Superior Solutions for Sheet Metal Fabricators

ULTRA® AND THICK TURRET TOOLING

- ULTRA TEC® TOOLING
- ULTRA XT™ TOOLING
- ORIGINAL THICK TURRET TOOLING
- MXC™ TOOLING
- AMX™ TOOLING
- MULTI TOOL TOOLING
- ULTRAFORM® TOOLING

PN 2011

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MATE®
PRECISION TOOLING
TRUSTED | QUALITY | SERVICE | SOLUTIONS

MATE PRECISION TOOLING

COMPANY OVERVIEW

Founded in 1962, Mate has grown into a world-class manufacturer of superior products and solutions for sheet metal fabricators. We manufacture tooling for every major CNC punch press, and offer a complete line of CO2 laser products. Our mission: To be the world's leading supplier of precision tooling for CNC punch presses. Our purpose: Helping sheet metal fabricators produce quality parts faster and more efficiently.

Headquartered in Anoka, Minnesota, in a 300,000 sq. ft. state-of-the-art facility.

COMMITMENT TO QUALITY

Mate's dedication to quality is not just demonstrated in the products and services we provide, it is a part of every aspect of our business. This commitment was formally recognized when Mate was honored with the Minnesota Quality Award, Achievement level, for 2005. We integrate the Baldrige National Quality Program's criteria into the way we operate and continually measure our progress in improving our products, processes, and service.

CUSTOMER SATISFACTION GUARANTEED

Customer service is a critical component of Mate's business. Mate's Sales engineers are experts in their field working on site with customers to solve fabricating issues. This commitment to customer satisfaction is extended around the world with Mate tooling experts available in every industrialized country. Customer education is available for every product Mate offers and is available 24/7 at mate.com. My.mate.com, a free web-based portal, allows registered users access to previously ordered drawings of special shapes and assemblies. Mate offers an extensive standard product line that can be delivered with same day or next day service and all our products come with a 100% satisfaction guarantee.

PRODUCTS AND SOLUTIONS THAT WORK

Mate's product engineering team currently holds several national and international patents and continues to develop products that push the boundaries of manufacturing technology. Our state-of-the-art technology center is an integral part of this process. It allows us to develop and test new tooling concepts and designs, and focus on proving the viability of value-added products while reducing the time needed to bring these products to market. The technology center also allows us to replicate the end user's environment and needs in every way. We work closely with the world's leading sheet metal fabricators and punch press manufacturers conducting research and evaluating new products. These partnerships bring to Mate a combined effort to continually offer customers superior products with proven solutions.

SPANNING THE GLOBE

Mate has over 80 dealers providing products and services in every industrialized country, and Mate's European operations are headquartered in Oberursel, Germany. Our dealers are thoroughly trained to assist with all tooling needs from simple hole punching to complex special applications. Mate recognized the need for an international specialist in the punch press tooling field and has been serving the international market since 1967. Our commitment to serving manufacturers around the world was formally recognized when Mate was presented with the President's "E" Certificate for Exports by the Secretary of Commerce in 1996. Today, approximately 50% percent of Mate's revenue has come from outside the United States. We are committed to improving manufacturing technology around the world, by helping established and emerging manufacturers produce quality parts faster and more efficiently.

[Dimensions in Inches(mm)]

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[Dimensions in Inches(mm)]

THICK TURRET TOOLING SYSTEMS OVERVIEW

Mate offers the most comprehensive range of thick turret tooling systems designed to accommodate any punching application. Use this simple chart to determine which system is right for your typical thick turret applications.

LESS • •• ••• •••• MORE	Ultra TEC®	Ultra XT™	Original Thick Turret
Overall Value – The combination of features, purchase price, and operating costs.	••••	•••	••
Cost Savings – The ongoing cost savings of operating the tooling system over time.	••••	•••	•
Ease of Use – Design features included in the tooling system 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 other 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 grindable length of the punch tip before it needs to be replaced.	••••	•••	••
SLUG FREE® Die – Advanced die geometry that prevents the slug from being pulled back to the top of the sheet.	••••	••••	••••
Features – Elements of a tool system that affects its ease of use, performance and longevity.	••••	•••	••
Purchase Price – The initial purchase price of the system.	•••	••	•

Ultra TEC® Precision Tooling System

PERFORMANCE

Mate's Ultra TEC® precision tooling system is a thick turret punching system which increases tool performance and flexibility, offers extended tool life and allows interchangability with existing systems.

Some features of the Ultra® system include:

- Premium high speed tool steel punches
- Quick tool change strippers – no tools required
- Relieved strippers for extended grind life
  - 0.118(3.00) for 1/2" A and 1-1/4" B station
  - 0.078(2.00) for 2" C, 3-1/2" D and 4-1/2" E stations
- Easy click length adjustment - no shims or tooling required
- Internal and external tool lubrication
- Hardened guides
- SLUG FREE® die design

[Dimensions in Inches(mm)]

THICK TURRET TOOLING SYSTEMS OVERVIEW

Ultra XT™ Precision Tooling System

CONVENIENCE

Mate's Ultra XT™ precision tooling system is a thick turret punching system which increases tool performance and flexibility, offers extended tool life and allows interchangeability with existing systems. Features of the Mate Ultra XT™ system include:

- Premium high speed tool steel punches.
- Quick tool change strippers.
- Relieved strippers for extended grind life.
    - 0.118(3.00) for 1/2" A and 1-1/4" B station
- OEM compatible strippers 2" C, 3-1/2" D, and 4-1/2" E stations.
- Easy click length adjustment - no shims or tooling required.
- Internal and external lubrication.
- SLUG FREE® die design.

Original Style Thick Turret Tooling

ECONOMY

Original style thick turret tooling from Mate is OEM compatible, with several design enhancements, including:

- Premium high speed steel punches.
- Hexagon shaped punch heads in 1/2" A and 1-1/4" B stations for easier adjustment.
- Reversible spring retainers in 1/2" A and 1-1/4" B stations for additional tool life.
- Hardened guides for reduced friction and longer service life.
- Mate SLUG FREE® dies as standard.

Mate UltraFORM® Tooling System

FORMING

Mate's UltraFORM® tooling system features adjustable length holders for 1-1/4" B, 2" C, 3-1/2" D and 4-1/2" E stations. Each UltraFORM® holder can be used with a variety of special forming inserts.

Each Mate UltraFORM® holder includes a precise and convenient length adjustment mechanism to allow the fine adjustment of any forming tool to achieve high quality piece parts.

The benefits of the UltraFORM® tooling system include reduced tooling cost, increased flexibility and ease of length adjustment for accurate forms.

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS
1/2" A AND 1-1/4" B STATION

ULTRA® PRECISION TOOLING SYSTEM – DESIGNED TO DRAMATICALLY IMPROVE ANY PUNCHING OPERATION

- 0.237(6.04) more grind life than original style tooling.
- No tools needed for quick disassembly and assembly of guide, punch and stripper.
- Quick length adjustment significantly reduces change over and set-up times.
- Fully compatible with alternative systems.
- Superior internal and external spiral grooved lubrication system ensures uniform distribution of oil for smooth friction free operation of punch to guide and guide to turret bore.
- Hardened and ground guides stay round and true to size which greatly reduces turret bore wear.
- SLUG FREE® dies eliminate slug pulling.

PUNCHES:

- Premium high speed tool steel for extended life between regrinds and maximum productivity.
- 1/4 degree back taper and near polished flanks to reduce friction, eliminate galling and extend punch life.
- External lubrication grooves to allow fluid flow.
- Available in multiple styles:
    - Ultra TEC® with lubrication grooves.
    - Ultra® Metric (original) style punches.
    - Inch style (1-1/4" B station only).

STRIPPERS:

- Relieved to allow 0.118(3.00) extra grind life.
- Quick-change mechanism to allow rapid tool change.
- Rounded edges to minimize sheet marking.

SLUG FREE® DIES:

- SLUG FREE die geometry eliminates slug pulling.
- Highly wear resistant, chrome air hardened tool steel
- Uniform clearance radii in die corners improve edge quality.
- Superior roundness and flatness with exceptional die strength.
- Up to 0.125(3.20) grind life.

CANISTER ASSEMBLIES:

- Quick length adjustment with positive engagement with the guide.
- Uniform spring pressure for reliable stripping.
- Available in multiple styles:
    - Ultra TEC® for use with Ultra TEC® punches.
    - Ultra® Metric (Original) style punches.
    - Inch style (1-1/4" B station only) for Inch style punches.

UNIVERSAL GUIDES:

- Quick-change mechanism - no tools required.
- Tool remains assembled during tool length adjustment.
- Internal and external lubrication to reduce friction.
- Hardened and ground to reduce wear.
- Available in two styles:
    - Shaped – multiple precision internal keyways for shaped punches.
    - Round – internal keyway for round punches.

- **Long Lasting**
- **Freedom**
- **Flexibility**
- **Convenience**
- **Economy**
- **Quick adjustments**
- **Lowest cost per hole**

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS
2" C, 3-1/2" D, AND 4-1/2" E STATION

Ultra® precision tooling system – designed to dramatically improve any punching operation
- 0.212(5.38) more punch grind life than original style tooling.
- Quick change strippers.
- Quick length adjustment.
- Internal lubrication within punch guide.
- External lubrication between guide and turret bore ensures uniform distribution of oil within the turret bore.
- Hardened guides to reduce turret bore wear.
- SLUG FREE® dies eliminate slug pulling.

PUNCHES:
- Premium high speed tool steel for extended life between regrinds and maximum productivity.
- 1/4 degree back taper and near polished flanks to reduce friction and eliminate galling.
- Superior angularity, concentricity, and dimensional accuracy.
- Robust full-body design.
- Fully compatible with original style thick turret tooling.

STRIPPERS:
- Relieved to allow 0.078(2.00) extra grind life.
- Recessed to allow collection of lubrication fluid at punch tip.
- Quick-change mechanism to allow rapid tool change.
- Rounded edges to minimize sheet marking.
- Optional urethane stripper pads to eliminate sheet marking.

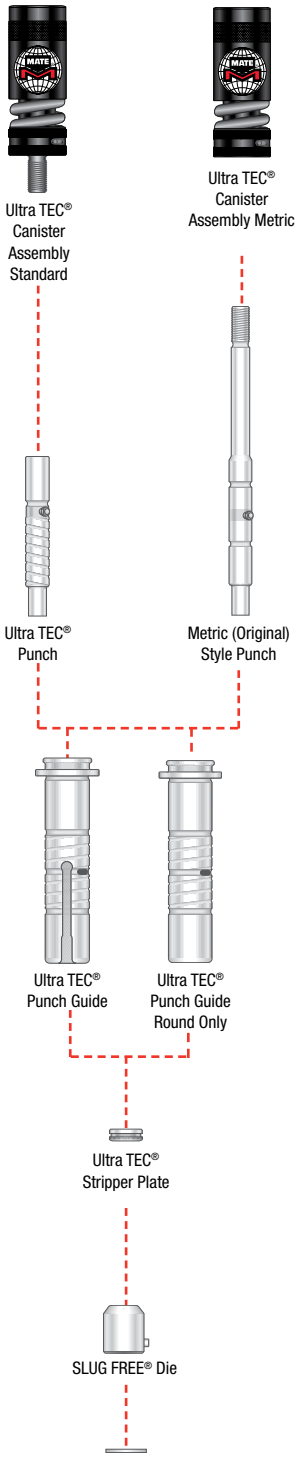
SLUG FREE® DIES:
- Highly wear resistant, chrome air hardened tool steel to balance hardness and toughness.
- SLUG FREE® die geometry eliminates slug pulling.
- Uniform clearance radii in die corners to improve edge quality.
- Precision orientation keyway.
- Up to 0.125(3.20) grind life.
- Superior roundness and flatness with exceptional die strength.

PUNCH GUIDE ASSEMBLY:
- Quick-change stripper release mechanism allows stripper to be removed easily, without tools.
- Quick length adjustment mechanism on the side of the guide allows the punch length to be adjusted without disassembly.
- Hardened and ground to stay round and true to size to greatly reduce turret bore wear.
- Internal and external lubrication grooves to reduce friction.
- High performance disc springs to optimize stripping force throughout the service life of the machine.

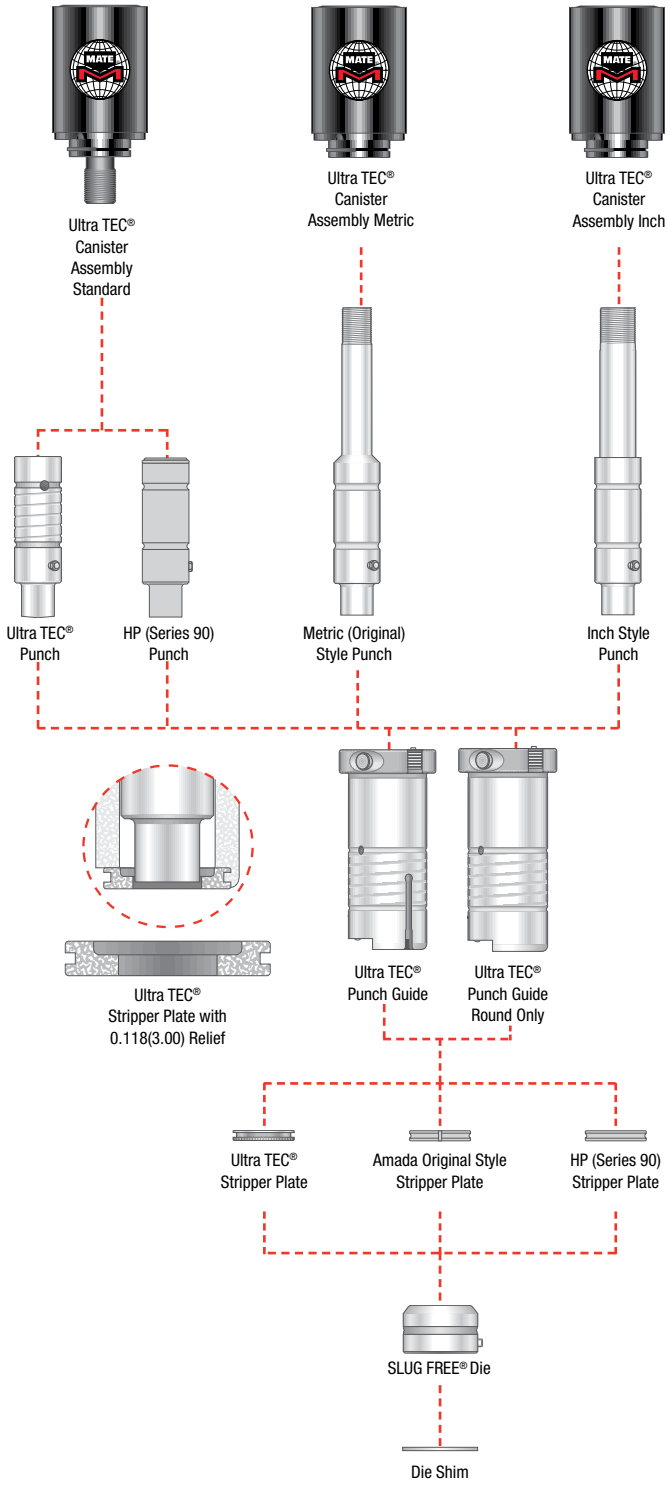
[Dimensions in Inches(mm)]

SYSTEM OVERVIEW

1/2" A STATION



1-1/4" B STATION



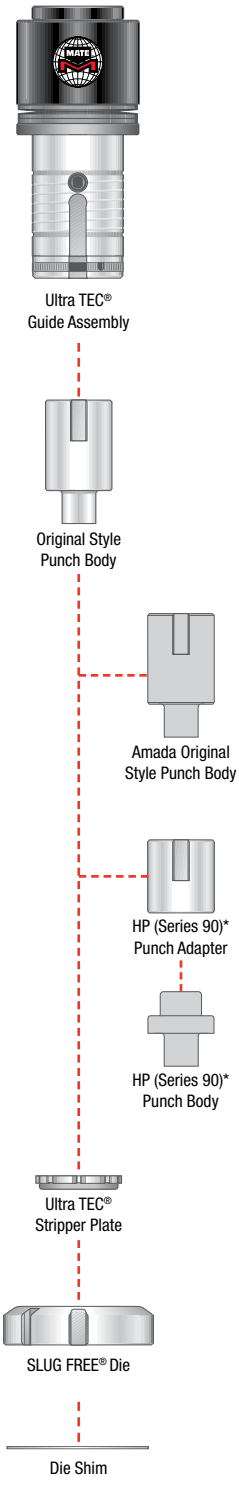
Features include:

- Extended grind life • Interchangeable components
- Multiple angle settings • Quick length adjustment
- Quick tool change • Premium high speed tool steel punches • SLUG FREE® die

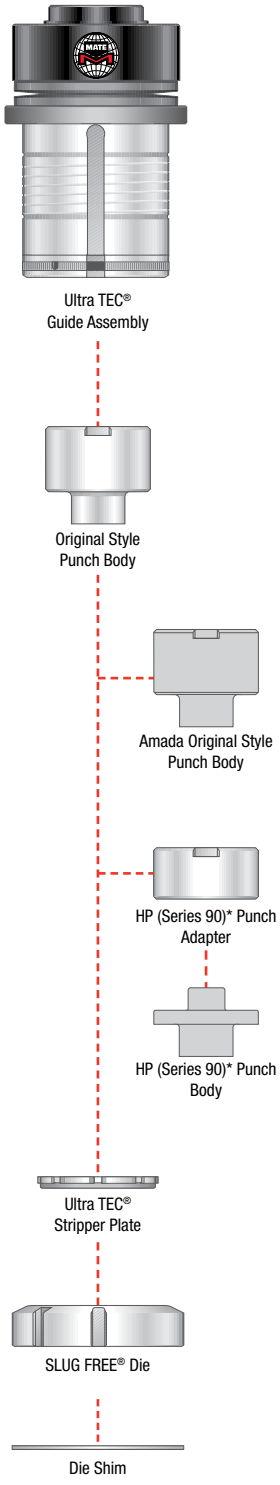
[Dimensions in Inches(mm)]

SYSTEM OVERVIEW

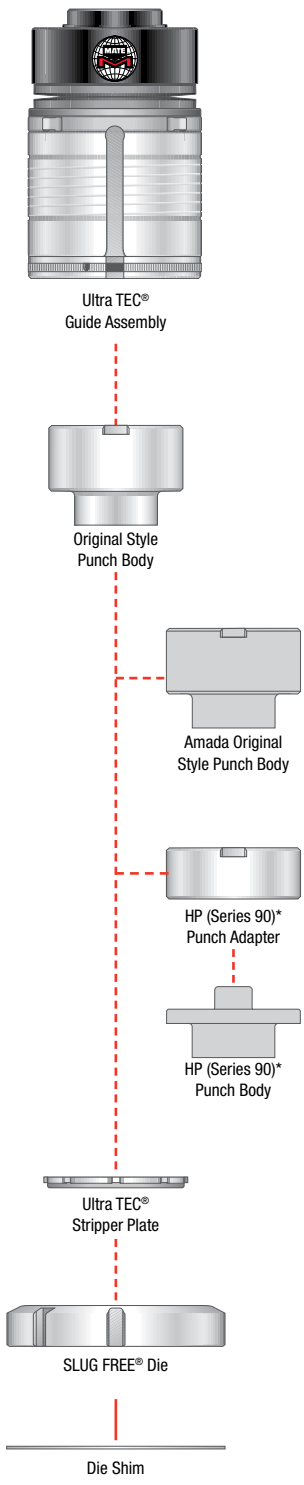
2" C STATION



3-1/2" D STATION



4-1/2" E STATION

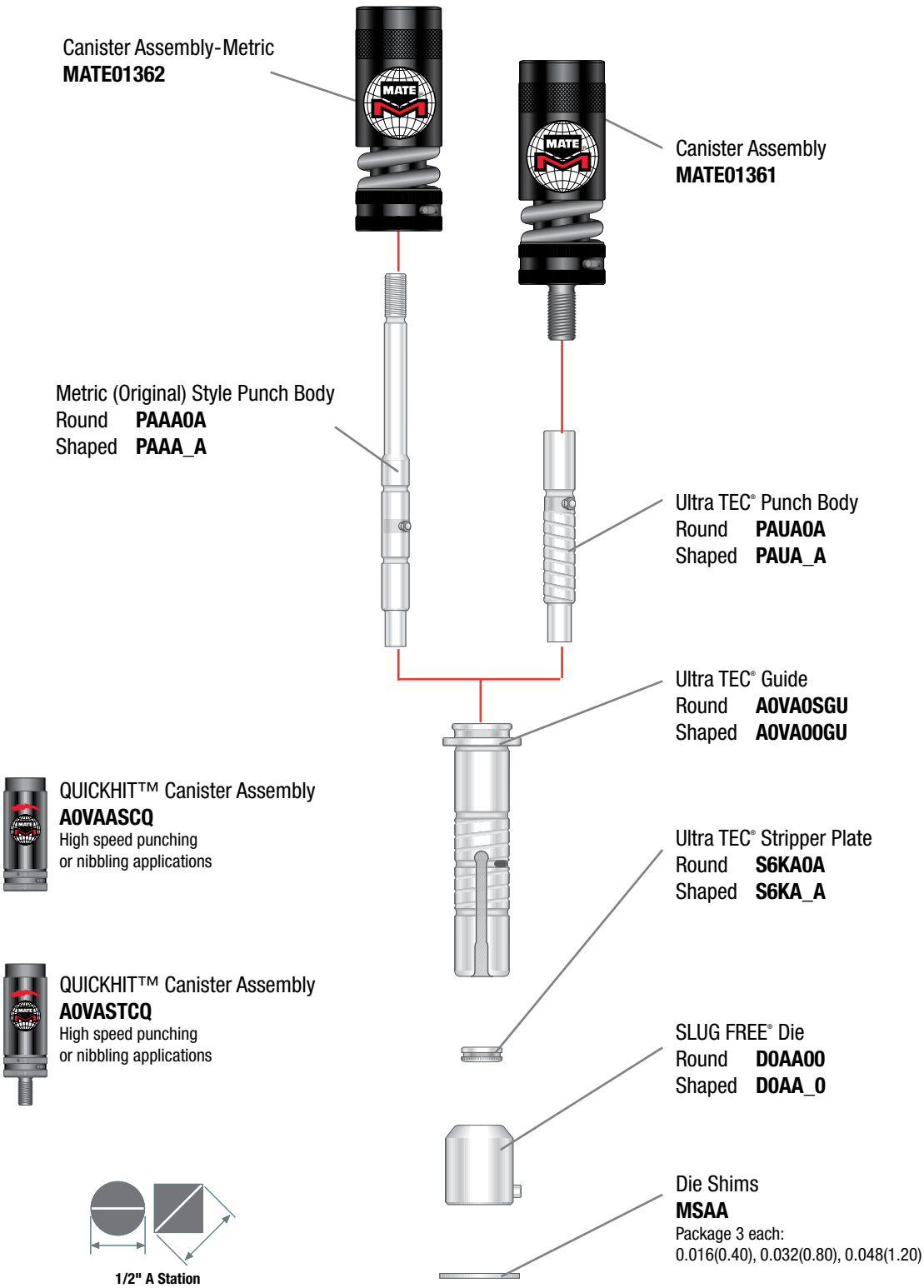


Features include:

- Extended grind life • Interchangeable components
- Multiple angle settings • Quick length adjustment
- Quick tool change • Premium high speed tool steel punches • SLUG FREE® die

[Dimensions in Inches(mm)]

ULTRA TEC® 1/2" A STATION ASSEMBLY FOR ULTRA TEC® AND THICK TURRET STYLE PUNCHES

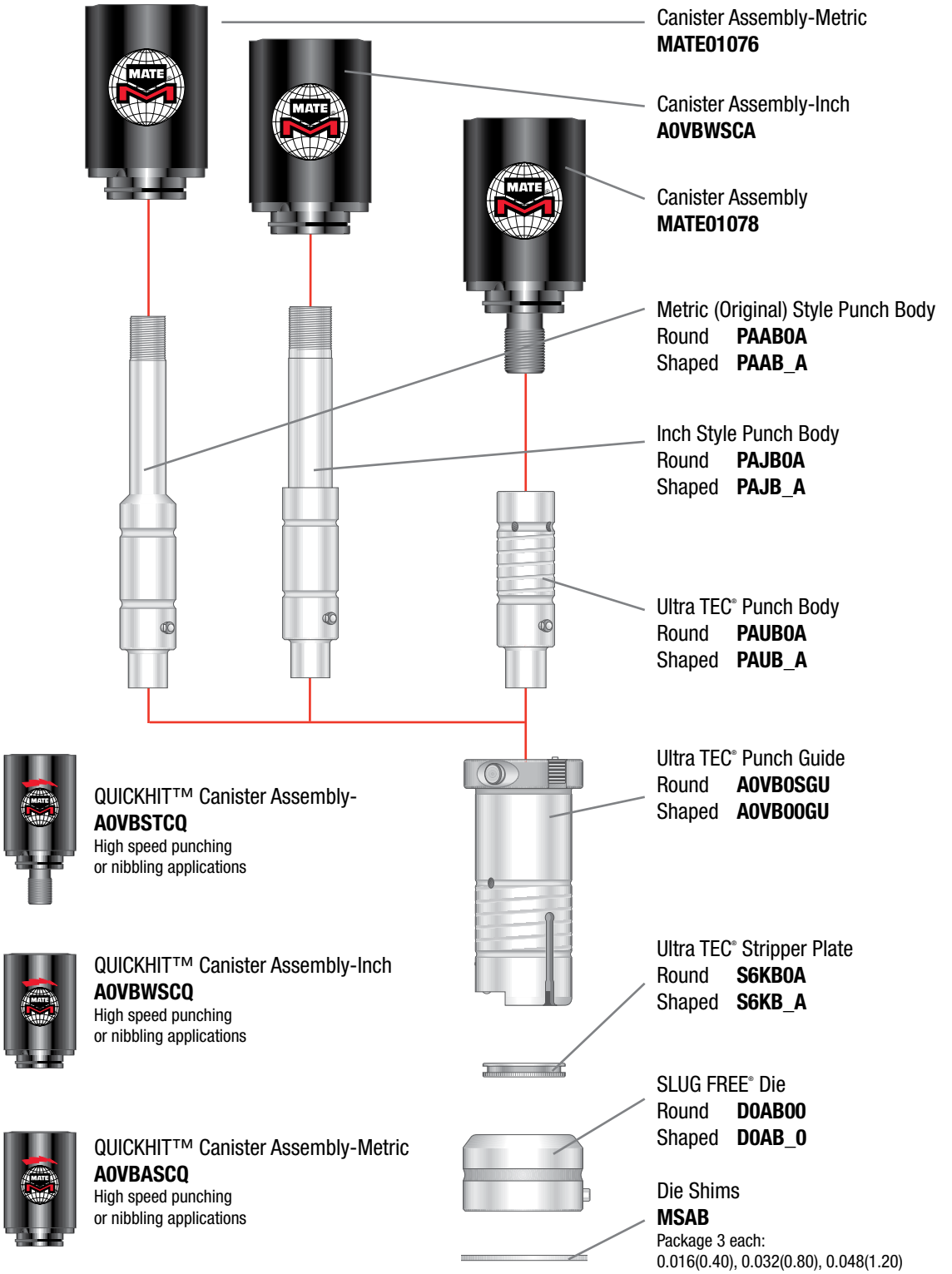


STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

ULTRA TEC® 1-1/4" B STATION ASSEMBLY FOR ULTRA TEC® AND THICK TURRET STYLE PUNCHES



Canister Assembly-Metric
MATE01076

Canister Assembly-Inch
A0VBWSCA

Canister Assembly
MATE01078

Metric (Original) Style Punch Body
Round **PAAB0A**
Shaped **PAAB_A**

Inch Style Punch Body
Round **PAJB0A**
Shaped **PAJB_A**

Ultra TEC® Punch Body
Round **PAUB0A**
Shaped **PAUB_A**

Ultra TEC® Punch Guide
Round **A0VB0SGU**
Shaped **A0VB00GU**

Ultra TEC® Stripper Plate
Round **S6KB0A**
Shaped **S6KB_A**

SLUG FREE® Die
Round **D0AB00**
Shaped **D0AB_0**

Die Shims
MSAB
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

QUICKHIT™ Canister Assembly-
A0VBSTCQ
High speed punching
or nibbling applications

