



ISO 9001*

IMPAX[®]
TOOLING SOLUTIONS

TOOLING SOLUTIONS

FOR THE STAMPING INDUSTRY

2026

HOW TO USE THE CATALOG

- 1 Find the style code.
- 2 Select head thickness.
- 3 Find the shank dia. box for the punch you are ordering. Shank code is listed in blue.
- 4 Select the overall length.
- 5 Select the point length.
- 6 Select the shape and indicate the size of the punch tip within this range (*Absolute Min. P/W additional charge.)

SOLID	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																		Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A		
				1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50					5.75	6.00
	ISP	.125=B or .188=V	.125 012																				.50=2	.03	.03	.125	
																							.75=3	.04	.06		
																							1.00=4	.06	.09		
		.125=B or .188=V	.250 025	4	4	4	4	4	4	4	4	4	4	4	4								.50=2	.04	.06	.25	
					4	4	4	4	4	4	4	4	4	4	4	4							.75=3				
						4	4	4	4	4	4	4	4	4	4	4							1.00=4				
							4	4	4	4	4	4	4	4	4	4							1.25=5				
		*.250=B or .188=V	.500 050	4	4	4		4	4	4	4	4	4	4	4	4							.50=2	.09	.13	.5	
				4	4	4	4	4	4	4	4	4	4	4	4	4						.75=3					
					4	4	4	4	4	4	4	4	4	4	4	4						1.00=4					
						4	4	4	4	4	4	4	4	4	4	4						1.25=5					
Overall Length [L] Code				125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600				

Stock available 4 Ultima® M4 steel available *Not stocked in Ultima® M4 steel

- 7 Choose tip tolerance.
- 8 Choose key type (if applicable). See Keying Information on pages 118-119.
- 9 Indicate type of material if other than M2. See Tool Steels on page 6.

OPTIONAL TIP TOLERANCE [P]		
#1 ROUNDS ±.0005 - 0 Point to Shank Concentric within .0005 T.I.R.	#1 SHAPES ±.0005 Point to Shank Concentric within .001 T.I.R.	#2 ROUNDS & SHAPES ±.0002 - 0 Point to Shank Concentric within .0003 T.I.R.
Tolerance #1 unless specified		

ORDER EXAMPLE	ROUND	STYLE ISP V 037 HEAD THICKNESS	SHANK - 300 OVERALL LENGTH	POINT LENGTH 'B' 3 SHAPE	'P' DIM RD P=.250 COATING	Optima
	SHAPE	STYLE ISP V 050 HEAD THICKNESS	SHANK - 275 OVERALL LENGTH	POINT LENGTH 'B' 5 SHAPE	'P' DIM OB P=.400 'W' DIM	W=.200 K1 Y90 KEY STYLE KEY ANGLE

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HEADED

	INCH	METRIC
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Solid Punch	12	56
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BALL LOCK

Heavy & Light Duty Solid Blanks	38	78
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ABOUT WILSON TOOL INTERNATIONAL

From humble beginnings in a small manufacturing facility in St. Paul, Minnesota, Wilson Tool International has added manufacturing facilities and sales channels around the world to better serve our thousands of global customers. Throughout our expansion, our mission has never wavered — we continue to offer products and services that help you be more successful. Every product you buy, every employee with whom you communicate, and every training event you attend, are designed to help customers just like you be more successful.

At Wilson Tool, we continue to invest in your success through constant innovation. Our tooling and solutions represent decades of knowledge and experience in assisting manufacturers resolve their most challenging fabrication issues. We understand that no two jobs are the same. Change is the only constant in manufacturing. So, working with a tooling supplier who's flexible, nimble, and knowledgeable is important.

Our goal is to deliver exceptional
customer service
along with the most reliable and
innovative products and solutions
so that our **customers**
can be more successful.

When you have a challenge, reach out to us. At Wilson Tool we are more than tools... we are solutions. Your local Sales Engineer is available in person, by phone and through e-mail. Let us put our many decades of expertise to the test. We will work with you to find the best possible solution to whatever challenge you may be facing. And every order comes with our guarantee to outperform your current tooling.

From all of us at Wilson Tool, thank you for the trust you have placed in us to provide products and services that are critical to your business. We look forward to your continued success as we head into the future.



BENDING

Wilson Tool's Bending division delivers the most complete line of tooling and clamping solutions available anywhere.

Whether you use American, European, WT, Bystronic or LVD-style precision or conventional tooling, Wilson Tool has a solution for you. Our clamping options cover these styles as well. With hydraulic push button, quick release mechanical or standard manual clamps, we have a clamping solution for any style of machine or budget. And our custom tooling manufacturing capabilities are the envy of the industry with innovative solutions for complex bending challenges. With manufacturing facilities located in the USA and Canada, our delivery times to North American fabricators are the fastest in the industry.



Whether you use American, European, WT, Bystronic or LVD-style precision or conventional tooling, Wilson Tool has a solution for you. Our clamping options cover these styles as well. With hydraulic push button, quick release mechanical or standard manual clamps, we have a clamping solution for any style of machine or budget. And our custom tooling manufacturing capabilities are the envy of the industry with innovative solutions for complex bending challenges. With manufacturing facilities located in the USA and Canada, our delivery times to North American fabricators are the fastest in the industry.

STAMPING



Wilson Tool's Stamping division, Impax Tooling Solutions®, offers high quality punch and die components, accessories and retainers for the stamping industry.

Innovative products such as our HP Accu-Lock® Retainer Inserts and extensive coating options, combined with our world-class customer service, have enabled us to quickly grow into a world-class provider. With a direct sales force throughout North America, we deliver products straight from the factory to you, enabling the fastest deliveries in the industry. Our custom tooling expertise is second to none with many customers coming to us for their most difficult stamping challenges.

PUNCHING

Wilson Tool's Punching division continues to drive the industry with new levels of quality, delivery, service and innovation.

From the early days of Series 80 to the Wilson Wheel® Family to EXP® technology, our punching division has been the industry-leading innovation driver.

Combined with the most experienced customer support professionals in the industry, Wilson Tool continues to raise the bar. Thick turret, TRUMPF-style, Salvagnini-style, or any other style of punch press you may be using, Wilson Tool offers the most complete line of tooling solutions available today.



TRUMPF is a trademark of TRUMPF GmbH + Co. KG.

ACCESSORIES



Whether you need storage systems, grinders, urethane, hand tools or related supplies, we offer a wide range of solutions to help you be more productive, organized and efficient.



PUT THE RIGHT TOOL STEEL TO WORK FOR YOU

Ever wonder which tool steel is the best for your application? Tool steels aren't all the same and that's why we use a wide range to meet the needs of virtually every application. Punches and dies from Impax Tooling Solutions®, a division of Wilson Tool International, are crafted from high alloy content steels specifically designed to stamp materials at high speeds and resist extreme heat generated at the tool's cutting edge. Beyond that, the makeup of tool steels varies significantly in hardness, wear resistance and toughness. To determine the right steel for your application, see below or contact us today.

M2

M2 is a conventional high-speed steel, hardened and triple tempered to HRC:60-63. It has good toughness, wear resistance and high compression strength.

PM-M4

When the toughness and wear resistance properties of M2 steel aren't enough, we offer an upgrade to PM-M4 tool steel. A particle metallurgy high-speed steel, PM-M4 is hardened and triple tempered to HRC: 62-64, which makes it a better steel for applications that require more toughness, wear resistance and compression strength.

Ultima® M4

If you are looking for a tool steel that is even tougher than PM-M4, Ultima M4 is the best combination of toughness and wear resistance and though it can be used for any job, is specifically designed for high tensile strength applications or for those using abrasive materials. Applications using Ultima M4 result in significantly reduced tool micro chipping, and substantial reductions in downtime and retooling costs due to less frequent tool replacement. In comparison with other steels, Ultima M4 shows 11% more toughness and 25% more wear resistance over PM-M4, and it provides an 86% increase in toughness and 64% more wear resistance over standard M2 steel.



PM-10V

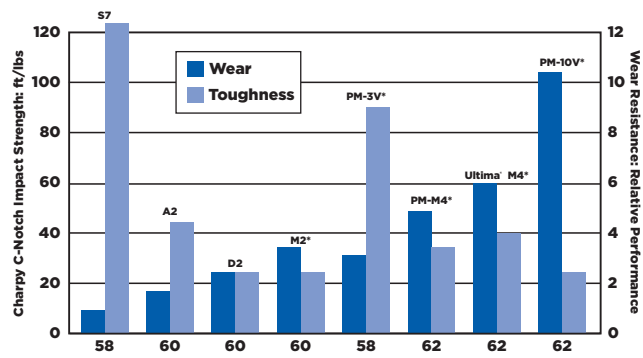
PM-10V steel is the most wear resistant steel we offer. It's hardened and triple tempered to HRC:62-64. Stampers who are successful with M2, but need additional tool life, are prime candidates for PM-10V.

PM-3V

We recommend PM-3V tool steel for the highest level of impact resistance, which has relatively good wear resistance and compressive strength. PM-3V is well suited to stampers who experience chipping and breakage problems with other types of steel such as stainless, HSLA or spring steel, or if the design requires you to pierce material thicknesses that are similar to your hole diameter.



Scan QR Code to
Explore Tool Steels



*Readily available from Wilson Tool. Other tool steels available upon request.

COATINGS FOR ULTIMATE PUNCH LIFE

Coating technology can boost tooling performance to levels far beyond that of untreated tool steels. As a leader in coating innovations, we continually work to develop solutions that increase tool life, lubricity and surface hardness — improving productivity and up time. Optima® was our first proprietary coating developed in our state-of-the-art coating facility and it has set the industry standard for many years. Today, we continue to offer you the very latest in coating solutions.

Optima® 	Our most popular coating for piercing, blanking and trimming in a variety of applications.	• Increased wear resistance • Improved surface finish • Greater resistance to corner breakdown • Much harder than traditional TiCN
Wearbeater 	Our first and original PVD coating. Commonly used for piercing, blanking and forming applications in softer materials such as mild steel, galvanized and aluminum.	• Reduced galling • Increased tool life by at least 3-7 times over non-coated punches • Increased hardness and lubricity • Bright gold for easier visual identification
TiAlN (AlTiN) 	Performs best in high-heat applications such as stainless, high strength steel or ultra-high strength steels. At higher surface temperatures aluminum oxide is formed, enhancing the coating's performance.	• Exceptionally hard coating • Not recommended for aluminum
AlCrN 	A chromium composition results in a much tougher coating with added wear resistance. Well-suited for high impact applications.	• Improved wear resistance • Not recommended for aluminum
TiZrN 	Typical applications include piercing and forming of non-ferrous materials, including aluminum, copper and brass.	• Improved wear resistance • Added toughness
TiCrN 	A nano layer coating that is suitable for piercing and especially for high pressure forming applications.	• Very high hardness • Low friction resulting in galling resistance
CrN 	Performs well in high heat and corrosive applications with improved performance and reduced wear.	• Improved wear resistance • High heat resistance • Increased chemical resistance
Forte® 	Our proprietary multi-layer nano coating is a great alternative to a chemical vapor deposition (CVD) coating. A lower application temperature retains original dimensions. Good for high-pressure applications and punching and forming for high and low alloy steel in all thicknesses.	• Reduced tooling downtimes • Superior punch wear and edge breakdown performance • Polished steels retain full surface quality • Reduced galling • Excellent coating adhesion
Slip-Max® 	This low friction, multi-layer coating transitions from PVD to PACVD uniformly in the same batch, creating excellent adhesion amongst the layers as well as to the substrate material.	• Increased wear resistance • Greatly reduced material adhesion • Low friction, improved lubricity • Better material flow for forming • Excellent coating adhesion

SURFACE ENHANCEMENTS

Increase Part Quality While Adding Tool Life

The Impax Tooling Solutions® division of Wilson Tool International has an expanded line of surface finishes to provide stampers with an array of options to increase punch life and improve your stamping performance. By improving stripping pressures and reducing galling, our surface finishes not only increase punch life, they result in a cleaner punch with more accurate hole diameters.

• Standard Finish

Every punch we produce is finished with Wilson Tool's standard finish. This is our basic ground finish. It is a conventional radial grind with a finish measuring 8-10 Ra for reduced galling, increased wear resistance and longer punch life.

• PinPoint™ Straight Line Grind

Wilson Tool's PinPoint straight line grind is the ultimate finish for high quality stamping. Available on any style of punch, the finish is produced by precision grinding in parallel with the centerline of the tool and then indexing the punch in millionth increments to achieve the required shape. It also improves the lubrication-retaining characteristics of the tip and reduces the stripping force required.

• SheerPerfection™ Polish

Available alone or in combination with any of our other surface finishes, our SheerPerfection polish will improve the finish of any punch by up to 4 Ra. It's an ideal solution for forming applications to prevent marring resulting from running metal against metal. Couple this finish with any of our coatings for a punch that will be the ultimate in resisting material adhesion. SheerPerfection polish is also available on extrusion dies and other internal features.



Improve Your Stamping Performance

Longer punch life and unmatched accuracy resulting from Wilson Tool surface finishes will increase your productivity and improve the quality of your parts. Call 800-944-4671 or visit [wilsontool.com/stamping](https://www.wilsontool.com/stamping) today to learn more.

GUARANTEED TO OUTPERFORM



With our consultative approach and industry-leading tooling performance, we guarantee we will outperform your current tooling.

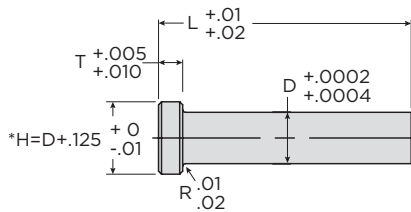
Since our inception, Wilson Tool has remained steadfast in our commitment to our customers' success. We collaborate closely with each customer, leveraging our decades of expertise to provide world-class tooling solutions tailored to your unique needs. With Wilson Tool, you're not just receiving tools – you're gaining a partner dedicated to your productivity.

READY TO GIVE US A CHANCE?

Visit wilsontool.com/stamping, call our tooling technicians at 800-944-4671 or contact your local sales engineer.

SOLID BLANKS

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4



Punch Head drawn to 40-50 HRC up to 1" dia.

*H=Head Diameter



ISP

ORDER	STYLE	SHANK	SHAPE
	HEAD THICKNESS	OVERALL LENGTH	
	ISP	V 037 - 250	BL

Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]															
			1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
ISP	.125=B or .188=V	.125 012																
	.125=B or .188=V	.1875 018	4	4	4	4	4	4	4	4	4	4	4	4				
	.125=B or .188=V	.250 025	4	4	4	4	4	4	4	4	4	4	4	4				
	.125=B or .188=V	.3125 031	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.188=V	.375 037	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.188=V	.4375 043	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	*.250=B or .188=V	.500 050	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.250=B or .188=V	.625 062					4	4	4	4	4	4	4	4	4	4	4	
	.250=B or .188=V	.750 075		4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.250=B or .188=V	.875 087		4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.250=B or .188=V	1.00 100		4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	.250=B or .188=V	1.25 125																
	.250=B or .188=V	1.50 150																
	.250=B or .188=V	1.75 175																
	.125=B or .188=V	2.00 200																
	.250=B or .188=V	2.25 225																
	.250=B or .188=V	2.50 250																

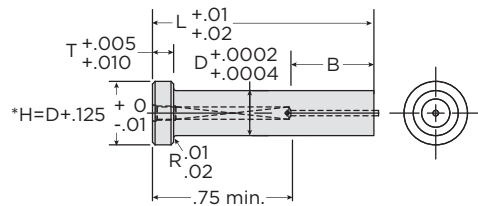
Overall Length [L] Code

125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
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Stock available 4 Ultima® M4 steel available *Not stocked in Ultima® M4 steel

EJECTOR BLANKS

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4



Punch Head drawn to 40-50 HRC up to 1" dia.

*H=Head Diameter



IEP

EJECTOR COMPONENTS						
Size	.020	.032	.046	.063	.094	.125
Part #	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12
Replacement component set includes screw, spring and pin. Quantity: 10 each						

For additional Ejector Components, see page 116.

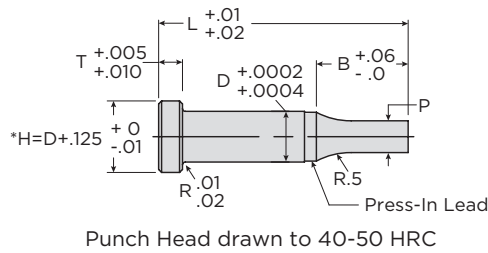
ORDER	STYLE	SHANK	SIDE HOLE LOCATION	
	HEAD THICKNESS	OVERALL LENGTH	SHAPE	
	IEP	B	062	- 300 4 BL

EJECTOR	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																		Side Hole Location [B]	Ejector			
				1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50			5.75	6.00	
IEP		.125=B or .188=V	.1875 018	4	4	4	4	4	4	4	4															2 (.02)
		.125=B or .188=V	.250 025	4	4	4	4	4	4	4	4															3 (.032)
		.125=B or .188=V	.3125 031	4	4	4	4	4	4	4	4	4	4	4	4											4 (.046)
		.188=V	.375 037	4	4	4	4	4	4	4	4	4	4	4	4											6 (.063)
		.188=V	.4375 043		4	4	4	4	4	4	4	4	4	4	4	4										6 (.063)
		.188=V	.500 050		4	4	4	4	4	4	4	4	4	4	4	4										6 (.063)
		.250=B or .188=V	.625 062		4	4	4	4	4	4	4	4	4	4	4	4										9 (.094)
		.250=B or .188=V	.750 075		4	4	4	4	4	4	4	4	4	4	4	4										9 (.094)
		.250=B or .188=V	.875 087		4	4	4	4	4	4	4	4	4	4	4	4										9 (.094)
		.250=B or .188=V	1.00 100		4	4	4	4	4	4	4	4	4	4	4	4										9 (.094)
		.250=B or .188=V	1.25 125																							12 (.125)
		.250=B or .188=V	1.50 150																							12 (.125)
		.250=B or .188=V	1.75 175																							12 (.125)
		.125=B or .188=V	2.00 200																							12 (.125)
		.250=B or .188=V	2.25 225																							12 (.125)
		.250=B or .188=V	2.50 250																							12 (.125)
Overall Length [L] Code				125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600			

Stock available 4 Ultima® M4 steel available

SOLID PUNCH

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4



*H=Head Diameter

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS
 $\pm .0005$
 - 0
 Point to Shank Concentric within .0005 T.I.R.

#1 SHAPES
 $\pm .0005$
 Point to Shank Concentric within .001 T.I.R.

#2 ROUNDS & SHAPES
 $\pm .0002$
 - 0
 Point to Shank Concentric within .0003 T.I.R.

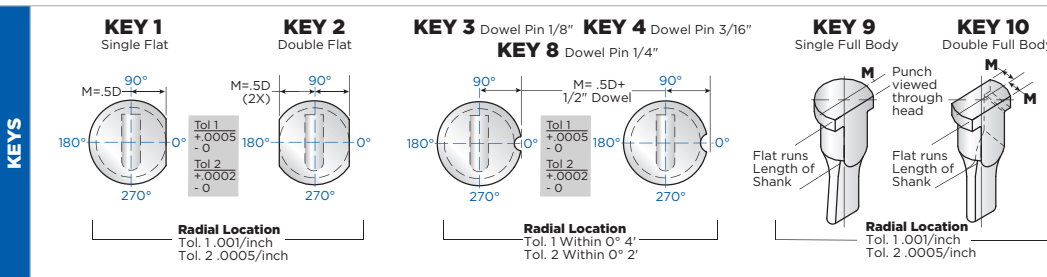
Tolerance #1 unless specified



ALTERATION OPTIONS

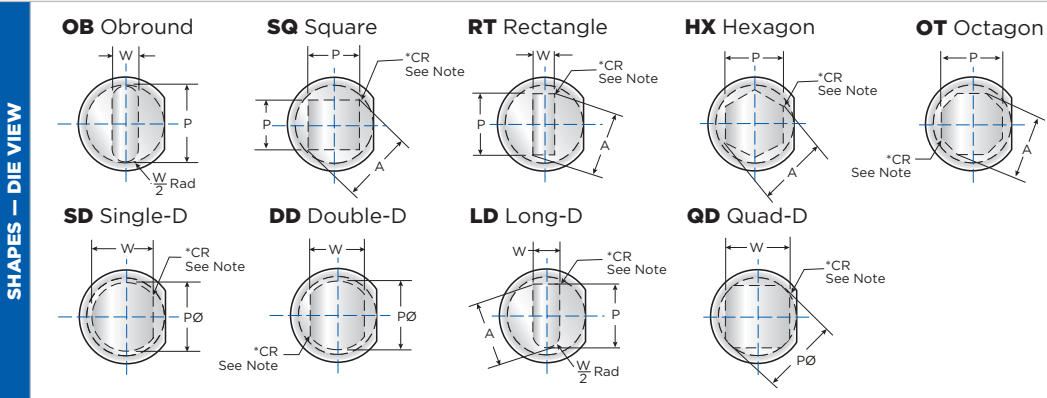
AH Altered head diameter
PL Precision overall Length $\pm .001$ "
PT Precision head thickness $\pm .0005$ "
 For additional Alteration Options, see page 114.

ORDER	ROUND	STYLE	SHANK	POINT	LENGTH 'B'	'P' DIM	COATING
		HEAD THICKNESS	OVERALL LENGTH	SHAPE			
		ISP V 037	- 300	3 RD	P=.250	Optima	
SHAPE	KEY	STYLE	SHANK	POINT	LENGTH 'B'	'P' DIM	KEY STYLE
		HEAD THICKNESS	OVERALL LENGTH	SHAPE		'W' DIM	KEY ANGLE
		ISP V 050	- 275	5 OB	P=.400	W=.200	K1 Y90



NOTES

- Key 1-4 & 8 included in all standard shapes price.
- Standard 'M' dim. for Key 9 & 10 is .5D Dia. -.060.
- Alterations to keying, see page 118.
- Standard key angle at 0°.



NOTES

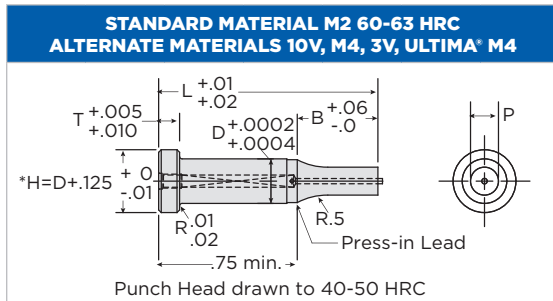
- Order Die View.
- *.005 radius corners typical on shapes.
- For special shapes see page 107.

SOLID PUNCH

Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																		Point Length [B]	Min. P/W**	Max. P/A		
			1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50				5.75	6.00
SOLID ISP	.125=B or .188=V	.125 012																				.50=2	.03	.125	
																						.75=3	.06		
																						1.00=4	.09		
																						1.25=5	.10		
	.125=B or .188=V	.1875 018	4	4	4	4	4	4	4	4	4	4	4	4								.50=2	.06	.1875	
				4	4	4	4	4	4	4	4	4	4	4	4							.75=3	.09		
					4	4	4	4	4	4	4	4	4	4	4	4						1.00=4	.10		
						4	4	4	4	4	4	4	4	4	4	4						1.25=5	.10		
	.125=B or .188=V	.250 025	4	4	4	4	4	4	4	4	4	4	4	4	4							.50=2	.06	.25	
				4	4	4	4	4	4	4	4	4	4	4	4							.75=3	.09		
					4	4	4	4	4	4	4	4	4	4	4	4						1.00=4	.10		
						4	4	4	4	4	4	4	4	4	4	4						1.25=5	.10		
	.125=B or .188=V	.3125 031	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4			.50=2	.09	.3125	
				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.1		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.1		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.1		
	.188=V	.375 037	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.09	.375	
				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.13		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.13		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.13		
	.188=V	.4375 043	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.13	.4375	
				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.25		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.25		
	*.250=B or .188=V	.500 050	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.13	.5	
				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.25		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.25		
	.250=B or .188=V	.625 062				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.2	.625	
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.25		
	.250=B or .188=V	.750 075		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.2	.75	
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.25		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.25		
	.250=B or .188=V	.875 087		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.2	.875	
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.25		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.25		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.25		
	.250=B or .188=V	1.00 100		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.50=2	.25	1	
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		.75=3	.312		
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.00=4	.312		
						4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		1.25=5	.312		
Overall Length [L] Code			125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600			

 Stock available
 4 Ultima® M4 steel available
 *Not stocked in Ultima® M4 steel
 **Smaller "Min. P/Ws" are available upon request.

EJECTOR PUNCH



EJECTOR COMPONENTS						
Size	.020	.032	.046	.063	.094	.125
Part #	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12

Replacement component set includes screw, spring and pin.
Quantity: 10 each

For additional Ejector Components, see page 116.

OPTIONAL TIP TOLERANCE [P]	
#1 ROUNDS	+ .0005 - 0 Point to Shank Concentric within .0005 T.I.R.
#1 SHAPES	+ .0005 - 0 Point to Shank Concentric within .001 T.I.R.
#2 ROUNDS & SHAPES	+ .0002 - 0 Point to Shank Concentric within .0003 T.I.R.
Tolerance #1 unless specified	

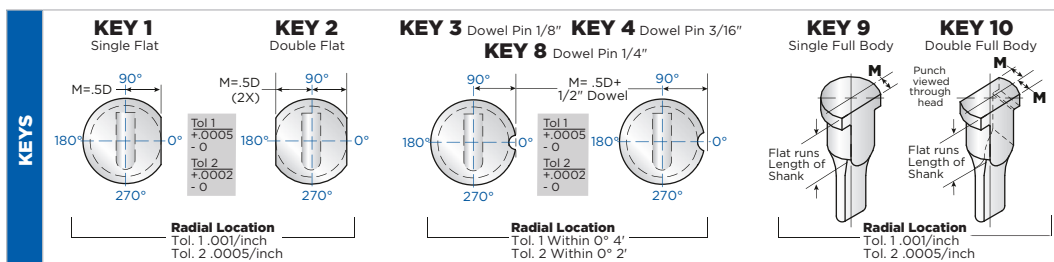


ALTERATION OPTIONS	
AE	Ejector size — different than standard for punch
AH	Altered head diameter
NS	No side hole — ejector
PL	Precision Overall Length ±.001"
PT	Precision head thickness ±.0005"
For additional Alteration Options, see page 114.	

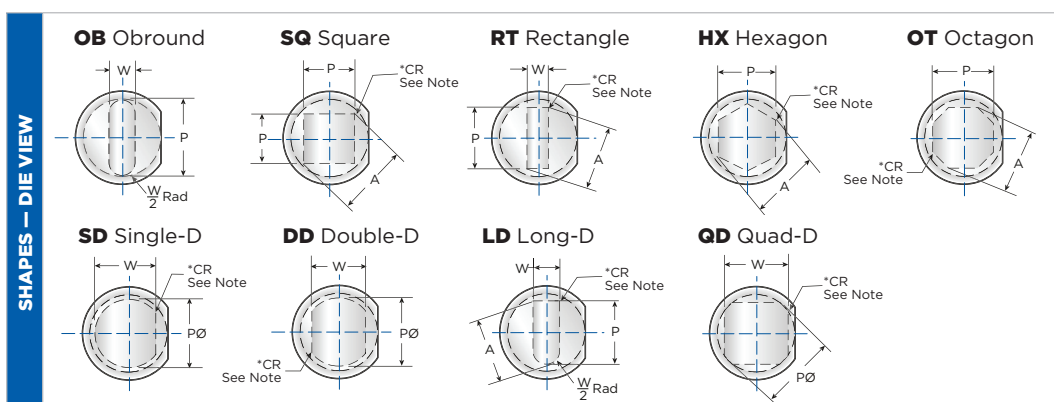
ORDER	SHAPE	ROUND				
		STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	COATING
		HEAD THICKNESS	OVERALL LENGTH	SHAPE	TOLERANCE	
		IEP V 037 - 300 3 RD P=.250 TOL2 Optima				
ORDER	SHAPE	SHAPE				
		STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	KEY ANGLE
		HEAD THICKNESS	OVERALL LENGTH	SHAPE	KEY STYLE	
		IEP B 062 - 350 4 SQ P=.250 K3 Y45				



EASY SHARP TOOL		
SIZE	CAT. NO.	FITS PIN NO.
.061	971481	4, 6, 9, 12
.031	971482	2, 3
Set	971562	



NOTES	
• Key 1-4 & 8 included in all standard shapes price. • Standard 'M' dim. for Key 9 & 10 is .5D Dia. -.060. • Alterations to keying, see page 118. • Standard key angle at 0°.	



NOTES	
Order Die View. *.005 radius corners typical on shapes. For special shapes see page 107.	

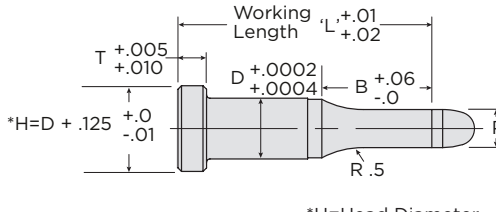
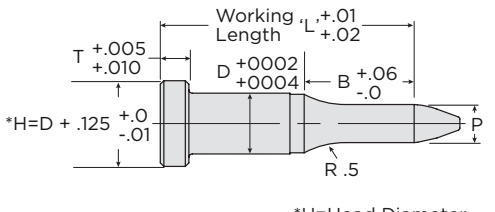
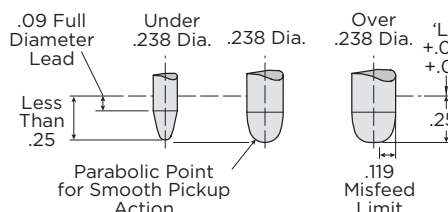
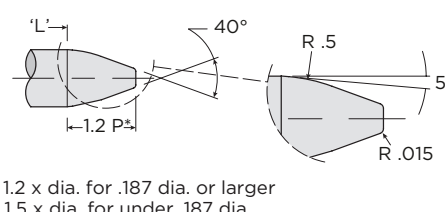
EJECTOR PUNCH

Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																				Point Length [B]	Min. P/W**	Max. P/A	Ejector	
			1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
EJECTOR IEP	.125=B or .188=V	.1875 018	4	4	4	4	4	4	4	4													.50=2	.06	.125	2 (.02)	
					4	4	4	4	4	4	4	4															.75=3
						4	4	4	4	4	4	4															1.00=4
	.125=B or .188=V	.250 025	4	4	4	4	4	4	4	4	4												.50=2	.09	.25	3 (.032)	
					4	4	4	4	4	4	4	4															.75=3
						4	4	4	4	4	4	4															1.00=4
	.125=B or .188=V	.3125 031	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					.50=2	.12	.3125	4 (.046)	
				4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4								.75=3
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							1.00=4
	.188=V	.375 037				4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.25=5	.165	.375	6 (.063)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.50=6			
							4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.188=V	.4375 043																						.75=3	.165	.4375	6 (.063)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.00=4			
							4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.188=V	.500 050																						1.50=6	.165	.5	6 (.063)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					.75=3			
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.250=B or .188=V	.625 062																						1.25=5	.25	.625	9 (.094)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.50=6			
							4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.250=B or .188=V	.750 075																						1.00=4	.25	.75	9 (.094)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.25=5			
							4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.250=B or .188=V	.875 087																						.75=3	.25	.875	9 (.094)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					1.00=4			
							4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	.250=B or .188=V	1.00 100																						1.50=6	.312	1	9 (.094)
			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					.75=3			
					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
	Overall Length [L] Code			125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600				

Stock available 4 Ultima® M4 steel available

**Smaller "Min. P/Ws" are available upon request.

PILOT PUNCH

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4		OPTIONAL TIP TOLERANCE [P]
STYLE P1 PARABOLIC PILOT	STYLE P2 ANGULAR PILOT NOTES	
 *H=Head Diameter	 *H=Head Diameter	#1 ROUNDS +.0005 - 0 Point to Shank Concentric within .0005 T.I.R.
 Parabolic Point for Smooth Pickup Action	 * 1.2 x dia. for .187 dia. or larger 1.5 x dia. for under .187 dia.	#2 ROUNDS +.0002 - 0 Point to Shank Concentric within .0003 T.I.R.
Note: Shaped pilot punches available.		

P1

P2



ALTERATION OPTIONS

ABR	Blend radius other than .500" [Round only]
ABRD	Point length longer than standard lengths [Round only]
AD	Reduce body diameter
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
PT	Precision head thickness ±.0005"

For additional Alteration Options, see page 114.

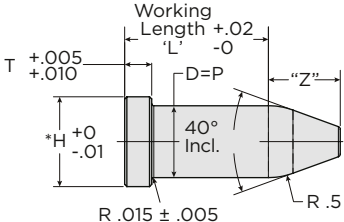
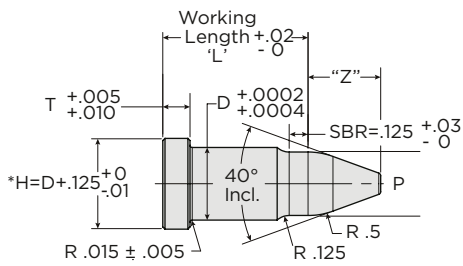
ORDER	ROUND	STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	
		ISP B 062	- 350	4 RD	P=.500	P1
		HEAD THICKNESS	WORKING LENGTH	SHAPE		PILOT STYLE

PILOT

HEADED

Stock available 4 Ultima® M4 steel available *Not stocked in Ultima® M4 steel

STUBBY PILOT PUNCH

STANDARD MATERIAL M2 60-63 HRC ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4		OPTIONAL TIP TOLERANCE [P]
ISS STRAIGHT — P3	ISP POINT — P3	
		TOLERANCE #1 +.0005 - 0 Point to Shank Concentric within .0005 T.I.R.
		TOLERANCE #2 +.0002 - 0 Point to Shank Concentric within .0003 T.I.R.
		Tolerance #1 unless specified

*H=Head Diameter

ISS [P3]

ISP [P3]



ALTERATION OPTIONS

ABR	Blend radius other than .500" [Round only]
ASBR	Altered SBR
AD	Reduce body diameter
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
PT	Precision head thickness ±.0005"

For additional Alteration Options, see page 114.

ORDER	STRAIGHT	STYLE	SHANK	SHAPE	PILOT STYLE
		HEAD THICKNESS	WORKING LENGTH	'D' DIM	
		ISS V 037 - 087	RD	D=.3430	P3
POINT		STYLE	SHANK	SHAPE	PILOT STYLE
		HEAD THICKNESS	WORKING LENGTH	'P' DIM	
		ISP B 075 - 100	RD	P=.500	P3

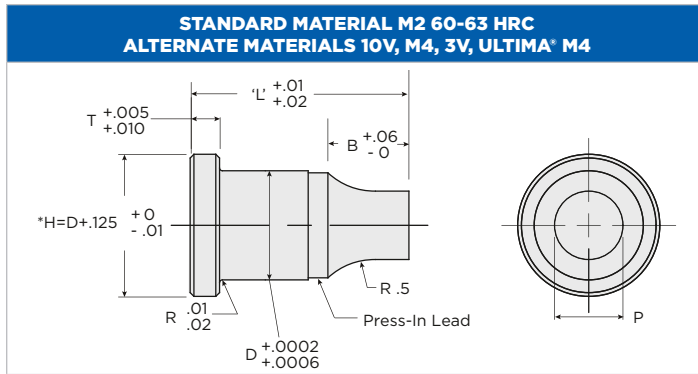
STUBBY PILOT PUNCH

STRAIGHT	Style Code	Head THK [T]	Shank Dia. [D]	Working Length [L]						[Z]	Min. D	Max. D	Head Diameter [H]	
				0.625	0.750	0.875	1.000	1.125	1.250					1.375
	ISS	.125=B or .188=V	.250 025								.25	.1876	.25	.375
		.125=B or .188=V	.3125 031								.3125	.2501	.3125	.4375
		.188=V	.375 037								.375	.3126	.375	.500
		.188=V	.4375 043								.4375	.3751	.4375	.5625
		.188=V or .250=B	.500 050								.5	.4376	.5	.625
		.188=V or .250=B	.625 062								.625	.5001	.625	.750
		.188=V or .250=B	.750 075								.75	.6251	.75	.875
		.188=V or .250=B	.875 087								.875	.7501	.875	1.00
.188=V or .250=B		1.00 100								1	.8751	1	1.125	
Working Length [L] Code				062	075	087	100	112	125	137				

POINT	Style Code	Head THK [T]	Shank Dia. [D]	Working Length [L]						SBR	Max. Z	Min. P	Max. P	
				0.625	0.750	0.875	1.000	1.125	1.250					1.375
	ISP	.125=B or .188=V	.250 025								.125	.25	.092	.2499
		.125=B or .188=V	.3125 031								.125	.3125	.092	.3124
		.188=V	.375 037								.125	.375	.092	.3749
		.188=V	.4375 043								.125	.4375	.092	.4374
		.188=V or .250=B	.500 050								.125	.5	.124	.4999
		.188=V or .250=B	.625 062								.125	.625	.234	.6249
		.188=V or .250=B	.750 075								.125	.75	.45	.7499
		.188=V or .250=B	.875 087								.125	.8750	.525	.8749
.188=V or .250=B		1.00 100								.125	1	.6	.9999	
Working Length [L] Code				062	075	087	100	112	125	137				

 Stock available

EXTENDED RANGE PUNCH

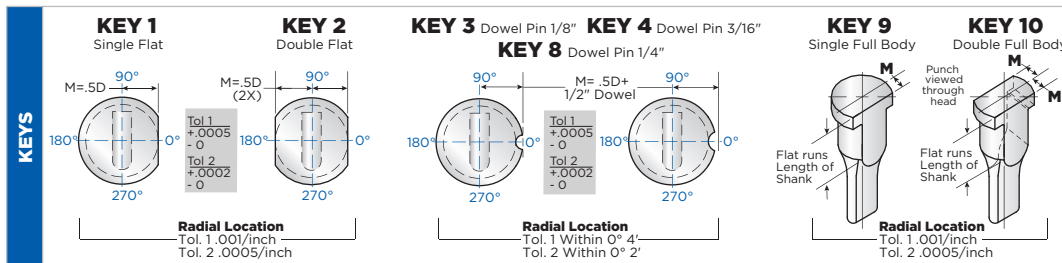


OPTIONAL TIP TOLERANCE [P]	
#1 ROUNDS +.0005 - 0	Point to Shank Concentric within .0005 T.I.R.
#1 SHAPES ±.0005	Point to Shank Concentric within .001 T.I.R.
#2 ROUNDS & SHAPES +.0002 - 0	Point to Shank Concentric within .0003 T.I.R.
Tolerance #1 unless specified	

ALTERATION OPTIONS	
ABR	Blend radius other than .500" [Round only]
ABRD	Point length longer than standard lengths [Round only]
ABSH	Point length longer than standard lengths [Shape only]
AD	Reduce body diameter
AE	Ejector size — different than standard for punch
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
EBT	Extra back taper
MK	Multiple keys
PL	Precision Overall Length ±.001"
PT	Precision head thickness ±.0005"
For additional Alteration Options, see page 114.	

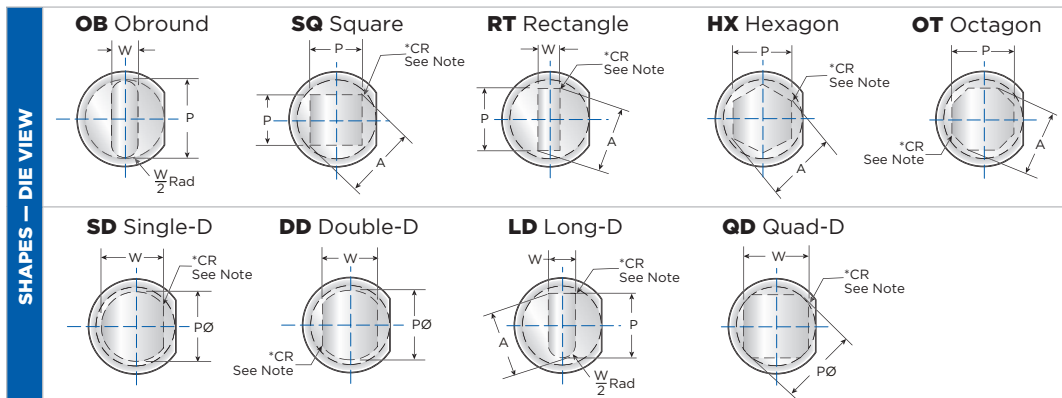


ORDER	ROUND	STYLE SHANK POINT LENGTH 'B' 'P' DIM ISP V 125 - 300 5 RD P=1.000 Optima HEAD THICKNESS OVERALL LENGTH SHAPE COATING
	SHAPE	STYLE SHANK POINT LENGTH 'B' 'P' DIM CORNER RADIUS KEY ANGLE IEP B 150 - 275 5 RT P=.900 W=.600 CR=.100 K2 Y0 HEAD THICKNESS OVERALL LENGTH SHAPE 'W' DIM KEY STYLE



NOTES

- Key 1-4 & 8 included in all standard shapes price.
- Standard 'M' dim. for Key 9 & 10 is .5D Dia. -.060.
- Alterations to keying, see page 118.
- Standard key angle at 0°.



NOTES

Order Die View.
*.005 radius corners typical on shapes.
For special shapes see page 107.

EXTENDED RANGE PUNCH

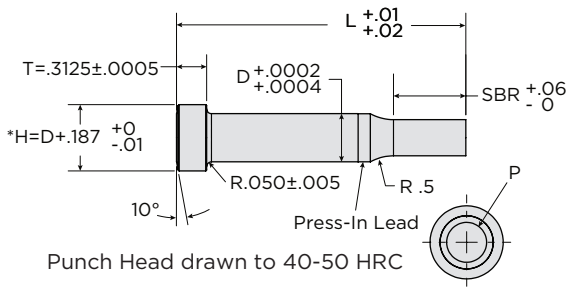
Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																Point Length [B]	Absolute Min. P/W	Min. P	Min. W	Max. P/A		
			2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00							
SOLID	ISP	.250=B or .188=V	1.25 125																	1.25=5	.282	.625	.282	1.25	
																				1.50=6					
		.250=B or .188=V	1.50 150																	1.25=5	.3	.75	.3	1.5	
																				1.50=6					
		.250=B or .188=V	1.75 175																	1.25=5	.35	1	.35	1.75	
																				1.50=6					
		.250=B or .188=V	2.00 200																		1.25=5	.4	1.187	.4	2
																					1.50=6				
		.250=B or .188=V	2.25 225																		1.25=5	.45	1.375	.45	2.25
																					1.50=6				
		.250=B or .188=V	2.50 250																		1.25=5	.5	1.625	.5	2.5
																					1.50=6				
Overall Length [L] Code				225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600						

Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]																Point Length [B]	Absolute Min. P/W	Min. P	Min. W	Max. P/A	Ejector
			2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00						
EJECTOR	IEP	.250=B or .188=V	1.25 125																1.25=5	.282	.625	.282	1.25	12 (.125)
		.250=B or .188=V	1.50 150																1.25=5	.3	.75	.3	1.5	12 (.125)
		.250=B or .188=V	1.75 175																1.25=5	.35	1	.35	1.75	12 (.125)
		.250=B or .188=V	2.00 200																1.25=5	.4	1.187	.4	2	12 (.125)
		.250=B or .188=V	2.25 225																1.25=5	.45	1.375	.45	2.25	12 (.125)
		.250=B or .188=V	2.50 250																1.25=5	.5	1.625	.5	2.5	12 (.125)
Overall Length [L] Code			225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600						

 Stock available

XTREME PUNCH

STANDARD MATERIAL ULTIMA® M4 ALTERNATE MATERIALS 10V AND 3V



*H=Head Diameter

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

±.0005
- 0

Point to Shank Concentric
within .0005 T.I.R.

