



# SOLUTIONS FOR BETTER PERFORMING TOOLS

CATALOG VERSION 12  
RECENTLY ADDED PRODUCTS:



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Z-Series  
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CVe Monitor / CVe Live  
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Customer Service  
1-800-269-6653 | 1-847-487-1000

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**PROGRESSIVE**  
C O M P O N E N T S

# ABOUT PROGRESSIVE...

Progressive Components offers advanced solutions for unmatched tooling performance, with product lines consisting of standard and proprietary mold components, mold monitoring devices and software, and innovations for improving mold maintenance.

This Progressive Catalog version 12 includes the widest scope of offerings in our company's history:

- Off-the-shelf Standard Components and an increased range of Mold-Ready Components.
- Alignment Locks and Plate Sequence Control items, to help keep molds in production.
- Standard Lifters, CamActions and Collapsible Core solutions offered for molding undercuts.
- Expanded Mold Monitoring capabilities, from CV mold counters to CVe Monitors, CVe Live and System Cooling.
- Toolroom Supplies and Software that help to advance mold maintenance and repair.

Together, this collection of advantages delivers convenience for the mold builder and unmatched tooling performance for molders and OEMs, with availability through direct distribution and authorized dealers throughout the world.

## Progressive Components Worldwide Locations

### Europe

P: (44)-0-1928-240660  
F: (44)-0-1928-750280  
sales.eu@procomps.com

### North & South America

P: 800-269-6653  
F: 800-462-6653  
sales@procomps.com

Illinois • California  
South Carolina

### Asia

P: (65)-6753-3212  
F: (65)-6753-4489  
sales.asia@procomps.com

## OUR COMMITMENT:

The team at Progressive continuously strives to be the leading supplier to the tooling industry. With a foundation in the mold business, we feel a responsibility to provide continued excellence.

Therefore, every customer should always expect the following:

- Products that meet expectations for quality, value, and performance.
- Prompt resolution of any order issue.
- Prompt response to billing questions and account status.
- Orders that are traced at no additional charge.
- Knowledgeable and helpful Customer Service and Technical Support staff.

If there is any way in which we can serve your needs better, we want to hear about it. Feel free to contact anyone on the Progressive Team using the contact information provided above.

We appreciate your support and will work to further earn your business.



Glenn Starkey  
Owner, President  
glenn.starkey@procomps.com

Don Starkey  
Owner, Chairman  
don.starkey@procomps.com

## Progressive Components Headquarters

235 Industrial Drive  
Wauconda, Illinois 60084

### Customer Service

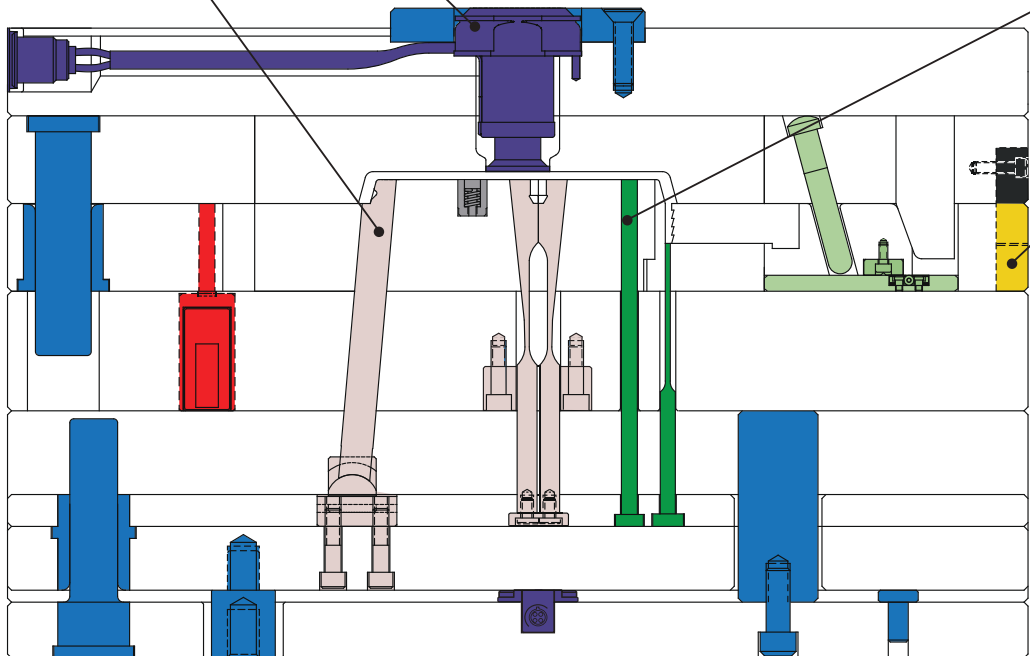
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**PROGRESSIVE**  
C O M P O N E N T S



- LIFTERS UNDERCUT RELEASE**
  - FlexiCores
  - Guides & Accessories
  - Lifter Blades
  - Lifter Cores
  - ModuLifters
  - UniLifters
  - Versa-Lifters
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  - Cavity Pressure
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  - Recessed Connectors
  - Switches
  - Thermocouples
  - Wire Channels
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  - Frames
  - Inserts
  - RTI Pins & Bushings
  - RTI Support Pillars
  - T-Handles
- MAINTENANCE PRODUCTS**
  - Cable Checker
  - Mold Checker
  - Mold Light Bar
  - Status Tags
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  - Toolroom Bench
- SOFTWARE LITERATURE**
  - Books
  - Mold Finish Guides
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  - Keyed Ejector Pins
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  - Sleeve Extensions
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  - UltraPins
- ALIGNMENT LOCKS**
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  - Guide Locks
  - Needle Bearing Locks
  - Shuttle Mold Locks
  - Side Locks
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  - Top Locks
  - Taper Locks
  - Z-Series Locks



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  - Air Poppets
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  - Date Plugs
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  - Recycle Inserts

- MOLD MONITORING**
  - CVe Monitor
  - CVe OnDemand
  - CVe Live
  - CounterView
  - CV Attachment Block
  - Program Watch
  - System Cooling

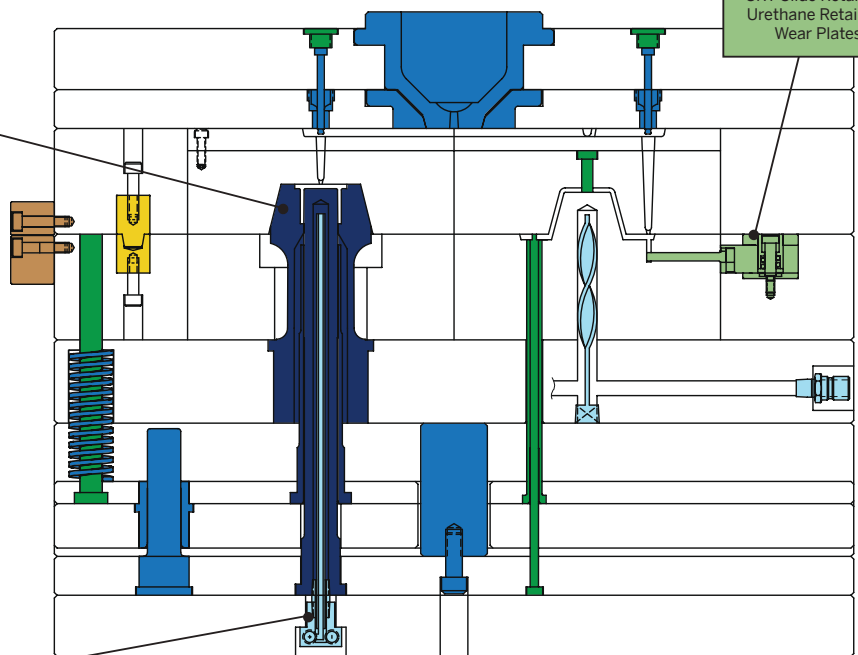
- CAMACTIONS SLIDE COMPONENTS**
  - 100 Series
  - 200 Series
  - 300 Series
  - 350 Series
  - 400 Series
  - Angle Pins
  - CamAction Accessories
  - L-Gibs
  - SRT Slide Retainers
  - Urethane Retainers
  - Wear Plates

- COLLAPSIBLE CORES EXPANDABLE CAVITIES**
  - DT Series C-Cores
  - Expandable Cavities
  - Grinding Rings
  - MiniCores
  - Retention Sleeves
  - RT Series C-Cores

- PLATE SEQUENCE CONTROL**
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  - Plate Locks
  - Roller Pullers
  - StackIt

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  - Front Loading Pins
  - Guided Ej Bushings
  - Guided Ejector Pins
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  - Locating Rings
  - Mold Straps
  - PKO Extensions
  - Puller Pins & Bushings
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- COOLING ITEMS**
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  - Bubbler Base
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  - Hex & Piston Tubes
  - Hose
  - Hose Barbs
  - Inlet Cascade Fittings
  - Misc Brass Fittings
  - Safety Clips
  - Threadless Plugs
  - Tubes
  - Water Blockers
  - Water Jumpers













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	Prefix: EP	Prefix: EP	Prefix: EPD	Prefix: EPD
	Page: A-2	Page: A-3	Page: A-4	Page: A-5
<b>Catalog # Prefix</b>				
<b>Catalog Page</b>	Z-3	Z-4	Z-4	Z-5
<b>Pricing Page</b>				

				
<b>Ejector Pins: Straight JIS</b>	<b>Ejector Pins: Shoulder JIS</b>	<b>UltraPins</b>	<b>Keyed Ejector Pins</b>	<b>Return Pins</b>
Prefix: EPJ	Prefix: EPJ	Prefix: EPL	Prefix: EP	Prefix: RP
Page: A-6	Page: A-7	Page: A-8	Page: A-10	Page: A-11
Z-6	Z-6	Z-6	Z-7	Z-7

				
<b>Blade Ejectors</b>	<b>Core Pins</b>	<b>TI Pins</b>	<b>Ejector Sleeves</b>	<b>Thin Wall Sleeves</b>
Prefix: BE	Prefix: CP	Prefix: TI	Prefix: ES	Prefix: ESTW
Page: A-12	Page: A-14	Page: A-15	Page: A-16	Page: A-17
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		<b>MOLD BASE COMPONENTS</b>			
<b>Sleeve Extensions</b>	<b>Core Pin Retainers</b>		<b>PKO Extensions</b>	<b>Locating Rings</b>	
Prefix: SXT	Prefix: CPR		<b>Catalog # Prefix</b>	Prefix: PH, PKP	Prefix: LR
Page: A-18	Page: A-19		<b>Catalog Page</b>	Page: B-1	Page: B-2
Z-11	Z-11	<b>Pricing Page</b>	Z-11	Z-11	

				
<b>Sprue Bushings</b>	<b>Extended Sprues</b>	<b>Puller Pins &amp; Bushings</b>	<b>Leader Pins: Straight</b>	<b>Leader Pins: Shoulder</b>
Prefix: SPR	Prefix: ESB, RX	Prefix: PP, PPB	Prefix: LP	Prefix: SLP
Page: B-3	Page: B-4	Page: B-5	Page: B-6	Page: B-7
Z-11	Z-12	Z-12	Z-12	Z-13