QUICKHIT™ Canister Assembly-Inch
A0VBWSCQ
High speed punching
or nibbling applications

QUICKHIT™ Canister Assembly-Metric
A0VBASCQ
High speed punching
or nibbling applications

See page 13 for Slug Free Light™ Dies

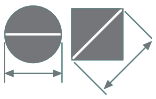
See page 88 for Add-Ons

1-1/4" B Station
Maximum 1.250(31.75)
diameter/diagonal

[Dimensions in Inches(mm)]

ULTRA TEC® GUIDE ASSEMBLIES FOR THICK TURRET STYLE PUNCHES

2" C STATION



Maximum
2.000(50.80)
diameter/diagonal

Ultra TEC® Guide Assembly
AGVC1Z

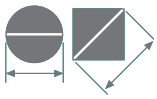
Original Style Punch Body
Round **PAAC0A**
Shaped **PAAC_A**

Ultra TEC® Stripper Plate
Round **S6KC0A**
Shaped **S6KC_A**

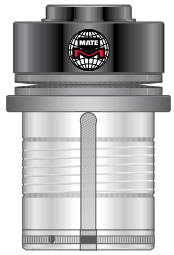
SLUG FREE® Die
Round **D0AC00**
Shaped **D0AC_0**

Die Shims
MSAC
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

3-1/2" C STATION



Maximum
3.500(88.90)
diameter/diagonal



Ultra TEC® Guide Assembly
AGVD1Y

Original Style Punch Body
Round **PAAD0A**
Shaped **PAAD_A**

Ultra TEC® Stripper Plate
Round **S6KD0A**
Shaped **S6KD_A**

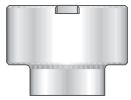
SLUG FREE® Die
Round **D0AD00**
Shaped **D0AD_0**

Die Shims
MSAD
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

4-1/2" E STATION

Maximum
4.500(114.30)
diameter/diagonal

Ultra TEC® Guide Assembly
AGVE1Z



Original Style Punch Body
Round **PAAE0A**
Shaped **PAAE_A**

Ultra TEC® Stripper Plate
Round **S6KE0A**
Shaped **S6KE_A**

SLUG FREE® Die
Round **D0AE00**
Shaped **D0AE_0**

Die Shims
MSAE
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

See page 13 for Slug Free Light™ Dies

See page 88 for Add-Ons

STANDARD SHAPES:

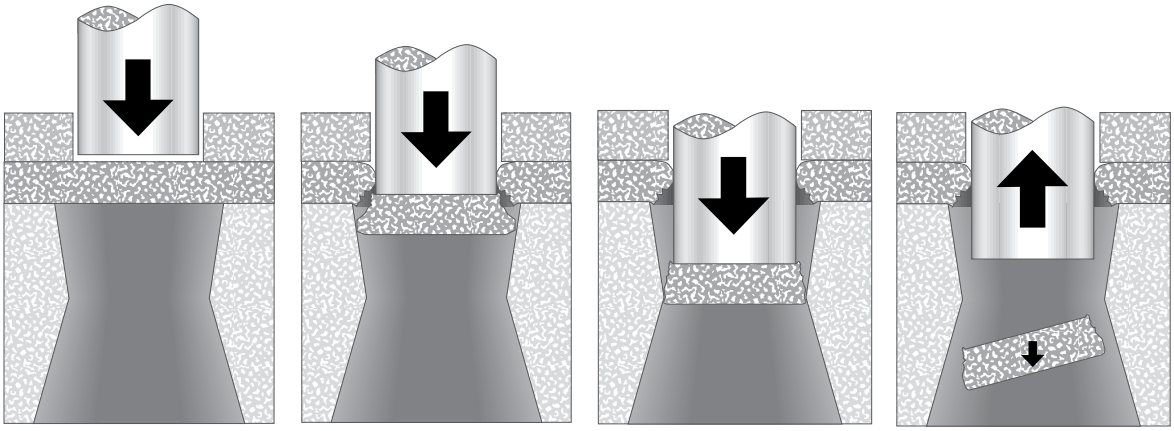
[Dimensions in Inches(mm)]

MATE SLUG FREE® DIES

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.



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.

MATE SLUG FREE LIGHT™ DIES FOR THIN SHEET METAL

Mate Slug Free Light™ thick turret dies are designed to eliminate slug pulling when punching thin sheet metal material, where the recommended die clearance is less than 0.008(0.20).

The Mate Slug Free Light™ die works by introducing a series of small protrusions around the edge of the slug. Each protrusion is created by a small angled notch cut into the die opening (See photo 1). As the slug passes through the die, the position of the protrusion relative to the notch changes slightly. This change creates slight pressure between the slug and the die land, which traps the slug into the die and eliminates the possibility of the slug being pulled back through the die. By eliminating slug pulling with every punch cycle, the piece part quality is improved and tool life is increased.

Mate Slug Free Light™ dies are available for thick turret tooling and are particularly effective when the die clearance is less than 0.008(0.20).

Mate Slug Free Light™ notches are cut at an angle to create a series of protrusions on the slug. As the slug moves through the die, the protrusions become trapped against the die land to prevent the slug pulling back on to the sheet. (Image enhanced for additional clarity)

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

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS

1-1/4" B STATION

Ultra TEC® Canister Assembly Standard

Ultra TEC® Canister Assembly Metric

Ultra TEC® Punch

Metric (Original) Style Punch

Ultra TEC® Fully Guided Punch Guide

Ultra TEC® Fully Guided Stripper Plate

SLUG FREE® Die

2" C STATION

Fully Guided Guide Assembly

Original Style Punch Body

Ultra TEC® Fully Guided Stripper Plate

SLUG FREE® Die

3-1/2" D STATION

Fully Guided Guide Assembly

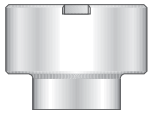
Original Style Punch Body

Ultra TEC® Fully Guided Stripper Plate

SLUG FREE® Die

4-1/2" E STATION

Fully Guided Guide Assembly



Original Style Punch Body

Ultra TEC® Fully Guided Stripper Plate

SLUG FREE® Die

- **Fully guided assembly**
  Accurate and close tolerances between guide and stripper hold punches rigid, control against hole distortion and saw toothing.
- **Premium high speed tool steel punches at 60-62 Rockwell C**
  Specially formulated high speed steel and specially developed heat treatment processes result in unusually high tool performance, superior dimensional accuracy and maximum tool life.
- **Stripper opening 0.0015(0.04) TC to point**
  Guiding at punch point supports punches, increases hole accuracy, improves stripping and prevents scrap from rising into the assembly.
- **Quick length adjustment**
  The external quick length adjustment button on the side of the guide allows the punch length to be adjusted without disassembly.
- **Hardened and ground guide**
  Reduces abrasive action of punching, diffuses heat effectively, resists galling, extends tool life, increases turret life and improves up time.
- **Interior and exterior spiral grease grooves**
  Even and consistent tool lubrication increases tool life.
- **Tool Lubrication**
  Interior vertical fluid grooves and fluid through holes provide even and efficient transfer of lubrication fluid to internal surfaces and to external guide surface area, increases lubrication and tool life.
- **SLUG FREE® die design**
  Clearing the slug every cycle eliminates slug pulling, extends tool life, improves piece part quality and reduces scrap.

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS

3-1/2" D STATION

Ultra TEC® Fully Guided Clamp Clearing Guide Assmbly

Punch Retainer

Slitting Insert

"DD" Stripper Plate

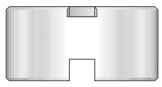
"D" Stripper Plate

"DD" Clamp Clearing SLUG FREE® Die

"D" Clamp Clearing SLUG FREE® Die

4-1/2" E STATION

Ultra TEC® Fully Guided Clamp Clearing Guide Assmbly



Punch Retainer

Slitting Insert

"DD" Stripper Plate

"D" Stripper Plate

"DD" Clamp Clearing SLUG FREE® Die

"D" Clamp Clearing SLUG FREE® Die

- **Fully guided assembly**
  Accurate and close tolerances between guide and stripper hold punches rigid, control against hole distortion and saw toothing.

- **Premium high speed tool steel punches at 60-62 Rockwell C**
  Specially formulated M4PM™ high speed steel and specially developed heat treatment processes result in unusually high tool performance, superior dimensional accuracy and maximum tool life.

- **Stripper opening 0.0015(0.04) TC to point**
  Guiding at punch point supports punches, increases hole accuracy, improves stripping and prevents scrap from rising into the assembly.

- **Clamp clearing relief**
  Use this tool close to work holder clamps. The stripper and the die are relieved so the clamp can pass between the upper and the lower unit. No need to reposition the clamps, saves time, improves piece part quality.

- **Quick length adjustment**
  The external quick length adjustment button on the side of the guide allows the punch length to be adjusted without disassembly. Guide will adjust punch point length by 0.008(0.20) per click.

- **Hardened and ground guide**
  Reduces abrasive action of punching, diffuses heat effectively, resists galling, extends tool life, increases turret life and improves up time.

- **Interior and exterior spiral grease grooves**
  Even and consistent tool lubrication increases tool life.

- **Tool Lubrication**
  Interior vertical fluid grooves and fluid through holes provide even and efficient transfer of lubrication fluid to internal surfaces and to external guide surface area, increases lubrication and tool life.

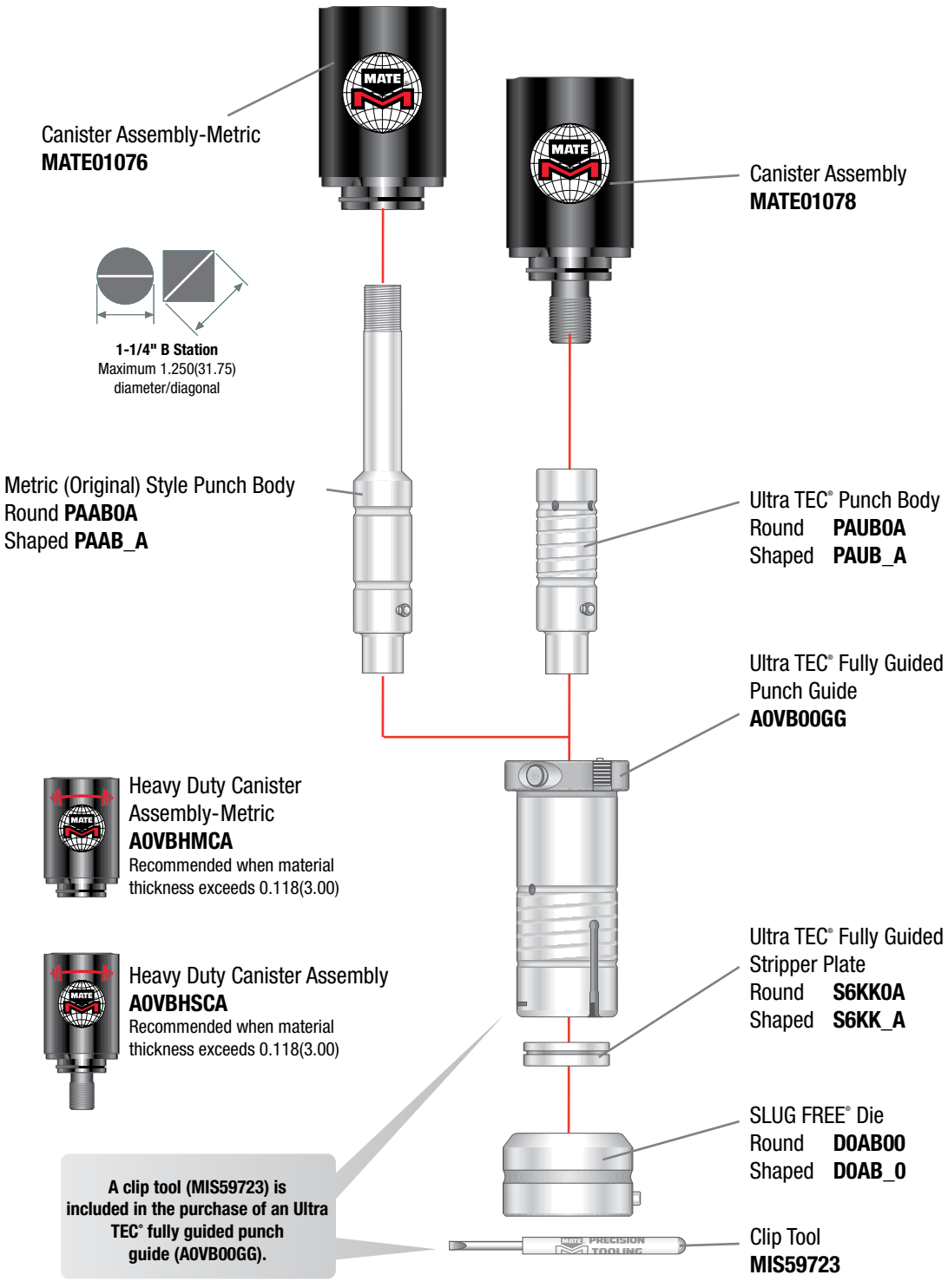
- **Additional 0.079(2.00) punch grind life**
  Use insert style punches from Mate in combination with this specially designed stripper to gain additional grind life.

- **SLUG FREE® die design**
  Clearing the slug every cycle eliminates slug pulling, extends tool life, improves piece part quality and reduces scrap.

[Dimensions in Inches(mm)]

ULTRA TEC® FULLY GUIDED

1-1/4" B STATION



See page 13 for Slug Free Light™ Dies

See page 88 for Add-Ons

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

ULTRA TEC® FULLY GUIDED

2" C STATION

Ultra TEC® Fully Guided
Guide Assembly*
AGVS1Z

Original Style Punch Body
Round **PAAC0A**
Shaped **PAAC_A**

Fully Guided Stripper Plate
Round **S2KL0A**
Shaped **S2KL_A**

SLUG FREE® Die
Round **D0AC00**
Shaped **D0AC_0**

*Also Available
(2" C Station Only)
AGVS3Z
External keyways at
0°, 45° and 90°

3-1/2" D STATION

Ultra TEC® Fully Guided
Guide Assembly**
AGVT1Y

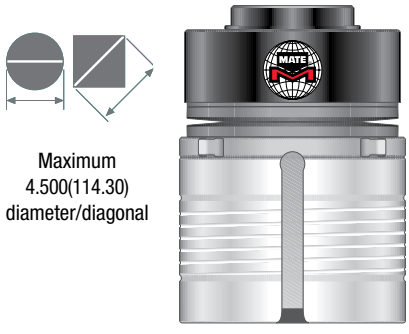
Original Style Punch Body
Round **PAAD0A**
Shaped **PAAD_A**

Fully Guided Stripper Plate
Round **S2KM0A**
Shaped **S2KM_A**

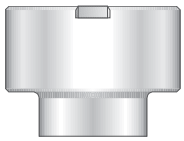
SLUG FREE® Die
Round **D0AD00**
Shaped **D0AD_0**

**Also Available
(3-1/2" D Station Only)
AGVT3Y
External keyways at
0°, 45° and 90°

4-1/2" E STATION



Ultra TEC® Fully Guided
Guide Assembly
AGVU1Z



Original Style Punch Body
Round **PAAE0A**
Shaped **PAAE_A**

Fully Guided Stripper Plate
Round **S2KN0A**
Shaped **S2KN_A**

SLUG FREE® Die
Round **D0AE00**
Shaped **D0AE_0**

Lifter "T" Handle

A0LEH

[Dimensions in Inches(mm)]

ULTRA TEC® FULLY GUIDED CLAMP CLEARING SLITTING TOOL FOR 3-1/2" D AND 4-1/2" E STATION

3-1/2" D STATION

Ultra TEC® Fully Guided Clamp Clearing Guide Assembly

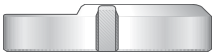
Punch Retainer

Slitting Insert

"DD" Stripper Plate

"D" Stripper Plate

"DD" Clamp Clearing SLUG FREE® Die

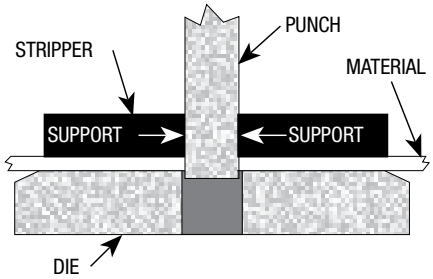


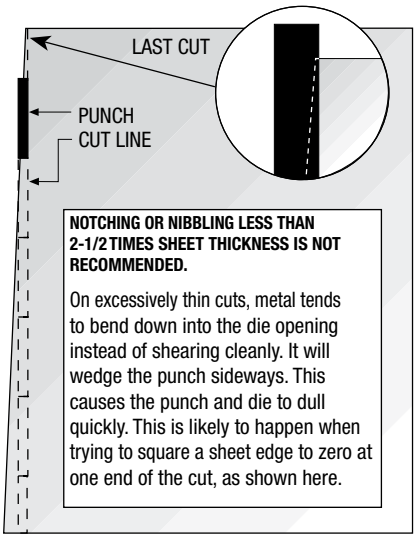
"D" Clamp Clearing SLUG FREE® Die

ULTRA® CLAMP CLEARING SLITTING TOOL

This tool is specially designed for slitting and parting applications. Separating piece parts, trimming sheet edges, and reducing sheet sizes often requires the use of a tool with long narrow dimensions. Rectangles with radius corners or ovals are recommended.

Slitting and parting applications require the tool to pierce material cleanly and accurately while overcoming various side load and twisting pressures. For example, parting a sheet will include an amount of overlap in each step where sheet resistance is absent. This causes the force of resistance to build on one side which can cause the hole to distort or saw tooth. The same is true when trimming the edge of a sheet.





NOTCHING OR NIBBLING LESS THAN 2-1/2 TIMES SHEET THICKNESS IS NOT RECOMMENDED.

On excessively thin cuts, metal tends to bend down into the die opening instead of shearing cleanly. It will wedge the punch sideways. This causes the punch and die to dull quickly. This is likely to happen when trying to square a sheet edge to zero at one end of the cut, as shown here.

The Ultra clamp clearing slitting tool is designed to overcome these side load and twisting pressures. The advantage comes from punch point guiding. By squarely and tightly controlling the punch point where it contacts the sheet, the punch can accurately pierce a hole, even when punching partial hits.

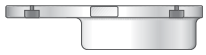
4-1/2" E STATION

Ultra TEC® Fully Guided Clamp Clearing Guide Assembly

Punch Retainer

Slitting Insert

"DD" Stripper Plate



"D" Stripper Plate

"DD" Clamp Clearing SLUG FREE® Die

"D" Clamp Clearing SLUG FREE® Die

See page 13 for Slug Free Light™ Dies

See page 88 for Add-Ons

[Dimensions in Inches(mm)]

ULTRA TEC® FULLY GUIDED CLAMP CLEARING

3-1/2" D STATION

3.500(88.90) maximum punch diagonal/length

0.315(8.00) maximum punch width

3.560(90.40) maximum die diagonal/length

0.374(9.50) maximum die width

*Also Available
(3-1/2" D Station Only)
AGVT3Y
External keyways at 0°, 45° and 90°

Ultra TEC® Fully Guided Guide Assembly*
AGVT1Y

Punch Retainer
A0LD00PR

Slitting Insert
Shaped **P4AQ_A**

Clamp Clearing
"DD" Stripper Plate
Shaped **S6KW_A**

Clamp Clearing
"D" Stripper Plate
Shaped **S6KT_A**

Clamp Clearing
"DD" SLUG FREE® Die
Shaped **D0AW_0**

Clamp Clearing
"D" SLUG FREE® Die
Shaped **D0AT_0**

4-1/2" E STATION

4.500(114.30) maximum punch diagonal/length

0.315(8.00) maximum punch width

4.560(115.80) maximum die diagonal/length

0.374(9.50) maximum die width

Ultra TEC® Fully Guided Guide Assembly*
AGVU1Z

Punch Retainer
A0LE00PR

Slitting Insert
Shaped **P4AR_A**

Clamp Clearing
"DD" Stripper Plate
Shaped **S6KX_A**

Clamp Clearing
"D" Stripper Plate
Shaped **S6KU_A**

Clamp Clearing
"DD" SLUG FREE® Die
Shaped **D0AX_0**

Clamp Clearing
"D" SLUG FREE® Die
Shaped **D0AU_0**

Lifter "T" Handle

A0LEH

STANDARD SHAPES

Rectangle Oval

[Dimensions in Inches(mm)]

ULTRA TEC® GUIDE ASSEMBLIES WITH M14 BOLTS

The Mate Ultra TEC® precision tooling system for thick turret punch presses increases tool performance and flexiblity, offers extended tool life, and allows interchangeability with existing tooling inventory.

Mate Ultra TEC® punch guide assemblies with M14 bolts provide many important benefits, including:

- Quick length adjustment – no shims or tooling required.
- Internal and external grooves for superior lubrication.
- Hardened and ground surfaces for maximum turret bore life.
- High performance stripping springs for extended service life.
- Full compatibility with existing M14 threaded punches.
- Conversion kit for compatibility with M12 threaded punches.

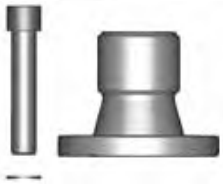
Mate Ultra TEC® guides with M14 bolts are available in two versions:

ULTRA TEC®

- Quick-change stripper release mechanism allows stripper to be removed quickly and easily, without tools.
- Quick length adjustment mechanism on the side of the guide allows the punch length to be adjusted without disassembly.

ULTRA TEC® FULLY GUIDED

- Fully guided stripper to guide the punch tip for improved piece part quality and extended punch life. Ideal for slitting and nibbling applications.
- Quick length adjustment mechanism on the side of the guide allows the punch length to be adjusted without disassembly.



Also available is an M14 punch driver conversion kit to convert existing Mate Ultra TEC® guides with M12 bolts to suit punches with an M14 thread.

Tool Style / Station	2" C Station	3-1/2" D Station	4-1/2" E Station
Mate Ultra TEC® Guide with M14 bolt	**MATE00654**	**MATE00655**	**MATE01809**
Mate Ultra TEC® Fully Guided Guide with M14 bolt	**MATE00657**	**MATE00658**	**MATE01813**
Mate Ultra TEC®/Ultra XT® M14 Punch Driver Conversion Kit	**MATE00651**	**MATE00652**	**MATE00653**

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS
1/2" A AND 1-1/4" B STATION

Mate's Ultra XT™ Precision Tooling System is a thick turret punching system which increases tool performance and flexibility, offers extended tool life and allows interchangeability with existing systems. Some features of the Ultra XT™ system include: • Premium high speed tool steel punches • Quick tool change • Easy click length adjustment - no punch shims required • Grooved guides for better lubrication • SLUG FREE® die design • 0.118(3.00) additional punch grind life.

PUNCHES:
- Premium high speed tool steel for extended life between regrinds and maximum productivity.
- 1/4 degree back taper and near polished flanks to reduce friction, eliminate galling and extend punch life.
- External lubrication grooves to allow fluid flow.
- Available in multiple styles:
    - Ultra TEC® with lubrication grooves.
    - Ultra® Metric compatible with original style punches.
    - Inch Style (1-1/4" B station only).

STRIPPERS:
- Fully compatible with Ultra TEC® tooling system.
- Relieved to allow 0.118(3.00) extra grind life.
- Quick-change mechanism to allow rapid tool change.

SLUG FREE® DIES:
- SLUG FREE® die geometry eliminates slug pulling. See page 13.
- Highly wear resistant, chrome air hardened tool steel.
- Uniform clearance radii in die corners improve edge quality.
- Up to 0.125(3.20) grind life.

CANISTER ASSEMBLIES:
- Quick length adjustment with positive engagement with the guide.
- Uniform spring pressure for reliable stripping.
- Available in multiple styles:
    - Ultra TEC® for use with Ultra TEC® standard punches.
    - Ultra® Metric for original style punches.
    - Inch Style (1-1/4" B station only) for Inch style punches.

GUIDES WITH EXTERNAL ORIENTATION SLOTS:
- Quick-change mechanism with no tools require.
- Tool remains assembled during tool length adjustment.
- Internal and external lubrication to reduce friction.
- Hardened and ground to reduce wear.
- Available in three styles:
    - Round – internal keyway for round punches only.
    - Shaped – one precision internal keyway, 0° and 90° external keyways.
    - Shaped – one precision internal keyway, 0° and 45° external keyways.

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS
2" C, 3-1/2" D, AND 4-1/2" E STATION

Mate's Ultra XT™ Precision Tooling System is a thick turret punching system which increases tool performance and flexibility, offers extended tool life and allows interchangeability with existing systems. Some features of the Ultra XT™ system include:

- Premium high speed tool steel punches.
- Quick tool change.
- Easy click length adjustment - no punch shims required.
- Grooved guides for better lubrication.
- SLUG FREE® die design.
- Compatible with machine tool lubrication systems.
- OEM compatible strippers in the 2" C, 3-1/2" D, 4-1/2" E stations.

PUNCHES:
- Premium high speed tool steel for extended life between regrinds and maximum productivity.
- 1/4 degree back taper and near polished flanks to reduce friction and eliminate galling.
- Superior angularity, concentricity, and dimensional accuracy.
- Robust full-body design.
- Fully compatible with original style thick turret tooling.

STRIPPERS:
- Fully OEM compatible.
- Close tolerance opening for superior piece part quality.
- Radiused face to ease installation and reduce sheet marking.

SLUG FREE® DIES:
- Highly wear resistant, chrome air hardened tool steel to balance hardness and toughness.
- SLUG FREE® die geometry eliminates slug pulling. See page 13.
- Uniform clearance radii in die corners to improve edge quality.
- Precision orientation keyway.
- Up to 0.125(3.20) grind life.
- Superior roundness and flatness with exceptional die strength.

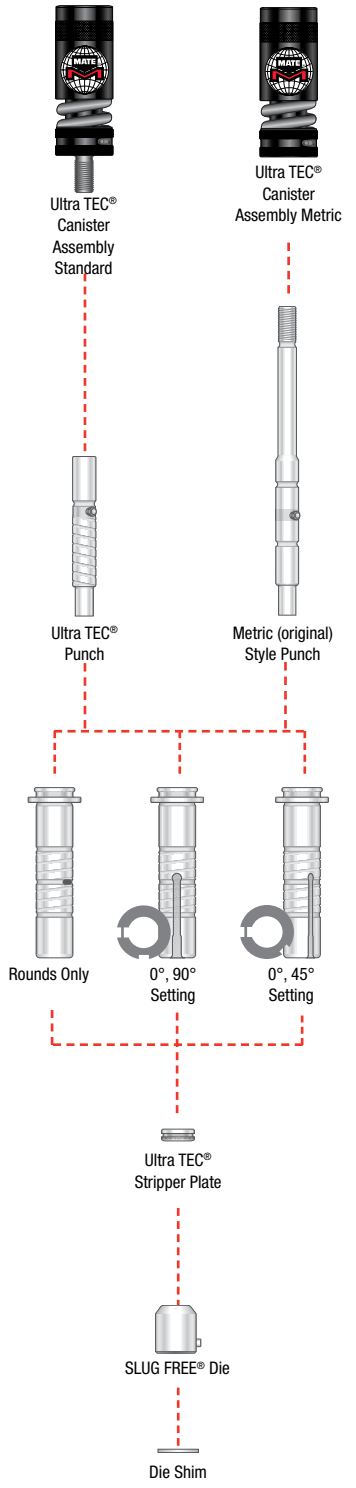
PUNCH GUIDE ASSEMBLY:
- Fully compatible with original style strippers.
- Quick length adjustment mechanism on the side of the guide allows the punch length to be adjusted without disassembly.
- Hardened and ground to stay round and true to size to greatly reduce turret bore wear.
- Internal and external lubrication grooves to reduce friction.
- High performance disc springs to optimize stripping force.

