIAL ASSEMBLIES



CLUSTER - ROUND



CLUSTER - SHAPE



CARD GUIDE



CENTERPOINT



COUNTERSINK - ROUND



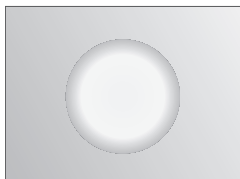
COUNTERSINK - SHAPE



EMBOSS - BEADING



EMBOSS - EDGEFORM



EMBOSS - FORMED



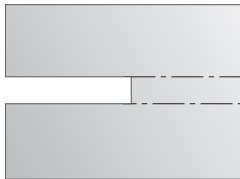
EMBOSS- COLD FORGED



EXTRUSION - TAPPING



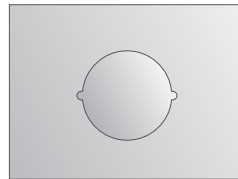
EXTRUSION - FLANGED HOLE



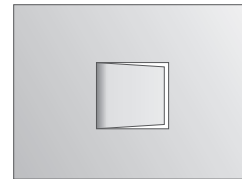
GUIDED SHEARING



HINGE TOOL



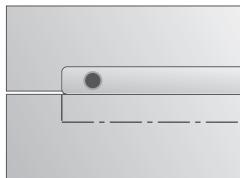
KNOCKOUT



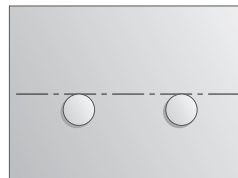
LANCE AND FORM



LOUVER



SCISSORTOOL™



SHEARBUTTON



ROLLERBALL™



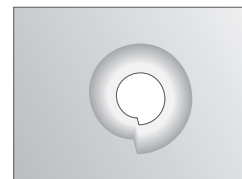
SHEETMARKER™



STAMPING - ALPHA/NUMERIC



STAMPING - V-LINE



THREAD FORM

*Special Assemblies order form and fill-in drawings
are available at: www.mate.com/sa*

[Dimensions in Inches(mm)]



114 STYLE FOR CENTRUM 1000, 2000, 2500 - MAGNUM 1250

STATION	MARATHON® PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B	VAMB3C2125	VA4B3C2125	VA4B3C2125AA		MA4B3C2812	U4B9	U4B7
C	VAMD3C3125	VA4C3C3125	VA4C3C3125AA		MA4C3C4580	U4C9	U4C7
D	VAMD3C3125	VA4D3C3125	VA4D3C3125AA		MA4D3C4580	U4D9	U4D7
D[†] AUTO INDEX	VAMX3C3125	114 NOT APPLICABLE IN THIS STATION RANGE					
D VARISTATION	VAMD3C4125AV	VA4D3C4125AV			MA4D3C6690AV	U4D9	U4D7
D^{††} VARISTATION	VAMD3C4125AV	VA4D3C4125AV			MA4D5C4646AV	U4D9	U4D7
E	VAMF3C4562	VA4F3C4562	VA4F3C4562AA		MA4E3C6350	U4E9	U4E7
F	VAMF3C4562	VA4F3C4562	VA4F3C4562AA		MA4F3C6350	U4F9	U4F7
G only in MAGNUM 1250 machines	VAMG3C5510	VA4G3C5510	VA4G3C5510AA		MA4G3C9134	U4G9	U4G7

STANDARD SHAPES:

rectangle square quad "D" round hexagon octagon oval single "D" double "D" triangle diamond



[Dimensions in Inches(mm)]



112 STYLE FOR CENTRUM 1000, 2000, 2500 - MAGNUM 1250

30

PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	MARATHON® PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B	VAMB3C2125	VA2B3C2125	VA2B3C2125AA		MA2B3C2812	U2B9	U2B7
C	VAMD3C3125	VA2C3C3125	VA2C3C3125AA		MA2C3C4580	U2C9	U2C7
D	VAMD3C3125	VA2D3C3125	VA2D3C3125AA	VA2D3C3125AL	MA2D3C4580	U2D9	U2D7
D [†] AUTO INDEX	VAMX3C3125	VA2D3C3125AX			MA2D3C6693AXC	U2D9	U2D7
D VARISTATION	VAMD3C4125AV	VA2D3C4125AV			MA2D3C6690AV	U2D9	U2D7
D ^{††} VARISTATION	VAMD3C4125AV	VA2D3C4125AV			MA2D5C4646AV	U2D9	U2D7
E	VAMF3C4562	VA2F3C4562	VA2F3C4562AA	VA2F3C4562AL	MA2E3C6350	U2E9	U2E7
F	VAMF3C4562	VA2F3C4562	VA2F3C4562AA	VA2F3C4562AL	MA2F3C6350	U2F9	U2F7
G only in MAGNUM 1250 machines	VAMG3C5510	VA2G3C5510	VA2G3C5510AA	VA2G3C5510AL	MA2G3C9134	U2G9	U2G7

*LESS 15% QUANTITY 12 OR MORE

†CENTRUM 2000 ONLY

††ALL CENTRUM 2500, AND CENTRUM 2000 SERIAL NUMBER 2474 AND AFTER

[Dimensions in Inches(mm)]



114 STYLE FOR CENTRUM 3000, 3500 - 34, 36, 40 STATION SINGLE TRACK

STATION	MARATHON® PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B	VAMB502250	VA4B502250	VA4B502250AA		MA4B5C2625	U4B9	U4B7
C	VAMD503125	VA4C503125	VA4C503125AA		MA4C5C3156	U4C9	U4C7
D	VAMD503375	VA4D503375	VA4D503375AA	VA4D503375AL	MA4D5C3968	U4D9	U4D7
D[†] AUTO INDEX	VAMX5C3125	114 NOT AVAILABLE IN THIS STATION RANGE					
D^{††} AUTO INDEX	VAMX5M3375	VA4D5M3375AX			MA4D5C3620AX	U4D9	U4D7
D VARISTATION	VAMD5C4172AV	VA4D5C4172AV			MA4D5C4646AV	U4D9	U4D7
E	VAMF504562	VA4F504562	VA4F504562AA	VA4F504562AL	MA4E5C5580	U4E9	U4E7
F	VAMF504562	VA4F504562	VA4F504562AA	VA4F504562AL	MA4F5C5580	U4F9	U4F7
F VARISTATION	VAMF5C4562AV	VA4F5C4562AV			MA4F5C4872AV	U4F9	U4F7
G	VAMH505938	VA4H505938	VA4H505938AA	VA4H505938AL	MA4G5C7688	U4G9	U4G7
H	VAMH505938	VA4H505938	VA4H505938AA	VA4H505938AL	MA4H5C7688	U4H9	U4H7
J	VAMJ505938	VA4J505938	VA4J505938AA	VA4J505938AL	MA4J5C7688	U4J9	U4J7
K	VAMK506750	VA4L506750	VA4L506750AA	VA4L506750AL	MA4K5C9625	U4K9	U4K7
L		VA4L506750	VA4L506750AA	VA4L506750AL	MA4L5C9625		

*LESS 15% QUANTITY 12 OR MORE

†SERIAL NUMBER 577 AND BEFORE, AND SERIAL NUMBERS 700-739

††SERIAL NUMBERS 578, 579, 582-585



[Dimensions in Inches(mm)]