				
<b>Bushings: Shoulder</b>	<b>Bushings: Straight</b>	<b>QC Bushings: Shoulder</b>	<b>Guided Ejector Bushings</b>	<b>Guided Ejector Pins</b>
Prefix: SAB, SHB, SGP, STL	Prefix: STB, STGP	Prefix: SQC	Prefix: GEB, GGP, GQC	Prefix: GEP, LP
Page: B-8	Page: B-9	Page: B-10	Page: B-12	Page: B-13
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Front Load Pins & Bushings	Guide Blocks	Support Pillars & Columns	Urethane Springs	Springs
Prefix: FLPB	Prefix: GBK	Prefix: SP, SPH	Prefix: US	Prefix: MS, HS
Page: B-14	Page: B-15	Page: B-16	Page: B-20	Page: B-21
Z-16	Z-16	Z-16	Z-17	Z-17



Stripper Bolts	Stripper Bolt Bushings	Tubular Dowels	Stop Discs & Pins	Mold Straps
Prefix: SBLT	Prefix: SBB	Prefix: TD	Prefix: SD, STP	Prefix: MSTRP
Page: B-24	Page: B-25	Page: B-26	Page: B-27	Page: B-27
Z-18	Z-19	Z-19	Z-19	Z-19

### ALIGNMENT LOCKS



	Side Locks	Top Locks	Guide Locks	X-Style Side Locks
<b>Catalog # Prefix</b>	Prefix: SL, SLM	Prefix: TL, TLM	Prefix: GL, GLM	Prefix: SLX
<b>Catalog Page</b>	Page: C-3	Page: C-4	Page: C-5	Page: C-6
<b>Pricing Page</b>	Z-19	Z-19	Z-19	Z-19



Shuttle Mold Sets	Inserted Bar Locks	Bar Locks	Taper Locks & Plates	Top Lock - 20MM Square
Suffix: -SF, -SM	Prefix: BLN, BLG	Prefix: BLB & BLG	Prefix: MTL, FTL, TLP	Prefix: TLM
Page: C-6	Page: C-7	Page: C-8	Page: C-11	Page: C-11
Z-19	Z-20	Z-20	Z-21	Z-21



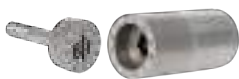
### DATERS AIR VALVES



Needle Bearing Locks	Side Locks: Steel	Side Locks: Graphite	DATERS AIR VALVES	Locking Series
Prefix: SLR, SLRM, TLR	Prefix: SLS, SLMS	Prefix: SLPM	<b>Catalog # Prefix</b>	Prefix: DN, DTN
Page: C-12	Page: C-14	Page: C-15	<b>Catalog Page</b>	Page: D-1
Z-21	Z-21	Z-21	<b>Pricing Page</b>	Z-21



Tapered Series	RF Series	20 Series	CH Series	FD Series
Prefix: DTPR	Prefix: DF	Prefix: DL	Prefix: DC	Prefix: DFD
Page: D-3	Page: D-4	Page: D-5	Page: D-6	Page: D-7
Z-22	Z-23	Z-24	Z-24	Z-24



Multi-Daters	MicroDaters	LG Series	Recycle Inserts	Air Valves & Poppets
Prefix: DMD	Prefix: MD	Prefix: DLB, DLS	Prefix: RI	Prefix: AV, APV
Page: D-8	Page: D-10	Page: D-11	Page: D-12	Page: D-13
Z-24	Z-25	Z-25	Z-25	Z-26



**COOLING ITEMS**



Die Cast Vacuum Blocks		Baffles	Jumper Baffles	Reverse Flow Baffles
Prefix: SV, SC, UV	<b>Catalog # Prefix</b>	Prefix: SB, TB	Prefix: JBA	Prefix: RFB
Page: D-14	<b>Catalog Page</b>	Page: E-2	Page: E-4	Page: E-5
Z-26	<b>Pricing Page</b>	Z-26	Z-27	Z-27



Cascade: Nipple Type	Cascade: Quick Coupler	Cascade: Hex Key, Compact	Cascade: High Flow	Cascade: Rear Load Nipple
Prefix: NC	Prefix: QC	Prefix: HKC, CC	Prefix: HFC	Prefix: RLN
Page: E-6	Page: E-7	Page: E-8	Page: E-9	Page: E-10
Z-27	Z-27	Z-27	Z-27	Z-27



Cascade: RL Quick Coupler	Bubbler Base	Inlet Cascade	Metric Tubes: High Flow, Hex	Tubes: High Flow, Hex
Prefix: RLQC	Prefix: BBL	Prefix: CF	Prefix: HFTM, HEXM, EHEXM	Prefix: HFT, HEXT
Page: E-11	Page: E-12	Page: E-13	Page: E-14	Page: E-15
Z-28	Z-28	Z-28	Z-28	Z-28



Tubes: Piston, Brass	Socket Connectors	Connector Plugs	Safety Clips	Extension Plugs
Prefix: PT, T	Prefix: SC	Prefix: Numeral	Prefix: SC	Prefix: Numeral
Page: E-16	Page: E-17	Page: E-18	Page: E-19	Page: E-21
Z-29	Z-29	Z-30	Z-31	Z-31



Adjustable Hex Nipples	Pipe Nipples	Elbows: Hex Key	Water Jumpers	Push-Lok Hose
Prefix: APN	Prefix: BPN, GPN	Prefix: HK, HKEE, HKL	Prefix: WJ	Prefix: WJH
Page: E-24	Page: E-24	Page: E-25	Page: E-26	Page: E-26
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Water Jumpers: Swivel	Pipe Plugs	Plugs: Water Blockers	Plugs: Threadless	Hose Barbs & Splicers
Prefix: WJ	Prefix: BR, ST, SS	Prefix: WB	Prefix: TWP, TAP, TDP	Prefix: MB, FB, HS
Page: E-27	Page: E-28	Page: E-29	Page: E-30	Page: E-31
Z-34	Z-34	Z-35	Z-35	Z-35












Elbows: Hex, Extension	Combination Hose Inserts	Tees & Elbows	Reducers & Couplings	Cover Plugs, Clamps & Tape
Prefix: HELS, HELB	Prefix: Numeral	Prefix: T, MT, ELS, EL, ELA	Prefix: RB, MR, C, HN	Prefix: CP, HC, TT
Page: E-32	Page: E-33	Page: E-34	Page: E-35	Page: E-36
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<b>MOLD MONITORING</b>				
	<b>CVe Monitor</b>	<b>CVe OnDemand</b>	<b>CVe Live</b>	<b>Profile Tool Mgt System</b>
	Catalog # Prefix	Prefix: CVe		
	Catalog Page	Page: F-1	Page: F-3	Page: F-4
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<b>CounterView: 100/200</b>	<b>CounterView: R-Series</b>	<b>CV Attachment Block</b>	<b>System Cooling</b>
Prefix: CV	Prefix: CVR, CVRL	Prefix: CVRA	Prefix: SCTS, SCM
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<b>CAMACTIONS SLIDE COMPONENTS</b>					
	<b>CamAction 100 Series</b>	<b>CamAction 200 Series</b>	<b>CamAction 300/350 Series</b>	<b>CamAction 400 Series</b>	
	Catalog # Prefix	Prefix: CA, CAME	Prefix: CA, CAME	Prefix: CA, CAME	Prefix: CA
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<b>Slide Retainers</b>	<b>SRT Bases &amp; Bushings</b>	<b>Angle Pin</b>	<b>Slide Retainer: Urethane</b>	<b>Wear Plates</b>
Prefix: SRT, SRTM	Prefix: SRTBA, SRTBU	Prefix: AP	Prefix: RET	Prefix: WP
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	<b>LIFTERS UNDERCUT RELEASE</b>				
<b>L- GIB</b>		<b>UniLifter System</b>	<b>ModuLifter System</b>	<b>Versa-Lifter System</b>	
Prefix: LGIB		Catalog # Prefix	Prefix: CB, UC, TG	Prefix: MLB, MLC, MLR, MLH	Prefix: UGV, SGV, CBV
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<b>Spherical Bushings</b>	<b>Lifter Guides</b>	<b>FlexiCore System</b>	<b>Lifter Blades &amp; Cores</b>
Prefix: LSB	Prefix: LG, LHK	Prefix: FCA, FCR, FCDA	Prefix: LBA, LCA
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<b>COLLAPSIBLE CORES EXPANDABLE CAVITIES</b>					
	<b>C-Cores: DT Series</b>	<b>DT Core Grinding Fixtures</b>	<b>DT Core Sub-10mm Series</b>	<b>C-Cores: RT Series</b>	
	Catalog # Prefix	Prefix: DT	Prefix: DTG	Prefix: S10	Prefix: CC, CCM
	Catalog Page	Page: I-1	Page: I-6	Page: I-7	Page: I-9
Pricing Page	Z-41	Z-41	Z-41	Z-41	















		<b>PLATE SEQUENCE CONTROL</b>		
<b>RT Core Grinding Rings</b>	<b>Expandable Cavities</b>		<b>Plate Locks</b>	<b>Friction Pullers</b>
Prefix: RTGR	Prefix: EXCAV		Prefix: PLC, PLCM, PLN	Prefix: FP
Page: I-11	Page: I-12	<b>Catalog # Prefix</b>	Page: J-1	Page: J-7
Z-41	Z-41	<b>Catalog Page</b>	Z-41	Z-42
		<b>Pricing Page</b>		



		<b>ELECTRICAL COMPONENTS</b>		
<b>Roller Pullers</b>	<b>StackIt System</b>		<b>KO Switches</b>	<b>CamAction Switches</b>
Prefix: RPL	Prefix: SK		Prefix: SWKO	Prefix: SWCA
Page: J-8	Page: J-9	<b>Catalog # Prefix</b>	Page: K-1	Page: K-3
Z-42	Z-42	<b>Catalog Page</b>	Z-42	Z-42
		<b>Pricing Page</b>		

				
<b>Plate Position Switches</b>	<b>Side Action Switches</b>	<b>External Mount Switches</b>	<b>Thermocouples</b>	<b>Hot Sprue Bushings</b>
Prefix: SWPPS	Prefix: SWSA	Prefix: SWXM	Prefix: TC	Prefix: BX
Page: K-4	Page: K-4	Page: K-5	Page: K-7	Page: K-8
Z-42	Z-42	Z-42	Z-42	Z-42

				
<b>Pressure Transducers</b>	<b>Patch Cables</b>	<b>Jumper Plugs</b>	<b>Recessed Connectors</b>	<b>Wire Channel Inserts</b>
Prefix: CPT	Prefix: ECCA	Prefix: ECJP	Prefix: ECRC	Prefix: WC
Page: K-10	Page: K-12	Page: K-12	Page: K-13	Page: K-13
Z-43	Z-43	Z-43	Z-43	Z-43

