

Superior Solutions for Sheet Metal Fabricators

HIGH PERFORMANCE TOOLING SYSTEMS FOR TRUMPF STYLE PRESSES

- MATE NEXT™
- MATE QUICKLOCK™
- MATE TRUMPF STYLE



MATE®
M
**PRECISION
TOOLING**

mate.com/trumpfstyle

INTERNATIONAL 2007

Mate Tooling Lasts Longer

1295 Lund Boulevard, Anoka, Minnesota 55303 USA
Call 763.421.0230 Fax 763.421.0285 mate.com

MACHINE MODEL CLASSIFICATION

	<u>Non Keyed</u>	<u>Keyed</u>	<u>Rotational</u>	<u>Minimatic</u>
	Class A	Class E	Class H	Class S
	CN 700	400	190R	100
	CN 900	150K	200R	120R
	CN 701	151K	500R	160
	CN 901	152K	600L	
	Class B	180K	Class I	
	CN 901E	180.2K	2000R	
	CN 902	180KD	2010R	
	CS 75	180LK	2020R	
	CS 75.2	180.2LK	5000R	
	Class C	202K	6000L	
	CN 1200S	225K	3000	
	CN 1200A	235K	3000L	
	CS 15	300K		
	CS 20	300LK		
	CS 20A	300PK		
	MP 25	400K		
	MP 25D	Class F		
	Class D	150W		
	20	152W		
	20A	180W		
	202M	180.2W		
		180R		
		180LW		
		180.2LW		
		ELX/SWIFT		
		185		
		240		
		240R		
		250		
		260R		
Alignment Rings				
Size 1	VANTD	VANTE	VANTE	VANTM
Size 2 and 3	VAPTD	VAPTE	VAPTE	-
Heavy Duty	-	VANTF	VANTF	-
Size 1-X	-	-	-	VAPTM
QuickLock™ Alignment Ring				
Size 1 and 2	-	MATE00480	MATE00480	-
NEXT™ Tool Holders				
Size 40	-	MATE00371	MATE00371	-
Size 76	-	MATE00372	MATE00372	-
Stripper Styles				
Size 1	SND1	SKD1	SRD1	SKDX
Size 2 and 3	SND2	SKD2	SRD2	-
Size 3	SND3	SKD3	-	-
Size 1-X	-	-	-	SKDX



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Mate has been there from the beginning with products, service, and solutions. For the past five decades, Mate has led the tooling industry in quality, price, delivery, and service. This dedication and expertise result in products that are long lasting, reliable and productive.

Mate's products and services are aimed at just one thing: helping customers manufacture sheet metal parts as productively and efficiently as possible. **All Mate products are 100% unconditionally customer satisfaction guaranteed.** Standard tooling or special requests – anywhere in the world, Mate is there. Call us today, we look forward to working with you.

Dean A. Sundquist
Chairman and CEO



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MATE TOOLING SYSTEMS FOR TRUMPF STYLE PUNCH PRESSES

Mate offers the most comprehensive range of tooling systems designed to accommodate any punching application in your Trumpf style punch press. Use this simple chart to determine which tooling system is right for your typical punching application.

LESS ←-----→ MORE 	Mate NEXT™ Tooling System	Mate QuickLock™ Tooling System	Mate Trumpf Style Tooling System
Overall Value – The combination of: the features, the purchase price, and the operating costs.	••••	•••	••
Cost Savings – The ongoing cost savings of operating the tooling system over an extended period of time.	••••	•••	••
Ease of Use – Design features that make it faster to install, simpler for the operator to set up, and more convenient to maintain.	••••	•••	••
Interchangeability – The ability of a tooling system to be compatible with popular systems from other major suppliers.	•••	•••	••••
Quick Set-up – Integral features which enable tools to be changed quickly and accurately, thus maximizing machine up time.	••••	•••	••
Grind Life – The sum of the number of holes punched between regrinds AND the total useable length of the punch tip.	••••	•••	•••
Features – Elements of a system that make it simple to use, easy to maintain, extend service life, and increase productivity.	••••	•••	••
Purchase Price – The initial purchase price of the system.	•••	••	••

Mate Trumpf Style Tooling System

The Mate Trumpf Style Tooling System is designed to enable fabricators to produce high quality piece parts, economically. Features include:

Standard System

- Alignment Ring: Shock-resistant tool steel for maximum accuracy and durability.
- Punches: Abrasion resistant High Speed Steel for increased tool life. 1/4-degree back taper for improved stripping performance.
- Urethane Strippers reduce punching noise and eliminate sheet marking.
- Metal Strippers: High-strength tool steel for superior strength and flatness.
- Dies: Wear-resistant tool steel with uniform corner clearance radii for improved die strength and enhanced piece part quality.

Maxima® Coating:

Maxima® Coating – Zirconium Titanium Nitride ZrTiN coating is available for extreme applications to eliminate galling.

Slug Free® Dies:

Mate Slug Free® die geometry is available to eliminate slug pulling in extreme applications. Clearing the slug during each cycle improves piece part quality and extends tool life.



See Pages 7 – 11



Mate QuickLock™ Tooling System for Trumpf Style Presses

The Mate QuickLock™ tooling system for Trumpf style presses combines the economy of conventional Trumpf style tooling with the convenience of alignment via a keyed alignment ring. The keyed alignment ring engages the alignment key in the punch for quick tool alignment without an alignment fixture. This results in quicker tool set-ups and increased machine productivity.



Convenience

Features include:

- High Speed Steel punches, with 1/4 degree back taper and near polished flanks for extended interval between regrinds.
- Punches include an alignment key for use with the Mate QuickLock alignment ring.
- Alignment ring with a keyway that engages the key on both Mate QuickLock size 1 and size 2 punches for quick and accurate tool alignment.
- Urethane strippers, in an extended size range, for quieter operation and improved piece part quality. Available as push-on or screw-on, depending on punch point size.
- Highly wear-resistant punches and dies for maximum productivity.

See Pages 26 – 31

Mate NEXT™ Insert Tooling System for Trumpf Style Presses

The Mate NEXT™ Insert Tooling System for Trumpf style presses, is a high performance tooling system designed to maximize tool life, minimize tool set-up times, improve accuracy, reduce punching costs, and maximize productivity.



High Performance

The Mate NEXT Insert Tooling System includes:

- Two sizes of insert punch holders with precision orientation features for quick tool change without alignment fixtures.
 - Size 40: 0.031(0.80) to 1.575(40.00)
 - Size 76: 1.575(40.00) to 3.000(76.20)
- Interchangeable, highly abrasion-resistant, punch inserts for exceptional interval between regrinds. Size 40 punch inserts use exclusive M4PM™ tool steel for longest tool life.
- Precision ground shims which return the punch insert to the original length after 0.118(3.00) has been removed during grinding.
- Push-on urethane stripper for Size 40 punch holders provide positive on-the-die stripping without marking. Ideal for decorative material.

See Pages 20 – 25

Dimensions in inches (millimeters)



MAXIMA® COATING / MATE SLUG FREE® DIES

Maxima® Coating

Maxima® is a premium tool steel coating that has been specially formulated for punch press tooling applications. Maxima is a multilayer Zirconium Titanium Nitride (ZrTiN) coating that is hard, wear resistant, and lubricious. It acts as a barrier between the punch and the sheet metal being punched and, because of its exceptional lubricity, greatly improves stripping.

Maxima is applied to the precision ground surface of Mate's premium tool steel punches. Maxima is an extremely hard, wear resistant, slippery material which reduces the friction that occurs during the stripping portion of the punching cycle, it is particularly good for abrasive tooling applications. Less friction means less heat build up, less galling, and longer tool life.

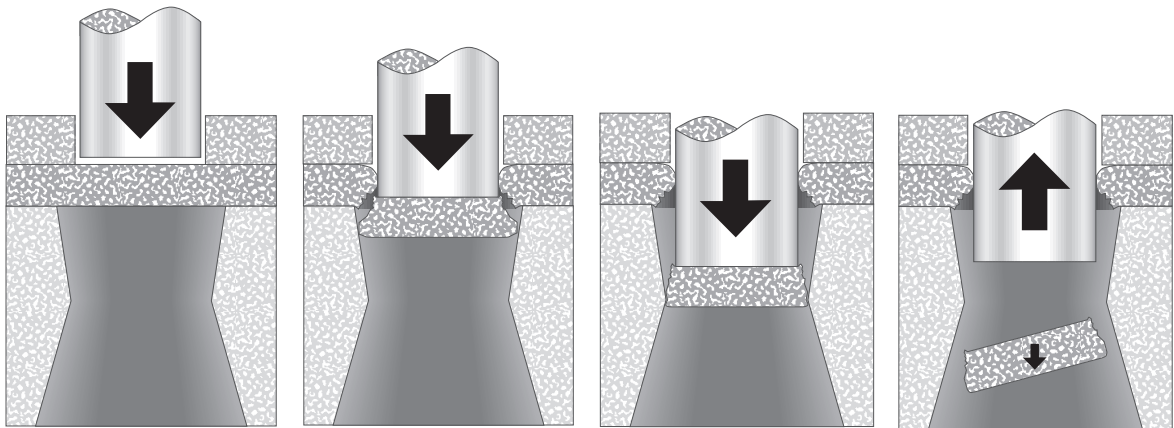


Mate Slug Free® Dies

Mate Slug Free® dies eliminate slug pulling. Slug pulling is a condition where the slug returns to the top of the sheet during the stripping portion of the punching cycle. The slug comes between the punch and the top of the sheet on the next cycle. This causes damage to the piece part and the tooling. Slug Free dies eliminate this problem.

The Slug Free die has been designed with an opening that has a constriction point below the surface so the slug cannot return once it passes this point. Once the slug is separated from the punch, it is free to fall away from the punching area. Slug pulling is eliminated.

For more information visit mate.com/slugfree



Material held securely by stripper before punch makes contact.

Punch penetrates the material. Slug fractures away from sheet.

Pressure point constricts slug. Punch stroke bottoms out as slug squeezes past pressure point.

Punch retracts and slug is free to fall down and away through exit taper of the Slug Free® die.



Slug Free® Dies:

- Eliminate slug pulling
- Reduce tool breakage
- Improve tool life
- Increase quality

TRUMPF STYLE TOOLING

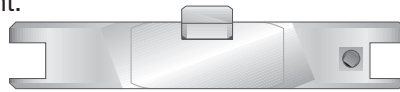
The sum of all of the features and benefits of each Mate product guarantee superior performance in every punching application. Here are just some of the features that make this a true statement.

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Trumpf Style Tooling

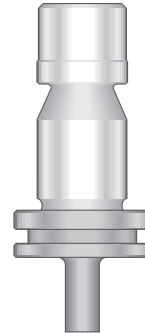
Alignment Rings

- Precision machined and ground for accurate tool alignment.
- High impact-resistant steel to maintain superior flatness and durability.



Punches

- Premium high speed tool steel for longer tool life.
- 1/4° back taper and near polished flanks to reduce friction and eliminate galling.
- Minute corner radii on punch point to reduce chipping.
- Single point turned radii at base of punch point to reduce stress.
- Solid surface contact with alignment ring for superior alignment.
- Superior tolerances and surface finishes.
- 0.118 (3.00) grind life in 0.250 (6.35) material.



Urethane Strippers

- Quiet.
- Cushions impact.
- Eliminates sheet rattle.
- Safe: will not shatter.
- Non-Marring even on polished aluminum.
- Improved flatter sheets, no puckering.
- Positive stripping keeps sheets from moving.



Strippers

- Keyed to allow 45° angle settings.
- High strength tool steel, will not deform or break.

Dies

- High chrome air hardened tool steel.
- 0.059 (1.50) grind life.
- Double-cut die opening to improve die strength.
- Uniform clearance radii in die corners.
- Precision slot orientation—die opening orientation and slot cut in single operation to improve accuracy.
- Improved die strength: Domed relief in size 1 and Stress Free® relief in size 2.
- Superior roundness and flatness.



Die Adapters

- Permits Size 1 dies to be used in machines with Size 2 die bases.
- Precision machined in shock resistant tool steel for greater accuracy, superior machine fit, and longer life.

SECTION 1

Dimensions in inches (millimeters)





TRUMPF STYLE TOOLING ROUND SIZE 0, 1, 2, 3

Size 0-A



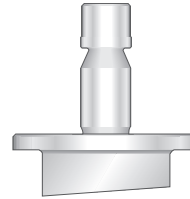
Size 0-B



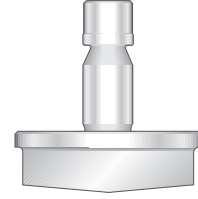
Size 1



Size 2



Size 3



M4PM™ Premium High Speed Steel, See Page 35

ROUND PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Rooftop Shear	Maxima® Coating
Size 0-A	0.030(0.77) to 0.236(6.00)	PADA0A	•			•
Size 0-B	0.237(6.01) to 0.413(10.50)	PADBOA	•			•
Size 1-A	0.030(0.77) to 0.590(15.00)	PADCOA	•			•
Size 1-B	0.591(15.01) to 1.181(30.00)	PADDOA	•			•
Size 2-A	1.182(30.01) to 1.574(40.00)	PADE0A		•		•
Size 2-B	1.575(40.01) to 2.000(50.80)	PADFOA		•		•
Size 2-C	2.001(50.81) to 2.362(60.00)	PADGOA		•		•
Size 2-D	2.363(60.01) to 3.000(76.20)	PADHOA		•		•
Size 3	3.001(76.21) to 4.134(105.00)	PADJOA			•	•

ROUND MACHINE STRIPPERS

Size	Keyed	Non-Keyed	Rotational
Size 0	SKD00A	SND00A	SRD00A
Size 1	SKD10A	SND10A	SRD10A
Size 2	SKD20A	SND20A	SRD20A
Size 3	SKD30A	SND30A	N/A

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 0-A	0.250 (6.35)	TPOA00US
Size 0-B	0.430 (10.92)	TPOB00US
Size 1	0.590 (14.98)	TP0106US
Size 1	0.890 (22.60)	TP0109US
Size 1	1.065 (27.05)	TP0112US



Keyed



Non-Keyed



Rotational



ROUND DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD100
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD200
Size 3	4.134(105.00) +0.079(2.00) Opening	DOD300



Size 1



Size 2



Size 3



See Page 58 for extended length and shear options

See Pages 12 – 13 for
• Punch Chucks
• Alignment Rings
• Die Adapters

TRUMPF STYLE TOOLING RECTANGLE SIZE 0, 1, 2, 3



Size 0-A



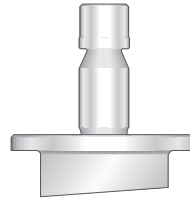
Size 0-B



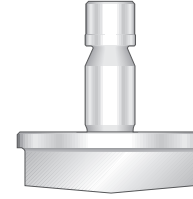
Size 1



Size 2



Size 3



M4PM™ Premium High Speed Steel, See Page 35

RECTANGLE PUNCHES

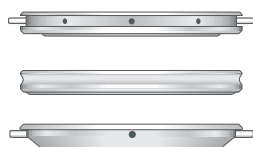
Size	Range	Part Number	Without Shear	Whisper Shear	Rooftop Shear	Maxima® Coating
Size 0-A	0.030(0.77) to 0.236(6.00)	PADA1A	•			•
Size 0-B	0.237(6.01) to 0.413(10.50)	PADB1A	•			•
Size 1-A	0.030(0.77) to 0.590(15.00)	PADC1A	•			•
Size 1-B	0.591(15.01) to 1.181(30.00)	PADD1A	•			•
Size 2-A	1.182(30.01) to 1.574(40.00)	PADE1A		•		•
Size 2-B	1.575(40.01) to 2.000(50.80)	PADF1A		•		•
Size 2-C	2.001(50.81) to 2.362(60.00)	PADG1A		•		•
Size 2-D	2.363(60.01) to 3.000(76.20)	PADH1A		•		•
Size 3	3.001(76.21) to 4.134(105.00)	PADJ1A			•	•

RECTANGLE MACHINE STRIPPERS

Size	Keyed	Non-Keyed	Rotational
Size 0	SKD01A	SND01A	SRD01A
Size 1	SKD11A	SND11A	SRD11A
Size 2	SKD21A	SND21A	SRD21A
Size 3	SKD31A	SND31A	N/A

PUSH-ON URETHANE STRIPPERS

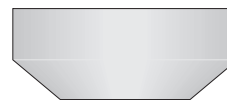
Size	Inside Diameter	Part Number
Size 0-A	0.250 (6.35)	TPOA00US
Size 0-B	0.430 (10.92)	TPOB00US
Size 1	0.590 (14.98)	TP0106US
Size 1	0.890 (22.60)	TP0109US
Size 1	1.065 (27.05)	TP0112US



Keyed

Non-Keyed

Rotational



RECTANGLE DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD110
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD210
Size 3	4.134(105.00) +0.079(2.00) Opening	DOD310



Size 1



Size 2

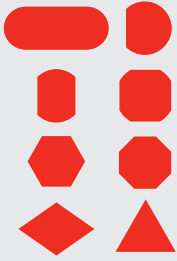


Size 3

Visit mate.com/trumpfstandard



Dimensions in inches (millimeters)



TRUMPF STYLE TOOLING STANDARD SHAPE* SIZE 0, 1, 2, 3

Size 0-A



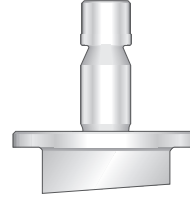
Size 0-B



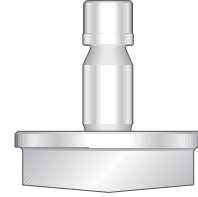
Size 1



Size 2



Size 3



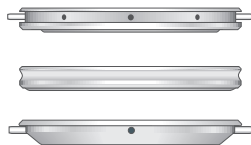
M4PM™ Premium High Speed Steel, See Page 35

SHAPED PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Rooftop Shear	Maxima® Coating
Size 0-A	0.030(0.77) to 0.236(6.00)	PADA_A	•			•
Size 0-B	0.237(6.01) to 0.413(10.50)	PADB_A	•			•
Size 1-A	0.030(0.77) to 0.590(15.00)	PADC_A	•			•
Size 1-B	0.591(15.01) to 1.181(30.00)	PADD_A	•			•
Size 2-A	1.182(30.01) to 1.574(40.00)	PADE_A		•		•
Size 2-B	1.575(40.01) to 2.000(50.80)	PADF_A		•		•
Size 2-C	2.001(50.81) to 2.362(60.00)	PADG_A		•		•
Size 2-D	2.363(60.01) to 3.000(76.20)	PADH_A		•		•
Size 3	3.001(76.21) to 4.134(105.00)	PADJ_A			•	•