112 STYLE FOR CENTRUM 3000, 3500 - 34, 36, 40 STATION SINGLE TRACK

32

STATION	MARATHON® PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B	VAMB502250	VA2B502250	VA2B502250AA		MA2B5C2625	U2B9	U2B7
C	VAMD503125	VA2C503125	VA2C503125AA		MA2C5C3156	U2C9	U2C7
D	VAMD503375	VA2D503375	VA2D503375AA	VA2D503375AL	MA2D5C3968	U2D9	U2D7
D[†] AUTO INDEX	VAMX5C3125	VA2D5C3125AX			MA2D5C3937AXC	U2D9	U2D7
D^{††} AUTO INDEX	VAMX5M3375	VA2D5M3375AX			MA2D5C3620AX	U2D9	U2D7
D VARISTATION	VAMD5C4172AV	VA2D5C4172AV			MA2D5C4646AV	U2D9	U2D7
E	VAMF504562	VA2F504562	VA2F504562AA	VA2F504562AL	MA2E5C5580	U2E9	U2E7
F	VAMF504562	VA2F504562	VA2F504562AA	VA2F504562AL	MA2F5C5580	U2F9	U2F7
F VARISTATION	VAMF5C4562AV	VA2F5C4562AV			MA2F5C4872AV	U2F9	U2F7
G	VAMH505938	VA2G505938	VA2G505938AA	VA2G505938AL	MA2G5C7688	U2G9	U2G7

PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

**LESS 15% QUANTITY 12 OR MORE*

†SERIAL NUMBER 577 AND BEFORE, AND SERIAL NUMBERS 700-739

††SERIAL NUMBERS 578, 579, 582-585

[Dimensions in Inches(mm)]



114 STYLE FOR CENTRUM 3000, 3500 - 34, 36, 40 STATION DOUBLE TRACK

STATION	MARATHON® PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA
B INNER TRACK ROUNDS ONLY	VAMR5M2250	VA4R5M2250			MA4B5M3125	U4B9 U4B7
B	VAMB5V2250	VA4B5V2250	VA4B5M2250AA		MA4B5M3125	U4B9 U4B7
C	VAMD503125	VA4C503125	VA4C503125AA		MA4C5M3937	U4C9 U4C7
D	VAMD503375	VA4D503375	VA4D503375AA	VA4D503375AL	MA4D5M4687	U4D9 U4D7
D AUTO INDEX	VAMX5T3375	VA4D5T3375AX			MA4D5C3620AX	U4D9 U4D7
D VARISTATION	VAMD5C4172AV	VA4D5C4172AV			MA4D5C4646AV	U4D9 U4D7
E	VAMF504562	VA4F504562	VA4F504562AA	VA4F504562AL	MA4E5M5580	U4E9 U4E7
F	VAMF504562	VA4F504562	VA4F504562AA	VA4F504562AL	MA4F5M5580	U4F9 U4F7
G	VAMH505938	VA4H505938	VA4H505938AA	VA4H505938AL	MA4G5M7688	U4G9 U4G7
H	VAMH505938	VA4H505938	VA4H505938AA	VA4H505938AL	MA4H5M7688	U4H9 U4H7
J	VAMJ505938	VA4J505938	VA4J505938AA	VA4J505938AL	MA4J5M7688	U4J9 U4J7
K	VAMK506750	VA4L506750	VA4L506750AA	VA4L506750AL	MA4K5M10750	U4K9 U4K7
L		VA4L506750	VA4L506750AA	VA4L506750AL	MA4L5M10750	

*LESS 15% QUANTITY 12 OR MORE



[Dimensions in Inches(mm)]

112 STYLE FOR CENTRUM 3000, 3500 - 34, 36, 40 STATION DOUBLE TRACK

34

PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	MARATHON® PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK ROUNDS ONLY	VAMR5M2250	VA2R5M2250			MA2B5M3125	U2B9	U2B7
B	VAMB5V2250	VA2B5V2250	VA2B5M2250AA		MA2B5M3125	U2B9	U2B7
C	VAMD503125	VA2C503125	VA2C503125AA		MA2C5M3937	U2C9	U2C7
D	VAMD503375	VA2D503375	VA2D503375AA	VA2D503375AL	MA2D5M4687	U2D9	U2D7
D AUTO INDEX	VAMX5T3375	VA2D5T3375AX			MA2D5M3620AX	U2D9	U2D7
D VARISTATION	VAMD5C4172AV	VA2D5C4172AV			MA2D5C4646AV	U2D9	U2D7
E	VAMF504562	VA2F504562	VA2F504562AA	VA2F504562AL	MA2E5M5580	U2E9	U2E7
F	VAMF504562	VA2F504562	VA2F504562AA	VA2F504562AL	MA2F5M5580	U2F9	U2F7
G	VAMH505938	VA2G505938	VA2G505938AA	VA2G505938AL	MA2G5M7688	U2G9	U2G7

*LESS 15% QUANTITY 12 OR MORE



[Dimensions in Inches(mm)]

114 STYLE FOR MAGNUM 2125

STATION	MARATHON® PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK XB ROUNDS ONLY		VA4R5V1692				U4X9	U4X7
B INNER TRACK IB ROUNDS ONLY	VAMB2M2250	VA4R2M2250			MA4B2M2625	U4B9	U4B7
B	VAMB5V2250	VA4B5V2250			MA4B2M2625	U4B9	U4B7
C	VAMD5V3125	VA4C5V3125			MA4C2M3543	U4C9	U4C7
D	VAMD5V3375	VA4D5V3375			MA4D2M3937	U4D9	U4D7
D AUTO INDEX	VAMD5C4172AV	VA4D5C4172AV			MA4D2M6690AXC	U4D9	U4D7
D VARISTATION	VAMD5C4172AV	VA4D5C4172AV			MA4D5C4646AV	U4D9	U4D7
E	VAMF504562	VA4F504562			MA4E2M5580	U4E9	U4E7
F	VAMF504562	VA4F504562			MA4F2M5580	U4F9	U4F7

*LESS 15% QUANTITY 12 OR MORE



[Dimensions in Inches(mm)]

112 STYLE FOR MAGNUM 2125

36

PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	MARATHON® PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK XB ROUNDS ONLY		VA2R5V1692				U2X9	U2X7
B INNER TRACK IB ROUNDS ONLY	VAMB2M2250	VA2R2M2250			MA2B2M2625	U2B9	U2B7
B	VAMB5V2250	VA2B5V2250			MA2B2M2625	U2B9	U2B7
C	VAMD5V3125	VA2C5V3125			MA2C2M3543	U2C9	U2C7
D	VAMD5V3375	VA2D5V3375			MA2D2M3937	U2D9	U2D7
D AUTO INDEX	VAMD5C4172AV	VA2D5C4172AV			MA2D2M6690AXC	U2D9	U2D7
D VARISTATION	VAMD5C4172AV	VA2D5C4172AV			MA2D5C4646AV	U2D9	U2D7
E	VAMF504562	VA2F504562			MA2E2M5580	U2E9	U2E7
F	VAMF504562	VA2F504562			MA2F2M5580	U2F9	U2F7

*LESS 15% QUANTITY 12 OR MORE



[Dimensions in Inches(mm)]