<b>RAPID TOOLING INSERTS</b>				
	<b>Rapid Tooling Inserts</b>	<b>RTI: S-Series</b>	<b>RTI: Complete</b>	<b>RTI Cavity &amp; Core Inserts</b>
	Prefix: RTS, RTL, RTT	Prefix: RTS	Prefix: RTL	Prefix: RCI, RCIA
	<b>Catalog # Prefix</b>	Page: L-1	Page: L-15	Page: L-16
<b>Catalog Page</b>	Z-43	Z-44	Z-44	Z-44
<b>Pricing Page</b>				

				
<b>RTI Frames</b>	<b>RTI Pins &amp; Bushings</b>	<b>Frame Sprue Bushing</b>	<b>Support Pillars</b>	<b>Straps</b>
Prefix: RTF	Prefix: RLP, RSB, RGEB	Prefix: RFS	Prefix: RSP	Prefix: MS
Page: L-18	Page: L-22	Page: L-23	Page: L-23	Page: L-24
Z-44	Z-44	Z-44	Z-44	Z-44

		<b>MAINTENANCE PRODUCTS</b>		
<b>Frame Clamps</b>	<b>T-Handles</b>		<b>Status Tags</b>	<b>Toolroom Bench</b>
Prefix: RFC	Prefix: T		Prefix: ST	Prefix: TRB
Page: L-24	Page: L-24	<b>Catalog # Prefix</b>	Page: M-1	Page: M-2
Z-44	Z-44	<b>Catalog Page</b>	Z-44	Z-44
		<b>Pricing Page</b>		



Cable Checker	Mold Checker	Mold Light Bar	Synthetic Grease
Prefix: CCT, CCTX	Prefix: MCY, MCTY	Prefix: MLB, MLBTF	Prefix: SYN
Page: M-4	Page: M-5	Page: M-6	Page: M-6
Z-45	Z-45	Z-45	Z-45

SOFTWARE LITERATURE	MoldTRAX		
	Literature	Mold Finish Guides	Mold Maintenance Software
<b>Catalog # Prefix</b>	Prefix: LIT	Prefix: LIT	
<b>Catalog Page</b>	Page: N-1	Page: N-1	Page: N-2
<b>Pricing Page</b>	Z-45	Z-45	Z-45



# EJECTOR PINS CORE PINS, SLEEVES

## SECTION A



Ejector Pins: Straight Inch	Ejector Pins: Shoulder Inch	Ejector Pins: Straight DIN	Ejector Pins: Shoulder DIN
Prefix: EP	Prefix: EP	Prefix: EPD	Prefix: EPD
Page: A-2	Page: A-3	Page: A-4	Page: A-5



Ejector Pins: Straight JIS	Ejector Pins: Shoulder JIS	UltraPins	Keyed Ejector Pins
Prefix: EPJ	Prefix: EPJ	Prefix: EPL	Prefix: EP
Page: A-6	Page: A-7	Page: A-8	Page: A-10



Return Pins	Blade Ejectors	Core Pins	TI Pins
Prefix: RP	Prefix: BE	Prefix: CP	Prefix: TI
Page: A-11	Page: A-12	Page: A-14	Page: A-15



Ejector Sleeves	Thin Wall Sleeves	Sleeve Extensions	Core Pin Retainers
Prefix: ES	Prefix: ESTW	Prefix: SXT	Prefix: CPR
Page: A-16	Page: A-17	Page: A-18	Page: A-19



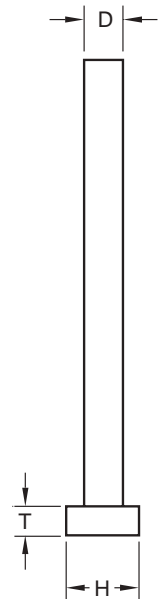


# PIN COMPARISON CHART

Pin Diameter D			Standard Head Dimensions									
Inch		Metric	US Inch				DIN Metric			JIS Metric		
Fraction	Decimal	mm	PRO Cat #	.005 O.S.	H	T	PRO Cat #	H	T	PRO Cat #	H	T
1/32	.0312	0.8	EP031	—	0.25	0.125	EPD008	4	2	—	—	—
	(.0354)	0.9	—	—	—	—	EPD009	4	2	—	—	—
	(.0394)	1.0	—	—	—	—	EPD01	4	2	EPJ01	4/5/6	4
	(.0433)	1.1	—	—	—	—	EPD011	4	2	—	—	—
3/64	.0469	(1.2)	EP047	—	0.25	0.125	—	—	—	—	—	—
	(.0472)	1.2	—	—	—	—	EPD012	3/4	1.5/2	EPJ012	5/6	4
	(.0511)	1.3	—	—	—	—	EPD013	4	2	—	—	—
	(.0551)	1.4	—	—	—	—	EPD014	4	2	—	—	—
	(.059)	1.5	—	—	—	—	EPD015	3/6	1.5/3	EPJ015	4/5/6/8	4/6
1/16	.0625	(1.6)	EP062	—	0.25	0.125	—	—	—	—	—	—
	(.063)	1.6	—	—	—	—	EPD016	3/6	1.5/3	—	—	—
	(.0669)	1.7	—	—	—	—	EPD017	3/6	1.5/3	—	—	—
	(.0708)	1.8	—	—	—	—	EPD018	3/6	1.5/3	—	—	—
5/64	.0781	(1.9)	EP078	—	0.25	0.125	—	—	—	—	—	—
	(.0787)	2.0	—	—	—	—	EPD02	4/6	2/3	EPJ02	5/6/8	4/6
	(.0855)	2.2	—	—	—	—	EPD022	4/6	2/3	—	—	—
3/32	.0937	(2.4)	EP094	—	0.25	0.125	—	—	—	—	—	—
	(.0984)	2.5	—	—	—	—	EPD025	5/6	2/3	EPJ025	6/8	4/6
	(.1063)	2.7	—	—	—	—	EPD027	5	2	—	—	—
7/64	.1094	(2.8)	EP109	—	0.25	0.125	—	—	—	—	—	—
	(.1181)	3.0	—	—	—	—	EPD03	6	3	EPJ03	6/8/9	4/6
1/8	.125	3.2	EP125	EP130	0.25	0.125	EPD032	6	3	—	—	—
	(.1378)	3.5	—	—	—	—	EPD035	7	3	EPJ035	7	4
9/64	.1406	(3.6)	EP141	EP146	0.25	0.125	—	—	—	—	—	—
	(.1457)	3.7	—	—	—	—	EPD037	7	3	—	—	—
5/32	.1562	4.0	EP156	EP161	0.28	0.156	EPD04	8	3	EPJ04	8	6
	(.1614)	4.1	—	—	—	—	EPD041	8	3	—	—	—
	(.1653)	4.2	—	—	—	—	EPD042	8	3	—	—	—
11/64	.1719	(4.4)	EP172	EP177	0.34	0.187	—	—	—	—	—	—
	(.1771)	4.5	—	—	—	—	EPD045	8	3	EPJ045	8	6
	(.185)	4.7	—	—	—	—	EPD047	8	3	—	—	—
3/16	.1875	(4.8)	EP187	EP192	0.37	0.187	—	—	—	—	—	—
	(.1968)	5.0	—	—	—	—	EPD05	10	3	EPJ05	9	6
13/64	.2031	5.2	EP203	EP208	0.37	0.187	EPD052	10	3	—	—	—
	(.2165)	5.5	—	—	—	—	EPD055	10	3	EPJ055	10	6
7/32	.2187	(5.6)	EP219	EP224	0.40	0.187	—	—	—	—	—	—
15/64	.2344	6.0	EP234	EP239	0.4	0.187	EPD06	12	5	EPJ06	10	6
	(.2402)	6.1	—	—	—	—	EPD061	12	5	—	—	—
	(.244)	6.2	—	—	—	—	EPD062	12	5	—	—	—
1/4	.25	(6.4)	EP250	EP255	0.43	0.187	—	—	—	—	—	—
	(.2559)	6.5	—	—	—	—	EPD065	12	5	—	—	—
17/64	.2656	(6.7)	EP266	EP271	0.43	0.250	—	—	—	—	—	—
	(.2756)	7.0	—	—	—	—	EPD07	12	5	EPJ07	11	6
9/32	.2812	(7.1)	EP281	EP286	0.43	0.250	—	—	—	—	—	—
19/64	.2969	7.5	EP297	EP302	0.5	0.25	EPD075	12	5	—	—	—
5/16	.3125	(7.9)	EP312	EP317	0.50	0.250	—	—	—	—	—	—
	(.315)	8.0	—	—	—	—	EPD08	14	5	EPJ08	13	8
	(.3228)	8.2	—	—	—	—	EPD082	14	5	—	—	—
21/64	.3281	(8.3)	EP328	EP333	0.56	0.25	—	—	—	—	—	—
	(.3346)	8.5	—	—	—	—	EPD085	14	5	—	—	—
11/32	.3437	(8.7)	EP344	EP349	0.56	0.25	—	—	—	—	—	—
	(.3543)	9.0	—	—	—	—	EPD09	14	5	—	—	—
23/64	.3594	(9.1)	EP359	EP364	0.62	0.25	—	—	—	—	—	—
3/8	.375	9.5	EP375	EP380	0.62	0.250	EPD095	14	5	—	—	—
25/64	.39	(9.9)	EP390	EP395	0.62	0.25	—	—	—	—	—	—
	(.3937)	10.0	—	—	—	—	EPD10	16	5	EPJ10	15	8
	(.4015)	10.2	—	—	—	—	EPD102	16	5	—	—	—
13/32	.4062	(10.3)	EP406	EP411	0.68	0.250	—	—	—	—	—	—
	(.4133)	10.5	—	—	—	—	EPD105	16	5	—	—	—
27/64	.4219	(10.7)	EP422	EP427	0.68	0.250	—	—	—	—	—	—
	(.433)	11.0	—	—	—	—	EPD11	16	5	—	—	—
7/16	.4375	(11.1)	EP437	EP442	0.68	0.250	—	—	—	—	—	—
29/64	.4531	(11.5)	EP453	EP458	0.68	0.25	—	—	—	—	—	—
15/32	.4687	(11.9)	EP469	EP474	0.75	0.250	—	—	—	—	—	—
	(.4724)	12.0	—	—	—	—	EPD12	18	7	EPJ12	17	8
	(.4803)	12.2	—	—	—	—	EPD122	18	7	—	—	—
31/64	.4844	(12.3)	EP484	EP489	0.75	0.25	—	—	—	—	—	—
	(.4921)	12.5	—	—	—	—	EPD125	18	7	—	—	—
1/2	.5	(12.7)	EP500	EP505	0.75	0.25	—	—	—	—	—	—
33/64	.5156	(13.1)	EP515	—	0.75	0.250	—	—	—	—	—	—
17/32	.5312	(13.5)	EP531	EP536	0.75	0.25	—	—	—	—	—	—
	(.5512)	14.0	—	—	—	—	EPD14	22	7	EPJ14	19	8
9/16	.5625	(14.3)	EP562	—	0.81	0.25	—	—	—	—	—	—
	(.5906)	15.0	—	—	—	—	—	—	—	EPJ15	20	8
5/8	.625	(15.9)	EP625	—	0.87	0.25	—	—	—	—	—	—
	(.6299)	16.0	—	—	—	—	EPD16	22	7	EPJ16	21	8
	(.6378)	16.2	—	—	—	—	EPD162	22	7	—	—	—
11/16	.6875	(17.5)	EP687	—	0.93	0.250	—	—	—	—	—	—
	(.7087)	18.0	—	—	—	—	EPD18	24	7	EPJ18	23	8
3/4	.75	(19.1)	EP750	—	1.00	0.250	—	—	—	—	—	—
	(.7874)	20.0	—	—	—	—	EPD20	26	8	EPJ20	25	8
7/8	.875	(22.2)	EP875	—	1.12	0.250	—	—	—	—	—	—
	(.9842)	25.0	—	—	—	—	EPD25	32	10	—	—	—
1	1.0000	(25.4)	EP1000	—	1.25	0.250	—	—	—	—	—	—
	(1.2598)	32.0	—	—	—	—	EPD32	40	10	—	—	—

This chart references standard nominal Ejector Pins and their Progressive catalog prefix.