SHAPED MACHINE STRIPPERS

Size	Keyed	Non-Keyed	Rotational
Size 0	SKD0_A	SND0_A	SRD0_A
Size 1	SKD1_A	SND1_A	SRD1_A
Size 2	SKD2_A	SND2_A	SRD2_A
Size 3	SKD3_A	SND3_A	N/A



Keyed

Non-Keyed

Rotational

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 0-A	0.250 (6.35)	TPOA00US
Size 0-B	0.430 (10.92)	TPOB00US
Size 1	0.590 (14.98)	TP0106US
Size 1	0.890 (22.60)	TP0109US
Size 1	1.065 (27.05)	TP0112US



SHAPED DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD1_0
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD2_0
Size 3	4.134(105.00) +0.079(2.00) Opening	DOD3_0



Size 1

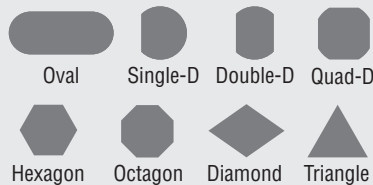


Size 2



Size 3

*STANDARD SHAPES



TRUMPF STYLE TOOLING

SQUARE SIZE 0, 1, 2, 3

11



Trumpf Style Tooling

Size 0-A



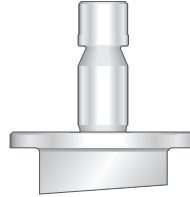
Size 0-B



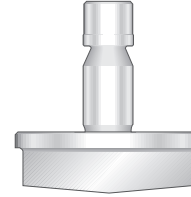
Size 1



Size 2



Size 3



M4PM™ Premium High Speed Steel, See Page 35

SQUARE PUNCHES

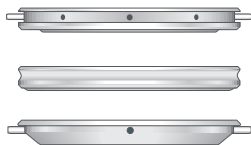
Size	Range	Part Number	Without Shear	Whisper Shear	Rooftop Shear	Maxima® Coating
Size 0-A	0.030(0.77) to 0.236(6.00)	PADA3A	•			•
Size 0-B	0.237(6.01) to 0.413(10.50)	PADB3A	•			•
Size 1-A	0.030(0.77) to 0.590(15.00)	PADC3A	•			•
Size 1-B	0.591(15.01) to 1.181(30.00)	PADD3A	•			•
Size 2-A	1.182(30.01) to 1.574(40.00)	PADE3A		•		•
Size 2-B	1.575(40.01) to 2.000(50.80)	PADF3A		•		•
Size 2-C	2.001(50.81) to 2.362(60.00)	PADG3A		•		•
Size 2-D	2.363(60.01) to 3.000(76.20)	PADH3A		•		•
Size 3	3.001(76.21) to 4.134(105.00)	PADJ3A			•	•

SQUARE MACHINE STRIPPERS

Size	Keyed	Non-Keyed	Rotational
Size 0	SKD03A	SND03A	SRD03A
Size 1	SKD13A	SND13A	SRD13A
Size 2	SKD23A	SND23A	SRD23A
Size 3	SKD33A	SND33A	N/A

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 0-A	0.250 (6.35)	TPOA00US
Size 0-B	0.430 (10.92)	TPOB00US
Size 1	0.590 (14.98)	TP0106US
Size 1	0.890 (22.60)	TP0109US
Size 1	1.065 (27.05)	TP0112US



Keyed

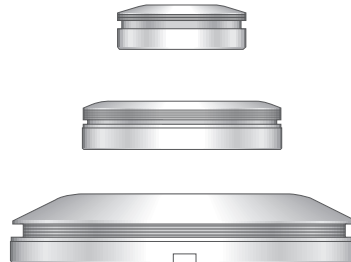
Non-Keyed

Rotational



SQUARE DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD130
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD230
Size 3	4.134(105.00) +0.079(2.00) Opening	DOD330



Size 1

Size 2

Size 3


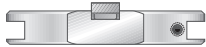




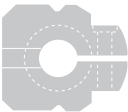




See Page 58 for extended length and shear options

See Pages 12 – 13 for
 • Punch Chucks
 • Alignment Rings
 • Die Adapters



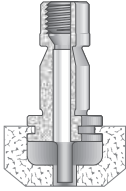
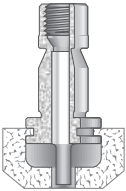








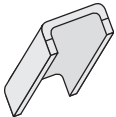
Dimensions in inches (millimeters)

ALIGNMENT RINGS

<p>Size 1 Automatic Tool Change VANTE</p> <p>(RECESSED)</p> 	<p>Sizes 2 and 3 Automatic Tool Change VAPTE</p> 	<p>Replacement Dowel 8 x 16mm DPI17304*</p> <p>For all Sizes</p> 
<p>Size 1 Manual Tool Change VANTD</p> <p>(RECESSED)</p> 	<p>Sizes 2 and 3 Manual Tool Change VAPTD</p> 	<p>Alignment Key For all Sizes VKETE000</p> 
<p>Size 1 Minimatic VANTM</p> <p>(RECESSED)</p> 	<p>Size 1-X Minimatic VAPTM</p> 	<p>Alignment Key For Minimatic VKETM000</p> 
<p>Size 1 and 2 Heavy Duty VANTF</p> 		<p>Alignment Key For Heavy Duty VKETF000</p> 



ACCESSORIES

<p>Size 0-A Punch Chuck VINTS010</p> 	<p>Sizes 0-B Punch Chuck VINTS020</p> 	<p>Punch Chuck Set Screw VINSSS</p> 
<p>Size 2 Die Adapter Accepts Size 1 Dies MAT20000</p> 	<p>Size 3 Die Adapter Accepts Size 2 Dies MAT30000</p> 	<p>Size 3 Die Adapter Accepts Size 1 Dies MAT40000</p> 
<p>Size 1 Die Shim Pack 2x 0.004(0.1) Thickness 1x 0.012(0.30) Thickness 1x 0.020(0.50) Thickness MST1</p> 	<p>Size 2 Die Shim Pack 2x 0.004(0.1) Thickness 1x 0.012(0.30) Thickness 1x 0.020(0.50) Thickness MST2</p> 	<p>Size 1 Die Shims 0.004(0.1) Thickness MST1004 (6 minimum) 0.012(0.30) Thickness MST1012 (6 minimum) 0.020(0.50) Thickness MST1020 (6 minimum)</p> <p>Size 2 Die Shims 0.004(0.1) Thickness MST2004 (6 minimum) 0.012(0.30) Thickness MST2012 (6 minimum) 0.020(0.50) Thickness MST2020 (6 minimum)</p>
<p>Size 3 Keyed Stripper Adapter SKT3H00000</p> 	<p>Size 3 Non-Keyed Stripper Adapter SNT3H00000</p> 	<p>Die Slot Plug MKPT000</p> 

Dimensions in inches (millimeters)



MINIMATIC TOOLING SYSTEM

MINIMATIC HSS PUNCHES - PUNCH CHUCKS

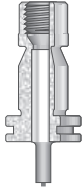
SIZE 0-A PART NUMBER



Punch Chuck Setcrew **VINSSS**
Size 0-A Punch Chuck **VINTS010**

Size range: ● **PADA0A**
0.030(0.77) to ■ **PADA1A**
0.236(6.00) ○ **PADA2A**
Maximum Diagonal ■ **PADA3A**

SIZE 0-B



Punch Chuck Setcrew **VINSSS**
Size 0-B Punch Chuck **VINTS020**

Size range: ● **PADB0A**
0.030(0.77) to ■ **PADB1A**
0.413(10.50) ○ **PADB2A**
Maximum Diagonal ■ **PADB3A**

SIZE 1-A



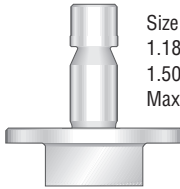
Size range: ● **PADC0A**
0.030(0.77) to ■ **PADC1A**
0.590(15.00) ○ **PADC2A**
Maximum Diagonal ■ **PADC3A**

SIZE 1-B



Size range: ● **PADD0A**
0.591(15.01) to ■ **PADD1A**
1.181(30.00) ○ **PADD2A**
Maximum Diagonal ■ **PADD3A**

SIZE 1-X



Size range: ● **PADX0A**
1.182(30.01) to ■ **PADX1A**
1.500(38.10) ○ **PADX2A**
Maximum Diagonal ■ **PADX3A**

TRUMPF MACHINES THAT USE MINIMATIC STYLE TOOLS



AUTOMATIC TOOL CHANGE
TRUMATIC
100
100M
120
160



KEYED
TRUMATIC
100
100M
120
160

MINIMATIC STRIPPERS

SIZE 1 PART NUMBER

1.181 + .060(30.00 + 1.52) maximum



● **SKDX0A**
■ **SKDX1A**
○ **SKDX2A**
■ **SKDX3A**

SIZE 1-X

1.500 + .060(38.10 + 1.52) maximum



● **SKDX0A**
■ **SKDX1A**
○ **SKDX2A**
■ **SKDX3A**

MINIMATIC DIES

SIZE 1 PART NUMBER

1.181 + .079(30.00 + 2.00)
Maximum Actual Die Opening



● **DOD100**
■ **DOD110**
○ **DOD120**
■ **DOD130**

SIZE 1-X

1.500 + 0.028 (38.10 + 0.71)
Maximum Actual Die Opening



● **DODX00**
■ **DODX10**
○ **DODX20**
■ **DODX30**

MINIMATIC ALIGNMENT RINGS

SIZE 1 PART NUMBER

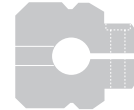
(0-3) d, .030 - 1.181
(0.77 - 30.00)



VANTM

SIZE 1-X

(0-3) d, 1.182 - 1.500
(30.01 - 38.10)



VAPT M



HEAVY DUTY TOOLING

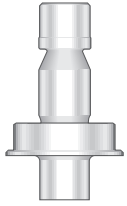
15

Heavy Duty Tooling

HEAVY DUTY HSS PUNCHES

HEAVY DUTY DIES

SIZE 1 PART NUMBER



(0-3) d, .250-1.181*
(6.35-30.00)
(3) a, .842(21.39)

- PHDD0A
- PHDD1A
- PHDD2A
- PHDD3A

*Punch width/diameter less than .250(6.35) NOT available in heavy duty style tooling

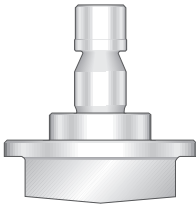
SIZE 1 PART NUMBER

.984 + .059(24.99 + 1.49)
Maximum Actual Die Opening



- D4D100
- D4D110
- D4D120
- D4D130

SIZE 2



(0) d, 1.182-1.625
(30.01-41.27)
(1) d, 1.182-2.125
(30.01-53.97)
(2) d, 1.182-2.000
(30.01-50.80)
(3) d, 1.182-1.768
(30.01-44.90)
(3) a, 1.256(31.91)

- PHDE0A
- PHDE1A
- PHDE2A
- PHDE3A

*Punch width/diameter less than .250(6.35) NOT available in heavy duty style tooling

SIZE 2

2.047 + .079(52.00 + 2.00)
Maximum Actual Die Opening



- D4D200
- D4D210
- D4D220
- D4D230

MACHINE STRIPPERS

HEAVY DUTY ALIGNMENT RING

	KEYED	NON-KEYED	ROTATIONAL
SIZE 1	SND1_A	SKD1_A	SRD1_A
SIZE 2	SND2_A	SKD2_A	SRD2_A

SIZE 1 AND 2 PART NUMBER



VANTF

TRUMPF MACHINE GROUPS BY ALIGNMENT RING STYLE

TRUMATIC 180W	235	300W
150K	180WD	240
150W	185	260
180K	200R	300K
180LK	202K	300LW
180LW	202W	300PK
180PK	225	300PW
		500R
		500L
		600L
		2000R
		5000

AUTOMATIC TOOL CHANGE



KEY FOR HEAVY DUTY ALIGNMENT RING - ALL SIZES



(Not interchangeable with OEM)

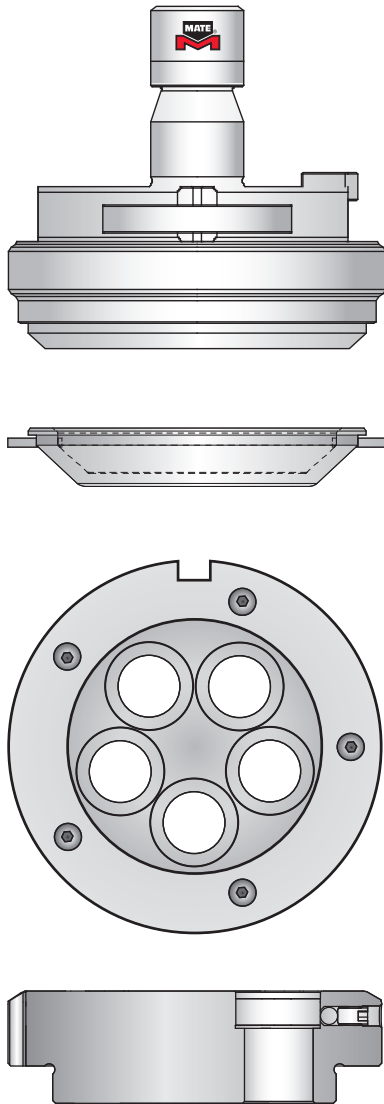
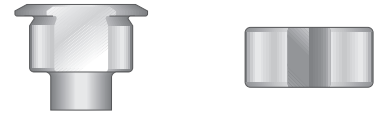
VKETF000

Dimensions in inches (millimeters)



5-STATION MULTI TOOL SYSTEM

Punch Holder	MATE00559
Stripper	MATE00560
Die Holder	MATE00561



ROUND

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PADV0A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	DADV00

RECTANGLE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PADV1A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	DADV10

SHAPED*

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PADV_A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	DADV_0

SQUARE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PADV3A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	DADV30

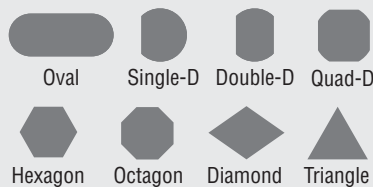
Punches

- Premium particle metallurgy tool steel for exceptional interval between regrinds and maximum machine up time.
- 1/4 degree back taper and near polished punch flanks to reduce friction and extend tool life.
- Maxima® coating available for extreme applications.

Dies

- High Speed Steel for extended life between regrinds.
- Uniform corner clearance radii for increased die strength and improved piece part quality.

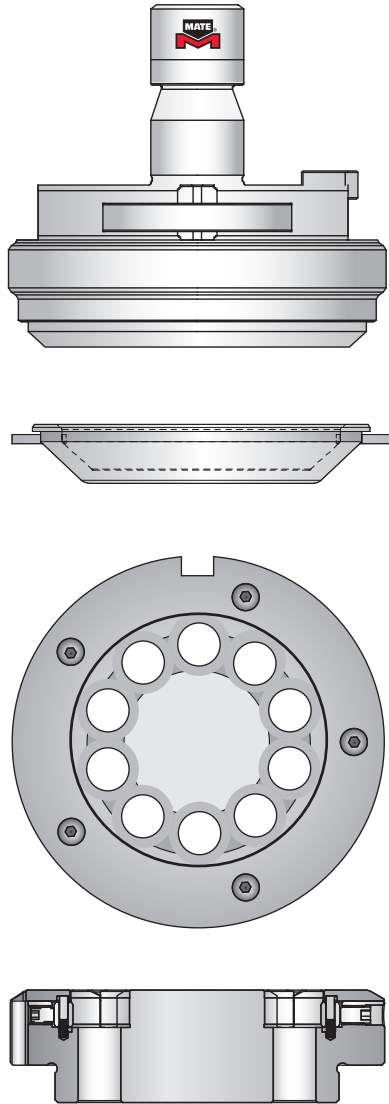
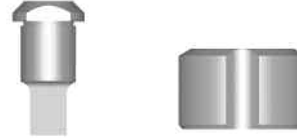
*STANDARD SHAPES



10-STATION MULTI TOOL SYSTEM

17

Punch Holder	MATE00555
Stripper	MATE00556
Die Holder	MATE00550



ROUND

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PADT0A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	DADT00

RECTANGLE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PADT1A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	DADT10

SHAPED*

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PADT_A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	DADT_0

SQUARE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PADT3A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	DADT30

Punches

- M4PM™ particle metallurgy High Speed Steel with excellent edge-wear resistance for exceptional interval between regrinds. See page 35 for details.
- 1/4 degree back taper and near polished punch flanks to reduce friction and extend tool life.
- Maxima® coating available for extreme applications.

Dies

- High Speed Steel for maximum life between regrinds.
- Uniform corner clearance radii for increased die strength and improved piece part quality.

10-Station Multi Tool

SECTION 2

Dimensions in inches (millimeters)



4-STATION MULTI TOOL TOOLING

1-PIECE PUNCH STYLE



ROUND

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD50A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D400

RECTANGLE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD51A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D410

SHAPED*

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD5_A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D4_0

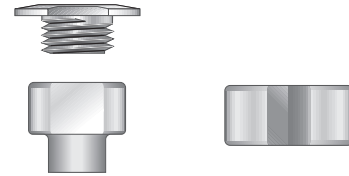
SQUARE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD53A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D430

SHIM PACKAGE

Die	Shim Assortment 8x 0.004(0.10) 8x 0.012(0.03) 8x 0.024(0.60)	MTST4
-----	---	-----------

2-PIECE PUNCH STYLE



ROUND

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD40A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D400

RECTANGLE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD41A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D410

SHAPED*

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD4_A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D4_0

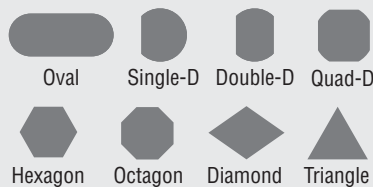
SQUARE

Punch	0.030(0.77) to 0.630(16.00) Maxima® Coating	PAD43A •
Die	0.630(16.00) +0.024(0.60) Maximum Die Opening	D0D430

SHIM PACKAGE

Punch	Shim Assortment 6x 0.004(0.10) 6x 0.012(0.03) 6x 0.024(0.60) 6x 0.040(1.00)	VTST
Die	Shim Assortment 8x 0.004(0.10) 8x 0.012(0.03) 8x 0.024(0.60)	MTST4

*STANDARD SHAPES

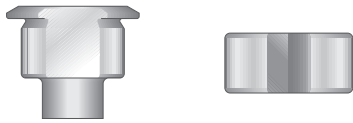


Punch Cap
PAT4CAP

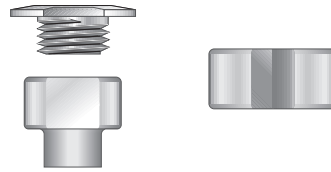


6-STATION MULTI TOOL TOOLING

1-PIECE PUNCH STYLE



2-PIECE PUNCH STYLE



ROUND

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD70A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D600

ROUND

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD60A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D600

RECTANGLE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD71A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D610

RECTANGLE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD61A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D610

SHAPED*

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD7_A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D6_0

SHAPED*

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD6_A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D6_0


SQUARE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD73A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D630



SQUARE

Punch	0.030(0.77) to 0.413(10.50) Maxima® Coating	PAD63A •
Die	0.413(10.50) +0.024(0.60) Maximum Die Opening	D0D630

SHIM PACKAGE

Die	Shim Assortment 8x 0.004(0.10) 8x 0.012(0.03) 8x 0.024(0.60)	MTST6 
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SHIM PACKAGE

Punch	Shim Assortment 6x 0.004(0.10) 6x 0.012(0.03) 6x 0.024(0.60) 6x 0.040(1.00)	VTST 
Die	Shim Assortment 8x 0.004(0.10) 8x 0.012(0.03) 8x 0.024(0.60)	MTST6 

Punch Cap
PAT6CAP



Dimensions in inches (millimeters)

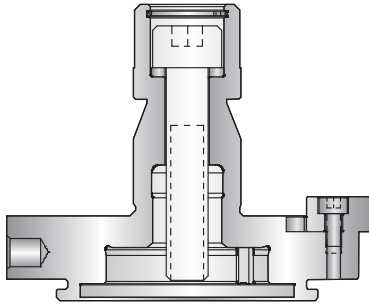
MATE NEXT™ INSERT TOOLING SYSTEM

The new NEXT™ Insert Tooling System for Trumpf style presses, is designed to dramatically increase tool life and reduce punching costs.