114 STYLE FOR MAGNUM 5000 52 STATION - VECTRUM 5000 52 STATION

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK ROUNDS ONLY	MATE01144	VA4R5M2250			MA4B5M3125	U4B9	U4B7
B	MATE01141	VA4B5V2250	VA4B5M2250AA		MA4B5M3125	U4B9	U4B7
C	MATE01090	VA4C5V3125			MA4C5M3937	U4C9	U4C7
D	MATE01132	VA4D5V3375		VA4D5V3375AL	MA4D5M4687	U4D9	U4D7
D [†] AUTO INDEX (Available in standard Marathon only)	VAMX5M3125		114 NOT AVAILABLE IN THIS STATION RANGE				
D ^{††} AUTO INDEX	MATE01145	VA4D5M3375AX			MA4D5M3620AX	U4D9	U4D7
E	MATE01136	VA4F5V4562		VA4F5V4562AL	MA4E5M5580	U4E9	U4E7
F	MATE01136	VA4F5V4562		VA4F5V4562AL	MA4F5M5580	U4F9	U4F7
G	MATE01155	VA4H5M6750		VA4H5M6750AL	MA4G5M10750	U4G9	U4G7
H	MATE01155	VA4H5M6750		VA4H5M6750AL	MA4H5M10750	U4H9	U4H7
J	MATE01300	VA4J5M6750		VA4J5M6750AL	MA4J5M10750	U4JM	U4J7
K (Available in standard Marathon only)	VAMK5M6750	VA4L5M6750		VA4L5M6750AL	MA4K5M10750	U4KM	
L		VA4L5M6750		VA4L5M6750AL	MA4L5M10750		

*LESS 15% QUANTITY 12 OR MORE

†MAGNUM 5000 SERIAL NUMBER 584 AND BEFORE

††MAGNUM 5000 SERIAL NUMBER 585 AND AFTER - ALL VECTRUM 5000

To prevent damage, use Marathon Plus™
torque stand (MATE01293) when changing punch. See page 21.



[Dimensions in Inches(mm)]

112 STYLE FOR MAGNUM 5000 52 STATION - VECTRUM 5000 52 STATION

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK ROUNDS ONLY	MATE01144	VA2R5M2250			MA2B5M3125	U2B9	U2B7
B	MATE01141	VA2B5V2250	VA2B5M2250AA		MA2B5M3125	U2B9	U2B7
C	MATE01090	VA2C5V3125			MA2C5M3937	U2C9	U2C7
D	MATE01132	VA2D5V3375		VA2D5V3375AL	MA2D5M4687	U2D9	U2D7
D[†] AUTO INDEX (Available in standard Marathon only)	VAMX5M3125	VA2D5M3125AX			MA2D5M3937AXC	U2D9	U2D7
D^{††} AUTO INDEX	MATE01145	VA2D5M3375AX			MA2D5M3620AX	U2D9	U2D7
E	MATE01136	VA2F5V4562		VA2F5M4562AL	MA2E5M5580	U2E9	U2E7
F	MATE01136	VA2F5V4562		VA2F5M4562AL	MA2F5M5580	U2F9	U2F7
G	MATE01155	VA2G5M6750		VA2G5M6750AL	MA2G5M10750	U2G9	U2G7

*LESS 15% QUANTITY 12 OR MORE

†MAGNUM 5000 SERIAL NUMBER 584 AND BEFORE

††MAGNUM 5000 SERIAL NUMBER 585 AND AFTER - ALL VECTRUM 5000

To prevent damage, use Marathon Plus™
torque stand (MATE01293) when changing punch. See page 21.

[Dimensions in Inches(mm)]



114 STYLE FOR MAGNUM 5000 36, 46, 60 STATION - VECTRUM 5000 AND 5058 60 STATION

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA
B INNER TRACK ROUNDS ONLY	MATE01144	VA4R5M2250			MA4B5M3125	U4B9 U4B7
B	MATE01141	VA4B5V2250	VA4B5M2250AA		MA4B5M3125	U4B9 U4B7
C	MATE01090	VA4C5V3125			MA4C5M3937	U4C9 U4C7
D	MATE01132	VA4D5V3375		VA4D5V3375AL	MA4D5M4687	U4D9 U4D7
D[†] AUTO INDEX	VAMX5M3125 (Available in standard Marathon only)	114 NOT AVAILABLE IN THIS STATION RANGE				
D^{††} AUTO INDEX	MATE01145	VA4D5M3375AX			MA4D5M3620AX	U4D9 U4D7
E	MATE01136	VA4F5V4562		VA4F5V4562AL	MA4E5M5580	U4E9 U4E7
F	MATE01136	VA4F5V4562		VA4F5V4562AL	MA4F5M5580	U4F9 U4F7
G	MATE01154	VA4H5V5938		VA4H5V5938AL	MA4G5M7688	U4G9 U4G7
H	MATE01154	VA4H5V5938		VA4H5V5938AL	MA4H5M7688	U4H9 U4H7
J	MATE01299	VA4J5V5938		VA4J5V5938AL	MA4J5M7688	U4JM U4J7
K (Available in standard Marathon only)	VAMK5M6750	VA4L5M6750		VA4L5M6750AL	MA4K5M10750	U4KM
L		VA4L5M6750		VA4L5M6750AL	MA4L5M10750	

*LESS 15% QUANTITY 12 OR MORE

†SERIAL NUMBER 584 AND BEFORE

††SERIAL NUMBER 585 AND AFTER



[Dimensions in Inches(mm)]

To prevent damage, use Marathon Plus™
torque stand (MATE01293) when changing punch. See page 21.

112 STYLE FOR MAGNUM 5000 36, 46, 60 STATION - VECTRUM 5000 60 STATION

40

PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK ROUNDS ONLY	MATE01144	VA2R5M2250			MA2B5M3125	U2B9	U2B7
B	MATE01141	VA2B5V2250	VA2B5M2250AA		MA2B5M3125	U2B9	U2B7
C	MATE01090	VA2C5V3125			MA2C5M3937	U2C9	U2C7
D	MATE01132	VA2D5V3375		VA2D5V3375AL	MA2D5M4687	U2D9	U2D7
D ⁺ AUTO INDEX	VAMX5M3125 (Available in standard Marathon only)	VA2D5M3125AX			MA2D5M3937AXC	U2D9	U2D7
D ⁺⁺ AUTO INDEX	MATE01145	VA2D5M3375AX			MA2D5M3620AX	U2D9	U2D7
E	MATE01136	VA2F5V4562		VA2F5M4562AL	MA2E5M5580	U2E9	U2E7
F	MATE01136	VA2F5V4562		VA2F5M4562AL	MA2F5M5580	U2F9	U2F7
G	MATE01154	VA2G5V5938		VA2G5V5938AL	MA2G5M7688	U2G9	U2G7

*LESS 15% QUANTITY 12 OR MORE

†SERIAL NUMBER 584 AND BEFORE

††SERIAL NUMBER 585 AND AFTER

To prevent damage, use Marathon Plus™
torque stand (MATE01293) when changing punch. See page 21.