Refer to each specific catalog page for available shoulder lengths and overall lengths.



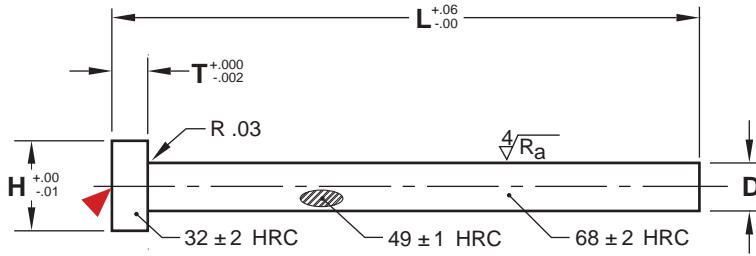
# EJECTOR PINS

## STRAIGHT PINS · INCH STANDARD



**D Tolerances**

Ø3/64 - Ø7/16	-.0004 -.0007
Ø15/32 and Up	-.0004 -.0009



**M** H-13    **H** Core: 48-50 HRC, Surface: 66-70 HRC

CAD insertion point

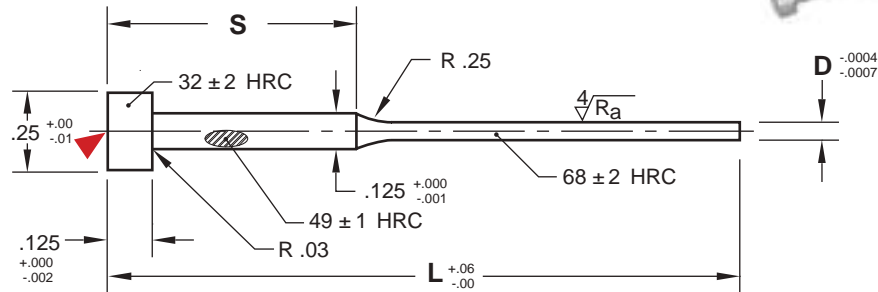
D Nominal Pin Diameter	H	T	L=6"		L=10"		L=14"		L=18"		L=25"		L=39"		L=50"	
			D Standard	D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D Standard	
1/32	.25	.125	EP031L6	—	—	—	—	—	—	—	—	—	—	—	—	—
3/64	.25	.125	EP047L6	—	—	—	—	—	—	—	—	—	—	—	—	—
1/16	.25	.125	EP062L6	EP062L10	—	—	—	—	—	—	—	—	—	—	—	—
5/64	.25	.125	EP078L6	EP078L10	—	—	—	—	—	—	—	—	—	—	—	—
3/32	.25	.125	EP094L6	EP094L10	—	—	—	—	—	—	—	—	—	—	—	—
7/64	.25	.125	EP109L6	EP109L10	—	—	—	—	—	—	—	—	—	—	—	—
1/8	.25	.125	EP125L6	EP125L10	EP130L10	EP125L14	EP130L14	EP125L18	—	EP125L25	—	—	—	—	—	—
9/64	.25	.125	—	EP141L10	—	EP141L14	EP146L14	—	—	—	—	—	—	—	—	—
5/32	.28	.156	EP156L6	EP156L10	EP161L10	EP156L14	EP161L14	EP156L18	—	EP156L25	—	—	—	—	—	—
11/64	.34	.187	—	EP172L10	—	EP172L14	EP177L14	—	—	—	—	—	—	—	—	—
3/16	.37	.187	EP187L6	EP187L10	EP192L10	EP187L14	EP192L14	EP187L18	—	EP187L25	—	—	EP187L39	EP187L50	—	—
13/64	.37	.187	—	EP203L10	—	EP203L14	EP208L14	—	—	—	—	—	—	—	—	—
7/32	.40	.187	EP219L6	EP219L10	EP224L10	EP219L14	EP224L14	—	—	EP219L25	—	—	—	—	—	—
15/64	.40	.187	—	EP234L10	—	EP234L14	EP239L14	—	—	—	—	—	—	—	—	—
1/4	.43	.187	EP250L6	EP250L10	EP255L10	EP250L14	EP255L14	EP250L18	EP255L18	EP250L25	—	—	EP250L39	EP250L50	—	—
17/64	.43	.250	—	EP266L10	—	EP266L14	EP271L14	—	—	EP266L25	—	—	—	—	—	—
9/32	.43	.250	EP281L6	EP281L10	EP286L10	EP281L14	EP286L14	EP281L18	EP286L18	EP281L25	—	—	—	—	—	—
19/64	.50	.250	—	EP297L10	—	EP297L14	EP302L14	—	—	—	—	—	—	—	—	—
5/16	.50	.250	EP312L6	EP312L10	EP317L10	EP312L14	EP317L14	EP312L18	EP317L18	EP312L25	EP317L25	EP312L39	EP312L50	—	—	—
21/64	.56	.250	—	EP328L10	—	EP328L14	EP333L14	—	—	EP328L25	—	—	—	—	—	—
11/32	.56	.250	EP344L6	EP344L10	EP349L10	EP344L14	EP349L14	—	—	EP344L25	—	—	—	—	—	—
23/64	.62	.250	—	EP359L10	—	EP359L14	EP364L14	—	—	—	—	—	—	—	—	—
3/8	.62	.250	EP375L6	EP375L10	EP380L10	EP375L14	EP380L14	EP375L18	EP380L18	EP375L25	EP380L25	EP375L39	EP375L50	—	—	—
25/64	.62	.250	—	—	—	EP390L14	EP395L14	EP390L18	—	—	EP395L25	—	—	—	—	—
13/32	.68	.250	EP406L6	EP406L10	EP411L10	EP406L14	EP411L14	EP406L18	—	EP406L25	—	—	—	—	—	—
27/64	.68	.250	—	—	—	EP422L14	EP427L14	—	—	—	—	—	—	—	—	—
7/16	.68	.250	EP437L6	EP437L10	EP442L10	EP437L14	EP442L14	EP437L18	—	EP437L25	—	—	EP437L39	—	—	—
29/64	.68	.250	—	—	—	EP453L14	EP458L14	—	—	—	—	—	—	—	—	—
15/32	.75	.250	—	EP469L10	EP474L10	—	EP474L14	EP469L18	—	EP469L25	—	—	—	—	—	—
31/64	.75	.250	—	—	—	EP484L14	EP489L14	—	—	—	—	—	—	—	—	—
1/2	.75	.250	EP500L6	EP500L10	EP505L10	EP500L14	EP505L14	EP500L18	—	EP500L25	EP505L25	EP500L39	EP500L50	—	—	—
17/32	.75	.250	—	—	—	EP531L14	EP536L14	—	—	EP531L25	—	—	—	—	—	—
9/16	.81	.250	EP562L6	EP562L10	—	EP562L14	—	EP562L18	—	EP562L25	—	—	—	—	—	—
5/8	.87	.250	EP625L6	EP625L10	—	EP625L14	—	EP625L18	—	EP625L25	—	—	EP625L39	—	—	—
11/16	.93	.250	—	EP687L10	—	—	—	EP687L18	—	EP687L25	—	—	—	—	—	—
3/4	1.00	.250	EP750L6	EP750L10	—	EP750L14	—	EP750L18	—	EP750L25	—	—	EP750L39	EP750L50	—	—
7/8	1.12	.250	—	EP875L10	—	EP875L14	—	EP875L18	—	EP875L25	—	—	EP875L39	—	—	—
1	1.25	.250	EP1000L6	EP1000L10	—	EP1000L14	—	EP1000L18	—	EP1000L25	—	—	EP1000L39	—	—	—

For keyed ejectors or pins cut to length, see pages A-10 & A-20.  
For mold-ready detail, refer to the templates in section X.



# EJECTOR PINS

## SHOULDER PINS - INCH STANDARD



M H-13 H Core: 48-50 HRC, Surface: 66-70 HRC

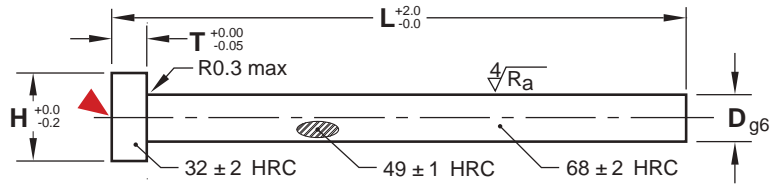
CAD insertion point

D Nominal Pin Diameter	S Shoulder Length	L=6"		L=10"		L=14"	
		D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize
1/32	1/2	EP031L6-05	EP036L6-05	—	—	—	—
	2	EP031L6-20	—	EP031L10-20	EP036L10-20	—	—
	3	EP031L6-30	—	—	—	—	—
	4	EP031L6-40	—	—	—	—	—
3/64	1/2	EP047L6-05	—	EP047L10-05	EP052L10-05	—	—
	2	EP047L6-20	—	EP047L10-20	EP052L10-20	EP047L14-20	—
	3	—	—	EP047L10-30	—	—	—
	4	—	—	EP047L10-40	EP052L10-40	EP047L14-40	EP052L14-40
1/16	1/2	EP062L6-05	—	EP062L10-05	EP067L10-05	—	—
	2	EP062L6-20	—	EP062L10-20	EP067L10-20	EP062L14-20	—
	3	—	—	EP062L10-30	—	—	—
	4	—	—	EP062L10-40	EP067L10-40	EP062L14-40	EP067L14-40
5/64	1/2	EP078L6-05	—	EP078L10-05	EP083L10-05	—	—
	2	EP078L6-20	—	EP078L10-20	EP083L10-20	EP078L14-20	—
	3	—	—	EP078L10-30	—	—	—
	4	—	—	EP078L10-40	EP083L10-40	EP078L14-40	EP083L14-40
3/32	1/2	EP094L6-05	—	EP094L10-05	EP099L10-05	—	—
	2	EP094L6-20	—	EP094L10-20	EP099L10-20	EP094L14-20	—
	3	—	—	EP094L10-30	—	—	—
	4	—	—	EP094L10-40	EP099L10-40	EP094L14-40	EP099L14-40
7/64	1/2	EP109L6-05	—	EP109L10-05	EP114L10-05	—	—
	2	EP109L6-20	—	EP109L10-20	EP114L10-20	EP109L14-20	—
	3	—	—	EP109L10-30	—	—	—
	4	—	—	EP109L10-40	EP114L10-40	EP109L14-40	EP114L14-40

For keyed ejectors or pins cut to length, see page A-20.  
 For mold-ready detail, refer to the templates in section X.