MATE®

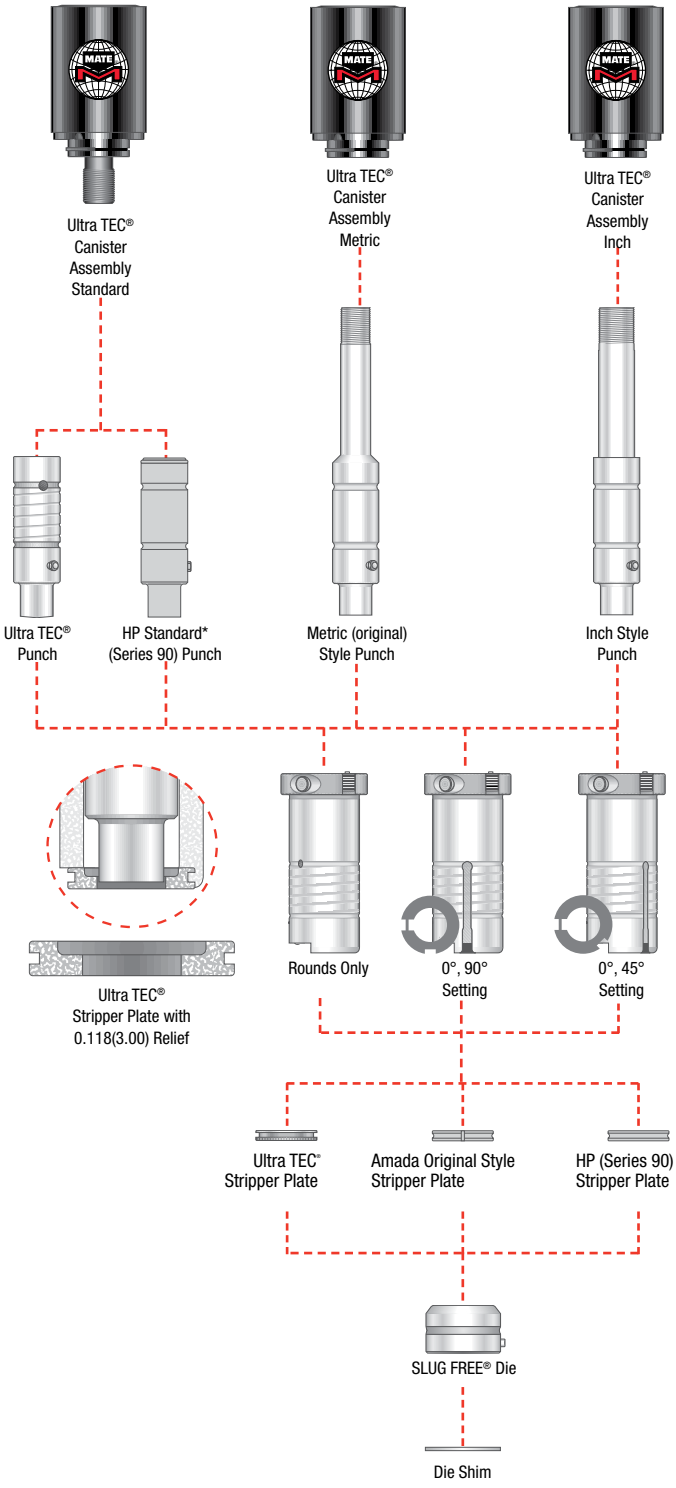
[Dimensions in Inches(mm)]

SYSTEM OVERVIEW

1/2" A STATION



1-1/4" B STATION

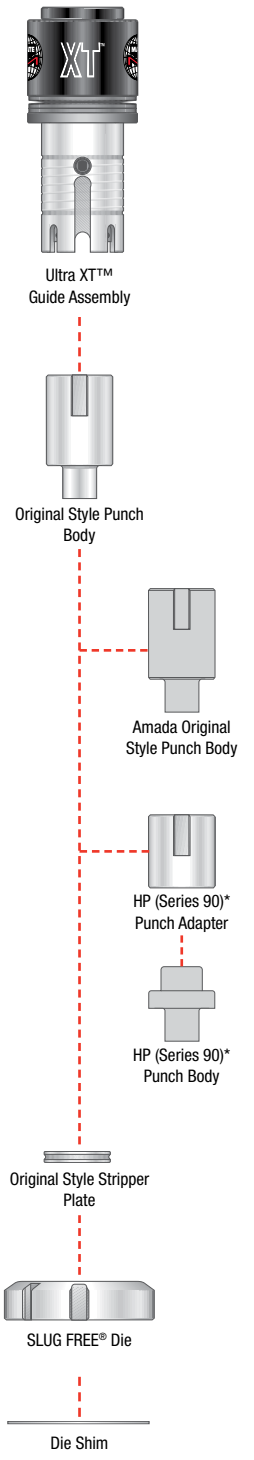


***HP WLS and HP ABS are not compatible with Ultra XT guides. Use Ultra TEC® guides. See pages 6-12**

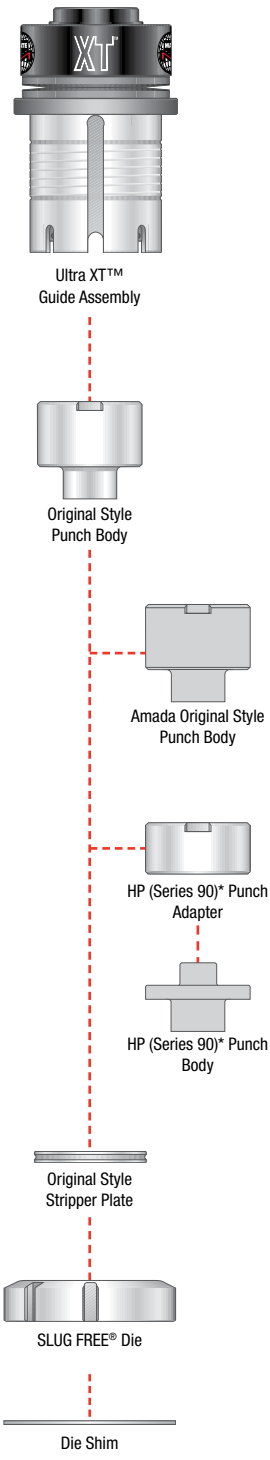
[Dimensions in Inches(mm)]

SYSTEM OVERVIEW

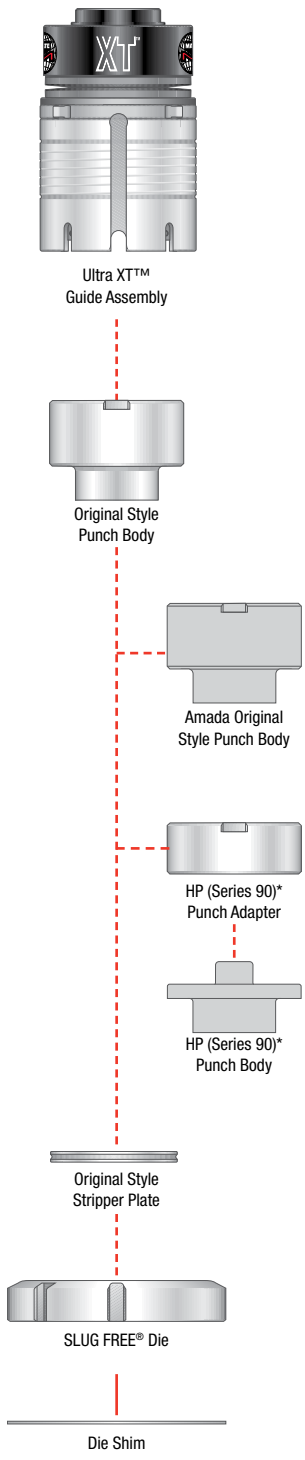
2" C STATION



3-1/2" D STATION

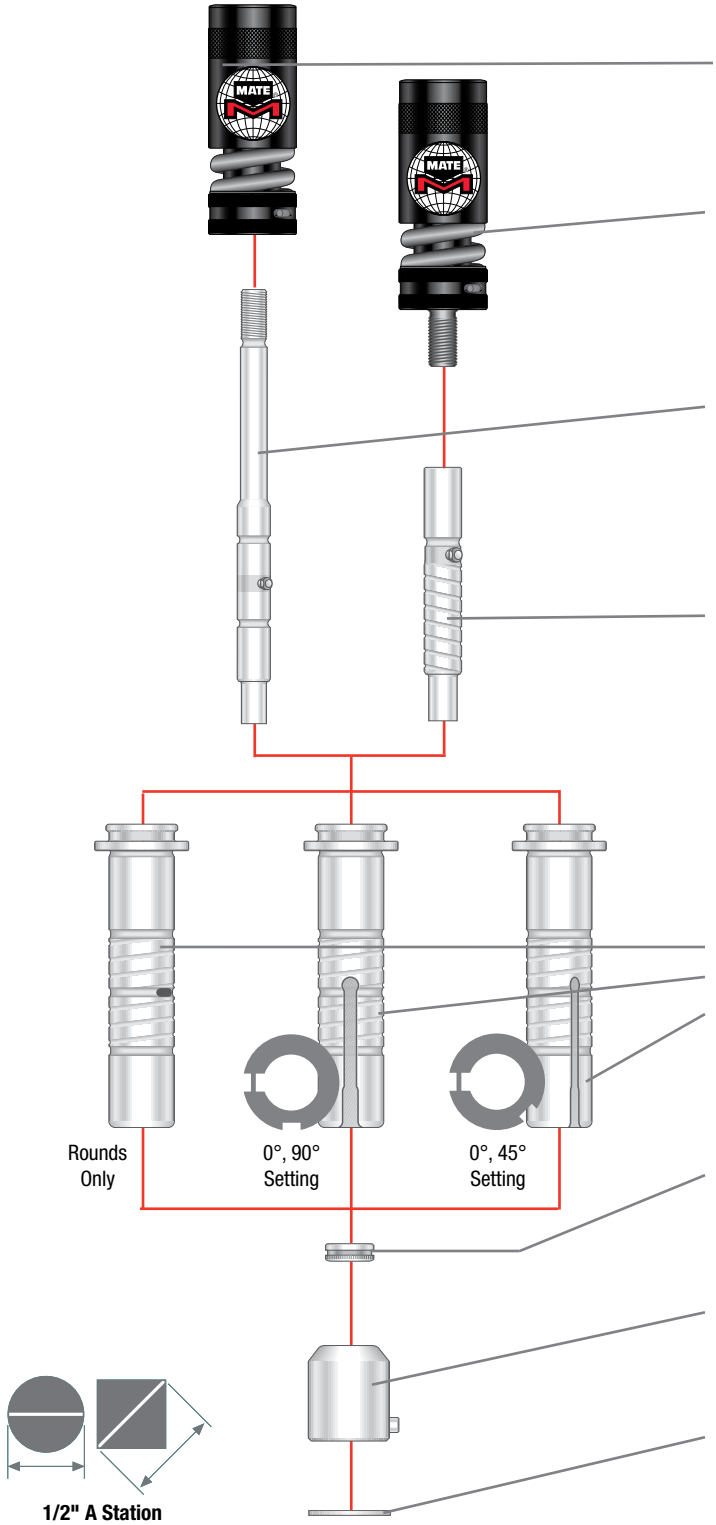


4-1/2" E STATION



[Dimensions in Inches(mm)]

ULTRA XT™ 1/2" A STATION ASSEMBLY FOR ULTRA TEC® AND THICK TURRET STYLE PUNCHES



Canister Assembly-Metric
MATE01382

Canister Assembly
MATE01361

Metric (Original) Style Punch Body
Round **PAAA0A**
Shaped **PAAA_A**

Ultra TEC® Punch Body
Round **PAUA0A**
Shaped **PAUA_A**

Ultra XT™ Guide
Round **A0VA0SGU**
Shaped **MATE00204**
Shaped **MATE00205**

Ultra TEC® Stripper Plate
Round **S6KA0A**
Shaped **S6KA_A**

SLUG FREE® Die
Round **D0AA00**
Shaped **D0AA_0**

Die Shims
MSAA
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

1/2" A Station
Maximum 0.500(12.70) diameter/diagonal

See page 13 for Slug Free Light™ Dies

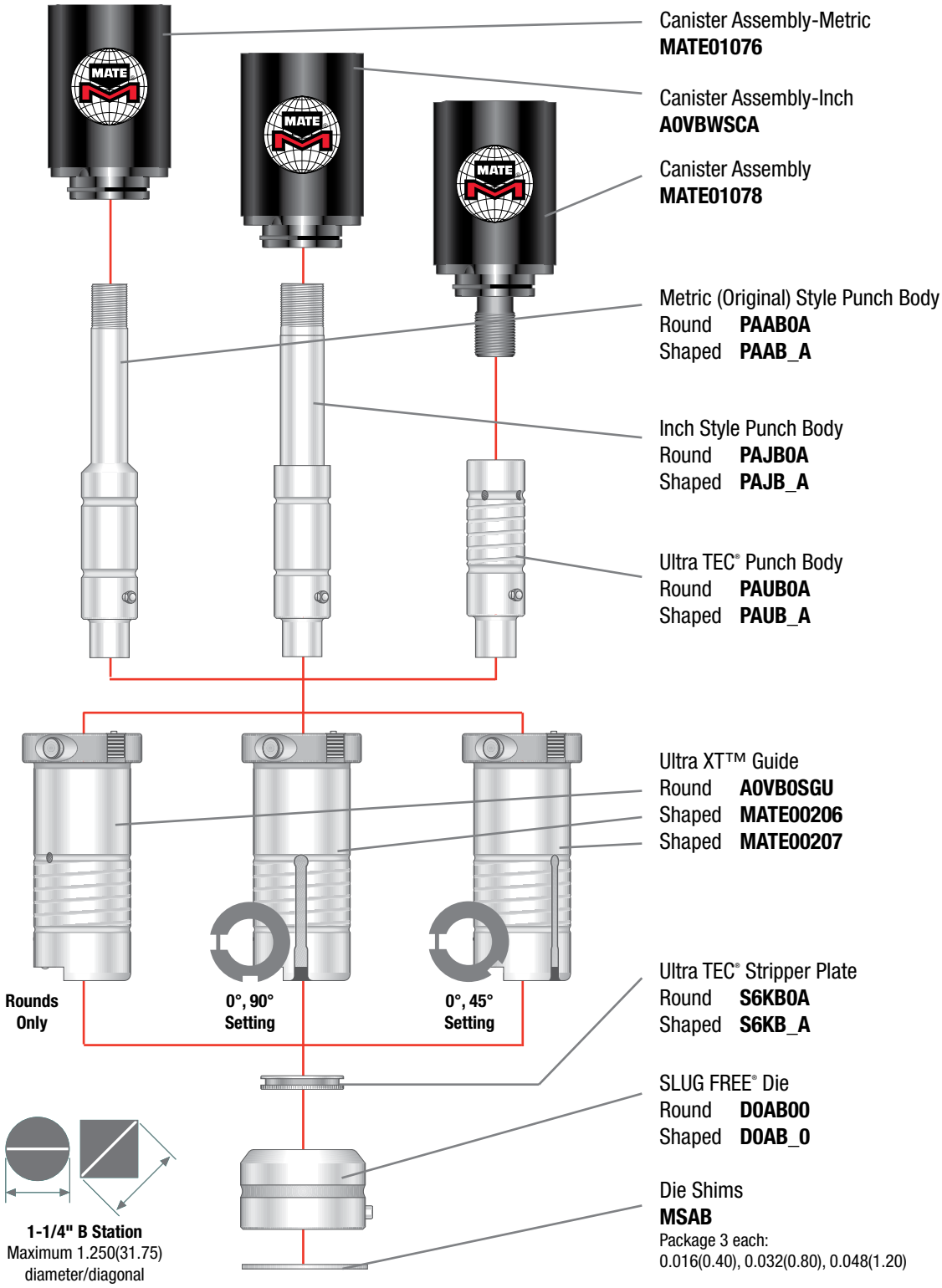
See page 88 for Add-Ons

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

ULTRA XT™ 1-1/4" B STATION ASSEMBLY FOR ULTRA TEC® AND THICK TURRET STYLE PUNCHES



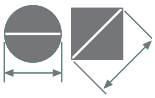
See page 13 for Slug Free Light™ Dies

See page 88 for Add-Ons

[Dimensions in Inches(mm)]

ULTRA XT™ GUIDE ASSEMBLIES FOR THICK TURRET STYLE TOOLING

2" C STATION



Maximum
2.000(50.80)
diameter/diagonal

Ultra XT™ Guide Assembly
MATE00209

Original Style Punch Body
Round **PAAC0A**
Shaped **PAAC_A**

Original Style Stripper Plate
Round **S6AC0A**
Shaped **S6AC_A**

SLUG FREE® Die
Round **D0AC00**
Shaped **D0AC_0**

Die Shims
MSAC
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

3-1/2" D STATION

Maximum
3.500(88.90)
diameter/diagonal

Ultra XT™ Guide Assembly
MATE00211

Original Style Punch Body
Round **PAAD0A**
Shaped **PAAD_A**

Original Style Stripper Plate
Round **S6AD0A**
Shaped **S6AD_A**

SLUG FREE® Die
Round **D0AD00**
Shaped **D0AD_0**

Die Shims
MSAD
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

4-1/2" E STATION

Maximum
4.500(114.30)
diameter/diagonal

Ultra XT™ Guide Assembly
MATE00213

Original Style Punch Body
Round **PAAE0A**
Shaped **PAAE_A**

Original Style Stripper Plate
Round **S6AE0A**
Shaped **S6AE_A**

SLUG FREE® Die
Round **D0AE00**
Shaped **D0AE_0**

Die Shims
MSAE
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

See page 13 for Slug Free Light™ Dies

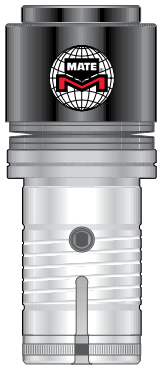
See page 88 for Add-Ons

STANDARD SHAPES:

[Dimensions in Inches(mm)]

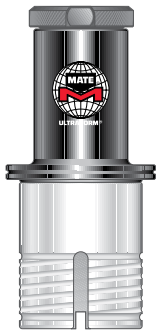
ULTRA TEC® LVD STYLE PUNCH GUIDE ASSEMBLIES

2" C STATION
0.250(6.35) wide keyway



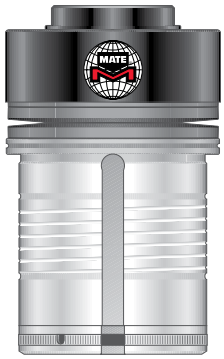
Ultra® LVD Guide Assembly
LGVC1

Ultra® LVD Fully Guided
Guide Assembly*
LGVS1

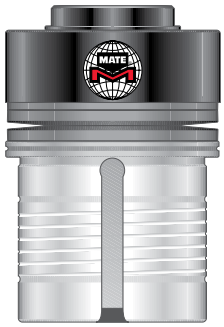


UltraFORM® LVD Style Forming
Unit Guide Assembly
LFKC2

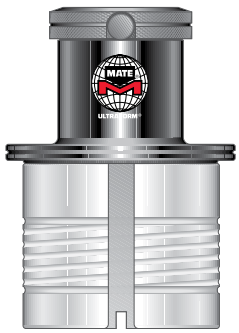
3-1/2" D STATION
0.512(13.00) wide keyway



Ultra® LVD Guide Assembly
LGVD1

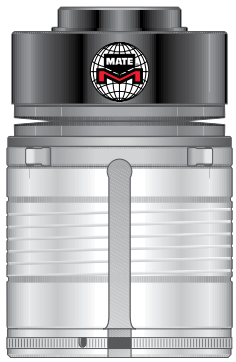


Ultra® LVD Fully Guided
Guide Assembly*
LGVT1

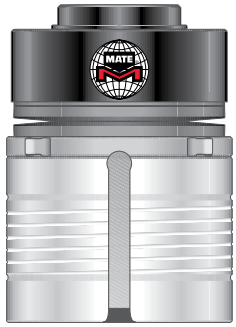


UltraFORM® LVD Style Forming
Unit Guide Assembly
LFKD2

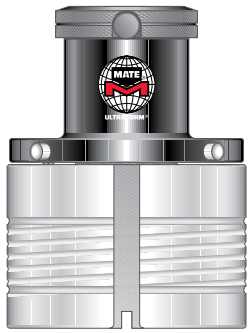
4-1/2" E STATION
0.512(13.00) wide keyway



Ultra® LVD Guide Assembly
LGVE1



Ultra® LVD Fully Guided
Guide Assembly*
LGVU1



UltraFORM® LVD Style Forming
Unit Guide Assembly
LFKE2

Lifter "T" Handle

AOLEH

[Dimensions in Inches(mm)]

*Also Available
(2" C Station Only)
LGVS3
External keyways at
0°, 45° and 90°

*Also Available
(3-1/2" D Station Only)
LGVT3
External keyways at
0°, 45° and 90°

FEATURES AND BENEFITS
1/2" A AND 1-1/4" B STATION

Mate's Original Style Thick Turret Tooling is fully OEM compatible tooling with several design enhancements. Premium High Speed Tool Steel is a standard feature in all Mate Thick Turret punches.

PUNCHES:
- Premium high speed tool steel - optimum edge wear resistance.
- 1/4 degree back taper and near polished flanks to reduce friction and eliminate galling.
- Exceptional dimensional accuracy and tool life.
- Minute corner radii to reduce chipping.
- Superior angularity and concentricity.

STRIPPERS:
- Fully OEM compatible.
- Close tolerance opening - superior piece part quality.
- Precision alignment slots - superior piece part quality.
- Hardened and ground - to reduce friction.
- Radiused face - to reduce sheet marking.

SLUG FREE® DIES:
- Highly wear resistant, chrome air hardened tool steel.
- SLUG FREE® die geometry eliminate slug pulling.
- Uniform clearance radii in die corners for improved piece part quality.
- Precision orientation with hardened pin.
- Up to 0.125(3.20) grind life.
- Improved die strength.
- Superior roundness and flatness.

PUNCH HEAD:
- Hexagonal design and 12.9 grade socket head cap screw for easier installation and adjustment.

SPRING:
- High performance spring shot peened prior to painting for extended service life.

SPRING RETAINER:
- Reversible design returns the punch point to "new" position by turning over retainer after 0.078(2.00) has been removed during regrinding.

[Dimensions in Inches(mm)]

FEATURES AND BENEFITS
2" C, 3-1/2" D, AND 4-1/2" E STATION

Mate's Original Style Thick Turret Tooling is fully OEM compatible tooling with several design enhancements. Premium High Speed Tool Steel is a standard feature in all Mate Thick Turret punches.

PUNCHES:
- Premium high speed tool steel - optimum edge wear resistance.
- 1/4 degree back taper and near polished flanks to reduce friction and eliminate galling.
- Exceptional dimensional accuracy and tool life.
- Minute corner radii to reduce chipping.
- Superior angularity and concentricity.

SLUG FREE® DIES:
- Highly wear resistant, chrome air hardened tool steel.
- SLUG FREE® die geometry eliminates slug pulling.
- Uniform clearance radii in die corners for improved piece part quality.
- Precision orientation with external keyway.
- Up to 0.125(3.20) grind life.
- Improved die strength.
- Superior roundness and flatness.

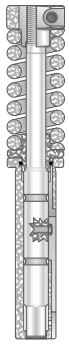
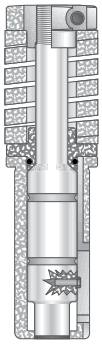
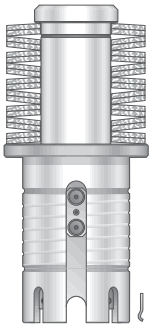
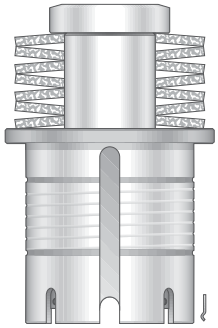
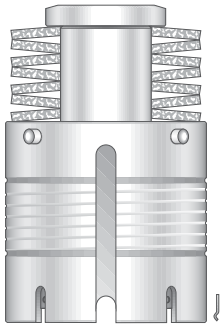
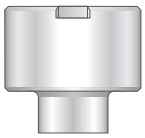
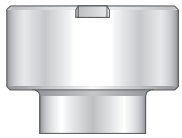
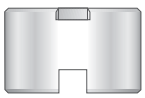
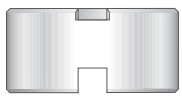
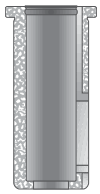
STRIPPER:
- Fully OEM compatible.
- Close tolerance opening for superior piece part quality.
- Radiused face to ease installation and reduce sheet marking.

PUNCH GUIDE ASSEMBLY:
- Fully OEM compatible.
- Hardened and ground to reduce turret bore wear.
- Internal and external lubrication grooves to reduce friction.
- High performance disc springs to optimize stripping force throughout the service life of the machine.