[Dimensions in Inches(mm)]



114 STYLE FOR MOTORUM

STATION	COMMENTS	MARATHON PLUS™ PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	†114 DIE HOLDER 2044EZ ONLY	URETHANE STRIPPER 92dA	70dA
B	Inner Track XB Rounds Only up to 0.500 (12.7)	MATE01159	VA4R5V1692		U4X9	U4X7
B	Inner Track IB	MATE01141	VA4B5V2250		U4B9	U4B7
B		MATE01141	VA4B5V2250	MA4B3C2812	U4B9	U4B7
C		MATE01090	VA4C5V3125	MA4C3C4580	U4C9	U4C7
D		MATE01132	VA4D5V3375	MA4D3C4580	U4D9	U4D7
D	Varistation	MATE01091	VA4D5V4172AV		U4D9	U4D7
F	Varistation	MATE01374	VA4F5V4172AV		U4V9	U4V7
E		MATE01137*	VA4F5V5938*	MA4E3C6350	U4E9	U4E7
		MATE01136**	VA4F5V4562**			
F		MATE01137*	VA4F5V5938*	MA4F3C6350	U4F9	U4F7
		MATE01136**	VA4F5V4562**			
G		MATE01154	VA4H5V5938	MA4G3C9134	U4G9	U4G7
H		MATE01154	VA4H5V5938		U4H9	U4H7
J		MATE01299	VA4J5V5938		U4JM	U4J7

*For use with Motorum model 2000.

**For use with Motorum models 2044, 2048, 2054 and newer.

†Motorum die holders not shown are available from Murata Machinery.



[Dimensions in Inches(mm)]

To prevent damage, use Marathon Plus™ torque stand (MATE01293) when changing punch. See page 21.

112 STYLE FOR MOTORUM

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PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	COMMENTS	MARATHON PLUS™ PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	†112 DIE HOLDER 2044EZ ONLY	URETHANE STRIPPER 92dA	70dA
B	Inner Track XB Rounds Only up to 0.500 (12.7)	MATE01159	VA2R5V1692		U2X9	U2X7
B	Inner Track IB	MATE01141	VA2B5V2250		U2B9	U2B7
B		MATE01141	VA2B5V2250	MA2B3C2812	U2B9	U2B7
C		MATE01090	VA2C5V3125	MA2C3C4580	U2C9	U2C7
D		MATE01132	VA2D5V3375	MA2D3C4580	U2D9	U2D7
D	Varistation	MATE01091	VA2D5V4172AV		U2D9	U2D7
E		MATE01137*	VA2F5V5938*	MA2E3C6350	U2E9	U2E7
		MATE01136**	VA2F5V4562**			
F		MATE01137*	VA2F5V5938*	MA2F3C6350	U2F9	U2F7
		MATE01136**	VA2F5V4562**			
G		MATE01154	VA2G5V5938	MA2G3C9134	U2G9	U2G7

*For use with Motorum model 2000.

**For use with Motorum models 2044, 2048, 2054 and newer.

†Motorum die holders not shown are available from Murata Machinery.

To prevent damage, use Marathon Plus™ torque stand (MATE01293) when changing punch. See page 21.

[Dimensions in Inches(mm)]



114 STYLE FOR VECTRUM 3000 α

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 114 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	114 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA
B INNER TRACK XB ROUNDS ONLY up to .500(12.7)	MATE01159	VA4R5V1692				U4X9 U4X7
B INNER TRACK IB	MATE01141	VA4B5V2250				U4B9 U4B7
B	MATE01141	VA4B5V2250				U4B9 U4B7
C	MATE01090	VA4C5V3125				U4C9 U4C7
D	MATE01132	VA4D5V3375				U4D9 U4D7
D VARISTATION	MATE01091	VA4D5V4172AV				U4D9 U4D7
F VARISTATION	MATE01374	VA4F5V4172AV				U4V9 U4V7
E	MATE01136	VA4F5V4562				U4E9 U4E7
F	MATE01136	VA4F5V4562				U4F9 U4F7
G	MATE01154	VA4H5V5938				U4G9 U4G7
H	MATE01154	VA4H5V5938				U4H9 U4H7
J	MATE01299	VA4J5V5938				U4J9 U4J7

VECTRUM 3000 DIE HOLDERS ARE AVAILABLE FROM MURATA WIEDEMANN

STANDARD SHAPES:

rectangle square quad "D" round hexagon octagon oval single "D" double "D" triangle diamond



[Dimensions in Inches(mm)]



112 STYLE FOR VECTRUM 3000_α

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PUNCH HOLDERS, DIE HOLDERS, AND URETHANE STRIPPERS

STATION	MARATHON PLUS™ PUNCH HOLDER	STANDARD 112 PUNCH HOLDER	ADJUSTABLE ANGLE PUNCH HOLDER	ADJUSTABLE LENGTH PUNCH HOLDER	112 DIE HOLDER	URETHANE STRIPPER* 92dA 70dA	
B INNER TRACK XB ROUNDS ONLY up to .500(12.7)	MATE01159	VA2R5V1692				U2X9	U2X7
B INNER TRACK IB	MATE01141	VA2B5V2250				U2B9	U2B7
B	MATE01141	VA2B5V2250				U2B9	U2B7
C	MATE01090	VA2C5V3125				U2C9	U2C7
D	MATE01132	VA2D5V3375				U2D9	U2D7
D VARISTATION	MATE01091	VA2D5V4172AV				U2D9	U2D7
E	MATE01136	VA2F5V4562				U2E9	U2E7
F	MATE01136	VA2F5V4562				U2F9	U2F7
G	MATE01154	VA2G5V5938				U2G9	U2G7

VECTRUM 3000 DIE HOLDERS ARE AVAILABLE FROM MURATA WIEDEMANN

*LESS 15% QUANTITY 12 OR MORE

To prevent damage, use Marathon Plus™ torque stand (MATE01293) when changing punch. See page 21.

[Dimensions in Inches(mm)]



PUNCH AND DIE MAINTENANCE

GRIND LIFE FOR 114 STYLE PUNCHES

	Maximum Grind Life Punching	Minimum Punch Overall Length
STATION	0.100(2.5) Material	
A	0.063(1.6)	2.656(67.5)
B	0.380(9.7)	3.620(91.9)
C	0.310(7.9)	3.753(95.3)
D - L	0.303(7.7)	3.228(82.0)

GRIND LIFE FOR 112 STYLE PUNCHES

	Maximum Grind Life Punching	Minimum Punch Overall Length
STATION	0.100(2.5) Material	
A	0.063(1.6)	1.750(44.5)
B	0.180(4.6)	2.683(68.1)
C	0.148(3.8)	3.008(76.4)
D - G	0.243(6.2)	1.820(46.2)

GRIND LIFE FOR VULCAN STYLE PUNCHES

	Maximum Grind Life Punching	Minimum Punch Overall Length
STATION	0.100(2.5) Material	
X	0.063(1.6)	2.656(67.5)
AB	0.380(9.7)	3.620(91.9)
B	0.310(7.9)	3.753(95.3)
C	0.303(7.7)	3.228(82.0)
D - L	0.303(7.7)	3.228(82.0)

GRIND LIFE FOR DIES

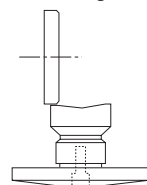
STATION	Tooling Style	Maximum Die Grind Life	Minimum Die OAL
B - L	MARATHON	0.125(3.2)	1.000(25.4)
X - L	114	0.125(3.2)	1.000(25.4)
B - L	VULCAN	0.125(3.2)	1.000(25.4)
B - C	112	0.125(3.2)	0.468(11.9)
D - G	112	0.125(3.2)	0.625(15.9)