# EJECTOR PINS

## STRAIGHT PINS · DIN STANDARD



M 1.2344 H Core: 48-50 HRC, Surface: 66-70 HRC

CAD insertion point

D Pin Diameter	H	T	L=125MM	L=160MM	L=200MM	L=250MM	L=400MM	L=630MM	L=1000MM
1.2	3	1.5	EPD012L125	EPD012L160	—	—	—	—	—
1.5	3	1.5	EPD015L125	EPD015L160	EPD015L200	EPD015L250	—	—	—
1.6	3	1.5	EPD016L125	—	EPD016L200	EPD016L250	—	—	—
1.7	3	1.5	EPD017L125	—	EPD017L200	EPD017L250	—	—	—
1.8	3	1.5	EPD018L125	—	EPD018L200	EPD018L250	—	—	—
2	4	2	EPD02L125	EPD02L160	EPD02L200	EPD02L250	EPD02L400	—	—
2.2	4	2	EPD022L125	EPD022L160	EPD022L200	EPD022L250	EPD022L400	—	—
2.5	5	2	EPD025L125	EPD025L160	EPD025L200	EPD025L250	EPD025L400	—	—
2.7	5	2	—	EPD027L160	—	EPD027L250	EPD027L400	—	—
3	6	3	EPD03L125	EPD03L160	EPD03L200	EPD03L250	EPD03L400	—	—
3.2	6	3	EPD032L125	EPD032L160	EPD032L200	EPD032L250	EPD032L400	—	—
3.5	7	3	EPD035L125	EPD035L160	EPD035L200	EPD035L250	EPD035L400	—	—
3.7	7	3	—	EPD037L160	—	EPD037L250	EPD037L400	—	—
4	8	3	EPD04L125	EPD04L160	EPD04L200	EPD04L250	EPD04L400	EPD04L630	—
4.1	8	3	—	EPD041L160	—	EPD041L250	EPD041L400	—	—
4.2	8	3	EPD042L125	EPD042L160	EPD042L200	EPD042L250	EPD042L400	—	—
4.5	8	3	EPD045L125	EPD045L160	EPD045L200	EPD045L250	EPD045L400	—	—
4.7	8	3	EPD047L125	EPD047L160	EPD047L200	EPD047L250	EPD047L400	—	—
5	10	3	EPD05L125	EPD05L160	EPD05L200	EPD05L250	EPD05L400	EPD05L630	EPD05L1000
5.2	10	3	EPD052L125	EPD052L160	EPD052L200	EPD052L250	EPD052L400	—	—
5.5	10	3	EPD055L125	EPD055L160	EPD055L200	EPD055L250	EPD055L400	—	—
6	12	5	EPD06L125	EPD06L160	EPD06L200	EPD06L250	EPD06L400	EPD06L630	EPD06L1000
6.1	12	5	—	EPD061L160	—	EPD061L250	EPD061L400	—	—
6.2	12	5	EPD062L125	EPD062L160	EPD062L200	EPD062L250	EPD062L400	EPD062L630	—
6.5	12	5	EPD065L125	EPD065L160	EPD065L200	EPD065L250	EPD065L400	—	—
7	12	5	EPD07L125	EPD07L160	EPD07L200	EPD07L250	EPD07L400	EPD07L630	EPD07L1000
7.5	12	5	—	EPD075L160	—	EPD075L250	EPD075L400	—	—
8	14	5	EPD08L125	EPD08L160	EPD08L200	EPD08L250	EPD08L400	EPD08L630	EPD08L1000
8.2	14	5	EPD082L125	EPD082L160	EPD082L200	EPD082L250	EPD082L400	—	—
8.5	14	5	EPD085L125	EPD085L160	EPD085L200	EPD085L250	EPD085L400	—	—
9	14	5	EPD09L125	EPD09L160	EPD09L200	EPD09L250	EPD09L400	—	—
9.5	14	5	—	EPD095L160	—	EPD095L250	EPD095L400	—	—
10	16	5	EPD10L125	EPD10L160	EPD10L200	EPD10L250	EPD10L400	EPD10L630	EPD10L1000
10.2	16	5	EPD102L125	EPD102L160	EPD102L200	EPD102L250	EPD102L400	—	—
10.5	16	5	EPD105L125	EPD105L160	EPD105L200	EPD105L250	EPD105L400	—	—
11	16	5	EPD11L125	EPD11L160	EPD11L200	EPD11L250	EPD11L400	—	—
12	18	7	EPD12L125	EPD12L160	EPD12L200	EPD12L250	EPD12L400	EPD12L630	EPD12L1000
12.2	18	7	EPD122L125	EPD122L160	EPD122L200	EPD122L250	EPD122L400	—	—
12.5	18	7	EPD125L125	EPD125L160	EPD125L200	EPD125L250	EPD125L400	—	—
14	22	7	EPD14L125	EPD14L160	EPD14L200	EPD14L250	EPD14L400	EPD14L630	—
16	22	7	EPD16L125	EPD16L160	EPD16L200	EPD16L250	EPD16L400	EPD16L630	—
16.2	22	7	—	—	—	EPD162L250	EPD162L400	EPD162L630	—
18	24	7	—	EPD18L160	EPD18L200	EPD18L250	EPD18L400	EPD18L630	—
20	26	8	—	EPD20L160	EPD20L200	EPD20L250	EPD20L400	EPD20L630	EPD20L1000
25	32	10	—	EPD25L160	EPD25L200	EPD25L250	EPD25L400	EPD25L630	EPD25L1000
32	40	10	—	EPD32L160	EPD32L200	EPD32L250	EPD32L400	EPD32L630	EPD32L1000

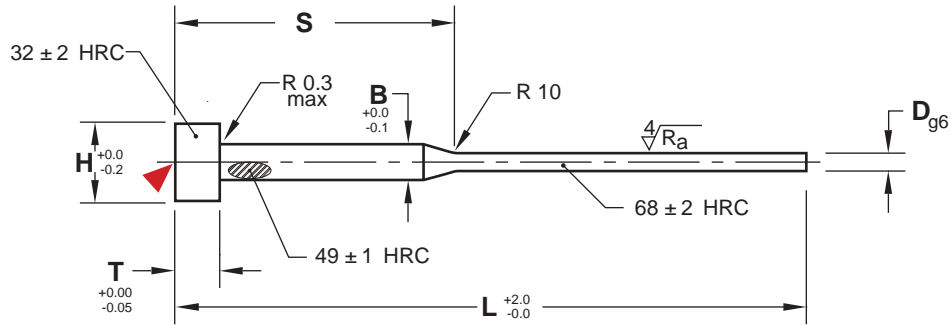
For keyed ejectors or pins cut to length, see page A-20. x  
For mold-ready detail, refer to the templates in section X. x





# EJECTOR PINS

## SHOULDER PINS · DIN STANDARD



**M** 1.2344 **H** Core: 48-50 HRC, Surface: 66-70 HRC

CAD insertion point

D Nominal Diameter	B	H	T	L=125MM S=50MM	L=160MM S=75MM	L=200MM S=75MM
0.8	2	4	2	EPD008X2L125-50	EPD008X2L160-75	—
0.9	2	4	2	EPD009X2L125-50	EPD009X2L160-75	—
1	2	4	2	EPD01X2L125-50	EPD01X2L160-75	EPD01X2L200-75
1.1	2	4	2	EPD011X2L125-50	EPD011X2L160-75	—
1.2	2	4	2	EPD012X2L125-50	EPD012X2L160-75	—
1.3	2	4	2	EPD013X2L125-50	EPD013X2L160-75	EPD013X2L200-75
1.4	2	4	2	EPD014X2L125-50	EPD014X2L160-75	—
1.5	3	6	3	EPD015X3L125-50	EPD015X3L160-75	EPD015X3L200-75
1.6	3	6	3	EPD016X3L125-50	EPD016X3L160-75	EPD016X3L200-75
1.7	3	6	3	—	EPD017X3L160-75	EPD017X3L200-75
1.8	3	6	3	EPD018X3L125-50	EPD018X3L160-75	EPD018X3L200-75
2	3	6	3	EPD02X3L125-50	EPD02X3L160-75	EPD02X3L200-75
2.2	3	6	3	—	EPD022X3L160-75	EPD022X3L200-75
2.5	3	6	3	EPD025X3L125-50	EPD025X3L160-75	EPD025X3L200-75

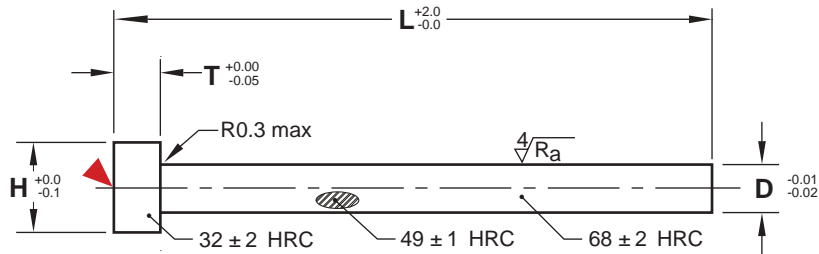
For keyed ejectors or pins cut to length, see page A-20.  
 For mold-ready detail, refer to the templates in section X.