#1 SHAPES

±.0005

Point to Shank Concentric
within .001 T.I.R.

#2 ROUNDS & SHAPES

±.0002
- 0

Point to Shank Concentric
within .0003 T.I.R.

Tolerance #1 unless
specified

ISPX



IEPX

ALTERATION OPTIONS

- ABR** Blend radius other than .500" [Round only]
 - ASBR** Altered SBR
 - AD** Reduce body diameter
 - AL** Overall length shorter [Shorten shank maintain point]
 - EBT** Extra back taper
 - MK** Multiple keys
 - PL** Precision Overall Length ±.001"
- For additional Alteration Options, see page 114.

ORDER	ROUND	STYLE SHANK SBR 'P' DIM ISP X 037 - 300 3 RD P=.250 Optima HEAD THICKNESS OVERALL LENGTH SHAPE COATING				
	SHAPE	STYLE SHANK SBR 'P' DIM KEY STYLE IEP X 050 - 275 4 OB P=.400 W=.200 K1 Y90 HEAD THICKNESS OVERALL LENGTH SHAPE 'W' DIM KEY ANGLE				

KEYS	KEY 1 Single Flat		KEY 2 Double Flat		KEY 3 Dowel Pin 1/8"		KEY 4 Dowel Pin 3/16"		KEY 8 Dowel Pin 1/4"		KEY 9 Single Full Body		KEY 10 Double Full Body	
	M=.5D 90° 180° 270° Tol 1 +.0005/-0 Tol 2 +.0002/-0		M=.5D (2X) 90° 180° 270° Tol 1 +.0005/-0 Tol 2 +.0002/-0		M=.5D+1/2" Dowel 90° 180° 270° Tol 1 +.0005/-0 Tol 2 +.0002/-0		M=.5D+1/2" Dowel 90° 180° 270° Tol 1 +.0005/-0 Tol 2 +.0002/-0		M=.5D+1/2" Dowel 90° 180° 270° Tol 1 +.0005/-0 Tol 2 +.0002/-0		Flat runs Length of Shank Radial Location Tol. 1 .001/inch Tol. 2 .0005/inch		Flat runs Length of Shank Radial Location Tol. 1 .001/inch Tol. 2 .0005/inch	

NOTES

- Key 1-4 & 8 included in all standard shapes price.
- Standard 'M' dim. for Key 9 & 10 is .5D Dia. -.060.
- Alterations to keying, see page 118.
- Standard key angle at 0°.

SHAPES - DIE VIEW	OB Obround		SQ Square		RT Rectangle		HX Hexagon		OT Octagon	
	W, P, W/2 Rad, *CR See Note		P, A, *CR See Note		W, P, A, *CR See Note		P, A, *CR See Note		P, A, *CR See Note	
SHAPES - DIE VIEW	SD Single-D		DD Double-D		LD Long-D		QD Quad-D		BL Blank	
	W, P, *CR See Note		W, P, *CR See Note		W, P, A, *CR See Note		W, P, A, *CR See Note		P, *CR See Note	

NOTES

- Order Die View.
- *.005 radius corners typical on shapes.
- For special shapes see page 107.

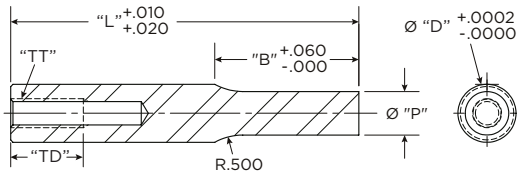
HEADED

23

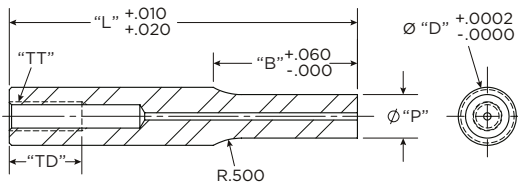
TAP BACK PUNCH

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS 10V, M4, 3V, Ultima® M4

ISPT



IEPT



OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+0.0005
- 0
Point to Shank
Concentric within
.0005 T.I.R.

#1 SHAPES

±.0005
Point to Shank
Concentric within
.001 T.I.R.

#2 ROUNDS & SHAPES

+0.0002
- 0
Point to Shank
Concentric within
.0003 T.I.R.

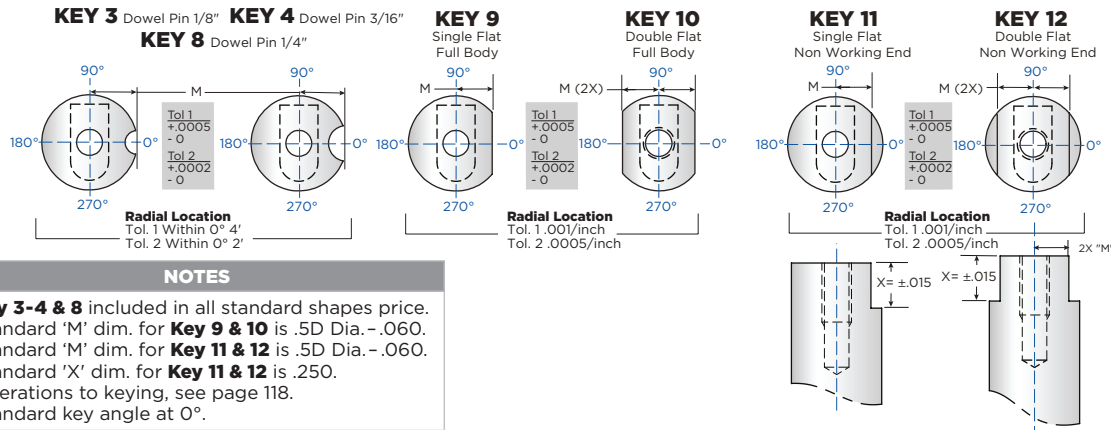
ALTERATION OPTIONS

ABR	Blend radius other than .500" [Round only]
ABRD	Point length longer than standard lengths [Round only]
ABSH	Point length longer than standard lengths [Shape only]
AD	Reduce body diameter
AL	Overall length shorter [Shorten shank maintain point]
EBT	Extra back taper
MK	Multiple keys
PL	Precision Overall Length ±.001"

For additional Alteration Options, see page 114.

ORDER	BLANK	STYLE	SHANK	SHAPE
		ISPT	050 - 300	BL
			OVERALL LENGTH	
ROUND		STYLE	SHANK	POINT LENGTH 'B'
		IEPT	075 - 250	4 RD P=.687
			OVERALL LENGTH	SHAPE

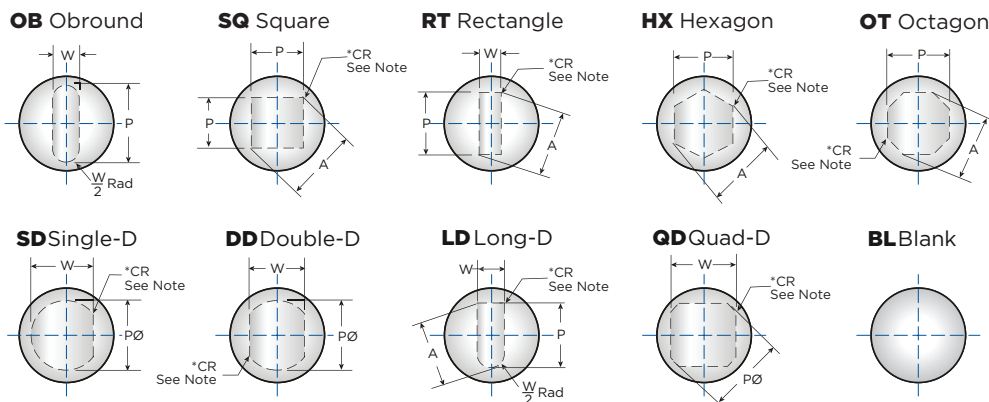
KEYS



NOTES

- Key 3-4 & 8 included in all standard shapes price.
- Standard 'M' dim. for Key 9 & 10 is .5D Dia. - .060.
- Standard 'M' dim. for Key 11 & 12 is .5D Dia. - .060.
- Standard 'X' dim. for Key 11 & 12 is .250.
- Alterations to keying, see page 118.
- Standard key angle at 0°.

SHAPES — DIE VIEW



NOTES

Order Die View.
*.005 radius corners
typical on shapes.
For special shapes
see page 107.

TAP BACK PUNCH

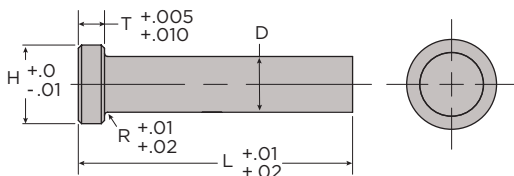
SOLID	Style Code	Shank Dia. [D]	Thread Type [TT]	Min Thread Depth [TD]	Overall Length [L]																Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A						
					1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00					5.25	5.50	5.75	6.00		
ISPT	.250 025	8 - 32	.453																							.50=2	.04	.06	.25	
																										.75=3				
																														1.00=4
																														1.25=5
	.3125 031	10 - 32	.500																								.06	.09	.3125	
																										.50=2				
																										.75=3				
																										1.00=4				
	.375 037	10 - 32	.500																								.06	.09	.375	
																										.50=2				
																										.75=3				
																										1.00=4				
	.4375 043	1/4 - 20	.625																								.09	.13	.4375	
																										.125=5				
																										1.50=6				
																										.75=3				
	.500 500	1/4 - 20	.625																								.09	.13	.5	
																										1.00=4				
																										1.25=5				
																										1.50=6				
	.625 062	5/16 - 18	.750																								.18	.2	.625	
																										1.00=4				
																										1.25=5				
																										1.50=6				
	.750 075	3/8 - 16	.875																								.18	.2	.75	
																											.75=3			
																											1.00=4			
																										1.25=5				
																									1.50=6					
Overall Length [L] Code				125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600							

EJECTOR	Style Code	Shank Dia. [D]	Thread Type [TT]	Min Thread Depth [TD]	Overall Length [L]																				Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A	Ejector
					1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
IEPT	.250 025	8 - 32	.453																							.50=2	.08	.09	.25 (.020)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.3125 031	10 - 32	.500																							.50=2	.115	.12	.3125 (.046)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.375 037	10 - 32	.500																							.50=2	.158	.165	.375 (.046)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.4375 043	1/4 - 20	.625																							.50=6	.158	.165	.4375 (.063)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.500 500	1/4 - 20	.625																							.50=6	.158	.165	.5 (.063)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.625 062	5/16 - 18	.750																							.50=6	.235	.25	.625 (.094)
																										.75=3			
																										1.00=4			
																										1.25=5			
	.750 075	3/8 - 16	.875																							.50=6	.235	.25	.75 (.094)
																										.75=3			
																										1.00=4			
																										1.25=5			
																									1.50=6				
Overall Length [L] Code					125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600					

Stock available

STRAIGHT PUNCH

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4



Punch Head drawn to 40-50 HRC

OPTIONAL TOLERANCE [D]

TOLERANCE #1

+0.0005

-0

Concentric within .0005 T.I.R.

TOLERANCE #2

+0.0002

-0

Concentric within .0003 T.I.R.

Foretaper only, head end large .0001 total

Tolerance #1 unless specified



ALTERATION OPTIONS

- AH** Altered head diameter
 - AHR** Altered radius under head
 - AL** Overall length shorter [Shorten shank maintain point]
 - AT** Altered head thickness
 - PL** Precision Overall Length $\pm .001$ "
 - PT** Precision head thickness $\pm .0005$ "
- For additional Alteration Options, see page 114.

ORDER

STYLE SHANK 'D' DIM COATING

ISS V 037 - 250 D= .350 TOL2 Optima

HEAD THICKNESS OVERALL LENGTH TOLERANCE

SOLID	Style Code	Head THK [T]	Shank Dia. [D]	Shank Code	Overall Length [L]																Min. D	Max. D	Head Dia. [H]					
					1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00				5.25	5.50	5.75	6.00	
	ISS	.125=B or .188=V	.125	012																						.062	.125	.25
			.1875	018																						.1251	.1875	.312
			.25	025																						.1876	.25	.375
			.3125	031																						.2501	.3125	.438
		.188=V	.375	037																						.3126	.375	.5
			.4375	043																						.3751	.4375	.562
		.250=B or .188=V	.5	050																						.4376	.5	.625
			.625	062																						.5001	.625	.75
Overall Length [L] Code					125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600				
For nominal size punches, see page 10 for available blanks.																												

ORDER

STYLE SHANK SIDE HOLE LOCATION

IES B 062 - 300 4 D= .526

HEAD THICKNESS OVERALL LENGTH 'D' DIM

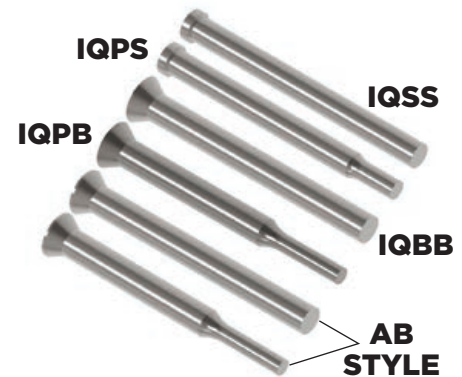
Style Code	Head THK [T]	Shank Dia. [D]	Shank Code	Overall Length [L]																	Side Hole Location [B]	Min. D	Max. D	Head Dia. [H]	Ejector			
				1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25						5.50	5.75	6.00
IES	.125=B or .188=V	.25	025																				.50=2	.187	.25	.375	3 (.032)	
		.3125	031																				.50=2	.2501	.3125	.438	4 (.046)	
	.188=V	.375	037																				.50=2	.3126	.375	.5	6 (.063)	
		.4375	043																				.75=3	.3751	.4375	.562	6 (.063)	
		.5	050																				.75=3	.4376	.5	.625	6 (.063)	
		.625	062																				.75=3	.5001	.625	.75	9 (.094)	
	.250=B or .188=V																						1.00=4					
	Overall Length [L] Code			125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600					
	For nominal size punches, see page 11 for available blanks.																											

Stock available

CLOSE SPACE PUNCH

STANDARD MATERIAL M2 60-63 HRC ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4			OPTIONAL TIP TOLERANCE [P]
BLANK [BL]	STRAIGHT PUNCH	PUNCH	
			TOLERANCE #1 +.0005 - 0 Point to Shank Concentric within .0005 T.I.R.
			TOLERANCE #2 +.0002 - 0 Point to Shank Concentric within .0003 T.I.R.
'AB' STYLE HEAD 60° Available upon request			Tolerance #1 unless specified. *Blend Radius = .250 if not specified.

ROUND & BLANK	Style Code		Shank Dia. [D"]	Overall Length (L)											Head Dia. 60° (H)	Head STD (H)	Point Length [B]
	60° HEAD	STD HEAD		1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00			
	IQBB Blank	IQBS Blank	.0625 006												1.8D	.125	.187
			.0938 009												1.8D	.156	.25
			.125 012												1.8D	.188	.312
	IQPB Round	IQPS Round	.1562 015												1.8D	.218	.312
			.1875 018												1.8D	.25	.312
			.2188 021												1.8D	.281	.312
			.250 025												1.8D	.312	.312
			Overall Length [L] Code			150	175	200	225	250	275	300	325	350	375	400	



ORDER	BLANK	STYLE	SHANK	SHAPE
		IQBB 015 - 250 BL		
		OVERALL LENGTH		
ORDER	ROUND	STYLE	SHANK	'P' DIM
		IQPS 021 - 225 P=.189		
		OVERALL LENGTH		

STRAIGHT	Style Code		Shank Dia. [D]	Overall Length (L)										Min. D	Max. D	Head Dia. 60° (H)	Head Dia. STD (H)	
	60° HEAD	STD HEAD		1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75					4.00
	IQSB	IQSS	.0625 006												.03	.063	1.8D	.125
			.0938 009												.0631	.094	1.8D	.156
			.125 012												.0941	.125	1.8D	.188
			.1562 015												.1251	.157	1.8D	.218
			.1875 018												.1571	.188	1.8D	.25
			.2188 021												.1881	.219	1.8D	.281
			.250 025												.2191	.25	1.8D	.312
			Overall Length [L] Code			150	175	200	225	250	275	300	325	350	375	400		

ORDER	STRAIGHT	STYLE	SHANK	'D' DIM
		IQSS 012 - 225 D=.100		
		OVERALL LENGTH		

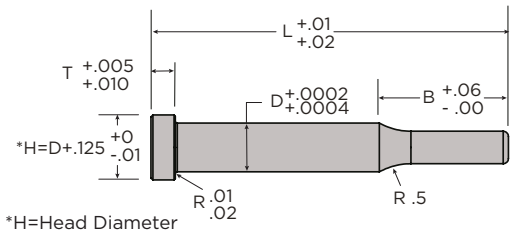
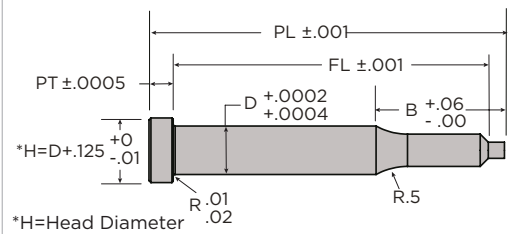
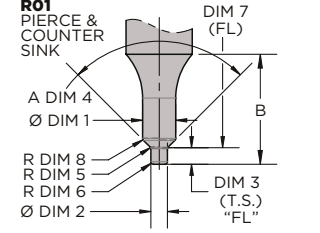
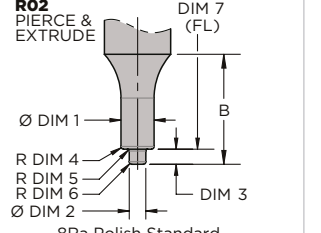
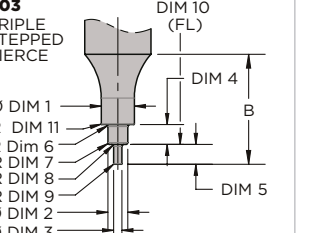
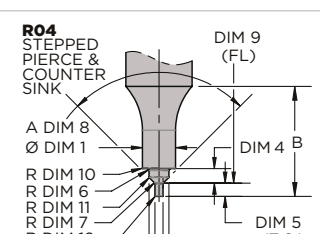
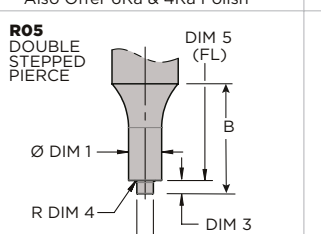
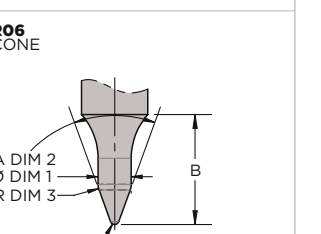
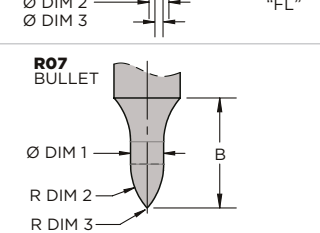
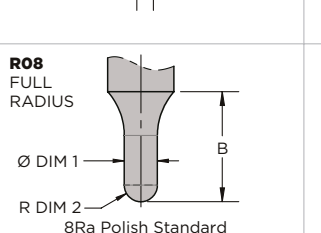
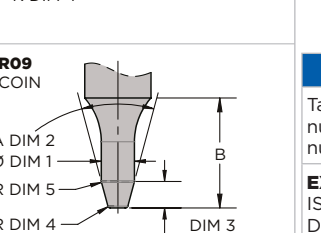
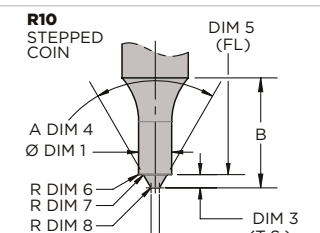
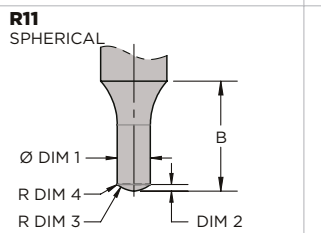
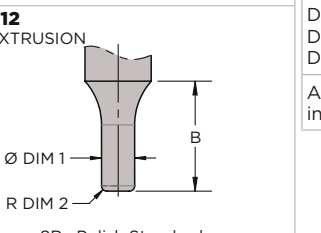
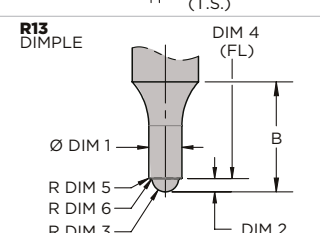
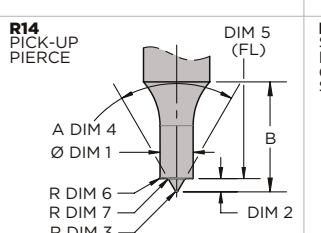
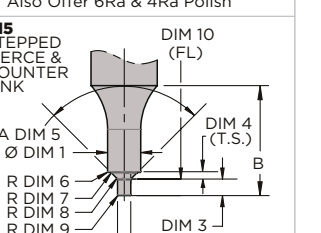
ALTERATION OPTIONS

AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
PL	Precision Overall Length ±.001"
PT	Precision head thickness ±.0005"

For additional Alteration Options, see page 114.

• 60° Head available larger than .2500 body diameter
 Stock available • If "D" is greater than .2500, T=.156

ROUND FORM PUNCH

STANDARD MATERIAL M2 — ALTERNATE MATERIALS M4, 10V, 3V ULTIMA® M4			OPTIONAL TIP TOLERANCE [P] TOLERANCE #1 +.0005 - 0 Point to Shank Concentric within .0005 T.I.R. TOLERANCE #2 +.0002 - 0 Concentric within .0003 T.I.R. OPTIONAL LENGTH & HEAD THICKNESS TOLERANCE PL ±.001 PT ±.0005
ROUND FORM WITHOUT 'FL' (FORM LENGTH)		ROUND FORM WITH 'FL' (FORM LENGTH) ALL ROUND FORM WITH 'FL' ARE PT AND PL	
			
R01 PIERCE & COUNTER SINK 	R02 PIERCE & EXTRUDE 	R03 TRIPLE STEPPED PIERCE 	
R04 STEPPED PIERCE & COUNTER SINK 	R05 DOUBLE STEPPED PIERCE 	R06 CONE 	
R07 BULLET 	R08 FULL RADIUS 	R09 COIN 	
R10 STEPPED COIN 	R11 SPHERICAL 	R12 EXTRUSION 	
R13 DIMPLE 	R14 PICK-UP PIERCE 	R15 STEPPED PIERCE & COUNTER SINK 	



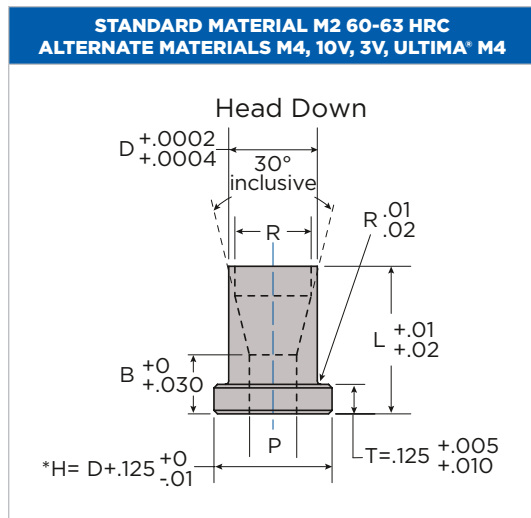
ORDER

Take standard catalog part number + round form part number.

EXAMPLE:
 ISPV050-3004-R05
 DIM. 1 = .XXXX
 DIM. 2 = .XXXX
 DIM. 3 = .XXXX
 DIM. 4 = .XXXX
 DIM. 5 = .XXXX

All internal corners will have an internal radius of .010 minimum.

CLOSE SPACE GUIDE



OPTIONAL TIP TOLERANCE [P]
#1 ROUNDS +.0005 - 0 Point to Shank Concentric within .0005 T.I.R.
#1 SHAPES +.001 - 0 Point to Shank Concentric within .001 T.I.R.
#2 ROUNDS & SHAPES +.0002 - 0 Point to Shank Concentric within .0003 T.I.R.
Tolerance #1 unless specified



ORDER	STYLE	SHANK	'P' DIM
	ICSG	037	- 062 P=.125
			OVERALL LENGTH

CLOSE SPACE GUIDES	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length (L)				Min [P]	Max. [P]	Head Dia [H]	Relief [R]
				.500	.625	.750	1.00				
	ICSG	.125	.1875 018					.032	.0625	.312	.141
			.250 025					.032	.0938	.375	.201
			.3125 031					.032	.125	.437	.261
			.375 037					.032	.1562	.5	.323
			.4375 043					.062	.1875	.562	.386
			.500 050					.062	.2188	.625	.448
			.625 062					.062	.25	.75	.515
	Overall Length [L] Code			050	062	075	100				

Stock available

DIE LAND EXAMPLE
(P = .200) .82 X .200 + .082 = .246

Land Length [B]	
P	B
≤ .065	2P
.0651 - .0950	P + .065
≥ .0951	.82P + .082

HEADED

IHUG

IHLG

IHDG

ALTERATION OPTIONS

AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
ART	Relief taper other than standard
AT	Altered head thickness
PL	Precision Overall Length $\pm .001''$
PT	Precision head thickness $\pm .0005''$

For additional Alteration Options, see page 114.

NOTES

- **Key 1-4 & 8** included in all standard shapes price.
- Standard 'M' dim. for **Key 5, 6, 9 & 10**, see page 118.
- Standard 'M' and alterations to keying, see page 118.
- Standard key angle at 0°.

Radial Location
- Tol. 1.001/inch -
Tol. 2.0005/inch

NOTES

Order Die View.

*.007 radius corners
typical on shapes.

For special shapes
see page 107.

GUIDE BUSHINGS

HEAD UP	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length (L)						Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. [R]	
				.250	.3125	.375	.500	.625	.750						1.00
	IHUG	.125	.125 012								.03	.031	.031	.062	.076
			.1875 018								.05	.062	.05	.13	.141
			.250 025								.05	.062	.05	.17	.201
			.3125 031								.05	.093	.05	.212	.261
			.375 037								.05	.125	.05	.255	.323
			.4375 043								.075	.187	.075	.297	.386
			.500 050								.075	.212	.075	.344	.448
			.625 062								.075	.293	.075	.425	.515
Overall Length [L] Code				025	031	037	050	062	075	100					

HEADLESS	Style Code	Shank Dia. [D]	Overall Length (L)						Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. [R]	
			.250	.3125	.375	.500	.625	.750						1.00
	IHLG	.125 012								.03	.031	.031	.062	.076
		.1875 018								.05	.062	.05	.13	.141
		.250 025								.05	.062	.05	.17	.201
		.3125 031								.05	.093	.05	.212	.261
		.375 037								.05	.125	.05	.255	.323
		.4375 043								.075	.187	.075	.297	.386
		.500 050								.075	.212	.075	.344	.448
		.625 062								.075	.293	.075	.425	.515
Overall Length [L] Code			025	031	037	050	062	075	100					

HEAD DOWN	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length (L)						Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. [R]	
				.250	.3125	.375	.500	.625	.750						1.00
	IHDG	.125	.125 012								.03	.031	.031	.062	.076
			.1875 018								.05	.062	.05	.13	.141
			.250 025								.05	.062	.05	.17	.201
			.3125 031								.05	.093	.05	.212	.261
			.375 037								.05	.125	.05	.255	.323
			.4375 043								.075	.187	.075	.297	.386
			.500 050								.075	.212	.075	.344	.448
			.625 062								.075	.293	.075	.425	.515
Overall Length [L] Code				025	031	037	050	062	075	100					

DIE LAND EXAMPLE

$$(P = .200) .82 \times .200 + .082 = .246$$

Land Length [B]

P	B
≤ .065	2P
.0651 - .0950	P + .065
≥ .0951	.82P + .082

Stock available

COUNTERBORE RELIEF DIE

STANDARD MATERIAL M2 60-63 HRC ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4	
HEADLESS	HEADED
BLANKS: Available with start hole. Start hole concentric to body within .005" and contains a counterbore.	

OPTIONAL HOLE TOLERANCE [P]
#1 ROUNDS +.0005 - 0 Hole to Body — Concentric within .0005 T.I.R.
#1 SHAPES +.001 - 0 Hole to Body — Concentric within .001 T.I.R.
#2 ROUNDS & SHAPES +.0002 - 0 Hole to Body — Concentric within .0003 T.I.R.
Tolerance #1 unless specified



ALTERATION OPTIONS	
AD	Reduce body diameter
ADL	Altered die diameter
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
ARD	Relief diameter larger than standard size
AT	Altered head thickness
PL	Precision Overall Length ±.001"
PT	Precision head thickness ±.0005"
SH2	Slug Hugger*2
SH4L	Slug Hugger*4L
For additional Alteration Options, see page 114.	

ORDER	ROUND	STYLE	SHANK	SHAPE	'P' DIM	SLUG HUGGER	TOTAL CLEARANCE
		IDDC 075 - 100 RD P=.400 SH2 CLR= .010					
			OVERALL LENGTH	MAT=Mild Steel MT= .125			
				MATERIAL TYPE	MATERIAL THICKNESS		

KEYS	KEY 1 (Single Flat)	KEY 2 (Double Flat)	KEY 3 Dowel Pin 1/8"	KEY 4 Dowel Pin 3/16"	KEY 5 (Single Flat) working end view	KEY 6 (Double Flat) working end view
	KEY 9 (Single Full Body)	KEY 10 (Double Full Body)	OR			
	KEY 5 (Single Flat) working end view	KEY 6 (Double Flat) working end view				

NOTES
• Key 1-4 & 8 included in all standard shapes price. • Standard 'M' dimension for Key 5, 6, 9 & 10, see page 118. • Standard 'M' and alterations to keying, see page 118. • Standard key angle at 0°.

SHAPES — DIE VIEW	OB Obround	SQ Square	RT Rectangle	HX Hexagon	OT Octagon
	SD Single-D	DD Double-D	LD Long-D	QD Quad-D	BL Blank

NOTES
Order Die View. *.007 radius corners typical on shapes. For special shapes see page 107.

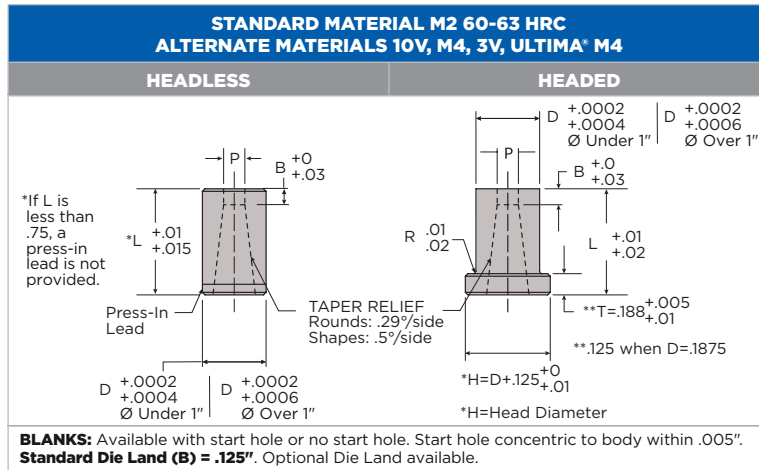
COUNTERBORE RELIEF DIE

	Style Code	Shank Dia. [D]	Overall Length (L)										Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. [R]	Die Land [B]	
			.750	.875	.9375	1.00	1.125	1.25	1.375	1.50	1.75	2.00							
HEADLESS	IDDC	.250 025												.032	.048 .096	.048	.095 .125	.125 .156	.156
		.3125 031												.032	.048	.048	.161	.191	.187
		.375 037												.032	.048 .096	.048	.095 .125	.125 .156	.156
													.126		.048		.195	.228	
		.4375 043												.032	.048	.048	.251	.281	.187
		.500 050												.032	.062 .196	.062	.195 .285	.228 .312	.187
		.625 062											.093 .286		.093		.285 .345	.312 .375	
		.750 075												.032	.118 .346	.118	.345 .435	.375 .468	.187 .25
		.875 087											.125 .436		.125		.435 .545	.468 .578	.25
		1.00 100												.032	.156 .546	.156	.545 .655	.578 .687	.25
		1.25 125											.187 .656		.187		.655 .78	.687 .812	
		1.50 150												.032	.25 .781 .906	.25	.78 .905 1.035	.812 .937 1.062	.312
		1.75 175											.25		.25		1.4	1.43	
		2.00 200												.032	.875	.25	1.6	1.63	.34
		2.25 225												.032	1	.312	1.8	1.83	.34
		2.50 250												.032	1.125	.375	2	2.03	.34
2.75 275												.032	1.25	.437	2.2	2.23	.34		
Overall Length [L] Code			075	087	093	100	112	125	137	150	175	200							

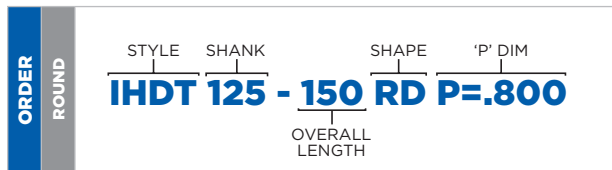
	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length (L)										Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. [R]	Die Land [B]
				.750	.875	.9375	1.00	1.125	1.25	1.375	1.50	1.75	2.00						
HEADED	IHDC	.1875	.250 025											.032	.048 .096	.048	.095 .125	.125 .156	.156
			.3125 031												.161		.191	.187	
			.375 037											.032	.048 .096	.048	.095 .125	.125 .156	.156
													.126		.048		.195	.228	
			.4375 043											.032	.048	.048	.251	.281	.187
			.500 050											.032	.062 .196	.062	.195 .285	.228 .312	.187
			.625 062										.093 .286		.093		.285 .345	.312 .375	
			.750 075											.032	.118 .346	.118	.345 .435	.375 .468	.187 .25
			.875 087												.125 .436		.125	.435 .545	.468 .578
			1.00 100											.032	.156 .546	.156	.545 .655	.578 .687	.25
			1.25 125												.187 .656		.187	.655 .78	
			1.50 150												.032	.25 .781 .906	.25	.78 .905 1.035	.812 .937 1.062
											.906		1.035	1.062					
Overall Length [L] Code			075	087	093	100	112	125	137	150	175	200							

Stock available

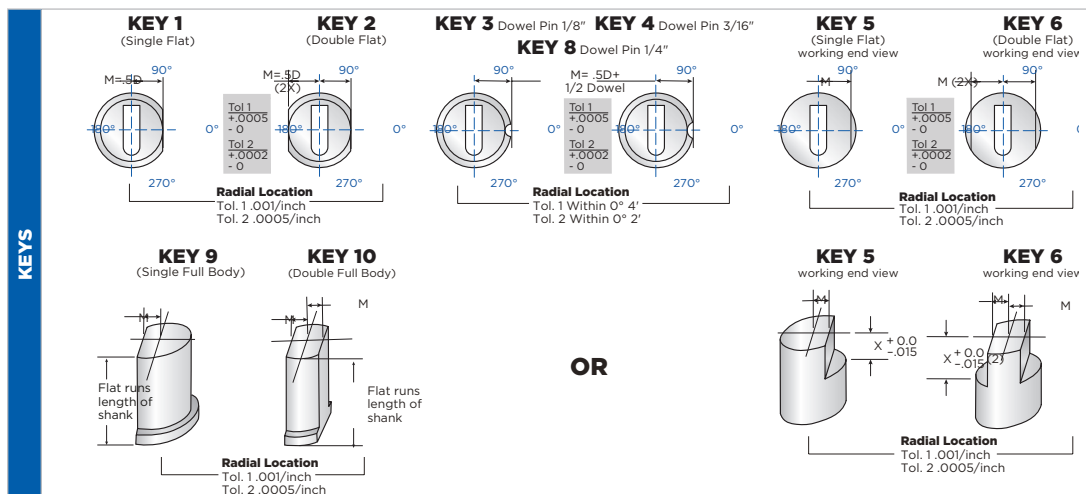
TAPER RELIEF DIE



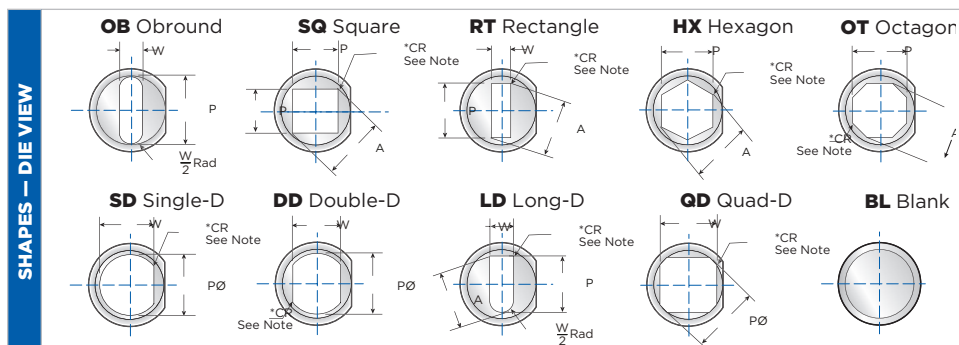
OPTIONAL HOLE TOLERANCE [P]
#1 ROUNDS +.0005 - 0 Hole to Body — Concentric within .0005 T.I.R.
#1 SHAPES +.001 - 0 Hole to Body — Concentric within .001 T.I.R.
#2 ROUNDS & SHAPES +.0002 - 0 Hole to Body — Concentric within .0003 T.I.R.
Tolerance #1 unless specified



ALTERATION OPTIONS
AD Reduce body diameter ADL Altered head diameter AH Altered head diameter AHR Altered radius under head AL Overall length shorter [Shorten shank maintain point] ART Relief taper other than standard AT Altered head thickness PL Precision Overall Length ±.001" PT Precision head thickness ±.0005" SH2 Slug Hugger® 2 SH4L Slug Hugger® 4L For additional Alteration Options, see page 114.



NOTES
• Key 1-4 & 8 included in all standard shapes price. • Standard 'M' dimension for Key 5, 6, 9 & 10 see page 118. • Standard M and alterations to keying, see page 118. • Standard key angle at 0°.



NOTES
Order Die View. *.007 radius corners typical on shapes. For special shapes see page 107.

TAPER RELIEF DIE

	Style Code	Shank Dia. [D]	Overall Length (L)										Absolute Min. P/W	Min. P	Min. W	Max. P/A	Die Land [B]	
			.500	.625	.750	.875	1.00	1.125	1.25	1.375	1.50	1.75						2.00
HEADLESS	IDDT	.1875 018												.032	.038	.05	.13	.125
		.250 025												.032	.05	.05	.17	.125
		.3125 031												.032	.062	.05	.212	.125
		.375 037												.032	.075	.05	.255	.125
		.4375 043												.032	.13	.075	.297	.125
		.500 050												.032	.15	.075	.344	.125
		.625 062												.032	.188	.075	.425	.125
		.750 075												.032	.225	.075	.51	.125
		.875 087												.032	.3	.075	.595	.125
		1.00 100												.032	.4	.075	.68	.125
		1.25 125												.032	.5	.075	.85	.125
		1.50 150												.032	.6	.075	1.05	.125
		1.75 175												.032	.75	.13	1.4	.125
		2.00 200												.032	.875	.13	1.6	.125
		2.25 225												.032	1	.13	1.8	.125
		2.50 250												.032	1.125	.13	2	.125
		2.75 275												.032	1.25	.13	2.2	.125
Overall Length [L] Code			050	062	075	087	100	112	125	137	150	175	200					

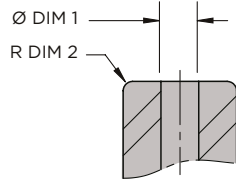
	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length (L)										Absolute Min. P/W	Min. P	Min. W	Max. P/A	Die Land [B]	
				.500	.625	.750	.875	1.00	1.125	1.25	1.375	1.50	1.75						2.00
HEADED	IHDT	.125	.1875 018												.032	.038	.05	.13	.125
			.250 025												.032	.05	.05	.17	.125
			.3125 031												.032	.062	.05	.212	.125
			.375 037												.032	.075	.05	.255	.125
			.4375 043												.032	.13	.075	.297	.125
			.500 050												.032	.15	.075	.344	.125
			.625 062												.032	.188	.075	.425	.125
			.750 075												.032	.225	.075	.51	.125
			.875 087												.032	.3	.075	.595	.125
			1.00 100												.032	.4	.075	.68	.125
			1.25 125												.032	.5	.075	.85	.125
			1.50 150												.032	.6	.075	1.05	.125
			1.75 175												.032	.75	.13	1.4	.125
			2.00 200												.032	.875	.13	1.6	.125
			2.25 225												.032	1	.13	1.8	.125
			2.50 250												.032	1.125	.13	2	.125
			2.75 275												.032	1.25	.13	2.2	.125
Overall Length [L] Code				050	062	075	087	100	112	125	137	150	175	200					

 Stock available

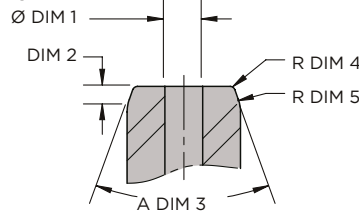
ROUND FORM DIE

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS M4, 10V, 3V, ULTIMA® M4

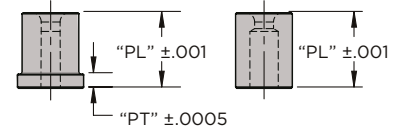
FD01



FD02

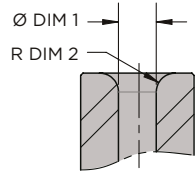


ALSO AVAILABLE WITH TAPER OR COUNTERBORE RELIEF



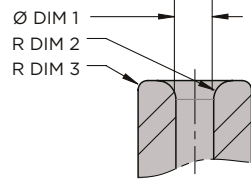
Offer 8Ra, 6Ra & 4Ra Polish

FD03



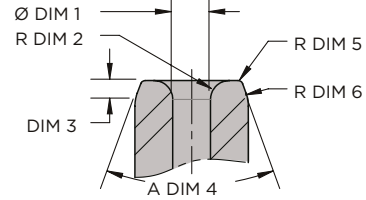
"R DIM2" 8Ra Polish Standard
Also Offer 6Ra & 4Ra Polish

FD04



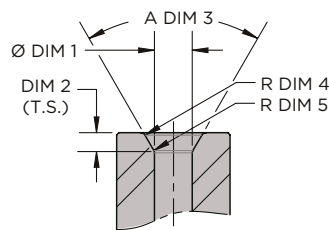
"R DIM2" 8Ra Polish Standard
Also Offer 6Ra & 4Ra Polish

FD05

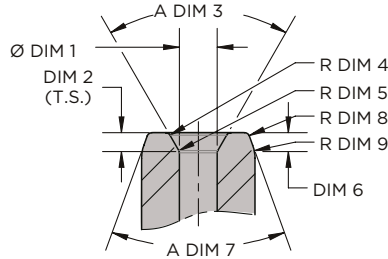


"R DIM2" 8Ra Polish Standard
Also Offer 6Ra & 4Ra Polish

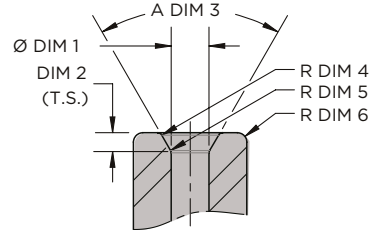
FD06



FD07



FD08



HEADED



ORDER

Take standard catalog part number plus round tip part number.

EXAMPLE:

IHDT100-150 FD03

DIM. 1 = .XXXX

DIM. 2 = .XXXX

OPTIONAL HOLE TOLERANCE [P]

TOLERANCE #1

+ .0005

- 0

Hole to Body Concentric within .0005 T.I.R.