GRINDING WHEEL SPECIFICATIONS

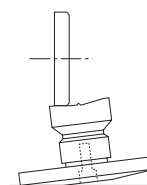
Tool Material	Wheel Hardness	Grit Size
Premium Tool Steel	G-J	40-60
High Speed Steel	D-G	40-60
Shock Steel	G-J	40-60

SHARPENING 112/114 PUNCHES

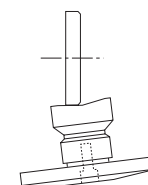
STEP 1—
Grind Dull Edges



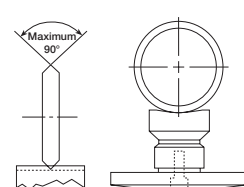
STEP 2—
Grind 1st Punch Face



STEP 2—
Grind 2nd Punch Face



STEP 4—
Remove 'V' From Punch Face



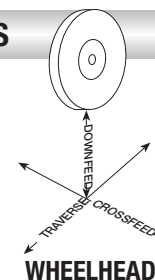
- Sharpening fixture, Part Number TS0000 is employed
- A 0.125(3.2) Radius edge on the grinding wheel will help avoid a stress point at punch center
- A good blend radius at punch center is required
- Grind punch flats between 0.060 0.180(1.5-4.6)
- If a sharp 'V' remains on the punch face, remove with a bevel wheel no greater than 4.000(101.6) in diameter

FEED RATES

Downfeed:
0.001-0.003(0.03-0.08)

Crossfeed:
0.010(0.25) per pass

Traverse (per pass):
100-150 inches/minute
(2.50-3.80 meters/minute)



FIXING SHARPENING PROBLEMS

PROBLEM:	CAUSE:	CURE:
Discoloration** and/or surface cracks	Insufficient coolant	Increase or redirect flow Use
	Improper wheel	coarser grain, softer grade grinding wheel
Harsh cutting sound and/or poor surface finish	Improper dress	Drop wheelhead 0.0002-0.0004(0.005-0.010) and redress. Move crossfeed approximately 50 inches/minute (1.25 meters/minute)
	Excessive stock removal	Less downfeed; lower crossfeed rate
	Improper wheel	Coarser grain, softer grade
	Improper dress or glazed wheel	Redress wheel, break glaze on wheel surface

**Dark discoloration indicates damage not necessarily limited to tool surface. Removal of burned surface will not rectify damage. Recommend replacement of the tool.



[Dimensions in Inches(mm)]



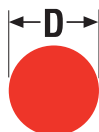
MPG Punch and Die Grinder

Contact Mate customer service for info on our Manual Adjust or Laser Sensor grinders for easy tool maintenance.

MATE MARATHON® PUNCH STRAIGHT BEFORE RADIUS (SBR) AND GRIND LIFE

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PUNCH SBR AND GRIND LIFE



"D"
Range
Diameter

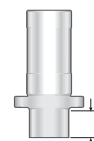


"A"
Range
Length

"B"
Range
Width



Maximum
Recommended
Material Thickness



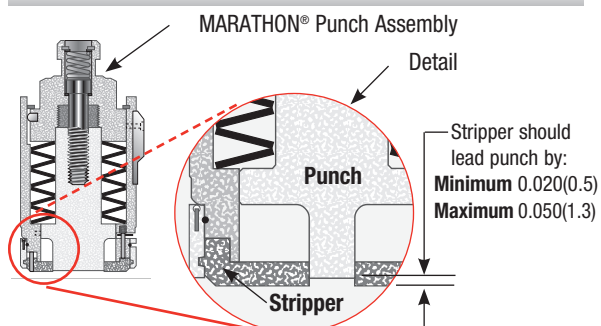
New Punch
SBR
±0.020(0.5)



Maximum
Grind
Life*

0.030-0.039(0.8-1.0)	0.030-0.187(0.8-4.7)	0.030-0.039(0.8-1.0)	0.020(0.5)	0.320(8.1)	0.000(0.0)
0.040-0.063(1.0-1.6)	0.030-0.187(0.8-4.7)	0.040-0.063(1.0-1.6)	0.060(1.5)	0.380(9.7)	0.030(0.8)
0.064-0.094(1.6-2.4)	0.030-0.187(0.8-4.7)	0.064-0.094(1.6-2.4)	0.090(2.3)	0.440(11.2)	0.060(1.5)
0.095-0.156(2.4-4.0)	0.030-0.187(0.8-4.7)	0.095-0.156(2.4-4.0)	0.140(3.6)	0.680(17.3)	0.120(3.0)
0.157-0.187(4.0-4.7)	0.030-0.187(0.8-4.7)	0.157-0.187(4.0-4.7)	0.180(4.6)	0.730(18.5)	0.120(3.0)
≥0.187(4.7)			0.250(6.4)	0.730(18.5)	0.060(1.5)
0.188-0.625(4.8-15.9)	0.188-0.625(4.8-15.9)	0.030-0.039(0.8-1.0)	0.020(0.5)	0.320(8.1)	0.000(0.0)
0.188-0.625(4.8-15.9)	0.188-0.625(4.8-15.9)	0.040-0.063(1.0-1.6)	0.060(1.5)	0.440(11.2)	0.060(1.5)
0.188-0.625(4.8-15.9)	0.188-0.625(4.8-15.9)	0.064-0.094(1.6-2.4)	0.090(2.3)	0.630(16.0)	0.120(3.0)
0.188-0.625(4.8-15.9)	0.188-0.625(4.8-15.9)	0.095-0.156(2.4-4.0)	0.140(3.6)	0.680(17.3)	0.120(3.0)
0.188-0.625(4.8-15.9)	0.188-0.625(4.8-15.9)	0.157-0.625(4.0-15.9)	0.250(6.4)	0.760(19.3)	0.060(1.5)
≥0.626(≥15.9)	≥0.626(≥15.9)	0.030-0.039(0.8-1.0)	0.020(0.5)	0.380(9.7)	0.000(0.0)
≥0.626(≥15.9)	≥0.626(≥15.9)	0.040-0.063(1.0-1.6)	0.060(1.5)	0.540(13.7)	0.060(1.5)
≥0.626(≥15.9)	≥0.626(≥15.9)	0.064-0.094(1.6-2.4)	0.090(3.0)	0.630(16.0)	0.120(3.0)
≥0.626(≥15.9)	≥0.626(≥15.9)	0.095-0.156(2.4-4.0)	0.140(3.6)	0.760(19.3)	0.120(3.0)
≥0.626(15.9)	≥0.626(15.9)	≥0.157(4.0)	0.250(6.4)	0.760(19.3)	0.060(1.5)

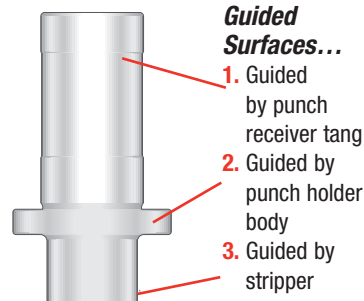
SETTING UP STRIPPER LEAD



THREE-POINT PUNCH CONTROL

Guided from top to bottom...