## STANDARD TOLERANCES

NOMINAL DIAMETER (MM)		SHAFT TOLERANCE	
Over	To	g6	
0	3	-.002	-.008
3	6	-.004	-.012
6	10	-.005	-.014
10	18	-.006	-.017
18	30	-.007	-.020
30	50	-.009	-.025

# EJECTOR PINS

## STRAIGHT PINS · JIS STANDARD



**M** SKD61 **H** Core: 48-50 HRC, Surface: 66-70 HRC

CAD insertion point

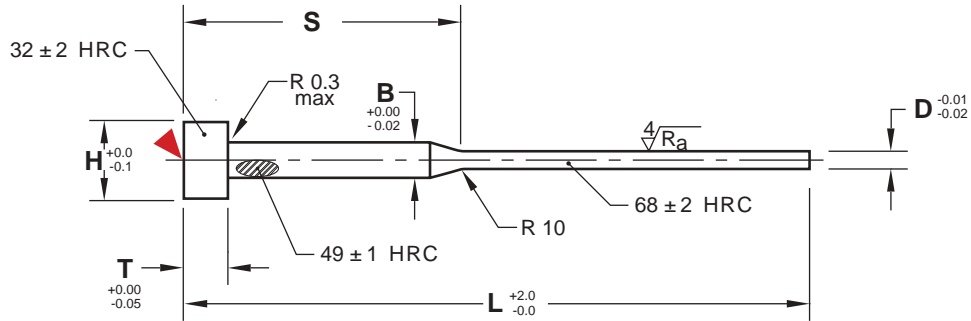
D Pin Diam.	H	T	L=100MM	L=150MM	L=200MM	L=250MM	L=300MM	L=400MM	L=500MM	L=600MM	L=650MM
1	4	4	EPJ01L100	EPJ01L150	EPJ01L200	—	—	—	—	—	—
1.5	4	4	EPJ015L100	EPJ015L150	EPJ015L200	EPJ015L250	—	—	—	—	—
2	5	4	EPJ02L100	EPJ02L150	EPJ02L200	EPJ02L250	—	—	—	—	—
2.5	6	4	EPJ025L100	EPJ025L150	EPJ025L200	EPJ025L250	—	—	—	—	—
3	6	4	EPJ03L100	EPJ03L150	EPJ03L200	EPJ03L250	—	—	—	—	—
3.5	7	4	EPJ035L100	EPJ035L150	EPJ035L200	EPJ035L250	—	—	—	—	—
4	8	6	—	—	EPJ04L200	EPJ04L250	EPJ04L300	EPJ04L400	—	—	—
4.5	8	6	—	—	EPJ045L200	EPJ045L250	EPJ045L300	EPJ045L400	—	—	—
5	9	6	—	—	EPJ05L200	EPJ05L250	EPJ05L300	EPJ05L400	—	—	—
5.5	10	6	—	—	EPJ055L200	EPJ055L250	EPJ055L300	EPJ055L400	—	—	—
6	10	6	—	—	EPJ06L200	EPJ06L250	EPJ06L300	EPJ06L400	EPJ06L500	—	—
7	11	6	—	—	—	EPJ07L250	EPJ07L300	EPJ07L400	EPJ07L500	—	—
8	13	8	—	—	—	—	—	EPJ08L400	EPJ08L500	EPJ08L600	—
10	15	8	—	—	—	—	—	EPJ10L400	EPJ10L500	EPJ10L600	—
12	17	8	—	—	—	—	—	—	EPJ12L500	EPJ12L600	EPJ12L650
14	19	8	—	—	—	—	—	—	EPJ14L500	—	—
15	19	8	—	—	—	—	—	—	EPJ15L500	—	—
16	21	8	—	—	—	—	—	—	EPJ16L500	—	—
18	23	8	—	—	—	—	—	—	EPJ18L500	—	—
20	25	8	—	—	—	—	—	—	EPJ20L500	—	—

For keyed ejectors or pins cut to length, see page A-20.   
 For mold-ready detail, refer to the templates in section X.



# EJECTOR PINS

## SHOULDER PINS · JIS STANDARD



**M** SKD61 **H** Core: 48-50 HRC, Surface: 66-70 HRC

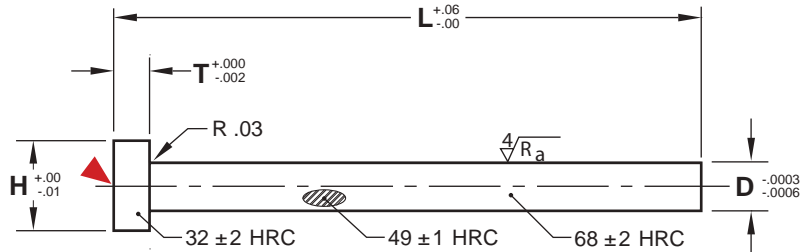
CAD insertion point

D Nominal Diameter	B	H	T	L=150MM		L=200MM	
				S=50MM	S=70MM	S=70MM	S=100MM
1	2.5	5	4	EPJ01X25L150-50	—	—	EPJ01X25L200-100
	3	6	4	EPJ01X3L150-50	—	EPJ01X3L200-70	EPJ01X3L200-100
1.2	2.5	5	4	EPJ012X25L150-50	—	—	EPJ012X25L200-100
	3	6	4	EPJ012X3L150-50	—	EPJ012X3L200-70	EPJ012X3L200-100
1.5	2.5	5	4	EPJ015X25L150-50	—	—	EPJ015X25L200-100
	3	6	4	EPJ015X3L150-50	—	EPJ015X3L200-70	EPJ015X3L200-100
	4	8	6	EPJ015X4L150-50	—	—	EPJ015X4L200-100
2	3	6	4	EPJ02X3L150-50	—	EPJ02X3L200-70	EPJ02X3L200-100
	4	8	6	—	EPJ02X4L150-70	—	EPJ02X4L200-100
2.5	3	6	4	EPJ025X3L150-50	—	EPJ025X3L200-70	EPJ025X3L200-100
	4	8	6	—	EPJ025X4L150-70	—	EPJ025X4L200-100
3	4	8	6	—	EPJ03X4L150-70	—	EPJ03X4L200-100
	5	9	6	—	—	—	EPJ03X5L200-100

For keyed ejectors or pins cut to length, see page A-20.  
 For mold-ready detail, refer to the templates in section X.


# ULTRAPINS®

## TREATED STRAIGHT PINS



M H-13 H Core: 48-50 HRC, Surface: 66-70 HRC S Chrome Plated: .00005-.00007" Thick ▶ CAD insertion point

Nominal Diameter	D Actual Diameter	H	T	L=6"			D Actual Oversized Pin Diam.	L=10"
				D Standard	D Standard	D Standard		D .005 Oversize
1/8	.1247 .1244	.25	.125	EPL125L6	EPL125L10	—	.1297 .1294	EPL130L10
5/32	.1560 .1557	.28	.156	EPL156L6	EPL156L10	—	.1610 .1607	EPL161L10
3/16	.1872 .1869	.37	.187	EPL187L6	EPL187L10	—	.1922 .1919	EPL192L10
7/32	.2185 .2182	.40	.187	EPL219L6	EPL219L10	—	.2235 .2232	EPL224L10
1/4	.2497 .2494	.43	.187	EPL250L6	EPL250L10	EPL250 L14	.2547 .2544	EPL255L10
5/16	.3122 .3119	.50	.250	—	EPL312L10	EPL312 L14	—	—
3/8	.3747 .3744	.62	.250	—	EPL375L10	EPL375 L14	—	—
1/2	.4997 .4994	.75	.250	—	EPL500L10	EPL500 L14	—	—

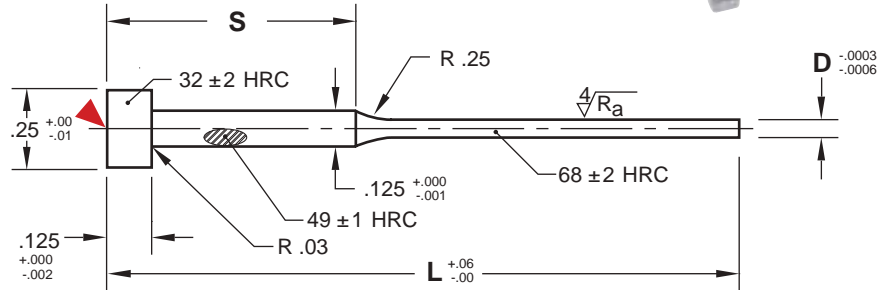
 For mold-ready detail, refer to the templates in section X.

### Application Guidelines:

- Maximum operating temperature: 660° F (350° C).
- Not recommended for Die Cast or PVC molding.
- Contact Customer Service for availability on other diameters and lengths not shown.



# ULTRAPINS® TREATED SHOULDER PINS



**M** H-13 **H** Core: 48-50 HRC, Surface: 66-70 HRC **S** Chrome Plated: .00005-.00007" Thick **▶** CAD insertion point

Nominal Diameter	D Actual Diameter	S Shoulder Length	L=6" D Standard	L=10" D Standard	D Actual Oversized Pin Diameter	L=10" .005 Oversize
<b>1/32</b>	$\frac{.0310}{.0307}$	1/2	EPL031L6-05	—	—	—
		2	EPL031L6-20	—	—	—
<b>3/64</b>	$\frac{.0466}{.0463}$	1/2	EPL047L6-05	—	$\frac{.0516}{.0513}$	EPL052L10-05
		2	EPL047L6-20	EPL047L10-20		EPL052L10-20
		3	-	EPL047L10-30	-	-
		4	-	EPL047L10-40	-	-
<b>1/16</b>	$\frac{.0622}{.0619}$	1/2	EPL062L6-05	—	$\frac{.0672}{.0669}$	EPL067L10-05
		2	EPL062L6-20	EPL062L10-20		EPL067L10-20
		3	-	EPL062L10-30	-	-
		4	-	EPL062L10-40	-	-
<b>5/64</b>	$\frac{.0778}{.0775}$	1/2	EPL078L6-05	—	$\frac{.0828}{.0825}$	EPL083L10-05
		2	EPL078L6-20	EPL078L10-20		EPL083L10-20
		3	-	EPL078L10-30	-	-
		4	-	EPL078L10-40	-	-
<b>3/32</b>	$\frac{.0935}{.0932}$	1/2	EPL094L6-05	—	$\frac{.0985}{.0982}$	EPL099L10-05
		2	EPL094L6-20	EPL094L10-20		EPL099L10-20
		3	-	EPL094L10-30	-	-
		4	-	EPL094L10-40	-	-
<b>7/64</b>	$\frac{.1091}{.1088}$	1/2	EPL109L6-05	—	$\frac{.1141}{.1138}$	EPL114L10-05
		2	EPL109L6-20	EPL109L10-20		EPL114L10-20

For mold-ready detail, refer to the templates in section X.

### Application Guidelines:

- Maximum operating temperature: 660° F (350° C).
- Not recommended for Die Cast or PVC molding.
- Contact Customer Service for availability of other diameters and lengths not shown.