MATE®

[Dimensions in Inches(mm)]

SYSTEM OVERVIEW

1/2" A STATION	1-1/4" B STATION	2" C STATION	3-1/2" D STATION	4-1/2" E STATION
				
Punch Assembly	Punch Assembly	Punch Guide Assembly	Punch Guide Assembly	Punch Guide Assembly
		Punch Shim	Punch Shim	Punch Shim
				
Punch Body	Punch Body	Punch Body	Punch Body	Punch Body
				
		Punch Retainer	Punch Retainer	Punch Retainer
				
Punch Guide	Punch Guide	Slitting Insert	Slitting Insert	Slitting Insert
				
		Stripper Plate	Stripper Plate	Stripper Plate
				
SLUG FREE® Die	SLUG FREE® Die	SLUG FREE® Die	SLUG FREE® Die	SLUG FREE® Die
Die Shim	Die Shim	Die Shim	Die Shim	Die Shim

Features include:

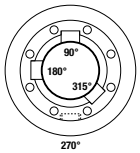
• OEM compatible • Hardened and ground guides
• Premium high speed tool steel punches • SLUG FREE® die

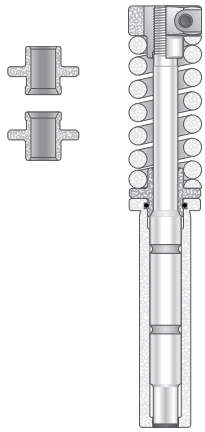
[Dimensions in Inches(mm)]

SIDE BY SIDE COMPARISON

1/2" A STATION

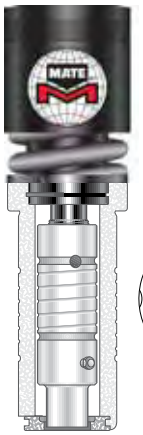
Ultra TEC®		MATE ORIGINAL STYLE
No tools required. Each 'click' is 0.006(0.15)	**LENGTH ADJUSTMENT**	Tools needed for adjustment
Self contained in canister	**SPRING ASSEMBLY**	Spring retainer with reversible design
Uses Ultra® or Original style	**PUNCH**	Original style
Snap in, self locking design. 0.118(3.00) additional grind life	**STRIPPER**	One piece punch guide
3 internal slots: 90°, 180° and 315°. 1 external slot at 270°	**ANGLE ADJUSTMENT**	External slots: 1 for rounds 2 for shapes
Quick release locking mechanism	**ASSEMBLY**	O-ring snap fit

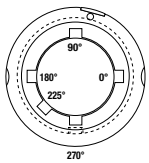


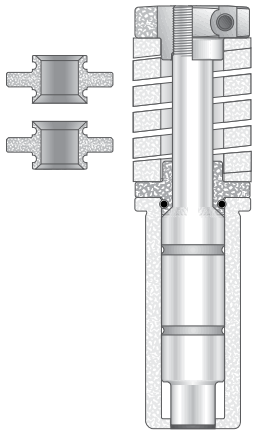


1-1/4" B STATION

No tools required. Each 'click' is 0.008(0.20)	**LENGTH ADJUSTMENT**	Tools needed for adjustment
Self contained in canister	**SPRING ASSEMBLY**	Spring retainer with reversible design
Uses Ultra® Metric (Original) style, inch style or HP (Series 90)	**PUNCH**	Original style
Snap in, self locking design. 0.118(3.00) additional grind life	**STRIPPER**	One piece punch guide
5 internal slots: 0°, 90°, 180°, 225° and 270° 1 external slot at 270°	**ANGLE ADJUSTMENT**	External slots: 1 for rounds, 2 for shapes and 4 for special shapes
Quick release locking mechanism	**ASSEMBLY**	O-ring snap fit

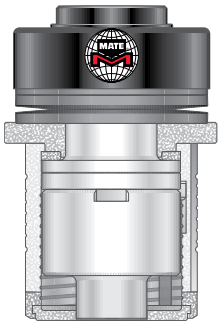


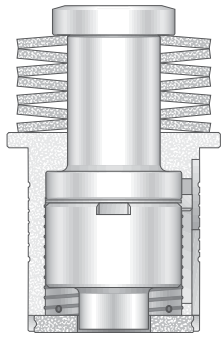




2" C, 3-1/2" D, 4-1/2" E STATION

No tools or shims required. Each 'click' is 0.008(0.20)*	**LENGTH ADJUSTMENT**	Tools and shims needed for adjustment
Uses Ultra®, original style or HP (Series 90)**	**PUNCH**	Original style
Snap in, self locking design. 0.079(2.00) additional grind life	**STRIPPER**	Stripper held in place with external clips
0° and 90° Two External Slots	**ANGLE ADJUSTMENT**	0° and 90° Two External Slots
Ease out design helps punch removal	**ASSEMBLY**	Tools required to make adjustments





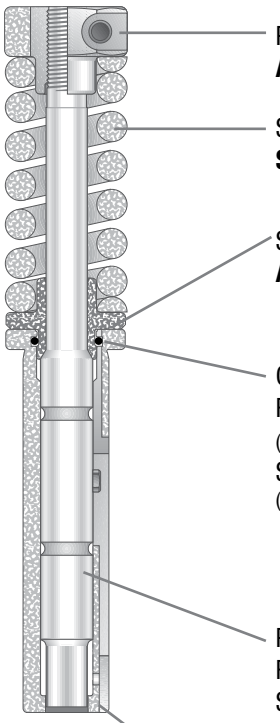
* Holders made prior to June 1999 have length adjustment settings of 0.016(0.40) per 'click'
** Requires punch adapter and/or drawbolt change

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

1/2" A STATION ASSEMBLY



Punch Head
A0LA00PH

Stripping Spring
SPR33662

Spring Retainer
A0LA00SR

O-Ring
Round **MIS60548***
(12 minimum)
Shaped **MIS60468***
(12 minimum)

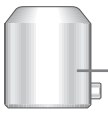
Punch Body
Round **PAAA0A**
Shaped **PAAA_A**

Punch Guide (Includes O-Ring)
Round **S6AA0A**
Shaped **S6AA_A**

Hardware
XPAAAA

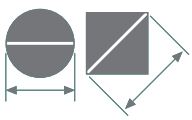
Punch Assembly
Round
Shaped

Complete Assembly
Round
Shaped



SLUG FREE® Die
Round **D0AA00**
Shaped **D0AA_0**

Die Shims
MSAA
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)



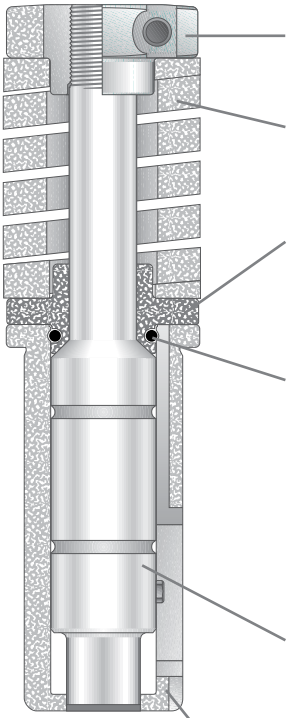
1/2" A Station
Maximum 0.500(12.70)
diameter/diagonal

* Items sold separately
beyond minimum quantity

See page 88 for Add-Ons

[Dimensions in Inches(mm)]

1-1/4" B STATION ASSEMBLY



Punch Head
A0LB00PH

Stripping Spring
SPR33689

Spring Retainer
A0LB00SR

O-Ring
MIS60556*
(12 minimum)

Punch Body
Round **PAAB0A**
Shaped **PAAB_A**

Punch Guide
Round **S6AB0A**
Shaped **S6AB_A**

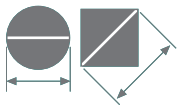
Hardware
XPABAA

Punch Assembly
Round
Shaped

Complete Assembly
Round
Shaped

SLUG FREE® Die
Round **D0AB00**
Shaped **D0AB_0**

Die Shims
MSAB
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)



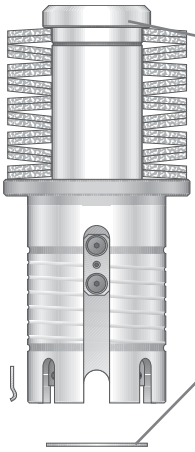
1-1/4" B Station
Maximum 1.250(31.75)
diameter/diagonal

See page 88 for Add-Ons

* Items sold separately beyond minimum quantity

[Dimensions in Inches(mm)]

2" C STATION ASSEMBLY



Punch Guide Assembly
AGLC1

Punch Shims
VSAC
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

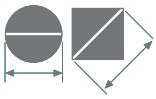
Punch Body
Round **PAAC0A**
Shaped **PAAC_A**

Stripper Plate
Round **S6AC0A**
Shaped **S6AC_A**

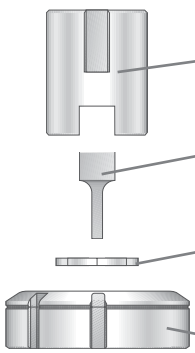
SLUG FREE® Die
Round **D0AC00**
Shaped **D0AC_0**

Die Shims
MSAC
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

Set Assembly
Round
Shaped



Maximum
2.000(50.80)
diameter/diagonal



Punch Retainer
A0LC00PR

Slitting Insert
Shaped **P4AP_A**

Die Inserts
Shaped **D0KP_0**

Slitting Die Body
A0LC00SD

Slitting Tool Components

D/L = Diagonal/Length
R C = Radius Corners

Slitting Insert with SLUG FREE® Die
2.000(50.80) max. D/L
0.709(18.00) max. width

SLUG FREE® Die
2.059(52.30) max. D/L
0.768(19.50) max. width

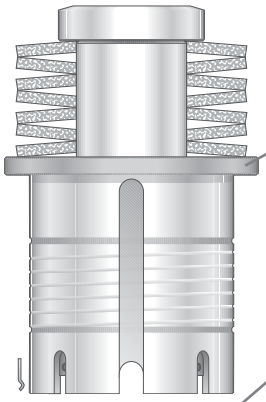
Slitting Insert with Die Inserts
2.000(50.80) max. D/L
0.268(6.80) max. width

Die Inserts, Rectangles and Ovals
2.028(51.50) max. D/L
0.295(7.50) max. width

STANDARD SHAPES:

[Dimensions in Inches(mm)]

3-1/2" D STATION ASSEMBLY



Punch Guide Assembly
AGLD1

Punch Shims
VSAD
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

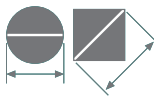
Punch Body
Round **PAAD0A**
Shaped **PAAD_A**

Stripper Plate
Round **S6AD0A**
Shaped **S6AD_A**

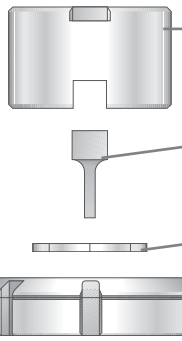
SLUG FREE® Die
Round **D0AD00**
Shaped **D0AD_0**

Set Assembly
Round
Shaped

Die Shims
MSAD
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)



Maximum
3.500(88.90)
diameter/diagonal



Punch Retainer
A0LD00PR

Slitting Insert
Shaped **P4AQ_A**

Die Inserts
Shaped **D0KQ_0**

Slitting Die Body
A0LD00SD

Slitting Tool Components

D/L = Diagonal/Length
R C = Radius Corners

Slitting Insert with SLUG FREE® Die
3.500(88.90) max. D/L
0.709(18.00) max. width

SLUG FREE® Die
3.559(90.40) max. D/L
0.768(19.50) max. width

Slitting Insert with Die Inserts
3.500(88.90) max. D/L
0.315(8.00) max. width

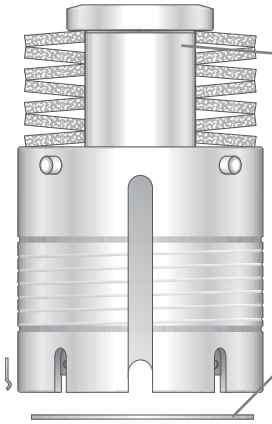
Die Inserts R C ≤ 0.125(3.18)
3.384(85.95) max. length
0.335(8.50) max. width
OR
3.539(89.90) max. length
0.175(4.45) max. width

Die Inserts R C > 0.125(3.18) and Ovals
3.520(89.40) max. length
0.335(8.50) max. width

See page 88 for Add-Ons

[Dimensions in Inches(mm)]

4-1/2" STATION ASSEMBLY



Punch Guide Assembly
AGLE1

Punch Shims
VSAE
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

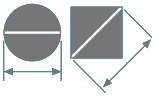
Punch Body
Round **PAAE0A**
Shaped **PAAE_A**

Stripper Plate
Round **S6AE0A**
Shaped **S6AE_A**

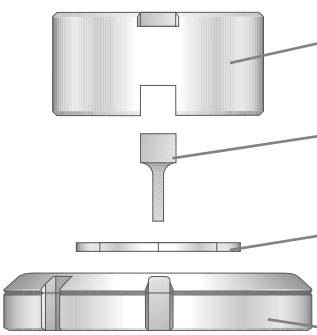
Set Assembly
Round
Shaped

SLUG FREE® Die
Round **D0AE00**
Shaped **D0AE_0**

Die Shims
MSAE
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)



Maximum
4.500(114.30)
diameter/diagonal



Punch Retainer
A0LE00PR

Slitting Insert
Shaped **P4AR_A**

Die Inserts
Shaped **D0KR_0**

Slitting Die Body
A0LE00SD

Slitting Tool Components

D/L = Diagonal/Length
R C = Radius Corners

Slitting Insert with SLUG FREE® Die
4.500(114.30) max. D/L
0.709(18.00) max. width

SLUG FREE® Die
4.559(115.80) max. D/L
0.768(19.50) max. width

Slitting Insert with Die Inserts
4.500(114.30) max. D/L
0.315(8.00) max. width

Die Inserts R C ≤ .125(3.18)
4.411(112.05) max. length
0.335(8.50) Max. width
OR
4.539(115.30) max. length
0.236(6.00) max. width

Die Inserts R C > .125(3.18) and Ovals
4.539(115.30) max. length
0.335(8.50) max. width

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

6" F STATION ASSEMBLY

Punch Guide Assembly:

This punch guide assembly is designed to fit all thick turret machines with a 6" F station. The guide assembly incorporates many performance features including:

- Hardened guide body
- High performance disc springs.
- High tensile draw bolt.
- Precision internal punch key.
- Internal and external lubrication grooves.
- Spring steel stripper clips.
- Fully OEM compatible.

Punches, Strippers, and Dies

Mate offers a comprehensive range of punches, strippers and dies to suit the thick turret 6" F Station.

- High Speed Steel Punches.
- Toughened Strippers.
- Shock Steel Dies.

Special Assembly Applications

Available on request. Contact your Mate applications specialist.

PUNCH GUIDE ASSEMBLY
AGLF1

PUNCH
Round **PAAF0A**
Shaped **PAAF_A**

Stripper
Round **S6AF0A**
Shaped **S6AF_A**

DIE
Round **D0KF00**
Shaped **D0KF_0**

[Dimensions in Inches(mm)]

ULTRA TEC® HEAVY DUTY

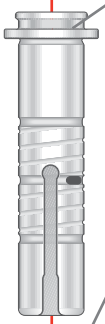
1/2" A STATION

Canister Assembly

Standard:
MATE01866 **$121.00**
Metric:
MATE01866 **$121.00**

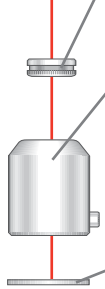
Ultra TEC® Heavy Duty
Punch Body
Round **PHUA0A**
Shaped **PHUA_A**

Maximum Heavy
Duty Punch Size
0.500(12.70)
diameter/diagonal



Ultra TEC® Guide
Round **A0VA0SGU**
Shaped **A0VA00GU**

Ultra TEC® Heavy Duty
Stripper Plate
Round **SHKA0A**
Shaped **SHKA_A**



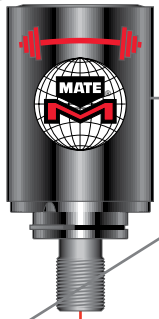
Heavy Duty SLUG FREE® Die
Round **DHAA00**
Shaped **DHAA_0**

Maximum Heavy
Duty Die Size
0.559(14.20)
diameter/diagonal
(includes clearance)

Die Shims
MSAA
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

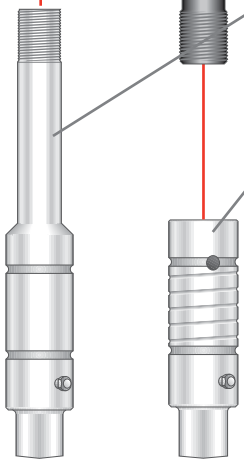
1-1/4" B STATION

Heavy Duty Canister
Assembly-Metric
A0VBHMCA



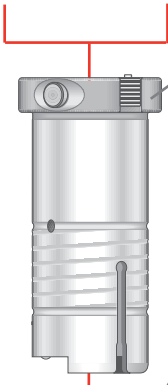
Heavy Duty Canister Assembly
A0VBHSCA

Heavy Duty Punch Body
Round **PHAB0A**
Shaped **PHAB_A**



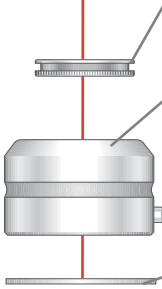
Ultra TEC® Heavy Duty
Punch Body
Round **PHUB0A**
Shaped **PHUB_A**

Maximum Heavy
Duty Punch Size
1.250(31.75)
diameter/diagonal



Ultra TEC® Guide
Round **A0VB0SGU**
Shaped **A0VB00GU**

Ultra TEC® Heavy Duty
Stripper Plate
Round **SHKB0A**
Shaped **SHKB_A**



Heavy Duty SLUG FREE® Die
Round **DHAB00**
Shaped **DHAB_0**

Maximum Heavy
Duty Die Size
1.309(33.25)
diameter/diagonal
(includes clearance)

Die Shims
MSAB
Package 3 each:
0.016(0.40), 0.032(0.80), 0.048(1.20)

Minimum width/diameter in heavy duty is 0.250(6.35)

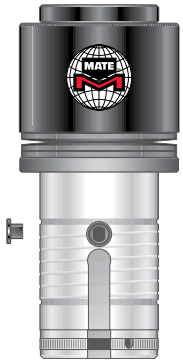
Features include:

• 1 Degree back taper on punches (per side) • Quick tool change
• Heavy duty SLUG FREE® die design • Premium high speed tool steel punches
• Heavy duty springs (1-1/4" B Station)
• Roof top shear • Quick length adjustment

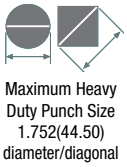
[Dimensions in Inches(mm)]

ULTRA TEC® HEAVY DUTY

2" C STATION

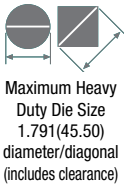


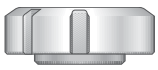
Ultra TEC® Guide Assembly
AGVC1Z



Heavy Duty Punch Body
Round **PHAC0A**
Shaped **PHAC_A**

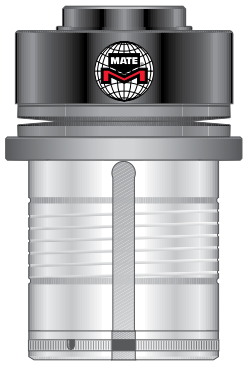
Ultra TEC® Heavy Duty
Stripper Plate
Round **SHKC0A**
Shaped **SHKC_A**



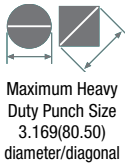


Heavy Duty SLUG FREE® Die
Round **DHAC00**
Shaped **DHAC_0**

3-1/2" D STATION

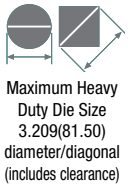


Ultra TEC® Guide Assembly
AGVD1Y



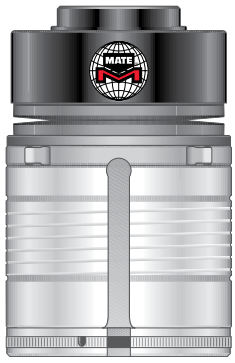
Heavy Duty Punch Body
Round **PHAD0A**
Shaped **PHAD_A**

Ultra TEC® Heavy Duty
Stripper Plate
Round **SHKD0A**
Shaped **SHKD_A**

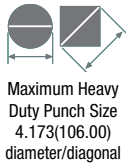


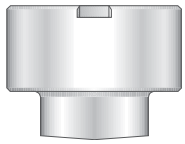
Heavy Duty SLUG FREE® Die
Round **DHAD00**
Shaped **DHAD_0**

4-1/2" E STATION



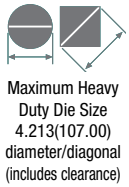
Ultra TEC® Guide Assembly
AGVE1Z





Heavy Duty Punch Body
Round **PHAE0A**
Shaped **PHAE_A**

Ultra TEC® Heavy Duty
Stripper Plate
Round **SHKE0A**
Shaped **SHKE_A**



Heavy Duty SLUG FREE® Die
Round **DHAE00**
Shaped **DHAE_0**

Minimum width/diameter in heavy duty is 0.250(6.35)

See page 88 for Add-Ons

[Dimensions in Inches(mm)]

ULTRA LIGHT™ TOOLING SYSTEM CANISTERS AND SPRING PACKS

1/2" A STATION

Ultra Light™ Spring Canister Ultra® Style
MATE00276

Ultra Light™ Spring Canister Metric Style
MATE00278

Ultra Light™ 1/2" A station canisters apply 70% of the stripping force of the standard Ultra TEC® 1/2" A station canisters.

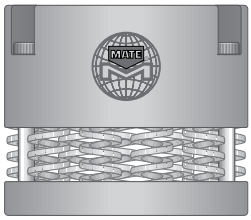
1-1/4" B STATION

Ultra Light™ Spring Canister Ultra® Style
MATE00277

Ultra Light™ Spring Canister Metric Style
MATE00279

Ultra Light™ 1-1/4" B station canisters apply 60% of the stripping force of the standard Ultra TEC® 1-1/4" B station canisters.

2" C STATION

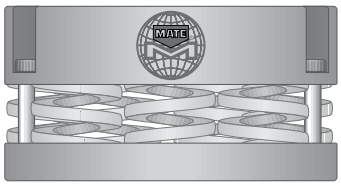


Ultra Light™ Spring Assembly
MATE00038

(Package of 9)
Heavy Pressure Gold Springs*
MATE00280

MATE00038 is assembled with 9 medium pressure blue springs.

3-1/2" D AND 4-1/2" E STATION



Ultra Light™ Spring Assembly
MATE00033

(Package of 9)
Medium Heavy Pressure Red Springs*
MATE00281

MATE00033 is assembled with 9 medium pressure blue springs.

***See page 42 for details on spring selection.**

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

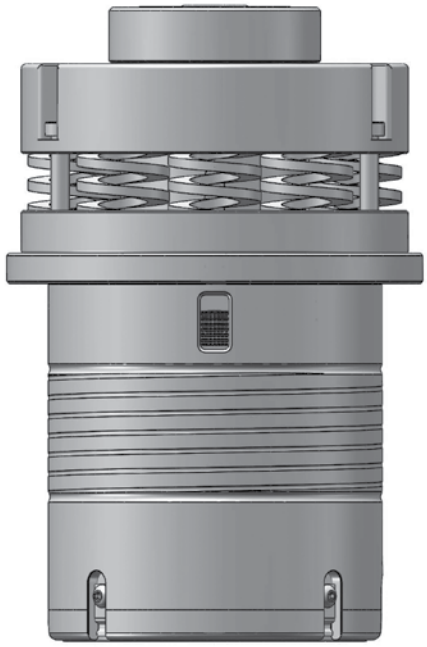
THICK TURRET PUNCH GUIDE ASSEMBLIES WITH ULTRA LIGHT™ SPRING PACKS

Mate Ultra Light™ spring packs provide precise control of the stripping pressure when using any thick turret guide assembly manufactured by Mate. Benefits include:

- Reduced spring pressure to eliminate unwanted sheet marking. Designed for thin or decorative materials.
- Ideal for high polish, textured, pre-painted or reflective metals where finish appearance is critical.
- Quieter punching in all applications. Noise levels reduced by as much as 10 decibels.
- Maximum control over total spring pressure. Combine two sets of springs for nine pressure variations. See table.

Mate punch guide assemblies complete with Mate Ultra Light™ spring packs are now available for popular thick turret tooling styles including:

- Mate Ultra TEC®
- Mate Ultra TEC® fully guided
- Mate Ultra XT™
- Original style thick turret



Note: Your existing Mate thick turret guides can be retrofitted with Mate Ultra Light™ spring packs.

TOOL STYLE	STATION	PART NUMBER
Mate Ultra TEC®	2" C	**MATE00487**
	3-1/2" D	**MATE00488**
	4-1/2" E	**MATE01807**
Mate Ultra TEC® fully guided	2" C	**MATE00490**
	3-1/2" D	**MATE00491**
	4-1/2" E	**MATE01811**
Mate Ultra XT™	2" C	**MATE00496**
	3-1/2" D	**MATE00497**
	4-1/2" E	**MATE01815**
Original style thick turret	2" C	**MATE00493**
	3-1/2" D	**MATE00494**
	4-1/2" E	**MATE00495**
Additional springs for heavier application. (pack of 9)	2" C	**MATE00280**
	3-1/2" D	**MATE00281**
	4-1/2" E	**MATE00281**

Mate Ultra Light™ spring packs are supplied with 9 blue springs. The spring pressure can be altered by removing and/or replacing the springs. Additional red and gold springs are available.

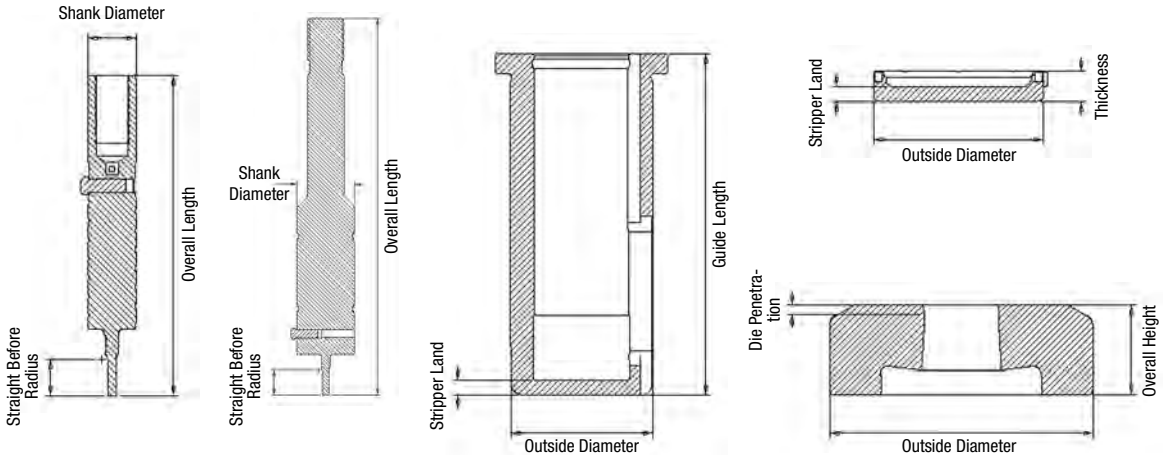
Use the table below to select the spring combination to achieve the desired stripping pressure. The spring pressure is stated as the percentage achieved in the Ultra Light™ guide as compared to an Ultra TEC® disc spring stack.

2" C Station		3-1/2" D Station 4-1/2" E Station	
3 blue	4%	3 blue	5%
6 blue	7%	6 blue	10%
9 blue	10%	3 red	11%
3 gold	12%	9 blue	15%
3 blue + 3 gold	15%	3 blue + 3 red	16%
6 blue + 3 gold	19%	6 blue + 3 red	21%
6 gold	25%	6 red	22%
3 blue + 6 gold	27%	3 blue + 6 red	27%
9 gold	36%	9 red	33%

[Dimensions in Inches(mm)]

THICK TURRET TOOLING
CRITICAL DIMENSIONS

Station	1/2" A	1-1/4" B	2" C	3-1/2" D	4-1/2" E
Maximum Punch Diagonal	0.500(12.70)	1.250(31.75)	2.000(50.80)	3.500(88.90)	4.500(114.30)
Ultra TEC® Punch					
Part Number	PAUA	PAUB	PAAC	PAAD	PAAE
Overall Length	4.245(107.82)	3.957(100.51)	3.786(96.16)	3.313(84.15)	3.353(85.17)
Shank Diameter	0.630(15.99)	1.250(31.75)	2.007(50.98)	3.520(89.41)	4.520(114.81)
Straight Before Radius*	0.742(18.85)	0.742(18.85)	1.004(25.50)	1.004(25.50)	1.043(26.49)
Ultra TEC® Stripper					
Part Number	S6KA	S6KB	S6KC	S6KD	S6KE
Outside Diameter	0.751(19.07)	1.500(38.10)	2.249(57.12)	3.825(97.16)	4.759(120.88)
Thickness	0.272(6.91)	0.272(6.91)	0.394(10.01)	0.394(10.01)	0.394(10.01)
Stripper Land	0.157(3.99)	0.157(3.99)	0.315(8.00)	0.315(8.00)	0.315(8.00)
Metric (Original) Style Punch					
Part Number	PAAA	PAAB	PAAC	PAAD	PAAE
Overall Length	8.169(207.49)	8.169(207.49)	3.786(96.16)	3.313(84.15)	3.353(85.17)
Shank Diameter	0.630(16.00)	1.250(31.75)	2.007(50.98)	3.520(89.41)	4.520(114.81)
Straight Before Radius*	0.664(16.87)	0.742(18.85)	1.004(25.50)	1.004(25.50)	1.043(26.49)
Original Style Stripper					
Part Number	S6AA	S6AB	S6AC	S6AD	S6AE
Guide/Stripper Outside Diameter	1.020(25.91)	1.883(47.83)	2.007(50.98)	3.520(89.41)	4.520(114.81)
Guide Length/Stripper Thickness	4.448(112.98)	4.528(115.01)	0.394(10.01)	0.394(10.01)	0.394(10.01)
Stripper Land	0.197(5.00)	0.197(5.00)	0.394(10.01)	0.394(10.01)	0.394(10.01)
SLUG FREE® Die					
Part Number	D0AA	D0AB	D0AC	D0AD	D0AE
Outside Diameter	1.000(25.40)	1.875(47.63)	3.500(88.90)	4.938(125.43)	6.249(158.72)
Overall Height	1.187(30.15)	1.187(30.15)	1.187(30.15)	1.187(30.15)	1.187(30.15)
Die Penetration	0.118(3.00)	0.118(3.00)	0.118(3.00)	0.118(3.00)	0.118(3.00)



*** The Straight Before Radius (SBR) dimension may be reduced for small diameters and narrow widths. Consult your application specialists.**

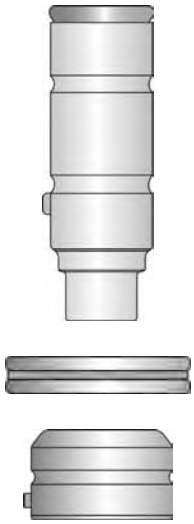
[Dimensions in Inches(mm)]

FEATURES AND BENEFITS

- DuraSteel™ with superior hardness and toughness for extended interval between regrinds.
- Hardened pin for precise orientation of punches for improved piece part quality.