TOLERANCE #2

+ .0002

- 0

Hole to Body Concentric within .0003 T.I.R.

ELIMINATE COSTLY SLUG PULLING

Slug pulling can cause expensive press downtime. At the Impax Tooling Solutions® division of Wilson Tool International, our desire to provide innovative tooling solutions for our customers has lead us to develop the Slug Hugger® die design which helps eliminate the very costly problem of slug pulling.

The Slug Pulling Solution

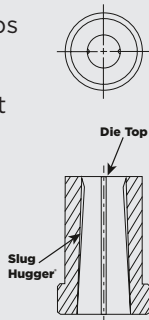
Slug Hugger dies help eliminate scrapped parts, costly downtime, and possible press and tooling damage due to slug pulling.

This unique design helps eliminate unnecessary back-pressure on small punch tips by preventing packed slugs. The Slug Hugger 2 design works on most material types and thicknesses including aluminum and stainless steel while Slug Hugger 4L is specifically designed for thinner materials. They are an available option on all die configurations: taper relief, counterbore relief, headed or headless.



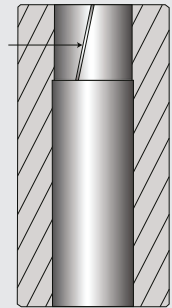
SLUG HUGGER® 2

The Slug Hugger 2 design grabs the slug just below the cutting surface of the die and retains it during the stripping process. Precision “nips” hold slugs in the die and when capacity is reached, one slug per hit is released through the relief.



SLUG HUGGER® 4L

The Slug Hugger 4L retains slugs with the assistance of cavities on the inside of the die. These cavities hold the slug in place after the hit occurs. While the 4L can be used with any material thickness, it is ideal for stamping thinner materials and is recommended for clearances of less than .004”.



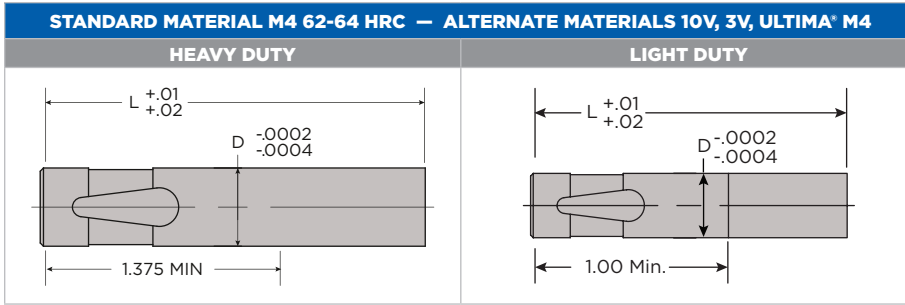
Ordering Slug Hugger Dies

- Use the clearance you want and the die type you like.
- The minimum P/W dimension for the Slug Hugger 4L is 0.050” [1.27mm].
- The minimum total clearance for Slug Hugger 4L shape is 0.001” [.026mm], a round is 0.0005” [.013mm]
- The minimum total P/W dimension for the Slug Hugger 2 is 0.035” [.89mm].
- Minimum clearance for a Slug Hugger 2 shape or round is 0.004” [.10mm] total.

Simply specify that you’d like Slug Hugger 2 or 4L when you place your tooling order. Indicate the type and thickness of material you are stamping as well as your desired clearance. See the example below:

	Quantity	Catalog Number	Shape	P	W	Tolerance	Type	Material Type	Material Thickness	Die Clearance Specify Per Side or Total
INCH	2	IDD100-125 Headless Taper Relief Die Round	RD	.5000”	—	1	Slug Hugger® 2	Cold Rolled	.060”	.010” Per Side
	1	IHDT100-125 Headed Taper Relief Die Shape	OB	.6500”	.4000”	1	Slug Hugger® 4L	Cold Rolled	.020”	.002” Per Side
METRIC	1	MHDT16-25 Metric Headed Tape Relief Die Shape	SQ	6.5mm	—	1	Slug Hugger® 2	Alum	1.5mm	.105mm Per Side

HEAVY & LIGHT DUTY SOLID BLANKS



ORDER	HEAVY DUTY	STYLE	OVERALL LENGTH
		IHSP 037 - 300 BL	
		SHANK	SHAPE

ORDER	LIGHT DUTY	STYLE	OVERALL LENGTH
		ILSP 037 - 300 BL	
		SHANK	SHAPE

HEAVY DUTY SOLID	Style Code	Shank Dia. [D]	Overall Length [L]														
			2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00
	IHSP	.375 037	4	4	4	4	4	4	4								
		.500 050	4	4	4	4	4	4	4								
		.625 062	4	4	4	4	4	4	4								
		.750 075	4	4	4	4	4	4	4								
		.875 087		4	4	4	4	4	4								
		1.00 100			4	4	4	4	4								
		1.25 125			4	4	4	4	4								
	Overall Length [L] Code			250	275	300	325	350	375	400	425	450	475	500	525	550	575

LIGHT DUTY SOLID	Style Code	Shank Dia. [D]	Overall Length [L]																
			2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00
	ILSP	.250 025	4	4	4	4	4												
		.375 037	4	4	4	4	4												
		.500 050	4	4	4	4	4												
		.625 062		4	4	4	4												
		.750 075		4	4	4	4												
		.875 087			4	4	4												
	1.00 100			4	4	4													
	Overall Length [L] Code			200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575

 Stock available
 4 Ultima® M4 steel available

HEAVY & LIGHT DUTY EJECTOR BLANKS

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, Ultima® M4	
HEAVY DUTY	LIGHT DUTY



ORDER	HEAVY DUTY	OVERALL LENGTH	SHAPE
	STYLE	SHANK	SIDE HOLE LOCATION
	IHEP 037 - 300 6 BL		
ORDER	LIGHT DUTY	OVERALL LENGTH	SHAPE
	STYLE	SHANK	SIDE HOLE LOCATION
	ILEP 037 - 300 6 BL		

EJECTOR COMPONENTS						
Size	.020	.032	.046	.063	.094	.125
Part #	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12
Replacement component set includes screw, spring and pin. Quantity: 10 each						

For additional Ejector Components, see page 116.

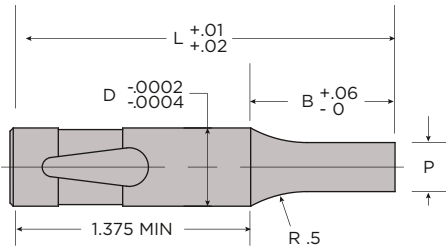
HEAVY DUTY EJECTOR	Style Code	Shank Dia. [D]	Overall Length [L]														Side Hole Location [B]	Ejector
			2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75		
IHEP		.375 037															.50=2	4 (.046)
		.500 050															.75=3	6 (.063)
		.625 062															1.00=4	9 (.094)
		.750 075															1.25=5	9 (.094)
		.875 087															1.50=6	9 (.094)
		1.00 100																9 (.094)
		1.25 125																12 (.125)
Overall Length [L] Code			250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	

LIGHT DUTY EJECTOR	Style Code	Shank Dia. [D]	Overall Length [L]																		Side Hole Location [B]	Ejector
			2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00			
	ILEP	.250 025																			.50=2 .75=3 1.00=4 1.25=5 1.50=6	3 (.032)
		.375 037																				4 (.046)
		.500 050																				6 (.063)
		.625 062																				9 (.094)
		.750 075																				9 (.094)
		.875 087																				9 (.094)
		1.00 100																				9 (.094)
	Overall Length [L] Code			200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600		

Stock available

HEAVY DUTY SOLID PUNCH

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4



OPTIONAL TIP
TOLERANCE [P]

#1 ROUNDS

+ .0005

- 0

Point to Shank Concentric
within .0005 T.I.R.

#1 SHAPES

± .0005

Point to Shank Concentric
within .001 T.I.R.

#2 ROUNDS & SHAPES

+ .0002

- 0

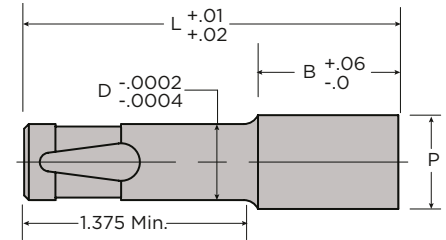
Point to Shank Concentric
within .0003 T.I.R.

Tolerance #1 unless
specified



Oversized Punches

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4



Oversized punches can be ordered the same as our regular ball lock numbers.

Use **IHSO**— Impax Heavy Duty Oversized solid punch.

BALL LOCK

ROUND

STYLE SHANK POINT LENGTH 'B' 'P' DIM
IHSP 037 - 300 3 RD P=.250 Optima
OVERALL LENGTH SHAPE COATING

SHAPE

STYLE SHANK POINT LENGTH 'B' 'P' DIM KEY LOCATION
IHSP 050 - 275 5 OB P=.250 W=.200 Y180
OVERALL LENGTH SHAPE 'W' DIM

OVERSIZED

STYLE SHANK POINT LENGTH 'B' 'P' DIM
IHSO 050 - 300 4 RD P=.550
OVERALL LENGTH SHAPE

ALTERATION OPTIONS

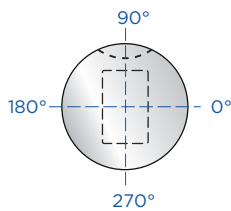
ABR Blend radius other than .500"
[Round only]

AW Smaller than standard "W"
[Shapes]

PL Precision overall length ±.001"
For additional Alteration Options, see
page 114.

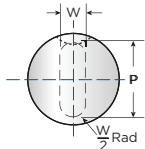
SHAPES — DIE VIEW

STANDARD KEY
LOCATION IS 90°

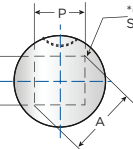


Radial Location
Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

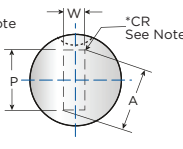
OB Obround



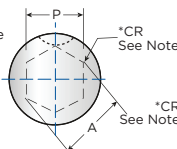
SQ Square



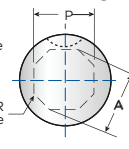
RT Rectangle



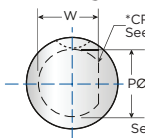
HX Hexagon



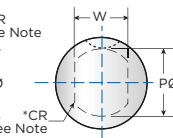
OT Octagon



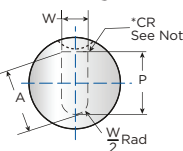
SD Single-D



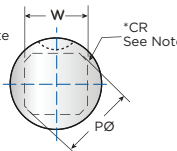
DD Double-D



LD Long-D



QD Quad-D



NOTES

Order Die
View.

*.005 radius
corners
typical on
shapes.

For special
shapes see
page 107.

HEAVY DUTY SOLID PUNCH

HEAVY DUTY SOLID Style Code = IHSP																				
Shank Dia. [D]	Overall Length [L]															Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A	
	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
.375 037	4	4	4	4	4	4	4										.50=2	.06	.09	.375
	4	4	4	4	4	4	4										.75=3			
	4	4	4	4	4	4	4										1.00=4			
		4	4	4	4	4	4										1.25=5			
			4	4	4	4	4										.150=6			
.500 050	4	4	4	4	4	4	4										.75=3	.09	.13	.5
	4	4	4	4	4	4	4										1.00=4			
		4	4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
				4	4	4	4													
.625 062	4	4	4	4	4	4	4										.75=3	.18	.2	.625
	4	4	4	4	4	4	4										1.00=4			
		4	4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
				4	4	4	4													
.750 075	4	4	4	4	4	4	4										.75=3	.18	.2	.75
	4	4	4	4	4	4	4										1.00=4			
		4	4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
				4	4	4	4													
.875 087	4	4	4	4	4	4	4										.75=3	.21	.25	.875
	4	4	4	4	4	4	4										1.00=4			
		4	4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
				4	4	4	4													
1.00 100			4	4	4	4	4										.75=3	.21	.25	1
			4	4	4	4	4										1.00=4			
			4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
			4	4	4	4	4													
1.25 125			4	4	4	4	4										.75=3	.282	.282	1.25
			4	4	4	4	4										1.00=4			
			4	4	4	4	4										1.25=5			
			4	4	4	4	4										1.50=6			
				4	4	4	4													
Overall Length [L] Code		250	275	300	325	350	375	400	425	450	475	500	525	550	575	600				

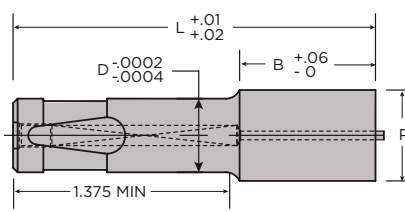
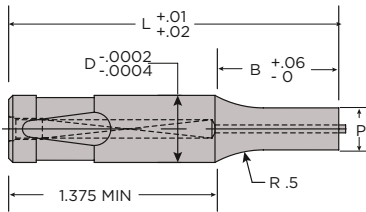
Stock available 4 Ultima® M4 steel available

OVERSIZED HEAVY DUTY SOLID																	Style Code = IHSO																
Shank Dia. [D]	Overall Length [L]								Point Length [B]	Absolute Min. P/W	Min. P/W																						
	2.50	2.75	3.00	3.25	3.50	3.75	4.00																										
.375 037	4	4	4	4	4	4	4	.50=2	.06	.375																							
	4	4	4	4	4	4	4	.75=3																									
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
.500 050	4	4	4	4	4	4	4	.75=3	.09	.5																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
.625 062	4	4	4	4	4	4	4	.75=3	.18	.625																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
.750 075	4	4	4	4	4	4	4	.75=3	.18	.75																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
.875 087	4	4	4	4	4	4	4	.75=3	.21	.875																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
1.00 100	4	4	4	4	4	4	4	.75=3	.21	1																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
1.25 125	4	4	4	4	4	4	4	.75=3	.282	1.25																							
	4	4	4	4	4	4	4	1.00=4																									
	4	4	4	4	4	4	4	1.25=5																									
	4	4	4	4	4	4	4	1.50=6																									
	4	4	4	4	4	4	4	1.75=7																									
Overall Length [L] Code	250	275	300	325	350	375	400																										

BALL LOCK

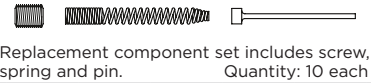
HEAVY DUTY EJECTOR PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, Ultima® M4



EJECTOR COMPONENTS

Size	.020	.032	.046	.063	.094	.125
Part #	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12



Replacement component set includes screw, spring and pin. Quantity: 10 each

Oversized punches can be ordered the same as our regular ball lock numbers. Use **IHEO** — Impax Heavy Duty Oversized ejector punch.

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+ .0005
- 0
Point to Shank Concentric within .0005 T.I.R.

#1 SHAPES

+ .0005
- 0
Point to Shank Concentric within .001 T.I.R.

#2 ROUNDS & SHAPES

+ .0002
- 0
Point to Shank Concentric within .0003 T.I.R.

Tolerance #1 unless specified

For additional Ejector Components, see page 116.



Oversized Punches

ORDER	ROUND	STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	COATING
		IHEP 037 - 300 3 RD P=.250				Optima
SHAPE	SHAPE	STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	KEY LOCATION
		IHEP 050 - 275 5 OB P=.250 W=.200 Y180				
OVERSIZED	OVERSIZED	STYLE	SHANK	POINT LENGTH 'B'	'P' DIM	
		IHEO 050 - 350 5 SQ P=.550				

EASY SHARP TOOL

SIZE	CAT. NO.	FITS PIN NO.
.061	971481	4, 6, 9, 12
.031	971482	2, 3
Set	971562	

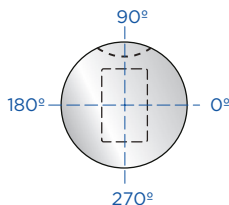
NOTES

Order Die View.

*.005 radius corners typical on shapes.

For special shapes see page 107.

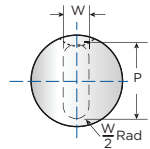
STANDARD KEY LOCATION IS 90°



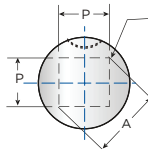
Radial Location

Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

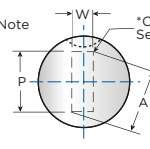
OB Obround



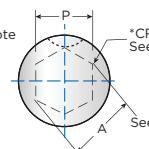
SQ Square



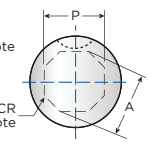
RT Rectangle



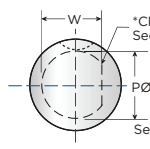
HX Hexagon



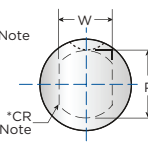
OT Octagon



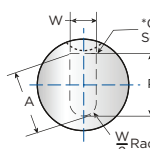
SD Single-D



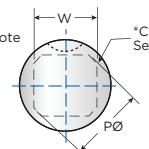
DD Double-D



LD Long-D



QD Quad-D



SHAPES — DIE VIEW

BALL LOCK

 Stock available

Overall Length [L] Code	250	275	300	325	350	375	400
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HEAVY DUTY PILOT PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, Ultima® M4

**P1 STYLE
PARABOLIC PILOT**

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS
+.0005
- 0
Point to Shank Concentric within .0005 T.I.R.

#2 ROUNDS
+.0002
- 0
Point to Shank Concentric within .0003 T.I.R.

Note: Shaped pilot punches available.

**P2 STYLE
ANGULAR PILOT**

ORDER

STYLE SHANK POINT LENGTH 'B' 'P' DIM

IHSP 062 - 350 4 RD P=.500 P1

WORKING LENGTH SHAPE PILOT STYLE

Style Code	Shank Dia. [D]	Working Length [L]														Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A		
		2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
IHSP	.375 037	4	4	4													.50=2	.06	.09	.375	
		4	4	4													.75=3				
		4	4	4													1.00=4				
			4	4													1.25=5	.09	.1		
	.500 050			4													1.50=6		.5		
		4	4	4													.75=3	.09		.13	
		4	4	4													1.00=4				
				4													1.25=5				
	.625 062				4												1.50=6	.12		.625	
		4	4	4													.75=3				
		4	4	4													1.00=4	.18	.2		
			4	4													1.25=5				
	.750 075					4											1.50=6	.23	.25	.75	
		4	4	4													.75=3				
		4	4	4													1.00=4	.18	.2		
			4	4													1.25=5				
	.875 087						4										1.50=6	.23	.25	.875	
			4	4													.75=3				
			4	4													1.00=4	.21	.250		
				4													1.25=5				
	1.00 100							4									1.50=6	.3	.312	1	
									4								.75=3				
										4							1.00=4	.21	.25		
											4						1.25=5				
	1.25 125											4					1.50=6	.3	.312	1.25	
													4				.75=3				
														4			1.00=4	.282	.282		
															4		1.25=5				
Working Length [L] Code		250	275	300	325	350	375	400	425	450	475	500	525	550	575	600					

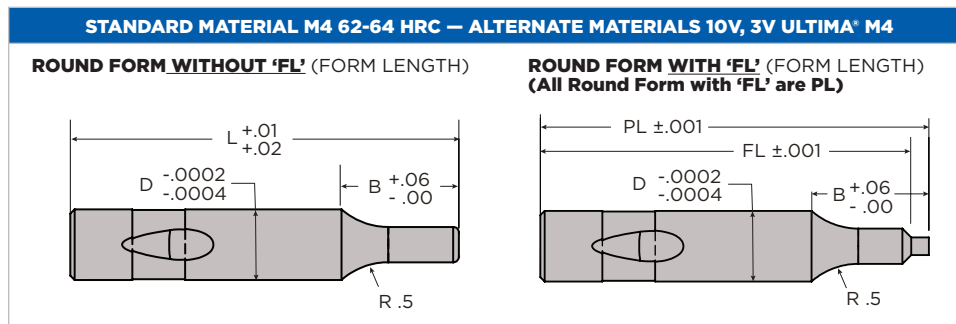
Stock available 4 Ultima® M4 steel available

44

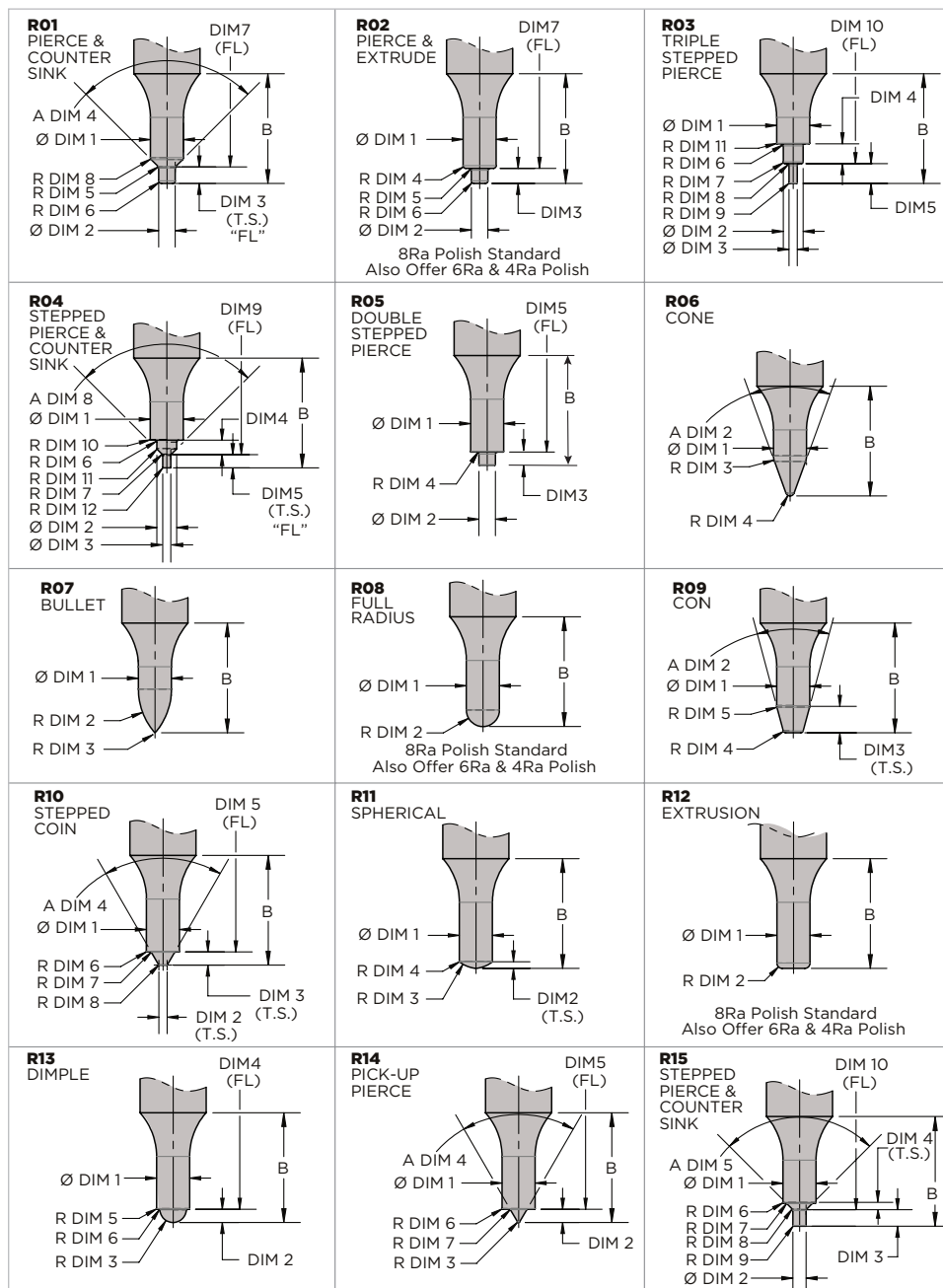
Visit wilsontool.com/MyAccount for Drawings, Invoices, Tracking & More!

BALL LOCK

ROUND FORM PUNCH



OPTIONAL TIP TOLERANCE [P]
TOLERANCE #1 +.0005 - 0 Concentric within .0005 T.I.R.
TOLERANCE #2 +.0002 - 0 Concentric within .0003 T.I.R.
OPTIONAL LENGTH TOLERANCE PL ±.001

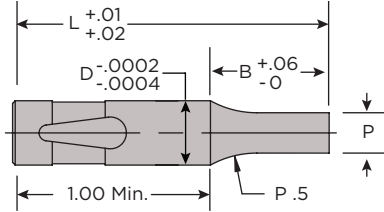


ORDER
Take standard catalog part number + round form part number.
EXAMPLE: ILSP050-3004 R05 DIM. 1 = .XXXX DIM. 2 = .XXXX DIM. 3 = .XXXX DIM. 4 = .XXXX DIM. 5 = .XXXX
All internal corners will have an internal radius of .010 minimum.

Note: Ball-lock round forms can be ordered as heavy or light duty — order example shown is light duty.

LIGHT DUTY SOLID PUNCH

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4



OPTIONAL TIP
TOLERANCE [P]

#1 ROUNDS

±.0005
- 0
Point to Shank Concentric
within .0005 T.I.R.

#1 SHAPES

±.0005
Point to Shank Concentric
within .001 T.I.R.

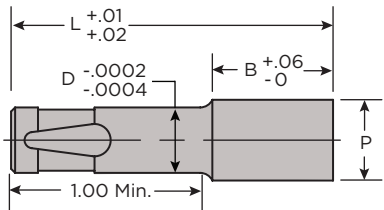
#2 ROUNDS & SHAPES

±.0002
- 0
Point to Shank Concentric
within .0003 T.I.R.

Tolerance #1 unless
specified



STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4



Oversized punches can be ordered the same as our regular ball lock part numbers.
Use **ILSO** — Impax Light Duty Oversized solid punch.



Oversized punches

ORDER	ROUND	STYLE SHANK POINT LENGTH 'B' 'P' DIM ILSP 037 - 300 3 RD P=.250 Optima OVERALL LENGTH SHAPE COATING
	SHAPE	STYLE SHANK POINT LENGTH 'B' 'P' DIM KEY LOCATION ILSP 050 - 275 5 OB P=.250 W=.200 YO OVERALL LENGTH SHAPE 'W' DIM
	OVERSIZED	STYLE SHANK POINT LENGTH 'B' 'P' DIM ILSO 050 - 300 4 RD P=.550 OVERALL LENGTH SHAPE

ALTERATION OPTIONS

ABR Blend radius other than .500" [Round only]
AW Smaller than standard "W" [Shapes]
PL Precision overall length ±.001"
For additional Alteration Options, see page 114.

NOTES

Order Die View.
*.005 radius corners typical on shapes.
For special shapes see page 107.

SHAPES — DIE VIEW	STANDARD KEY LOCATION IS 90°				
	OB Obround	SQ Square	RT Rectangle	HX Hexagon	OT Octagon
 Radial Location Tol. 1 Within 0° 4' Tol. 2 Within 0° 2'					

LIGHT DUTY SOLID PUNCH

Overall Length [L] Code	Shank Dia. [D]	Overall Length [L]																Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75				
.250 025	.250	4	4	4	4	4												.50=2	.04	.06	.25
		4	4	4	4	4												.75=3			
		4	4	4	4	4												1.00=4			
			4	4	4	4												1.25=5			
.375 037	.375	4	4	4	4	4												.50=2	.06	.09	.375
		4	4	4	4	4												.75=3			
		4	4	4	4	4												1.00=4			
			4	4	4	4												1.25=5			
.500 050	.500	4	4	4	4	4												.75=3	.09	.13	.5
		4	4	4	4	4												1.00=4			
			4	4	4	4												1.25=5			
				4	4	4												1.50=6			
.625 062	.625	4	4	4	4	4												.75=3	.18	.2	.625
		4	4	4	4	4												1.00=4			
			4	4	4	4												1.25=5			
				4	4	4												1.50=6			
.750 075	.750	4	4	4	4	4												.75=3	.18	.2	.75
		4	4	4	4	4												1.00=4			
			4	4	4	4												1.25=5			
				4	4	4												1.50=6			
.875 087	.875		4	4	4	4												.75=3	.21	.250	.875
			4	4	4	4												1.00=4			
				4	4	4												1.25=5			
					4	4												1.50=6			
1.00 100	1.00		4	4	4	4												.75=3	.21	.25	1
			4	4	4	4												1.00=4			
				4	4	4												1.25=5			
					4	4												1.50=6			
Overall Length [L] Code		200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600			

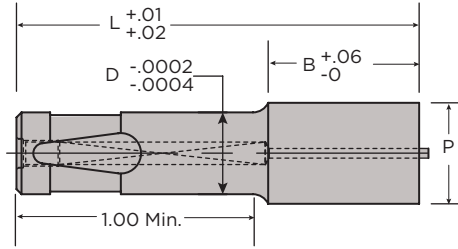
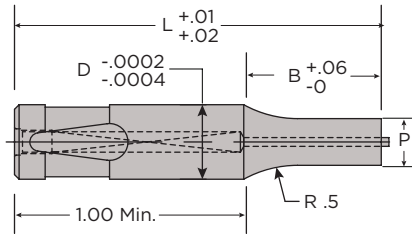
Stock available 4 Ultima® M4 steel available

OVERSIZED LIGHT DUTY SOLID PUNCH																			Style Code = ILSO																		
Overall Length [L] Code	Shank Dia. [D]	Overall Length [L]								Point Length [B]	Min. P/W																										
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75			4.00																									
.250 025	.250																	.50=2	.250																		
																	.75=3																				
																	1.00=4																				
																	1.25=5																				
.375 037	.375																	.50=2	.375																		
																	.75=3																				
																	1.00=4																				
																	1.25=5																				
.500 050	.500																	.75=3	.500																		
																	1.00=4																				
																	1.25=5																				
																	1.50=6																				
.625 062	.625																	.75=3	.625																		
																	1.00=4																				
																	1.25=5																				
																	1.50=6																				
.750 075	.750																	.75=3	.750																		
																	1.00=4																				
																	1.25=5																				
																	1.50=6																				
.875 087	.875																	.75=3	.875																		
																	1.00=4																				
																	1.25=5																				
																	1.50=6																				
1.00 100	1																	.75=3	1																		
																	1.00=4																				
																	1.25=5																				
																	1.50=6																				

BALL LOCK

LIGHT DUTY EJECTOR PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, Ultima® M4



OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+ .0005
- 0

Point to Shank Concentric within .0005 T.I.R.

#1 SHAPES

+ .0005
- 0

Point to Shank Concentric within .001 T.I.R.

#2 ROUNDS & SHAPES

+ .0002
- 0

Point to Shank Concentric within .0003 T.I.R.

Tolerance #1 unless specified

EJECTOR COMPONENTS

Size	.020	.032	.046	.063	.094	.125
Part #	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12



Replacement component set includes screw, spring and pin.
Quantity: 10 each

Oversized punches can be ordered the same as our regular ball lock numbers.

Use **ILEO** — Impax Heavy Duty Oversized ejector punch.

For additional Ejector Components, see page 116.



Oversized punches



BALL LOCK

ORDER	ROUND	STYLE SHANK POINT LENGTH 'B' 'P' DIM ILEP 037 - 300 3 RD P=.250 Optima OVERALL LENGTH SHAPE COATING
	SHAPE	STYLE SHANK POINT LENGTH 'B' 'P' DIM KEY LOCATION ILEP 050 - 275 5 OB P=.250 W=.200 Y180 OVERALL LENGTH SHAPE 'W' DIM
	OVERSIZED	STYLE SHANK POINT LENGTH 'B' 'P' DIM ILEO 050 - 350 5 SQ P=.550 OVERALL LENGTH SHAPE

EASY SHARP TOOL

SIZE	CAT. NO.	FITS PIN NO.
.061	971481	4, 6, 9, 12
.031	971482	2, 3
Set	971562	

NOTES

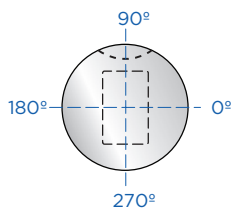
Order Die View.

*.005 radius corners typical on shapes.

For special shapes see page 107.

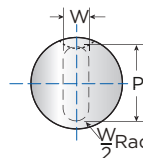
SHAPES — DIE VIEW

STANDARD KEY LOCATION IS 90°

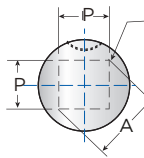


Radial Location
Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

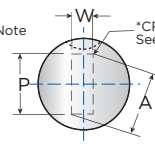
OB Obround



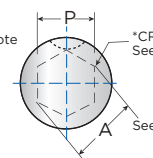
SQ Square



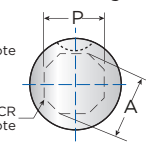
RT Rectangle



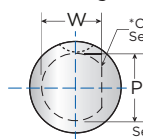
HX Hexagon



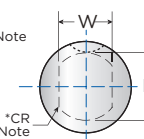
OT Octagon



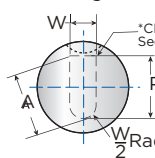
SD Single-D



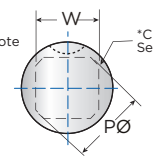
DD Double-D



LD Long-D



QD Quad-D

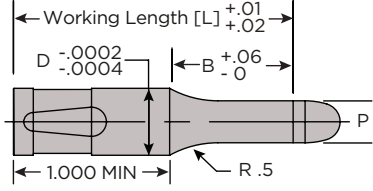
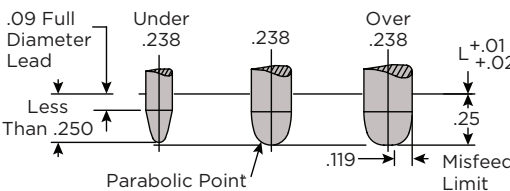
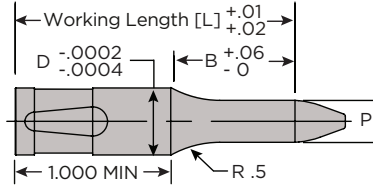
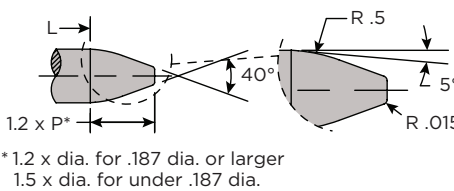


LIGHT DUTY EJECTOR PUNCH

		Style Code = ILEP																Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A	Ejector	
		Overall Length [L]																					
Shank Dia. [D]		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75	6.00					
.250 025																		.50=2	.058	.06	.25	3 (.032)	
																		.75=3					
																		1.00=4					
.375 037																		.50=2	.115	.12	.375	4 (.046)	
																		.75=3					
																		1.00=4					
																		1.25=5					
.500 050																		.75=3	.518	.165	.5	6 (.063)	
																		1.00=4					
																		1.25=5					
																		1.50=6					
.625 062																		.75=3	.235	.25	.625	9 (.094)	
																		1.00=4					
																		1.25=5					
																		1.50=6					
.750 075																		.75=3	.235	.25	.75	9 (.094)	
																		1.00=4					
																		1.25=5					
																		1.50=6					
.875 087																		.75=3	.235	.312	.875	9 (.094)	
																		1.00=4					
																		1.25=5					
																		1.50=6					
1.00 100																		.75=3	.235	.312	1	9 (.094)	
																		1.00=4					
																		1.25=5					
																		1.50=6					
Overall Length [L] Code		200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600					

LIGHT DUTY PILOT PUNCH

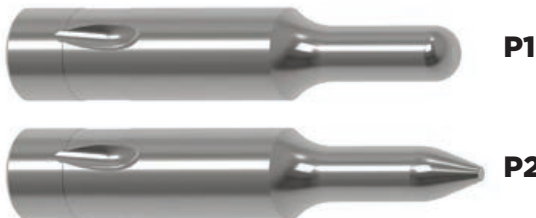
STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, Ultima® M4

P1 STYLE PARABOLIC PILOT		
P2 STYLE ANGULAR PILOT		 *1.2 x dia. for .187 dia. or larger 1.5 x dia. for under .187 dia.

ORDER	STYLE	SHANK	POINT LENGTH 'B'	'P' DIM
	ILSP 062	- 350	4 RD	P=.500 P1
		WORKING LENGTH	SHAPE	PILOT STYLE

OPTIONAL TIP TOLERANCE [P]
#1 ROUNDS +.0005 - 0 Point to Shank Concentric within .0005 T.I.R.
#2 ROUNDS +.0002 - 0 Point to Shank Concentric within .0003 T.I.R.

Note: Shaped pilot punches available.



LIGHT DUTY PILOT PUNCH

Style Code	Shank Dia. [D]	Working Length [L]																Point Length [B]	Absolute Min. P/W	Min. P/W	Max. P/A	
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50	5.75					6.00
SOLID ILSP	.250 025	4	4	4	4														.50=2	.04	.06	.25
		4	4	4	4														.75=3			
		4	4	4	4														1.00=4			
			4	4	4														1.25=5			
	.375 037	4	4	4	4														.50=2	.06	.09	.375
		4	4	4	4														.75=3			
		4	4	4	4														1.00=4			
			4	4	4														1.25=5			
	.500 050	4	4	4	4														.75=3	.09	.13	.5
		4	4	4	4														1.00=4			
			4	4	4														1.25=5			
				4	4														1.50=6			
	.625 062		4	4	4														.75=3	.18	.2	.625
			4	4	4														1.00=4			
			4	4	4														1.25=5			
				4	4														1.50=6			
	.750 075		4	4	4														.75=3	.18	.2	.75
			4	4	4														1.00=4			
			4	4	4														1.25=5			
				4	4														1.50=6			
	.875 087			4	4														.75=3	.21	.250	.875
				4	4														1.00=4			
				4	4														1.25=5			
				4	4														1.50=6			
	1.00 100			4	4														.75=3	.21	.25	1
				4	4														1.00=4			
				4	4														1.25=5			
				4	4														1.50=6			
Working Length [L] Code		200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600				

Stock available 4 Ultima® M4 steel available

COUNTERBORE RELIEF DIE

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, Ultima® M4

Also available with taper relief.

OPTIONAL HOLE TOLERANCE [P]

#1 ROUNDS
+.0005
- 0
Hole to Body Concentric within .0005 T.I.R.

#1 SHAPES
+.001
- 0
Hole to Body Concentric within .001 T.I.R.

#2 ROUNDS & SHAPES
+.0002
- 0
Hole to Body Concentric within .0003 T.I.R.

Tolerance #1 unless specified

BLANKS: Available with .04" dia. start hole. Start hole concentric to body within .005" and contains a counterbore.



ROUND
ILBD 050 - 118 RD P=.175
OVERALL LENGTH

SHAPE
ILBD 075 - 118 OB P=.325 W=.250 SH2 CLR=.010
OVERALL LENGTH
MAT=Mild Steel MT= 12g
MATERIAL TYPE MATERIAL THICKNESS

ALTERATION OPTIONS

ADL Altered die land (smaller)

PL Precision Overall Length $\pm .001$ "

SH2 Slug Hugger*2

For additional Alteration Options, see page 114.

STANDARD KEY LOCATION IS 90°

SHAPES — DIE VIEW

OB Obound

SQ Square

RT Rectangle

HX Hexagon

OT Octagon

SD Single-D

DD Double-D

LD Long-D

QD Quad-D

BL Blank

Radial Location
Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

NOTES

Order Die View.

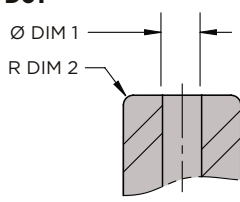
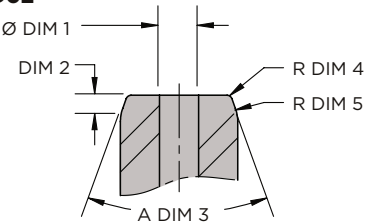
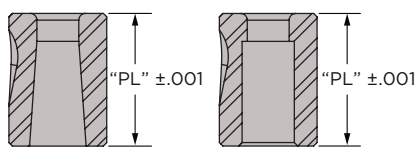
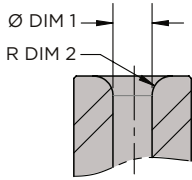
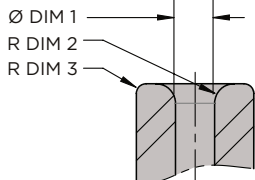
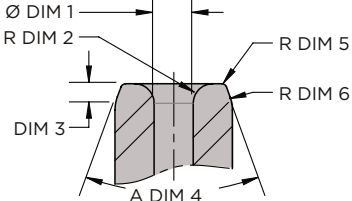
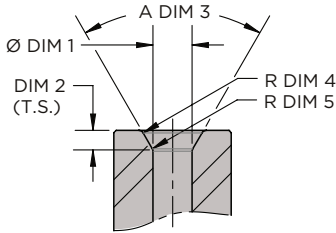
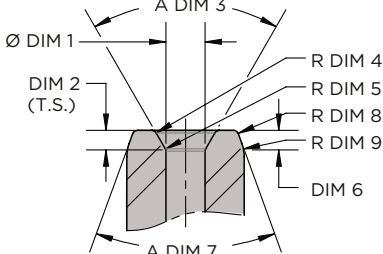
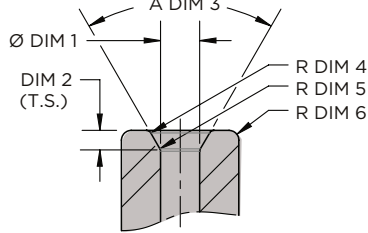
*.007 radius corners typical on shapes.

For special shapes see page 107.

Style Code	Shank Dia. [D]	Overall Length [L]	Absolute Min. P/W	Min. P	Max. P	Max. P/A	Relief Dia. [R]	Die Land [B]
ILBD	.500	1.1875 118	.032	.062	.062	.195	.228	.156
	.625			.093	.093	.285	.312	.187
	.750			.118	.118	.345	.375	.187
	.875			.125	.125	.435	.468	.25
	1.00			.156	.156	.545	.578	.25
	1.25			.187	.187	.655	.687	.25
	1.50			.25	.25	.780	.812	.312
	1.75			.25	.25	1.035	1.062	.34
	1.875							
	2.00							

Note: Longer lengths available upon request.

ROUND FORM DIE

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS M4, 10V, 3V, ULTIMA® M4		
FD01 	FD02 	ALSO AVAILABLE WITH TAPER OR COUNTERBORE RELIEF  Offer 8Ra, 6Ra & 4Ra Polish
FD03  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD04  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD05  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish
FD06 	FD07 	FD08 



ORDER

Take standard catalog part number plus round tip part number.

EXAMPLE:

ILBD100-118 FD03

DIM. 1 = .XXXX

DIM. 2 = .XXXX

OPTIONAL HOLE TOLERANCE [P]

TOLERANCE #1

+.0005

- 0

Hole to Body Concentric within .0005 T.I.R.

TOLERANCE #2

+.0002

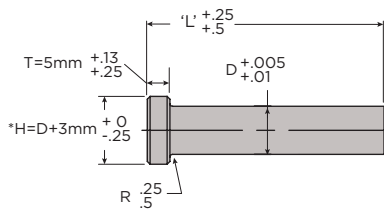
- 0

Hole to Body Concentric within .0003 T.I.R.

BALL LOCK

SOLID BLANKS

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4



Punch Head drawn to 40-50 HRC up to 25mm dia.

*H=Head Diameter



ORDER

STYLE

OVERALL LENGTH

MSPB 10 - 80 BL

SHANK

SHAPE

SOLID	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]											
				32	40	45	50	56	60	63	70	71	80	90	100
	MSPB	5	4 04												
			5 05												
			6 06												
			8 08												
			10 10												
			13 13												
			16 16												
			20 20												
			25 25												
			32 32												
			40 40												
			45 45												
			50 50												
			56 56												
63 63															
Overall Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100

☐ Stock available

HEADED

SOLID

EJECTOR BLANKS

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4

Punch Head drawn to 40-50 HRC up to 25mm dia.
*H=Head Diameter

EJECTOR COMPONENTS						
Size	.38	.69	1.04	1.47	2.26	3.05
Part #	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12

Replacement component set includes screw, spring and pin.
Quantity: 10 each



For additional Ejector Components, see page 117.