Three-point control for precision punching at all speeds for greater stability, rigidity and minimal lateral movement



Guided Surfaces...

1. Guided by punch receiver tang
2. Guided by punch holder body
3. Guided by stripper

*Maximum grind life increases as material thickness decreases.



PUNCH SHEAR SPECIFICATIONS

Shear Specifications for MARATHON® Punches

Standard Shear for **MARATHON** punches all sizes, all stations is flat - without shear.

SHEAR SPECIFICATIONS FOR 114 PUNCHES

STATION	DESCRIPTION	SIZE	SHEAR REQUIRED
B	rounds and shapes	0.030-1.000(0.76-25.4)	none
C	rounds	1.001-1.500(25.42-38.1)	concave 0.062(1.57) shear depth
C	shapes	1.001-1.500(25.42-38.1)	none
D - L	rounds	1.501(38.12) and larger	concave 0.093(2.36) shear depth
D - L	shapes (except square)	width 0.030-0.187(0.76-4.75)	rooftop
D - L	shapes (except square)	width 0.188(4.77) and larger	concave 0.093(2.36) shear depth
D - L	squares with 45° setting	1.000-1.499(25.4-38.07)	4-way 0.040(1.02) shear depth with 0.187(4.75) square flats
D - L	squares with 45° setting	1.500(38.1) and larger	4-way 0.093(2.36) shear depth

SHEAR SPECIFICATIONS FOR HEAVY DUTY 114 PUNCHES

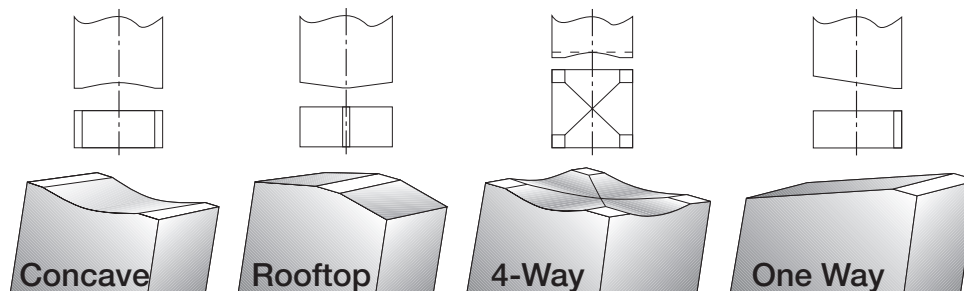
STATION	DESCRIPTION	SIZE	SHEAR REQUIRED
B	rounds and shapes	0.250-0.938(0.8-23.8)	none
C	square, rectangle	0.813-1.313(20.7-33.4)	none
C	round, oval, D, DD	0.939-1.492(23.9-37.9)	rooftop
D - L	round, oval, D, DD	1.493(37.9) and larger	rooftop
D - L	rectangle	1.314(33.4) and larger	rooftop
D - L	square	1.314(33.4) and larger	none - to reduce lateral movement

SHEAR SPECIFICATIONS FOR 112 PUNCHES

STATION	DESCRIPTION	SIZE	SHEAR REQUIRED
B	rounds and shapes	0.030-1.000(0.76-25.4)	none
C	rounds	1.001-1.500(25.42-38.1)	concave 0.062(1.57) shear depth
C	shapes	1.001-1.500(25.42-38.1)	none
D - G	rounds	1.501(38.12) and larger	concave 0.062(1.57) shear depth
D - G	shapes (except square)	width 0.030-0.187(0.76-4.75)	rooftop
D - G	shapes (except square)	width 0.188(4.77) and larger	concave 0.062(1.57) shear depth
D - G	squares with 45° setting	1.000-1.499(25.4-38.07)	4-way 0.040(1.02) shear depth with 0.187(4.75) square flats
D - G	squares with 45° setting	1.500(38.1) and larger	4-way 0.062(1.57) shear depth

SHEAR SPECIFICATIONS FOR VULCAN PUNCHES

Standard Shear for **Vulcan** style punches all sizes, all stations **X** through **L** is flat - without shear. Rooftop shear is the recommended optional shear in some stations, for some size ranges.

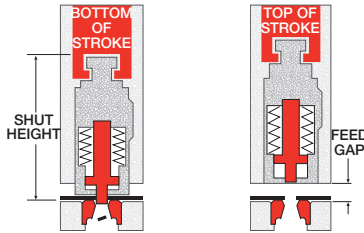


[Dimensions in Inches(mm)]

PUNCH HOLDER SET-UP DIMENSIONS

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PUNCH HOLDER SET-UP DIMENSIONS



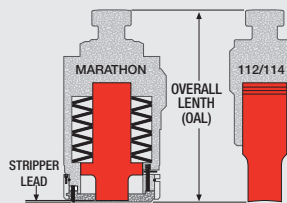
PUNCH PRESS	SHUT HEIGHT	FEED GAP
CENTRUM 1000	5.875(149.2)	0.835(21.2)
CENTRUM 2000	5.875(149.2)	0.875(22.2)
CENTRUM 3000	6.750(171.5)	0.875(22.2)
MAGNUM 1250	5.875(149.2)	0.875(22.2)
MAGNUM 2125	5.875(149.2)	0.875(22.2)
MAGNUM 5000	5.875(149.2)	0.875(22.2)
MOTORUM 2000	PROGRAMMABLE	0.875(22.2)
VECTRUM 3000α	PROGRAMMABLE	0.875(22.2)
VECTRUM 5000	6.750(171.5)	0.875(22.2)
FLEXILASER	PROGRAMMABLE	0.875(22.2)

MURATA WIEDEMANN PUNCH PRESS TONNAGE RATINGS

PUNCH PRESS	PUNCH PRESS TONNAGE (TONS)	PUNCH PRESS TONNAGE (METRIC TONS)
CENTRUM 1000	16.5	14.85
CENTRUM 2000	22.0	19.8
CENTRUM 3000	33.0	29.7
MAGNUM 1250	22.0	19.8
MAGNUM 2125	22.0	19.8
MAGNUM 5000	45.0	40.5
MOTORUM 2000	22.0	19.8
VECTRUM 3000α	33.0	29.7
VECTRUM 5000	50.0	45.0
FLEXILASER	11.0	10.0