- Smooth rounded edges to eliminate sheet marking and improve piece part quality.

- SLUG FREE® die geometry eliminates slug pulling to improve piece part quality and increase tool life.



- 1/4 degree back taper and near polished punch flanks to reduce friction, eliminate galling, and maximize punch life.
- Maxima™ coating available for extreme applications.

- Compatible with existing HP (Series 90) tooling inventory for maximum flexibility.

- Highly wear-resistant tool steel provides optimum balance between hardness and toughness, for extended life.

MATE DURASTEEL™ HIGH PERFORMANCE TOOL STEEL

Mate DuraSteel™ is an air hardening tool steel designed specifically for use in high performance tooling systems.

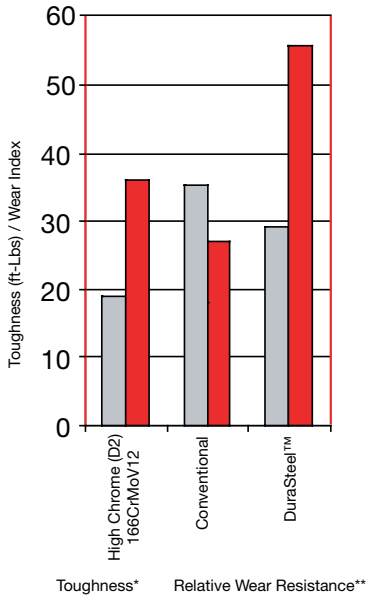
A combination of the chemical composition of Mate DuraSteel and the closely controlled manufacturing process results in an upgrade to conventional High Chrome D2 tool steel. It offers better wear resistance, greater toughness, better compressive strength, and higher attainable hardness.

Mate DuraSteel is a high quality tool steel which has many advantages when compared to alternative tool steels commonly available. These advantages include:

Superior Wear Resistance – Mate DuraSteel offers superior resistance to adhesive- and abrasive-wear to maximize the interval between regrinds.
- Increased Vanadium carbides – harder wearing than chromium carbides 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 hardness – increased alloy content results in higher effective hardness for better wear resistance.

Increased Toughness – the chemical composition and heat treatment processes used with Mate DuraSteel make it tougher than conventional tool steels in impact strength tests.
- The inclusion of tungsten and vanadium allows the carbon content to be reduced, which increases the toughness.

Better Value – Customer trials have shown that tools manufactured in Mate DuraSteel last 100% longer between regrinds than tools manufactured using conventional tool steels. By increasing the interval between regrinds, the tooling lasts longer and punches many more holes before needing to be replaced.

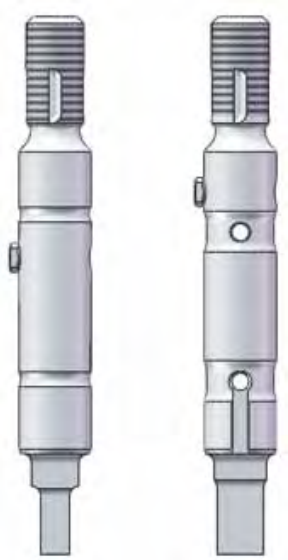


DuraSteel™ Chemical Composition	
Carbon	1.10%
Chromium	7.50%
Vanadium	2.40%
Tungsten	1.15%
Molybdenum	1.60%

[Dimensions in Inches(mm)]

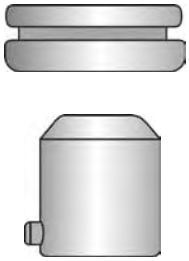
MXC™ THICK TURRET TOOLING SYSTEM - 1/2" A STATION

MXC™ Punch - Standard		
Round	PXCA0A	
Shape	PXCA_A	
Maxima™ Coating		
MXC™ Punch - ABS Style*		
Round	PLCA0A	
Shape	PLCA_A	
Maxima™ Coating		
MXC™ Stripper		
Round	SXCA0A	
Shape	SXCA_A	
SLUG FREE® Die		
Round	D0AA00	
Shape	D0AA_0	
Slug Free Light™ Die		
Round		
Shape		
Die Shim Pack Package 3 each: 0.016(0.40) 0.032(0.80) 0.048(1.20)	MSAA	



MXC™ Punch Standard Style

MXC™ Punch ABS Style



PUNCH
- DuraSteel™ with superior hardness and toughness for extended interval between regrinds.
- Hardened double-D key for precise orientation of punches for improved piece part quality.
- 1/4 degree back taper and near polished punch flanks to reduce friction, eliminate galling, and maximize punch life.
- Maxima™ coating available to reduce friction in extreme applications. Less friction means less heat build up, less galling and longer tool life.

STRIPPER
- Smooth rounded edges to eliminate sheet marking and improve piece part quality.
- Compatible with existing conventional tooling inventory for maximum flexibility.

SLUG FREE® DIE
- Slug Free die geometry eliminates slug pulling to improve piece part quality and increase tool life.
- Highly wear-resistant tool steel provides optimum balance between hardness and toughness, for extended life.

Mate's MXC™ Tooling System is a thick turret punching system which increases tool performance and flexibility, offers extended tool life and allows interchangeability with existing systems. Some features of the MXC system include:

- **DuraSteel™ punches**
- **100% Compatible with:**
  HP™
  HP™ WLS®
  HP™ ABS
- **Compatible with:**
  Ultra TEC®
  Ultra XT™
- **SLUG FREE® die design**

*ABS Style also works in WLS environment

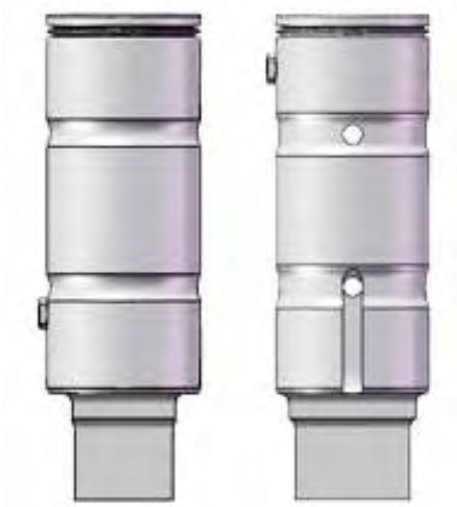
Mate MXC™ A and B-station tooling is produced under license from Wilson Tool International, Inc.

See pages 50 for Add-Ons and Accessories

[Dimensions in Inches(mm)]

MXC™ THICK TURRET TOOLING SYSTEM - 1-1/4" B STATION

MXC™ Punch - Standard	Part Number	Price
Round	PXCB0A	
Shape	PXCB_A	
Maxima™ Coating		
Anti-Rotation Pin	MATE00752	
Retaining Ring	RRI00010	
MXC™ Punch - ABS Style		
Round***	PLCB0A	
Shape***	PLCB_A	
Maxima™ Coating		
Anti-Rotation Pin	MATE00752	
Retaining Ring	RRI00010	
Felt Pad**	FLT00001	
MXC™ Stripper		
Round	SXCB0A	
Shape	SXCB_A	
Retaining Ring*	MATE00754	
SLUG FREE® Die		
Round	D0AB00	
Shape	D0AB_0	
Slug Free Light™ Die		
Round		
Shape		
Die Shim Pack Package 3 each: 0.016(0.40) 0.032(0.80) 0.048(1.20)	MSAB	



MXC™ Punch Standard Style

MXC™ Punch ABS Style

* Stripper retaining ring not included with stripper

** Add felt pad (not included with punch) to ABS style punch to work in WLS® environment

*** MXC™ ABS B-station punches are compatible with Wilson Fully Indexable R series 3 station MT for Finn-Power

Mate MXC™ A and B-station tooling is produced under license from Wilson Tool International, Inc.

See pages 50 for Add-Ons and Accessories

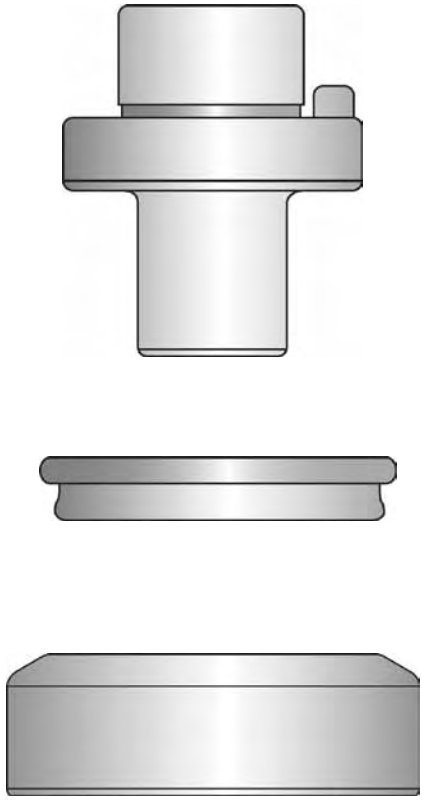
STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

MXC™ THICK TURRET TOOLING SYSTEM - 2" C STATION

MXC™ Punch - Standard	Part Number	Price
Round	PXCC0A	
Shape	PXCC_A	
Maxima™ Coating		
Ultra TEC® Adapter	A0VCWSPA	
MXC™ Stripper		
Round	SXCC0A	
Shape	SXCC_A	
SLUG FREE® Die		
Round	D0AC00	
Shape	D0AC_0	
Slug Free Light™ Die		
Round		
Shape		
Die Shim Package 3 each: 0.016(0.40) 0.032(0.80) 0.048(1.20)	MSAC	



PUNCH
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- Hardened double-D key for precise orientation of punches for improved piece part quality.
- 1/4 degree back taper and near polished punch flanks to reduce friction, eliminate galling, and maximize punch life.
- Maxima™ coating available to reduce friction in extreme applications. Less friction means less heat build up, less galling and longer tool life.

STRIPPER
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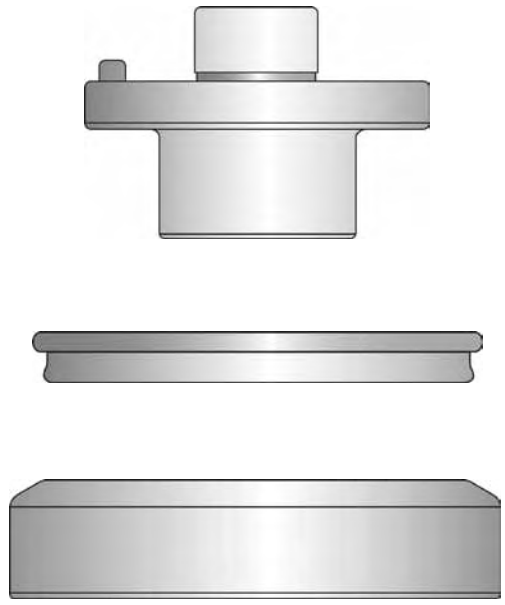
SLUG FREE® DIE
- Slug Free die geometry eliminates slug pulling to improve piece part quality and increase tool life.
- Highly wear-resistant tool steel provides optimum balance between hardness and toughness, for extended life.

See pages 50 for Add-Ons and Accessories

[Dimensions in Inches(mm)]

MXC™ THICK TURRET TOOLING SYSTEM - 3-1/2" D STATION

MXC™ Punch - Standard	Part Number	Price
Round	PXCD0A	
Shape	PXCD_A	
Maxima™ Coating		
Ultra TEC® Adapter	A0VDWSPA	
MXC™ Stripper		
Round	SXCD0A	
Shape	SXCD_A	
SLUG FREE® Die		
Round	D0AD00	
Shape	D0AD_0	
Slug Free Light™ Die		
Round		
Shape		
Die Shim Package 3 each: 0.016(0.40) 0.032(0.80) 0.048(1.20)	MSAD	



PUNCH
- DuraSteel™ with superior hardness and toughness for extended interval between regrinds.
- Hardened double-D key for precise orientation of punches for improved piece part quality.
- 1/4 degree back taper and near polished punch flanks to reduce friction, eliminate galling, and maximize punch life.
- Maxima™ coating available to reduce friction in extreme applications. Less friction means less heat build up, less galling and longer tool life.

STRIPPER
- Smooth rounded edges to eliminate sheet marking and improve piece part quality.
- Compatible with existing conventional tooling inventory for maximum flexibility.

SLUG FREE® DIE
- Slug Free die geometry eliminates slug pulling to improve piece part quality and increase tool life.
- Highly wear-resistant tool steel provides optimum balance between hardness and toughness, for extended life.

See pages 50 for Add-Ons and Accessories

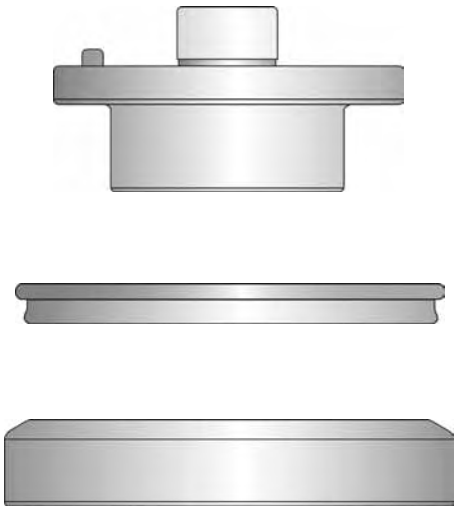
STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

MXC™ THICK TURRET TOOLING SYSTEM - 4-1/2" E STATION

MXC™ Punch - Standard	Part Number	Price
Round	PXCE0A	
Shape	PXCE_A	
Maxima™ Coating		
Ultra TEC® Adapter	A0VEWSPA	
MXC™ Stripper		
Round	SXCE0A	
Shape	SXCE_A	
SLUG FREE® Die		
Round	D0AE00	
Shape	D0AE_0	
Slug Free Light™ Die		
Round		
Shape		
Die Shim Package 3 each: 0.016(0.40) 0.032(0.80) 0.048(1.20)	MSAE	



PUNCH
- DuraSteel™ with superior hardness and toughness for extended interval between regrinds.
- Hardened double-D key for precise orientation of punches for improved piece part quality.
- 1/4 degree back taper and near polished punch flanks to reduce friction, eliminate galling, and maximize punch life.
- Maxima™ coating available to reduce friction in extreme applications. Less friction means less heat build up, less galling and longer tool life.

STRIPPER
- Smooth rounded edges to eliminate sheet marking and improve piece part quality.
- Compatible with existing conventional tooling inventory for maximum flexibility.

SLUG FREE® DIE
- Slug Free die geometry eliminates slug pulling to improve piece part quality and increase tool life.
- Highly wear-resistant tool steel provides optimum balance between hardness and toughness, for extended life.

See pages 50 for Add-Ons and Accessories

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

MXC™ THICK TURRET TOOLING SYSTEM ADD-ONS

Small Diameter Round Tools	
Point diameter 0.031(0.79) - 0.061(1.55) - to punch, stripper and die	
Point diameter 0.062(1.56) - 0.092(2.35) - to punch, stripper and die	
Narrow Width Shaped Tools	
Width is less than 0.079(2.00) - to punch, stripper and die	
Angle Setting	
Non-Standard Angle Setting - to punch, stripper and die	
Maxima™ Coating	
1/2" A Station	
1-1/4" B Station	
2" C Station	
3-1/2" D Station	
4-1/2" E Station	

MXC™ THICK TURRET TOOLING SYSTEM PARTS & ACCESSORIES

1-1/4" B Station Punch Retaining Ring
RRI00010

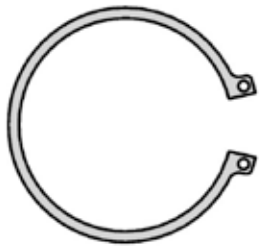
Replacement Part

1-1/4" B Station Punch Anti Rotation Pin
MATE00752

Replacement Part

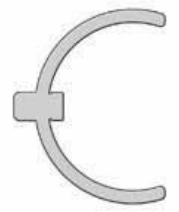
1-1/4" B Station Punch Felt Pad
FLT00001

To convert ABS punch to WLS® style



1-1/4" B Station Stripper Retaining Ring
MATE00754

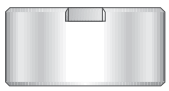
Replacement Part



Round Punches Only Anti-rotation Clip
A0VBWBAC

Replacement Part

2" C Station HP™ Punch Adapter
A0VCWSPA



3-1/2" D Station HP™ Punch Adapter
A0VDWSPA

4-1/2" E Station HP™ Punch Adapter
A0VEWSPA

These Punch Adapters allow an HP™ and/or MXC™ punch to be used in an Original Style Thick Turret, Ultra TEC® or Ultra ABS® holder.

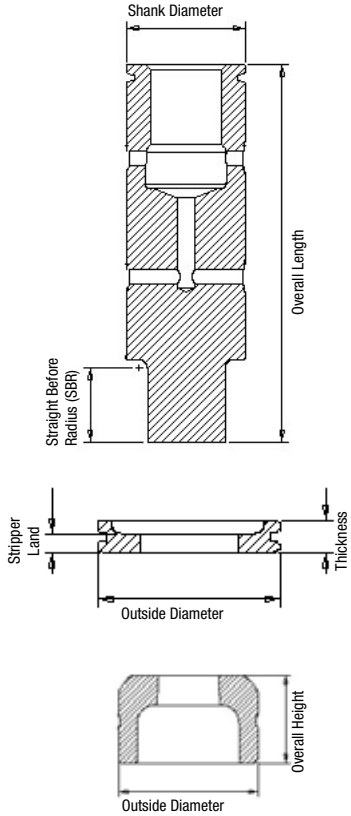
HP™ is a trademark of Wilson Tool International, Inc.

[Dimensions in Inches(mm)]

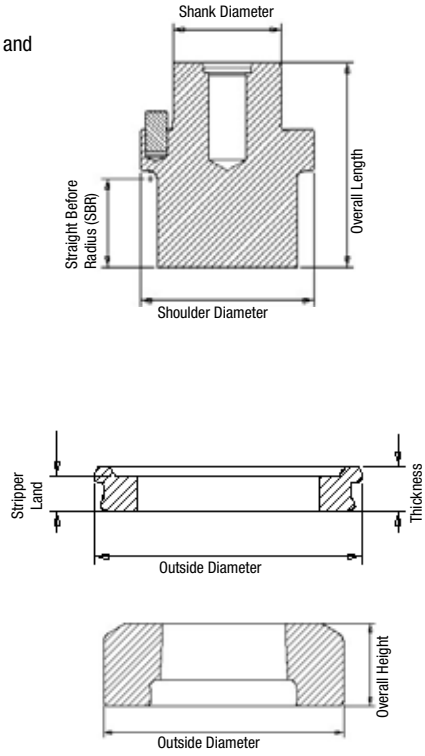
MXC™ CRITICAL DIMENSIONS CHART

MXC™ PUNCH					
Station	**1/2" A**	**1-1/4" B**	**2" C**	**3-1/2" D**	**4-1/2" E**
Part Number	**PXCA or PLCA**	**PXCB or PLCB**	**PXCC**	**PXCD**	**PXCE**
Maximum Punch Diagonal	0.500(12.70)	1.250(31.75)	2.000(50.80)	3.500(88.90)	4.500(114.30)
Overall Length	4.640(117.86)	3.957(100.51)	2.360(59.94)	2.360(59.94)	2.360(59.94)
Shank Diameter	0.624(15.85)	1.249(31.72)	1.250(31.75)	1.250(31.75)	1.250(31.75)
Shoulder Diameter	n/a	n/a	2.000(50.80)	3.500(88.90)	4.500(114.30)
Straight Before Radius	0.740(18.80)	0.740(18.80)	1.004(25.50)	1.004(25.50)	1.004(25.50)
MXC™ STRIPPER					
Part Number	**SXCA**	**SXCB**	**SXCC**	**SXCD**	**SXCE**
Outside Diameter	0.768(19.51)	1.497(38.02)	2.356(59.84)	4.011(101.88)	4.866(123.60)
Thickness	0.272(6.91)	0.272(6.91)	0.390(9.91)	0.390(9.91)	0.390(9.91)
Stripper Land	0.157(3.99)	0.157(3.99)	0.315(8.00)	0.315(8.00)	0.315(8.00)
SLUG FREE® and SLUG FREE LIGHT™ DIES					
Part Number	**D0AA**	**D0AB**	**D0AC**	**D0AD**	**D0AE**
Outside Diameter	1.000(25.40)	1.875(47.63)	3.500(88.90)	4.938(125.43)	6.249(158.72)
Overall Height	1.187(30.15)	1.187(30.15)	1.187(30.15)	1.187(30.15)	1.187(30.15)
Die Penetration	0.118(3.00)	0.118(3.00)	0.118(3.00)	0.118(3.00)	0.118(3.00)

For 1/2" A and
1-1/4" B Station
(B station shown)



For 2" C, 3-1/2" D and
4-4/2" E Station
(C station shown)



[Dimensions in Inches(mm)]

MATE AMX™ THICK TURRET ABS TOOLING

Mate's new AMX™ Thick Turret ABS Tooling offers the superior replacement alternative fabricators have been waiting for! AMX Tooling provides 100% worry free compatability with AMADA® ABS assemblies and holders. PLUS, you have the flexibility of using AMX punches with Mate's Ultra TEC® Tooling System. Mate incorporated advanced metallurgy and lubrication delivery systems to prevent galling, slivering, and slug pulling. As with all Mate products, AMX is backed by Best-In-Class service and our 100% Customer Satisfaction Guarantee.

AMX™ PUNCHES

- 100% worry free compatibility with Amada assemblies.
- Holder compatible with Mate Ultra TEC® and Ultra TEC® Fully Guided systems.
- M2 High Speed Steel - OEM equivalent. Superior to other after-market replacements, M2 lasts longer between regrinds.
- Precision gun drilled ABS channels on A and B-station punches.
- Standard external spiral lubrication grooves on A & B-station punches ensures uniform fluid flow for friction free punch-to-guide operation.
- 1/4 degree total back taper reduces galling.
- Hardened pin for precise orientation of punches for improved piece part quality.
- Maxima™ coating and Nitride treatment available for special application needs.

AMX™ A AND B-STATION STRIPPER GUIDES

- Available for A and B-station punches.
- Stripper opening incorporates blips for ABS compatibility.
- Fully hardened and ground for maximum precision and long life.
- Two styles:
  - Rounds, with internal keyway.
  - Shapes, with multiple precision keyways.
- Stripper relieved to allow 0.118(3,00) extra grind life.
- Rounded edges to minimize sheet marking.

AMX™ C, D, AND E STRIPPERS

- Fully compatible with AMADA ABS systems.
- Relieved to allow 0.078(2,00) extra grind life.
- Rounded edges to minimize sheet marking.
- Blips around stripper opening for ABS functionality.

[Dimensions in Inches(mm)]

MATE AMX™ THICK TURRET ABS TOOLING SYSTEM

A-STATION PUNCH

ROUND	PMXA0A
SHAPE	PMXA_A

A-STATION STRIPPER GUIDE

ROUND	SMXA0A
SHAPE	SMXA_A

B-STATION PUNCH

ROUND	PMXB0A
SHAPE	PMXB_A

B-STATION STRIPPER GUIDE

ROUND	SMXB0A
SHAPE	SMXB_A

C-E-STATION PUNCHES

ROUND	PMXC0A
SHAPE	PMXC_A
ROUND	PMXD0A
SHAPE	PMXD_A
ROUND	PMXE0A
SHAPE	PMXE_A

C-E-STATION STRIPPERS

ROUND	SMXC0A
SHAPE	SMXC_A
ROUND	SMXD0A
SHAPE	SMXD_A
ROUND	SMXE0A
SHAPE	SMXE_A

PUNCH HEAD ASSEMBLIES

A-STATION	XPAAMX
B-STATION	XPABMX

AMX SEAL KIT*

A-STATION	MATE01880
B-STATION	MATE01883

A & B-station punches

A & B-station stripper guides

C-station stripper

D-station stripper

E-station stripper

D-E STATION SLITTING SYSTEMS

D-STATION AMX Punch Insert Retainer Assembly	MATE01988	**$267.00**
E-STATION AMX Punch Insert Retainer Assembly	MATE01990	**$300.00**
D-STATION Slitting Insert with M4 Material	P4AQ_A	**$139.00**
E-STATION Slitting Insert with M4 Material	P4AR_A	**$178.00**

*To make your existing Mate A & B-Station Original Style punch head assemblies ABS compatible, use this AMX Seal Kit.

STANDARD SHAPES:

[Dimensions in Inches(mm)]

THICK TURRET INCH STYLE PUNCHES WITH 1/2-13 THREADS FOR A - E STATION

Inch Style tooling is designed with features to enhance punching performance, including:

- Premium High Speed Steel which is specially formulated to deliver superior abrasion resistance to extend the interval between regrinds.
- Near polished punch flanks with a 1/4 degree back taper to minimize friction, eliminate galling during stripping and improve piece part quality.
- Minute corner radii to eliminate chipping and extend punch life.
- Superior angularity and concentricity for improved hole quality.
- Thread size clearly marked for ease of use.
- Maxima™ coating available.

1/2" A STATION

Maximum Diagonal

0.500(12.70)

Round **PAJA0A**
Shaped **PAJA_A**

HeavyDuty
Round **PHJA0A**
Shaped **PHJA_A**

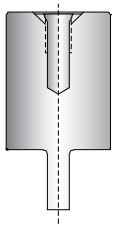
1-1/4" B STATION

Maximum Diagonal

1.250(31.75)

Round **PAJB0A**
Shaped **PAJB_A**

HeavyDuty
Round **PHJB0A**
Shaped **PHJB_A**



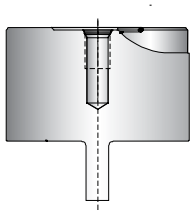
2" C STATION

Maximum Diagonal

2.000(50.80)

Round **PAJC0A**
Shaped **PAJC_A**

HeavyDuty
Round **PHJC0A**
Shaped **PHCA_A**



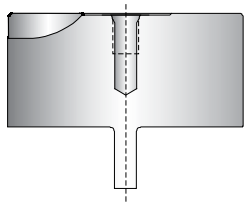
3-1/2" D STATION

Maximum Diagonal

3.500(88.90)

Round **PAJD0A**
Shaped **PAJD_A**

HeavyDuty
Round **PHJD0A**
Shaped **PHJD_A**



4-1/2" E STATION

Maximum Diagonal

4.500(114.30)

Round **PAJE0A**
Shaped **PAJE_A**

HeavyDuty
Round **PHJE0A**
Shaped **PHJE_A**

Fully Compatible with Wilson Inch Style

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

MULTI TOOL TOOLING SYSTEMS

Mate is a world leading manufacturer, and OEM supplier, of multi tool systems for popular punch presses. The result of these valuable design partnerships is a comprehensive range of world class multi tool products. These products are designed and engineered as an integral part of the high performance machines in which they operate.