The NEXT™ Insert Tooling System includes:

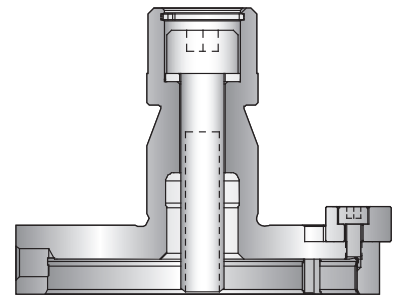
- Interchangeable, abrasion-resistant, punch inserts
- Two sizes of insert punch holders with precision orientation features
- Precision ground punch shim returns the NEXT™ punch assembly to the original length after 0.118(3.00) has been removed during routine grinding.

SIZE 40



Insert Punch Holder
Available in two sizes.
Size 40 0.031-1.575(0.80-40.00)
Size 76 1.576-3.000(40.01-76.20)

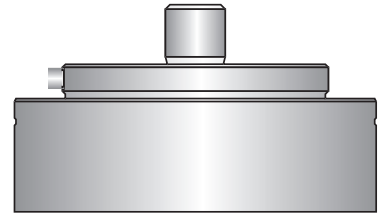
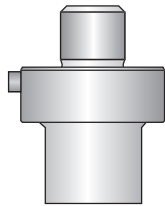
SIZE 76



Precision Ground Shim



NEXT™ Punch Inserts
M4PM™ from 0.031(0.80) to 1.181(30.00)
M2 HSS from 1.182(30.01) to 3.000(76.20)



Push-on Urethane Stripper



The NEXT™ Insert Tooling System is fully compatible with existing strippers and dies.



High strength steel strippers for reliable operation.



Highly wear resistant steel dies for exceptional tool life.



Visit mate.com/NEXT

MATE NEXT™ INSERT TOOLING SYSTEM

The NEXT™ Insert Tooling System holders, with integral precision alignment features and captive draw bolt, accept interchangeable punch inserts for faster and more accurate machine set-ups. Includes two angle settings for maximum versatility.*

Size 40 0.031(0.80) to 1.575(40.00)
Size 76 1.576(40.01) to 3.000(76.20)

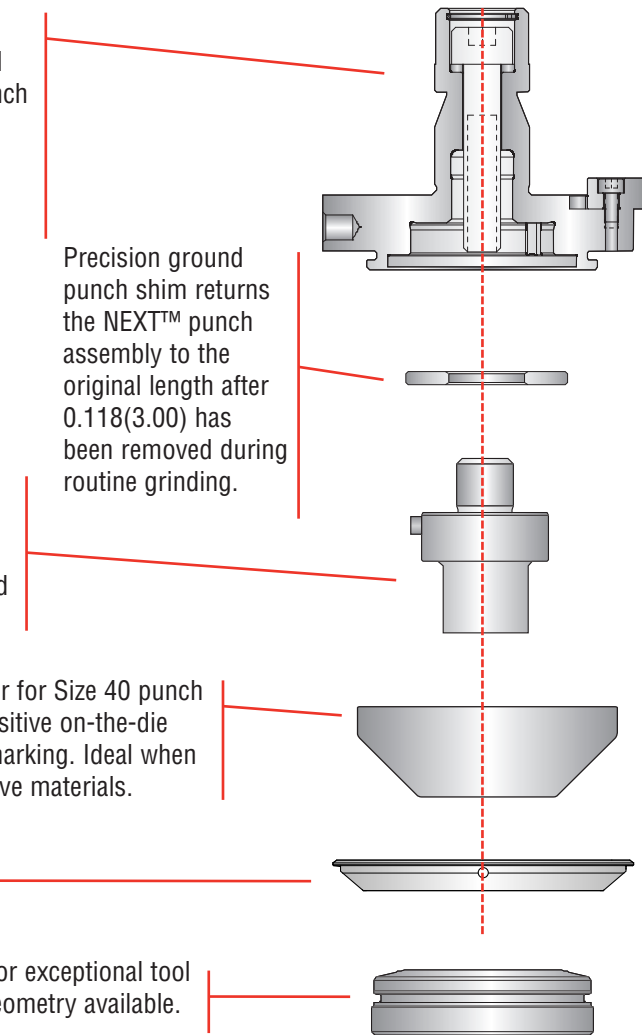
M4PM™ from 0.031(0.80) to 1.181(30.00)
M2 HSS from 1.182(30.01) to 3.000(76.20)
 High speed steel (HSS) NEXT™ punch inserts provide superior abrasion resistance to extend the interval between regrinds.

Precision ground punch shim returns the NEXT™ punch assembly to the original length after 0.118(3.00) has been removed during routine grinding.

Push-on urethane stripper for Size 40 punch insert holders provide positive on-the-die stripping without sheet marking. Ideal when punching soft or decorative materials.

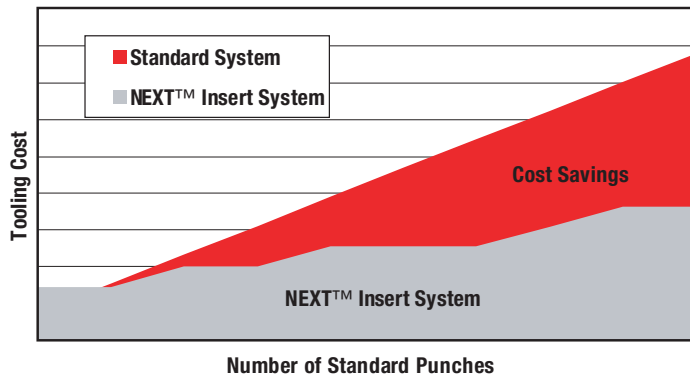
High strength steel stripper for reliable operation.

High wear resistant steel die for exceptional tool life. Optional Slug Free® die geometry available.

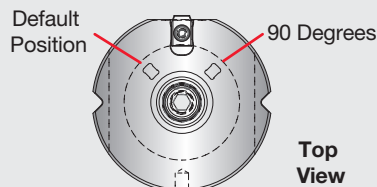


Mate NEXT™ Insert System Delivers Value!

The High Speed Steel punch inserts deliver exceptional edge wear resistance. The M4PM™ HSS Insert in sizes up to 0.031-1.181(0.80-30.00) delivers the longest possible interval between regrinds. In addition, by installing the shim after 0.118(3.00) has been removed from the punch during regrinding, the punch assembly is returned to its original length instead of being replaced. The result is that a single punch insert would last the same as multiple standard punches. The chart at right demonstrates the real value delivered by the NEXT™ Insert Tooling System from Mate.



SECTION 3



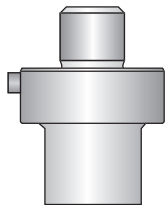
Dimensions in inches (millimeters)

Torque Settings (Pre-set torque wrench recommended)
 6mm NEXT™ Holder Draw Bolt – 288 in-lbs (22 N-m)

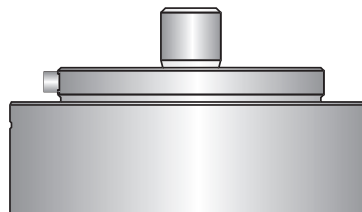


MATE NEXT™ TOOLING SYSTEM ROUND SIZE 40 AND SIZE 76

SIZE 40



SIZE 76



ROUND PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 40*	0.030 (0.77) to 1.181 (30.00)	PBTD0A	•		•
Size 40	1.182 (30.01) to 1.575 (40.00)	PBTE0A		•	•
Size 76	1.576 (40.01) to 2.205 (56.00)	PBTFOA		•	•
Size 76	2.206 (56.01) to 2.598 (66.00)	PBTGOA		•	•
Size 76	2.599 (66.01) to 3.000 (76.20)	PBTH0A		•	•

ROUND MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD10A	SRD10A
Size 2	SKD20A	SRD20A



Keyed



Rotational

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 40	0.984 (25.00)	MATE00374
Size 40	1.181 (30.00)	MATE00375
Size 40	1.378 (35.00)	MATE00376
Size 40	1.575 (40.00)	MATE00377



ROUND DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD100
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD200



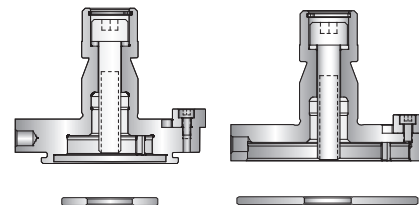
Size 1



Size 2

PUNCH HOLDER AND SHIM

Size 40	Punch Holder with Shim	MATE00371
Size 40	Shim	MATE00364
Size 76	Punch Holder with Shim	MATE00372
Size 76	Shim	MATE00365
	Draw Bolt	SHC12191
	Snap Ring	SRI00001



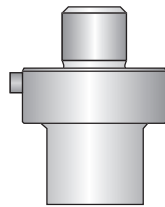
See Page 58 for extended length and shear options

*M4PM™ Premium High Speed Steel, See Page 35

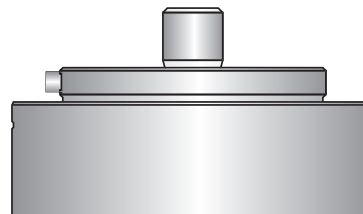
MATE NEXT™ TOOLING SYSTEM

RECTANGLE SIZE 40 AND SIZE 76

SIZE 40



SIZE 76



RECTANGLE PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 40*	0.030 (0.77) to 1.181 (30.00)	PBTD1A	•		•
Size 40	1.182 (30.01) to 1.575 (40.00)	PBTE1A		•	•
Size 76	1.576 (40.01) to 2.205 (56.00)	PBTF1A		•	•
Size 76	2.206 (56.01) to 2.598 (66.00)	PBTG1A		•	•
Size 76	2.599 (66.01) to 3.000 (76.20)	PBTH1A		•	•

RECTANGLE MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD11A	SRD11A
Size 2	SKD21A	SRD21A



Keyed



Rotational

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 40	0.984 (25.00)	MATE00374
Size 40	1.181 (30.00)	MATE00375
Size 40	1.378 (35.00)	MATE00376
Size 40	1.575 (40.00)	MATE00377



RECTANGLE DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD110
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD210



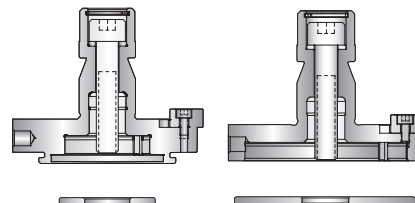
Size 1



Size 2

PUNCH HOLDER AND SHIM

Size 40	Punch Holder with Shim	MATE00371
Size 40	Shim	MATE00364
Size 76	Punch Holder with Shim	MATE00372
Size 76	Shim	MATE00365
	Draw Bolt	SHC12191
	Snap Ring	SRI00001



*M4PM™ Premium High Speed Steel, See Page 35

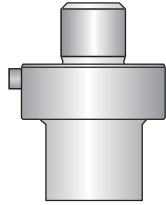
Dimensions in inches (millimeters)



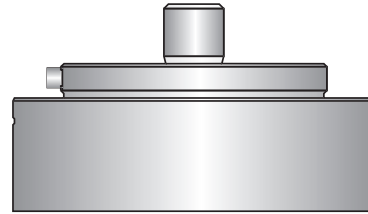


MATE NEXT™ TOOLING SYSTEM STANDARD SHAPE* SIZE 40 AND SIZE 76

SIZE 40



SIZE 76



SHAPED PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 40*	0.030 (0.77) to 1.181 (30.00)	PBTD_A	•		•
Size 40	1.182 (30.01) to 1.575 (40.00)	PBTE_A		•	•
Size 76	1.576 (40.01) to 2.205 (56.00)	PBTF_A		•	•
Size 76	2.206 (56.01) to 2.598 (66.00)	PBTG_A		•	•
Size 76	2.599 (66.01) to 3.000 (76.20)	PBTH_A		•	•

SHAPED MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD1_A	SRD1_A
Size 2	SKD2_A	SRD2_A



Keyed



Rotational

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 40	0.984 (25.00)	MATE00374
Size 40	1.181 (30.00)	MATE00375
Size 40	1.378 (35.00)	MATE00376
Size 40	1.575 (40.00)	MATE00377



SHAPED DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD1_0
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD2_0



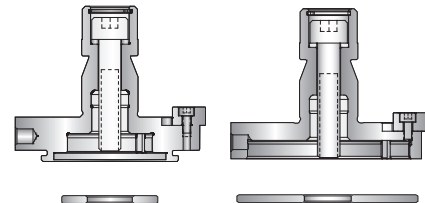
Size 1



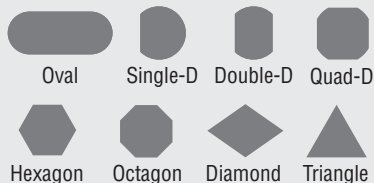
Size 2

PUNCH HOLDER AND SHIM

Size 40	Punch Holder with Shim	MATE00371
Size 40	Shim	MATE00364
Size 76	Punch Holder with Shim	MATE00372
Size 76	Shim	MATE00365
	Draw Bolt	SHC12191
	Snap Ring	SRI00001



*STANDARD SHAPES



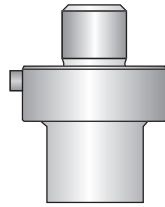
*M4PM™ Premium High Speed Steel, See Page 35



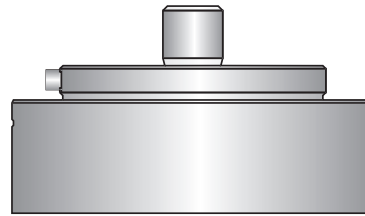
MATE NEXT™ TOOLING SYSTEM

SQUARE SIZE 40 AND SIZE 76

SIZE 40



SIZE 76



SQUARE PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 40*	0.030 (0.77) to 1.181 (30.00)	PBTD3A	•		•
Size 40	1.182 (30.01) to 1.575 (40.00)	PBTE3A		•	•
Size 76	1.576 (40.01) to 2.205 (56.00)	PBTF3A		•	•
Size 76	2.206 (56.01) to 2.598 (66.00)	PBTG3A		•	•
Size 76	2.599 (66.01) to 3.000 (76.20)	PBTH3A		•	•

SQUARE MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD13A	SRD13A
Size 2	SKD23A	SRD23A



Keyed



Rotational

PUSH-ON URETHANE STRIPPERS

Size	Inside Diameter	Part Number
Size 40	0.984 (25.00)	MATE00374
Size 40	1.181 (30.00)	MATE00375
Size 40	1.378 (35.00)	MATE00376
Size 40	1.575 (40.00)	MATE00377



SQUARE DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD130
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD230



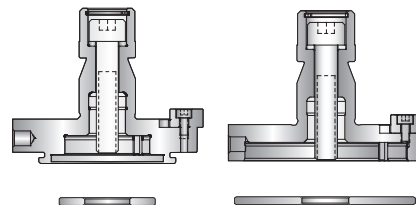
Size 1



Size 2

PUNCH HOLDER AND SHIM

Size 40	Punch Holder with Shim	MATE00371
Size 40	Shim	MATE00364
Size 76	Punch Holder with Shim	MATE00372
Size 76	Shim	MATE00365
	Draw Bolt	SHC12191
	Snap Ring	SRI00001



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Mate NEXT™ Tooling

SECTION 3

*M4PM™ Premium High Speed Steel, See Page 35

See Page 58 for extended length and shear options



Dimensions in inches (millimeters)

MATE QUICKLOCK™ TOOLING SYSTEM

Introducing Mate QuickLock™ Tooling System

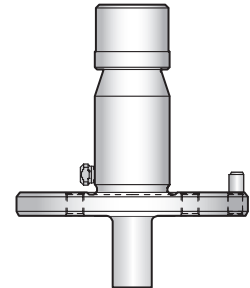
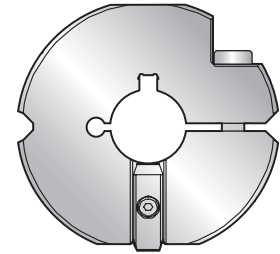
Mate QuickLock™ is a new tooling system for Trumpf style presses that combines the economy of conventional Trumpf style tooling with the convenience of alignment via a keyed alignment ring. The hardened and ground key (located in the shank or shoulder, depending on punch point size) engages the keyway in the alignment ring for fast and accurate alignment without a dedicated alignment fixture.

Mate QuickLock™ Tooling System Features:

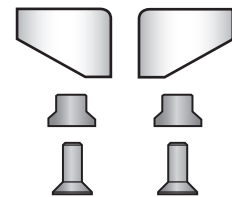
- High speed steel punches for extended interval between sharpening.
- Punches include an alignment key for use with the Mate QuickLock™ alignment ring.
- Alignment ring with a keyway that engages the key on both Mate QuickLock™ size 1 and size 2 punches for quick and accurate tool alignment of both.
- Urethane strippers, in an extended size range, for quieter operation and improved piece part quality.
- Highly wear-resistant punches and dies for maximum productivity.