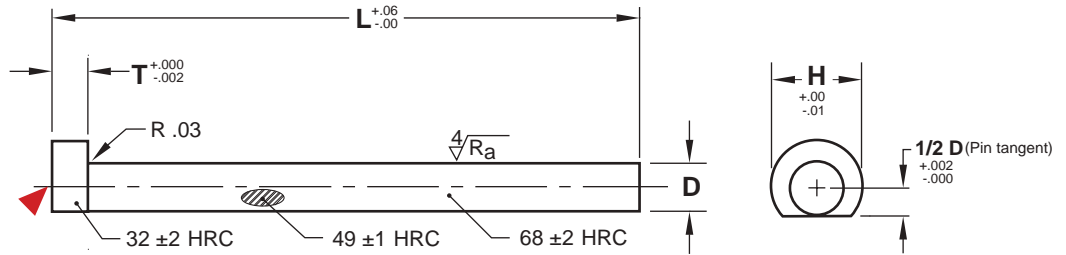
# KEYED EJECTOR PINS

## STRAIGHT STYLE · INCH STANDARD



### D Tolerances

1/8 $\phi$ - 7/16 $\phi$	-.0004 -.0007
1/2 $\phi$ and Up	-.0004 -.0009



**M** H-13 **H** Core: 48-50 HRC, Surface: 66-70 HRC

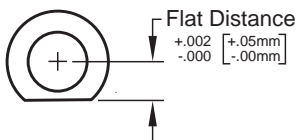
CAD insertion point

D Nominal Pin Diameter	H Head Diameter	T Head Thickness	L=6"	L=10"	L=14"	L=18"	L=25"	L=39"
3/64	.25	.125	EP047L6-K	-	-	-	-	-
1/16	.25	.125	EP062L6-K	-	-	-	-	-
5/64	.25	.125	-	EP078L10-K	-	-	-	-
3/32	.25	.125	EP094L6-K	EP094L10-K	-	-	-	-
1/8	.25	.125	EP125L6-K	EP125L10-K	EP125L14-K	-	-	-
9/64	.25	.125	-	-	EP141L14-K	-	-	-
5/32	.28	.156	-	-	EP156L14-K	EP156L18-K	-	-
3/16	.37	.187	EP187L6-K	EP187L10-K	EP187L14-K	-	-	-
13/64	.37	.187	-	EP203L10-K	EP203L14-K	-	-	-
7/32	.40	.187	-	EP219L10-K	EP219L14-K	-	-	-
1/4	.43	.187	EP250L6-K	EP250L10-K	EP250L14-K	EP250L18-K	EP250L25-K	-
9/32	.43	.250	-	-	EP281L14-K	-	EP281L25-K	-
5/16	.50	.250	EP312L6-K	EP312L10-K	EP312L14-K	EP312L18-K	EP312L25-K	-
3/8	.62	.250	EP375L6-K	EP375L10-K	EP375L14-K	EP375L18-K	EP375L25-K	EP375L39-K
7/16	.68	.250	-	EP437L10-K	EP437L14-K	EP437L18-K	EP437L25-K	EP437L39-K
1/2	.75	.250	EP500L6-K	EP500L10-K	EP500L14-K	EP500L18-K	EP500L25-K	EP500L39-K
5/8	.87	.250	-	-	EP625L14-K	EP625L18-K	EP625L25-K	EP625L39-K
3/4	1.00	.250	-	-	EP750L14-K	EP750L18-K	EP750L25-K	EP750L39-K
7/8	1.12	.250	-	-	EP875L14-K	EP875L18-K	EP875L25-K	EP875L39-K
1	1.25	.250	-	-	EP1000L14-K	EP1000L18-K	EP1000L25-K	EP1000L39-K

### KEYED PIN OPTIONS

In addition to those available from stock, all Progressive standard Ejector Pins (Inch, DIN, and JIS) can be supplied with keyed heads. To order items with the flat ground tangent to the pin diameter, specify -K after the catalog number. Ex. EPD10L200-K

To order pins with the flat machined a specific distance from the center of the pin, specify that distance after the "K" designation for the flat as shown below.



Examples:

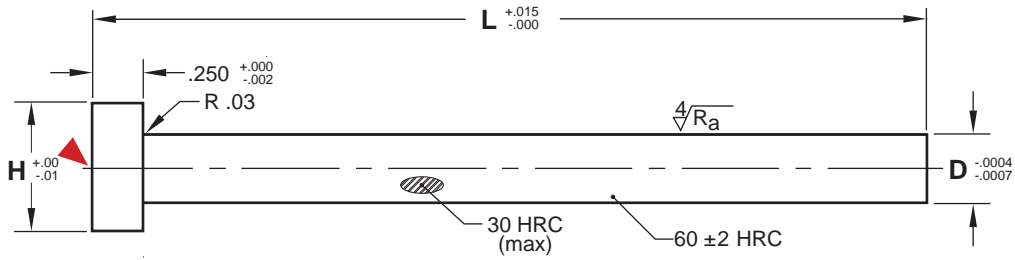
EP437L10-K250 for a 7/16 $\phi$  pin with a flat 1/4" from center

EPD10L200-K6 for a 10mm diameter DIN pin with a flat 6mm from center

For cut-to-length pins or pins manufactured to alternate materials or specifications, please refer to page A-20 and section X.



# RETURN PINS



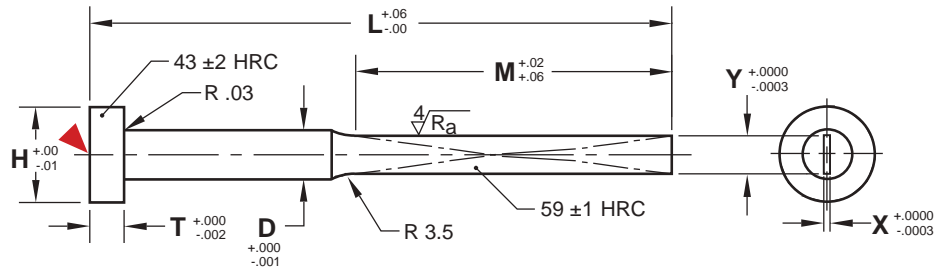
**M** AISI 52100 **H** Core: 30 HRC max, Surface: 58-62 HRC

CAD insertion point

D=1/2 H=.75		D=5/8 H=.87		D=3/4 H=1.00		D=1 H=1.25	
L	CATALOG NUMBER	L	CATALOG NUMBER	L	CATALOG NUMBER	L	CATALOG NUMBER
3-9/16	RP50L3.56	4-1/16	RP62L4.06	4-15/16	RP75L4.93	—	—
4-1/16	RP50L4.06	4-9/16	RP62L4.56	5-7/16	RP75L5.43	—	—
4-9/16	RP50L4.56	5-1/16	RP62L5.06	5-15/16	RP75L5.93	—	—
5-1/16	RP50L5.06	5-9/16	RP62L5.56	6-7/16	RP75L6.43	6	RP100L6
5-9/16	RP50L5.56	6-1/16	RP62L6.06	6-15/16	RP75L6.93	—	—
6-1/16	RP50L6.06	6-9/16	RP62L6.56	7-7/16	RP75L7.43	—	—
6-9/16	RP50L6.56	7-1/16	RP62L7.06	7-15/16	RP75L7.93	—	—
—	—	7-9/16	RP62L7.56	8-7/16	RP75L8.43	—	—
—	—	8-1/16	RP62L8.06	8-15/16	RP75L8.93	—	—
—	—	—	—	9-7/16	RP75L9.43	10	RP100L10
—	—	—	—	—	—	18	RP100L18

# BLADE EJECTORS

## INCH STANDARD



**M** 0-1 **H** 58-60 HRC

CAD insertion point

X	Y	D	H	T	L=6.5"	L=7.5"	L=10.5"
.0150	.0460	.062	.250	.125	BE062-015L6.5	BE062-015L7.5	—
.0150	.1000	.125	.250	.125	BE125-015L6.5	BE125-015L7.5	—
.0200	.0460	.062	.250	.125	BE062-020L6.5	BE062-020L7.5	—
.0200	.1000	.125	.250	.125	BE125-020L6.5	BE125-020L7.5	—
.0240	.1000	.125	.250	.125	BE125-024L6.5	BE125-024L7.5	—
.0240	.1400	.156	.281	.156	BE156-024L6.5	BE156-024L7.5	—
.0240	.1720	.187	.375	.187	BE187-024L6.5	BE187-024L7.5	—
.0320	.1000	.125	.250	.125	BE125-032L6.5	BE125-032L7.5	—
.0320	.1400	.156	.281	.156	BE156-032L6.5	BE156-032L7.5	—
.0320	.1720	.187	.375	.187	BE187-032L6.5	BE187-032L7.5	BE187-032L10.5
.0320	.2340	.250	.437	.187	BE250-032L6.5	BE250-032L7.5	BE250-032L10.5
.0320	.2960	.312	.500	.250	—	BE312-032L7.5	BE312-032L10.5
.0320	.3590	.375	.625	.250	—	BE375-032L7.5	BE375-032L10.5
.0460	.1000	.125	.250	.125	BE125-046L6.5	BE125-046L7.5	—
.0460	.1400	.156	.281	.156	BE156-046L6.5	BE156-046L7.5	—
.0460	.1720	.187	.375	.187	BE187-046L6.5	BE187-046L7.5	BE187-046L10.5
.0460	.2340	.250	.437	.187	BE250-046L6.5	BE250-046L7.5	BE250-046L10.5
.0460	.2960	.312	.500	.250	—	BE312-046L7.5	BE312-046L10.5
.0460	.3590	.375	.625	.250	—	BE375-046L7.5	BE375-046L10.5
.0620	.1720	.187	.375	.187	BE187-062L6.5	BE187-062L7.5	BE187-062L10.5
.0620	.2340	.250	.437	.187	BE250-062L6.5	BE250-062L7.5	BE250-062L10.5
.0620	.2960	.312	.500	.250	—	BE312-062L7.5	BE312-062L10.5
.0620	.3590	.375	.625	.250	—	BE375-062L7.5	BE375-062L10.5
.0780	.2960	.312	.500	.250	—	BE312-078L7.5	BE312-078L10.5
.0780	.3590	.375	.625	.250	—	BE375-078L7.5	BE375-078L10.5
.0780	.4840	.500	.750	.250	—	BE500-078L7.5	BE500-078L10.5
.0780	.5470	.562	.812	.250	—	BE562-078L7.5	BE562-078L10.5
.0780	.6090	.625	.875	.250	—	BE625-078L7.5	BE625-078L10.5
.0940	.4220	.437	.687	.250	—	BE437-094L7.5	BE437-094L10.5
.0940	.4840	.500	.750	.250	—	BE500-094L7.5	BE500-094L10.5
.0940	.5470	.562	.812	.250	—	BE562-094L7.5	BE562-094L10.5
.0940	.6090	.625	.875	.250	—	BE625-094L7.5	BE625-094L10.5
Blade Length <b>M</b>					M = 5"	M = 5"	M = 6"

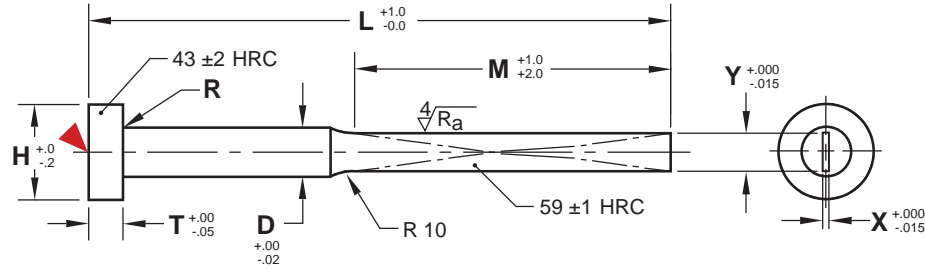
For custom Blades, refer to the templates in section X.