A multi tool allows a standard indexing D-Station in a punch press to accept 8 or 3 “mini” stations. By using just one multi tool, your 20 station punch press becomes a 22 or 27 station press, expanding your capacity much more economically than purchasing an additional machine.

Multi tool systems available from Mate include:

Mate Ultra® Multi Tool Tooling System:
Mate Ultra® multi tool assemblies make full use of the advantages of Mate Ultra TEC® punches, strippers and SLUG FREE® dies. They provide complete compatibility with existing tooling inventory for added convenience. Mate Ultra® multi tools fit into 3-1/2” D-Index stations and are available in two versions for maximum flexibility.

The Mate Ultra® Multi Tool 8 station assembly

- Punch point range: 0.030(0.80) to 0.500(12.70).
- Ultra TEC® 1/2” A station punches, strippers, and SLUG FREE® dies.

Upper	**MATE00967**	**$5,423.00**
Lower	**MATE00968`**	**$2,793.00**

The Mate Ultra Multi Tool 3 station assembly

- Punch point range: 0.500(12.70) to 1.250(31.70).
- Ultra TEC® 1-1/4” B station punches, strippers, and SLUG FREE® dies.

Upper	**MATE00969**	**$5,423.00**
Lower	**MATE00970**	**$2,793.00**

MT Tooling System:
The Mate MT tooling system delivers exceptional punching performance for users of Finn-Power and Euromac punch presses. The Mate MT tooling system is available in three size ranges.

- MT 24mm – punch point range from 0.030(0.80) to 0.945(24.00).
- MT 16mm – punch point range from 0.030(0.80) to 0.630(16.00).
- MT 8mm – punch point range from 0.030(0.80) to 0.315(8.00).

XMT™ Tooling System:
The Mate XMT™ tooling system is the world’s first and only tooling designed specifically for Euromac punch presses. Mate’s status as Original Equipment Manufacturer for Euromac makes XMT™ tooling the only way to take full advantage of the capabilities of the Euromac multi tool punch holders.

- XMT™ 24mm – punch point range from 0.030(0.80) to 0.945(24.00).
- XMT™ 12.7mm – punch point range from 0.030(0.80) to 0.500(12.70).

Visit mate.com for more information.

[Dimensions in Inches(mm)]

MATE ULTRA® IMT™
FULLY INDEXABLE MULTI TOOL

Mate's patent pending Ultra® IMT™ is a fully indexable multi tool that adds flexibility and expands the ability of a standard multi tool because, unlike standard multi tools, which can only have one angle setting, fully indexable multi tools can achieve any angle setting on the workpiece.

Mate offers two versions of Ultra IMT fully indexable multi tool:

- 3-Station uses Ultra TEC® 1-1/4" B-Station punches and strippers, and thick turret B-Station dies. It can punch up to 6mm material with maximum tonnage of 16 tons (142kN).
- 8-Station uses Ultra TEC® 1/2" A-Station punches and strippers, and thick turret A-Station dies. It can punch up to 6mm material with maximum tonnage of 7 tons (62kN).

Lubrication Port to all moving parts

Striker assembly fits only one way for ease of use

Release/zero mark position indicator

Punch Carrier

One piece guide design for tighter toleralnces allowing burr-free punching of thinner materials

Punch holder body made with hardened tool steel

No tools needed for punch and stripper installation or removal

PATENT PENDING
3 Station model shown

Replaceable stripper plate costs less than replacing whole guide

[Dimensions in Inches(mm)]

ULTRA® IMT™ 3 & IMT™ 8-STATION INDEXABLE MULTI TOOL

Mate's Ultra IMT fully indexable Multi Tools fit indexing D-Stations and are available in two versions:

The fully **indexable Ultra IMT™ 3-Station multi tool** works with Ultra TEC® B Station punch, strippers and Thick Turret Slug Free® dies up to a maximum punch diagonal of 1.250" (31,75 mm). The multi tool can achieve any angle setting on the workpiece.

Patent pending

3-Station
Upper: **MATE01850**
Lower: **MATE00697**

The fully **indexable Ultra IMT™ 8-Station multi tool** works with Ultra TEC® A Station punch, strippers and Thick Turret Slug Free® dies up to a maximum punch diagonal of .500" (12,70 mm). The multi tool accepts 8 "mini" stations. All fully indexable multi tools can achieve any angle setting on the workpiece.

Patent pending

8-Station
Upper: **MATE01840**
Lower: **MATE00050**

See Ultra® IMT Product Bulletin for additional information (LIT00745)

[Dimensions in Inches(mm)]

ULTRAFORM® TOOLING SYSTEM

Concept: One adjustable length holder can be used with a variety of special forming inserts. The benefits include reduced tooling cost, increased flexibility, and the length of the assembly can be accurately pre-set.

Quick Length Adjustment:
The push-button length adjustment mechanism allows the overall length of the assembly to be set in 0.002(0.05) increments, without disassembly or removal from the machine.

Adjustment Below the Shoulder:
The length adjustment is made below the shoulder of the assembly, thus maintaining the gap between the ram and the tool at top of stroke to prevent the ram from hitting the tool.

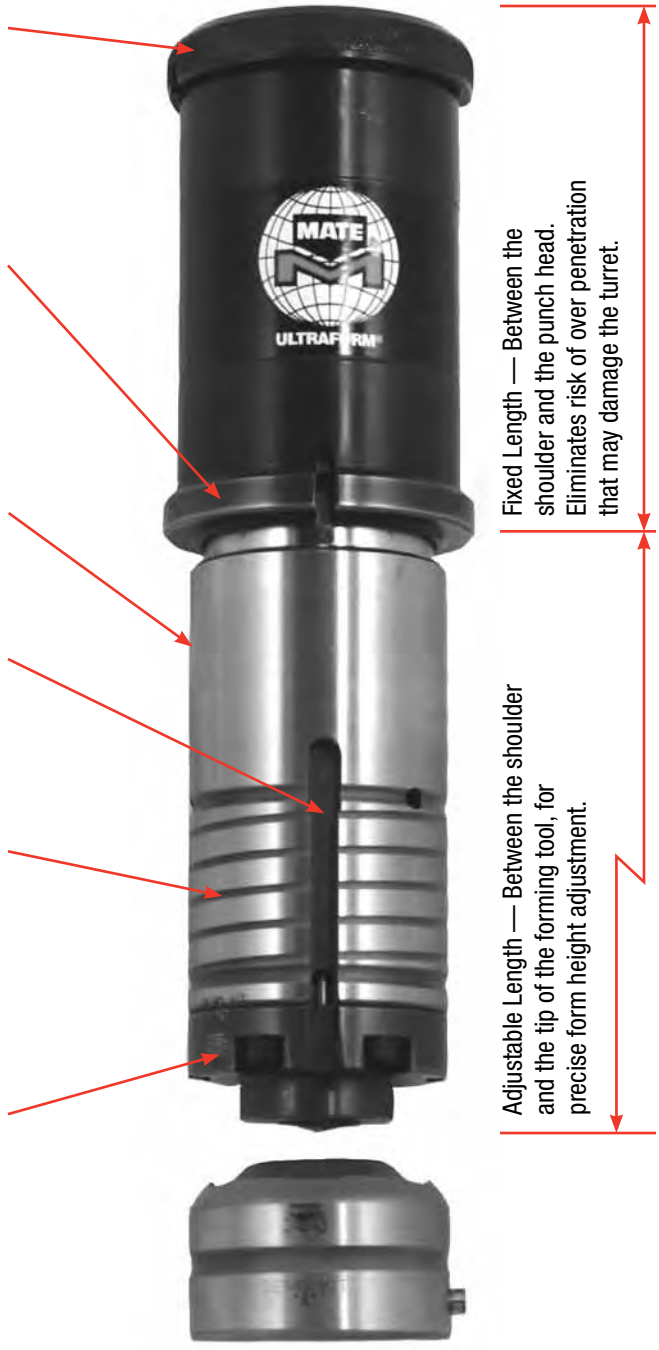
Hardened Guides:
The hardened guides, combined with the lubrication grooves, reduce friction and extend turret bore life.

Multiple Angle Settings:
All UltraFORM® holders can be set at 0, 90, 180 and 270 degrees as a standard, for maximum flexibility.

Tool Lubrication:
Ultraform® holders provide internal channels and external grease grooves to allow lubrication of forming tools. UltraFORM® is compatible with all popular punch press machine tool lubrication systems.

One Holder – Multiple Applications:
The Ultraform® holder system is designed to allow an unlimited number of forming tools to be used with the same holder, which reduces tooling inventory costs.

Available for:
- 1-1/4" B Station
- 2" C Station
- 3-1/2" D Station
- 4-1/2" E Station



[Dimensions in Inches(mm)]

ULTRAFORM®

Ultraform®

Ultraform XT™

Ultraform FX™

	Ultraform®	Ultraform XT™	Ultraform FX™
Ultraform inserts	•	•	•
Angle setting of 0°, 90°, 180° und 270°	•	•	•
Upper holder, fine length adjustment (0,05 mm)	•		
Upper holder, adjustable length (>0,2 mm)		•	
Fixed Length			•
Length adjustment without tools	•		
Upper holder, adjustable length in turret possible	•		
Hardened guide	•		
Length adjustment under the upper turret	•	•	
Usable with lubricating system of the machine	•	•	•
Available for B - E Station	•	•	•
Available for F Station	•		

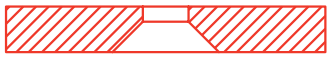
[Dimensions in Inches(mm)]

ORIGINAL STYLE 1-1/4" B STATION FORMING TOOLS

Combine the economy of original style thick turret tooling, with the convenience of integrated tool body construction, and the simplicity of the hexagon shaped punch head. Ideal for hydraulic punch presses with programmable ram control.

Dedicated Countersink Down

Complete Assembly with blank die	**XAABD0B399**
Replacement Countersink Tip	**XAABD0B316**



Dedicated Countersink Up

Complete Assembly with non-spring loaded lower.	**XAABD0B199**

Round Emboss with Dome Top

Complete Assembly with spring loaded lower	**XAABD0E099**

Round Emboss with Flat Top

Complete Assembly with spring loaded lower	**XAABD0E199**

Round Embossed Countersink Up

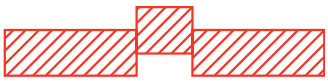
Complete Assembly with spring loaded lower	**XAABD0E999**

Round Extrude Up

Complete Assembly with spring loaded lower	**XAABD0D199**
Replacement Lower Insert	**XAABD0D104**

Single Round Knockout Up

Complete Assembly with spring loaded lower	**XAABD0K199**



Shear Button Up

Complete Assembly with spring loaded lower	**XAABD0S199**
Replacement Lower Insert	**XAABD0S104**

All 1-1/4" B station original style forming tools are designed to your specific material type, thickness, and machine model requirements. Interchangeability between machines is not recommended due to the variations in the shut height between different machines. For fully adjustable and interchangeable forming tools, we recommend the Mate UltraFORM® forming tool system.

[Dimensions in Inches(mm)]

MATE PILOT™ TURRET CALIBRATION SYSTEM

The Mate Pilot™ Turret Calibration System is the most accurate system for ensuring precision concentric and angular alignment of thick turret punch press stations available. The Mate Pilot Turret Calibration System operates in two modes.

- **Verification Mode** – Confirm the precise concentric and angular alignment of your turret to maintain high quality piece part production and maximum tool life.
- **Alignment Mode** – Restore the concentric and angular alignment of each station with the same or better precision as the initial machine installation.

THE MATE PILOT™ TURRET CALIBRATION SYSTEM IS SIMPLY THE BEST SYSTEM AVAILABLE.

Accurate:
Each calibration instrument is machined from a single piece of high quality tool steel. The upper and lower halves are separated near the end of the production process, just prior to installation of the hardware. This eliminates the possibility of cumulative tolerances adversely affecting the accuracy of the finished instrument.

Simple to Use:
Install the two halves of the calibration instrument into the turret station to be aligned. Rotate turret to position the station to be aligned under the machine ram. Use the integral adjustment handle to draw the two halves of the calibration instrument together.

The interlocking design of the interface between the two halves causes the loosened die holder assembly, to be drawn into concentric and angular alignment relative to the upper bore as the two halves of the calibration instrument engage.

The tri-color light indicates alignment.

- Engaged, but not aligned
- Angularity and concentricity within 0.0012(0.030)
- Angularity and concentricity within 0.0003(0.008)*

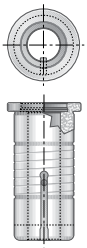
Comprehensive:
The Mate Pilot Calibration System is available in all five thick turret station sizes and is also available to suit the Finn-Power Multi-Tool stations. The Mate Pilot Calibration System is available as a set to suit thick turret presses.

Station	Part Number	Package A	Package F
1/2" A	**MATE00670**	•	
1-1/4" B	**MATE00666**	•	•
2" C	**MATE00667**	•	•
3-1/2" D	**MATE00668**	•	•
4-1/2" E	**MATE00669**	•	
Multi-Tool	**MATE00671**		•
Accessory Kit	**MATE00662**	•	•
		MATE00665	**MATE00672**

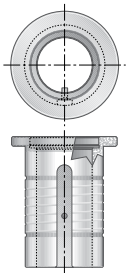
*Angularity and concentricity within 0.0003(0.008) - Green Indicator Light - is recommended when punching materials with a thicknesses of 0.048(1.20) or less.

[Dimensions in Inches(mm)]

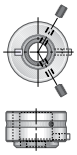
THICK TURRET AND ULTRA® ACCESSORIES



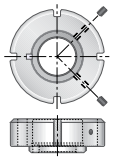
1-1/4" to 1/2"
B to A Station
Punch Guide Adapter
APLG00AD



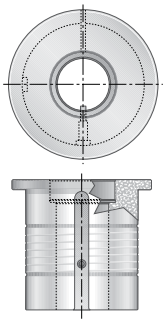
2" to 1-1/4"
C to B Station
Punch Guide Adapter
APLH00AD



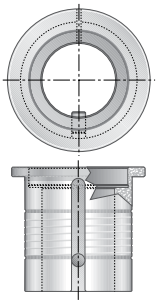
1-1/4" to 1/2"
B to A Station
Die Adapter
ADLG00AD



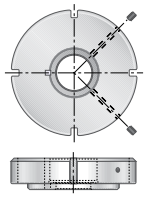
2" to 1-1/4"
C to B Station
Die Adapter
ADLH00AD



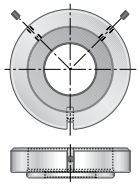
3-1/2" to 1-1/4"
D to B Station
Punch Guide Adapter
APLK00AD



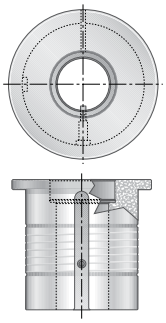
3-1/2" to 2"
D to C Station
Punch Guide Adapter
APLJ00AD



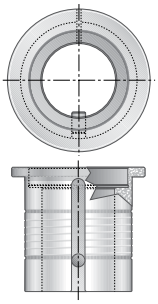
3-1/2" to 1-1/4"
D to B Station
Die Adapter*
ADLK00AD



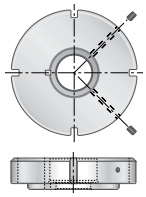
3-1/2" to 2"
D to C Station
Die Adapter*
ADLJ00AD



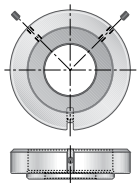
4-1/2" to 1-1/4"
E to B Station
Punch Guide Adapter
APLM00AD



4-1/2" to 2"
E to C Station
Punch Guide Adapter
APLL00AD



4-1/2" to 1-1/4"
E to B Station
Die Adapter
ADLM00AD



4-1/2" to 2"
E to C Station
Die Adapter
ADLL00AD

*Use this table to select the appropriate die adapter for use in the Finn-Power upforming station.
When using a die adapter in an upforming station, the press upper ram stroke may need to be reduced by 0.079(2.00).

[Dimensions in Inches(mm)]

THICK TURRET AND ULTRA® ACCESSORIES

Ultra® SYSTEM ANTI-ROTATION CLAMPS FOR ROUND PUNCHES

1/2" A Station
Original Style Round Punch
Anti-Rotation Clamp

A0VAASAC

1-1/4" B Station
Original Style Round Punch
Anti-Rotation Clamp

A0VBASAC

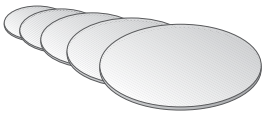
1-1/4" B Station HP (Series 90) Style
Round Punch
Anti-Rotation Clip

A0VBWBAC

1-1/4" B Station Punch
Length Adjustment Clamp
HP (Series 90) Driver Assembly

A0VBWGAC

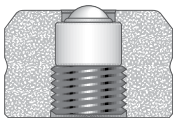
SOFT FACE STRIPPER PADS - ADHESIVE BACKED URETHANE



Soft faced stripper pads for thick turret and Ultra style tooling - 0.009(0.25) thick adhesive backed urethane to prevent material scratching and reduce noise levels.

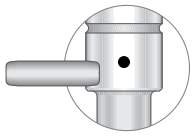
A Station Soft Face Stripper Pad - Package 6	**A0LA00SF**
B Station Soft Face Stripper Pad - Package 6	**A0LB00SF**
C Station Soft Face Stripper Pad - Package 6	**A0LC00SF**
D Station Soft Face Stripper Pad - Package 4	**A0LD00SF**
E Station Soft Face Stripper Pad - Package 4	**A0LE00SF**

MORE ACCESSORIES FOR Ultra® AND UltraFORM® 0.157(4.00) Diameter Pin (12 Minimum)



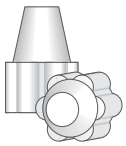
Roller Die for UltraFORM®
System Special Applications
(1-1/4" B Station Only)

A0LB00FG



Pin for Original Style Round Punch
when used with Ultra® Guide
1/2" A and 1-1/4" B Station (12 minimum)

MIS60256*



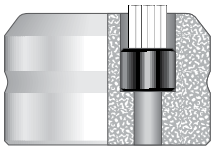
Urethane Slug Ejectors
3 and 6 mm Diameters
(12 minimum)

3 mm Urethane Slug Ejectors

URE40002*

6 mm Urethane Slug Ejectors

URE40010*



Brush Die for Ultraform
System Special Applications
(B thru E Stations)

B Station	**ADLB0001**
C Station	**ADLC0001**
D Station	**ADLD0001**
E Station	**ADLE0001**

Medium India Oil Stone
ST029807

Replacement Brush
Assembly for Brush Dies (3 minimum)
*Not compatable with the new plastic Thick Turret brush dies.

Clip Tool for Ultra® 1-1/4" B Station
Fully Guided Punch Guide
Stripper Clip

MIS59723

Thick Turret Brush Die

A Station	**MATE01895**	**$25.00**
B Station	**MATE01896**	**$27.00**
C Station	**MATE01897**	**$70.00**
D Station	**MATE01898**	**$94.00**
E Station	**MATE01899**	**$258.00**

Lifter "T" Handle

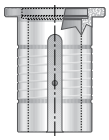
A0LEH

* Items sold separately beyond minimum quantity
** Order A0VBWSAC when using Series 90 punches with wire ring.

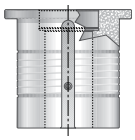
[Dimensions in Inches(mm)]

THICK TURRET AND ULTRA TEC® ACCESSORIES

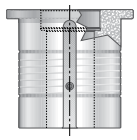
LVD STYLE TO ACCEPT LVD, THICK TURRET AND Ultra TEC® GUIDE ASSEMBLIES



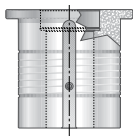
2" to 1-1/4"
LVD C Station to
Thick Turret B Station
Punch Guide
Adapter Assembly
LPLH00AD



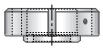
3-1/2" to 1-1/4"
LVD D Station to
Thick Turret B Station
Punch Guide
Adapter Assembly
LPLK00AD



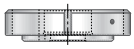
3-1/2" to 2"
LVD D Station to
LVD C Station
Punch Guide
Adapter Assembly
LPPJ00AD



3-1/2" to 2"
LVD D Station to
Thick Turret C Station
Punch Guide
Adapter Assembly
LPLJ00AD

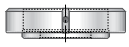


2" to 1-1/4"
C to B Station
Die Adapter
ADLH00AD



3-1/2" to 1-1/4"
D to B Station
Die Adapter
ADLK00AD

3-1/2" to 2"
D to C Station
Die Adapter
ADLJ00AD



3-1/2" to 2"
D to C Station
Die Adapter
ADLJ00AD

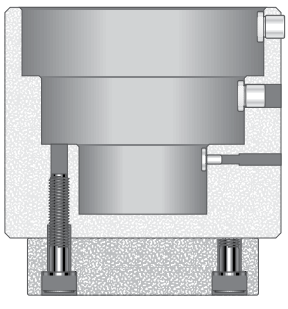
HP (SERIES 90) PUNCH ADAPTERS

C Station HP (Series 90)
Punch Adapter
A0VCWSPA

D Station HP (Series 90)
Punch Adapter
A0VDWSPA

E Station HP (Series 90)
Punch Adapter
A0VEWSPA

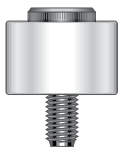
THICK TURRET - ULTRA® 2" C, 3-1/2" D AND 4-1/2" E STATION TORQUE STAND ASSEMBLY AND ACCESSORIES



MIS59483
10mm Hex Key
also available sepa-
rately

Ultra® / Thick Turret Torque Stand
Assembly with 3/8" Drive 10mm Hex Key
2" C, 3-1/2" D and 4-1/2" E Stations
MATE00083

Torque Wrench
for use with Torque Stand
Fixed setting at 75 lbs. ft. (102 N • m)
MIS99030



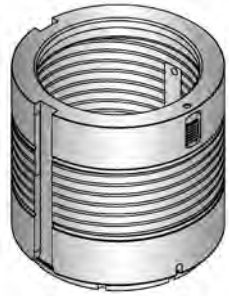
Ultra® Spacer for
Amada Tightening
Fixture 2" C Station
APLEP

[Dimensions in Inches(mm)]

ULTRA TEC® FIELD SERVICE KITS

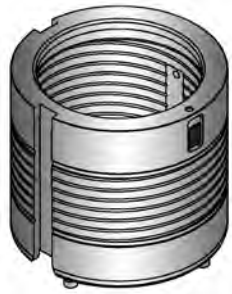
Ultra TEC® Replacement Locking Ring Kit

2" C	**MATE00628**
3-1/2" D	**MATE00629**
4-1/4" E	**MATE00630**



Ultra TEC® Replacement Guide Body Kit

2" C	**MATE00631**
3-1/2" D	**MATE00632**
4-1/4" E	**MATE01808**



Ultra TEC® Fully Guided Replacement Guide Body Kit

2" C	**MATE00634**
3-1/2" D	**MATE00636**
4-1/4" E	**MATE01812**

Ultra TEC® Fully Guided Replacement Guide Body Kit (3-slot)

2" C	**MATE00635**
3-1/2" D	**MATE00637**

Ultra TEC® Replacement Spring Kit

2" C	**MIS61647P** (18 springs)
3-1/2" D	**MATE00270** (7 springs)
4-1/4" E	**MATE00270** (7 springs)

Ultra TEC® Replacement Spring Cover

2" C	**MIS99709**
3-1/2" D	**A0VDSTCV**
4-1/4" E	**A0VDSTCV**

[Dimensions in Inches(mm)]

THICK TURRET TOOLING CABINETS

- Heavy duty construction.
- Overall Dimensions: 38" (965 mm) High x 30" (762 mm) Wide x 29" (737 mm) Deep.
- Five drawers with heavy duty slide mechanism.
- Drawer capacity 400 lbs.(182 kg.) each.
- Includes 8 groove trays and 40 groove tray dividers for maximum storage flexibility.
- Rubber mat top for easy tool maintenance.
- Includes lock and key.
- Made in the USA.

MATE00582

Drawer Number	Drawer Front Height	Drawer Useable Height
1	3.000(76.20)	2.125(53.98)
2	3.875(98.43)	3.000(76.20)
3	7.000(177.80)	6.125(155.58)
4	7.750(196.85)	7.000(177.80)
5	9.250(234.95)	8.500(219.50)

See part # MATE00137 and MATE00149 for cabinets with inserts for thick turret tooling

Tooling Cabinet for Ultra® and Thick Turret Tooling
- Includes Ultra® Thick Turret Torque Stand—for easier tool installation.
- Includes 3/8" drive pre-set torque wrench—for precise punch installation.
- Heavy duty drawer inserts—securely hold each tool.
- Drawer for miscellaneous tools, hardware, and catalogs.

Thick Turret – 1/2" A Station to 3-1/2" D Station
- 1/2" A Station: 30 Complete Assemblies; 33 Ultra® Punches; 33 Ultra® Strippers; 16 Ultra® Canisters; 102 Dies; 12 Original Style Punches; and 16 Guides.
- 1-1/4" B Station: 16 Complete Assemblies; 16 Ultra® Punches; 16 Ultra® Strippers; 8 Ultra® Canisters; 77 Dies; 12 Original Style Punches; and 8 Guides.
- 2" C Station: 5 Complete Assemblies; 9 Punches; 9 Strippers; and 18 Dies.
- 3-1/2" D Station: 3 Complete Assemblies; 6 Punches; 6 Strippers; and 12 Dies.

MATE00137

Thick Turret – 1/2" A Station to 4-1/2" E Station
- 1/2" A Station: 30 Complete Assemblies; 33 Ultra® Punches; 33 Ultra® Strippers; 16 Ultra® Canisters; 102 Dies; 12 Original Style Punches; and 16 Guides.
- 1-1/4" B Station: 16 Complete Assemblies; 16 Ultra® Punches; 16 Ultra® Strippers; 8 Ultra® Canisters; 77 Dies; 12 Original Style Punches; and 8 Guides.
- 2" C Station: 5 Complete Assemblies; 7 Punches; 7 Strippers; and 14 Dies.
- 3-1/2" D Station: 3 Complete Assemblies; 5 Punches; 5 Strippers; and 10 Dies.
- 4-1/2" E Station: 1 Complete Assembly; 2 Punches; 2 Strippers; and 4 Dies.

MATE00149

[Dimensions in Inches(mm)]

EASYVIEW™ TOOLING CARTS

Want to organize your tool room? How about managing jobs on the shop floor? Designed for lean visual management, Mate EasyView™ tooling carts can help you reduce costs by increasing your shop's productivity.

Mate EasyView™ carts keep your tooling protected and organized, reducing tool damage and set-up time. Because all tooling is visible to the user, operators can eliminate wasted time looking for the correct tool. Users can quickly locate the correct tool, making it faster and easier for them to make the correct decision every time.

Built from heavy duty 14-gauge steel and powder-coated for durability, these carts can withstand the harshest locations. With shelves available in a number of standard configurations, the Mate EasyView™ cart is completely modular, allowing you to configure it to your specific needs. Shelves are adjustable in 1 inch increments.

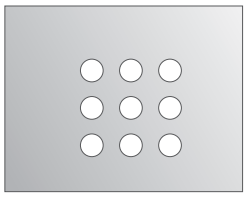
The base assembly provides mobility on all EasyView™ carts. Equipped with four 700-pound capacity casters, this base allows you to carry an amazing 2,800 pound load. This means you can stage your jobs ahead of time and locate the cart near the machine, saving you valuable set-up time.