Mate QuickLock™ Universal Alignment Ring

- Precision machined keyway to accept the hardened punch key for accurate alignment, relative to the die aperture, without the need for a fixture.
- Precision ground upper and lower surfaces for positive contact with the punch shoulder for reduced tool stress and maximum service life.
- Elimination of the possibility of punch rotation, with a solid contact between the punch key and the alignment ring keyway.
- Shock resistant tool steel to eliminate cracking, for longer service life.
- Compatible with conventional Trumpf style size 2 punches.
- Universal for both Mate QuickLock™ size 1 and size 2 punches.



Mate QuickLock™ Push-On Urethane Stripper



Mate QuickLock™ Screw-On Urethane Stripper. Supplied in pairs. Fixed to the punch shoulder with a retainer and flat head screw.



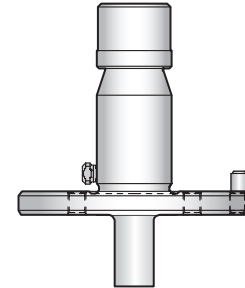
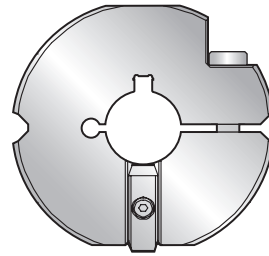
MATE QUICKLOCK™ TOOLING SYSTEM

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Mate QuickLock™ Tooling

Mate QuickLock™ Punches

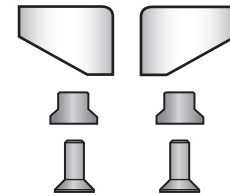
- High speed steel, for extended intervals between sharpening.
- Hardened and ground key for quick and accurate punch alignment.
 - For punches with a diagonal dimension up to 2.000(50.80) the alignment pin is located on the shank.
 - For punches with a diagonal dimension greater than 2.000(50.80) the alignment pin is located on the shoulder.
- 1/4-degree back taper and near polished punch flanks to reduce friction, eliminate galling, and extend punch grind life.
- Maxima® coating or Nitride treatment available for extreme punching applications.
- Optional extended length punch available, with 3.057(77.60) overall length.



Mate QuickLock™ Push-On Urethane Stripper

Mate QuickLock™ Urethane Strippers

- Positive, on-the-die stripping to eliminate sheet rattle and reduce punching noise.
- Two types available (dependent on punch point size).
- **Push-On Urethane Stripper**
 - Locks securely onto punch and alignment ring for reliable operation.
 - Available for all punches with a diagonal dimension up to 2.000(50.80).
- **Screw-On Urethane Stripper**
 - Available in two sizes: for shaped punches with width up to 0.394(10.00) and length up to 2.263(60.00), or length up to 3.000(76.20).
 - Supplied in pairs, and fixed to the punch shoulder with a flat head screw.
 - Punch must have rooftop shear.



Mate QuickLock™ Screw-On Urethane Stripper. Supplied in pairs. Fixed to the punch shoulder with a retainer and flat head screw.

Mate Dies

- Highly wear-resistant tool steel with optimized heat treatment for perfect balance of wear and toughness for maximum interval between regrinds. Up to 0.059(1.50) grind life.
- Double-cut die opening for improved accuracy.
- Uniform clearance radii in die corners for improved component edge quality.
- Improved die strength with domed relief to evenly distribute punching forces.
- Superior roundness and flatness for improved piece part quality.

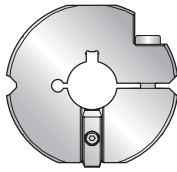


Visit mate.com/quicklock

Dimensions in inches (millimeters)

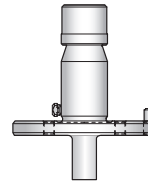


MATE QUICKLOCK™ TOOLING SYSTEM ROUND SIZE 1 AND SIZE 2



Mate QuickLock™ Universal Alignment Ring

The integral keyway allows for fast and accurate alignment of the Mate QuickLock™ punch for faster machine set-up without a dedicated alignment fixture. Also compatible with conventional size 2 punches.



Mate QuickLock™ Punch with Alignment Pin.

The hardened and ground key (located in the shank or shoulder, depending on punch point size) engages the keyway in the alignment ring for fast and accurate alignment without a dedicated alignment fixture.

QUICKLOCK™ UNIVERSAL ALIGNMENT RING

Size 1 and 2 Universal Alignment Ring MATE00480

ROUND QUICKLOCK™ PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 1	0.030 (0.77) to 1.181 (30.00)	PDTD0A	•		•
Size 2	1.182 (30.01) to 1.575 (40.00)	PDTE0A		•	•
Size 2	1.576 (40.01) to 2.000 (50.80)	PDTFOA		•	•
Size 2	2.001 (50.81) to 2.362 (60.00)	PDTGOA		•	•
Size 2	2.363 (60.01) to 3.000 (76.20)	PDTH0A		•	•

ROUND MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD10A	SRD10A
Size 2	SKD20A	SRD20A

PUSH-ON URETHANE STRIPPERS

Inside Diameter	Part Number
0.590 (15.00)	MATE00532
0.787 (20.00)	MATE00533
1.181 (30.00)	MATE00534
1.378 (35.00)	MATE00548
1.574 (40.00)	MATE00535
2.047 (52.00)	MATE00536



Keyed



Rotational



ROUND DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD100
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD200



Size 1



Size 2

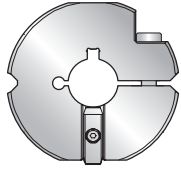


See Page 58 for extended length and shear options

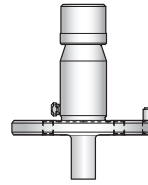
Dimensions in inches (millimeters)

MATE QUICKLOCK™ TOOLING SYSTEM

RECTANGLE SIZE 1 AND 2



Mate QuickLock™ Universal Alignment Ring
The integral keyway allows for fast and accurate alignment of the Mate QuickLock™ punch for faster machine set-up without a dedicated alignment fixture. Also compatible with conventional size 2 punches.



Mate QuickLock™ Punch with Alignment Pin.
The hardened and ground key (located in the shank or shoulder, depending on punch point size) engages the keyway in the alignment ring for fast and accurate alignment without a dedicated alignment fixture.

QUICKLOCK™ UNIVERSAL ALIGNMENT RING

Size 1 and 2 Universal Alignment Ring MATE00480

RECTANGLE PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 1	0.030 (0.77) to 1.181 (30.00)	PDTD1A	•		•
Size 2	1.182 (30.01) to 1.575 (40.00)	PDTE1A		•	•
Size 2	1.576 (40.01) to 2.000 (50.80)	PDTF1A		•	•
Size 2	2.001 (56.01) to 2.362 (60.00)	PDTG1A		•	•
Size 2	2.363 (60.01) to 3.000 (76.20)	PDTH1A		•	•

RECTANGLE MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD1_A	SRD1_A
Size 2	SKD2_A	SRD2_A

PUSH-ON URETHANE STRIPPERS

Inside Diameter	Part Number
0.590 (15.00)	MATE00532
0.787 (20.00)	MATE00533
1.181 (30.00)	MATE00534
1.378 (35.00)	MATE00548
1.574 (40.00)	MATE00535
2.047 (52.00)	MATE00536



Keyed



Rotational



RECTANGLE DIES

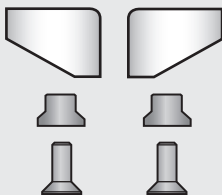
Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	D0D1_0
Size 2	3.000(76.20) +0.079(2.00) Opening	D0D2_0



Size 1



Size 2

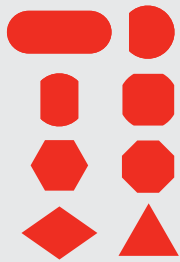


MATE QUICKLOCK™ Screw-On Urethane Stripper

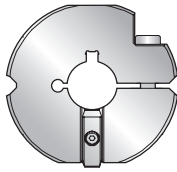
For use with shaped Mate QuickLock™ Punches with optional rooftop shear and width up to 0.394(10.00). Two sizes available.

For use with punch length up to 2.263 (60.00) MATE00538
 For use with punch length up to 3.000 (76.20) MATE00539
 Retainer – pair MATE00578
 Screw – pair MATE00579



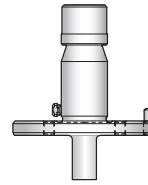


MATE QUICKLOCK™ TOOLING SYSTEM STANDARD SHAPE* SIZE 1 AND SIZE 2



Mate QuickLock™ Universal Alignment Ring

The integral keyway allows for fast and accurate alignment of the Mate QuickLock™ punch for faster machine set-up without a dedicated alignment fixture. Also compatible with conventional size 2 punches.



Mate QuickLock™ Punch with Alignment Pin.

The hardened and ground key (located in the shank or shoulder, depending on punch point size) engages the keyway in the alignment ring for fast and accurate alignment without a dedicated alignment fixture.

QUICKLOCK™ UNIVERSAL ALIGNMENT RING

Size 1 and 2 Universal Alignment Ring MATE00480

SHAPED PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 1	0.030 (0.77) to 1.181 (30.00)	PDTD_A	•		•
Size 2	1.182 (30.01) to 1.575 (40.00)	PDTE_A		•	•
Size 2	1.576 (40.01) to 2.000 (50.80)	PDTF_A		•	•
Size 2	2.001 (56.01) to 2.362 (60.00)	PDTG_A		•	•
Size 2	2.363 (60.01) to 3.000 (76.20)	PDTH_A		•	•

SHAPED MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD1_A	SRD1_A
Size 2	SKD2_A	SRD2_A

PUSH-ON URETHANE STRIPPERS

Inside Diameter	Part Number
0.590 (15.00)	MATE00532
0.787 (20.00)	MATE00533
1.181 (30.00)	MATE00534
1.378 (35.00)	MATE00548
1.574 (40.00)	MATE00535
2.047 (52.00)	MATE00536



Keyed



Rotational



SHAPED DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD1_0
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD2_0

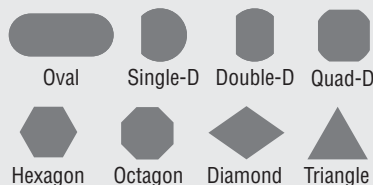


Size 1



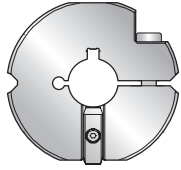
Size 2

*STANDARD SHAPES

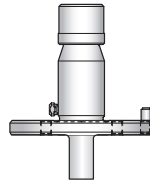


MATE QUICKLOCK™ TOOLING SYSTEM

SQUARE SIZE 1 AND SIZE 2



Mate QuickLock™ Universal Alignment Ring
The integral keyway allows for fast and accurate alignment of the Mate QuickLock™ punch for faster machine set-up without a dedicated alignment fixture. Also compatible with conventional size 2 punches.



Mate QuickLock™ Punch with Alignment Pin.
The hardened and ground key (located in the shank or shoulder, depending on punch point size) engages the keyway in the alignment ring for fast and accurate alignment without a dedicated alignment fixture.

QUICKLOCK™ UNIVERSAL ALIGNMENT RING

Size 1 and 2 Universal Alignment Ring MATE00480

SQUARE QUICKLOCK™ PUNCHES

Size	Range	Part Number	Without Shear	Whisper Shear	Maxima® Coating
Size 1	0.030 (0.77) to 1.181 (30.00)	PDTD3A	•		•
Size 2	1.182 (30.01) to 1.575 (40.00)	PDTE3A		•	•
Size 2	1.576 (40.01) to 2.000 (50.80)	PDTF3A		•	•
Size 2	2.001 (56.01) to 2.362 (60.00)	PDTG3A		•	•
Size 2	2.363 (60.01) to 3.000 (76.20)	PDTH3A		•	•

SQUARE MACHINE STRIPPERS

Size	Keyed	Rotational
Size 1	SKD13A	SRD13A
Size 2	SKD23A	SRD23A

PUSH-ON URETHANE STRIPPERS

Inside Diameter	Part Number
0.590 (15.00)	MATE00532
0.787 (20.00)	MATE00533
1.181 (30.00)	MATE00534
1.378 (35.00)	MATE00548
1.574 (40.00)	MATE00535
2.047 (52.00)	MATE00536



Keyed



Rotational



SQUARE DIES

Size	Range	Part Number
Size 1	1.181(30.00) +0.079(2.00) Opening	DOD130
Size 2	3.000(76.20) +0.079(2.00) Opening	DOD230



Size 1



Size 2

Mate QuickLock™ Tooling

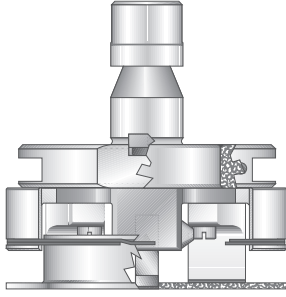
SECTION 4

See Page 58 for extended length and shear options

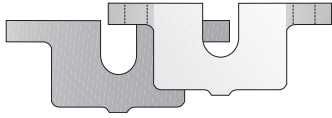


Dimensions in inches (millimeters)

EUROSTYLE™ TOOLING SYSTEM



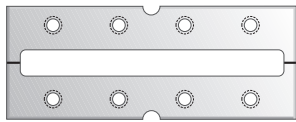
DESCRIPTION	5.00 X 56.00mm Slitting Assembly	5.00 X 76.20mm Slitting Assembly
	PART NUMBER	PART NUMBER
PUNCH ASSEMBLY, RECTANGLE	XPD2170500M5600	XPD2170500M7620
PUNCH ASSEMBLY, OVAL	XPD2270500M5600	XPD2270500M7620
PUNCH ASSEMBLY WITH MAXIMA COATING, RECTANGLE	XPD21M0500M5600	XPD21M0500M7620
PUNCH ASSEMBLY WITH MAXIMA COATING, OVAL	XPD22M0500M5600	XPD22M0500M7620



DESCRIPTION	5.00 X 56.00mm Slitting Assembly	5.00 X 76.20mm Slitting Assembly
	UTS1	UTS1
URETHANE SPRINGS		
REPLACEMENT STRIPPERS (NOT SHOWN)		
OVAL 5.00 X 61.00	MATE00459	N/A
OVAL 5.00 X 76.20	N/A	MATE00460

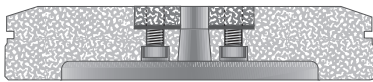


REPLACEABLE PUNCH INSERT, RECTANGLE	PADS1A0500M5600	PADS1A0500M7620
REPLACEABLE PUNCH INSERT, OVAL	PADS2A0500M5600	PADS2A0500M7620
REPLACEABLE PUNCH INSERT WITH MAXIMA COATING, RECTANGLE	PADS1M0500M5600	PADS1M0500M7620
REPLACEABLE PUNCH INSERT WITH MAXIMA COATING, OVAL	PADS2M0500M5600	PADS2M0500M7620



REPLACEABLE DIE INSERT, RECTANGLE	DODS1_0500M5600*	DODS1_0500M7620*
REPLACEABLE DIE INSERT, RECTANGLE WITH 1.50MM RADIUS CORNERS	DODS8_0500M5600*	DODS8_0500M7620*

*PLUS TOTAL CLEARANCE



REPLACEABLE DIE INSERT, RECTANGLE	XDD21_0500M5600*	XDD21_0500M7620*
REPLACEABLE DIE INSERT, RECTANGLE WITH 1.50MM RADIUS CORNERS	XDD28_0500M5600*	XDD28_0500M7620*

*PLUS TOTAL CLEARANCE

NOT FOR TC500 AND NEWER MACHINES

Punch insert can be removed from tool without disassembly to facilitate sharpening and punch replacement.



EUROSTYLE™ TOOLING SYSTEM

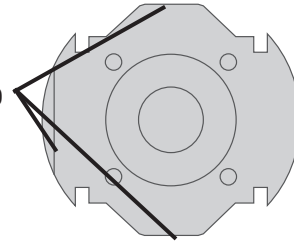
Precision and rigidity of the guided shearing assembly extend punch and die life *up to three times* more than non-guided assemblies...

A guided, spring-loaded stripper with on-the-die performance is built into the punching assembly. The stripper is guided by the inside surface of the retainer and by the sides of the punch insert. The punch point is guided by the stripper as it enters the material. This protects slitting punches against deflection at the point of impact so they last much longer. Spring pressure yields positive stripping action and clamps material against the die for clean, accurate punching, and flatter piece parts.

Three Alignment Flats...

- Three alignment flats on the punch holder allow immediate 0° or 90° alignment without disassembly.
- The guided stripper allows for on-die stripping which is essential for material control with minimal slippage. The greater accuracy eliminates secondary finishing, while the punching operation can be accomplished in fewer hits.

External alignment flats allow for simple 0 and 90 degree alignment ring setting without disassembly.

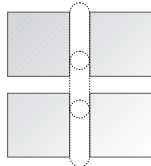


Slitting Options...



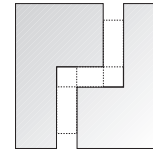
Standard with radius corners for smooth blending of successive cuts in slitting operations.

The oval punch is used for a smooth transition between punch hits. No “pips” or edge irregularities.



Shake-and-break (See D06 on Page 36) with square corners for precise gaps needed for holding corner tabs.

The rectangular punch is used for precision corner cutting.



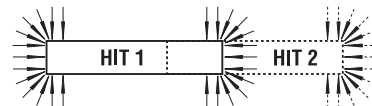
Smooth Slitting Tip...

To reduce edge irregularities left by square ended tools, it is common practice to order oval punches and rectangular dies with 0.060 (1.50) radius corners as sets.

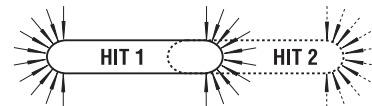
Slitting with a rectangular punch and die can result in small “pips” which are visually undesirable. This is the result of natural forces that take place when performing this operation.

The sharp corners of a rectangular punch and die force an abrupt change in the direction that the material flows prior to the fracture of the slug from the sheet. This abrupt change in the direction of flow can be decreased by placing a radius on the corners of the rectangle. As the radius increases in size, a more uniform flow of material is achieved.

When the size of the radius is increased to 1/2 the width of the rectangle, the shape becomes an oval. This oval shaped punch and die will result in an improved edge appearance when slitting.