OVERALL LENGTH (OAL) OF PUNCH HOLDER ASSEMBLIES

MARATHON® PUNCH HOLDER*	STATION	CENTRUM 1000 2000	CENTRUM 3000 W - 3050 W - 4560	MAGNUM 5000	MOTORUM	VECTRUM
	B	6.031(153.2)	6.906(175.4)	7.019 (178.3)	7.019 (178.3)	7.019 (178.3)
	C	6.125(155.6)	7.000(177.8)	7.124(180.94)	7.124(180.94)	7.124(180.94)
	D	6.125(155.6)	7.000(177.8)	7.124(180.94)	7.124(180.94)	7.124(180.94)
	E-G	6.125(155.6)	7.000(177.8)	7.115(180.72)	7.115(180.72)	7.115(180.72)
	H-L		7.000(177.8)	7.115(180.72)	7.115(180.72)	7.115(180.72)
114 STYLE PUNCH HOLDER	STATION	CENTRUM 1000 2000	CENTRUM 3000 W - 3050 W - 4560	MAGNUM 5000	MOTORUM	VECTRUM
	A	5.937(150.8)	6.812(173.0)	6.812(173.0)	6.812(173.0)	6.812(173.0)
	B	5.984(152.0)	6.843(173.8)	6.843(173.8)	6.843(173.8)	6.843(173.8)
	C	6.047(153.6)	6.906(175.4)	6.906(175.4)	6.906(175.4)	6.906(175.4)
	D	6.077(154.4)	6.937(176.2)	6.937(176.2)	6.937(176.2)	6.937(176.2)
	E-G	6.077(154.4)	6.937(176.2)	6.937(176.2)	6.937(176.2)	6.937(176.2)
112 STYLE PUNCH HOLDER	STATION	CENTRUM 1000 2000	CENTRUM 3000 W - 3050 W - 4560	MAGNUM 5000	MOTORUM	VECTRUM
	A	5.984(152.0)	6.812(173.0)	6.812(173.0)	6.812(173.0)	6.812(173.0)
	B	5.984(152.0)	6.843(173.8)	6.843(173.8)	6.843(173.8)	6.843(173.8)
	C	6.047(153.6)	6.906(175.4)	6.906(175.4)	6.906(175.4)	6.906(175.4)
	D	6.047(153.6)	6.906(175.4)	6.906(175.4)	6.906(175.4)	6.906(175.4)
	E-G	6.047(153.6)	6.906(175.4)	6.906(175.4)	6.906(175.4)	6.906(175.4)

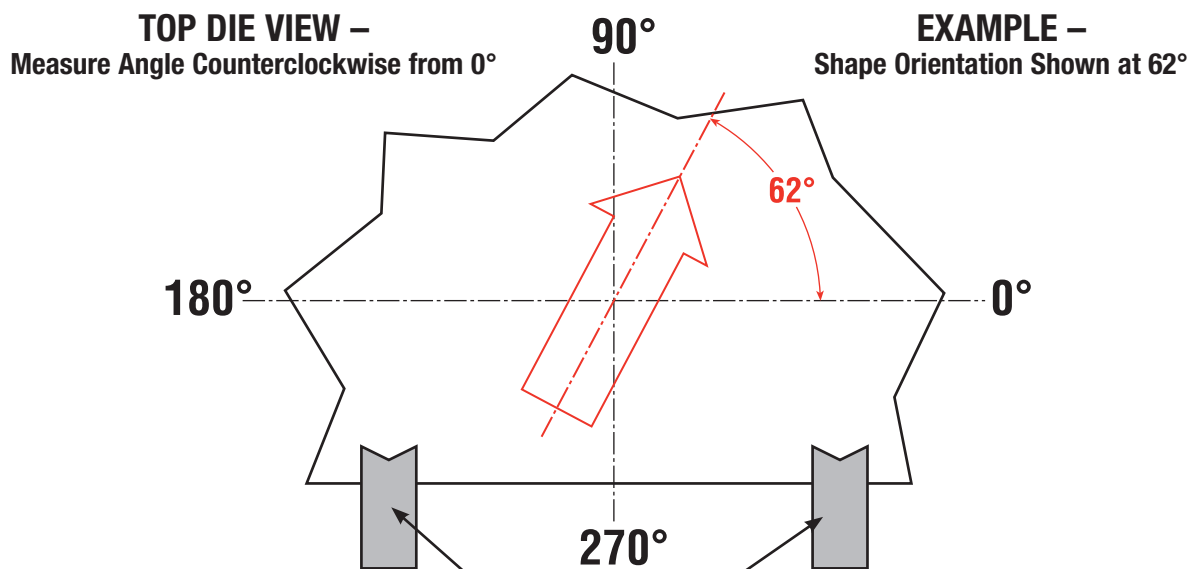


[Dimensions in Inches(mm)]



CUSTOM ANGLE SETTINGS

USING CARTESIAN COORDINATE SYSTEM



WORKHOLDER/CLAMPS

When ordering, please sketch the shape and angle of the punched hole(s).

ANGLE SETTINGS FOR MARATHON PLUS™ TOOLS



MARATHON PLUS™ Punch Holders Have Eight Standard Settings...

- Turn spring loaded lock ring
- Align stripper to desired angle
- Press down on stripper to engage spring loaded lock ring
- Special angles can also be specified

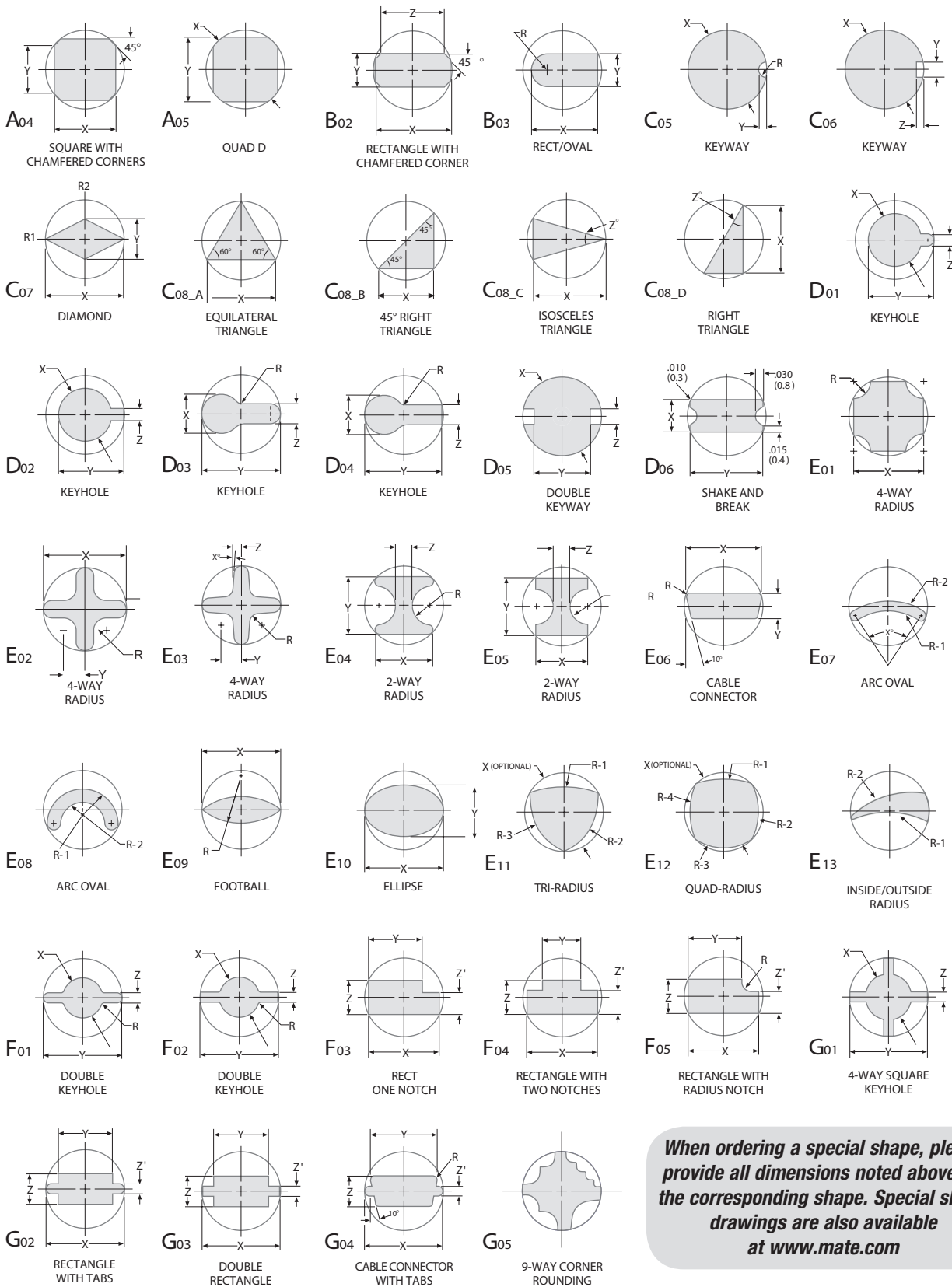


[Dimensions in Inches(mm)]