ORDER

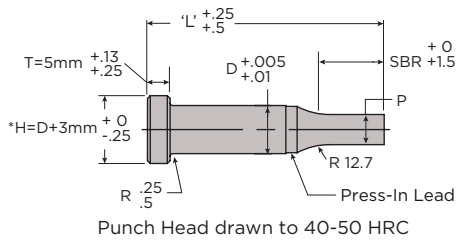
STYLE SHANK SIDE HOLE LOCATION
MEPB 16 - 80 25 BL
OVERALL LENGTH SHAPE

	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]												Side Hole Location [B]	Ejector
				32	40	45	50	56	60	63	70	71	80	90	100		
EJECTOR	MEPB	5	5 05													8 13 19 25	2 (.38)
			6 06														3 (.69)
			8 08														4 (1.04)
			10 10														6 (1.47)
			13 13														6 (1.47)
			16 16														9 (2.26)
			20 20														9 (2.26)
			25 25														9 (2.26)
			32 32														12 (3.05)
			40 40														12 (3.05)
			45 45														12 (3.05)
			50 50														12 (3.05)
			56 56														12 (3.05)
			63 63														12 (3.05)
			Overall Length [L] Code				32	40	45	50	56	60	63	70	71		80

Stock available

SOLID PUNCH

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4



*H=Head Diameter

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+0.013

-0

Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

±.013

Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+0.005

-0

Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified

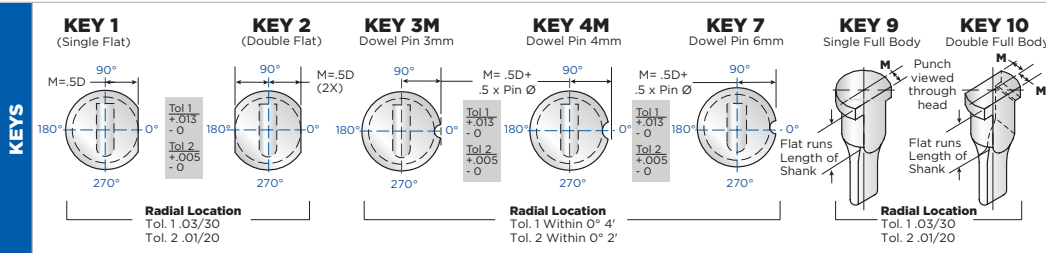


ALTERATION OPTIONS

ABR	Blend radius other than 12.7mm [Round only]
ASBR	Altered SBR
AD	Reduce body diameter
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
EBT	Extra back taper
MK	Multiple keys
PL	Precision Overall Length ±.026mm
PT	Precision head thickness ±.013mm

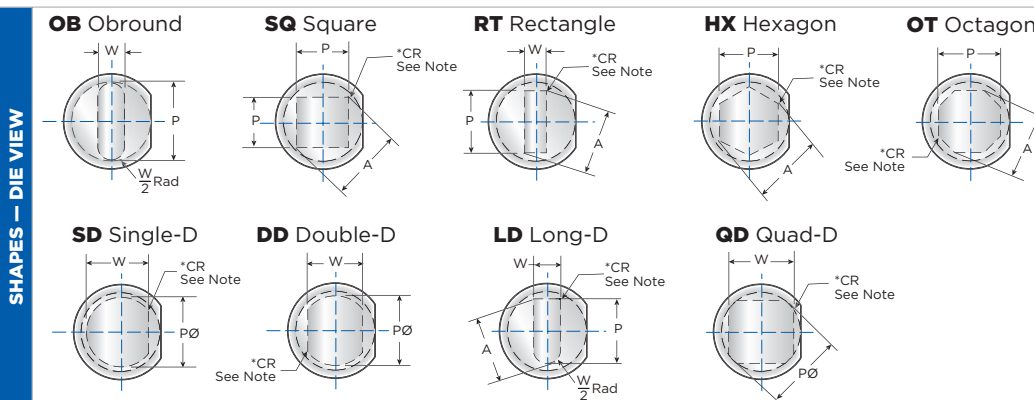
For additional Alteration Options, see page 114.

ORDER	ROUND	SHAPE
	STYLE SHANK SBR 'P' DIM OVERALL LENGTH SHAPE COATING	STYLE SHANK SBR 'P' DIM KEY TYPE OVERALL LENGTH SHAPE 'W' DIM KEY ANGLE
	MSPB 10 - 80 19 RD P=6.35 Optima	MSPB 13 - 71 25 OB P=10 W=5.0 K1 Y90



NOTES

- **Key 1-7** included in all standard shapes price.
- Standard 'M' dim. for **Key 9 & 10** is .5D Dia.- 1.5
- Alterations to keying, see page 119.
- Standard key angle 'Y'=0.



NOTES

- Order Die View.
- *.13 radius corners typical on shapes.
- For special shapes see page 107.

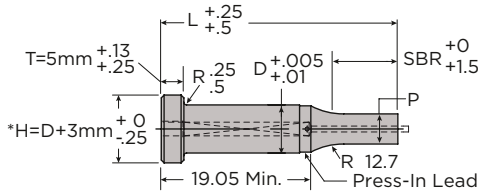
SOLID PUNCH

Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]														SBR	Min. P**	Min. W**	Max. P/A
			32	40	45	50	56	60	63	70	71	80	90	100						
SOLID MSPB	5	4 04														8	1.5	.75	4	
															13	1.5				
															19	2.25				
															25	2.25				
		5 05														8	1.5	1.5	5	
															13	2.25				
															19	2.5				
															25	2.5				
		6 06														8	3.25	1.5	6	
															13	2.25				
															19	2.5				
															25	2.5				
		8 08														8	4.25	2.25	8	
															13	2.5				
															19	2.5				
															25	2.5				
		10 10														8	4.25	2.25	10	
															13	2.5				
															19	2.5				
															25	2.5				
		13 13														13	4.25	3.25	13	
															19	3.25				
															25	3.25				
															25	3.25				
		16 16														13	6.25	5	16	
															19	6.25				
															25	6.25				
															25	6.25				
		20 20														13	6.25	5	20	
															19	6.25				
															25	6.25				
															25	6.25				
		25 25														13	8	6.25	25	
															19	6.25				
															25	7.75				
															25	7.75				
Overall Length [L] Code			32	40	45	50	56	60	63	70	71	80	90	100						

Stock available **Smaller "Min. P/Ws" are available upon request.

EJECTOR PUNCH

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4



Punch Head drawn to 40-50 HRC

*H=Head Diameter

EJECTOR COMPONENTS

Size	.38	.69	1.04	1.47	2.26	3.05
Part #	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12



For additional Ejector Components, see page 117.

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

±.013

- 0
 Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

±.013

Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

±.005

- 0
 Point to Shank Concentric within .008 T.I.R.

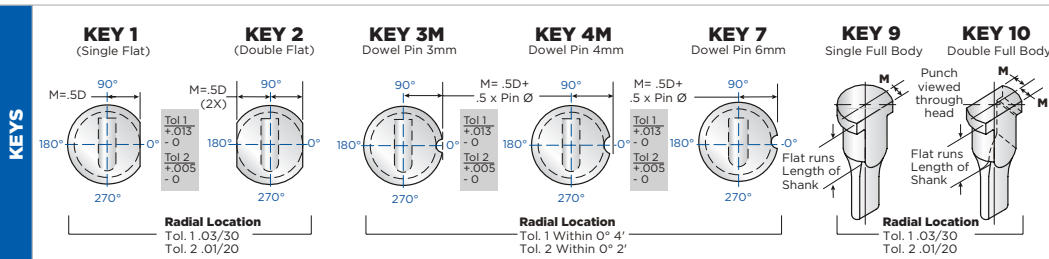
Tolerance #1 unless specified



ALTERATION OPTIONS

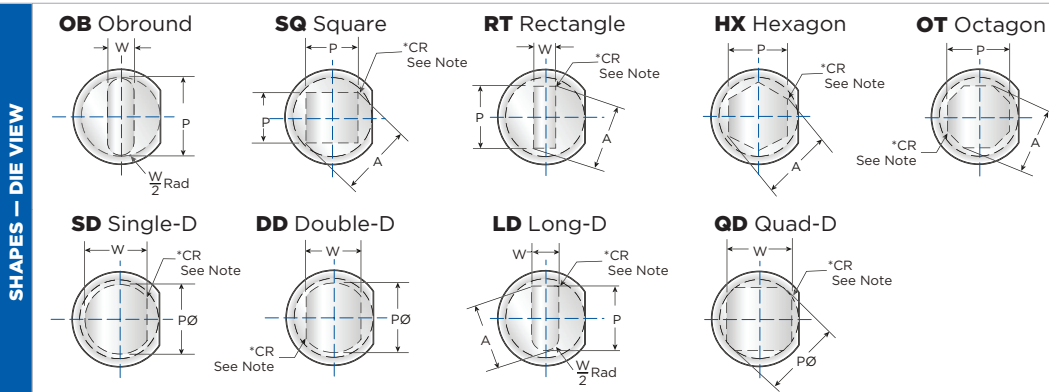
- ABR** Blend radius other than 12.7mm [Round only]
 - ASBR** Altered SBR
 - AD** Reduce body diameter
 - AH** Altered head diameter
 - AHR** Altered radius under head
 - AL** Overall length shorter [Shorten shank maintain point]
 - AT** Altered head Thickness
 - EBT** Extra back taper
 - MK** Multiple keys
 - NS** No side hole — ejector
 - PL** Precision Overall Length ±.026mm
 - PT** Precision head thickness ±.013mm
- For additional Alteration Options, see page 114.

ORDER	STYLE	SHANK	SBR	'P' DIM	COATING
ROUND	MEPB	16	80	25 RD	P=12.7 TOL2 Optima
SHAPE	STYLE	SHANK	SBR	'P' DIM	KEY ANGLE
SQ	MEPB	25	100	25 SQ	P=9.52 K1 Y90



NOTES

- **Key 1-7** included in all standard shapes price.
- Standard 'M' dimension for **Key 9 & 10** is .5D Dia.-1.5.
- Alterations to keying, see page 119.
- Standard key angle 'Y'=0.



NOTES

- Order Die View.
- *.13 radius corners typical on shapes.
- For special shapes see page 107.

EJECTOR PUNCH

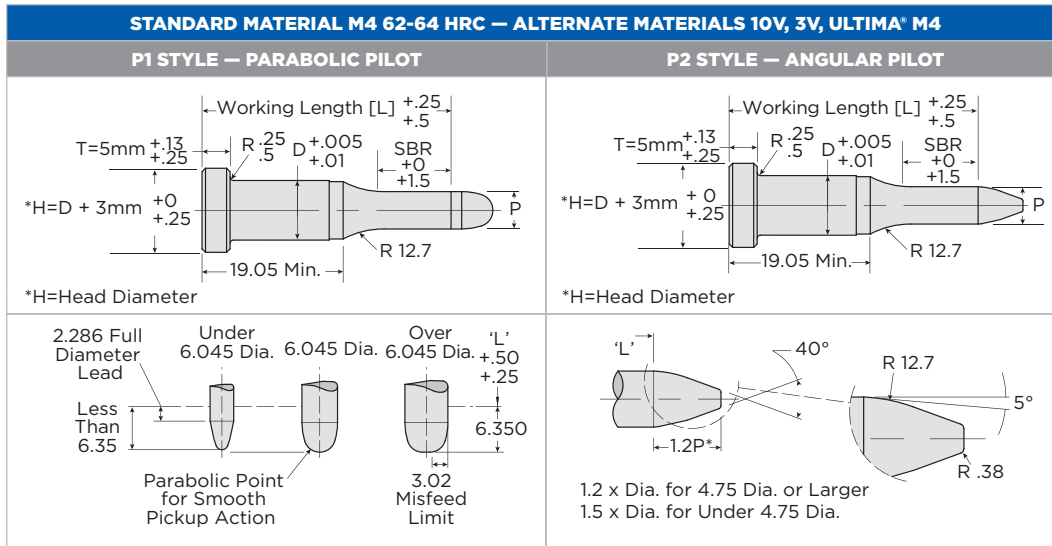
	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]												SBR	Min. P**	Min. W**	Max. P/A	Ejector	
				32	40	45	50	56	60	63	70	71	80	90	100						
EJECTOR	MEPB	5	5 05													8	1.5	1.5	5	2 (.38)	
																13		1.5			
																19		2.25			
			6 06														8	3.25	1.5	6	3 (.69)
																13	1.5				
																19	2.25				
																25	2.5				
			8 08														13	4.25	2.25	8	4 (1.04)
																19	2.5				
																25	2.5				
			10 10														13	4.25	2.25	10	6 (1.47)
																19	2.25				
																25	2.5				
			13 13														13	4.25	3.25	13	6 (1.47)
																19	3.25				
																25	3.25				
			16 16														13	6.25	5	16	9 (2.26)
																19	5				
																25	6.25				
			20 20														13	6.25	5	20	9 (2.26)
																19	5				
																25	6.25				
			25 25														13	8	6.25	25	9 (2.26)
																19	6.25				
																25	7.75				
Overall Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100						

Stock available **Smaller "Min. P/Ws" are available upon request.



EASY SHARP TOOL		
SIZE	CAT. NO.	FITS PIN NO.
1.5	971481	4, 6, 9, 12
.78	971482	2, 3
Set	971562	

PILOT PUNCH


OPTIONAL TIP TOLERANCE [P]
#1 ROUNDS

+0.013
- 0
Point to Shank Concentric within .013 T.I.R.

#2 ROUNDS

+0.005
- 0
Point to Shank Concentric within .008 T.I.R.

Note: Shaped pilot punches available.

STYLE	SHANK	SBR	'P' DIM
MSPB	16	90	25
	WORKING LENGTH	SHAPE	PILOT TYPE
			RD P=12.7 P1



PILOT	Style Code	Head THK [T]	Shank Dia. [D]	Working Length [L]													SBR	Min. P
				32	40	45	50	56	60	63	70	71	80	90	100			
MSPB	5	4 04															8	1.5
																13		
																19		
																25		
		5 05															8	1.5
																13		
																19		
																25		
		6 06															8	3.25
																13		
																19		
																25		
		8 08															8	4.25
																13		
																19		
																25		
		10 10															8	4.25
																13		
																19		
																25		
		13 13															13	4.25
																19		
																25		
																13		
16 16															19	6.25		
														25				
														13				
														19				
20 20															25	6.25		
														13				
														19				
														25				
25 25															13	8		
														19				
														25				
														13				
Working Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100			

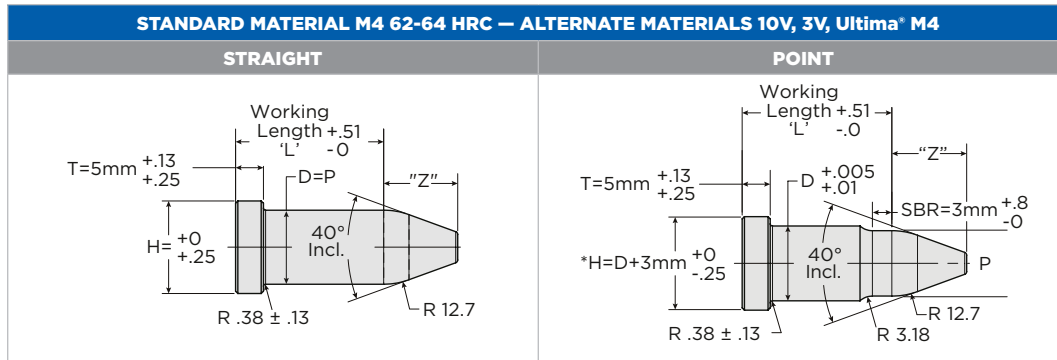
Stock available

ALTERATION OPTIONS

ABR	Blend radius other than 12.7mm [Round only]
ASBR	Altered SBR
AD	Reduce body diameter
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
PT	Precision head thickness ±.013mm

For additional Alteration Options, see page 114.

STUBBY PILOT PUNCH



*H=Head Diameter

OPTIONAL TIP TOLERANCE [P]

TOLERANCE #1

+ .013
- 0
Point to Shank Concentric within .013 T.I.R.

TOLERANCE #2

+ .005
- 0
Point to Shank Concentric within .008 T.I.R.

ORDER	STRAIGHT	STYLE	SHANK	SHAPE	PILOT STYLE
		HEAD THICKNESS	WORKING LENGTH	'D' DIM	
		MSS B 06 - 25 RD	D=5.05	P3	
POINT		STYLE	SHANK	SHAPE	PILOT STYLE
		HEAD THICKNESS	WORKING LENGTH	'P' DIM	ALT. LENGTH
		MSP B 08 - 32 RD	P=4.55	P3	AL=30.8



MSPB [P3]

STRAIGHT	Style Code	Head THK [T]	Shank Dia. [D]	Shank Code	Working Length [L]								Min. D	Max. D	Head Dia. [H]	
					16	20	22	25	28	32	35	[Z]				
	MSSB	5	4	04									4	1.50	4	7
			5	05								5	4.01	5	8	
			6	06								6	5.01	6	9	
			8	08								8	6.01	8	11	
			10	10								10	8.01	10	13	
			13	13								13	10.01	13	16	
			16	16								16	13.01	16	19	
			20	20								20	16.01	20	23	
25	25								25	20.01	25	28				
Working Length [L] Code					16	20	22	25	28	32	35					

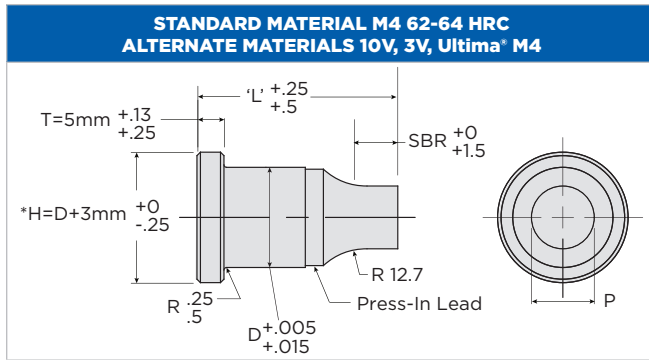
ALTERATION OPTIONS

- AH** Altered head diameter
 - AL** Overall length shorter [Shorten shank maintain point]
 - ASBR** Altered SBR
 - AT** Altered head thickness
 - PT** Precision head thickness ±.013mm
- For additional Alteration Options, see page 114.

POINT	Style Code	Head THK [T]	Shank Dia. [D]	Shank Code	Working Length [L]								SBR	Max. [Z]	Min. P	Max. P
					16	20	22	25	28	32	35					
	MSPB	5	4	04									3	4	2.5	3.99
			5	05										5	2.5	4.99
			6	06										6	2.5	5.99
			8	08										8	2.5	7.99
			10	10										10	3.5	9.99
			13	13										13	5	12.99
			16	16										16	12	15.99
			20	20										20	13	19.99
25			25									25		13	24.99	
Working Length [L] Code					16	20	22	25	28	32	35					

Stock available

EXTENDED RANGE PUNCH



OPTIONAL TIP TOLERANCE [P]	
#1 ROUNDS +.013 - 0	Point to Shank Concentric within .013 T.I.R.
#1 SHAPES ±.013	Point to Shank Concentric within .026 T.I.R.
#2 ROUNDS & SHAPES +.005 - 0	Point to Shank Concentric within .008 T.I.R.
Tolerance #1 unless specified	



No head draw on extended range.
No side hole on extended range.

ALTERATION OPTIONS	
ABR	Blend radius other than 12.7mm [Round only]
ASBR	Altered SBR
AD	Reduce body diameter
AE	Ejector size — different than standard for punch
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
EBT	Extra back taper
MK	Multiple keys
PL	Precision Overall Length ±.026mm
PT	Precision head thickness ±.013mm
For additional Alteration Options, see page 114.	

ORDER	ROUND	SHAPE
	STYLE SHANK SBR 'P' DIM MSPB 40 - 70 25 RD P=20 Optima OVERALL LENGTH SHAPE COATING	STYLE SHANK SBR 'P' DIM KEY TYPE MSPB 32 - 70 19 OB P=25 W=15 K1 Y90 OVERALL LENGTH SHAPE 'W' DIM KEY ANGLE

KEYS	KEY 1 (Single Flat)	KEY 2 (Double Flat)	KEY 3M Dowel Pin 3mm	KEY 4M Dowel Pin 4mm	KEY 7 Dowel Pin 6mm	KEY 9 Single Full Body	KEY 10 Double Full Body
	M=.5D 90° 180° 270° Tol. 1 .013 Tol. 2 +.005 - 0	M=.5D (2X) 90° 180° 270° Tol. 1 +.013 Tol. 2 +.005 - 0	M=.5D+.5 x Pin Ø 90° 180° 270° Tol. 1 +.013 Tol. 2 +.005 - 0	M=.5D+.5 x Pin Ø 90° 180° 270° Tol. 1 +.013 Tol. 2 +.005 - 0	M=.5D+.5 x Pin Ø 90° 180° 270° Tol. 1 +.013 Tol. 2 +.005 - 0	Punch viewed through head Flat runs Length of Shank Radial Location Tol. 1 .03/30 Tol. 2 .01/20	Punch viewed through head Flat runs Length of Shank Radial Location Tol. 1 .03/30 Tol. 2 .01/20

NOTES
• Key 1-7 included in all standard shapes price. • Standard 'M' dim. for Key 9 & 10 is .5D Dia. - 1.5. • Alterations to keying, see page 119. • Standard key angle 'Y'=0.

SHAPES — DIE VIEW	OB Obound	SQ Square	RT Rectangle	HX Hexagon	OT Octagon
	W P W/2 Rad *CR See Note	P A *CR See Note	W P A *CR See Note	P A *CR See Note	P A *CR See Note
	SD Single-D	DD Double-D	LD Long-D	QD Quad-D	
	W P *CR See Note	W P *CR See Note	W P W/2 Rad *CR See Note	W P *CR See Note	

NOTES
Order Die View.
*.013 radius corners typical on shapes.
For special shapes see page 107.

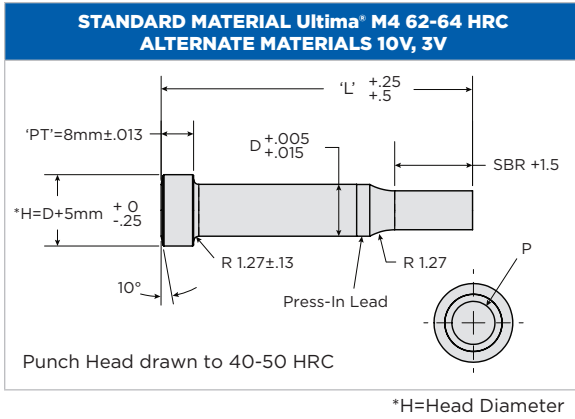
EXTENDED RANGE PUNCH

	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]												SBR	Min. P	Min. W	Max. P/A	
				32	40	45	50	56	60	63	70	71	80	90	100					
SOLID	MSPB	5	32 32													19	8.5	7	32	
																				25
																				30
			40 40														19	14	7.5	40
																	25			
																	30			
			45 45														19	25	9	45
																	25			
																	30			
			50 50														19	30	10	10
																	25			
																	30			
			56 56														19	35	11.5	56
																	25			
																	30			
			63 63														19	41	13	63
																	25			
																	30			
Overall Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100					

	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]												SBR	Min. P	Min. W	Max. P/A	Ejector	
				40	45	50	56	60	63	70	71	80	90	100							
EJECTOR	MEPB	5	32 32													19	8.5	7	32	12 (3.05)	
																25					
																30					
			40 40														19	14	7.5	40	12 (3.05)
																25					
																30					
			45 45														19	25	9	45	12 (3.05)
																25					
																30					
			50 50														19	30	10	10	12 (3.05)
																25					
																30					
			56 56														19	35	11.5	56	12 (3.05)
																25					
																30					
			63 63														19	41	13	63	12 (3.05)
																25					
																30					
Overall Length [L] Code				40	45	50	56	60	63	70	71	80	90	100							

 Stock available

XTREME PUNCH



OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+ .013

- 0

Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

± .013

Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+ .005

- 0

Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified



MSPX

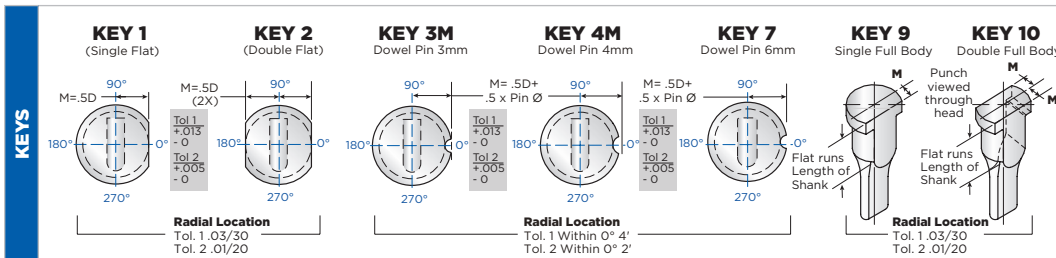
MEPX

ORDER	ROUND	STYLE	SHANK	SBR	'P' DIM	COATING
		HEAD THICKNESS	OVERALL LENGTH	SHAPE	TOLERANCE	
		MSP X 16 - 80 25 RD P=12.7 TOL2 Optima				
SHAPE	SHAPE	STYLE	SHANK	SBR	'P' DIM	KEY STYLE
		HEAD THICKNESS	OVERALL LENGTH	SHAPE	'W' DIM	KEY ANGLE
		MEP X 25 - 100 25 RT P=9.52 W=7.0 K1 Y45				

ALTERATION OPTIONS

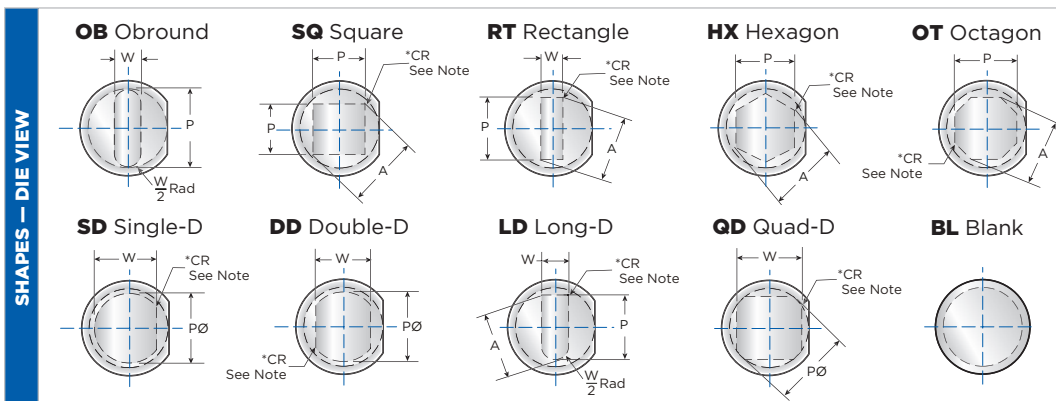
ABR	Blend radius other than 12.7mm [Round only]
ASBR	Altered SBR
AD	Reduce body diameter
AL	Overall length shorter [Shorten shank maintain point]
EBT	Extra back taper
MK	Multiple keys
PL	Precision Overall Length ±.026mm

For additional Alteration Options, see page 114.



NOTES

- Key 1-7 included in all standard shapes price.
- Standard 'M' dim. for Key 9 & 10 is .5D Dia. - 1.5.
- Alterations to keying, see page 119.
- Standard key angle 'Y'=0.



NOTES

- Order Die View.
- *.13 radius corners typical on shapes.
- For special shapes see page 107.

XTREME PUNCH

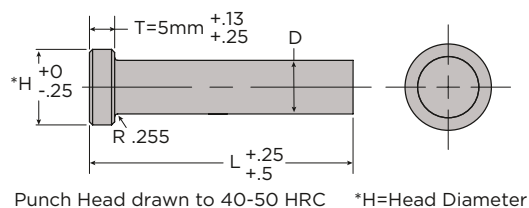
SOLID	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]								SBR	Min. P/W	Max. P/A
	50	60	70	80	90	100	110	120						
	MSPX	8	10 10		4	4	4	4	4			13	2	10
						4	4	4	4			19		
							4	4	4			25		
			13 13		4	4	4	4	4			13	3	13
						4	4	4	4			19		
							4	4	4			25		
			16 16		4	4	4	4	4			13	3	16
						4	4	4	4			19		
							4	4	4			25		
			20 20		4	4	4	4	4			13	5	20
						4	4	4	4			19		
							4	4	4			25		
			25 25		4	4	4	4	4			13	6	25
						4	4	4	4			19		
						4	4	4			25			
Overall Length [L] Code				50	60	70	80	90	100	110	120			

	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]								SBR	Min. P/W	Max. P/A	Ejector
				50	60	70	80	90	100	110	120				
EJECTOR	MEPX	8	10 10		4	4	4	4	4			13	4	10	6 (1.47)
						4	4	4	4			19			
							4	4	4			25			
			13 13		4	4	4	4	4			13	4	13	6 (1.47)
						4	4	4	4			19			
							4	4	4			25			
			16 16		4	4	4	4	4			13	6	16	9 (2.26)
						4	4	4	4			19			
							4	4	4			25			
			20 20		4	4	4	4	4			13	6	20	9 (2.26)
						4	4	4	4			19			
							4	4	4			25			
			25 25		4	4	4	4	4			13	8	25	9 (2.26)
						4	4	4	4			19			
							4	4	4			25			
Overall Length [L] Code				50	60	70	80	90	100	110	120				

4 Stock available - Ultima® M4 steel standard

STRAIGHT PUNCH

**STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4**



**OPTIONAL
TOLERANCE [D]**

TOLERANCE #1

+0.013
- 0
Concentric within .013 T.I.R.

TOLERANCE #2

+0.005
- 0
Concentric within .008 T.I.R.

Foretaper only, head
end large .003 total

Tolerance #1 unless
specified



MSSB

MESB

ORDER	STYLE	SHANK	'D' DIM	COATING
SOLID	MSSB	08	- 60 D=6.85	TOL2 Optima
			OVERALL LENGTH	TOLERANCE
EJECTOR	MESB	10	- 60 19 D=8.9	TOL2 Optima
			OVERALL LENGTH	TOLERANCE
			'D' DIM	COATING

ALTERATION OPTIONS

- AH** Altered head diameter
 - AHR** Altered radius under head
 - AL** Overall length shorter [Shorten shank maintain point]
 - AT** Altered head thickness
 - PL** Precision Overall Length $\pm 0.026\text{mm}$
 - PT** Precision head thickness $\pm 0.013\text{mm}$
- For additional Alteration Options, see page 114.

SOLID	Style Code	Head THK [T]	Shank [D]	Shank Code	Overall Length [L]											Range D	Head Dia. [H]	
					32	40	45	50	56	60	63	70	71	80	90			100
	MSSB	5	4	04													3-4	7
			5	05													4-5	8
			6	06													5-6	9
			8	08													6-8	11
			10	10													8-10	13
			13	13													10-13	16
	16	16													13-16	19		
	Overall Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100		
For nominal size punches, see page 54 for available blanks.																		

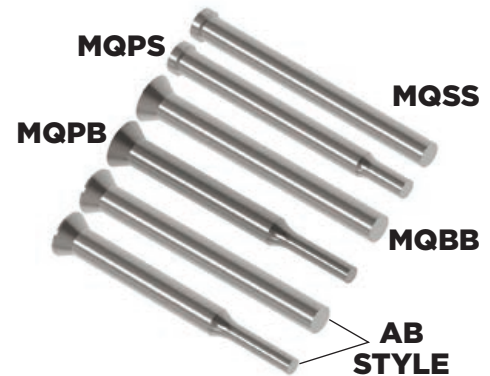
EJECTOR	Style Code	Head THK [T]	Shank [D]	Overall Length [L]												Side Hole Location	Range D	Head Dia. [H]	Ejector	
				32	40	45	50	56	60	63	70	71	80	90	100					
	MESB	5	6 06													8	5-6	9	3 (.69)	
																				13
			8 08														8	6-8	11	4 (1.04)
																	13			
																	19			
																	25			
			10 10														13	8-10	13	6 (1.47)
																	19			
																25				
13 13																	13	10-13	16	6 (1.47)
																19				
																25				
																25				
16 16																	13	13-16	19	9 (2.26)
																19				
																25				
Overall Length [L] Code				32	40	45	50	56	60	63	70	71	80	90	100					
For nominal size punches, see page 55 for available blanks.																				

Stock available

CLOSE SPACE PUNCH

STANDARD MATERIAL M2 60-63 HRC ALTERNATE MATERIALS 10V, M4, 3V, Ultima® M4			OPTIONAL TIP TOLERANCE [P]
BLANK [BL]	STRAIGHT PUNCH	PUNCH	TOLERANCE #1 +.013 - 0 Concentric within .013 T.I.R.
			TOLERANCE #2 +.005 - 0 Concentric within .008 T.I.R.
			Note: Blend Rad. = 6.35 if not specified
'AB' STYLE HEAD 60° Available upon request			Tolerance #1 unless specified

ROUND & BLANK	Style Code		Shank Dia. [D]	Overall Length [L]											Head Dia. [H]		Point Length [B]
	60° HEAD	STD HEAD		40	45	50	56	60	63	70	71	80	90	100	60°	STD	
	MQBB Blanks	MQBS Blanks	2 02												1.8D	4	5
			3 03													5	7
			4 04													6	8
	MQPB Rounds	MQPS Rounds	5 05													7	8
			6 06													8	8
			7 07														9
	Overall Length [L] Code			40	45	50	56	60	63	70	71	80	90	100			



STRAIGHT	Style Code		Shank Dia. [D]	Overall Length [L]											Head Dia. [H]		Min. D	Max. D	
	60° HEAD	STD HEAD		40	45	50	56	60	63	70	71	80	90	100	60°	STD			
	MQSB	MQSS	2 02												1.8D	4	.8	2	
			3 03													5	2	3	
			4 04														6	2	4
			5 05														7	3	5
			6 06														8	4	6
			7 07														9	6	7
			Overall Length [L] Code			40	45	50	56	60	63	70	71	80		90	100		

ORDER	BLANK	STYLE	SHANK	
		MQBB	05 - 63	OVERALL LENGTH
ORDER	ROUND	STYLE	SHANK	'P' DIM
		MQPB	06 - 63	P=5.25
ORDER	STRAIGHT	STYLE	SHANK	'D' DIM
		MQSS	04 - 60	D=3.54

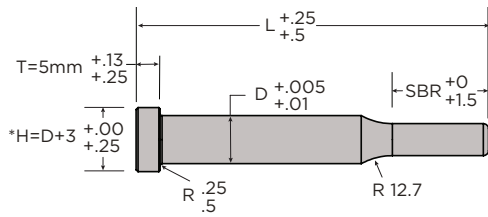
ALTERATION OPTIONS	
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
AT	Altered head thickness
PL	Precision Overall Length ±.026mm
PT	Precision head thickness ±.013mm
For additional Alteration Options, see page 114.	

Stock available • 60° Head available larger than 6.35 body diameter
• If "D" is greater than 6.35, T=3.962

ROUND FORM PUNCH

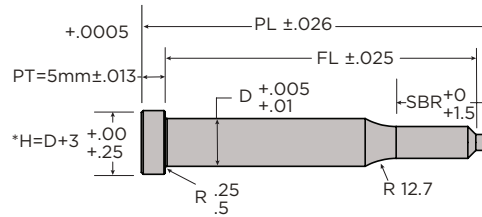
STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V ULTIMA® M4

ROUND FORM WITHOUT 'FL' (FORM LENGTH)



*H=Head Diameter

ROUND FORM WITH 'FL' (FORM LENGTH)
ALL ROUND FORM WITH 'FL' ARE PT AND PL



*H=Head Diameter

OPTIONAL TIP
TOLERANCE [P]

TOLERANCE #1

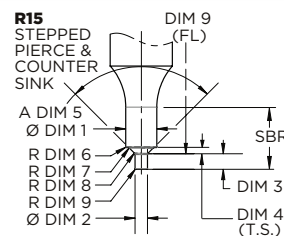
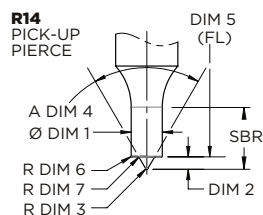
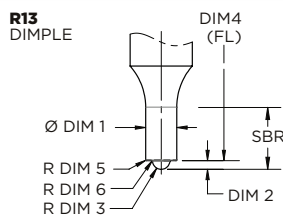
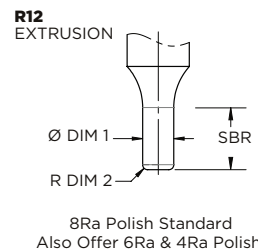
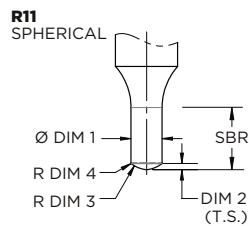
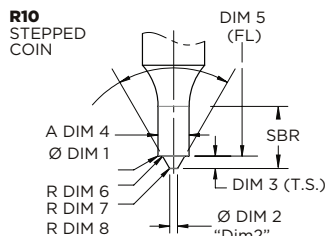
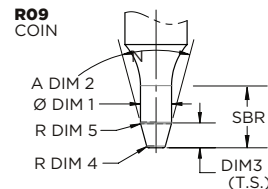
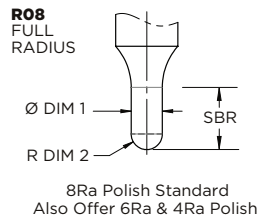
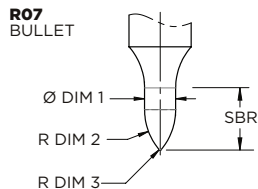
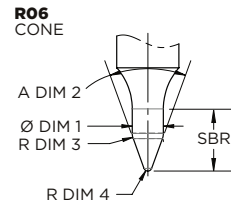
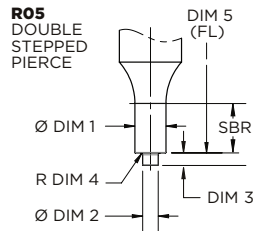
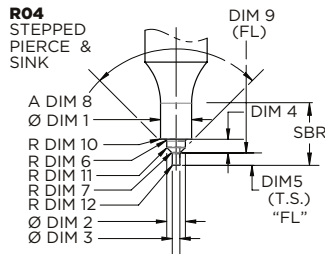
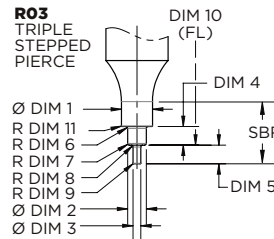
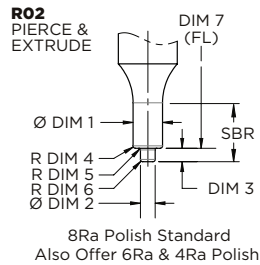
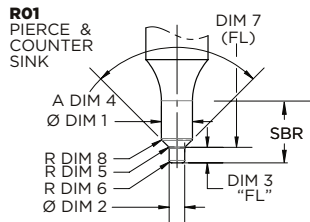
+0.013
- 0
Concentric within .013
T.I.R.

TOLERANCE #2

+0.005
- 0
Concentric within .008
T.I.R.

**OPTIONAL LENGTH
& HEAD THICKNESS
TOLERANCE**

PL ±.026
PT ±.013



ORDER

Take standard catalog part number + round form part number.

EXAMPLE:

MSPB16-9025 R05
DIM. 1 = .XXXX
DIM. 2 = .XXXX
DIM. 3 = .XXXX
DIM. 4 = .XXXX
DIM. 5 = .XXXX

All internal corners will have an internal radius of .26 minimum.

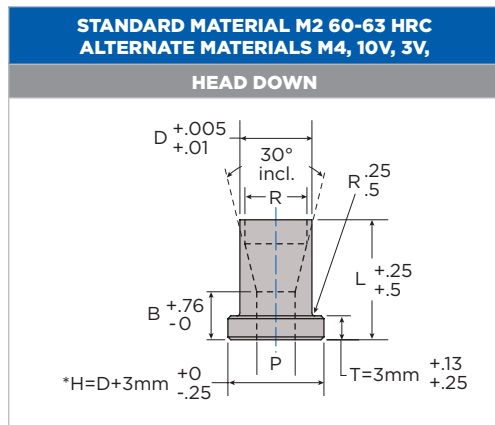
"FL"

Dimension is length from under head to form ±.026 (Form Length).

"L"

Dimension tolerance is
+.25
+.5
unless precision "L"

CLOSE SPACE GUIDES



OPTIONAL TIP TOLERANCE [P]
#1 ROUNDS +.013 - 0 Point to Shank Concentric within .013 T.I.R.
#2 ROUNDS +.005 - 0 Point to Shank Concentric within .008 T.I.R.
Tolerance #1 unless specified



ORDER	STYLE	SHANK	'P' DIM
	MCSG 08	- 25	P=2.8
		OVERALL LENGTH	

CLOSE SPACE GUIDES	Style Code	Head THK [T]	Shank Dia. [D]	Overall Length [L]			Min. P	Max. P	Head Dia. [H]	Relief [R]
				13	16	20				
	MCSG	3	5 05				1.7	2.5	8	3.6
			6 06				1.7	3	9	4.6
			8 08				1.7	4	11	6.6
			10 10				1.7	5	13	8.2
			13 13				1.7	6	16	11.4
Overall Length [L] Code				13	16	20				

DIE LAND EXAMPLE
(P = 2) 2 + 1.7 = 3.7

Land Length [B]	
P	B
.8 - 1.7	2P
1.7 - 2.4	P + 1.7
2.4 - 10.8	.82P + 2.1

HEADED

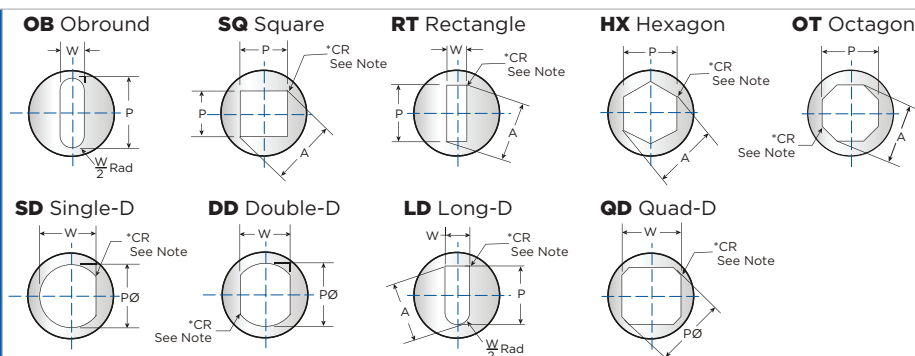
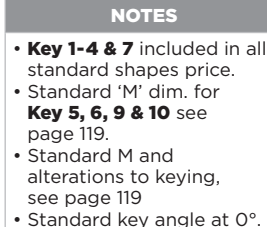


ALTERATION OPTIONS

AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
ARD	Relief diameter larger than standard size
AT	Altered head thickness
PL	Precision Overall Length $\pm .026\text{mm}$
PT	Precision head thickness $\pm .013\text{mm}$

For additional Alteration Options, see page 114.

ORDER **SHAPE** **STYLE** **SHANK** **SHAPE** **'W' DIM** **KEY ANGLE**
MHDG 10 - 13 OB P=6.0 W=4.25 K1 Y=0
OVERALL J FLIGHT **'P' DIM** **KEY TYPE**



NOTES
Order Die View.
*.178 radius corners
typical on shapes.
For special shapes
see page 107.