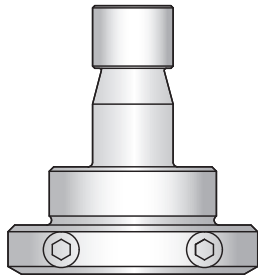


Abrupt change in material flow occurs at the sharp corners of the rectangle

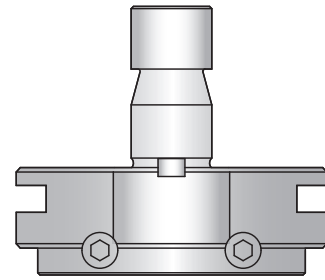


Material flows uniformly at the ends of the oval

MATE LONGLIFE™ TOOLING SYSTEM

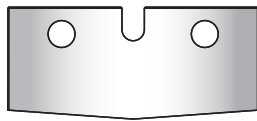


DESCRIPTION: SLITTING PUNCH HOLDER
PART NUMBER: **PPD2SHA**



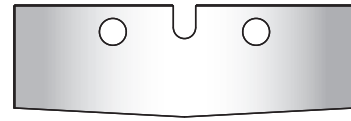
DESCRIPTION: SLITTING PUNCH HOLDER WITH INTEGRATED ALIGNMENT RING
PART NUMBER: **PPD2HAVANTF**

5.00 X 56.00 mm

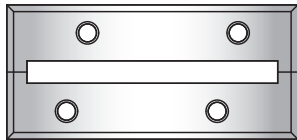


DESCRIPTION: RECTANGLE
PART NUMBER: **PPDS1A0500M5600**

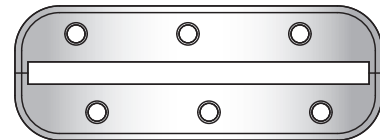
5.00 X 76.20 mm



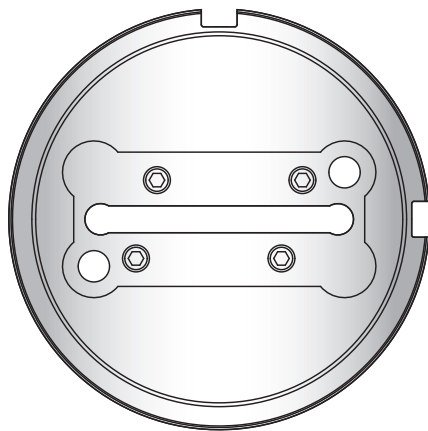
DESCRIPTION: RECTANGLE
PART NUMBER: **PPDS1A0500M7620**



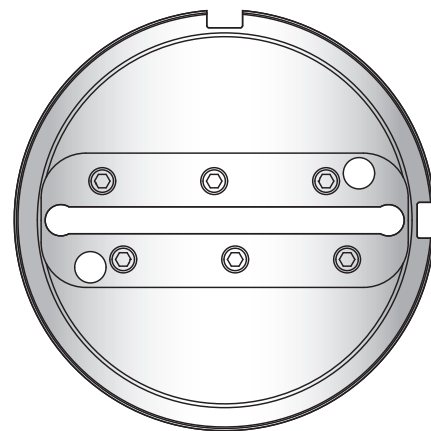
DESCRIPTION: RECTANGLE
PART NUMBER: **DPDS1_0500M5600***



DESCRIPTION: RECTANGLE
PART NUMBER: **DPDS1_0500M7620***



DESCRIPTION: DIE BASE ASSEMBLY
PART NUMBER: **DPD2H056**



DESCRIPTION: DIE BASE ASSEMBLY
PART NUMBER: **DPD2H076**



*Plus total clearance

MATE M4PM™ TOOL STEEL

35

Mate M4PM™ Tool Steel

M4PM™ is a high speed, particle metallurgy tool steel designed for use in high performance tooling systems.

A combination of the chemical composition of M4, the particle metallurgy manufacturing process, and the triple temper heat treatment process, produces M4PM: the world's finest tool steel for use in punching tools.

M4PM is a very homogeneous, high quality tool steel which has many advantages when compared to alternative tool steels commonly available. These advantages include:

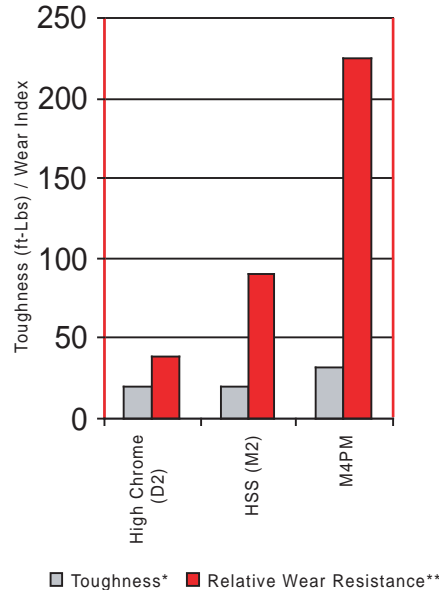
Superior Wear Resistance – 100% better wearing, M4PM offers superior resistance to adhesive- and abrasive-wear to maximize the interval between regrinds.

- More uniform distribution of smaller carbides—results in improved ductility (adhesive-wear) while still providing abrasive-wear resistant carbides over the entire surface of the material.
- 100% more Vanadium carbides—harder wearing for greater resistance to abrasive-wear.
- Increased Tungsten carbides—harder wearing and offer better red hardness; increased resistance to high temperatures which may anneal or damage the material.
- Higher hardenability—increased alloy content results in higher effective hardness for better wear resistance.

Increased Toughness – the molecular structure of M4PM is 50% tougher than conventional tool steels in impact strength tests.

- Triple temper heat treatment process—ensures full conversion of the material matrix. Results in fully tempered martensite and reduced internal stress, together with better dimensional stability.
- More uniform distribution of smaller carbides—offsets the effects of increased alloy content. Results in a more “interlocked” material matrix for significantly reduced tool breakage and edge chipping. See micrograph.

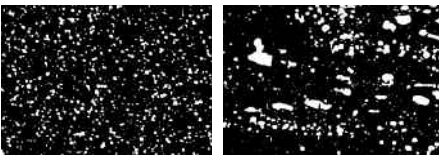
Better Value – customer trials have shown that tools manufactured in M4PM last 100% longer between regrinds than tools manufactured using conventional High Speed Steel. By increasing the interval between regrinds, the tooling lasts longer and punches many more holes before needing to be replaced.



International Material Standards			
	D2	M2	M4PM
JIS	SKD 11	SKH 51	SKH 54
Wnr	1.2379	1.3343	none
DIN	X155 CrVMo 12-1	HS 6-5-2	none

M4PM Chemical Composition	
Carbon	1.42%
Chromium	4.00%
Vanadium	4.00%
Tungsten	5.50%
Molybdenum	5.25%

Micrograph shows that the particle metallurgy process produces a very homogeneous, high quality tool steel with superior wear resistance, toughness and dimensional stability.



M4PM™ Conventional Tool Steel

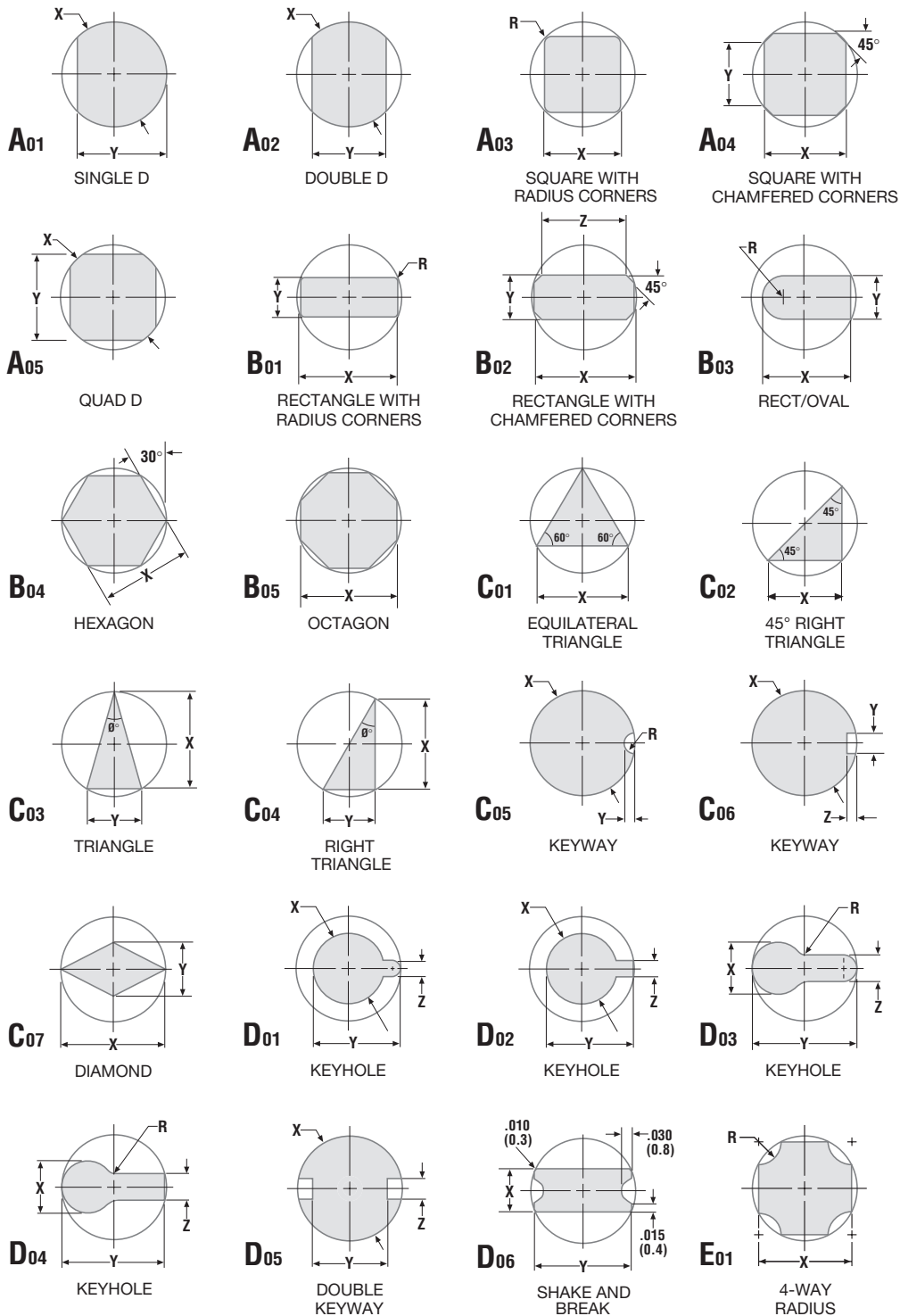
SECTION 6

*Toughness: Charpy C-Notch impact strength test.
 **Relative Wear Resistance: 10x Cross cylinder adhesive wear test.
 Based upon steel manufacturers data.

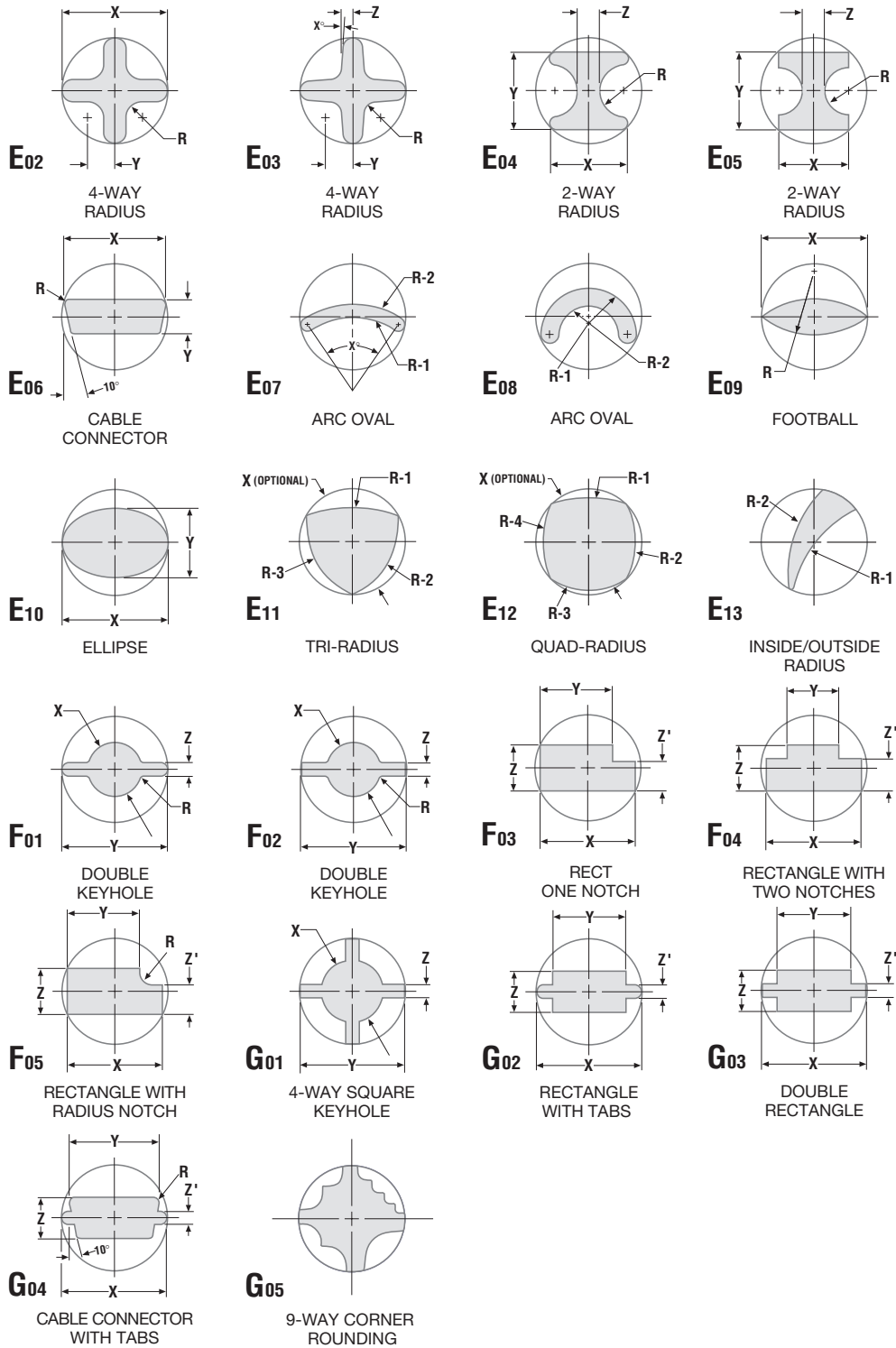


Dimensions in inches (millimeters)

SPECIAL SHAPES



SPECIAL SHAPES



SECTION 6

Visit mate.com/specialshapes



Dimensions in inches (millimeters)

ADD-ONS

General

Radius Corner	Add 10%	to punch and die
Non-Standard Straight Before Radius (SBR) Dimension	Add 25%	to punch
Extra Back Taper (1 degree per side)	Add 25%	to punch
Special Angle Settings	Add 25%	to die
Optional Shear (Limited Options)		no charge
Non-Standard Slug Ejector Request (Limited Options)	Add	per ejector
Shock Steel - for rectangles and squares when total clearance is greater than 0.024(0.60)	Add 25%	to die

Small Diameter Round Tools

Diameter 0.031 (0.79) to 0.061 (1.55)	Add 25%	to punch and die
Diameter 0.062 (1.56) to 0.092 (2.34)	Add 10%	to punch and die

Narrow Width Shaped Tools

Widths under 0.125 (3.18)	Add 25%	to punch, stripper, and die
---------------------------	---------	-----------------------------

Maxima® Coating or Nitride Treatment

Trumpf Style Tooling	Additional cost to punch price
Size 0-A and Size 0-B	Additional cost to punch price
Size 1 and Size 1-X	Additional cost to punch price
Size 2	Additional cost to punch price
Size 3	Additional cost to punch price
Slitting Insert	Additional cost to punch price
Multi Tool: 4, 5, 6, and 10 station	Additional cost to punch price

Mate QuickLock™

Size 1	Additional cost to punch price
Size 2	Additional cost to punch price

Mate NEXT™

Size 40	Additional cost to punch price
Size 76	Additional cost to punch price

Non-Standard Design Features:

Call for Quote



TRUMPF STYLE SPECIAL ASSEMBLIES AVAILABLE FROM STOCK!

Mate now has a huge inventory of Special Assemblies in stock for immediate delivery! Mate special assemblies from stock enable you to produce your parts sooner, more efficiently, and more profitably. Order yours today!