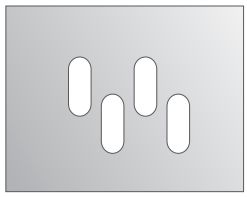
ORDERING INFORMATION:

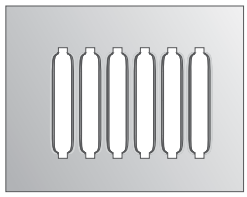
1. ORDER MOBILE BASE ASSEMBLY		
Part Number	Description	**Price**
MATE01705	EasyView™ mobile base assembly and standard handle	**$585.00**
2. CHOOSE YOUR HEIGHT • You can choose either a 36-inch or 48-inch side panels		
Part Number	Description	**Price**
MATE01702	EasyView™ standard side assembly, 36" tall, powder coated black, qty 2	**$272.00**
MATE01703	EasyView™ standard side assembly, 48" tall, powder coated black, qty 2	**$347.00**
3. CHOOSE YOUR SHELVES • You must select a minimum of 3 shelves for either height to ensure stability of the cart		
Part Number	Description	**Price**
MATE01704	EasyView™ standard blank shelf	**$149.00**
MATE01709	EasyView™ Ultra® and Thick Turret A-Station shelf	**$303.00**
MATE01710	EasyView™ Ultra® and Thick Turret B-Station shelf	**$281.00**
MATE01706	EasyView™ Ultra® and Thick Turret C-Station shelf	**$317.00**
MATE01707	EasyView™ Ultra® and Thick Turret D-Station shelf	**$275.00**
MATE01708	EasyView™ Ultra® and Thick Turret E-Station shelf	**$265.00**
MATE01711	EasyView™ Thick Turret C, D, and E-Station canister/guide shelf	**$184.00**
4. ADD OPTIONAL TRAY		
Part Number	Description	**Price**
MATE01712	EasyView™ side tray (Use to store lubricants, fasteners, assembly tools and more)	**$ 88.00**
5. YOU'RE ON YOUR WAY TO HIGHER PRODUCTIVITY AND INCREASED UPTIME!		

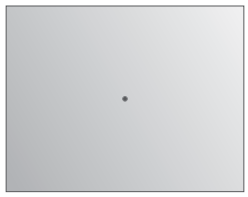
[Dimensions in Inches(mm)]

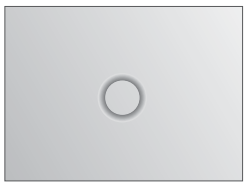
SPECIAL APPLICATIONS


Cluster – Round

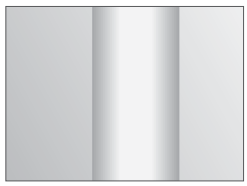

Cluster – Shape


Card Guide

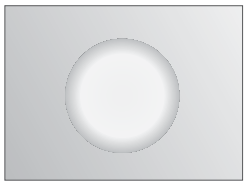

Centerpoint


Countersink – Round


Countersink – Shape


Emboss – Beading


Emboss – Edgeform

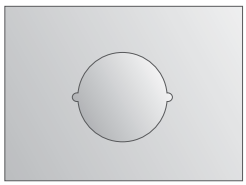

Emboss – Formed (Round and Shaped)

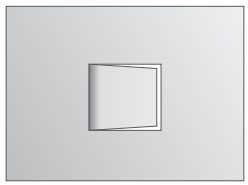
Emboss – Cold Forged

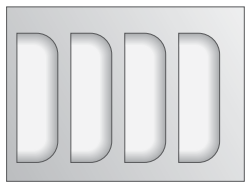

Extrusion – Tapping

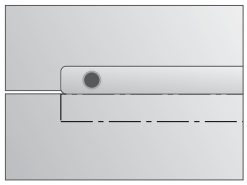

Extrusion – Flanged Hole

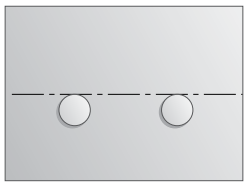

Hing Tool


Knockout


Lance And Form


Louver

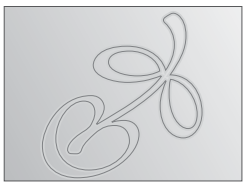

Scissortool™

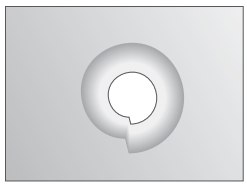

Shearbutton (Round and Shaped)


Rollerball™

Sheetmarker™

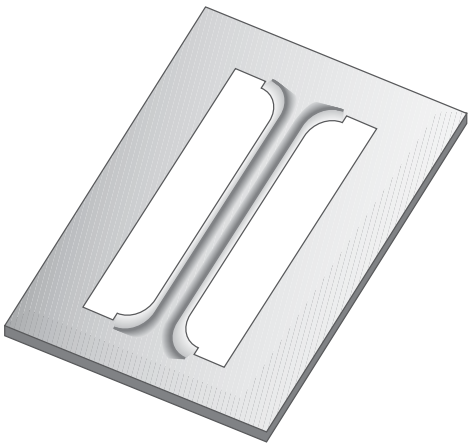
Stamping – Alpha Numeric


Stamping – V-line


Threadform

[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS



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).

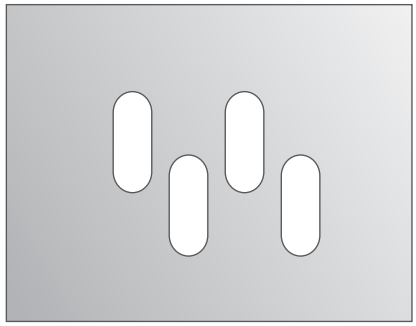
Comments:
- Length of the card guide is dependent upon station size and machine tonnage.
- Also available as a continuous form to increase productivity and flexibility.

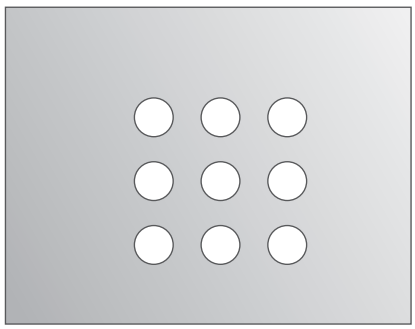
Cluster

Use:
To produce multiple holes with minimal hits.

Typical Application:
- Material thickness from 0.020(0.50) to 0.157(4.00).
- Other constraints 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.





[Dimensions in Inches(mm)]

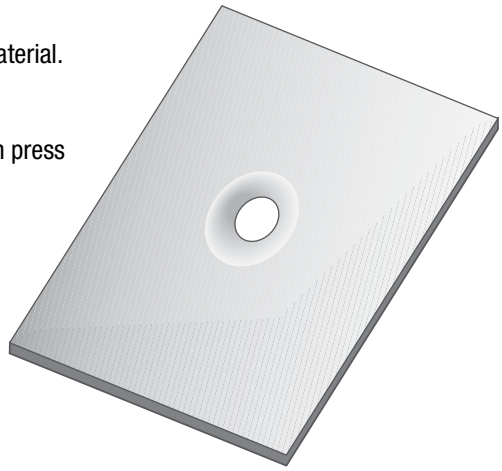
SPECIAL APPLICATIONS

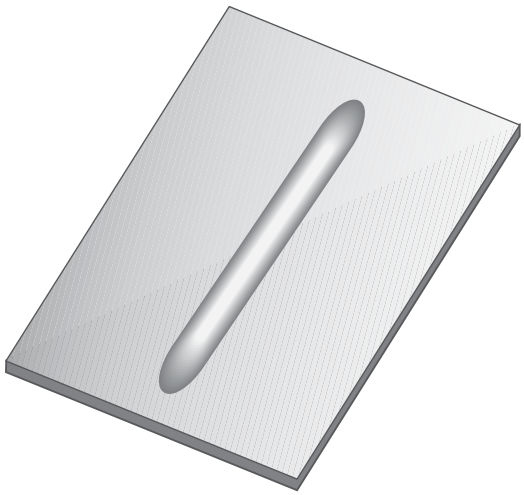
Countersink—Dedicated

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.

[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS

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.

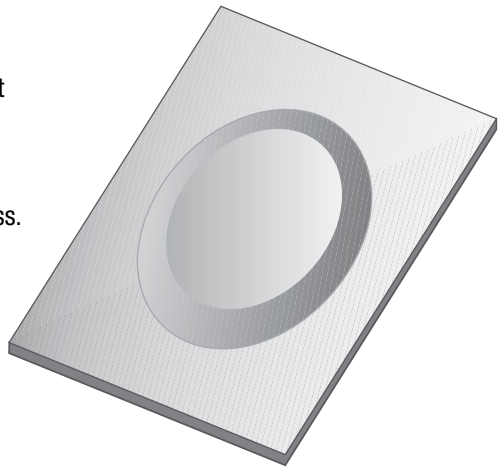
Comments:
- An exact drawing, CAD file, or artwork of logo is required to produce this type of assembly.

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.



[Dimensions in Inches(mm)]

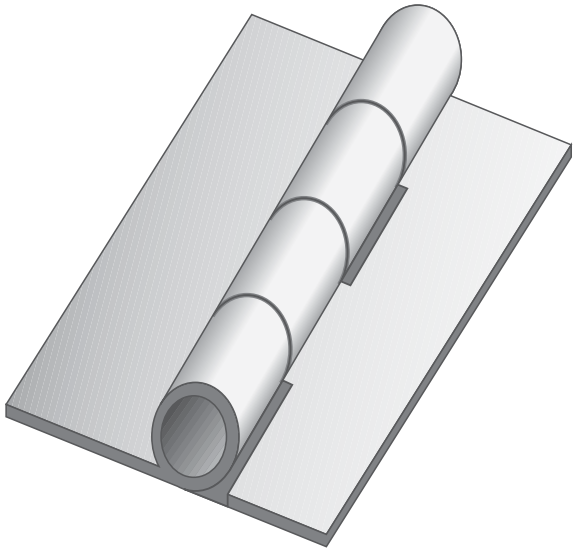
SPECIAL APPLICATIONS

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.

Comments:
- Additional inverted dies are required to accommodate different material thickness.



Hinge

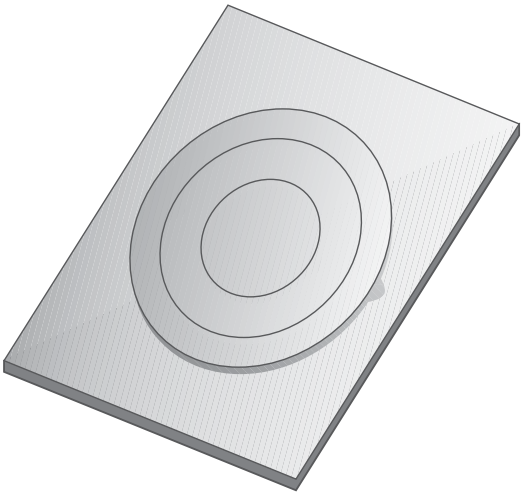
Use:
To create hinge knuckles as integral elements on sheet metal components.

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.

[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS



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.

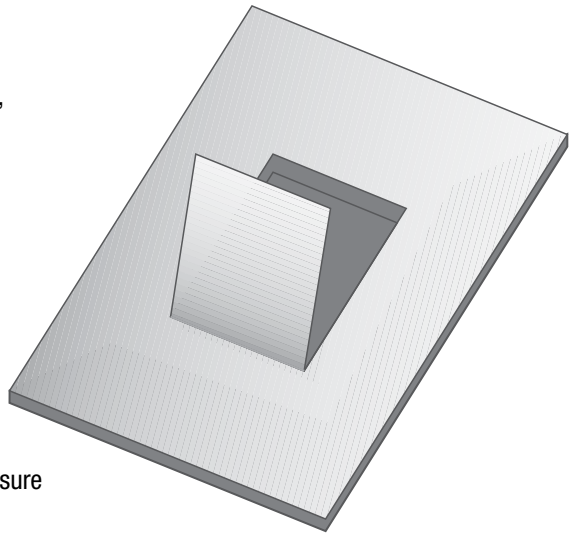
Comments:
- The tool can normally be used with other material thickness within a range. of + or - 0.016(0.41) from design thickness.
- Maintain 0.236(6.00) difference between diameters used for knockout.

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.



[Dimensions in Inches(mm)]

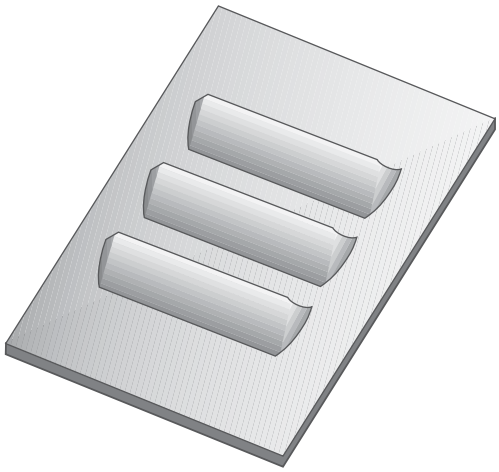
SPECIAL APPLICATIONS

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.

[Dimensions in Inches(mm)]

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.

[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS

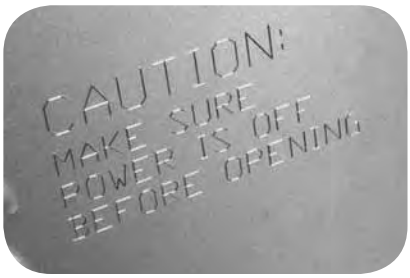
Mate Rollerball™

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.

Mate 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.

[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS

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.

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.

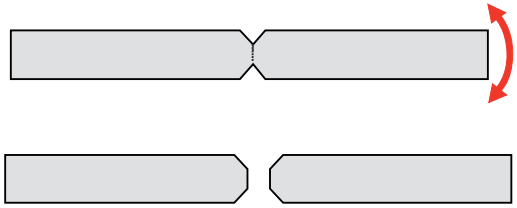
[Dimensions in Inches(mm)]

SPECIAL APPLICATIONS

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) depending on material type and thickness.



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

[Dimensions in Inches(mm)]

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 (2,540-3,810 mm/min).
6. After the 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.

CONSIDERATIONS IN GRINDING

A grinding wheel's abrasive particles, in effect, are break-away "teeth". These teeth can be made from a variety of very hard, abrasion resistant materials, such as diamond, borozon and, most commonly, aluminum oxide.

The abrasive particles are embedded in a softer matrix material and meant to fracture loose from the matrix as cutting pressure becomes greater. Cutting pressure can increase from raising the feed rate or from dulling of abrasive particles. Pressure causes surface particles to fracture or break free from the wheel matrix and expose new sharp edges, resulting in the wheel's sharpness.

For our purposes, in selecting a vitrified bond aluminum oxide wheel, we need only be concerned with two variables: hardness and coarseness of the wheel. Hardness refers to the bond strength of the matrix. Coarseness refers to the size and concentration of the abrasive particles (grit).

Generally speaking, harder materials require softer wheels — softer materials require harder wheels. Grinding a harder and/or more abrasive resistant material, such as hardened tool steel, dulls abrasive particles quickly. The wheel then needs increased feed forces. A softer wheel allows spent particles to break loose from the matrix more easily. The newly exposed sharp edges will cut rather than rub and tear at the workpiece. Less pressure is required and the wheel runs cooler.

Coarse wheels with large, widely spaced abrasive particles perform less cutting per revolution and allow greater "chip" clearance. The wheel stays cleaner. Friction is reduced.

Balancing hardness and coarseness results in a wheel that stays sharp and clean to optimize cutting action. It meets the grinding objective of removing material from the workpiece while expending a minimal amount of wheel energy. Wheel energy losses largely translate to workpiece heating. Workpiece heating, in turn, will result in softened and/or highly stressed tools which will not perform well. Hardened tool steels are particularly vulnerable.

It is generally desirable to use a softer "G" or "H" hardness wheel with a grit concentration/size of about forty-six.

A-2 and S-7 STEEL

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

M-2 and M4PM™ STEEL

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

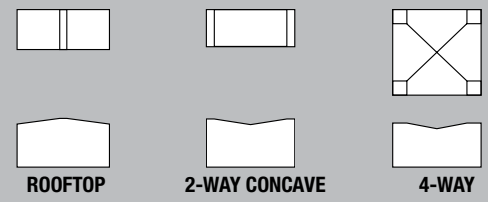
[Dimensions in Inches(mm)]

PUNCH AND DIE MAINTENANCE

PUNCH SHEAR RECOMMENDATIONS

STATION	DESCRIPTION	STANDARD	ALTERNATIVE
1/2" A	Rounds and Shapes	None	None
1-1/4" B	Rounds and Shapes	None	None
2" C	Rounds	None	2-Way Concave
	Rectangles Width ≤ 0.188(4.78)	None	Rooftop
	Rectangles Width ≤ 0.188(4.78)	None	2-Way Concave
	Squares	None	4-Way
3-1/2" D	Rounds	None	2-Way Concave
	Rectangles Width ≤ 0.188(4.78)	None	Rooftop
	Rectangles Width ≤ 0.188(4.78)	None	2-Way Concave
	Squares	None	4-Way
4-1/2" E	Rounds	Rooftop	2-Way Concave
	Rectangles Width ≤ 0.188(4.78)	Rooftop	Rooftop
	Rectangles Width ≤ 0.188(4.78)	Rooftop	2-Way Concave
	Squares	Rooftop	4-Way

ALTERNATIVE SHEARS

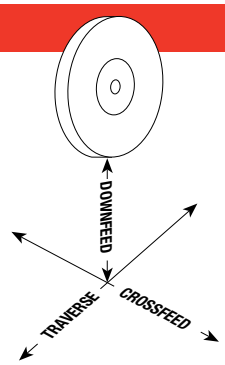


FEED RATES PER PASS

Downfeed:
0.001-0.003(0.03-0.08)

Crossfeed:
0.010(0.25)

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



WHEELHEAD

FIXING SHARPENING PROBLEMS

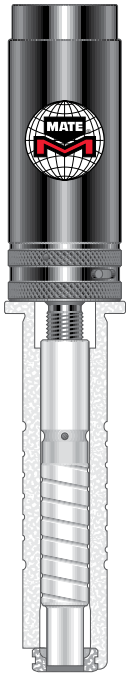
PROBLEM:	CAUSE:	CURE:
Discoloration** and/or surface cracks	Insufficient coolant	Increase or redirect flow.
	Improper wheel	Use coarser grain, softer grade grinding wheel.
	Improper dress	Drop wheelhead 0.0002-0.0004 (0.005-0.010) and redress. Move crossfeed approx. 50 in/min. (1.25 m/min.)
Harsh cutting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

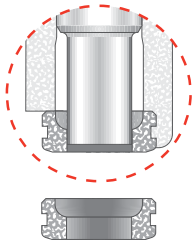
**Dark discoloration indicates damage not necessarily limited to the tool surface. Removal of burned surface will not rectify damage. Recommend replacement of the tool.

[Dimensions in Inches(mm)]

ULTRA TEC® GRIND LIFE COMPARISON
1/2" A STATION

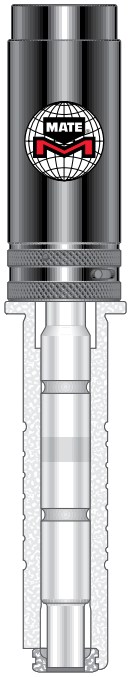
1/2" A Station Ultra® with Ultra® Punch



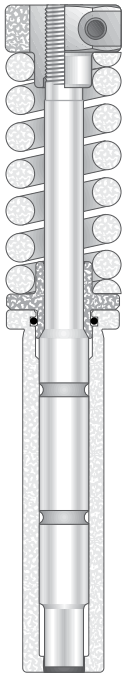


Ultra® Stripper with 0.118(3.0) Relief

1/2" A Station Ultra® with Original Style Punch

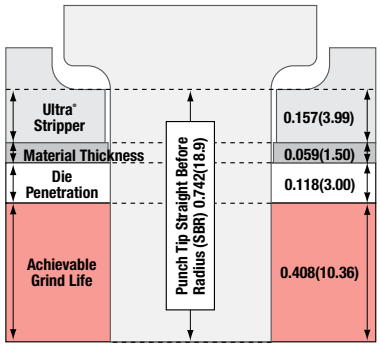


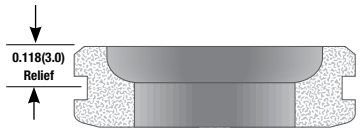
1/2" A Station Original Style



VALUE COMPARISON - 0.408(10.36) grind life when used with 0.059(1.50) material

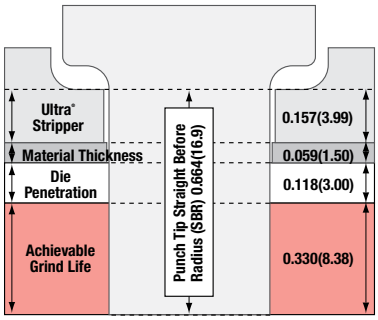
Mate Ultra® System w/Ultra® Punch

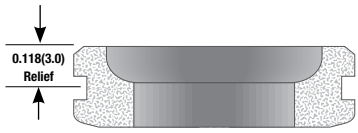




Ultra® System Stripper

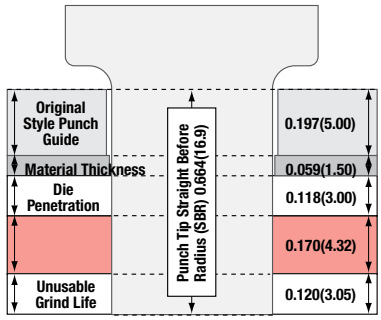
Mate Ultra® System w/Original Style Punch





Ultra® System Stripper

Original Style



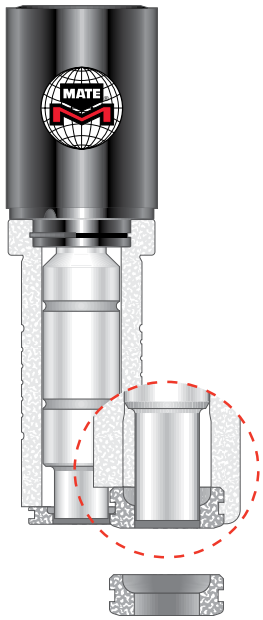
*Limited by punch head position

Original Style Punch Guide

[Dimensions in Inches(mm)]

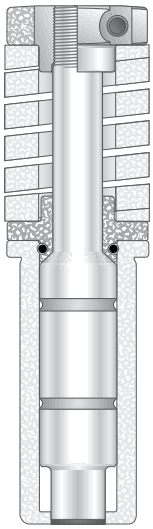
ULTRA TEC® GRIND LIFE COMPARISON
1-1/4" B STATION

1-1/4" B Station
Ultra®



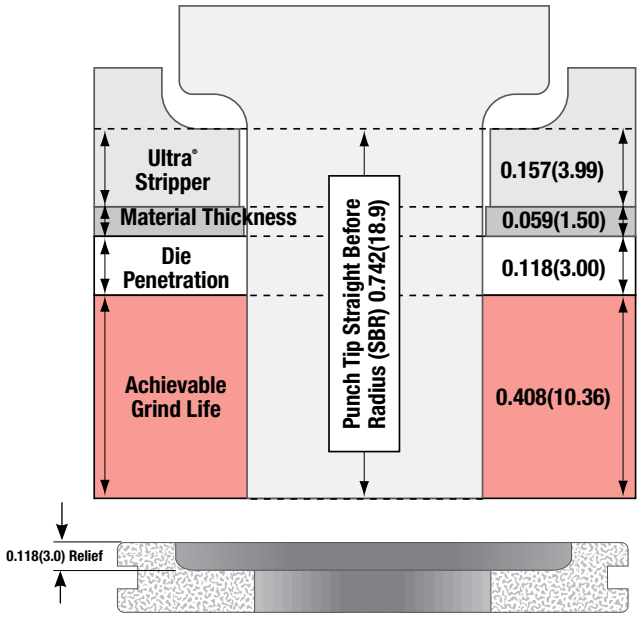
Ultra® Stripper with
0.118(3.0) Relief

1-1/4" B Station
Original Style



1-1/4" B Station
Original System
Punch Guide

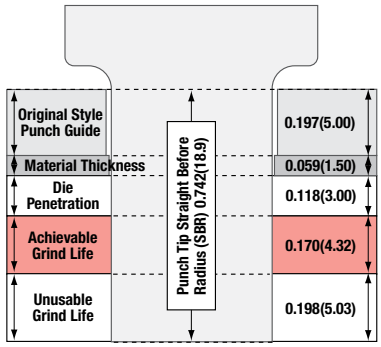
Mate Ultra® System



Ultra® System Stripper

VALUE COMPARISON - 0.408(10.36) grind life when used with 0.059(1.50) material

Original Style



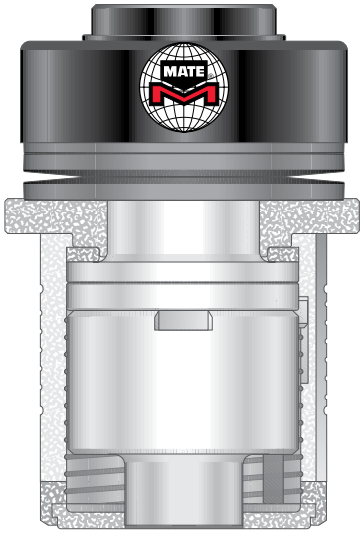
*Limited by punch head position

Original Style
Punch Guide

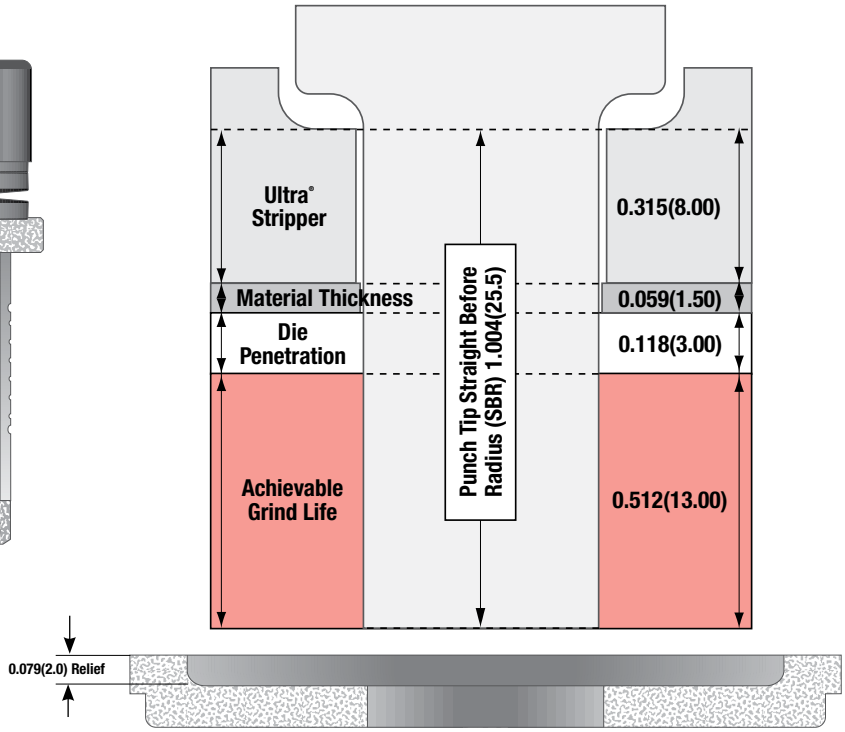
[Dimensions in Inches(mm)]

ULTRA TEC® GRIND LIFE COMPARISON
2" C, 3-1/2" D, AND 4-1/2" E STATION

4-1/2" D Station Ultra®

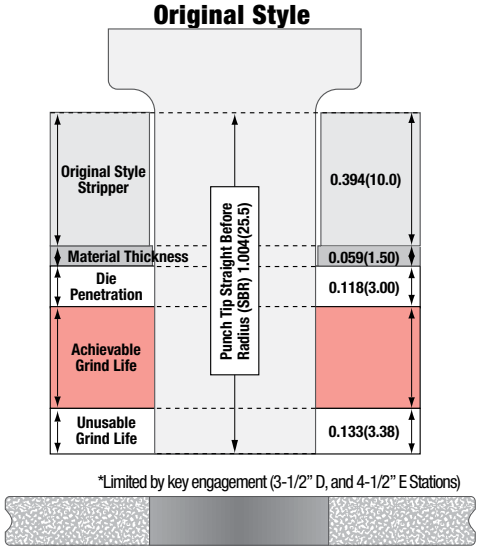


Mate Ultra® System



VALUE COMPARISON - 0.512(13.00) grind life when used with 0.059(1.50) material

Original Style



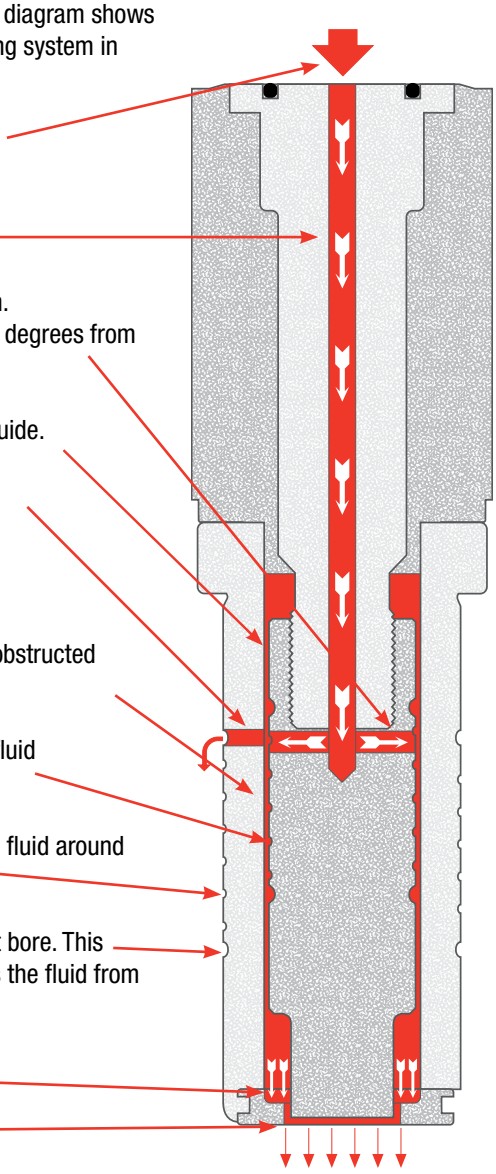
Original Style Stripper

[Dimensions in Inches(mm)]

ULTRA® TOOL LUBRICATION SYSTEM
1/2" A AND 1-1/4" B STATION

Machines equipped with tool lubrication systems introduce a lubrication fluid (oil, or an oil/air mixture) into the top of the tooling system. This diagram shows the method of transporting this fluid throughout the Ultra® tooling system in the 1/2" A (not show) and 1-1/4" B station (as shown) system.