GUIDE BUSHINGS

HEAD-UP	Style Code	Head THK [T]	Shank Dia. [D]	Head [H]	Overall Length [L]				Min. P	Max. P	Min. P/A	Max. P/G	Relief Dia. [R]
					8	10	13	16					
	MHUG	3	5 05	8					1.6	3.2	1.3	3.2	3.6
			6 06	9					1.6	3.9	1.3	3.9	4.6
			8 08	11					2.4	5.4	1.3	5.4	6.6
			10 10	13					3.2	6.8	1.3	6.8	8.2
			13 13	16					5.4	8.8	1.9	8.8	11.4
16 16			19					7.4	10.8	1.9	10.8	Taper only	
Overall Length [L] Code					08	10	13	16					

HEADLESS	Style Code	Shank Dia. [D]	Overall Length [L]				Min. P	Max. P	Min. P/A	Max. P/G	Relief Dia. [R]
			8	10	13	16					
	MHLG	5 05					1.6	3.2	1.3	3.2	3.6
		6 06					1.6	3.9	1.3	3.9	4.6
		8 08					2.4	5.4	1.3	5.4	6.6
		10 10					3.2	6.8	1.3	6.8	8.2
		13 13					5.4	8.8	1.9	8.8	11.4
16 16						7.4	10.8	1.9	10.8	Taper only	
Overall Length [L] Code			08	10	13	16					

HEAD-DOWN	Style Code	Head THK [T]	Shank Dia. [D]	Head [H]	Overall Length [L]				Min. P	Max. P	Min. P/A	Max. P/G	Relief Dia. [R]
					8	10	13	16					
	MHDG	3	5 05	8					1.6	3.2	1.3	3.2	3.6
			6 06	9					1.6	3.9	1.3	3.9	4.6
			8 08	11					2.4	5.4	1.3	5.4	6.6
			10 10	13					3.2	6.8	1.3	6.8	8.2
			13 13	16					5.4	8.8	1.9	8.8	11.4
16 16			19					7.4	10.8	1.9	10.8	Taper only	
Overall Length [L] Code					08	10	13	16					

 Stock available

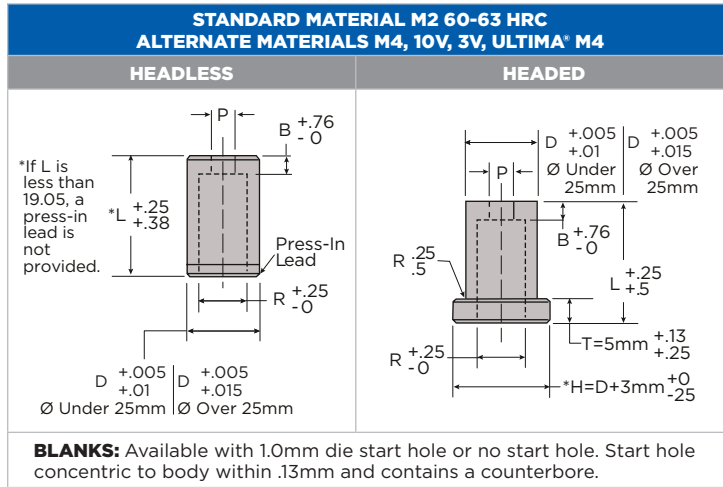
DIE LAND EXAMPLE

$$(P = 2) \mathbf{2 + 1.7 = 3.7}$$

Land Length [B]

P	B
.8 - 1.7	2P
1.7 - 2.4	P + 1.7
2.4 - 10.8	.82P + 2.1

COUNTERBORE RELIEF DIE



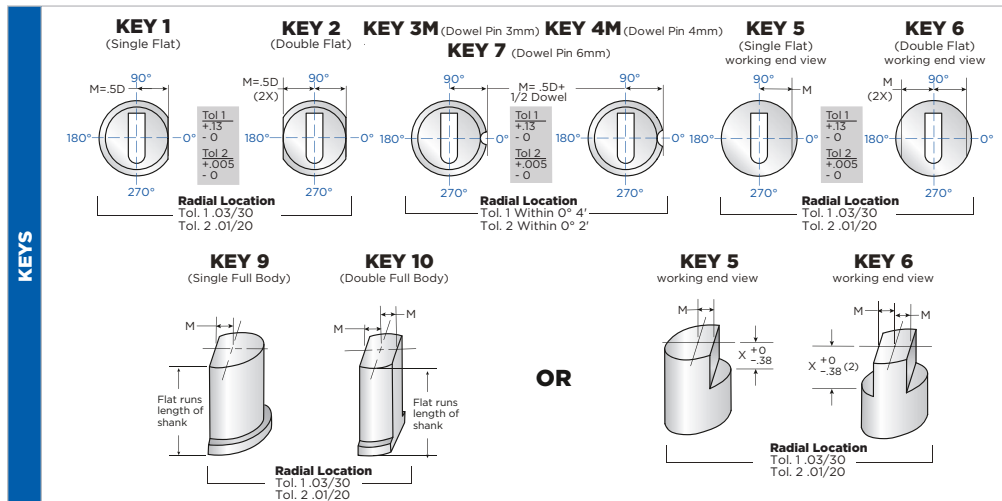
*H=Head Diameter

OPTIONAL HOLE TOLERANCE [P]
#1 ROUNDS $+.013$ -0 Hole to Body Concentric within .013 T.I.R.
#1 SHAPES $\pm .013$ Hole to Body Concentric within .026 T.I.R.
#2 ROUNDS & SHAPES $+.005$ -0 Hole to Body Concentric within .008 T.I.R.
Tolerance #1 unless specified

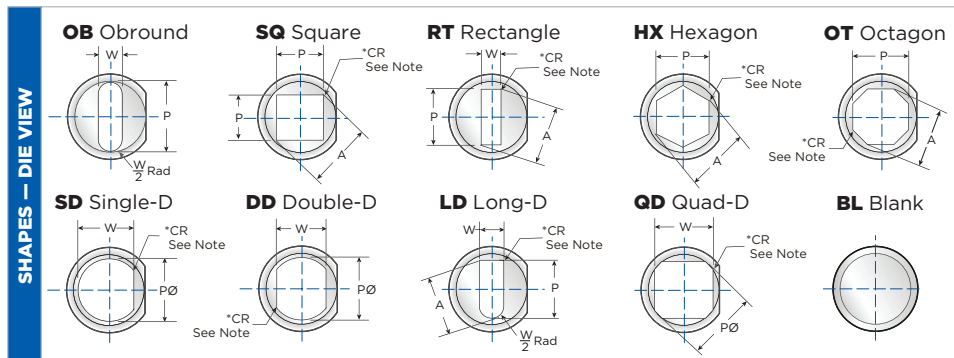


ORDER ROUND	STYLE	SHANK	SHAPE	'P' DIM	SLUG HUGGER	TOTAL CLEARANCE
	MDDC 20 - 25 RD P=7.5 SH2 CLR=.050					
	MAT=Mild Steel MT= 3mm					
	OVERALL LENGTH MATERIAL TYPE MATERIAL THICKNESS					

ALTERATION OPTIONS	
ADL	Altered die land (smaller)
PL	Precision Overall Length $\pm .026$
SH2	Slug Hugger*2
For additional Alteration Options, see page 114.	



- NOTES**
- Key 1-4 & 7 included in all standard shapes price.
 - Standard 'M' dimension for Key 5, 6, 9 & 10 see page 119.
 - Standard M and alterations to keying, see page 119.
 - Standard key angle at 0°.

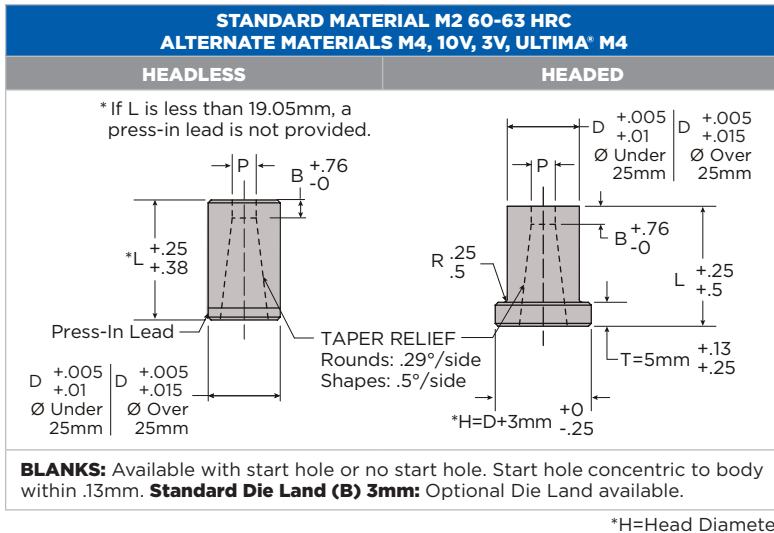


- NOTES**
- Order Die View.
 - *.178 radius corners typical on shapes.
 - For special shapes see page 107.

	Style Code	Shank Dia. [D]	Overall Length [L]							Min. P/W	Max. P	Relief Dia. [R]	Die Land [B]						
			20	22	25	28	30	32	35										
HEADLESS	MDDC	6 06									1.25	2.25 3.25	3 4	4					
		8 08									1.25	2.25 2.25	3 4	4					
		10 10									1.25 1.5 1.5	2.25 3.25 5.25	3 4 6	4 5					
		13 13									1.5 1.5	5.25 7.25	6 8	5					
		16 16									2.25	7.25 8.75	8 9.5	5					
		20 20									3	8.75 11.25	9.5 12	5 6.5					
		22 22									3.25	11.25 14.25	12 15	6.5					
		25 25									4	14.25 16.75	15 17.5	6.5					
		32 32									4.75	16.75 20.25	17.5 21	6.5 8					
		40 40									6.25 6.75 6.25	20.25 23.25 26.25	21 24 27	8					
		45 45									6.25	35.75	36.5	9					
		50 50									6.25	40.75	41.5	9					
		56 56									8	45.75	46.5	9					
		63 63									9.5	50.75	51.5	9					
		71 71									11	55.75	56.5	9					
Overall Length [L] Code			20	22	25	28	30	32	35										
HEADED	MHDC	5	Head THK [T]	Shank Dia. [D]	Head [H]	Overall Length [L]							Min. P/W	Max. P	Relief Dia. [R]	Die Land [B]			
						20	22	25	28	30	32	35							
						6 06	9									1.25	2.25 3.25	3 4	4
						8 08	11									1.25	2.25	3 4	4
						10 10	13									1.25 1.5 1.5	2.25 3.25 5.25	3 4 6	4 5
						13 13	16									1.5 1.5	5.25 7.25	6 8	5
						16 16	19									2.25	7.25 8.75	8 9.5	5
						20 20	23									3	8.75 11.25	9.5 12	5 6.5
						22 22	25									3.25	11.25 14.25	12 15	6.5
						25 25	28									4	14.25 16.75	15 17.5	6.5
						32 32	35									4.75	16.75 20.25	17.5 21	6.5 8
						40 40	43									6.25 6.75 6.25	20.25 23.25 26.25	21 24 27	8
						Overall Length [L] Code			20	22	25	28	30	32	35				

Stock available

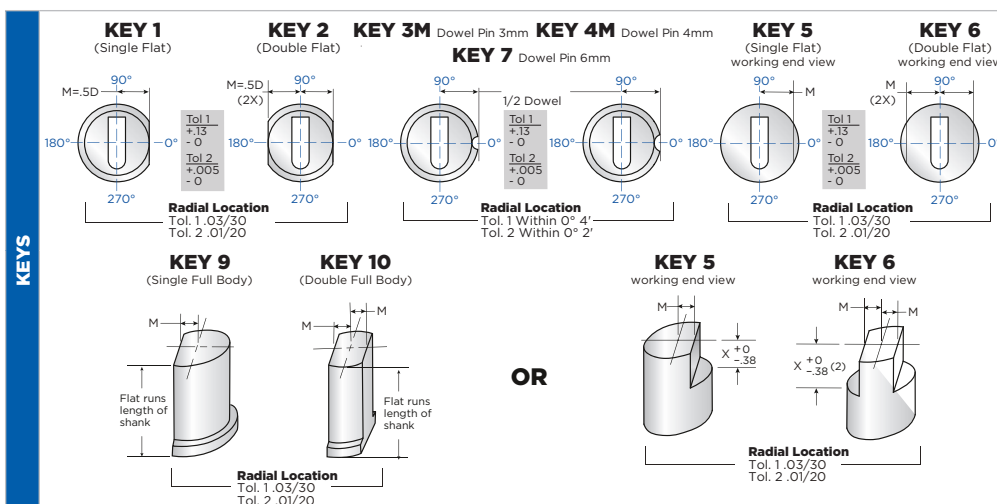
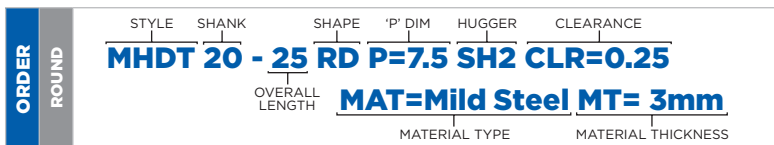
TAPER RELIEF DIE



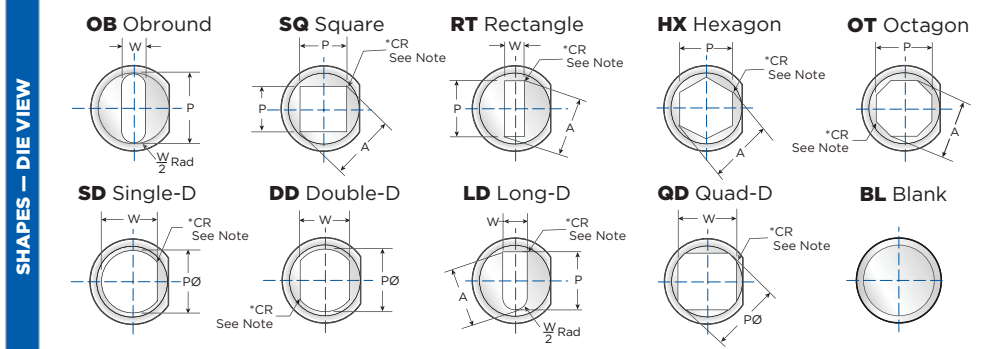
OPTIONAL HOLE TOLERANCE [P]
#1 ROUNDS +.013 - 0 Hole to Body Concentric within .013 T.I.R.
#1 SHAPES ±.013 Hole to Body Concentric within .026 T.I.R.
#2 ROUNDS & SHAPES +.005 - 0 Hole to Body Concentric within .008 T.I.R.
Tolerance #1 unless specified



ALTERATION OPTIONS	
AD	Reduce body diameter
ADL	Altered die line
AH	Altered head diameter
AHR	Altered radius under head
AL	Overall length shorter [Shorten shank maintain point]
ART	Relief taper other than standard
AT	Altered head thickness
PL	Precision Overall Length ±.026mm
PT	Precision head thickness ±.013mm
SH2	Slug Hugger® 2
SH4L	Slug Hugger® 4L
For additional Alteration Options, see page 114.	



- NOTES**
- **Key 1-4 & 7** included in all standard shapes price.
 - Standard 'M' dimension for **Key 5, 6, 9 & 10** see page 119.
 - Standard M and alterations to keying, see page 119.
 - Standard key angle at 0°.



- NOTES**
- Order Die View.
- *.178 radius corners typical on shapes.
- For special shapes see page 107.

TAPER RELIEF DIE

	Style Code	Shank Dia. [D]	Overall Length [L]									Min. P	Min. W	Max. P/A	Die Land [B]	
			13	16	20	22	25	28	30	32	35					
HEADLESS	MDDT	5 05										1	1.3	3.2	3	
		6 06										1.2	1.3	3.9		
		8 08										1.6	1.3	5.4		
		10 10										2	1.3	6.8		
		13 13										2.6	1.9	8.8		
		16 16										3.2	1.9	10.8		
		20 20										4	1.9	13.6		
		25 25										5	1.9	17		
		32 32										6.4	1.9	22		
		38 38										7.6	1.9	27		
		40 40										8	1.9	27		
		45 45										9	3.3	35		
		50 50										10	3.3	40		
		56 56										11.2	3.3	45		
		63 63										12.6	3.3	50		
		71 71										14.2	3.3	56		
Overall Length [L] Code			13	16	20	22	25	28	30	32	35					
	Style Code	Head THK [T]	Shank Dia. [D]	Head [H]	Overall Length [L]								Min. P	Min. W	Max. P/A	Die Land [B]
					13	16	20	22	25	28	30	32				
HEADED	MHDT	5	5 05	8									1	1.3	3.2	3
			6 06	9									1.2	1.3	3.9	
			8 08	11									1.6	1.3	5.4	
			10 10	13									2	1.3	6.8	
			13 13	16									2.6	1.9	8.8	
			16 16	19									3.2	1.9	10.8	
			20 20	23									4	1.9	13.6	
			25 25	28									5	1.9	17	
			32 32	35									6.4	1.9	22	
			38 38	41									7.6	1.9	27	
			40 40	43									8	1.9	27	
			45 45	48									9	3.3	35	
			50 50	53									10	3.3	40	
			56 56	59									11.2	3.3	45	
			63 63	66									12.6	3.3	50	
			71 71	74									14.2	3.3	56	
Overall Length [L] Code					13	16	20	22	25	28	30	32	35			

Stock available

Smaller "Min. P/Ws" are available upon request.

ROUND FORM DIE

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4

FD01 	FD02 	ALSO AVAILABLE WITH TAPER OR COUNTERBORE RELIEF Offer 8Ra, 6Ra & 4Ra Polish
FD03 "R DIM 2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD04 "R DIM 2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD05 "R DIM 2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish
FD06 	FD07 	FD08



ORDER

Take standard catalog part number plus round tip part number.

EXAMPLE:

MHDT08-28 FD03

DIM. 1 = .XXXX

DIM. 2 = .XXXX

OPTIONAL HOLE TOLERANCE [P]

TOLERANCE #1

+ .013

- 0

Hole to Body Concentric within .013 T.I.R.

TOLERANCE #2

+ .005

- 0

Hole to Body Concentric within .008 T.I.R.

ELIMINATE COSTLY SLUG PULLING

Slug pulling can cause expensive press downtime. At the Impax Tooling Solutions® division of Wilson Tool International, our desire to provide innovative tooling solutions for our customers has lead us to develop the Slug Hugger® die design which helps eliminate the very costly problem of slug pulling.

The Slug Pulling Solution

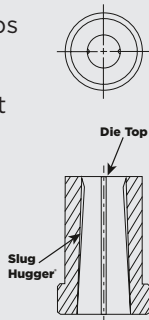
Slug Hugger dies help eliminate scrapped parts, costly downtime, and possible press and tooling damage due to slug pulling.

This unique design helps eliminate unnecessary back-pressure on small punch tips by preventing packed slugs. The Slug Hugger 2 design works on most material types and thicknesses including aluminum and stainless steel while Slug Hugger 4L is specifically designed for thinner materials. They are an available option on all die configurations: taper relief, counterbore relief, headed or headless.



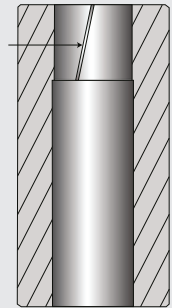
SLUG HUGGER® 2

The Slug Hugger 2 design grabs the slug just below the cutting surface of the die and retains it during the stripping process. Precision “nips” hold slugs in the die and when capacity is reached, one slug per hit is released through the relief.



SLUG HUGGER® 4L

The Slug Hugger 4L retains slugs with the assistance of cavities on the inside of the die. These cavities hold the slug in place after the hit occurs. While the 4L can be used with any material thickness, it is ideal for stamping thinner materials and is recommended for clearances of less than .004”.



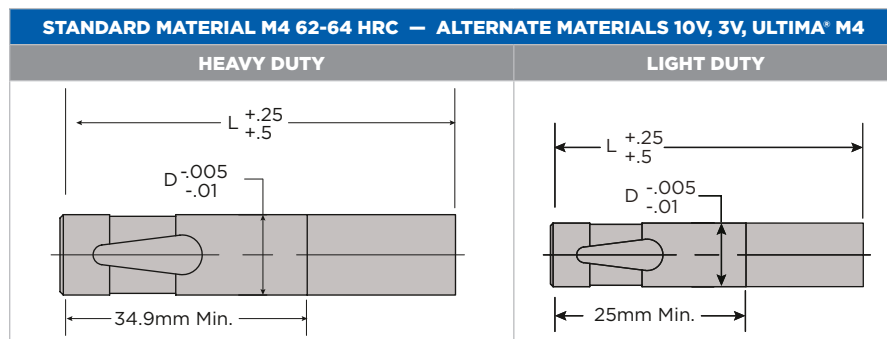
Ordering Slug Hugger Dies

- Use the clearance you want and the die type you like.
- The minimum P/W dimension for the Slug Hugger 4L is 0.050” [1.27mm].
- The minimum total clearance for Slug Hugger 4L shape is 0.001” [.026mm], a round is 0.0005” [.013mm]
- The minimum total P/W dimension for the Slug Hugger 2 is 0.035” [.89mm].
- Minimum clearance for a Slug Hugger 2 shape or round is 0.004” [.10mm] total.

Simply specify that you’d like Slug Hugger 2 or 4L when you place your tooling order. Indicate the type and thickness of material you are stamping as well as your desired clearance. See the example below:

	Quantity	Catalog Number	Shape	P	W	Tolerance	Type	Material Type	Material Thickness	Die Clearance Specify Per Side or Total
INCH	2	IDD100-125 Headless Taper Relief Die Round	RD	.5000"	—	1	Slug Hugger® 2	Cold Rolled	.060"	.010" Per Side
	1	IHDT100-125 Headed Taper Relief Die Shape	OB	.6500"	.4000"	1	Slug Hugger® 4L	Cold Rolled	.020"	.002" Per Side
METRIC	1	MHDT16-25 Metric Headed Tape Relief Die Shape	SQ	6.5mm	—	1	Slug Hugger® 2	Alum	1.5mm	.105mm Per Side

HEAVY & LIGHT DUTY SOLID BLANKS



ORDER
HEAVY DUTY

STYLE: **MHSP**
OVERALL LENGTH: **10 - 71**
SHANK: **BL**
SHAPE: **BL**

ORDER
LIGHT DUTY

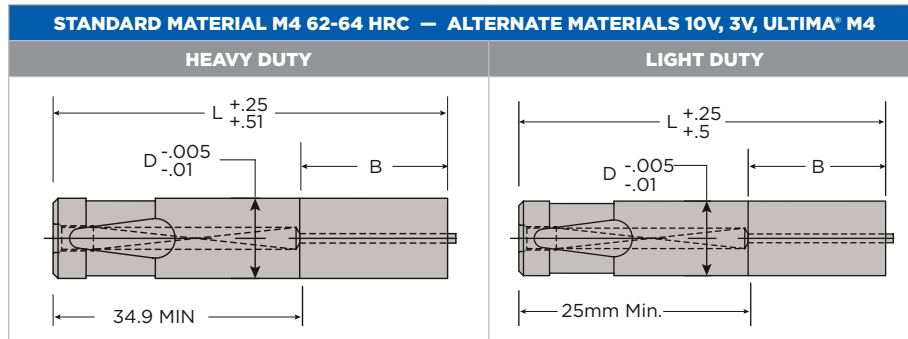
STYLE: **MLSP**
OVERALL LENGTH: **13 - 80**
SHANK: **BL**
SHAPE: **BL**

HEAVY DUTY SOLID BLANK	Style Code	Shank Dia. [D]	Overall Length [L]								
			63	71	80	90	100	110	125	140	150
	MHSP	10 10	4	4							
		13 13	4	4	4						
		16 16	4	4	4						
		20 20	4	4	4						
		25 25		4	4						
		32 32									
		40 40									
	Overall Length [L] Code			63	71	80	90	100	110	125	140

LIGHT DUTY SOLID BLANK	Style Code	Shank Dia. [D]	Overall Length [L]								
			63	71	80	90	100	110	125	140	150
	MLSP	6 06	4								
		10 10	4	4							
		13 13	4	4	4						
		16 16	4	4	4						
		20 20	4	4	4						
		25 25		4	4						
		32 32									
		38 38									
Overall Length [L] Code			63	71	80	90	100	110	125	140	150

Stock available 4 Ultima® M4 steel available

HEAVY & LIGHT DUTY EJECTOR BLANKS



EJECTOR COMPONENTS						
Size	.38	.69	1.04	1.47	2.26	3.05
Part #	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12
Replacement component set includes screw, spring and pin. Quantity: 10 each						

For additional Ejector Components, see page 117.

ORDER	HEAVY DUTY		
	STYLE	SHANK	SIDE HOLE LOCATION
	MHEB 10 - 90 10 BL		
	OVERALL LENGTH		SHAPE
LIGHT DUTY	STYLE	SHANK	SIDE HOLE LOCATION
	MLEB 20 - 80 13 BL		
	OVERALL LENGTH		SHAPE

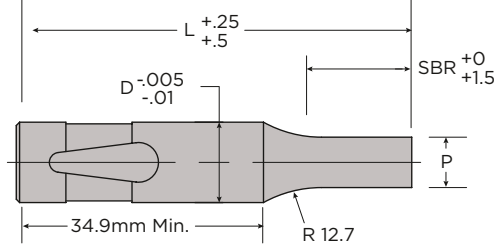
HEAVY DUTY EJECTOR BLANK	Style Code	Shank Dia. [D]	Overall Length [L]								Side Hole Location [B]	Ejector	
			63	71	80	90	100	110	125	140			150
	MHEP	10 10										10 13 19 25	4 (1.04)
		13 13											6 (1.47)
		16 16											9 (2.26)
		20 20											9 (2.26)
		25 25											9 (2.26)
		32 32											12 (3.05)
		40 40											12 (3.05)
	Overall Length [L] Code			63	71	80	90	100	110	125	140	150	

LIGHT DUTY EJECTOR PUNCH	Style Code	Shank Dia. [D]	Overall Length [L]								Side Hole Location [B]	Ejector	
			63	71	80	90	100	110	125	140			150
	MLEP	6 06										10 13 19 25	3 (0.69)
		10 10											4 (1.04)
		13 13											6 (1.47)
		16 16											9 (2.26)
		20 20											9 (2.26)
		25 25											9 (2.26)
		32 32											12 (3.05)
		38 38											10, 13, 19, 25, 30
Overall Length [L] Code			63	71	80	90	100	110	125	140	150		

Stock available

HEAVY DUTY SOLID PUNCH

**STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA[®] M4**



**OPTIONAL TIP
TOLERANCE [P]**

#1 ROUNDS

+ .013

- 0

Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

± .013

Point to Shank Concentric within .026 T.I.R.

**#2 ROUNDS &
SHAPES**

+ .005

- 0

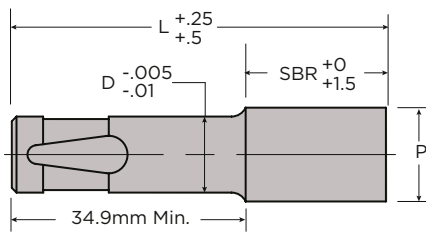
Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified



Oversized Punches

**STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA[®] M4**



Oversized punches can be ordered the same as our regular ball lock part numbers. Use **MHSO** — Metric Heavy Duty Oversized solid punch.

BALL LOCK

ORDER	SHAPE	ROUND				
		STYLE	SHANK	SBR	'P' DIM	COATING
		MHSP 10 - 71 10 RD P=6.35 Optima				
ORDER	SHAPE	STYLE	SHANK	SBR	'P' DIM	KEY LOCATION
		OVERALL LENGTH	SHAPE	'W' DIM		
		MHSP 13 - 90 25 OB P=6.35 W=5.0 Y180				
ORDER	SHAPE	STYLE	SHANK	SBR	'P' DIM	
		OVERALL LENGTH	SHAPE			
		MHSO 13 - 90 25 RD P=15				

ALTERATION OPTIONS

ASBR	Altered SBR
ABR	Blend radius other than 12.7mm [Round only]
AW	Smaller than standard "W" [Shapes]
PL	Precision Overall Length ±.026mm

For additional Alteration Options, see page 114.

NOTES

Order Die View.
*.13 radius corners typical on shapes.
For special shapes see page 107.

STANDARD KEY LOCATION IS 90°

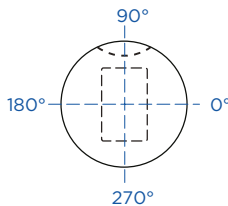
OB Obround

SQ Square

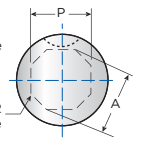
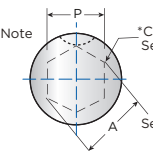
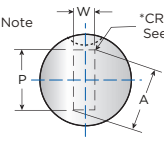
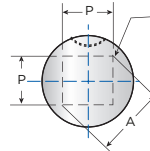
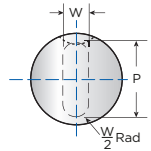
RT Rectangle

HX Hexagon

OT Octagon



Radial Location
Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

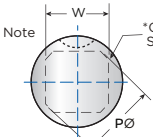
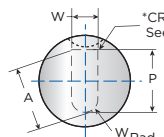
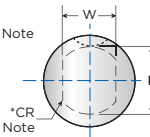
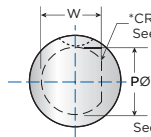


SD Single-D

DD Double-D

LD Long-D

QD Quad-D



HEAVY DUTY SOLID PUNCH

Style Code	Shank Dia. [D]	Overall Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. P/A
		63	71	80	90	100	110	125	140	150				
		63	71	80	90	100	110	125	140	150				
MHSP	10 10	4	4								10	1.4	1.6	9.97
		4	4								19	1.5	2.1	9.97
	13 13	4	4	4							13	4	4.5	12.97
		4	4	4							19			
			4	4							25			
	16 16	4	4	4							13	4	6	15.97
		4	4	4							19			
			4	4							25			
	20 20	4	4	4							13	6	8	19.97
		4	4	4							19			
			4	4							25			
	25 25		4	4							13	8	10	24.97
			4	4							19			
			4	4							25			
	32 32										13	10	12.5	31.97
											19			
											25			
	40 40										19	12	14	39.97
											25			
											30			
Overall Length [L] Code		63	71	80	90	100	110	125	140	150				

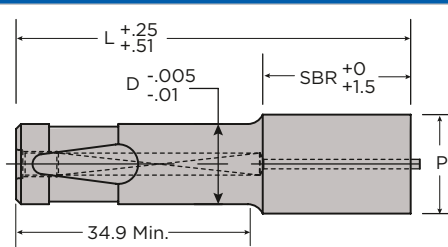
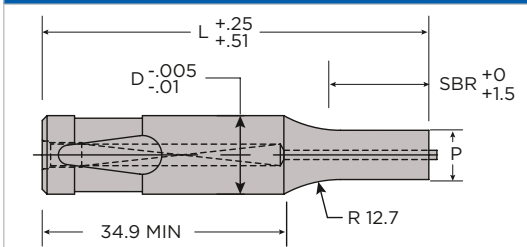
Stock available 4 Ultima® M4 steel available

OVERSIZED HEAVY DUTY SOLID PUNCH									
Style Code	Shank Dia. [D]	Overall Length [L]					SBR	Min. P/W	
		63	71	80	90	100			
MHSO	10 10						10	10	
							19		
	13 13						13	13	
							19		
							25		
	16 16						13	16	
							19		
							25		
	20 20						13	20	
							19		
							25		
	25 25						13	25	
							19		
							25		
	32 32						13	32	
							19		
							25		
	40 40						19	40	
							25		
							30		
Overall Length [L] Code		63	71	80	90	100			

BALL LOCK

HEAVY DUTY EJECTOR PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4



EJECTOR COMPONENTS

Size	.38	.69	1.04	1.47	2.26	3.05
Part #	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12



Replacement component set includes screw, spring and pin. Quantity: 10 each

Oversized punches can be ordered the same as our regular ball lock part numbers. Use **MEHO** — Metric Heavy Duty Oversized ejector punch.

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+0.13
- 0
Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

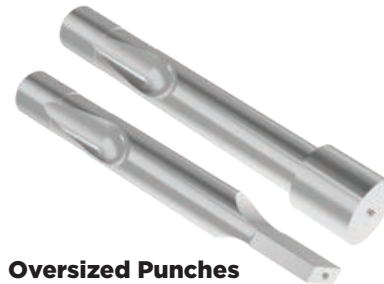
±.013
Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+0.05
- 0
Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified

For additional Ejector Components, see page 117.



Oversized Punches

BALL LOCK

ORDER	ROUND	STYLE SHANK SBR 'P' DIM MHEP 10 - 90 10 RD P=6.35 Optima OVERALL LENGTH SHAPE COATING
	SHAPE	STYLE SHANK SBR 'P' DIM KEY LOCATION MHEP 13 - 110 19 RT P=6.35 W=5.0 Y45 OVERALL LENGTH SHAPE 'W' DIM
	OVERSIZED	STYLE SHANK SBR 'P' DIM MHEO 13 - 90 19 SQ P=15 OVERALL LENGTH SHAPE



EASY SHARP TOOL

SIZE	CAT. NO.	FITS PIN NO.
1.5	971481	4, 6, 9, 12
.78	971482	2, 3
Set	971562	

SHAPES — DIE VIEW	STANDARD KEY LOCATION IS 90°	OB Obround	SQ Square	RT Rectangle	HX Hexagon	OT Octagon
	90° 180° 0° 270°					
	Radial Location Tol. 1 Within 0° 4' Tol. 2 Within 0° 2'					

NOTES

Order Die View.

*.13 radius corners typical on shapes.

For special shapes see page 107.

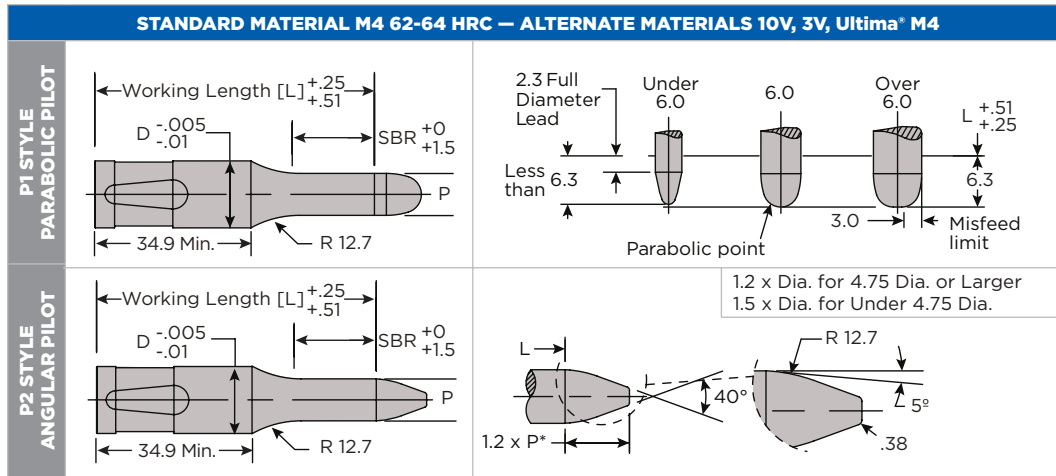
HEAVY DUTY EJECTOR PUNCH

HEAVY DUTY EJECTOR PUNCH																
Style Code	Shank Dia. [D]	Overall Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. P/A	Ejector	
		63	71	80	90	100	110	125	140	150						
MHPE	10 10										10	1.4	1.6	9.97	4 (1.04)	
											19	1.5	2.1			
	13 13										13	4	4.5	12.97	6 (1.47)	
											19					
											25					
	16 16										13	4	6	15.97	9 (2.26)	
											19					
											25					
	20 20										13	6	8	19.97	9 (2.26)	
											19					
											25					
	25 25										13	8	10	24.97	9 (2.26)	
											19					
											25					
	32 32										13	10	12.5	31.97	12 (3.05)	
											19					
											25					
	40 40										19	12	14	39.97	12 (3.05)	
											25					
											30					
	Overall Length [L] Code		63	71	80	90	100	110	125	140	150					

Stock available

OVERSIZED HEAVY DUTY EJECTOR PUNCH													
Style Code	Shank Dia. [D]	Overall Length [L]					SBR	Min. P/W	Ejector				
		63	71	80	90	100							
MHEO	10 10						10	10	4 (1.04)				
							19						
	13 13						13	13	6 (1.47)				
							19						
							25						
	16 16						13	16	9 (2.26)				
							19						
							25						
	20 20						13	20	9 (2.26)				
							19						
							25						
	25 25						13	25	9 (2.26)				
							19						
							25						
	32 32						13	32	12 (3.05)				
							19						
							25						
	40 40						19	40	12 (3.05)				
							25						
							30						
	Overall Length [L] Code		63	71	80	90	100						

HEAVY DUTY PILOT PUNCH



OPTIONAL TIP TOLERANCE [P]
#1 ROUNDS +.013 - 0 Point to Shank Concentric within .013 T.I.R.
#2 ROUNDS +.005 - 0 Point to Shank Concentric within .008 T.I.R.
Note: Shaped pilot punches available.

ORDER

STYLE SHANK SBR 'P' DIM

MHSP 16 - 80 19 RD P=12.7 P1

WORKING LENGTH SHAPE PILOT STYLE



Style Code	Shank Dia. [D]	Working Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. PA
		63	71	80	90	100	110	125	140	150				
PILOT MHSP	10	4									10	1.4	1.6	9.97
	10	4									19	1.5	2.1	
	13	4	4								13	4	4.5	12.97
		4	4								19			
			4								25			
	16	4	4								13	4	6	15.97
		4	4								19			
			4								25			
	20	4	4								13	6	8	19.97
		4	4								19			
			4								25			
	25		4								13	8	10	24.97
			4								19			
			4								25			
	32										13	10	12.5	31.97
											19			
											25			
	40										19	12	14	39.97
											25			
											30			
Working Length [L] Code		63	71	80	90	100	110	125	140	150				

 Stock available
 4 Ultima® M4 steel available

ROUND FORM PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4	
ROUND FORM WITHOUT 'FL' (FORM LENGTH)	ROUND FORM WITH 'FL' (FORM LENGTH) ALL ROUND FORM WITH 'FL' ARE PL

OPTIONAL TIP TOLERANCE [P]
TOLERANCE #1 +.013 - 0 Concentric within .013 T.I.R.
TOLERANCE #2 +.005 - 0 Concentric within .008 T.I.R.
OPTIONAL LENGTH TOLERANCE PL ±.026

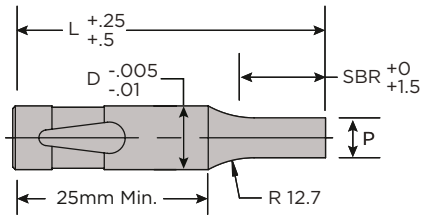
R01 PIERCE & COUNTER SINK 	R02 PIERCE & EXTRUDE 	R03 TRIPLE STEPPED PIERCE
R04 STEPPED PIERCE & SINK 	R05 DOUBLE STEPPED PIERCE 	R06 CONE
R07 BULLET 	R08 FULL RADIUS 	R09 COIN
R10 STEPPED COIN 	R11 SPHERICAL 	R12 EXTRUSION
R13 DIMPLE 	R14 PICK-UP PIERCE 	R15 STEPPED PIERCE & COUNTER SINK



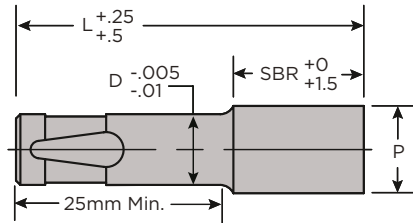
ORDER
Take standard catalog part number + round form part number.
EXAMPLE: MLSP25-10025 R05 DIM. 1 = .XXXX DIM. 2 = .XXXX DIM. 3 = .XXXX DIM. 4 = .XXXX DIM. 5 = .XXXX
All internal corners will have an internal radius of .254 minimum.

LIGHT DUTY SOLID PUNCH

STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4



STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, Ultima® M4



Oversized punches can be ordered the same as our regular ball lock part numbers. Use **MLSO** Metric Light Duty Oversized solid punch.

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+0.13
 - 0
 Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

±.013
 Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+0.005
 - 0
 Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified



Oversized Punches

BALL LOCK

ROUND

MLSP 13 - 80 13 RD P=6.35 Optima
 STYLE SHANK SBR 'P' DIM
 OVERALL LENGTH SHAPE COATING

SHAPE

MLSP 32 - 100 25 OB P=20.0 W=14.0 YO
 STYLE SHANK SBR 'P' DIM KEY LOCATION
 OVERALL LENGTH SHAPE 'W' DIM

OVERSIZED

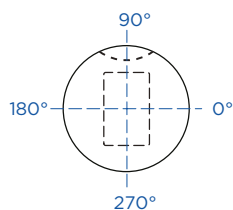
MLSO 13 - 90 25 SQ P=14
 STYLE SHANK SBR 'P' DIM
 OVERALL LENGTH SHAPE

ALTERATION OPTIONS

ABR Blend radius other than 12.7mm [Round only]
AW Smaller than standard "W" [Shapes]
PL Precision Overall Length ±.026mm
 For additional Alteration Options, see page 114.

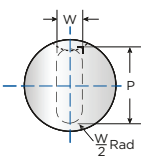
SHAPES — DIE VIEW

STANDARD KEY LOCATION IS 90°

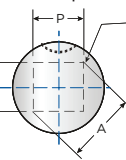


Radial Location
 Tol. 1 Within 0° 4'
 Tol. 2 Within 0° 2'

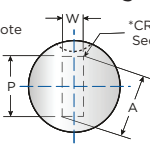
OB Obround



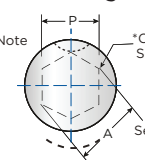
SQ Square



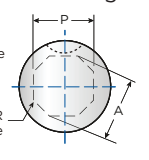
RT Rectangle



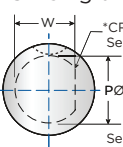
HX Hexagon



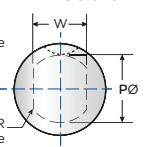
OT Octagon



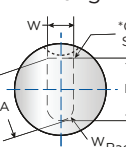
SD Single-D



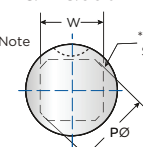
DD Double-D



LD Long-D



QD Quad-D



NOTES

Order Die View.
 *.005 radius corners typical on shapes.
 For special shapes see page 107.