Tapping Extrusion

Station	Inside Diameter	Material Thickness	Stock Part Number
Size 2	M4 - 0.131(3.32) +/-0.001(0.02)	0.056(1.42) to 0.062(1.57)	XTT2D0D100-0005
Size 2	M4 - 0.131(3.32) +/-0.001(0.02)	0.035(0.89) to 0.039(0.99)	XTT2D0D100-0006
Size 2	M5 - 0.166(4.22) +/-0.001(0.02)	0.056(1.42) to 0.062(1.57)	XTT2D0D100-0003
Size 2	M5 - 0.166(4.22) +/-0.001(0.02)	0.035(0.89) to 0.039(0.99)	XTT2D0D100-0004
Size 2	M6 - 0.197(5.00) +/-0.001(0.02)	0.056(1.42) to 0.062(1.57)	XTT2D0D100-0001
Size 2	M6 - 0.197(5.00) +/-0.001(0.02)	0.035(0.89) to 0.039(0.99)	XTT2D0D100-0002

Shearbutton

Station		Material Thickness	Stock Part Number
Size 2	0.197(5.00)	0.188(4.77) Max	XTT2D0S100-0001
Size 2	0.200(5.08)	0.188(4.77) Max	XTT2D0S100-0002

Ground Symbol Stamp

Station		Material Thickness	Stock Part Number
Size 1	With 0.437(12.00) diameter circle	0.250(6.35) Max	XTT1D0J200-0001

Centerpoint

Station		Material Thickness	Stock Part Number
Size 1	Down	0.250(6.35) Max	XTT1D0P200-0001

Planishing Tool

Station		Material Thickness	Stock Part Number
Size 2	2.995(76.10)	0.250(6.35) Max	XTT2D0V100-0001

Universal Countersink

Station		Material Thickness	Stock Part Number
Size 1	82 deg	0.250(6.35) Max	XTT1D0B201-0001
Size 1	90 deg	0.250(6.35) Max	XTT1D0B201-0002
Size 1	120 deg	0.250(6.35) Max	XTT1D0B201-0003

Custom Applications

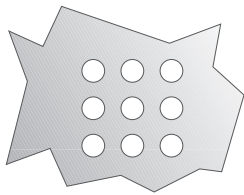
Station		Material Thickness	Stock Part Number
Size 2	Mate Rollerball®		XTT2D0RB00
Size 2	Mate Sheetmarker®		XTT2D0SM00

Visit mate.com/stockspecials

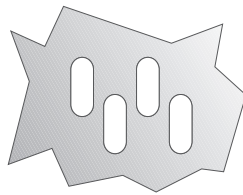


Dimensions in inches (millimeters)

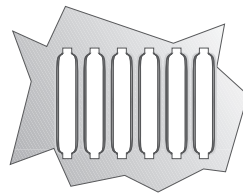
SPECIAL ASSEMBLIES



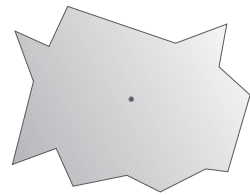
Cluster—Round



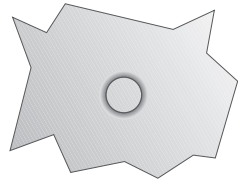
Cluster—Shape



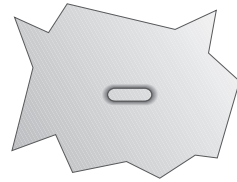
Card Guide



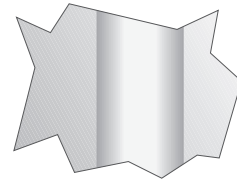
Centerpoint



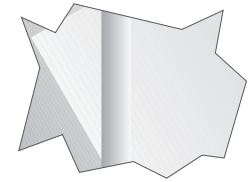
Countersink—Round



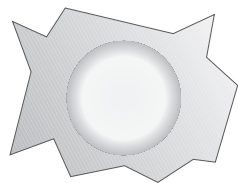
Countersink—Shape



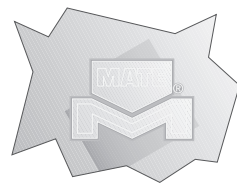
Emboss—Beading



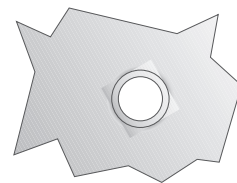
Emboss—Edgeform



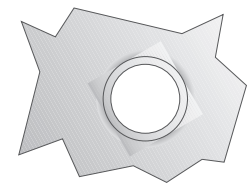
Emboss—Formed



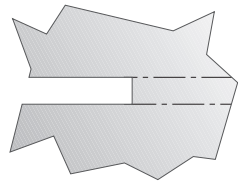
Emboss—Cold Forged



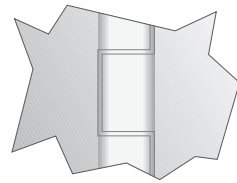
Extrusion—Tapping



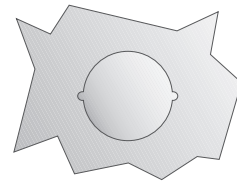
Extrusion—Flanged Hole



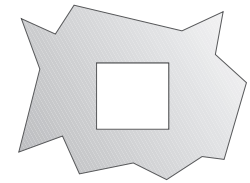
Guided Shearing



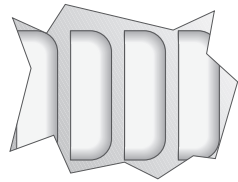
Hinge Tool



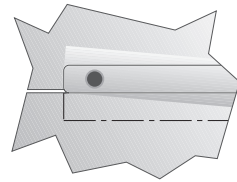
Knockout



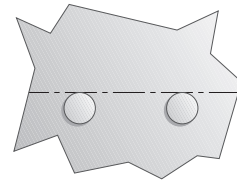
Lance And Form



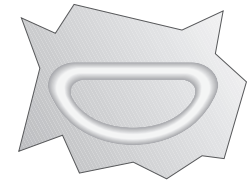
Louver



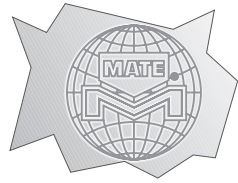
Scissortool®



Shearbutton



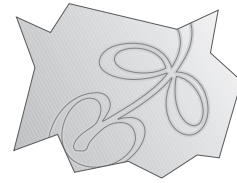
Rollerball®



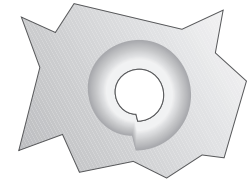
Sheetmarker®



Stamping—Alpha Numeric



Stamping—V-line



Threadform



See **MATE** Forming Tool Order Guide for forming tool ordering specifications...

Ask for part number **LIT00002**

Cluster

Use:

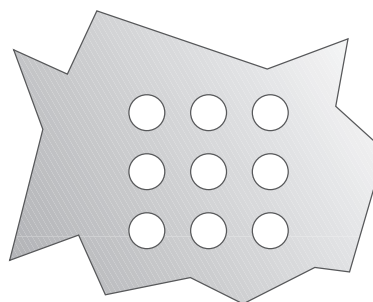
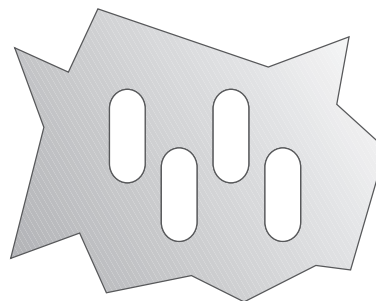
To produce multiple holes with minimal hits.

Typical Application:

- Material thickness from 0.020(0.50) to 0.157(4.00).
- Other restraints dependent upon station size, punch size and shape and press tonnage.

Comments:

- For greater hole uniformity and flatter sheets, spread the punches to avoid punching adjacent holes in the same hit.
- Do not re-punch through previously punched holes to complete a pattern. A single hit tool may be necessary.



Card Guide

Use:

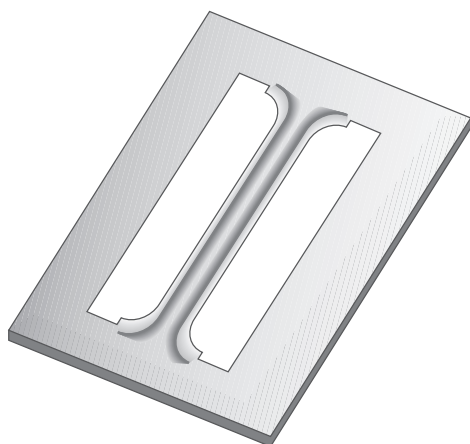
As a retainer for printed circuit boards.

Typical Application:

- Material thickness from 0.040(1.00) to 0.078(2.00).
- Maximum recommended top-of-sheet to top-of-form height is 0.125 (3.20).

Comments:

- Length of the card guide is dependent upon station size and machine tonnage.
- Also available as a continuous form to increase productivity and flexibility.



Visit mate.com/specialassemblies



Dimensions in inches (millimeters)

HIGH PERFORMANCE TOOLING

Countersink—Dedicated

Use:

Allows screw and rivet head to sit flush or below the surface of the material.

Typical Application:

- Material thickness from 0.048(1.22) to 0.250(6.35), dependent upon press tonnage capacity.

Comments:

- The *shoulder* (dedicated) style is generally ordered for one material thickness and screw size.
- The shoulder style coins the surrounding area, producing a clean flat countersink with minimal burring.



Emboss—Continuous

Use:

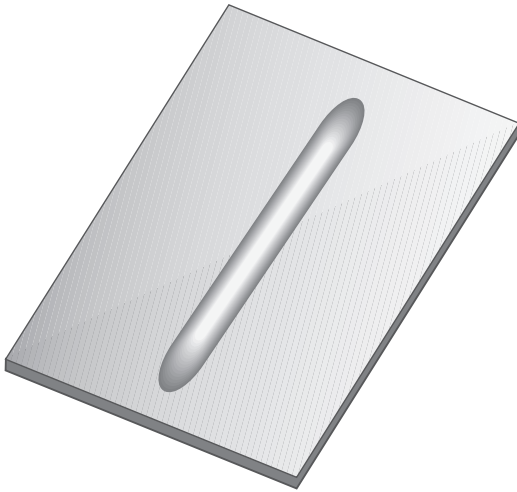
As a stiffener to add rigidity to sheet metal panels.

Typical Application:

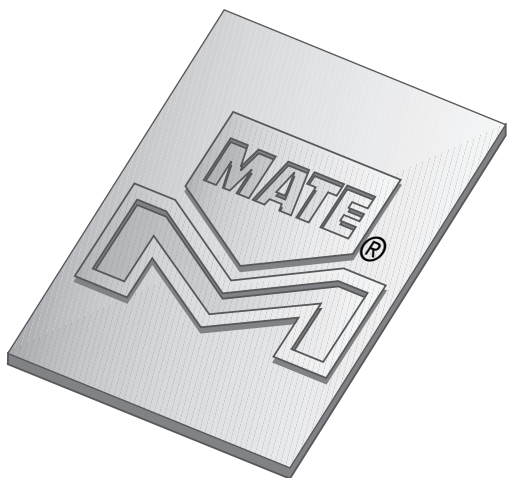
- Material thickness from 0.027(0.70) to 0.250(6.35), dependent upon press tonnage capacity.

Comments:

- The increment between hits is determined by the cosmetic requirements for the finished part. Smaller increments result in improved appearance.
- The form height should be as low as possible to minimize sheet distortion.



Emboss—Cold Forged



Use:

To produce a logo or design on a part.

Typical Application:

- Material thickness from 0.018(0.46) to 0.118(3.00).
- Best results in material thickness from 0.040(1.00) to 0.078(2.00).
- Maximum size dependent on the tooling style, station size, and press tonnage capacity.

Comments:

- An exact drawing, CAD file, or artwork of logo is required to produce this type of assembly.

Emboss—Formed

Use:

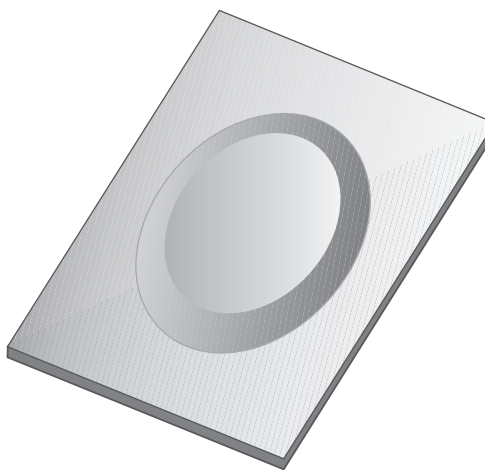
Provides a recess or a protrusion.

Typical Application:

- Material thickness from 0.027(0.70) to 0.250(6.35), dependent upon press tonnage capacity.

Comments:

- Best results are attained when the side wall angle is 45° or less.
- Optimum form height is 3 x the material thickness or less.



HIGH PERFORMANCE TOOLING

Extrusion—Tapping

Use:

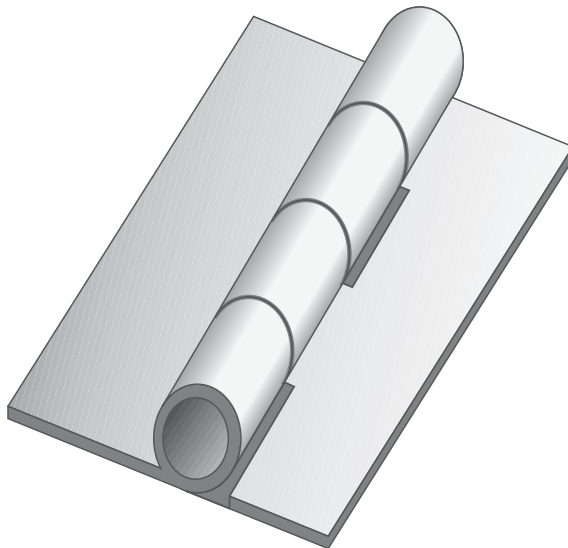
Threading for screws and increased bearing area for tubes, etc.

Typical Application:

- Material thickness from 0.031(0.80) to 0.106(2.70).
- Overall Height – 2x to 2.5x material thickness.
- Diameter – 0.374(9.50) (M10 Screw thread).

Comments:

- Additional inverted dies are required to accommodate alternate material thickness.



Hinge

Use:

To create hinge knuckles as integral elements on sheet metal components.

Typical Application:

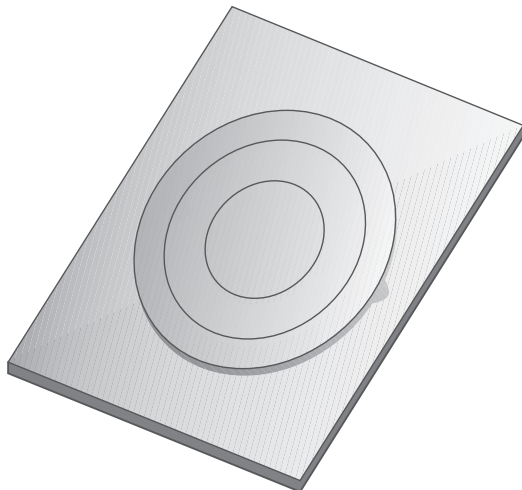
- The range of this application is dependent on a combination of the material thickness, pin diameter and feed gap of the press.

Comments:

- An integral hinge knuckle on a component will eliminate the costly process of purchasing and assembling separate hinges.



Knockout



Use:

Allows optional pathway for electrical cable.

Typical Application:

- Material thickness from 0.024(0.60) to 0.118(3.00).
- Maximum size dependent upon material type, thickness, and press tonnage capacity.

Comments:

- The tool can normally be used with other material thickness within a range of + or - 0.016(0.41) from design thickness.
- Maintain 0.236(6.00) difference between diameters used for knockout.

Lance And Form

Use:

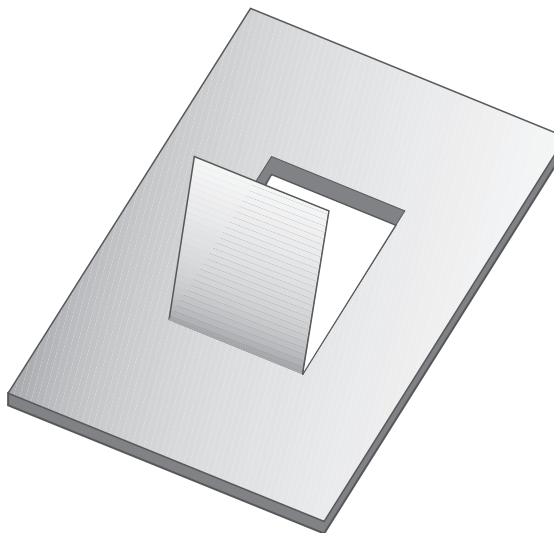
For air flow, decoration, as card guides, location markers, shear tabs, wire harnesses, or clip attachments.

Typical Application:

- Material thickness from 0.020(0.50) to 0.118 (3.00).
- Maximum recommended top-of-sheet to top-of-form height is 0.250(6.40).
- Other limitations include material type, station size, and press tonnage capacity.

Comments:

- The inclusion of a 5° draft angle is recommended to assure reliable operation of open ground forms.



See **MATE** Forming Tool Order Guide for forming tool ordering specifications...

Ask for part number
LIT00002

Dimensions in inches (millimeters)



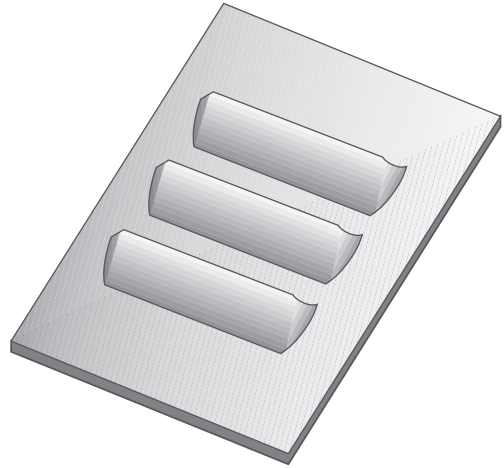
HIGH PERFORMANCE TOOLING

Louver

Use:
To provide air flow or ventilation.

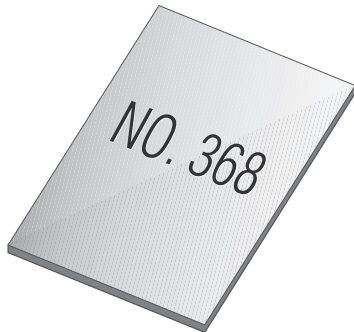
- Typical Application:
- Material thickness from 0.028(0.70) to 0.106(2.70)
 - Maximum recommended top-to-top height is 0.255(6.50)

- Comments:
- One tool cuts the sheet and produces the form in the same operation.
 - The tool is designed for a specific material thickness.



Insert Sizes Available

Fractional	Decimal	Metric
3/32	0.094	2.40
1/8	0.125	3.12
3/16	0.188	4.50
1/4	0.250	6.34



Stamp—Alpha Numeric

Use:
To provide indelible marking of alpha-numeric characters on the top or bottom of the sheet.

- Typical Application:
- Material thickness 0.032(0.80) up to machine capacity.
 - Characters available in 4 popular sizes. See table.

- Comments:
- Individual characters can be easily changed.



See **MATE** Forming Tool
Order Guide for forming tool
ordering specifications...

Ask for part number
LIT00002

Threadform

Use:

To provide a form to accept a sheet metal screw.

Typical Application:

- Material thickness 0.020(0.50) to 0.048(1.20).
- Size is dependent upon screw size selected.
- Thicker material requires a countersink operation or thinning prior to threadforming.



V-Line Inscription

Use:

To produce logos, messages, or symbols.

Typical Application:

- Material thickness from 0.032(0.80) up to machine capacity.
- Maximum size is dependent on station size, size of symbols and characters, and press tonnage capacity.

Comments:

- V-Line Stamping -- renders the image with a sharp line stamped into the surface.
- An exact drawing, CAD file, or artwork of logo is required in order to produce this type of assembly.



HIGH PERFORMANCE TOOLING

Rollerball®

Use:

The Rollerball® is an exciting new concept designed by Mate Precision Tooling to take advantage of the extended programming capabilities of hydraulic and other punch presses capable of operating in the x and y axis with the ram down. The Rollerball® gives you the benefit of making forms not possible with single hit forming tools.

Typical Application:

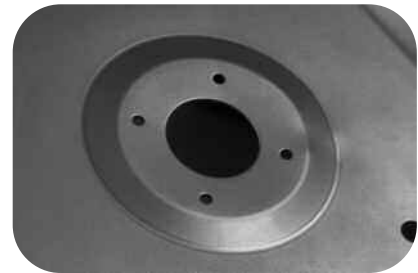
- Maximum workable material thickness is 0.105(2.70) mild steel.

Comments:

- The press must be capable of holding the ram down while the sheet is moved in the x and/or y.

Patent Pending

Visit mate.com/rollerball



Sheetmarker®

Use:

For markings or etchings on the surface of sheet metal. The tool uses a diamond pointed insert in a spring loaded holder to create the marking.

Typical Application:

- The Sheetmarker® Tool can be used on all material types and thicknesses.