MATE SPECIAL SHAPES

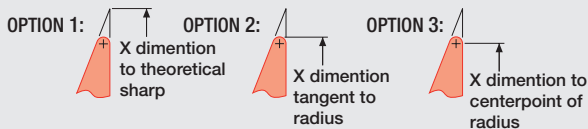
50

SPECIAL SHAPES



When ordering a special shape, please provide all dimensions noted above for the corresponding shape. Special shape drawings are also available at www.mate.com

*C2, C3, C4 ACUTE ANGLE OPTIONS



MAXIMUM STATION RANGE

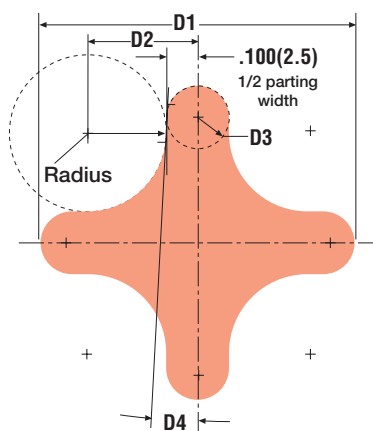
B 1.000(25.4)	G 3.500(88.9)
C 1.500(38.1)	H 4.125(104.8)
D 2.000(50.8)	J 4.750(120.7)
E 2.500(63.5)	K 5.500(139.7)
F 3.000(76.2)*	L 6.000(152.4)
*F 3.125(79.4)-112 only	

[Dimensions in Inches(mm)]



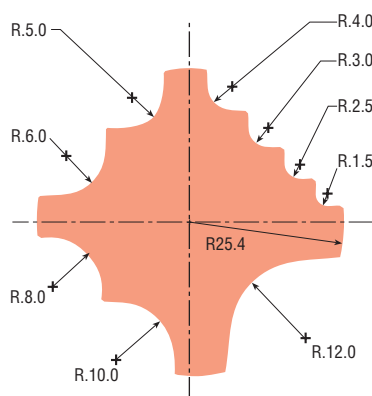
MATE SPECIAL SHAPES

4-WAY CORNER ROUNDING



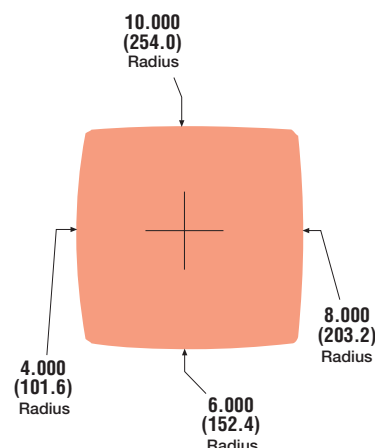
The 4-way corner rounding tool can round all four corners of a piece part without rotating the tooling - use with standard parting tools for piece part separation.

9-WAY CORNER ROUNDING



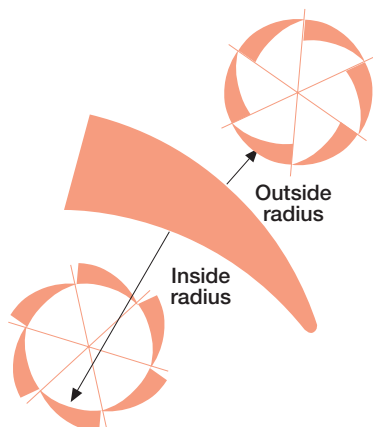
A single 9-way corner rounding tool provides nine popular radii in one tool. Auto indexing selects and rotates the desired radius to round off all corners of a piece part.

QUAD RADIUS



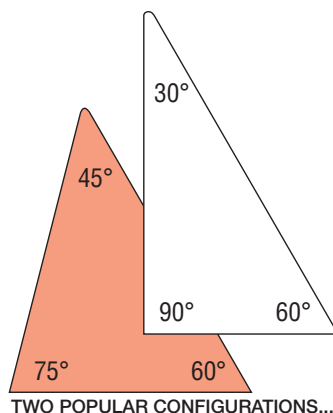
The quad radius tool nibbles large holes with smoother edges and fewer hits than using a round nibbling punch. Smooth round holes are not limited to station range.

INSIDE/OUTSIDE RADIUS



This tool's large radii results in blanks with smoother edges produced with fewer hits than with an ordinary radius punch. This tool can be programmed to punch holes with slugs or parts retained in the sheet, yet can be separated easily off the press.

3-WAY CORNER NOTCHING



The 3-way notching tool can include angles from 150° to 15° - shown above are two popular arrangements. One tool can provide three corner options.

SPECIAL SHAPE SOLUTIONS TO OTHER PUNCHING PROBLEMS...

In addition to standard tooling, a few selected multi-purpose punches can fill out a very versatile tooling complement. Some very simple tools, along with auto index press capacity, can perform complex punching operations without resorting to other means to accomplish these tasks.



[Dimensions in Inches(mm)]

ADD-ONS

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ADD-ONS

General

Radius Corner
Non-Standard Straight Before Radius (SBR) Dimension
Extra Back Taper (1 degree per side)
Special Angle Settings
Shock Steel
Optional Shear (Limited Options)
High Speed Steel Punch - 114 only

Non-Standard Slug Ejector Request (Limited Options)
Stabilizer

Small Diameter Round Tools

Diameter 0.031 (0.79) to 0.061 (1.55)
Diameter 0.062 (1.56) to 0.092 (2.34)

Narrow Width Shaped Tools

Widths under 0.125 (3.18)

Maxima™ and Nitride Coating (Available only on Marathon® Punches and High Speed Steel 114 Punches)

B -0.031(0.80) to 1.000 (25.40)
C -1.000(25.40) to 1.500 (38.10)
D -1.500(38.10) to 2.000 (50.80)
E -2.000(50.80) to 2.500 (63.50)
F -2.500(63.50) to 3.000 (76.20)
G -3.000(76.20) to 3.500 (88.90)
H -3.500(88.90) to 4.125 (104.80)
J -4.125(104.80) to 4.750 (120.70)
K -4.750(120.70) to 5.500 (139.70)
L -5.500(139.70) to 6.000 (152.40)

For more information on Maxima™ coating and Nitride treatment, ask for LIT00368.



[Dimensions in Inches(mm)]



visit **mate.com**

MATE PRECISION TOOLING

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