LIGHT DUTY SOLID PUNCH

Style Code	Shank Dia. [D]	Overall Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. P/A
		63	71	80	90	100	110	125	140	150				
MLSP	6 06	4									10	1.4	1.6	5.97
		4									13			
	10 10	4	4								10	1.4	1.6	9.97
		4	4								13	1.5	2.1	
	13 13	4	4	4							13	4	4.5	12.97
		4	4	4							19			
			4	4							25			
	16 16	4	4	4							13	4	6	15.97
		4	4	4							19			
			4	4							25			
	20 20	4	4	4							13	6	8	19.97
		4	4	4							19			
			4	4							25			
	25 25		4	4							13	8	10	24.97
			4	4							19			
			4	4							25			
	32 32										19	10	12.5	31.97
											25			
											30			
	38 38										19	12	14	39.97
										25				
										30				
Overall Length [L] Code		63	71	80	90	100	110	125	140	150				

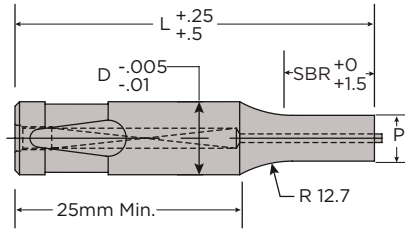
Stock available 4 Ultima® M4 steel available

OVERSIZED LIGHT DUTY SOLID PUNCH									
Style Code	Shank Dia. [D]	Overall Length [L]					SBR	Min. P/W	
		63	71	80	90	100			
MLS0	6 06						10	6	
							13		
	10 10						10	10	
							13		
	13 13						13	13	
							19		
							25		
	16 16						13	16	
							19		
							25		
	20 20						13	20	
							19		
							25		
	25 25						13	25	
							19		
							25		
	32 32						19	32	
							25		
							30		
	38 38						19	38	
						25			
						30			
Overall Length [L] Code		63	71	80	90	100			

BALL LOCK

LIGHT DUTY EJECTOR PUNCH

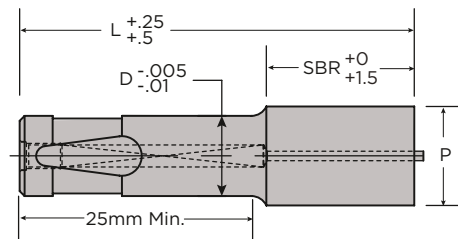
**STANDARD MATERIAL M4 62-64 HRC
ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4**



EJECTOR COMPONENTS

Size	.38	.69	1.04	1.47	2.26	3.05
Part #	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12

Replacement component set includes screw, spring and pin. Quantity: 10 each



Oversized punches can be ordered the same as our regular ball lock part numbers. Use **MLEO** Light Heavy Duty Oversized ejector punch.

OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+0.13
- 0

Point to Shank Concentric within .013 T.I.R.

#1 SHAPES

±.013

Point to Shank Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+0.005

- 0

Point to Shank Concentric within .008 T.I.R.

Tolerance #1 unless specified

For additional Ejector Components, see p. 117.



Oversized Punches

BALL LOCK

ORDER	ROUND	STYLE SHANK SBR 'P' DIM MLEP 20 - 80 13 RD P=12.35 Optima OVERALL LENGTH SHAPE COATING
	SHAPE	STYLE SHANK SBR 'P' DIM KEY LOCATION MLEP 32 - 100 25 RT P=12.35 W=9.0 YO OVERALL LENGTH SHAPE 'W' DIM
	OVERSIZED	STYLE SHANK SBR 'P' DIM MLEO 13 - 90 19 SQ P=14 OVERALL LENGTH SHAPE



EASY SHARP TOOL

SIZE	CAT. NO.	FITS PIN NO.
1.5	971481	4, 6, 9, 12
.78	971482	2, 3
Set	971562	

SHAPES — DIE VIEW	STANDARD KEY LOCATION IS 90°					
	OB Obround	SQ Square	RT Rectangle	HX Hexagon	OT Octagon	

Radial Location
Tol. 1 Within 0° 4'
Tol. 2 Within 0° 2'

NOTES

Order Die View.

*.13 radius corners typical on shapes.

For special shapes see page 107.

LIGHT DUTY EJECTOR PUNCH

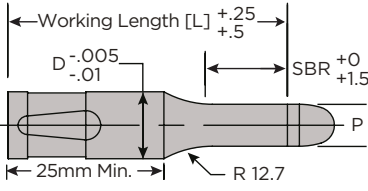
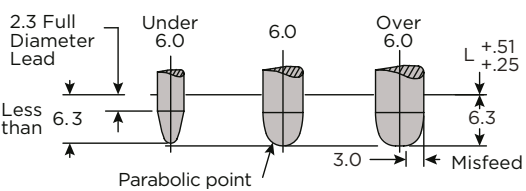
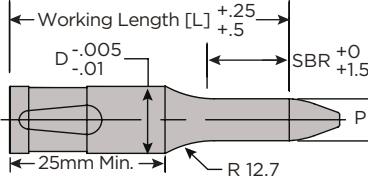
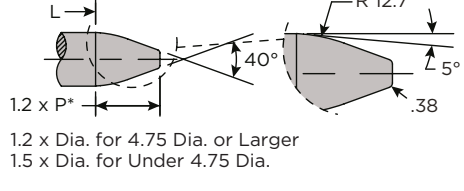
Style Code	Shank Dia. [D]	Overall Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. P/A	Ejector	
		63	71	80	90	100	110	125	140	150						
LIGHT DUTY EJECTOR PUNCH	6 06										10	1.4	1.6	5.97	3 (0.69)	
																13
	10 10										10	1.4	1.6	9.97	4 (1.04)	
																13
	13 13										13	4	4.5	12.97	6 (1.47)	
																19
																25
	16 16										13	4	6	15.97	9 (2.26)	
																19
																25
	20 20										13	6	8	19.97	9 (2.26)	
																19
																25
	25 25										13	8	10	24.97	9 (2.26)	
																19
																25
	32 32										19	10	12.5	31.97	12 (3.05)	
																25
																30
	38 38										19	12	14	39.97	12 (3.05)	
																25
																30
Overall Length [L] Code		63	71	80	90	100	110	125	140	150						

Stock available

Style Code	Shank Dia. [D]	Overall Length [L]					SBR	Min. P/W	Ejector	
		63	71	80	90	100				
OVERSIZED LIGHT DUTY EJECTOR PUNCH	MLEO	6 06						10	6	3 (0.69)
		10 10						10	10	4 (1.04)
		13 13						13	13	6 (1.47)
								19		
								25		
		16 16						13	16	9 (2.26)
								19		
								25		
		20 20						13	20	9 (2.26)
								19		
								25		
		25 25						13	25	9 (2.26)
								19		
								25		
		32 32						19	32	12 (3.05)
								25		
								30		
		38 38						19	38	12 (3.05)
								25		
								30		
Overall Length [L] Code		63	71	80	90	100				

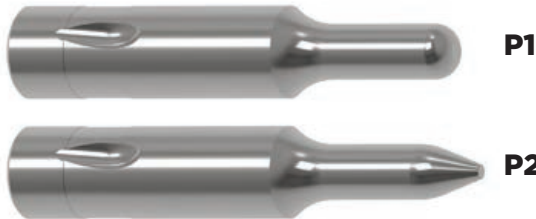
LIGHT DUTY PILOT PUNCH

STANDARD MATERIAL M4 62-64 HRC — ALTERNATE MATERIALS 10V, 3V, ULTIMA® M4

P1 STYLE PARABOLIC PILOT		
P2 STYLE ANGULAR PILOT		

ORDER

STYLE SHANK SBR 'P' DIM
MLSP 25 - 90 19 RD P=12.7 P1
 WORKING LENGTH SHAPE PILOT STYLE



OPTIONAL TIP TOLERANCE [P]

#1 ROUNDS

+ .013

- 0

Point to Shank Concentric within .013 T.I.R.

#2 ROUNDS

+ .005

- 0

Point to Shank Concentric within .008 T.I.R.

Note: Shaped pilot punches available.

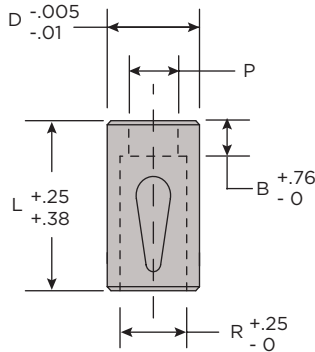
LIGHT DUTY PILOT PUNCH

	Style Code	Shank Dia. [D]	Working Length [L]									SBR	Absolute Min. P/W	Min. P/W	Max. P/A
			63	71	80	90	100	110	125	140	150				
PILOT	6 06		4									10	1.4	1.6	5.97
			4									13		2.1	
	10 10		4	4							10	1.4	1.6	9.97	
			4	4							13	1.5	2.1		
	13 13		4	4							13	4	4.5	12.97	
			4	4							19				
				4							25				
	16 16		4	4							13	4	6	15.97	
			4	4							19				
				4							25				
	20 20		4	4							13	6	8	19.97	
			4	4							19				
				4							25				
	25 25			4							13	8	10	24.97	
				4							19				
				4							25				
	32 32										13	10	12.5	31.97	
											19				
											25				
	38 38										19	12	14	39.97	
											25				
											30				
Working Length [L] Code			63	71	80	90	100	110	125	140	150				

Stock available
 4 Ultima® M4 steel available

COUNTERBORE RELIEF DIE

STANDARD MATERIAL M2 60-63 HRC
ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4



BLANKS: Available with 1.0mm dia. start hole. Start hole concentric to body within .13mm and contains a counterbore.

OPTIONAL HOLE TOLERANCE [P]

#1 ROUNDS

+ .013
- 0

Hole to Body Concentric within .013 T.I.R.

#1 SHAPES

± .026

Hole to Body Concentric within .026 T.I.R.

#2 ROUNDS & SHAPES

+ .005
- 0

Hole to Body Concentric within .008 T.I.R.



ORDER
SHAPE
ROUND

STYLE SHANK SHAPE 'P' DIM
MLBD 16 - 32 RD P=4.0
 OVERALL LENGTH

STYLE SHANK SHAPE 'P' DIM 'W' DIM SLUG HUGGER TOTAL CLEARANCE
MLBD 25 - 32 OB P=4.0 W=3.3 SH2 CLR=.50
 OVERALL LENGTH
MAT=Mild Steel MT= 3mm
 MATERIAL TYPE MATERIAL THICKNESS

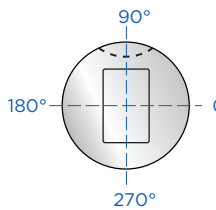
ALTERATION OPTIONS

- ADL** Altered head diameter
- PL** Precision Overall Length ±.026
- SH2** Slug Hugger®2

For additional Alteration Options, see page 114.

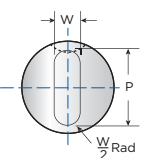
SHAPES — DIE VIEW

STANDARD KEY LOCATION IS 90°

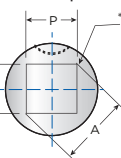


Radial Location
 Tol. 1 Within 0° 4'
 Tol. 2 Within 0° 2'

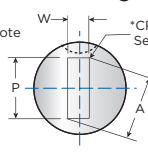
OB Obround



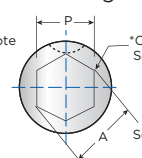
SQ Square



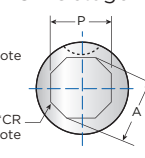
RT Rectangle



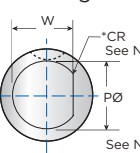
HX Hexagon



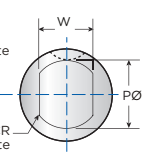
OT Octagon



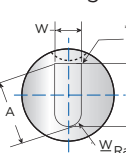
SD Single-D



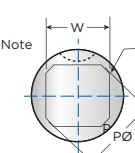
DD Double-D



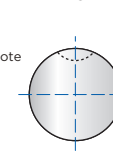
LD Long-D



QD Quad-D



BL Blank



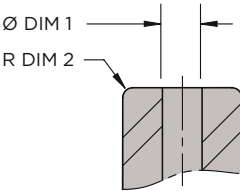
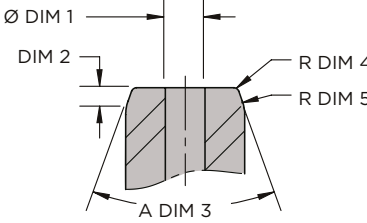
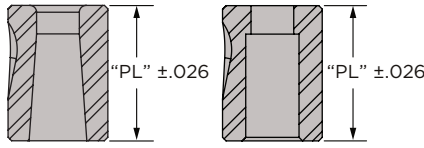
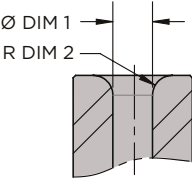
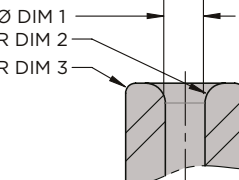
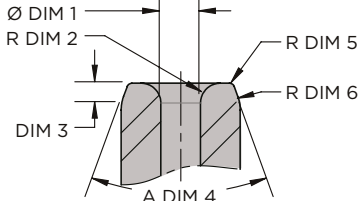
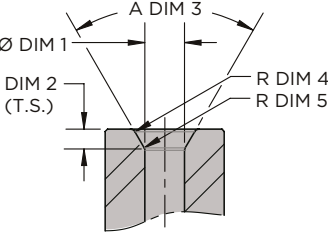
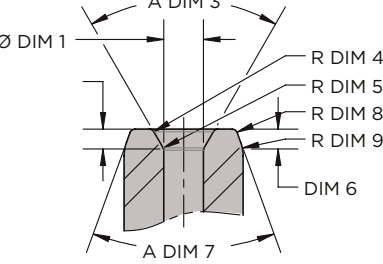
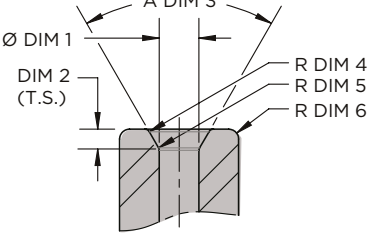
NOTES

Order Die View.
 *.178 radius corners typical on shapes.
 For special shapes see page 107.

Style Code	Shank Dia. [D]	Overall Length [L]	Absolute Min. P/W	Min. P	Min. W	Max. P/A	Relief Dia. R	Die Land B
MLBD	13	32	.8	1.5	1.5	5	6	4
	13							
	16			2.4	2.4	7.2	8	5
	16							
	20			3	3	11	12	5
	20							
	25	32		3.2	3.2	15	16	6
	25							
	32			4	4	19	20	6
	32							
	38			5	5	26	27	8
	38							

Note: Longer lengths available upon request.

ROUND FORM DIE

STANDARD MATERIAL M2 60-63 HRC — ALTERNATE MATERIALS 10V, M4, 3V, ULTIMA® M4		
FD01 	FD02 	ALSO AVAILABLE WITH TAPER OR COUNTERBORE RELIEF  Offer 8Ra, 6Ra & 4Ra Polish
FD03  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD04  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish	FD05  "R DIM2" 8Ra Polish Standard Also Offer 6Ra & 4Ra Polish
FD06 	FD07 	FD08 



ORDER

Take standard catalog part number plus round tip part number.

EXAMPLE:

MLBD20-32 FD03

DIM. 1 = .XXXX

DIM. 2 = .XXXX

OPTIONAL HOLE TOLERANCE [P]

TOLERANCE #1

+ .013

- 0

Hole to Body Concentric within .013 T.I.R.

TOLERANCE #2

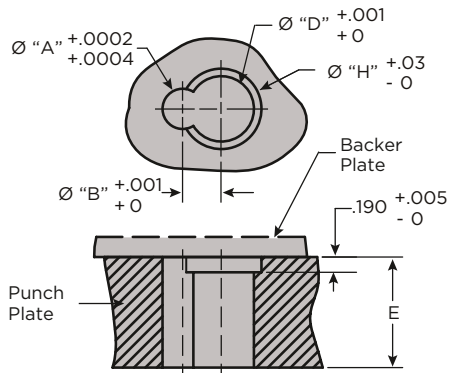
+ .005

- 0

Hole to Body Concentric within .008 T.I.R.

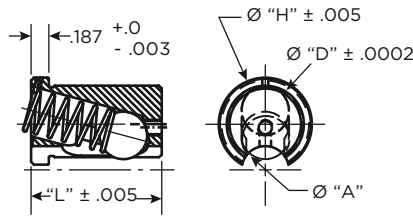
HP ACCU-LOCK® SPECIAL RETAINER INSERTS

PUNCH PLATE HOLE SPECIFICATION

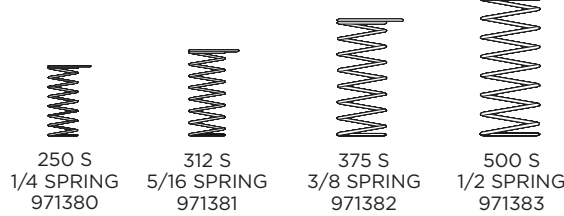


*Tolerance for 1.250 punch/hole is +.0006/+.0003

INSERT SPECIFICATION



REPLACEMENT SPRINGS FOR BACKING PLATE STYLE RETAINERS & HP ACCU-LOCK®

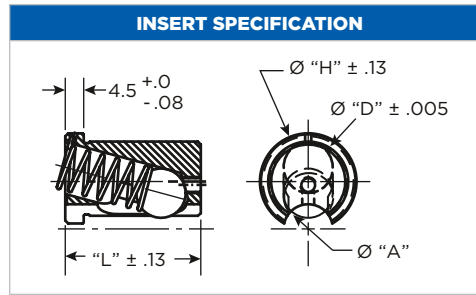
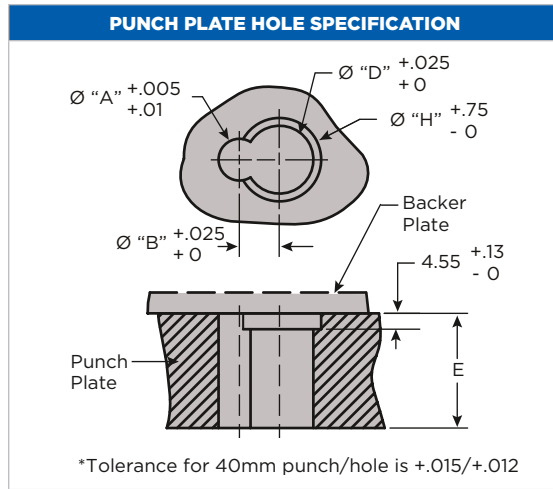


ORDER		HEAVY DUTY	
		STYLE	SHANK
		IHIS	050
ORDER		LIGHT DUTY	
		STYLE	SHANK
		ILIS	050

HEAVY DUTY	Style Code	Insert Specification					Punch Plate Specification				
		Shank Dia.	Shank Code	Insert Dia. [D]	Insert Head [H]	Length [L]	Punch Dia. Hole [A]	Center to Center [B]	Insert Hole Dia. [D]	Head C-Bore Dia. [H]	Inner Booster Spring
IHIS		.375	037	.625	.735	1.38	.375	.375	.6255	.75	972100
		.5	050	.8125	.98		.5	.48	.813	1	972101
		.625	062	.8125	.98		.625	.543	.813	1	
		.75	075	.8125	.98		.75	.605	.813	1	
		.875	087	.8125	.98		.875	.668	.813	1	
		1.00	100	.8125	.98		1.00	.73	.813	1	
		1.25	125*	.8125	.98		1.25	.855	.813	1	

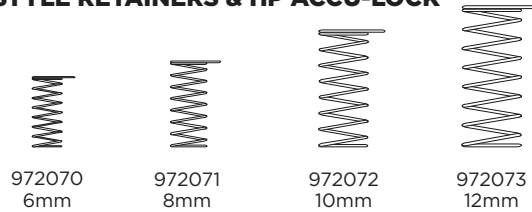
LIGHT DUTY	Style Code	Insert Specification					Punch Plate Specification				
		Shank Dia.	Shank Code	Insert Dia. [D]	Insert Head [H]	Length [L]	Punch Dia. Hole [A]	Center to Center [B]	Insert Dia. [D]	Head C-Bore Dia. [H]	Inner Booster Spring
ILIS		.25	025	.5	.615	1	.25	.28	.5005	.625	972100
		.375	037	.5	.615		.375	.325	.5005	.625	972101
		.5	050	.5625	.69		.5	.406	.5630	.72	
		.625	062	.5625	.69		.625	.469	.5630	.72	
		.75	075	.625	.735		.75	.563	.6255	.75	
		.875	087	.625	.735		.875	.625	.6255	.75	
		1.00	100	.625	.735		1.00	.688	.6255	.75	

HP ACCU-LOCK® SPECIAL RETAINER INSERTS



ORDER	HEAVY DUTY	STYLE	SHANK
		MHIS	020
ORDER	LIGHT DUTY	STYLE	SHANK
		MLIS	013

REPLACEMENT SPRINGS FOR BACKING PLATE STYLE RETAINERS & HP ACCU-LOCK®



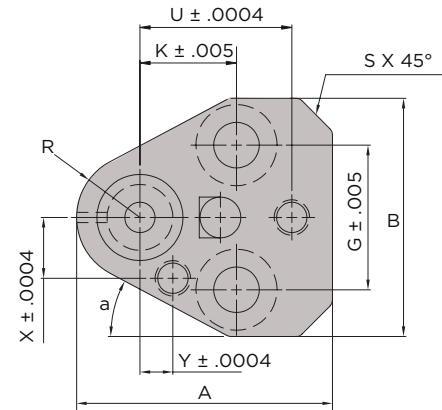
	Style Code	Insert Specification					Punch Plate Specification				
		Shank Dia.	Shank Code	Insert Dia. [D]	Insert Head [H]	Length [L]	Punch Dia. Hole [A]	Center to Center [B]	Insert Hole Dia. [D]	Head C-Bore Dia. [H]	Inner Booster Spring
HEAVY DUTY	MHIS	10	010	16	19.6	34.7	10	10	16.013	20	972100
		13	013	20	24.6		13	11.5	20.013	25	972101
		16	016	20	24.6		16	13	20.013	25	
		20	020	20	24.6		20	15	20.013	25	
		25	025	20	24.6		25	17.5	20.013	25	
		32	032	20	24.6		32	21	20.013	25	
		40	040*	20	24.6		40	25	20.013	25	

	Style Code	Insert Specification					Punch Plate Specification				
		Shank Dia.	Shank Code	Insert Dia. [D]	Insert Head [H]	Length [L]	Punch Dia. Hole [A]	Center to Center [B]	Insert Hole Dia. [D]	Head C-Bore Dia. [H]	Inner Booster Spring
LIGHT DUTY	MLIS	6	006	12	14.6	25.7	6	6.5	12.013	15	972100
		10	010	14	16.6		10	9	14.013	17	972101
		13	013	14	16.6		13	10.5	14.013	17	
		16	016	14	16.6		16	12	14.013	17	
		20	020	16	18.6		20	14	16.013	19	
		25	025	16	18.6		25	16.5	16.013	19	
		32	032	16	18.6		32	20	16.013	19	
		38	038	16	18.6		38	23	16.013	19	

HP TRU ADVANTAGE RETAINER

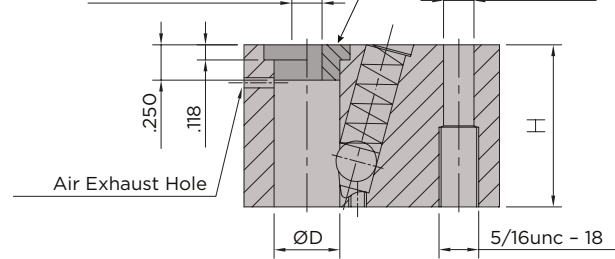


Furnished with backing plugs instead of backing plate.
See page 103 for backing/plug options.



Slip Fit For Dowel
.1250 For ILRT 0.250
.1875 For ILRT 0.375
.2500 For Others

Slip Fit
For .2500
Dowel (2X)

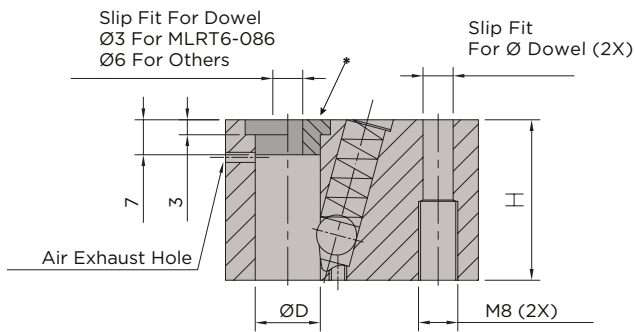
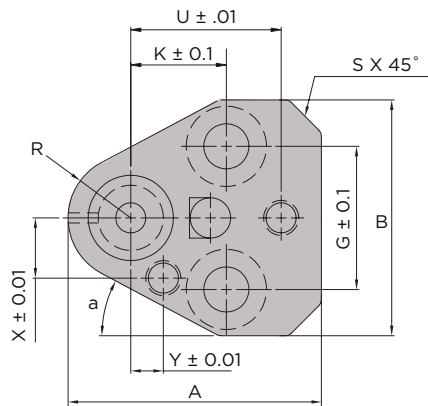


ORDER	HEAVY DUTY	
	STYLE	SHANK
	IHRT	050
LIGHT DUTY	STYLE	SHANK
	ILRT	087

HEAVY DUTY	Style Code	Shank Dia. [D]	Shank Code	A	B	G	H	K	R	S	U	X	Y	a°	Screw Size
	IHRT	.375	037	1.744	1.614	0.876	1.614	0.750	0.37	0.197	1.060	0.354	0.295	30°	5/16-18
		.500	050	1.984	1.850	1.124	1.614	0.750	0.49	0.265	1.180	0.472	0.256	28°	3/8-16
		.625	062	2.106	1.969	1.250	1.614	0.750	0.55	0.335	1.250	0.532	0.236	28°	3/8-16
		.750	075	2.366	2.165	1.376	1.614	0.750	0.69	0.394	1.320	0.650	0.197	28°	3/8-16
		.875	087	2.492	2.291	1.376	1.614	0.750	0.75	0.433	1.400	0.728	0.197	28°	3/8-16
		1.00	100	2.744	2.480	1.562	1.614	0.938	0.87	0.472	1.600	0.866	0.276	28°	1/2-13
		1.25	125	2.744	2.480	1.562	1.614	0.938	0.87	0.472	1.600	0.866	0.276	28°	1/2-13

LIGHT DUTY	Style Code	Shank Dia. [D]	Shank Code	A	B	G	H	K	R	S	U	X	Y	a°	Screw Size
	ILRT	.250	025	1.744	1.614	0.876	1.260	0.750	0.37	0.197	1.060	0.354	0.295	30°	5/16-18
		.375	037	1.744	1.614	0.876	1.260	0.750	0.37	0.197	1.060	0.354	0.295	30°	5/16-18
		.500	050	1.984	1.850	1.124	1.260	0.750	0.49	0.295	1.180	0.472	0.256	28°	3/8-16
		.625	062	2.106	1.969	1.250	1.260	0.750	0.55	0.335	1.250	0.532	0.236	28°	3/8-16
		.75	075	2.366	2.165	1.376	1.260	0.750	0.69	0.394	1.320	0.650	0.197	28°	3/8-16
		.875	087	2.492	2.291	1.376	1.260	0.750	0.75	0.433	1.400	0.728	0.197	28°	3/8-16
		1.00	100	2.744	2.480	1.562	1.260	0.938	0.87	0.472	1.600	0.866	0.276	28°	1/2-13

HP TRU ADVANTAGE RETAINER



Furnished with backing plugs instead of backing plate.
See page 105 for backing/plug options.

ORDER		HEAVY DUTY	
		STYLE	SHANK
		MHRT	020
		LIGHT DUTY	
		STYLE	SHANK
		MLRT	013

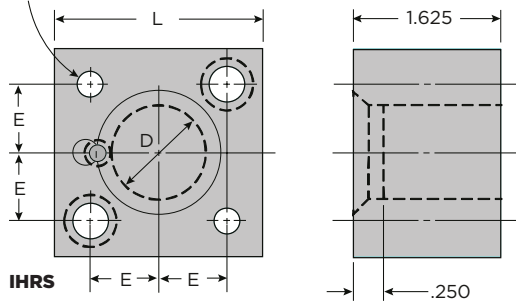
RETAINERS

HEAVY DUTY	Style Code	Shank Dia. [D]	Shank Code	A	B	G	H	K	R	S	U	X	Y	a°	Screw Size
	MHRT	10	010	44.3	41	22.24	41	19.95	9.5	5	26.925	9	7.5	30°	M8
		13	013	50.4	47	28.54	41	19.05	12.5	7.5	29.97	12	6.5	28°	M8
		16	016	53.5	50	31.74	41	19.05	14	8.5	31.75	13.5	6	28°	M8
		20	020	60.1	55	34.94	41	19.05	17.5	10	33.53	16.5	5	28°	M10
		25	025	69.7	63	39.68	41	23.82	22	12	40.64	22	7	28°	M12
		32	032	69.7	63	39.68	41	23.82	22	12	40.64	22	7	28°	M12
		40	040	76.4	73	48	41	27	26	15	43.993	26	10	28°	M12

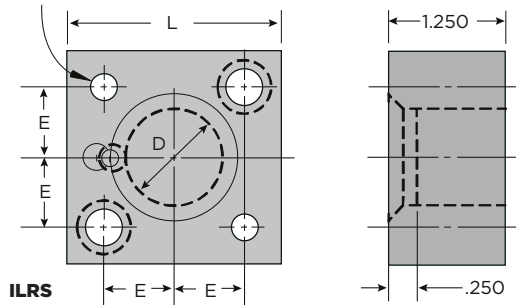
LIGHT DUTY	Style Code	Shank Dia. [D]	Shank Code	A	B	G	H	K	R	S	U	X	Y	a°	Screw Size
	MLRT	6	006	35	37.5	22.2	32	19	8	5	23	8	9	30°	M6
		10	010	44.3	41	22.24	32	19.95	9.5	5	26.925	9	7.5	30°	M8
		13	013	50.4	47	28.54	32	19.05	12.5	7.5	29.97	12	6.5	28°	M8
		16	016	53.5	50	31.74	32	19.05	14	8.5	31.75	13.5	6	28°	M8
		20	020	60.1	55	34.94	32	19.05	17.5	10	33.53	16.5	5	28°	M10
		25	025	69.7	63	39.68	32	23.82	22	12	40.64	22	7	28°	M12
		32	032	69.7	63	39.68	32	23.82	22	12	40.64	22	7	28°	M12
		38	038	76.4	73	48	32	27	26	15	43.993	26	10	28°	M12

SQUARE RETAINER

For .3125
Dia. Dowel



For .3125
Dia. Dowel



Furnished with backing plugs instead of backing plate.
See page 103 for backing/plug options.

ORDER		STYLE	SHANK
HEAVY DUTY		IHRS	062
LIGHT DUTY		ILRS	062

HEAVY DUTY	Style Code	Shank Dia.	L	E	Screw Size
	IHRS	.500 050	1.88	.562	3/8-16
		.625 062	2	.625	3/8-16
		.750 075	2.12	.688	3/8-16
		.875 087	2.38	.750	1/2-13
		1.00 100	2.38	.750	1/2-13
		1.25 125	2.62	.812	1/2-13

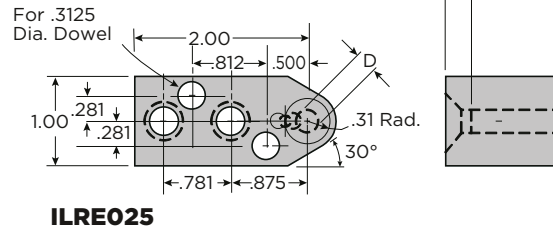
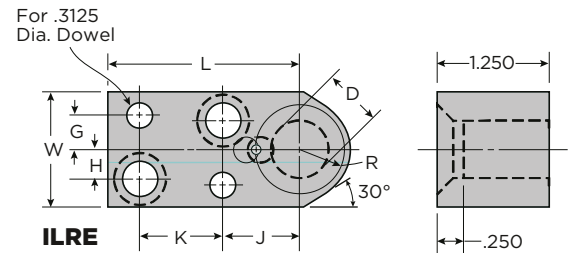
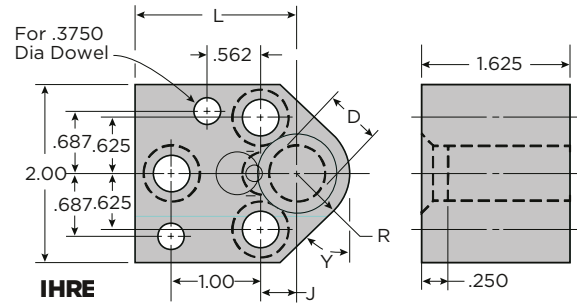
LIGHT DUTY	Style Code	Shank Dia.	L	E	Screw Size
	ILRS	.250 025	1.25	.312	1/4-20
		.375 037	1.38	.375	5/16-18
		.500 050	1.50	.438	5/16-18
		.625 062	1.62	.500	5/16-18
		.750 075	1.88	.562	3/8-16
		.875 087	2.00	.625	3/8-16
		1.00 100	2.25	.750	3/8-16
		1.25 125	2.25	.750	3/8-16
		1.50 150	2.75	1.00	3/8-16
		1.75 175	2.75	1.00	3/8-16

END RETAINER



Furnished with backing plugs instead of backing plate.
See page 103 for backing/plug options.

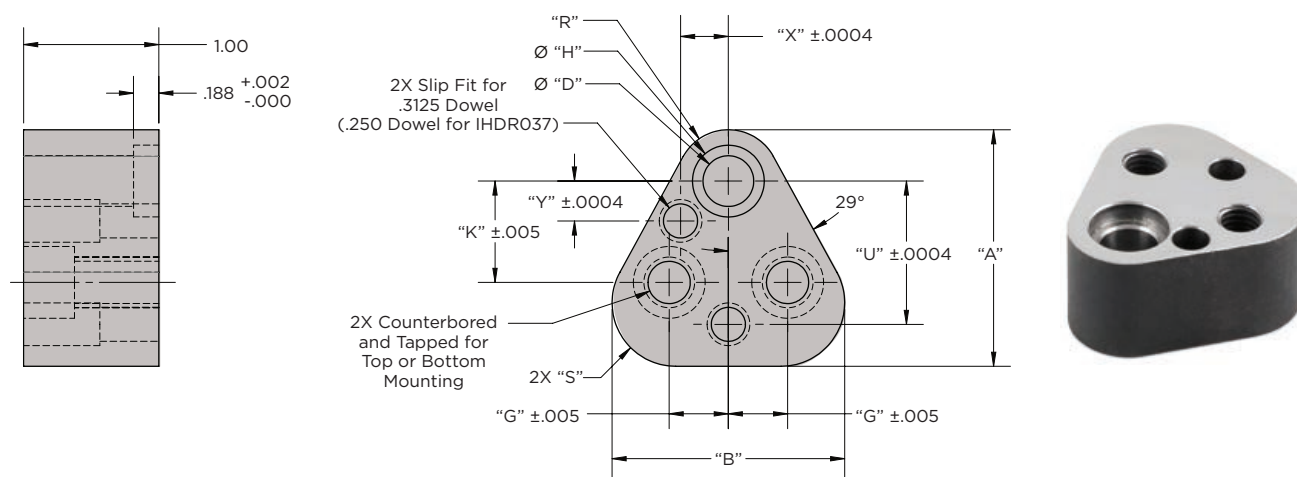
ORDER	HEAVY DUTY	STYLE	SHANK
		IHRE 050	
ORDER	LIGHT DUTY	STYLE	SHANK
		ILRE 062	



HEAVY DUTY	Style Code	Shank Dia.	L	J	R	Y	Screw Size
	IHRE	.500 050	1.75	.375	.50	40°	3/8-16
		.625 062	1.81	.438	.56	45°	3/8-16
		.750 075	1.88	.500	.69	60°	3/8-16
		.875 087	1.94	.562	.75	60°	3/8-16
		1.00 100	2.00	.625	.81	60°	3/8-16
		1.25 125	2.12	.750	1	—	3/8-16

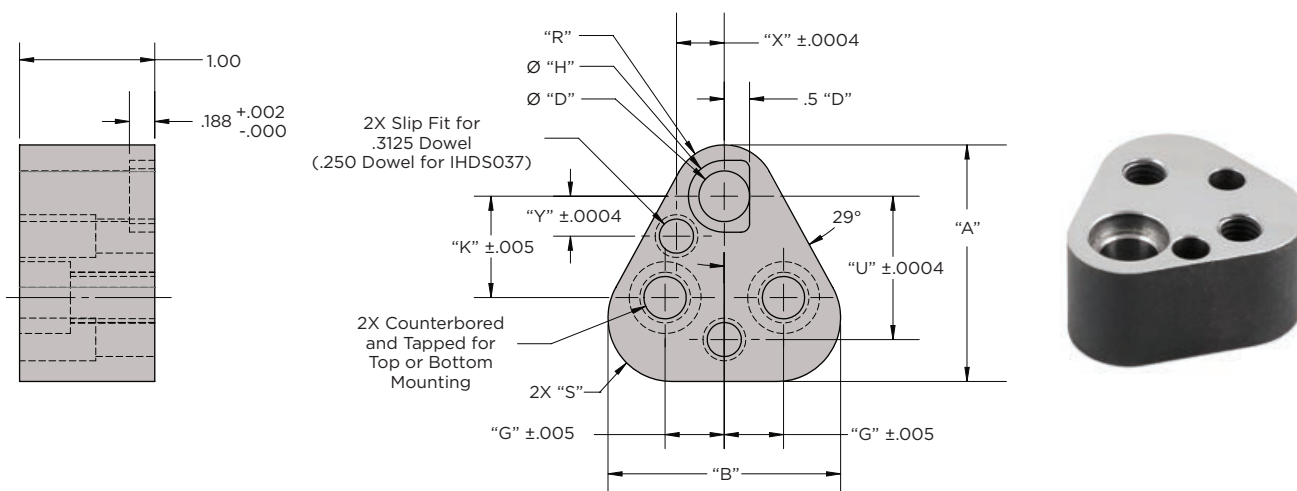
LIGHT DUTY	Style Code	Shank Dia.	G	H	J	K	L	R	W	Screw Size
	ILRE	.250 025	See diagram above for 025 specifications 1/4-20							1/4-20
		.375 037	.375	.281	.906	.969	2.25	.38	1.25	3/8-16
		.500 050	.375	.281	.906	.969	2.25	.50	1.25	3/8-16
		.625 062	.375	.281	.906	.969	2.25	.56	1.25	3/8-16
		.750 075	.438	.344	1.125	1.000	2.50	.69	1.38	3/8-16
		.875 087	.438	.344	1.125	1.000	2.50	.75	1.50	3/8-16
		1.00 100	.438	.344	1.125	1.000	2.50	.81	1.62	3/8-16
		1.25 125	.560	.560	.875	1.125	2.37	1.00	1.87	3/8-16

HEADED RETAINER



IHDR — ROUND TIPS ONLY													
ROUND	Cat No.	D	H	A	B	G	K	R	S	U	X	Y	Screw Size Tapped Hole
	IHDR037	.375	.526	1.75	1.72	.438	.750	.38	.47	1.060	.354	.295	5/16-18 3/8-16
	IHDR050	.5	.656	2.00	1.97	.562	.750	.50	.60	1.180	.472	.256	5/16-18 3/8-16
	IHDR062	.625	.781	2.12	2.09	.625	.750	.56	.66	1.250	.532	.236	5/16-18 3/8-16
	IHDR075	.75	.906	2.38	2.34	.688	.750	.69	.79	1.320	.650	.197	5/16-18 3/8-16
	IHDR100	1	1.156	2.75	2.72	.781	.938	.88	.97	1.600	.866	.276	1/2-13 5/8-11
	IHDR125	1.25	1.406	2.75	2.72	.781	.938	.88	.97	1.600	.866	.276	1/2-13 5/8-11

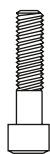
Note: Does not include backing plate or plug.



IHDS — SHAPED TIPS ONLY													
SHAPE	Cat No.	D	H	A	B	G	K	R	S	U	X	Y	Screw Size Tapped Hole
	IHDS037	.375	.526	1.75	1.72	.438	.750	.38	.47	1.060	.354	.295	5/16-18 3/8-16
	IHDS050	.5	.656	2.00	1.97	.562	.750	.50	.60	1.180	.472	.256	5/16-18 3/8-16
	IHDS062	.625	.781	2.12	2.09	.625	.750	.56	.66	1.250	.532	.236	5/16-18 3/8-16
	IHDS075	.75	.906	2.38	2.34	.688	.750	.69	.79	1.320	.650	.197	5/16-18 3/8-16
	IHDS100	1	1.156	2.75	2.72	.781	.938	.88	.97	1.600	.866	.276	1/2-13 5/8-11
	IHDS125	1.25	1.406	2.75	2.72	.781	.938	.88	.97	1.600	.866	.276	1/2-13 5/8-11

Note: Does not include backing plate or plug.