Comments:

- A wide variety of results can be produced, ranging from very light etching to fairly deep grooves in the sheet.
- Variations are achieved with a combination of three spring pressures and two insert point angles.

Comments:

- The press must be capable of holding the ram down while the sheet is moved in the x and/or y.

Patent Numbers: US 7,168,364 B2.
Europe 1 099 509. Singapore: 88336

Visit mate.com/sheetmarker



HIGH PERFORMANCE TOOLING

49

Special Assemblies

Mate SnapLock™

Use:

For joining materials, thus eliminating secondary operations such as spot welding, riveting, or fastening with threaded hardware.

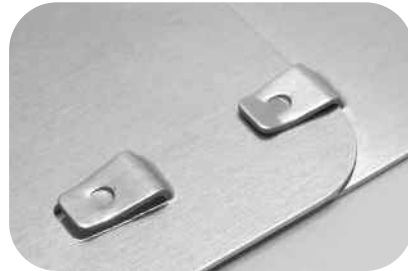
Typical Application:

- Material thickness from 0.020(0.50) up to 0.118(3.00).
- Other limitations include material type, station size, and press tonnage capacity.

Comments:

- Suitable for joining materials of dissimilar type and/or thickness.
- Positive locking and locating feature for fast and accurate assembly.

Visit mate.com/snaplock



Mate HexLock™

Use:

To provide a reliable and secure method of retaining common threaded fasteners in sheet metal.

Typical Application:

- Material thickness from 0.020(0.50) up to 0.118(3.00)
- Other limitations include material type, station size, and press tonnage capacity.

Comments:

- Suitable for hexagon nuts and hexagon headed bolts that conform to DIN933 or DIN934.

Visit mate.com/hexlock



SECTION 6

Dimensions in inches (millimeters)



HIGH PERFORMANCE TOOLING

Mate EasySnap™

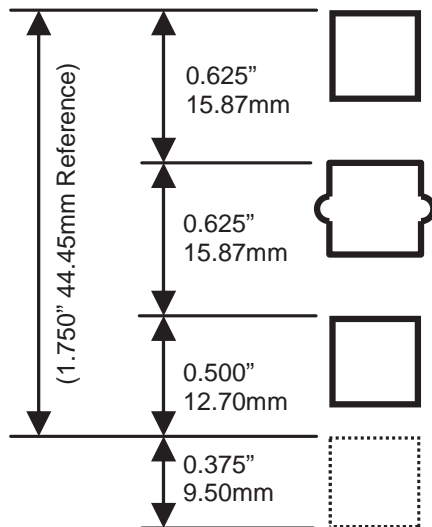
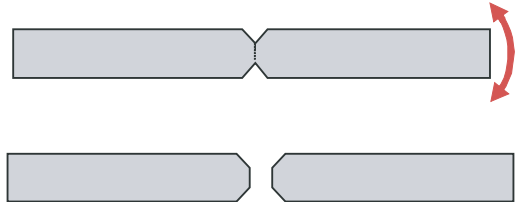
Use:
Scrapless retention system to allow fabricator to snap punched parts out of sheet metal.

Typical Application:

- Material thickness from 0.020(0.50) up to 0.078(2.00) for mild steel and aluminium, and 0.020(0.50) up to 0.059(1.50) for stainless steel.
- Maximum length of form is 36.00(914.40)

Comments:

- Reduces the need for slitting and micro joints for part retention.
- Material type and thickness must be specified at time of order.



Mate 19" Racking Cluster

Use:
For high speed punching of the mounting hole pattern commonly found in electronic and telecommunications cabinets. The hole spacing conforms to DIN41494, IEC 297 and BS 5954.

Typical Application:

- Material thickness from 0.020(0.50) up to 0.157(4.00)

Comments:

- Special shape "U" pitch marker on the central punch point allows the end user to count pitches, not holes!
- Solid (non-insert) style cluster tools and insert style cluster assembly options available.



PUNCH AND DIE MAINTENANCE

PUNCH MAINTENANCE

You can greatly extend overall punch life by sharpening whenever the edge dulls to a 0.005(0.13) radius. At this point, just a small amount of sharpening will "touch up" the cutting edge. Frequent touch up works better than waiting for the punch to become very dull. The tool lasts longer and cuts cleaner with less punching force.

Maximum amount of sharpening depends on thickness of material being punched, size of punch (length and width), and punch press station.

1. To sharpen, clamp the punch squarely in a Vee Block on the magnetic chuck of a surface grinder. Only 0.001 to 0.002 (0.03 to 0.05) should be removed in one "pass". Repeat until tool is sharp, normally 0.005-0.010(0.13-0.25) total.
2. Use a standard vitrified bond, aluminum oxide wheel: hardness range "D" to "J"; grain size 46 to 60. A "ROSE" wheel made especially for grinding high speed steel is a good choice but not mandatory.

3. Dress the wheel using a rigid single or multi-point diamond: downfeed 0.0002-0.0008 (0.005-0.020); crossfeed quickly 20-30 in/min (508-762 mm/min).
4. Apply coolant with as much force and as close to the tool and wheel as is practical. Use a good general purpose grinding coolant used to the manufacturer's specifications.
5. Feeds and feed rates: A, Downfeed (wheelhead), 0.001-0.003 (0.03-0.08); B, Crossfeed (infeed), 0.005-0.010 (0.13-0.25); for nitrided punches, 0.002-0.007(0.05-0.18); C, Traverse (sideways), 100-150 in/min (2540-3810 mm/min).
6. After sharpening, lightly stone the sharp cutting edges to remove any grinding burrs and to leave a 0.001-0.002 (0.03-0.05) radius. This reduces risk of chipping.
7. Demagnetize the punch and spray on a light oil to prevent corrosion.

DIE MAINTENANCE

As with punches, keep dies clean and watch for wear. Use the same sharpening procedures — hold die on surface grinder's magnetic chuck. Use same wheel and feed rates.

Check die thickness after each sharpening and add shims as necessary.

D-2, M-2, and M4PM™ Steel

Grinding Wheel Hardness: **D-G**
Grit Size: **46-60**

A-2 and S-7 Steel

Grinding Wheel Hardness: **G-J**
Grit Size: **46-60**

FIXING SHARPENING PROBLEMS

PROBLEM:	CAUSE:	CURE:
Discoloration** and/or surface cracks	Insufficient coolant	Increase or redirect flow, coarser grain, softer grade
	Improper wheel	
	Improper dress	Drop wheelhead .0002-.0004 (.005-.010) and redress. Move crossfeed approx. 50 in/min. (1.25 m/min.)
Harsh cutting sound and/or poor surface finish	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

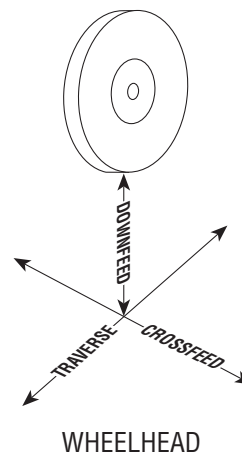
**Dark discoloration (brown or darker) indicates damage not necessarily limited to tool surface and removal of burned surface will not rectify damage

FEED RATES

Downfeed:
0.001-0.003(0.03-0.08)

Crossfeed:
0.010(0.25) per pass

Traverse:
100-150 in/min.
(2.50-3.80 m/min.)
per pass



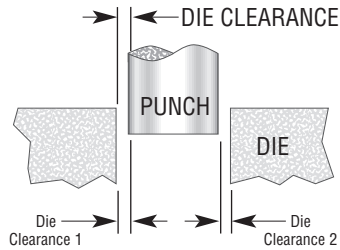
TOTAL DIE CLEARANCE AND HOLE QUALITY

Die clearance is equal to the space between the punch and die when the punch enters the die opening. It is always expressed as the TOTAL Clearance or TC. Using the correct die clearance increases tool life and improves piece part quality. The chart is based on experiences from our customers who achieve superior piece part quality and the longest possible tool life. Use the chart to determine the optimum clearance (percentage of material thickness) for piercing and blanking operations.

Material Type (Typical Shear Strength)	Material Thickness (T)	PIERCING	BLANKING
		Total Die Clearance (% of T)	Total Die Clearance (% of T)
Aluminum 25K psi (.1724 kN/mm ²)	Less than 0.098(2.49)	15%	15%
	0.098(2.49) through 0.197(5.00)	20%	15%
	Greater than 0.197(5.00)	25%	20%
Mild Steel 50K psi (.3447 kN/mm ²)	Less than 0.118(3.00)	20%	15%
	0.118(3.00) through 0.236(5.99)	25%	20%
	Greater than 0.236(5.99)	30%	20%
Stainless Steel 75K psi (.5171 kN/mm ²)	Less than 0.059(1.50)	20%	15%
	0.059(1.50) through 0.109(2.77)	25%	20%
	0.110(2.79) through 0.158(4.01)	30%	20%
	Greater than 0.158(4.01)	35%	25%

WHAT IS DIE CLEARANCE?

Die clearance is equal to the space between punch and die when the punch enters the die opening.

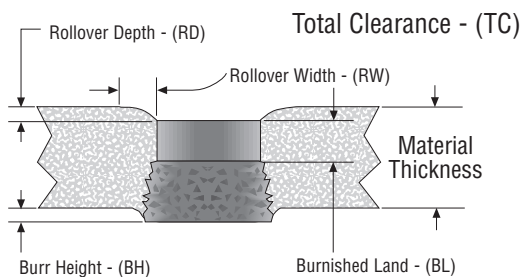


Total Die Clearance = Die Clearance on both sides of punch

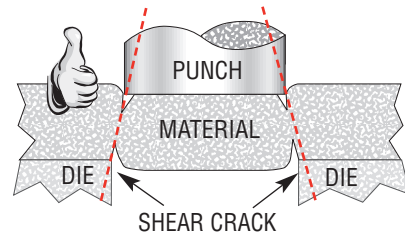
Total Die Clearance = Die Clearance 1 + Die Clearance 2

Regardless of sheet thickness, the recommended penetration of the punch into a Slug Free® die is 0.118 (3.00).

ANATOMY OF A PUNCHED HOLE

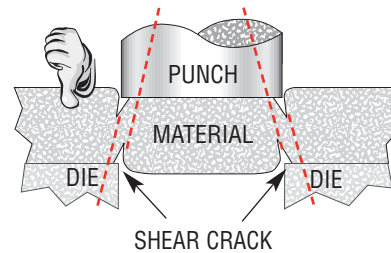


WHY USE PROPER DIE CLEARANCE?



PROPER CLEARANCE —

shear cracks join, balancing punching force, piece part quality, and tool life.



CLEARANCE TOO SMALL —

secondary shear cracks are created, raising punching force, and shortening tool life.



MATE always refers to **TOTAL DIE CLEARANCE**
— **NOT** clearance per side.

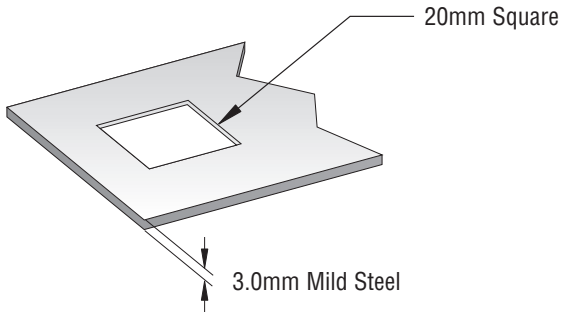
CALCULATING PUNCHING FORCE

Tonnage Calculation

Tonnage Formula:

$$\text{Tonnage} = \text{Punch Perimeter} \times \text{Material Thickness} \times \text{Material Tonnage Value} \times \text{Material Multiplier}$$

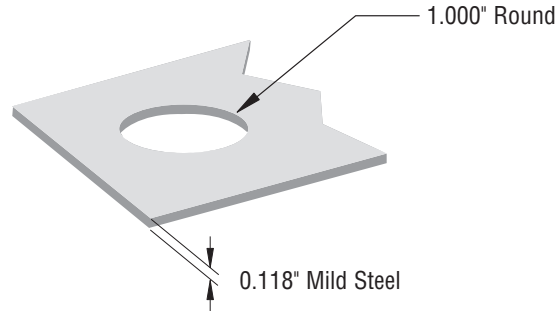
EXAMPLE OF TONNAGE CALCULATION



Metric Example:

Metric Tonnage for a 20mm square in 3.0mm Mild Steel

$$\text{Tonnage} = 80 (4 \times 20) \times 3.0 \times 0.0352 \times 1.0 = 8.45 \text{ Metric Tons}$$

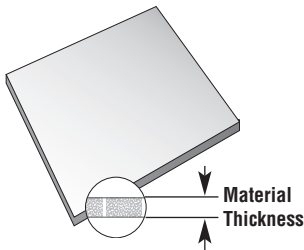


Inch Example:

Imperial Tonnage for a 1.000" round in 0.118" Mild Steel

$$\text{Tonnage} = 3.14 (1.000 \times 3.14) \times 0.118 \times 25 \times 1.0 = 9.26 \text{ Imperial Tons}$$

MATERIAL THICKNESS



Material thickness is the width of the workpiece or sheet that the punch must penetrate in making a hole. Generally the thicker the material, the more difficult it is to punch.

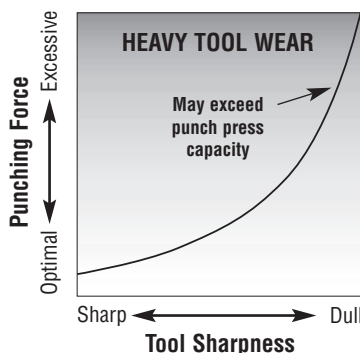
MATERIAL TONNAGE VALUE

Metric (Metric Tons/mm ²)	Inch (Imperial Tons/in ²)
0.0352	25

MATERIAL MULTIPLIER

MATERIAL TYPE	MATERIAL MULTIPLIER
Aluminum (soft sheet)	0.3
Aluminum (1/2 hard)	0.38
Aluminum (full hard)	0.5
Copper (rolled)	0.57
Brass (soft sheet)	0.6
Brass (1/2 hard)	0.7
Mild Steel	1.0
Stainless Steel	1.6

PUNCHING FORCE CHANGES AS TOOLS DULL



MATERIAL SHEAR STRENGTH — Material shear strength is a measure of maximum internal stress before a given material begins to shear. This property is determined by metallurgical science and expressed as a numerical factor. Popular materials like aluminum, brass, mild steel and stainless steel have approximate shear strengths of:

MATERIAL : SHEAR STRENGTH - psi/in²(kN/mm²):

Aluminum	25000(0.1724)
Brass	35000(0.2413)
Mild Steel	50000(0.3447)
Stainless	80000(0.5516)

Dimensions in inches (millimeters)

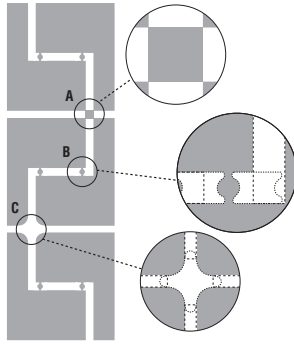


TIPS AND TECHNIQUES

Three methods for separating parts using long, narrow rectangles

SHAKE-AND-BREAK
— By programming a small gap between hits at exterior corners (A), the corners remain

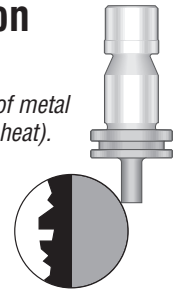
connected to the sheet until removed from the press and shaken loose. This technique works where corners of four parts meet. By programming a larger gap adjacent to interior corners (B), a special tab tool can transform the gap into a .008 (0.20) shake-and-break connection. Just one tangent or radial tool makes a tab at any corner without rotating when the corner is made by the shearing tool perpendicular to the tab tool. If exterior corners don't need to remain connected (C), the 4-way corner rounding tool cuts and rounds all four corners in one hit. Tips are specially tapered to blend the corner radius into the sides – also available with shake-and-break tab tips.



When galling occurs on punch tips

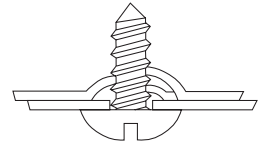
(Galling is an adhesion to the punch tip of metal being punched, caused by pressure and heat).

The best technique for removing galling is to rub it off with a fine stone. The rubbing should be done parallel to the direction of the punching motion. This will polish the surface which contacts the material, decreasing the chance of any future galling. Do not sandblast, belt sand, or use other harsh abrasive methods. These create a coarse surface finish to which material adheres more easily to the tool.



Eliminate cost for bolts and lockwashers

If thread forms can be programmed into a part, the cost for bolts and lockwashers can be eliminated. This domed shape with a screw thread acts like a locknut as a screw tightens it down. Mate's special thread form tools make both the screw hole and the raised dome in one hit.



When punches get dull too fast

Die clearance may be too tight. Total Die Clearance (not per side) should be 20-25% of material thickness. In partial hitting (notching, nibbling, shearing), lateral forces may deflect the punch tip and tighten clearance on one side. Sometimes the punch tip may move far enough to shave the side of the die. This results in rapid deterioration of both punch and die.

When to sharpen tools

If a piece-part is starting to show too much rollover, if the punch press is making more noise than you think it should, or if it's working harder than it used to – perhaps a tool is dull. It is recommended that tools be resharpened when the edges are worn to .005 (0.13) radius. You get improved consistency in quality of work. Machines last longer and so do tools if resharpened in small amounts more frequently rather than waiting until they are "really" dull.

Noise reduction

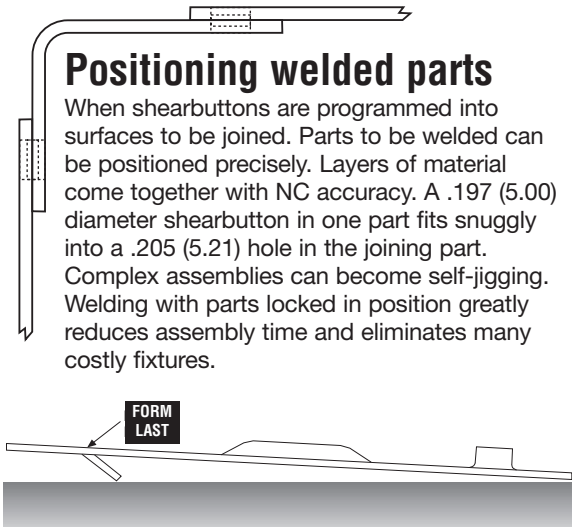
Use heavy duty tooling when punching .118 (3.00) material or thicker to help reduce noise. Heavy Duty tooling is manufactured with punch shear (rooftop, whisper, one-way) which creates less noise when punching. For best hole quality, a flat punch (a punch without shear), is recommended.