1. The lubrication fluid – is introduced at the top of the tool by the machine mechanism.
2. It travels through the center of the assembly.
3. It flows through four fluid transportation holes in the punch. Two holes have been shown here. The four holes are at 90 degrees from each other.
4. The lubrication fluid reaches the interior wall of the Ultra guide.
5. The lubrication fluid also reaches the exterior of the guide.
6. There are internal keyways (Three for 1/2 A, Five for 1-1/4 B-Station) in the Ultra guide for punch angle settings. One keyway will be obstructed with the key of the punch. The lubrication fluid moves through the remaining four unobstructed keyways to the stripper pooling area.
7. The punch spiral grooves evenly distribute the lubrication fluid around the entire interior of the guide.
8. The exterior spiral grooves evenly distribute the lubrication fluid around the entire guide between the guide and the turret bore.
9. The exterior spiral grooves do not extend beyond the turret bore. This keeps the lubrication on the contact surfaces and prevents the fluid from draining onto the work surface.
10. Stripper pooling area.
11. For Ultra ABS® Only: Fluid is expelled through the small reliefs in the stripper next to the punch.

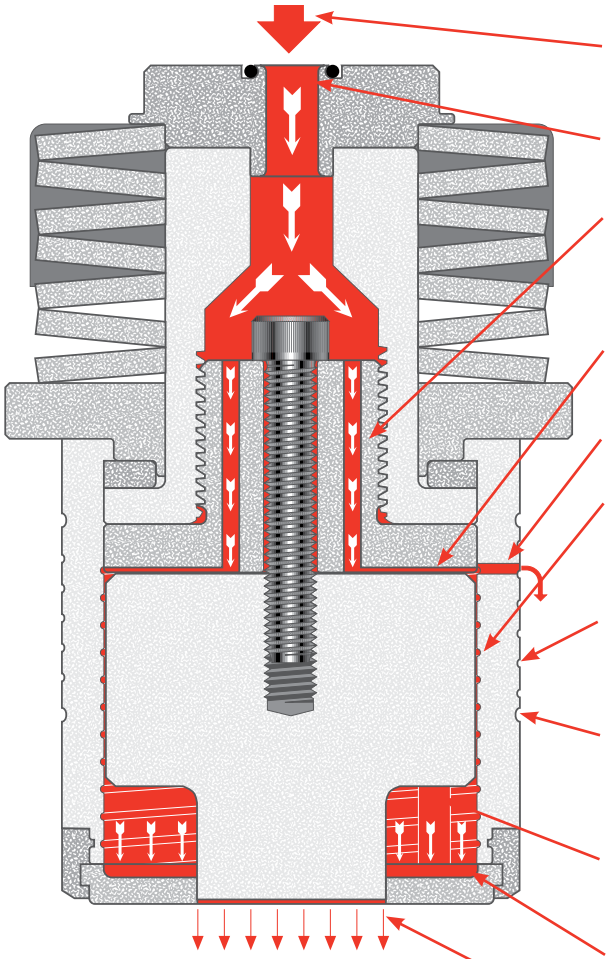


Ultra ABS® is licensed under U.S. Patent No. 4,977,804 and corresponding foreign patents and patent applications, and authorized for use only on punch press machines manufactured by, for, or under license from Amada Company, Ltd.

[Dimensions in Inches(mm)]

ULTRA® TOOL LUBRICATION SYSTEM
2" C, 3-1/2" D, AND 4-1/2" E STATION

Machines equipped with tool lubrication systems introduce a lubrication fluid (oil, or an oil/air mixture) into the top of a tooling system. This diagram shows the method of transporting this mixture throughout the Ultra® tooling system in the 2" C, 3-1/2" D (as shown), and the 4-1/2" E station system.



1. The lubrication fluid is introduced at the top of the tool by the machine mechanism.
2. It travels through the center of the assembly.
3. It flows through three fluid transportation holes. Two holes have been shown here.
   The three holes are at 120 degrees from each other.
4. The lubrication fluid reaches the interior wall of the guide as it flows through three channels.
5. The lubrication fluid also reaches the exterior of the guide.
6. The interior spiral grooves evenly distribute the lubrication fluid around the entire punch between the punch and the guide.
7. The exterior spiral grooves evenly distribute the lubrication fluid around the entire guide between the guide and the turret bore.
8. The exterior spiral grooves do not extend beyond the turret bore. This keeps the lubrication on the contact surfaces and prevents the fluid from draining onto the work surface.
9. There are three vertical interior guide grooves that transport the fluid to the stripper pooling area.
10. Stripper pooling area.
11. For Ultra ABS® Only:
    Fluid is expelled through the small reliefs in the stripper next to the punch.

[Dimensions in Inches(mm)]

MAXIMA™ COATING AND NITRIDE TREATMENT FOR PUNCH PRESS TOOLING

WHAT IS MAXIMA™ COATING?

Maxima™ is a premium tool steel coating that has been specially formulated for turret punch press tooling applications. Maxima is a multilayer Zirconium Titanium Nitride 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. Since 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 adhesive wear tooling applications. Less friction mean less heat build up, less galling and longer tool life.

Maxima coating is recommended for applications such as 3000 and 5000 series aluminum, galvanized and stainless steel, or any application where lubrication cannot be used such as vinyl coated or pre-painted materials. The lubricity is also beneficial when punching sharp cornered shapes with a 90 degree or smaller angle.
In real life tests around the world, Maxima has increased tool life by a factor of 2 to 10 times, keeping tools in production longer with increased up time. Maxima can be applied to M-2, M4PM™, and Durasteel™.

WHAT IS NITRIDE TREATMENT?

Nitride is an optional heat treatment feature for abrasive and adhesive wear environments when punching thin materials. It is a surface treatment which becomes an integral component of the structure of the material itself, therefore extending tool life.

Punches with Nitride Treatment are recommended for punching abrasive materials such as fiberglass or materials that cause galling such as stainless steel, galvanized steel, and aluminum. It is also recommended for high speed punching (see below for nibbling limitations).
It is not recommended for punches smaller than 0.158(4.01) in diameter or width, for material thicker than 0.250(6.35), or where significant punch deflection may occur. Nitride can be applied to M-2 and M4PM™ tool steel.

	3000 & 5000 Series Aluminum	Galvanized Steel	Stainless Steel	Stainless Steel Under 14 ga.	Vinyl Coated Materials	Prepainted Materials Under 16 ga.	Cold Rolled Steel Under 12 ga.	Fiberglass
Maxima™	•	•	•		•	•		
Nitride	•			•		•	•	•

Shape	Minimum punch size suitable for **Maxima™ Coating**	Minimum punch size suitable for **Nitride Treatment**	Minimum punch size suitable for **Nitride when nibbling**
Round	Minimum diameter= 0.098(2.50)	Minimum diameter= 0.158(4.01)	Minimum diameter= 0.500(12.70)
Rectangle	If length is >0.250(6.35) The minimum width is 0.060(1.50) If length is <0.250(6.35) The minimum width is 0.098(2.50)	Minimum width= 0.158(4.01)	Minimum width= 0.500(12.70)
Oval	If length is >0.250(6.35) The minimum width is 0.060(1.50) If length is <0.250(6.35) The minimum width is 0.098(2.50)	Minimum width= 0.158(4.01)	Minimum width= 0.500(12.70)
Square	Minimum width= 0.098(2.50)	Minimum width= 0.158(4.01)	Minimum width= 0.500(12.70)
Others	Consult a Mate application specialist		

[Dimensions in Inches(mm)]

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:

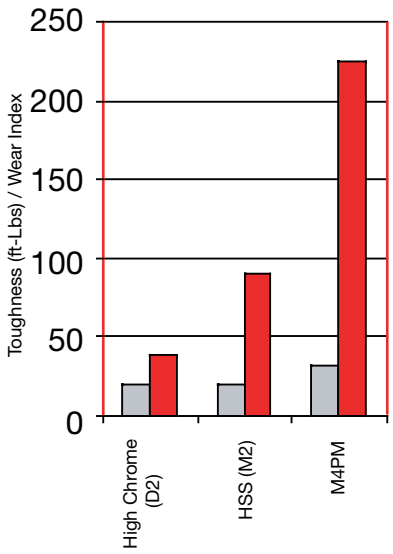
Superior Wear Resistance – 100% better wearing, M4PM offers superior resistance to adhesive- and abrasive-wear to maximize the interval between regrinds.

- 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.

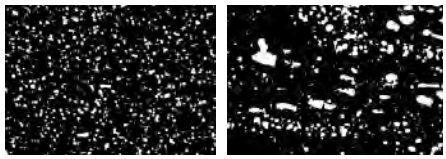
Better Value – customer trials have shown that tools manufactured in M4PM last 100% longer between regrinds than tools manufactured using conventional High Speed Steel. By increasing the interval between regrinds, the tooling lasts longer and punches many more holes before needing to be replaced.



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**

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

[Dimensions in Inches(mm)]

ADD-ONS

General
Radius Corners
Non-Standard Straight Before Radius (SBR) Dimension
Special Angle Settings
Optional Shear (Limited Options)

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

Narrow Width Shaped Tools
Widths under 0.079(2.00)

Station Jumper
1-1/4" B Station - if diagonal dimension is <0.500(12.70)
2" C Station - if diagonal dimension is <1.250(31.70)
3-1/2" D Station - if diagonal dimension is <2.000(50.80)
4-1/2" E Station - if diagonal dimension is <3.500(88.90)
6" F Station - if diagonal dimension is <4.500(114.30)

MaximaTM Coating - See Page 92
1/2" A Station
1-1/4" B Station
2" C Station
3-1/2" D Station
4-1/2" E Station
6" F Station
Slitting Punch Insert

Nitride Treatment - See Page 92
1/2" A Station
1-1/4" B Station
2" C Station
3-1/2" D Station
4-1/2" E Station
6" F Station
Slitting Punch Insert

Slug Free Light™ Die Geometry - See Page 13
1/2" A Station
1-1/4" B Station
2" C Station
3-1/2" D Station
4-1/2" E Station

1/2" A Station
1-1/4" B Station
2" C Station
3-1/2" D Station
4-1/2" E Station

Contact your Mate representative for pricing information.

[Dimensions in Inches(mm)]

THICK TURRET TOOLING SYSTEM
QUICK REFERENCE PRICE GUIDE

Station	Tool Style

Mate Ultra TEC®

1/2" A	Canister and guide with Ultra® punch, stripper, and SLUG FREE® die
1-1/4" B	Canister and guide with Ultra® punch, stripper, and SLUG FREE® die
2" C	Original punch, Ultra® stripper, SLUG FREE® die
3-1/2" D	Original punch, Ultra® stripper, SLUG FREE® die
4-1/2" E	Original punch, Ultra® stripper, SLUG FREE® die

See pages 10-12 for complete ordering information

Ultra TEC® Fully Guided

1-1/4" B	Canister and guide with Ultra® punch, guided stripper, and SLUG FREE® die
2" C	Original punch, guided stripper, SLUG FREE® die
3-1/2" D	Original punch, guided stripper, SLUG FREE® die
4-1/2" E	Original punch, guided stripper, SLUG FREE® die

See pages 16-17 for complete ordering information

Ultra TEC® Fully Guided Clamp Clearing

3-1/2" D	Punch insert, clamp clearing stripper and clamp clearing SLUG FREE® die
4-1/2" E	Punch insert, clamp clearing stripper and clamp clearing SLUG FREE® die

See page 19 for complete ordering information

Ultra XT™

1/2" A	Canister and guide with Ultra® punch, Ultra® stripper, and SLUG FREE® die
1-1/4" B	Canister and guide with Ultra® punch, Ultra® stripper, and SLUG FREE® die
2" C	Original punch, original stripper, and SLUG FREE® die
3-1/2" D	Original punch, original stripper, and SLUG FREE® die
4-1/2" E	Original punch, original stripper, and SLUG FREE® die

See pages 24-26 for complete ordering information

Original Style Thick Turret

1/2" A	Complete assembly with SLUG FREE® die
1-1/4" B	Complete assembly with SLUG FREE® die
2" C	Original punch, original stripper, and SLUG FREE® die
3-1/2" D	Original punch, original stripper, and SLUG FREE® die
4-1/2" E	Original punch, original stripper, and SLUG FREE® die
6" F	Original punch, original stripper, and SLUG FREE® die

See pages 33-37 for complete ordering information

MXC™ Tooling System

2" C	Punch, stripper, and SLUG FREE® die
3-1/2" D	Punch, stripper, and SLUG FREE® die
4-1/2" E	Punch, stripper, and SLUG FREE® die

See page 45 for complete ordering information

***Features round only guide.**

Contact your Mate representative for pricing information.

STANDARD SHAPES:

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

[Dimensions in Inches(mm)]

THICK TURRET COMPATIBILITY CHART

TOOLING SYSTEM COMPATIBILITY

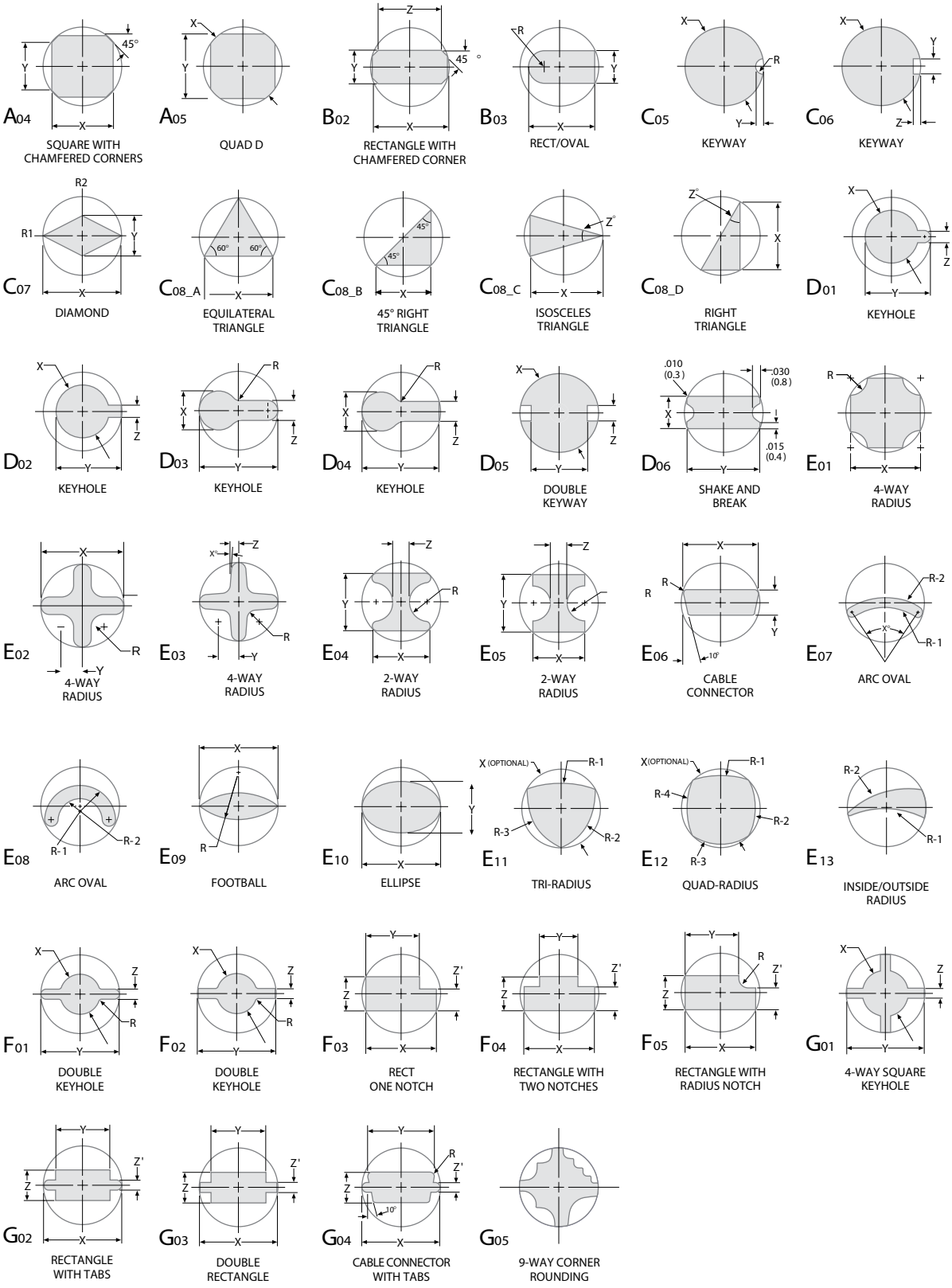
	Tool Style	Mate Part Number	Ultra TEC®	Ultra XT™	Ultra ABS®	Mate OS	Ultra ABS 14mm Bolt Guide Assembly	Ultra IMT 3 or 8 Station Multi Tool	HP™ & HP2™	HP™ WLS & HP2™ WLS ®	HP™ ABS & HP2™ ABS	Wilson Inch Style	Amada Standard	Amada ABS	Amada Z-Standard	Amada Z-ABS	Amada NEX Standard	Amada NEX ABS	Amada Alpha	Wilson Adjustable MT3B	Wilson Adjustable MT8Ri For Finn-Power	Wilson Adjustable MT3Ri For Finn-Power	Wilson Non-Adjust Multi Tool MT3B
1/2" A Station																							
Punch	Ultra TEC® Punch	PAUA	•	•				•															
	Metric (Original) Punch	PAAA	•6	•6		•							•				•						
	Ultra ABS® Punch	PAYA			•			•															
	Inch Style	PAJA										•											
	AMX™	PMXA			•									•		•		•					
	MXC™ Std	PXCA							•														
	MXC™ ABS	PLCA								•	•												
Stripper	Ultra TEC®	S6KA	•	•				•															
	Original Style (Stripper Guide)	S6AA				•							•				•						
	Ultra ABS®	S6YA			•																		
	AMX™ (Stripper Guide)	SMXA											•4	•	•4	•	•4	•					
	MXC™ ABS	SXCA								•	•												
Die	SLUG FREE® Die	D0AA	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•					
	Standard Die	D0KA	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•					
Clip	For Metric (Original) Round Punch	A0VAASAC	•5	•5	•5																		
1-1/4" B Station																							
Punch	Ultra TEC® Punch	PAUB	•	•				•	•1														
	Metric (Original) Punch	PAAB	•6	•6		•							•				•						
	Ultra ABS® Punch	PAYB			•			•															
	Inch Style	PAJB	•9	•9								•											
	AMX™	PMXB														•		•					
	MXC™ Std	PXCB							•														
	MXC™ ABS	PLCB								•	•									•		•	
Stripper	Ultra TEC®	S6KB	•	•																			
	Original Style (Stripper Guide)	S6AB				•							•				•						
	Ultra ABS®	S6YB			•			•															
	AMX™ (Stripper Guide)	SMXB											•4	•	•4	•	•4	•					
	MXC™	SXCB			•					•	•											•	
Die	SLUG FREE® Die	D0AB	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•					
	NON-SLUG FREE® Die	D0KB	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•					
Clip	For Metric (Original) Round Punch	A0VAASAC	•5	•5	•5																		
	HP Round Punch Retaining Ring	A0WBW-BAC	•10	•10	•10																		
	HP Round Punch Wire Hook	A0WB-WSAC	•10	•10	•10																		
	For Wilson HP Canister	A0WBW-GAC							•11	•11	•11												
	For Wilson HP2 Canister	A0WB-WHAC							•12	•12	•12												

THICK TURRET COMPATIBILITY CHART

	Tool Style	Mate Part Number	Ultra TEC®	Ultra XT™	Ultra ABS®	Mate OS	Ultra ABS 14mm Bolt Guide Assembly	Ultra IMT 3 or 8 Station Multi Tool	HP™ & HP2™	HP™ WLS® & HP2™ WLS®	HP™ ABS & HP2™ ABS	Wilson Inch Style	Amada Standard	Amada ABS	Amada Z-Standard	Amada Z-ABS	Amada NEX Standard	Amada NEX ABS	Amada Alpha	Wilson Adjustable MT3B	Wilson Adjustable MT8Ri For Finn-Power	Wilson Adjustable MT3Ri For Finn-Power	Wilson Non-Adjust Multi Tool MT3B
2" C, 3-1/2" D, and 4-1/2" E Stations																							
Punch	Original Style (M12 bolt)	PAA	•	•	•	•	•8						•		•2				•2				
	Inch Style (1/2-13 bolt)	PAJ			•							•											
	AMX™ (M14 Threads)	PMX					•									•			•7				
	AMX™ Slitting Retainer D Station	MATE001988					•							•		•			•7				
	AMX™ Slitting Retainer E Station	MATE001990					•							•		•			•7				
	MXC™	PXC							•	•													
Stripper	Ultra TEC®	S6K	•																				
	Original Style (Stripper Guide)	S6A		•		•							•		•3				•3				
	Ultra ABS®	S6Y			•																		
	AMX™ (Stripper Guide)	SMX												•		•			•				
	MXC™	SXC							•	•	•								•				
Die	SLUG FREE® Die	D0A	•	•	•	•	•		•	•	•	•	•	•	•	•			•				
	Standard Die	D0K	•	•	•	•	•		•	•	•	•	•	•	•	•			•				
Ultra M14 Bolt Conversion Package	C Station	MATE00651	•	•	•																		
	D Station	MATE00652	•	•	•																		
	E Station	MATE00653	•	•	•																		
MTG Multi Tool																							
Punch	3 Station	PMSQ																					•
	Long 8 Station	PNSR																					•
Stripper	3 Station	SMSQ																		•			•
	Long 8 Station	SNSR																			•		•
Die	3 Station Slug Free	DESQ																		•		•	•
	3 Station Non-Slug Free	DFSQ																		•		•	•
	Long 8 Station Slug Free	DGSR																			•		•
	Long 8 Station Non-Slug Free	DJSR																			•		•

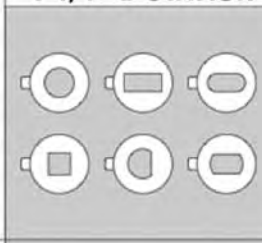
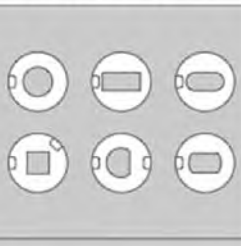
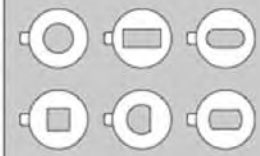
1. Round Ultra TEC punches are not compatible with HP guides
2. Requires the optional M12 bolt to be installed into the guide assembly
3. Requires use of optional Original style strippers
4. Pin must be removed from stripper guide
5. Clip attaches to competitive round punches without pin or key
6. Requires use of Ultra Metric canister
7. Requires the M14 bolt option
8. Must switch to the M12 bolt and centering washer
9. Requires Inch Style Canister
10. Clip attaches to HP punch after removing original hardware
11. Clip attaches to Wilson HP canister
12. Clip attaches to Wilson HP2 canister

SPECIAL SHAPES FOR THICK TURRET TOOLING

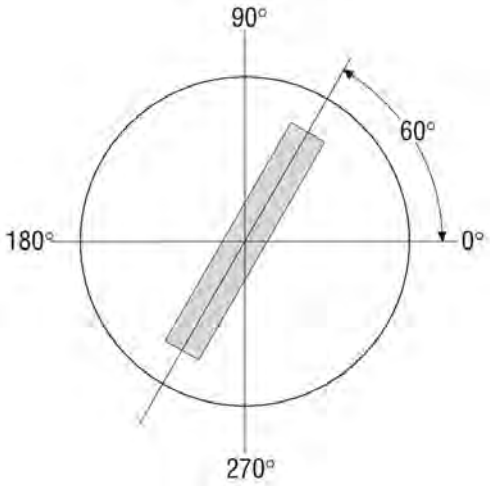


[Dimensions in Inches(mm)]

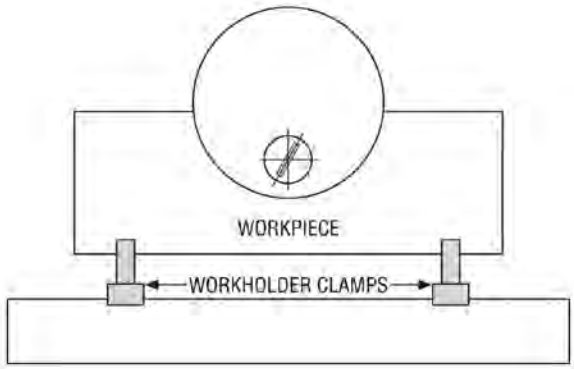
ULTRA® SYSTEM & THICK TURRET STANDARD ANGLE SETTINGS

	1/2" A STATION 1 1/4" B STATION	2"C STATION	3 1/2" D STATION	4 1/2" E & F STATION
PUNCHES				
DIES				

TOP DIE VIEW
CARTESIAN COORDINATE SYSTEM



TOP DIE OF TURRET



[Dimensions in Inches(mm)]

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