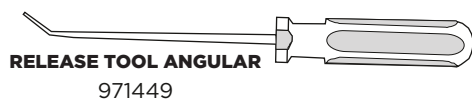
RETAINER ACCESSORIES


PLUG-STYLE
PLATE

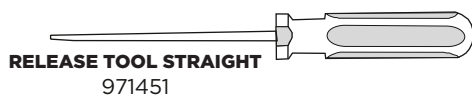
	IHRT Retainer Size	Socket Head Cap Screw	Pull Dowels		Ball Diameter	Ball Release Screw	Tru-Fast Spring	Optional Stiff Spring	Inner Booster Spring
			Vented	Tapped					
HEAVY DUTY	.375 037	971 388 5/16-18 X 1-3/4	971385 3/16 x 3/4*	971386 1/4 x 3/4	971395 3/8	971428 8-32 x 1	971400	971402	972100
	.5 050	8166 3/8-16 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101
	.625 062	8166 3/8-16 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101
	.75 075	8166 3/8-16 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101
	.875 087	8166 3/8-16 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101
	1.0 100	6325 1/2-13 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101
	1.25 125	6325 1/2-13 x 2	971386 1/4 x 3/4"		971396 1/2	971428 8-32 x 1	971401	971403	972101

	ILRT Retainer Size	Socket Head Cap Screw	Pull Dowels		Ball Diameter	Ball Release Screw	Tru-Fast Spring	Optional Stiff Spring	Inner Booster Spring
			Vented	Tapped					
LIGHT DUTY	.25 025	6618 5/16-18 x 1-1/2	971384 1/8 x 3/4*	971386 1/4 x 3/4	971393 1/4	971428 8-32 x 1	971397	N/A	972100
	.375 037	6618 5/16-18 x 1-1/2	971385 3/16 x 3/4*	971386 1/4 x 3/4	971393 1/4	971428 8-32 x 1	971397	N/A	972100
	.5 050	6391 3/8-16 x 1-1/2	971386 1/4 x 3/4"		971394 5/16	971428 8-32 x 1	971398	N/A	972101
	.625 062	6391 3/8-16 x 1-1/2	971386 1/4 x 3/4"		971394 5/16	971428 8-32 x 1	971398	N/A	972101
	.75 075	6391 3/8-16 x 1-1/2	971386 1/4 x 3/4"		971395 3/8	971428 8-32 x 1	971399	N/A	972101
	.875 087	6391 3/8-16 x 1-1/2	971386 1/4 x 3/4"		971395 3/8	971428 8-32 x 1	971399	N/A	972101
	1.0 100	971 391 1/2-13 x 1-3/4	971386 1/4 x 3/4"		971395 3/8	971428 8-32 x 1	971399	N/A	972101

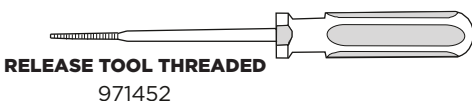
* 1/8" and 3/16" dowels are not tapped / vented



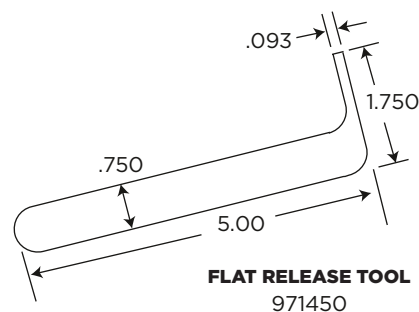
RELEASE TOOL ANGULAR
971449



RELEASE TOOL STRAIGHT
971451

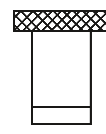
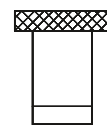
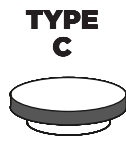
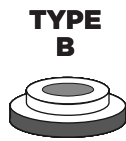
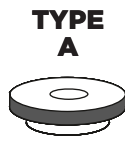


RELEASE TOOL THREADED
971452



FLAT RELEASE TOOL
971450

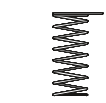
RETAINER ACCESSORIES



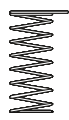
HEAVY DUTY	IHRT Retainer Size	Backing Plugs			Jack Screw	For Manual Mounting, Prevents Chips From Entering Spring, Ball, Hole		Retainer Nuts
		In Line Dowel	Die Button	Solid		Drill Bushing	Ream Bushing	
	.375 037	971409 .1875 hole	N/A	971423	971429 5/16-18 x 1-1/4	971433	971444	971438
	.5 050	971410 .250 hole	N/A	971424	971429 5/16-18 x 1-1/4	971434	971445	971439
	.625 062	971411 .250 hole	N/A	971425	971429 5/16-18 x 1-1/4	971435	971446	971439
	.75 075	971412 .250 hole	N/A	971426	971429 5/16-18 x 1-1/4	971436	971447	971439
	.875 087	971413 .250 hole	N/A	971427	971429 5/16-18 x 1-1/4	971437	971448	971439
	1.0 100	971406 .250 hole	N/A	971420	971429 5/16-18 x 1-1/4	971430	971441	971440
	1.25 125	971407 .250 hole	N/A	971421	971429 5/16-18 x 1-1/4	971431	971442	971440

LIGHT DUTY	ILRT Retainer Size	Backing Plugs			Jack Screw	For Manual Mounting, Prevents Chips From Entering Spring, Ball, Hole		Retainer Nuts
		In Line Dowel	Die Button	Solid		Drill Bushing	Ream Bushing	
	.25 025	971408 .125 hole	N/A	971422	971429 5/16-18 x 1-1/4	971432	971433	971438
	.375 037	971409 .1875 hole	N/A	971423	971429 5/16-18 x 1-1/4	971433	971444	971438
	.5 050	971410 .250 hole	971416 .312 hole	971424	971429 5/16-18 x 1-1/4	971434	971445	971439
	.625 062	971411 .250 hole	971417 .406 hole	971425	971429 5/16-18 x 1-1/4	971435	971446	971439
	.75 075	971412 .250 hole	971418 .531 hole	971426	971429 5/16-18 x 1-1/4	971436	971447	971439
	.875 087	971413 .250 hole	971419 .625 hole	971427	971429 5/16-18 x 1-1/4	971437	971448	971439
	1.0 100	971406 .250 hole	971414 .719 hole	971420	971429 5/16-18 x 1-1/4	971430	971441	971440

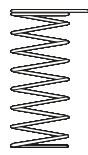
REPLACEMENT SPRINGS FOR BACKING PLATE STYLE RETAINERS & HP ACCU-LOCK®



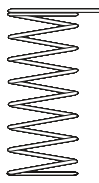
250 S
1/4 SPRING
971380



312 S
5/16 SPRING
971381



375 S
3/8 SPRING
971382



500 S
1/2 SPRING
971383



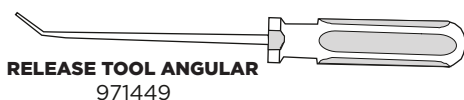
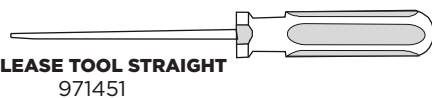
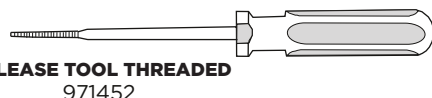
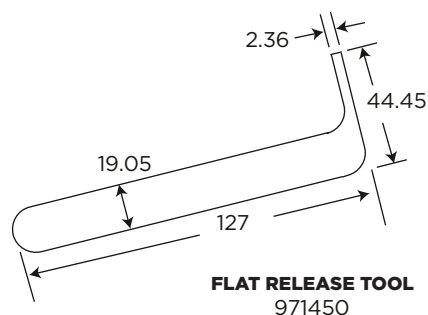
EASY SHARP TOOL		
SIZE	CAT. NO.	FITS PIN NO.
.061	971481	4, 6, 9, 12
.031	971482	2, 3
Set	971562	

RETAINER ACCESSORIES

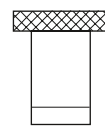
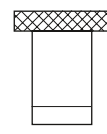
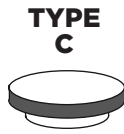
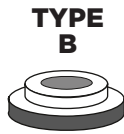
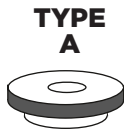

PLUG-STYLE
PLATE

	MHRT Retainer Size	Socket Head Cap Screw	Vented / Tapped Pull Dowels	Ball Diameter	Ball Release Screw	Tru-Fast Spring	Optional Stiff Spring	Inner Booster Spring
HEAVY DUTY	10 010	30161 M8 x 40	972087 6 x 20	972032 10mm	972076 M4 x 25mm	972062 10mm	972064 10mm	972100
	13 013	30161 M8 x 40	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101
	16 016	30161 M8 x 40	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101
	20 020	30162 M10 x 45	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101
	25 025	970467 M12 x 50	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101
	32 032	970467 M12 x 50	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101
	40 040	970467 M12 x 50	972087 6 x 20	972033 12mm	972076 M4 x 25mm	972067 12mm	972066 12mm	972101

	MLRT Retainer Size	Socket Head Cap Screw	Vented/Tapped Pull Dowels		Ball Diameter	Ball Release Screw	Tru-Fast Spring	Optional Stiff Spring	Inner Booster Spring
			Vented	Tapped					
LIGHT DUTY	6 006	970453 M6 x 35		972086 3 x 20	972030 6mm	972076 M4 x 25mm	972068 6mm	N/A	972100
	10 010	970451 M8 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	13 013	970451 M8 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	16 016	970451 M8 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	20 020	43504 M10 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	25 025	6112 M12 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	32 032	6112 M12 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101
	38 038	6112 M12 x 35		972087 6 x 20	972031 8mm	972076 M4 x 25mm	972069 8mm	N/A	972101


RELEASE TOOL ANGULAR
971449

RELEASE TOOL STRAIGHT
971451

RELEASE TOOL THREADED
971452

FLAT RELEASE TOOL
971450

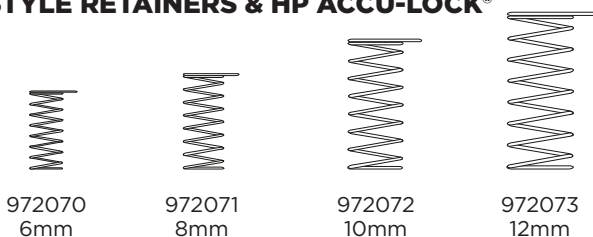
RETAINER ACCESSORIES



HEAVY DUTY	MHRT Retainer Size	Backing Plugs			Jack Screw	For Manual Mounting, Prevents Chips From Entering Spring, Ball, Hole		Retainer Nuts
		In Line Dowel	Die Button	Solid		Drill Bushing	Ream Bushing	
	10 010	972019 6mm hole	N/A	972078	33588 M8 x 8	972042	972051	972059 8mm
	13 013	971942 6mm hole	N/A	972079	33588 M8 x 8	972043	972052	972059 8mm
	16 016	971943 6mm hole	N/A	972080	33588 M8 x 8	972044	972053	972059 8mm
	20 020	971944 6mm hole	N/A	972081	33588 M8 x 8	972045	972054	972060 10mm
	25 025	971945 6mm hole	N/A	972082	33588 M8 x 8	972046	972055	972061 12mm
	32 032	971946 6mm hole	N/A	972083	33588 M8 x 8	972047	972056	972061 12mm
	40 040	971948 6mm hole	N/A	972085	33588 M8 x 8	972049	972058	972061 12mm

LIGHT DUTY	MLRT Retainer Size	Backing Plugs			Jack Screw	For Manual Mounting, Prevents Chips From Entering Spring, Ball, Hole		Retainer Nuts
		In Line Dowel	Die Button	Solid		Drill Bushing	Ream Bushing	
	6 006	972018 3mm hole	N/A	972077	33588 M8 x 8	972041	972050	972059 8mm
	10 010	972019 6mm hole	N/A	972078	33588 M8 x 8	972042	972051	972059 8mm
	13 013	971942 6mm hole	972035	972079	33588 M8 x 8	972043	972052	972059 8mm
	16 016	971943 6mm hole	972036	972080	33588 M8 x 8	972044	972053	972059 8mm
	20 020	971944 6mm hole	972037	972081	33588 M8 x 8	972045	972054	972060 10mm
	25 025	971945 6mm hole	972038	972082	33588 M8 x 8	972046	972055	972061 12mm
	32 032	971946 6mm hole	972039	972083	33588 M8 x 8	972047	972056	972061 12mm
	38 038	971947 6mm hole	972040	972084	33588 M8 x 8	972048	972057	972061 12mm

REPLACEMENT SPRINGS FOR BACKING PLATE STYLE RETAINERS & HP ACCU-LOCK®



972070
6mm

972071
8mm

972072
10mm

972073
12mm



EASY SHARP TOOL		
SIZE	CAT. NO.	FITS PIN NO.
1.5	971481	4, 6, 9, 12
.78	971482	2, 3
Set	971562	

SPECIALS

SERVING A WIDE VARIETY OF INDUSTRIES

We have the ability to design and create an immense range of custom tooling. Our capability to provide innovative tooling design, precision manufacturing, advanced tool steels and state-of-the-art coatings makes us well-suited to create custom tooling solutions designed to meet the demands of a wide variety of industries.



SPECIAL TOOLING

- Mold & Die Cast Components
 - Custom Core Pins
 - Custom Ejector Pins
 - Trim Die Components
 - Custom Wire Work
- Special Machine Components
 - Locator Pins
 - Inspection Pins
 - Custom Components
- Jig & Fixture Components
 - Locating Pins/Bushings
 - Custom Clamping Components
- Die Industry
 - Die Blocks
 - Punch Pads
 - Pedestal Punches
- Letterstamp
 - Custom Steel Stamps
 - Logo stamps
 - Alpha/Numeric Stamps

PROCESSES

- Tube Expansion
- Cold Forging/Heading
- Fastener Heading
- Broaching
- Extruding
- Drawing
- Fine Blanking
- Plastic Injection Molding
- Bending
- Stamping

CAPACITY DETAILS	
Max. Length	15"
Max. Dia.	6"
Min. Length	.375"
Min. Dia.	.31"
Min. Tip Dia.	.007"

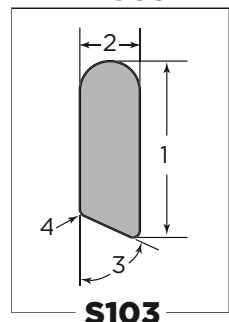
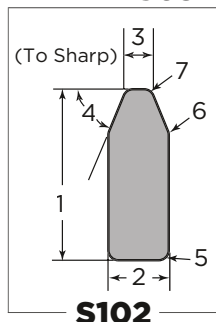
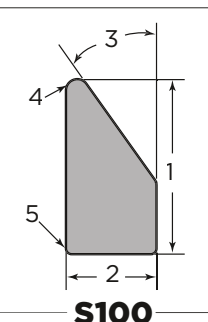
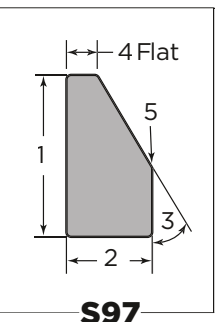
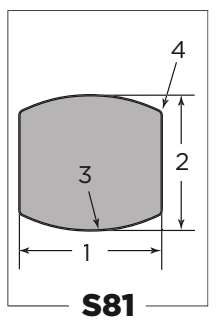
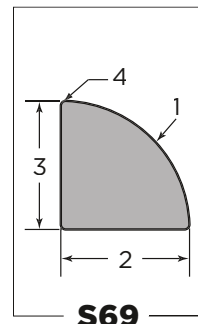
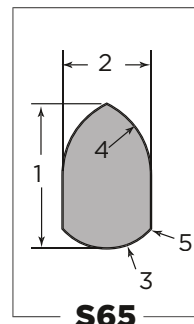
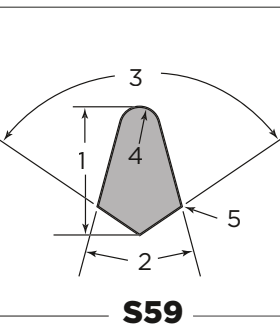
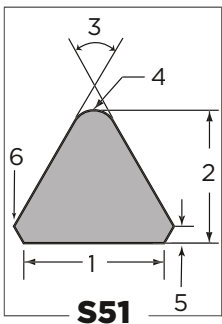
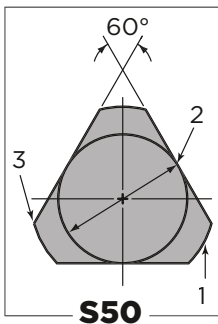
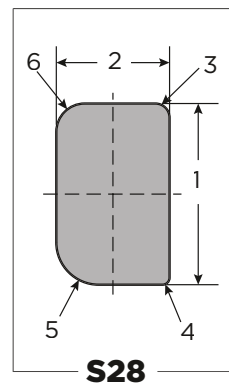
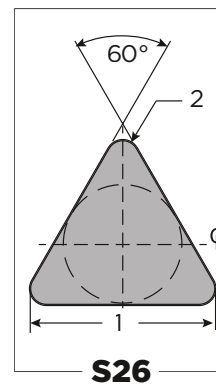
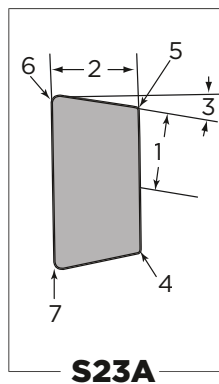
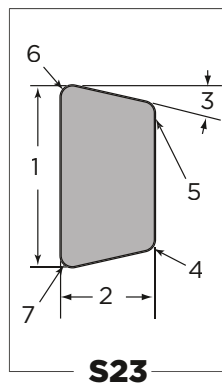
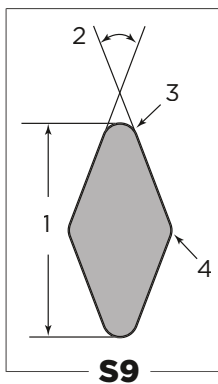
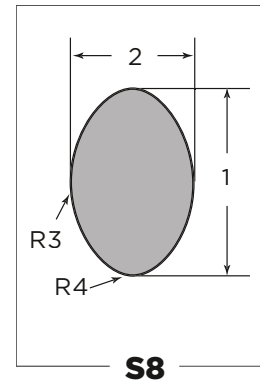
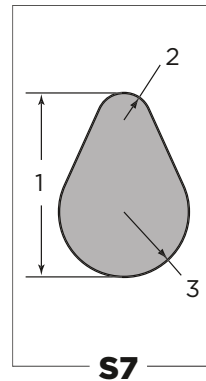
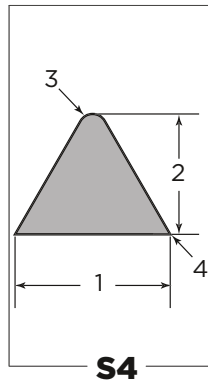
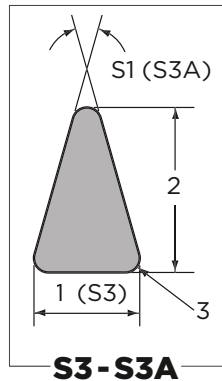
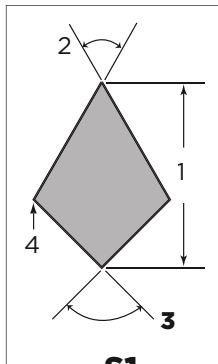
SPECIAL SHAPES — DIE VIEW

CL = centerline

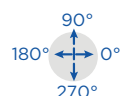
T.S. = theoretical sharp

T.I. = theoretical intersection

GROUP 'A'



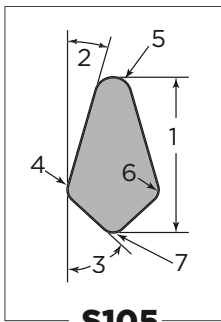
NOTE: If not specified: key will be located as shown on page 118-119. Alternate key locations at 15° increments are available for no additional charge. **Punches:** external radii will be .005" (.12mm) unless otherwise noted. **Dies/guides:** internal radii will be .007" (.18mm) unless noted. All shapes can be mirrored. Use die view when ordering tooling. **All shapes are centered on shank unless otherwise noted.**



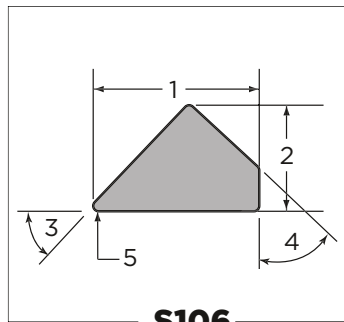
SPECIAL SHAPES — DIE VIEW

GROUP 'A'

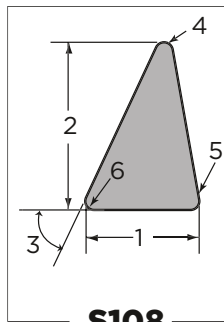
☒ = centerline **T.S.** = theoretical sharp **T.I.** = theoretical intersection



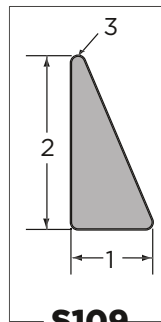
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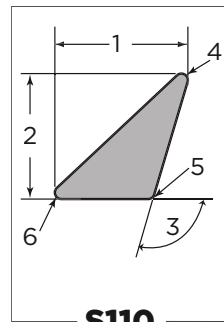
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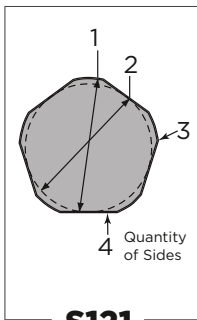
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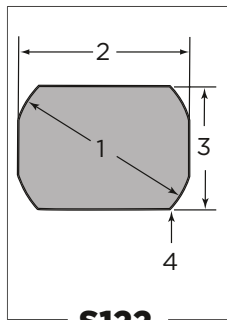
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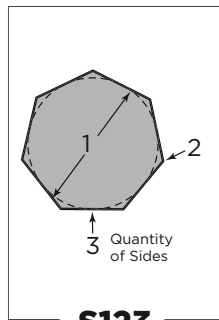
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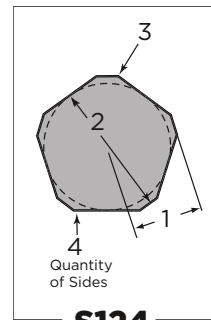
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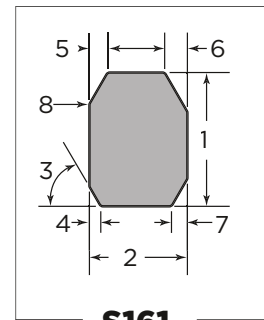
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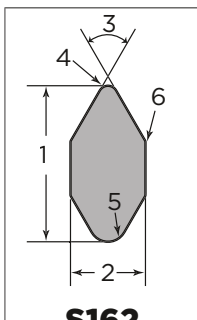
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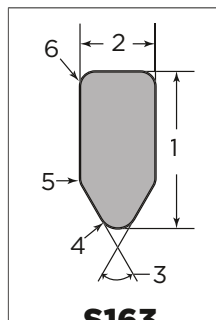
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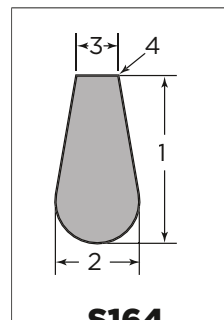
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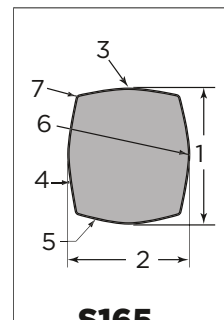
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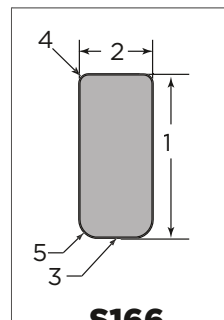
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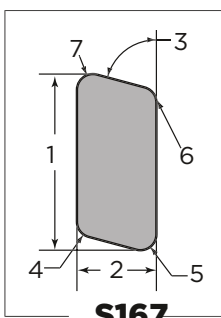
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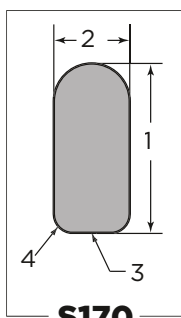
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S166

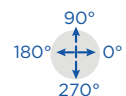


S167



S170

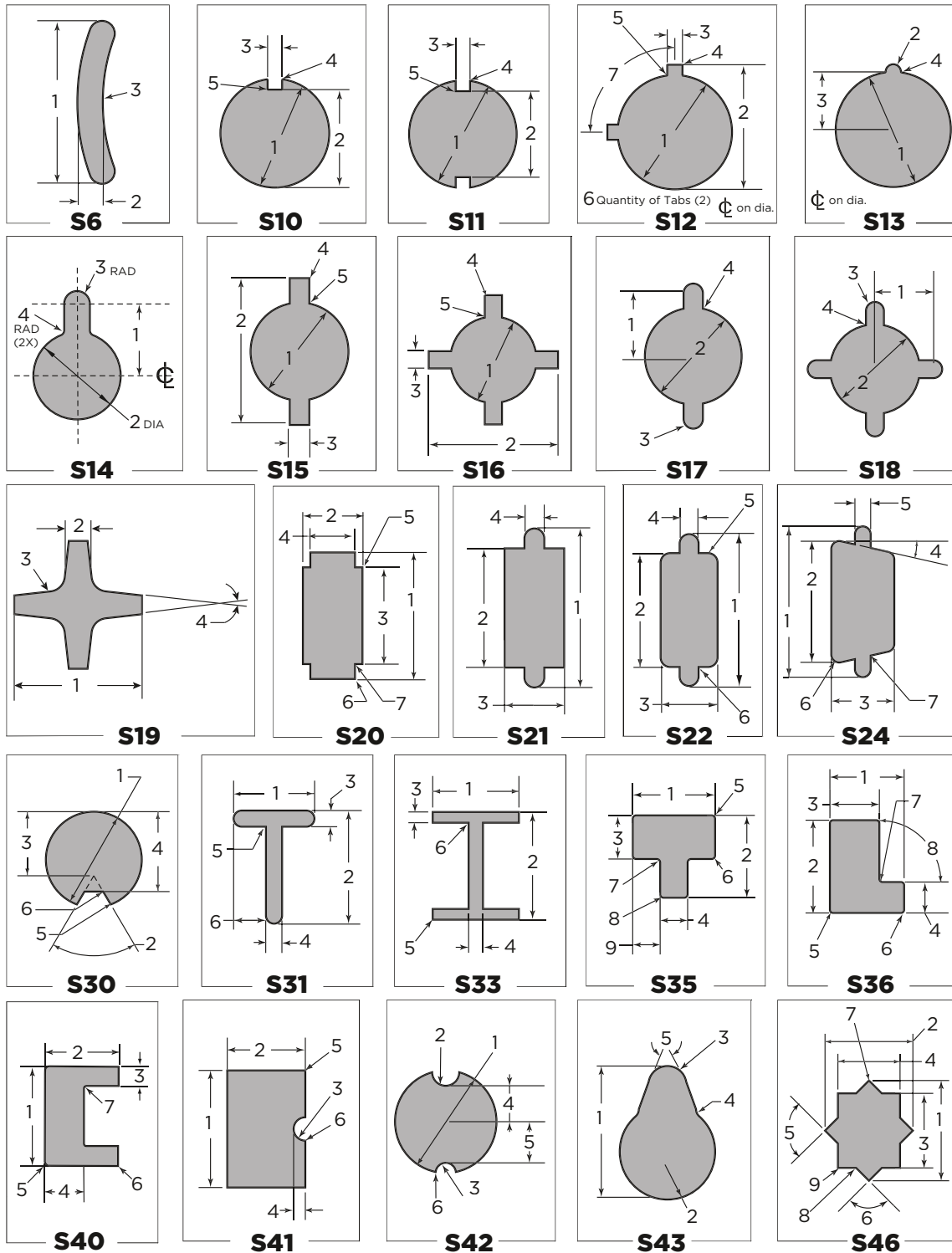
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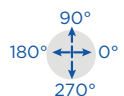
SPECIAL SHAPES — DIE VIEW

☒ = centerline **T.S.** = theoretical sharp **T.I.** = theoretical intersection

GROUP 'B'



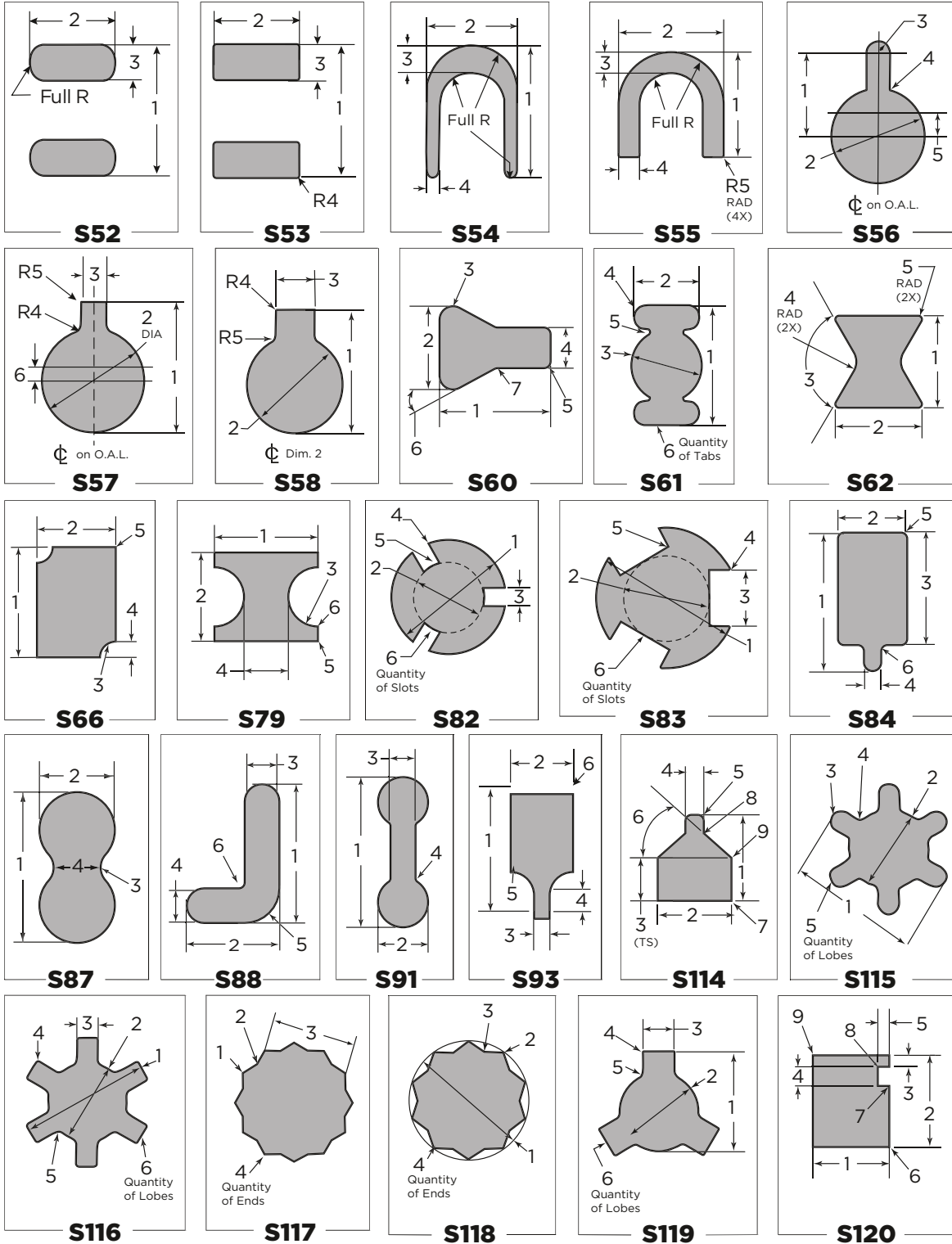
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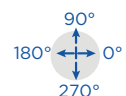
SPECIAL SHAPES — DIE VIEW

GROUP 'B'

☐ = centerline **T.S.** = theoretical sharp **T.I.** = theoretical intersection



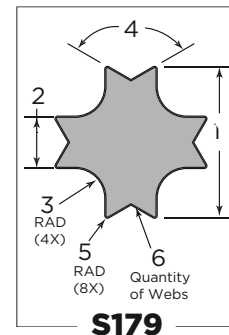
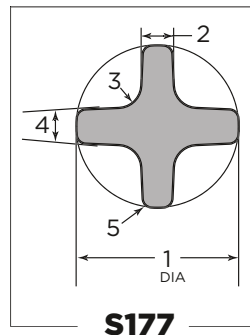
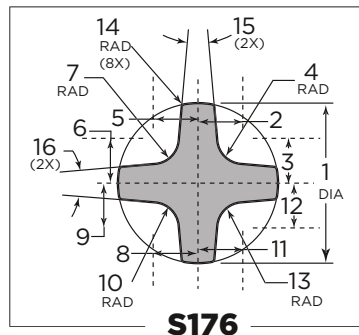
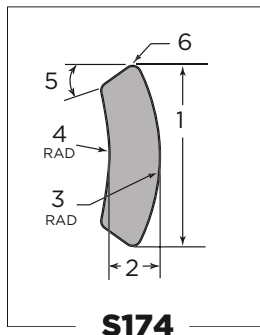
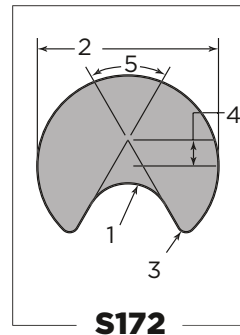
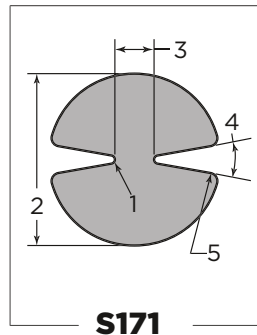
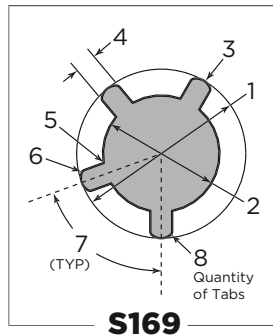
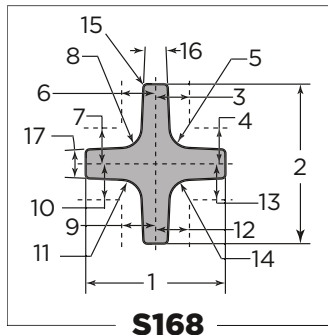
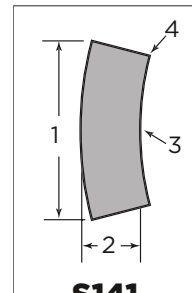
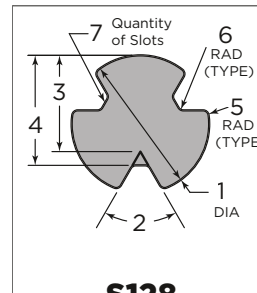
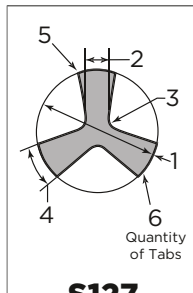
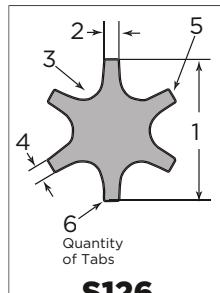
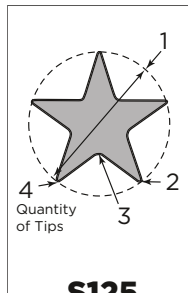
NOTE: If not specified: key will be located as shown on page 118-119. Alternate key locations at 15° increments are available for no additional charge. **Punches:** external radii will be .005" (.12mm) unless otherwise noted. **Dies/guides:** internal radii will be .007" (.18mm) unless noted. All shapes can be mirrored. Use die view when ordering tooling. **All shapes are centered on shank unless otherwise noted.**



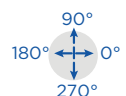
SPECIAL SHAPES — DIE VIEW

☐ = centerline **T.S.** = theoretical sharp **T.I.** = theoretical intersection

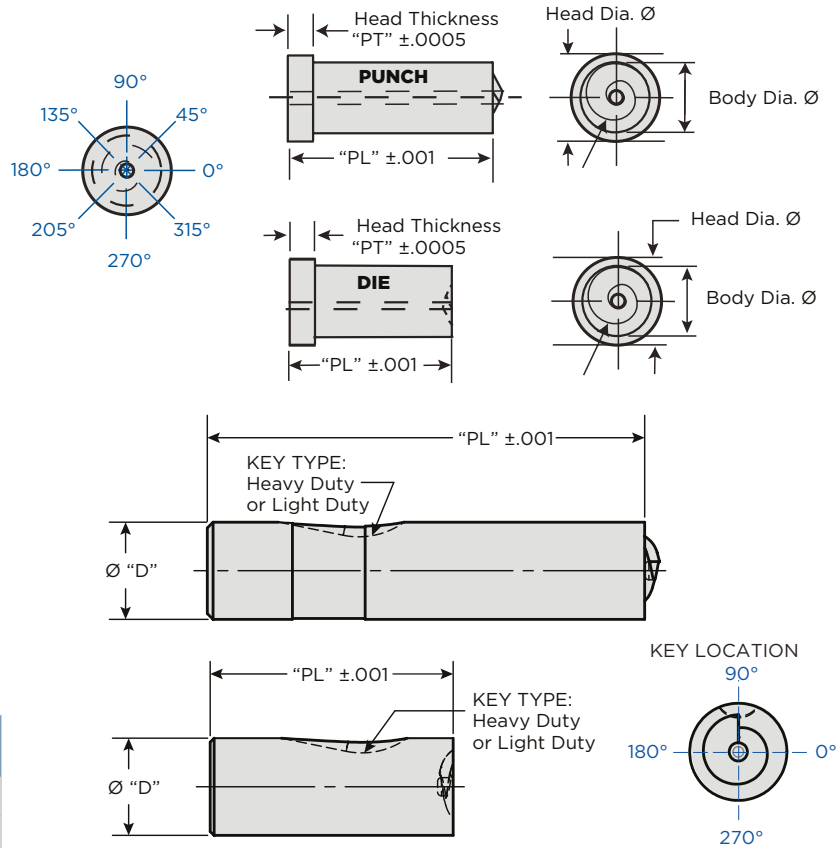
GROUP 'B'



NOTE: If not specified: key will be located as shown on page 118-119. Alternate key locations at 15° increments are available for no additional charge. **Punches:** external radii will be .005" (.12mm) unless otherwise noted. **Dies/guides:** internal radii will be .007" (.18mm) unless noted. All shapes can be mirrored. Use die view when ordering tooling. **All shapes are centered on shank unless otherwise noted.**



THREADFORMS



Thread Size [inch]	Metric Equivalent [mm]	Min. Punch Dia. for Given Thread Form inch [mm]
1/4 - 14	6.3 x 1.8	0.6250 [16]
1/4 - 20		0.6250 [16]
3/16 - 24		0.4375 [13]
5/16 - 12	8 x 2.1	0.7500 [20]
5/16 - 18		0.7500 [20]
3/8 - 16	10 x 1.5	0.7500 [20]
4 - 40		0.3750 [10]
6 - 18		0.3750 [10]
6 - 20	3.5 x 1.3	0.3750 [10]
6 - 32		0.4375 [13]
7 - 16		0.4375 [13]
8 - 15		0.4375 [13]
8 - 18	3.9 x 1.4	0.4375 [13]
8 - 32		0.4375 [13]
10 - 12		0.5000 [13]
10 - 16	4.8 x 1.6	0.4375 [13]
10 - 24		0.4375 [13]
10 - 32	5.0 x 0.8	0.4375 [13]
12 - 11		0.6250 [16]
12 - 14	5.5 x 1.8	0.6250 [16]
12 - 24		0.6250 [16]
14 - 10		0.6250 [16]

BE PREPARED TO PROVIDE THE FOLLOWING INFORMATION

Key Type	
Key Location	
'M' Dim	
Material Type & Thickness	
Thread Size	

REQUIREMENTS — PER DRAWING

Punch Head Thickness	
Punch Length	
Punch Head Diameter	
Punch Body Diameter	
Die Head Thickness	
Die Length	
Die Head Diameter	
Die Body Diameter	

TONNAGE CALCULATION

MATERIAL THICKNESS				
NON-FERROUS		GAUGE NO.	STEEL SHEETS	
Gauge Decimal [mm]	Gauge Decimal [inch]		Gauge Decimal [mm]	Gauge Decimal [inch]
5.827	.2294	3	6.073	.2391
5.189	.2043	4	5.695	.22242
4.62	.1819	5	5.314	.2092
4.115	.162	6	4.935	.1943
3.665	.1443	7	4.554	.1793
3.264	.1285	8	4.176	.1644
2.906	.1144	9	3.797	.1495
2.588	.1019	10	3.416	.1345
2.30	.0907	11	3.03	.1196
2.052	.0808	12	2.657	.1046
1.829	.072	13	2.278	.0897
1.628	.0641	14	1.897	.0747
1.45	.0571	15	1.709	.0673
1.29	.0508	16	1.519	.0598
1.151	.0453	17	1.367	.0538
1.024	.0403	18	1.214	.0478
0.912	.0359	19	1.062	.0418
0.813	.032	20	0.912	.0359
0.724	.0285	21	0.836	.0329
0.643	.0253	22	0.759	.0299
0.574	.0226	23	.0683	.0269
0.511	.0201	24	0.607	.0239
0.455	.0179	25	0.531	.0209
0.404	.0159	26	0.455	.0179
0.361	.0142	27	0.417	.0164
0.32	.0126	28	0.378	.0149
0.287	.0113	29	0.343	.0135
0.254	.01	30	0.305	.012
0.226	.0089	31	0.267	.0105
0.203	.008	32	0.246	.0097
.108	.0071	33	0.229	.009
0.16	.0063	34	0.208	.0082
0.142	.0056	35	0.191	.0075

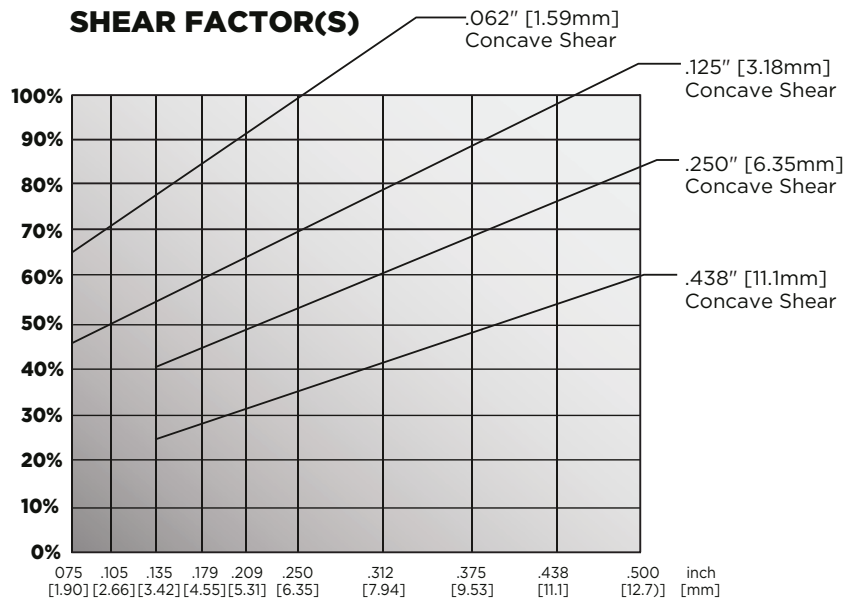
TONNAGE [Imperial]:

Total Perimeter (**P**) x Material Thickness (**T**) x **25** x Material Multiplication Factor (**F**) x Shear Factor (**S**).

TONNAGE [Metric]:

Total Perimeter (**P**) x Material Thickness (**T**) x **.0352** x Material Multiplication Factor (**F**) x Shear Factor (**S**)

MATERIAL MULTIPLICATION FACTOR	
Material Description	Multiplier (F)
Aluminum - Soft Sheet	.3
Aluminum - Half Hard	.38
Aluminum - Hard	.5
Brass - Soft Sheet	.6
Brass - Half Hard	.7
Copper - Rolled	.57
Steel - Mild	1
Steel - ASTM A36	1.2
Steel - 50 Carbon	1.4
Steel - Cold Drawn	1.2
Steel - Stainless	1.4
Spring Steel - Tempered	4



Shear Tonnage Chart:

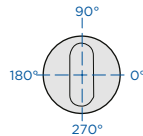
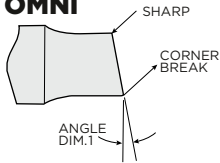
To find the actual tonnage required when using a given shear, multiply the calculated tonnage by the percentage shown on the chart for a specified material thickness.