Positioning welded parts

When shearbuttons are programmed into surfaces to be joined. Parts to be welded can be positioned precisely. Layers of material come together with NC accuracy. A .197 (5.00) diameter shearbutton in one part fits snugly into a .205 (5.21) hole in the joining part.

Complex assemblies can become self-jigging. Welding with parts locked in position greatly reduces assembly time and eliminates many costly fixtures.

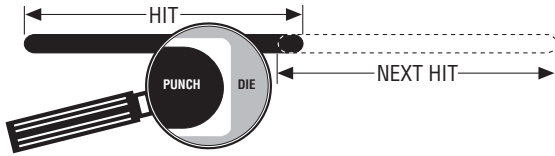


Form-down last

When using forming tools, form-down operations are generally avoided because they take up so much vertical room and any additional operations tend to flatten them out or bend the sheet. They can also drop into dies, get caught and pull out of work holders. However, if a form-down operation is the only solution for a particular piece part, make it the last operation on the sheet.



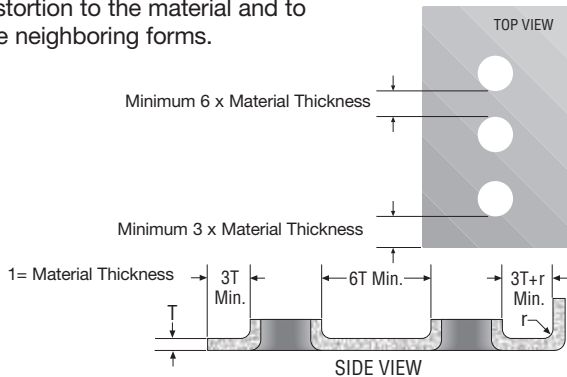
A smooth slitting tip...



To get rid of the small "teeth" left on edges by rectangular tools, it is a common practice to order oval punches with rectangular dies having radiused corners for slitting and parting. The radii blend into the next cut more smoothly even on older machines with play in the toolholder bores and workholders. Workpieces are less likely to cause cuts and scratches when being handled, need less finishing work later.

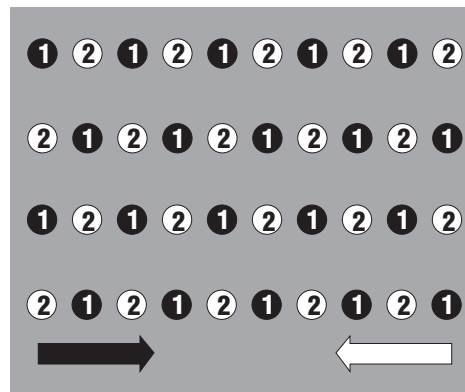
Recommended minimum distances between holes, forms, and edges of sheets

Holes and forms placed closer to each other or to the edge of the sheet than shown below will cause distortion to the material and to the neighboring forms.



Combatting material warp

If you're punching a large number of holes in a sheet and the sheet does not stay flat, it could be caused by the cumulative effect of punching. Each time a hole is punched, material surrounding the hole is stretched downward, placing the top of the sheet in tension. The downward movement causes a corresponding compression at the bottom of the sheet. For a few holes, the effect is insignificant, but as the number of holes increases, the tension and compression can multiply to the point where the sheet deforms. One way to counteract this effect is to punch every other hole first and then come back and punch the remaining holes. This places the same amount of force on the sheet, but it disrupts tension/compression accumulation that occurs when punching operations follow one another in close succession and in the same direction. It also allows the first set of holes to absorb some of the distorting effect of the second set.



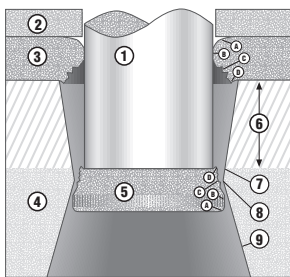
"Clearance corners" in dies control corner burrs



Why put a radius in the corners of rectangular and square dies with clearance uniform around the corner of the punch? If the die is sharp cornered too, then distance between punch and die corners would be greater than side clearance, resulting in larger burrs.

Slug Free® Die

The recommended penetration of the material into a Slug Free die is .118 (3.00). For thick material Slug Free design is an option on Trumpf style dies made by Mate.



- Slug Free® Die Components**
1. Punch
 2. Stripper
 3. Material
 4. Slug Free® Die
 5. Slug
 6. Grind Life
 7. Entry - Constricting Taper
 8. Pressure Point
 9. Exit - Relief Taper

- Hole/Slug Geometry**
- A. Rollover
 - B. Burnish
 - C. Fracture
 - D. Burr

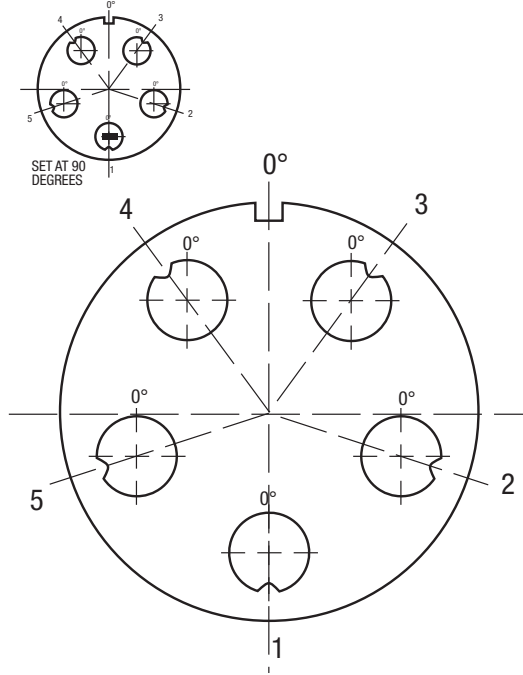
The secret to finest quality custom stamped inscriptions

If you want your company logo or other symbol to look the best it possibly can, there is no substitute for good artwork. That means a well executed drawing rendered with crisp, clean lines. It should be at least two times as large as the final stamped image. Email electronic files or ship it by mail with protection against bending or other damage — fax quality won't do.

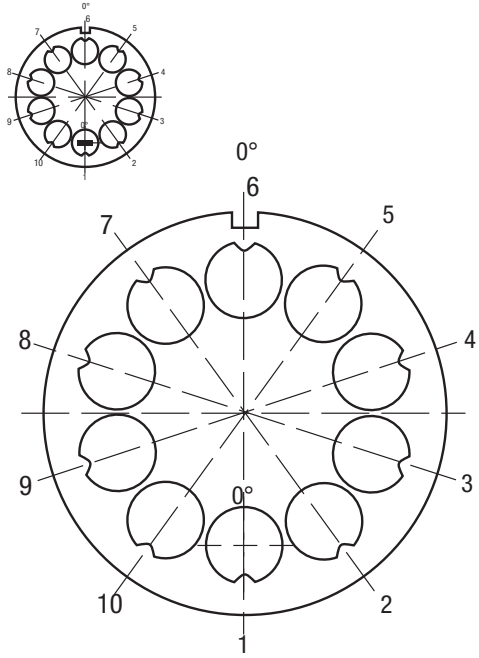


MULTI TOOL ANGLE SETTING

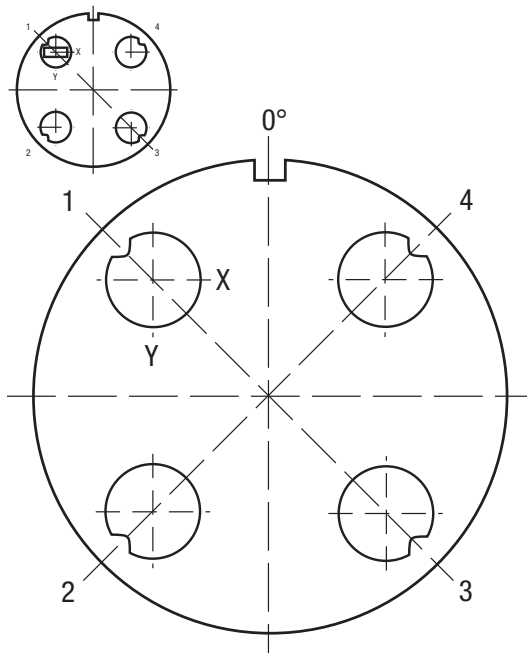
5-Station



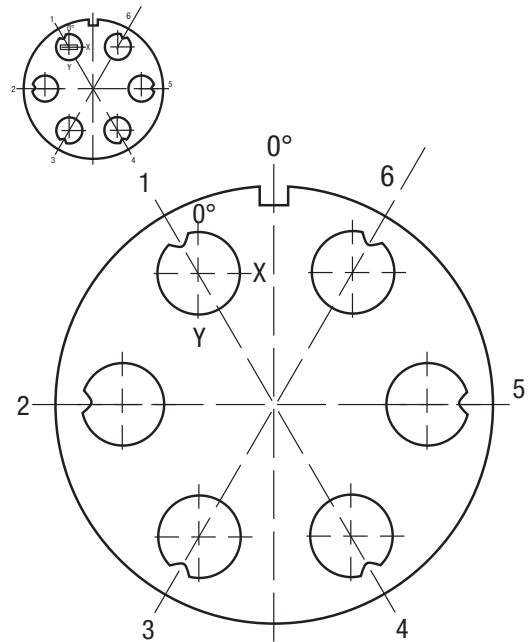
10-Station



4-Station



6-Station



Custom angle settings

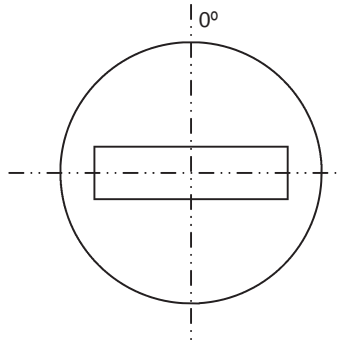
Custom angle settings can be achieved. Contact your customer service representative or dealer to discuss your specific needs.



STANDARD SHAPE ANGLE SETTING

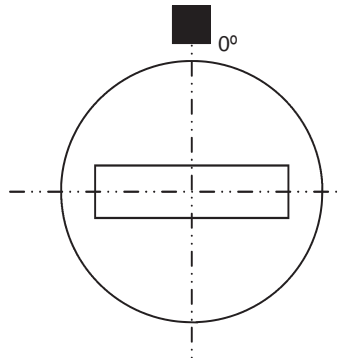
This page shows the location of the primary or (zero degree) orientation feature for punches, strippers, and dies. The orientation feature of a punch is a pin which engages with the alignment ring (Quicklock™) or punch holder (NEXT™). The orientation of a die is via a keyway, and strippers are oriented by a pair of pins.

Standard Punch



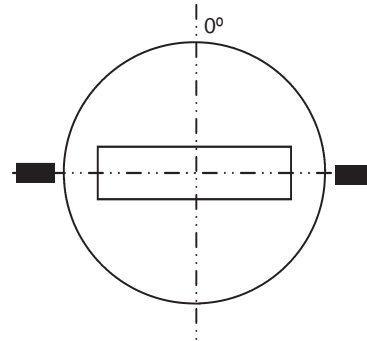
The standard punch is aligned with the alignment ring, and thus does not require an orientation feature.

Size 1 or 2 Die



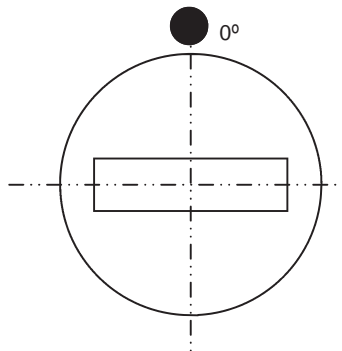
Additional keyways are provided, dependant on shape symmetry. Examples: Rectangle has two keyways and the single-D has four keyways. The default angle setting is 90 degrees, as shown.

Size 1 or 2 Stripper



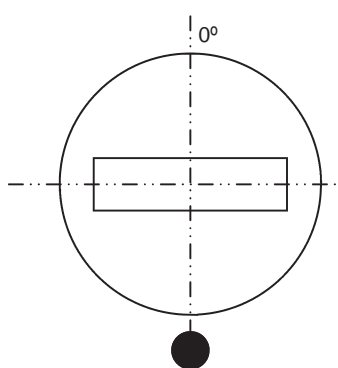
Additional pin locations are provided dependant on shape symmetry. The default angle setting is 90 degrees, as shown.

QuickLock™ Punch



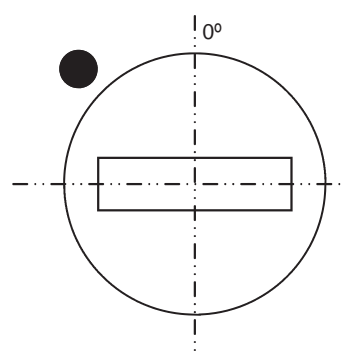
Where punch point diagonal is <2.000(50.80) the pin is positioned on the shank of the punch. The default angle setting is 90 degrees, as shown.

QuickLock™ Punch



Where punch point diagonal is >2.000(50.80) this pin is positioned on the shoulder of the punch. The default angle setting is 90 degrees, as shown.

NEXT™ Punch



The orientation pin is positioned on the shoulder of the punch. The default angle setting is 90 degrees, as shown.

SECTION 7

Dimensions in inches (millimeters)



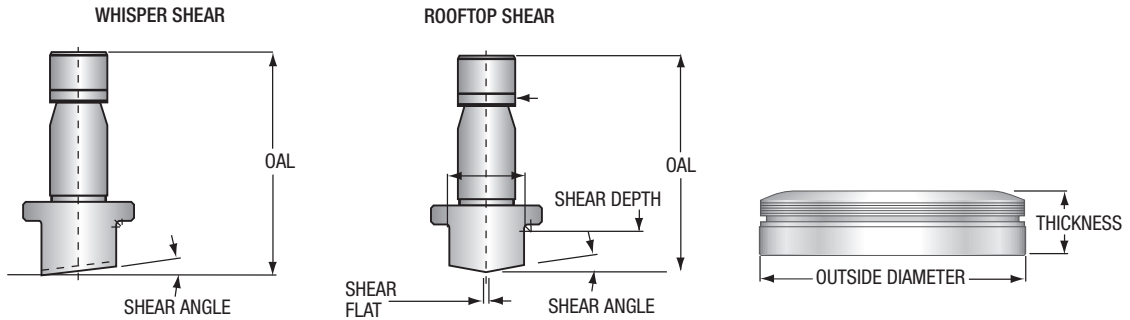
CRITICAL TOOL DIMENSIONS

	Overall Punch Length Inch	Overall Punch Length Millimeters	Flat (without shear)			Whisper		Rooftop	
			2.910 74.00	3.030 77.00	3.050 77.50	3.030 77.00	3.050 77.50	3.030 77.00	3.050 77.50
Trumpf Style	Size 0-A	PADA_A*	●	○	-	-	-	-	-
	Size 0-B	PADB_A*	●	○	-	-	-	-	-
	Size 1-A	PADC_A	●	○	-	○	-	○	-
	Size 1-B	PADD_A	●	○	-	○	-	○	-
	Size 1-X	PADX_A	●	-	-	-	-	-	-
	Size 2-A	PADE_A	○	○	-	●	-	○	-
	Size 2-B	PADF_A	○	○	-	●	-	○	-
	Size 2-C	PADG_A	○	○	-	●	-	○	-
	Size 2-D	PADH_A	○	○	-	●	-	○	-
	Size 3	PADJ_A	-	-	-	-	-	●	-
QuickLock™	Size 1	PCTD_A	●	○	○	○	○	○	○
	Size 2	PCTE_A	○	○	○	●	○	○	○
	Size 2	PCTF_A	○	○	○	●	○	○	○
	Size 2	PCTG_A	○	○	○	●	○	○	○
	Size 2	PCTH_A	○	○	○	●	○	○	○
NEXT™	Size 40	PBTD_A**	●	○	-	○	-	○	-
	Size 40	PBTE_A**	●	○	-	○	-	○	-
	Size 76	PBTF_A**	○	○	-	●	-	○	-
	Size 76	PBTG_A**	○	○	-	●	-	○	-
	Size 76	PBTH_A**	○	○	-	●	-	○	-

● Standard ○ No Charge Option - Option not available.

* Overall length when assembled into punch chuck

** Overall length when assembled into NEXT™ punch holder



Tool Style	Station	Maximum Punch Point Diagonal	Whisper Shear		Rooftop Shear		Die Dimensions	
			Depth/Angle	Depth/Angle	Shear Flat	Outside Diameter	Thickness	
Trumpf Style	Size 1	0.643(16.33)	5 degrees	10 degrees	0.050(1.27)	2.362(60.00)	0.709(18.00)	
	Size 1	1.181(30.00)	5 degrees	5 degrees	0.050(1.27)	2.362(60.00)	0.709(18.00)	
	Size 2	3.000(76.20)	0.110(2.79)	0.110(2.79)	0.100(2.54)	3.937(100.00)	0.789(20.00)	
	Size 3	4.134(105.00)	0.110(2.79)	0.110(2.79)	0.100(2.54)	5.905(150.00)		
QuickLock™	Size 1	0.643(16.33)	5 degrees	10 degrees	0.050(1.27)	2.362(60.00)	0.709(18.00)	
	Size 1	1.181(30.00)	5 degrees	5 degrees	0.050(1.27)	2.362(60.00)	0.709(18.00)	
	Size 2	3.000(76.20)	0.110(2.79)	0.110(2.79)	0.100(2.54)	3.937(100.00)	0.789(20.00)	
NEXT™	Size 40	0.643(16.33)	5 degrees	10 degrees	0.050(1.27)		See size 1	
	Size 40	1.181(30.00)	5 degrees	5 degrees	0.050(1.27)		See size 2	
	Size 40	1.575(40.01)	0.110(2.79)	0.110(2.79)	0.100(2.54)		See size 2	
	Size 76	3.000(76.20)	0.110(2.79)	0.110(2.79)	0.100(2.54)		See size 2	



Dimensions in inches (millimeters)

TOOLING ORDER FORM

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Order Form

Company Name:	
Ordered By:	
Purchase Order Number:	
Order Date:	
Machine Model:	
Tooling Style:	

Item	Style*	Station	Shape**	Diameter or Width	Radius Corners	Total Die Clearance	Component	Quantity	Price Each	Sub Total
1	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			
2	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			
3	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			
4	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			
5	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			
6	Trumpf			Diameter or Width:			Punch			
	QuickLock™			Length:			Maxima			
	NEXT™						Stripper			
	Multitool						Die			

SECTION 7

* Select as appropriate

**For previously ordered special shaped tools, please refer to the etch number.

Items not covered under the order form categories can be written in the Notes section below.

Notes:





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M
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Mate Tooling Lasts Longer

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