CLEARANCES			
Material	% TOTAL CLEARANCE		NOTES
	Minimum	Maximum	
Copper, 1/2 Hard	10	18	Example: .250" (6.3 mm) Mild Steel 20% or .050" (1.27mm). For material greater than .135" (3.4 mm) the "Maximum" column should be used.
Brass, 1/2 Hard	10	18	
Aluminum, Soft	10	18	
Mild Steel	14	20	
High Carbon Steel	14	24	
Stainless Steel	14	24	
% x Material Thickness = Total Clearance			

SHEAR & ALTERATION OPTIONS

SHEAR OPTIONS

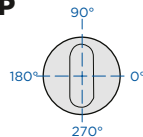
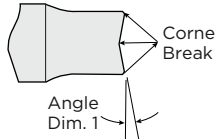
OMNI



Style S3

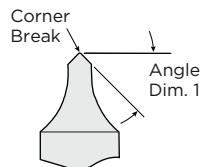
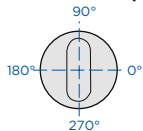
SL(Shear Location at high point) = ____°

INVERTED ROOFTOP



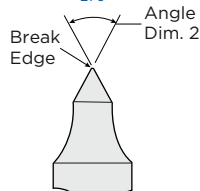
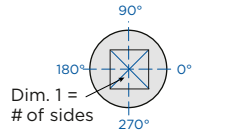
Style S2

ROOFTOP (W)



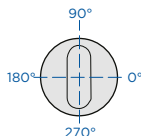
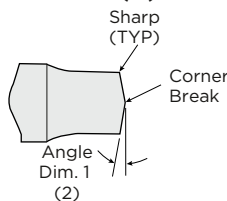
Style S1

NAIL POINT



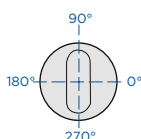
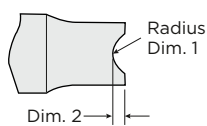
Style S6

ROOFTOP (P)



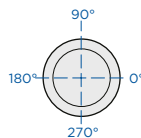
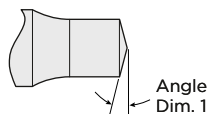
Style S4

CONCAVE



Style S5

CONICAL SHEAR



Style S7

ALTERATION OPTIONS

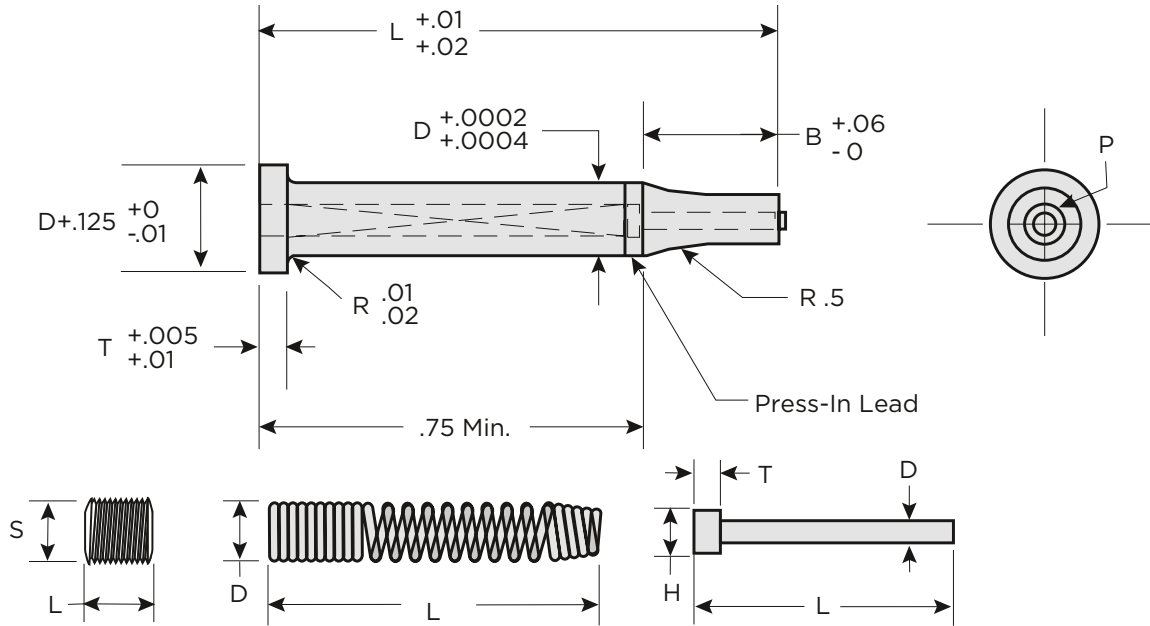
A2	Air hole 0.020 diameter
A3	Air hole 0.030 diameter
A4	Air hole 0.040 diameter
A6	Air hole 0.060 diameter
A9	Air hole 0.090 diameter
A12	Air hole 0.120 diameter
ABR	Blend radius for other than .500" [12.7mm] (rounds only)
ABRD	Point length: longer than longest std. Length (rounds only)
ABSH	Point length: longer than longest std. Length (shapes only)
AD	Reduce body diameter
ADL	Altered die land
AE	Ejector size — different than standard for punch
AH	Altered head diameter
AHR	Altered radius under head
AK	Add key to other than shape tool
AL	Overall length shorter (shorten shank, maintain point)
AP	Smaller than standard "P" (rounds)
ARD	Relief diameter other than standard (counterbore)
ART	Relief taper other than standard (per side)
ASBR	Altered SBR
AT	Altered head Thickness
AW	Smaller than standard "W" (shapes)
CR	Corner Radius
EBT	Extra back tape
HC	Head Chamfer - Option 1: Standard small (broke edge) - Option 2: 10° - Option 3: Custom (angle and depth dims required) - Option 4: None (sharp edge)
MK	Multiple keys
NS	No side hole — Ejector
PK	Precision key +.0002" -.000" [+ .005mm -.00mm]
PL	Precision overall length ±.001" [±.026mm]
PT	Precision head thickness ±.0005" [±.013mm]
SH2	Slug Hugger® 2
SH4L	Slug Hugger® 4L
SL	Shear location at high point on Omni Shear

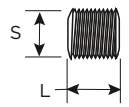
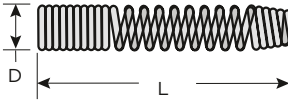
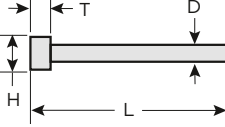
ALTERATION INFORMATION

Alterations are for ranges beyond the sizes listed in catalog.

	AT HEAD THICKNESS (T) Stock altered from head end. Thinner head shortens overall length PT PRECISION HEAD (T) Held to $\pm .0005''$ / $[\pm .013 \text{ mm}]$ AH HEAD DIAMETER (H) Maximum head diameter alteration is equal to the body size.																																																																																																								
	AL OVERALL LENGTH (L) Shorter Length: Punch-shorten shank maintain point. Headed Die — stock removed shortens land length. Minimum Length: Dies — headless products = $.250''$ [6.35mm] Dies — headed products = $.250 + T$ [6.35mm + T] PL PRECISION LENGTH (L) Held to $\pm .001''$ or $\pm .026\text{mm}$																																																																																																								
	AD BODY DIAMETER (D) <table><tr><th>Body Diameter</th><th>12</th><th>18</th><th>25</th><th>31</th><th>37</th><th>43</th><th>50</th><th>62</th><th>75</th><th>87</th><th>100</th><th>125</th><th>150</th></tr><tr><td>Punch Min. D</td><td>.063</td><td>.126</td><td>.188</td><td>.251</td><td>.313</td><td>.376</td><td>.438</td><td>.501</td><td>.626</td><td>.751</td><td>.876</td><td>1.000</td><td>1.250</td></tr><tr><td>Ejector Min. D</td><td></td><td>.172</td><td>.218</td><td>.282</td><td>.344</td><td>.376</td><td>.438</td><td>.563</td><td>.688</td><td>.751</td><td>.938</td><td>1.188</td><td>1.438</td></tr><tr><td>Die Min. D</td><td></td><td>.157</td><td>.229</td><td>.282</td><td>.344</td><td>.407</td><td>.469</td><td>.563</td><td>.688</td><td>.813</td><td>.938</td><td>1.125</td><td>1.375</td></tr></table> <table><tr><th>Body Diameter</th><th>5</th><th>6</th><th>8</th><th>10</th><th>13</th><th>16</th><th>20</th><th>25</th><th>32</th><th>38</th><th>40</th></tr><tr><td>Punch Min. D</td><td>4.4</td><td>5</td><td>6.8</td><td>8.8</td><td>11.5</td><td>14.5</td><td>18.5</td><td>23.5</td><td>30.5</td><td></td><td></td></tr><tr><td>Ejector Min. D</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Die Min. D</td><td>3.5</td><td>5</td><td>6.5</td><td>8.5</td><td>11.5</td><td>14.5</td><td>18.5</td><td>23</td><td>30</td><td></td><td></td></tr></table>	Body Diameter	12	18	25	31	37	43	50	62	75	87	100	125	150	Punch Min. D	.063	.126	.188	.251	.313	.376	.438	.501	.626	.751	.876	1.000	1.250	Ejector Min. D		.172	.218	.282	.344	.376	.438	.563	.688	.751	.938	1.188	1.438	Die Min. D		.157	.229	.282	.344	.407	.469	.563	.688	.813	.938	1.125	1.375	Body Diameter	5	6	8	10	13	16	20	25	32	38	40	Punch Min. D	4.4	5	6.8	8.8	11.5	14.5	18.5	23.5	30.5			Ejector Min. D												Die Min. D	3.5	5	6.5	8.5	11.5	14.5	18.5	23	30		
Body Diameter	12	18	25	31	37	43	50	62	75	87	100	125	150																																																																																												
Punch Min. D	.063	.126	.188	.251	.313	.376	.438	.501	.626	.751	.876	1.000	1.250																																																																																												
Ejector Min. D		.172	.218	.282	.344	.376	.438	.563	.688	.751	.938	1.188	1.438																																																																																												
Die Min. D		.157	.229	.282	.344	.407	.469	.563	.688	.813	.938	1.125	1.375																																																																																												
Body Diameter	5	6	8	10	13	16	20	25	32	38	40																																																																																														
Punch Min. D	4.4	5	6.8	8.8	11.5	14.5	18.5	23.5	30.5																																																																																																
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Die Min. D	3.5	5	6.5	8.5	11.5	14.5	18.5	23	30																																																																																																
	AB POINT LENGTH (B) PUNCHES Longer than longest standard length. Shank length is shortened; overall length does not change (min. shank length $.750''$ or 19.05mm). ADL LAND THICKNESS (B) DIES <table><tr><th colspan="2">Hole Size</th><th colspan="2">Max. Land</th><th colspan="2">Material Thickness</th><th colspan="2">Land Thickness</th></tr><tr><th>Inch</th><th>Metric</th><th>Inch</th><th>Metric</th><th>Inch</th><th>Metric</th><th>Inch</th><th>Metric</th></tr><tr><td>.031-.062</td><td>.800-1.600</td><td>2P</td><td>3.2</td><td></td><td></td><td></td><td></td></tr><tr><td>.062-.093</td><td>1.601-2.400</td><td>.187</td><td>5</td><td></td><td></td><td></td><td></td></tr><tr><td>.093-.158</td><td>2.401-4.000</td><td>.250</td><td>6</td><td>.003-.010</td><td>.080-.254</td><td>.031</td><td>.787</td></tr><tr><td>.158-.235</td><td>4.001-6.000</td><td>.312</td><td>8</td><td>.011-.020</td><td>.279-.508</td><td>.062</td><td>1.575</td></tr><tr><td>.235-.300</td><td>6.001-8.000</td><td>.375</td><td>9.5</td><td>.021-.030</td><td>.533-.762</td><td>.093</td><td>2.36</td></tr><tr><td>.300-.400</td><td>8.001-10.000</td><td>.437</td><td>11</td><td></td><td></td><td></td><td></td></tr><tr><td>.400-Over</td><td>10.001-Over</td><td>.500</td><td>13</td><td></td><td></td><td></td><td></td></tr></table> To minimize slug packing, land length should be shortened for material thickness under $.030''$ [7.62mm] or hole diameter under $.250''$ [6.35mm].	Hole Size		Max. Land		Material Thickness		Land Thickness		Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	.031-.062	.800-1.600	2P	3.2					.062-.093	1.601-2.400	.187	5					.093-.158	2.401-4.000	.250	6	.003-.010	.080-.254	.031	.787	.158-.235	4.001-6.000	.312	8	.011-.020	.279-.508	.062	1.575	.235-.300	6.001-8.000	.375	9.5	.021-.030	.533-.762	.093	2.36	.300-.400	8.001-10.000	.437	11					.400-Over	10.001-Over	.500	13																																				
Hole Size		Max. Land		Material Thickness		Land Thickness																																																																																																			
Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric																																																																																																		
.031-.062	.800-1.600	2P	3.2																																																																																																						
.062-.093	1.601-2.400	.187	5																																																																																																						
.093-.158	2.401-4.000	.250	6	.003-.010	.080-.254	.031	.787																																																																																																		
.158-.235	4.001-6.000	.312	8	.011-.020	.279-.508	.062	1.575																																																																																																		
.235-.300	6.001-8.000	.375	9.5	.021-.030	.533-.762	.093	2.36																																																																																																		
.300-.400	8.001-10.000	.437	11																																																																																																						
.400-Over	10.001-Over	.500	13																																																																																																						
	ARD Relief diameter other than standard (counterbore)																																																																																																								
	ART Relief taper other than standard																																																																																																								
	EBT EXTRA BACK TAPER The stripping tonnage and the likelihood of galling are reduced by increasing the back taper on the punch tip. Standard Taper: For Tol. #1 = $.0005''/\text{inch}/\text{side}$ [.013mm] For Tol. #2 = $.0001''/\text{SBR}/\text{side}$ [.003mm]																																																																																																								
	NBT NO BACK TAPER Maintains exact punch diameter after sharpening tip for close tolerance work.																																																																																																								
	SBR STRAIGHT BEFORE RADIUS $SBR = B - \sqrt{R^2 - (R - (D - P)/2)^2}$ *Use 'P' or 'W' whichever is smaller.																																																																																																								

EJECTOR COMPONENTS

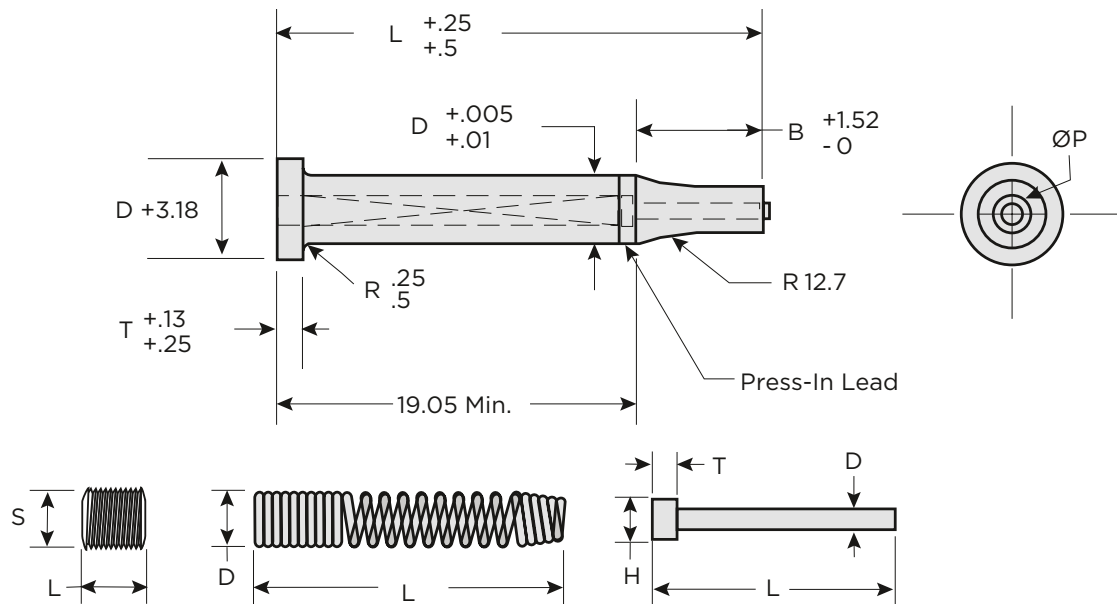


EJECTOR HOLE DIAMETER		.02	.032	.046	.063	.094	.125
SPRING HOLE DIAMETER		.086	.109	.141	.173	.221	.281
EJECTOR PIN EXTENSION		.031	.031	.06	.06	.06	.06
MINIMUM PUNCH DIAMETER (D)		.172	.218	.282	.344	.442	.552
MINIMUM POINT DIAMETER (P)		.05	.08	.115	.158	.235	.282
MAXIMUM SHANK LENGTH		3.375	3.375	3.375	4.25	4.25	4.25
MAXIMUM POINT LENGTH (B)		1.25	1.5	1.62	1.62	1.62	1.62
PART DESCRIPTION	SET PART NO.	EJ2	EJ3	EJ4	EJ6	EJ9	EJ12
	SCREW SIZE (S)	3-48	5-40	8-32	10-32	1/4-28	5/16-24
	LENGTH (L)	.187	.187	.187	.187	.25	.25
	DIAMETER (D)	.08	.104	.135	.165	.215	.27
	FREE LENGTH (L)	2.5	2.75	3.25	3.75	4	3.5
	PRESSURE (1/8 pre-load) (lbs.)	.5	.75	1	1.5	2	2.5
	HEAD DIAMETER (H)	.048	.073	.094	.12	.156	.188
	HEAD THICKNESS (T)	.031	.047	.062	.062	.094	.094
	PIN DIAMETER (D)	.015	.027	.041	.058	.089	.12
	LENGTH (L)	2	2	2	2	2.25	2.25

SPRINGS	PINS	SCREWS
EJ2SPRING	EJ2PIN	EJ2SCREW
EJ3SPRING	EJ3PIN	EJ3SCREW
EJ4SPRING	EJ4PIN	EJ4SCREW
EJ6SPRING	EJ6PIN	EJ6SCREW
EJ9SPRING	EJ9PIN	EJ9SCREW
EJ12SPRING	EJ12PIN	EJ12SCREW

INFORMATION NEEDED
Pre-packaged component sets include (10) set screws, (10) springs and (10) pins. The spring and pin are for the longest punch available for the set. User must cut the spring and pin to size for shorter length punches.

EJECTOR COMPONENTS



EJECTOR HOLE DIAMETER		.57	.81	1.17	1.6	2.39	3.18
SPRING HOLE DIAMETER		2.18	2.77	3.58	4.39	5.61	7.14
EJECTOR PIN EXTENSION		.79	.79	1.52	1.52	1.52	1.52
MINIMUM PUNCH DIAMETER (D)		4.37	5.54	7.16	8.74	11.23	14.02
MINIMUM POINT DIAMETER (P)		1.27	2.03	2.92	4.01	5.97	7.16
MAXIMUM SHANK LENGTH		85.73	85.73	85.73	107.95	107.95	107.95
MAXIMUM POINT LENGTH (B)		31.75	38.1	41.15	41.15	41.15	41.15
PART DESCRIPTION	SET PART NUMBER	MEJ2	MEJ3	MEJ4	MEJ6	MEJ9	MEJ12
	SCREW SIZE (S)	M2.5 x .45	M3 x .5	M4 x .7	M5 x .8	M6 x 1	M8 x 1.25
	LENGTH (L)	5	5	5	5	5	5
	DIAMETER (D)	2.03	2.64	3.43	4.19	5.46	6.86
	FREE LENGTH (L)	63.5	69.85	82.55	95.25	101.6	88.9
	PRESSURE (1/8 pre-load) (lbs.)	12.7	19.05	25.4	38.1	50.8	63.5
	HEAD DIAMETER (H)	1.22	1.85	2.39	3.05	3.97	4.78
	HEAD THICKNESS (T)	.79	1.199	1.58	1.58	2.39	2.39
	PIN DIAMETER (D)	.38	.69	1.04	1.47	2.26	3.05
	LENGTH (L)	50.8	50.8	50.8	50.8	57.15	57.15

INFORMATION NEEDED

Pre-packaged component sets include (10) set screws, (10) springs and (10) pins. The spring and pin are for the longest punch available for the set. User must cut the spring and pin to size for shorter length punches.

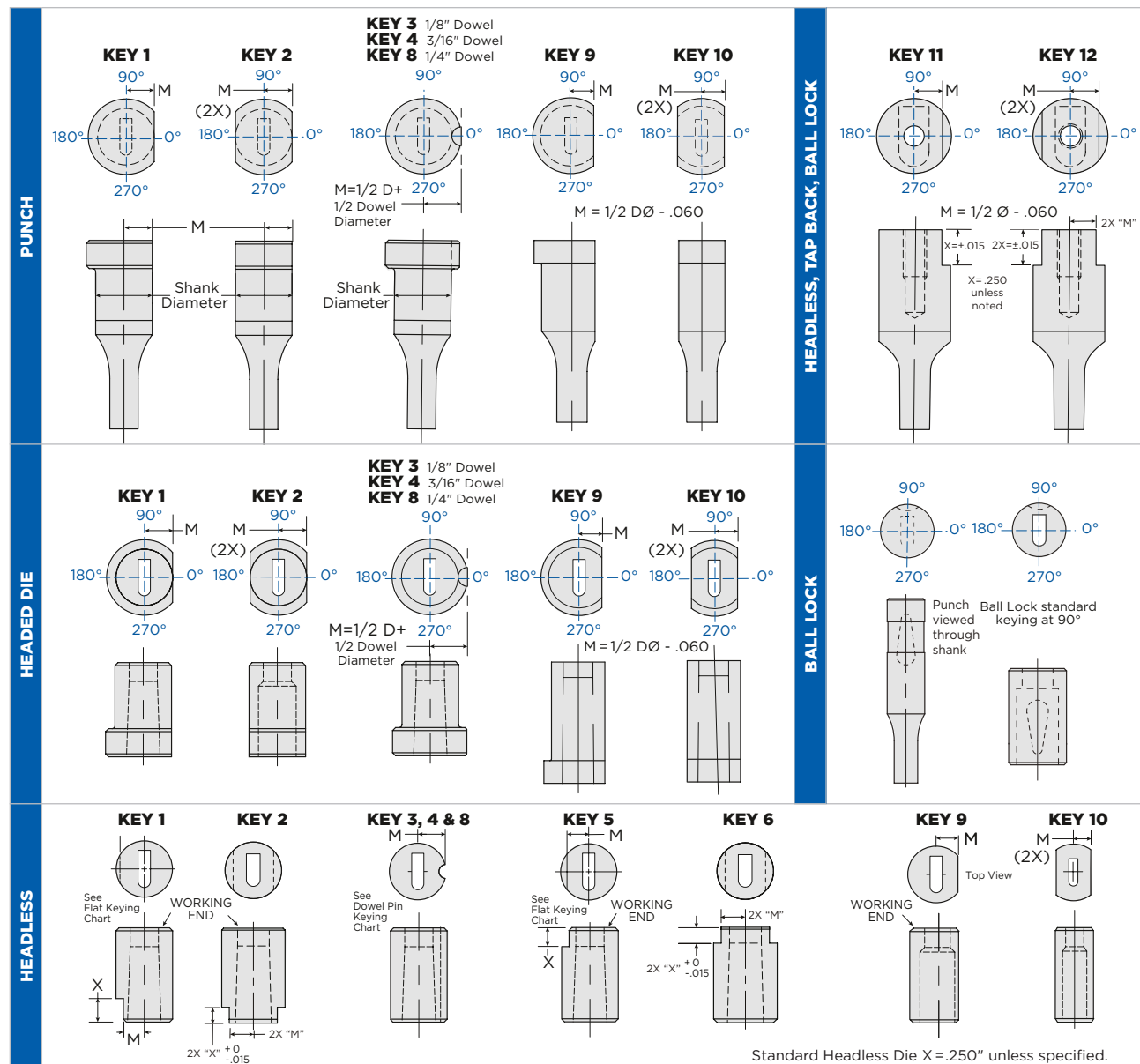
SPRINGS

EJ2SPRING	EJ2PIN	MEJ2SCREW
EJ3SPRING	EJ3PIN	MEJ3SCREW
EJ4SPRING	EJ4PIN	MEJ4SCREW
EJ6SPRING	EJ6PIN	MEJ6SCREW
EJ9SPRING	EJ9PIN	MEJ9SCREW
EJ12SPRING	EJ12PIN	MEJ12SCREW

PINS

SCREWS

KEYING INFORMATION



DOWEL PIN KEYING										
M = D/2 + 1/2 dowel diameter: Headed punches, & guides.										
M dim.: Headless dies, headless punches & guides (see chart).										
Dia.	25	31	37	43	50	62	75	87	100	125-275
KEY 3	.1625	.1875	.2125	.2375	.2625	D/2	D/2	D/2	D/2	D/2
KEY 4	.1938	.2188	.2438	.2688	.2938	D/2	D/2	D/2	D/2	D/2
KEY 8	.225	.250	.275	.300	.325	.3438	.4063	.4688	.5313	D/2

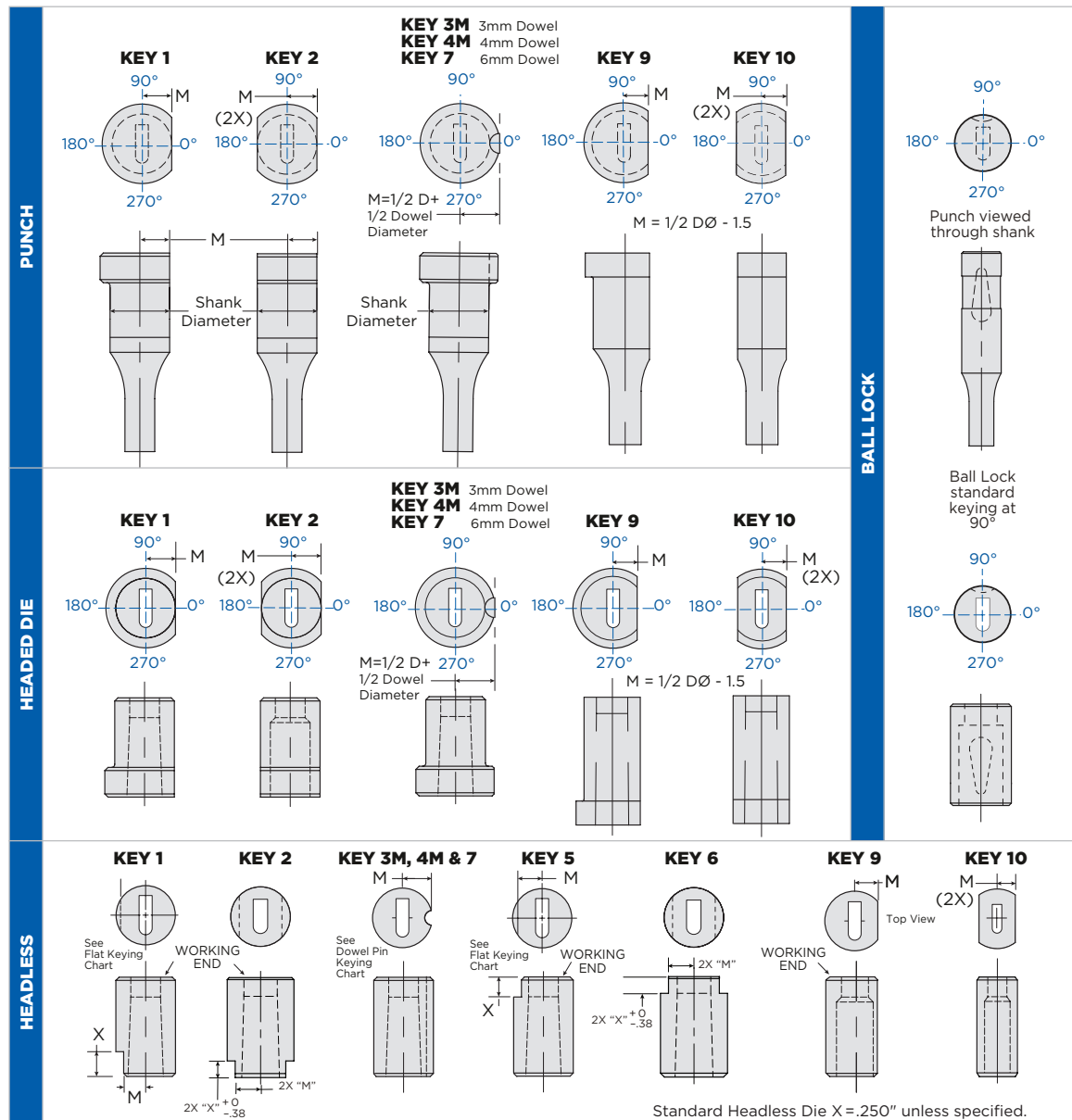
FLAT KEYING (unless otherwise specified)										
Key 1 & 2 M = D/2: Headed punches, dies & guides.										
Key 9 & 10 M = D/2 - .060" Headed punches, dies & guides, Headless punches.										
M dim.: Headless dies, guides & working end keys (see chart).										
D	18	25	31	37	43	50	62	75	87	
M	.080	.110	.135	.165	.190	.220	.270	.325	.380	
D	100	125	150	175	200	225	250	275		
M	.435	.540	.650	.775	.900	1.025	1.150	1.275		

BALL LOCK KEY TOLERANCE	
	RADIAL
Tolerance 1	0° 4'
Tolerance 2	0° 2'

DOWEL KEY TOLERANCE		
	'M'	RADIAL
Tolerance 1	+0.0005 -0	0° 4'
Tolerance 2	+0.0002 -0	0° 2'

FLAT KEY TOLERANCE		
	'M'	RADIAL
Tolerance 1	+0.0005 -0	.001/inch
Tolerance 2	+0.0002 -0	.0005/inch

KEYING INFORMATION



DOWEL PIN KEYING

M = D/2 + 1/2 dowel diameter: Headed punches, dies and guides.
M dim.: Headless dies, headless punches and guides (see chart).

Dia.	5	6	8	10	13	16	20	22	25	32-71
KEY 3M	3.5	3.9	4.7	5.5	6.7	D/2	D/2	D/2	D/2	D/2
KEY 4M	4	4.4	5.2	6	7.2	D/2	D/2	D/2	D/2	D/2
KEY 7	5	5.4	6.2	7	8.2	D/2+1	D/2+1	D/2+1	D/2+1	D/2

FLAT KEYING (unless otherwise specified)

Key 1 & 2 M = D/2: Headed punches, dies and guides.
Key 9 & 10 M = D/2 - 1.5mm: Headed punches, dies & guides, Headless punches.
M dim.: Headless dies, guides and working end keys (see chart).

D	5	6	8	10	13	16	20	22	25
M	2.2	2.6	3.5	4.3	5.6	6.9	8.7	9.5	10.8
D	32	38	40	45	50	56	63	71	
M	13.8	16.5	17.4	19.5	21.7	24.2	27.3	30.7	

BALL LOCK KEY TOLERANCE

	RADIAL
Tolerance 1	0° 4'
Tolerance 2	0° 2'

DOWEL KEY TOLERANCE

	'M'	RADIAL
Tolerance 1	+0.013 -0	0° 4'
Tolerance 2	+0.005 -0	0° 2'

FLAT KEY TOLERANCE

	'M'	RADIAL
Tolerance 1	+0.013 -0	.03/30
Tolerance 2	+0.005 -0	.01/20

ACCESSORIES

UNIKIX® EJECTOR ASSEMBLIES



UNIKIX® Spring Pins are manufactured with a hardened steel rod soldered to a compression spring. These ejector assemblies are used to prevent slug pulling, prevention of sheet metal being held against the stripper by stamping-fluid adherence and ejecting slugs after cutoff. The unique assembly design does allow for you to cut UNIKIX ejector assemblies to suit any application.

Cat. No.	Assembly
971591	#2 Unikix Ejector Assembly
971592	#3 Unikix Ejector Assembly
971593	#4 Unikix Ejector Assembly
971594	#6 Unikix Ejector Assembly
971595	#9 Unikix Ejector Assembly
988119	GP-148 Unikix Ejector Assembly

Pin	Pin Hole	Spring	Spring Hole	Screw
.020 Dia. x 3	.025	.082 Dia. x 2	.086	3-48 x 3/16
.026 Dia. x 3	.031	.105 Dia. x 2-1/4	.190	5-40 x 3/16
.041 Dia. x 3	.046	.140 Dia. x 2-1/2	.144	8-32 x 3/16
.055 Dia. x 4	.062	.162 Dia. x 2-3/4	.166	10-32 x 3/16
.086 Dia. x 4	.094	.217 Dia. x 3	.221	1/4-28 x 1/4
.148 Dia. x 4	.156	.308 Dia. x 3-1/2	.312	3/8-48 x 5/16

TOOLING STORAGE CABINETS



989826



989827

Storage systems from Wilson Tool International provide safe, efficient tool access to help increase performance. Keep your tooling protected from damage with cabinets that are tailored to suit your needs. Maximize your productivity with well organized tools that are easy to locate and identify for efficient setup and a speedy return to their designated location.

Cabinet Specifications

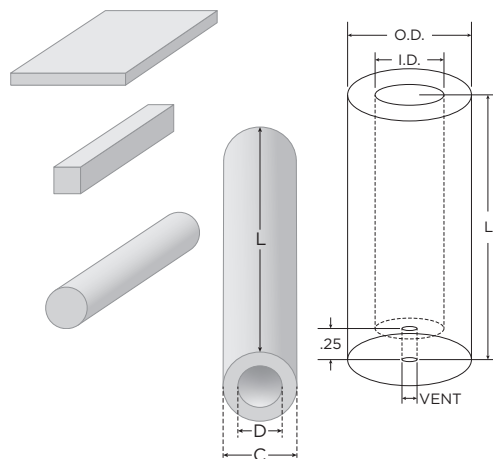
- High-capacity, PVC-lined drawers use an integrated, one-drawer-at-a-time locking system
- Ergonomic design ensures operator safety
- Secure, enclosed storage helps to maintain tool condition
- Stationary cabinets have a 2-inch recessed base to prevent toe kicks
- Mobile base style includes 6-inch casters, a side handle and an integrated lock-in mechanism on drawer handle
- Custom cabinet colors available on request (price to be quoted)

Cat. No.	W x D x H	Est. Weight	Drawer Sizes*
989826	30" x 27" x 42" [76.2 x 68.5 x 106.6cm]	540 lbs.	6 - 3" [76.2mm] 2 - 5" [127.0mm]
989827	30" x 27" x 47.5" [76.2 x 68.5 x 120.6 cm]	556 lbs.	1 - 8" [203.2mm]

*Alternate drawer configurations available upon request.

ACCESSORIES

URETHANE PRODUCTS



Wilson Tool offers a wide range of urethane products for all of your stamping needs. In addition to the standard thicknesses and widths of the sheets, bars, rods and strippers, custom urethane is available upon request.

Urethane Strippers

Strip the blank cleanly from the punch with these high holding pressure urethane strippers. Simply push the stripper onto the punch shank and the first stroke of the press forces the punch tip through stripper bottom.

Urethane Tubes & Springs

Useful in applications where vibration, corrosion and magnetism prevent the use of steel springs.

Solid Urethane

Sheets, bars & rods are available in stock or custom sizes. Precision cast for tighter control of urethane thickness than open cast.

Stocked in 95A durometer. Other durometers are available.

MILFAB CAM PUNCH UNITS



Take the vertical motion of your press and turn it into horizontal punching with a Milfab Cam Unit. The Milfab Pos-Z-Cam is a powerful compact positive return cam designed to maximize die runtime. Milfab Cam Units use investment cast hardened steel components which guarantees consistency, performance, and long life cycles.

SUPERIOR DIE COMPONENTS



As the exclusive distributor of Superior Components, Impax Tooling Solutions® delivers unparalleled precision with a massive, ready-to-ship inventory. Enjoy premium standard tolerances and advanced technologies designed for maximum tooling performance.

Type A Components

Built by the original OEM manufacturer, this line includes high-precision friction, ball bearing, and hardware components featuring the Maxi-Cage™ System for minimal deflection and flake-resistant Bronze-Rite® Bushings.

Type D Components

This fully-interchangeable line is in-stock for immediate delivery and features a complete selection of pins, hardware, Type 1 and Type 2 ball bearing cages, and friction components in both steel and self-lubricating materials.

Custom Support

We also provide expert engineering consultation and custom-tailored designs for unique applications.

XSHARP™ GRINDER

Automated Tool Sharpening from the Provider You Trust

Sharpening your tooling is simpler and faster with the innovative XSharp™ grinder from Wilson Tool.



**Cat. No.
987328**

ACCESSORIES

The benefits of accurate regrinding include:

- Longer tool life for reduced tooling costs
- No scrap or wasted material due to tooling malfunction
- Reduce wear on your springs, die and press

Fully Automated Grinding Process

- Simple to operate; no previous grinding experience required
- Touchscreen controller with user-friendly multi-language interface for easy operation (language can be selected during machine setup)
- Automated height detection feature locates the top of any tool mounted in the chuck before the grinding cycle begins
- Automatic compensation makes up for any grinding wheel wear

Suitable for Most Tooling Styles: Flexible range of chucks and adapters allows for sharpening most punch press tooling styles

Precision: AC-servo motor drives a precision gear and ball screw with dual linear guides and four carriers to provide highly stable bearing properties

Shear Grinding Chuck: For sharpening punches with shears (included)

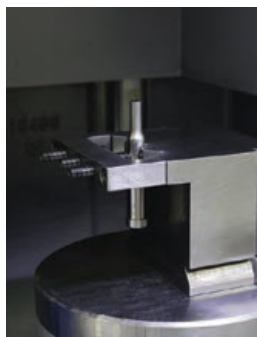
Closed Coolant System: Ensures the tool is constantly flooded with coolant during the grinding process

Interlocking Safety Guard: Opens and closes automatically

Frame: Heavy-duty cast-iron frame for durability, stability and long life

Small Footprint: Machine can easily be placed next to the punch press

5 EASY STEPS TO A SHARPER EDGE



Step 1. Load tool into chuck



Step 2. Set tool style



Step 3. Set tool size



Step 4. Set grind amount (in increments of 0.001" or 0.01mm)



Step 5. Touch start to sharpen the tool

XSHARP™ ACCESSORIES	
DESCRIPTION	CAT. NO.
Grinding Wheel	55109
Coolant	55367
Dressing Stone	55117
Magnetic Chuck	55667U

XSHARP™ TECHNICAL SPECIFICATIONS*			
MACHINE HEIGHT	77.2" (1962mm)	AIR PRESSURE SUPPLY	6 bar
MACHINE WIDTH	31.5" (800mm)	GRINDING MOTOR POWER	3HP/2.2 kW
MACHINE DEPTH	30.7" (779mm)	WHEEL ROTATION SPEED	2800 rpm
MACHINE WEIGHT	992 lbs./450kg	TABLE MOTOR POWER	.24HP/18 kW
MAXIMUM TOOL DIAMETER	6.3" (160mm)	TABLE ROTATION SPEED	40 RPM
MAXIMUM TOOL HEIGHT	9" (230mm)	COOLANT PUMP POWER	.21HP/0.16 kW
POWER SUPPLY	230V, 60Hz	COOLANT PUMP WATER FLOW	Max. 11.5GPM 40 l/min

*Wilson Tool International reserves the right to change machine specifications without prior notice.

NITROGEN GAS SPRINGS

Designed for high-production operations, these premium nitrogen springs provide longer spring life, and are the safest on the market with regard to overpressure, overstroke and uncontrolled speed — which helps stampers reduce the risk of injury and tooling damage. Also, Special Springs are performance guaranteed, so your purchase is risk-free!

SAME DAY SHIPPING

Place your spring order by 3:00pm (EST) and receive same-day shipping on over 25,000 in-stock items.

INTERCHANGEABILITY

Springs are interchangeable with competitive brands.

SAFETY

Springs are fully compliant with all regulations and feature the latest safety innovations including:

- Over Stroke Active Safety (OSAS)
- Uncontrolled Speed Active Safety (USAS)
- Over Pressure Active Safety (OPAS)



Scan QR Code to view
the Special Springs
Conversion Guide



DIE SPRINGS

Engineered with a simple design, and manufactured with high-quality materials to give you longer life, all die springs are color-coded per ISO standards for quick & easy identification of duty rating. Sizes range from 0.375" to 2.50" in diameter and work with all types of punch and die components.



- **Special Springs Standard**

- **ISO Standard**

- **Round Wire**

- **Precompressed Units**

- **US-NAAMS Standard**

- **JIS B5012**

- **Same Day Shipping**

- **Interchangeability**

- **No Minimum Order**

Scan QR Code
to view the
Die Springs
Catalog



See our Special Springs
catalog for
available options.

Visit wilsontool.com
or consult with your
sales engineer.

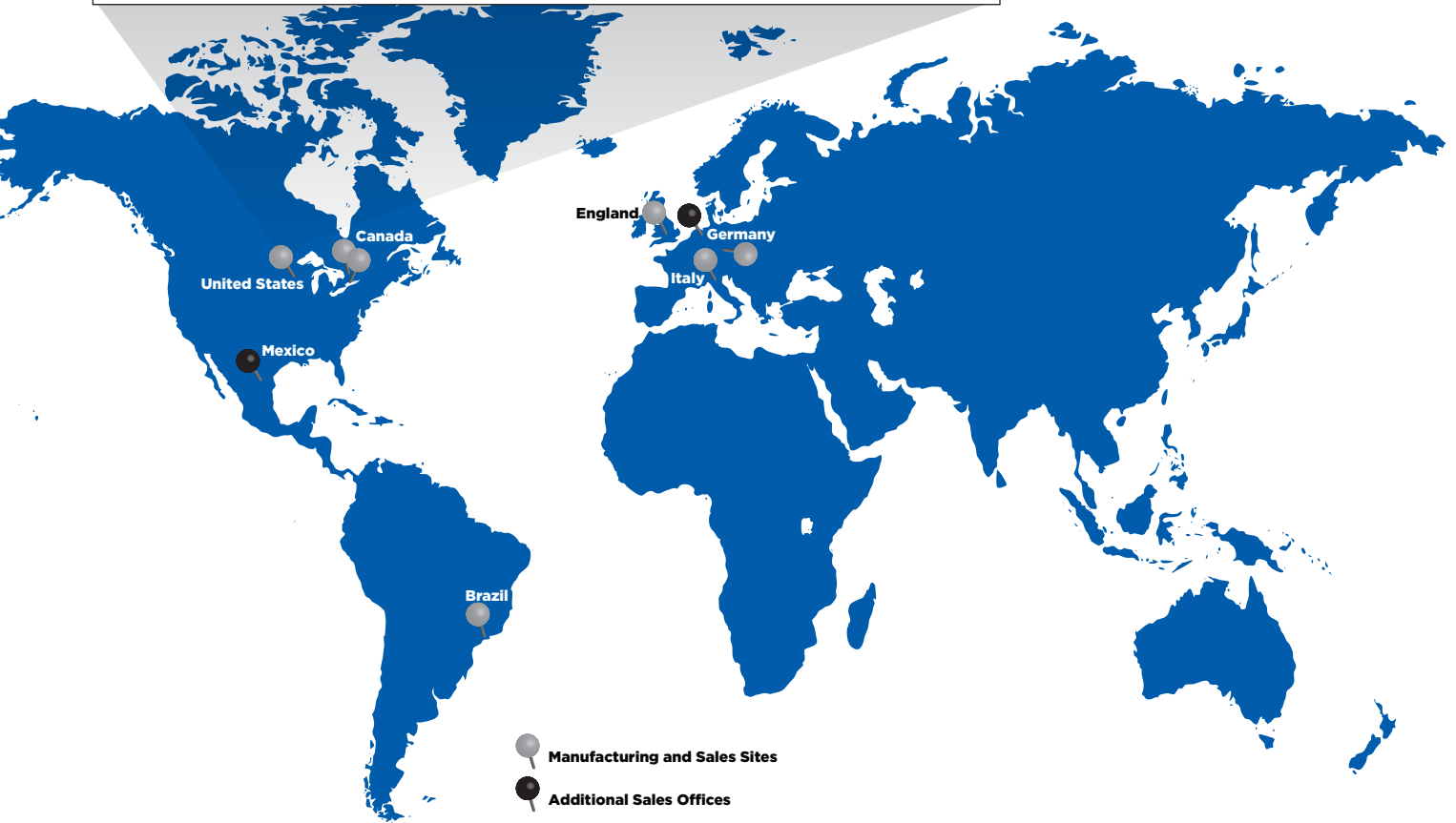
VL		Light Green Verde Claro Verte Claire		Super-Light Super-Ligero Extra-Légère	30% L ₀	4
V		Green Verde Verte		Light Ligero Légère	25% L ₀	5
B		Blue Azul Marino Bleue		Medium Medio Moyenne	25% L ₀	3
R		Red Rojo Rouge		Heavy Fuerte Forte	20% L ₀	2
G		Yellow Amarillo Jaune		Extra-Heavy Extra-Fuerte Extra-Forte	17% L ₀	2
A		Silver Plateado Argent		Ultra-Heavy Ultra-Fuerte Ultra-Forte	10% L ₀	1
T		Titanium Titanio Titane		Super-Strong Super-Fuerte Super-Forte	Max For Short Defl	
W		White Blanco Blanc		Hyper-Strong Hyper-Fuerte Hyper-Forte	5% L ₀	6
TV		Green Verde Verte		Light Ligero Légère	25% L ₀	5
TB		Blue Azul Blue		Medium Medio Moyenne	25% L ₀	3
TR		Red Rojo Rouge		Heavy Fuerte Forte	20% L ₀	2
L		Not painted Muelles no pintados Ressorts non peints		—	16% L ₀	2
RMBL		Silver-Blue Plateado-Azul Argent-Bleu		Light Ligero Légère	25% L ₀	4
RMHR		Silver-Red Plateado-Rojo Argent-Rouge		Medium Medio Moyenne	20% L ₀	2
RHGO		Silver-Gold Plateado-Oro Argent-Or		Heavy Fuerte Forte	15% L ₀	2
RXHG		Silver-Green Plateado-Verde Argent-Verte		Extra-Heavy Extra-Fuerte Extra-Forte	15% L ₀	2

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Mexico	001.800.741.2510	estampado@wilsontool.com



GUARANTEED TO OUTPERFORM

With Wilson Tool International, you're not just receiving tools — you're gaining a partner dedicated to your productivity, and products backed with a guarantee to outperform your current tooling.

*The products in this catalog are manufactured in a plant whose quality management system is certified or registered as conforming to the requirements defined in the ISO 9001 Standard.



S450C 7.2026