# BLADE EJECTORS

## DIN STANDARD



**M** 0-1 **H** 58-60 HRC

CAD insertion point

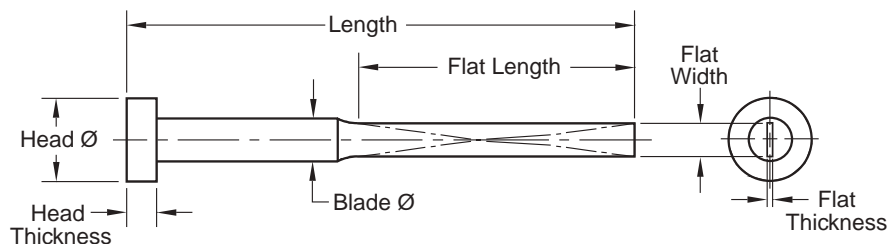
X	Y	D	H	T	R	L= 60 MM	L= 80 MM	L= 100 MM	L= 125 MM	L= 160 MM	L= 200 MM	L= 250 MM	L= 315 MM	L= 400 MM
1.0	3.5	4	8	3	0.3	BE4-1.0L60	BE4-1.0L80	BE4-1.0L100	BE4-1.0L125	BE4-1.0L160	—	—	—	—
1.2	3.5	4	8	3	0.3	—	BE4-1.2L80	BE4-1.2L100	BE4-1.2L125	BE4-1.2L160	—	—	—	—
1.5	4.5	5	10	3	0.3	—	BE5-1.5L80	BE5-1.5L100	BE5-1.5L125	BE5-1.5L160	—	—	—	—
1.2	5.5	6	12	5	0.5	—	BE6-1.2L80	BE6-1.2L100	BE6-1.2L125	BE6-1.2L160	BE6-1.2L200	—	—	—
1.5	5.5	6	12	5	0.5	—	BE6-1.5L80	BE6-1.5L100	BE6-1.5L125	BE6-1.5L160	BE6-1.5L200	—	—	—
2.0	5.5	6	12	5	0.5	—	BE6-2.0L80	BE6-2.0L100	BE6-2.0L125	BE6-2.0L160	BE6-2.0L200	—	—	—
1.2	7.5	8	14	5	0.5	—	—	BE8-1.2L100	BE8-1.2L125	BE8-1.2L160	BE8-1.2L200	BE8-1.2L250	—	—
1.5	7.5	8	14	5	0.5	—	—	BE8-1.5L100	BE8-1.5L125	BE8-1.5L160	BE8-1.5L200	BE8-1.5L250	—	—
2.0	7.5	8	14	5	0.5	—	—	BE8-2.0L100	BE8-2.0L125	BE8-2.0L160	BE8-2.0L200	BE8-2.0L250	BE8-2.0L315	—
1.5	9.5	10	16	5	0.5	—	—	—	—	BE10-1.5L160	BE10-1.5L200	BE10-1.5L250	BE10-1.5L315	—
2.0	9.5	10	16	5	0.5	—	—	—	—	BE10-2.0L160	BE10-2.0L200	BE10-2.0L250	BE10-2.0L315	BE10-2.0L400
2.0	11.5	12	20	7	0.8	—	—	—	—	—	BE12-2.0L200	BE12-2.0L250	BE12-2.0L315	BE12-2.0L400
2.5	11.5	12	20	7	0.8	—	—	—	—	—	BE12-2.5L200	BE12-2.5L250	BE12-2.5L315	BE12-2.5L400
2.0	15.5	16	22	7	0.8	—	—	—	—	—	BE16-2.0L200	BE16-2.0L250	BE16-2.0L315	BE16-2.0L400
2.5	15.5	16	22	7	0.8	—	—	—	—	—	BE16-2.5L200	BE16-2.5L250	BE16-2.5L315	BE16-2.5L400
Blade Length M						M 30 mm	M 40 mm	M 50 mm	M 60 mm	M 80 mm	M 100 mm	M 125 mm	M 160 mm	M 200 mm

For custom Blades, refer to the templates in section X.

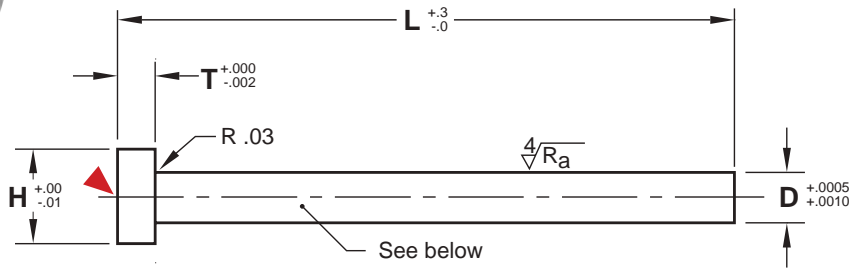
## JIS SPECIFICATION

MATERIAL: O-1

Contact Customer Service for the availability of JIS Blade Ejectors by specifying the information shown below:



# CORE PINS



**M** H-13 **H** 30-35 HRC

D Nominal Pin Dia.	H Head Dia.	T Head Thick.	L=3"	L=6"	L=10"	L=14"
3/32	.25	.125	CPS094L3	CPS094L6	CPS094L10	—
7/64	.25	.125	CPS109L3	CPS109L6	CPS109L10	—
1/8	.25	.125	CPS125L3	CPS125L6	CPS125L10	CPS125L14
9/64	.25	.125	CPS141L3	CPS141L6	CPS141L10	CPS141L14
5/32	.28	.156	CPS156L3	CPS156L6	CPS156L10	CPS156L14
11/64	.34	.187	CPS172L3	CPS172L6	CPS172L10	CPS172L14
3/16	.37	.187	CPS187L3	CPS187L6	CPS187L10	CPS187L14
13/64	.37	.187	CPS203L3	CPS203L6	CPS203L10	CPS203L14
7/32	.40	.187	CPS219L3	CPS219L6	CPS219L10	CPS219L14
15/64	.40	.187	—	CPS234L6	CPS234L10	—
1/4	.43	.187	CPS250L3	CPS250L6	CPS250L10	CPS250L14
9/32	.43	.250	CPS281L3	CPS281L6	CPS281L10	CPS281L14
5/16	.50	.250	CPS312L3	CPS312L6	CPS312L10	CPS312L14
11/32	.56	.250	CPS344L3	CPS344L6	CPS344L10	CPS344L14
3/8	.62	.250	CPS375L3	CPS375L6	CPS375L10	CPS375L14
13/32	.68	.250	CPS406L3	CPS406L6	CPS406L10	CPS406L14
7/16	.68	.250	CPS437L3	CPS437L6	CPS437L10	CPS437L14
15/32	.75	.250	CPS469L3	CPS469L6	CPS469L10	CPS469L14
1/2	.75	.250	CPS500L3	CPS500L6	CPS500L10	CPS500L14
17/32	.75	.250	—	CPS531L6	CPS531L10	—
9/16	.81	.250	—	CPS562L6	CPS562L10	CPS562L14
5/8	.87	.250	—	CPS625L6	CPS625L10	CPS625L14
11/16	.93	.250	—	CPS687L6	CPS687L10	CPS687L14
3/4	1.00	.250	—	CPS750L6	CPS750L10	CPS750L14
13/16	1.125	.250	—	CPS812L6	CPS812L10	CPS812L14
7/8	1.125	.250	—	CPS875L6	CPS875L10	CPS875L14
1	1.25	.250	—	CPS1000L6	CPS1000L10	CPS1000L14

**M** H-13 **H** 50-55 HRC

CAD insertion point

D Nominal Pin Dia.	H Head Dia.	T Head Thick.	L=3"	L=6"	L=10"	L=14"
3/32	.25	.125	CPH094L3	CPH094L6	CPH094L10	—
7/64	.25	.125	CPH109L3	CPH109L6	CPH109L10	—
1/8	.25	.125	CPH125L3	CPH125L6	CPH125L10	CPH125L14
9/64	.25	.125	CPH141L3	CPH141L6	CPH141L10	CPH141L14
5/32	.28	.156	CPH156L3	CPH156L6	CPH156L10	CPH156L14
11/64	.34	.187	CPH172L3	CPH172L6	CPH172L10	CPH172L14
3/16	.37	.187	CPH187L3	CPH187L6	CPH187L10	CPH187L14
13/64	.37	.187	CPH203L3	CPH203L6	CPH203L10	CPH203L14
7/32	.40	.187	CPH219L3	CPH219L6	CPH219L10	CPH219L14
15/64	.40	.187	—	CPH234L6	CPH234L10	—
1/4	.43	.187	CPH250L3	CPH250L6	CPH250L10	CPH250L14
9/32	.43	.250	CPH281L3	CPH281L6	CPH281L10	CPH281L14
5/16	.50	.250	CPH312L3	CPH312L6	CPH312L10	CPH312L14
11/32	.56	.250	CPH344L3	CPH344L6	CPH344L10	CPH344L14
3/8	.62	.250	CPH375L3	CPH375L6	CPH375L10	CPH375L14
13/32	.68	.250	CPH406L3	CPH406L6	CPH406L10	CPH406L14
7/16	.68	.250	CPH437L3	CPH437L6	CPH437L10	CPH437L14
15/32	.75	.250	CPH469L3	CPH469L6	CPH469L10	CPH469L14
1/2	.75	.250	CPH500L3	CPH500L6	CPH500L10	CPH500L14
17/32	.75	.250	—	CPH531L6	CPH531L10	—
9/16	.81	.250	—	CPH562L6	CPH562L10	CPH562L14
5/8	.87	.250	—	CPH625L6	CPH625L10	CPH625L14
11/16	.93	.250	—	CPH687L6	CPH687L10	CPH687L14
3/4	1.00	.250	—	CPH750L6	CPH750L10	CPH750L14
13/16	1.125	.250	—	CPH812L6	CPH812L10	CPH812L14
7/8	1.125	.250	—	CPH875L6	CPH875L10	CPH875L14
1	1.25	.250	—	CPH1000L6	CPH1000L10	CPH1000L14

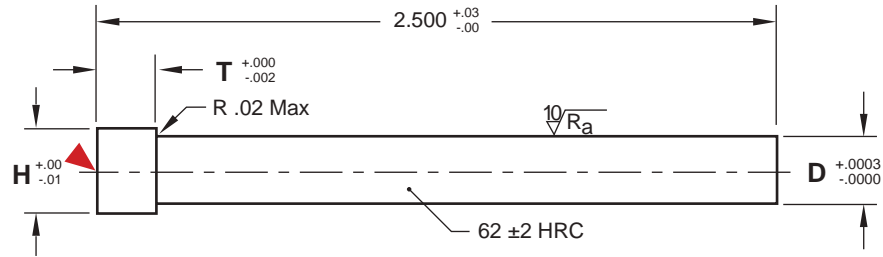
For mold-ready detail, refer to page A-20 and the templates in section X.  
 † For keyed core pins, refer to page A-20.

Note: Heads are annealed on 6", 10" and 14" lengths



# TI™ PINS

## THOUSANDTH INCREMENT PINS



M M-2 H 60-64 HRC

CAD insertion point

D Decimal Pin Diameter	H Head Diameter	T Head Thickness
.060 - .062	.093	.125
.0625	.093	.125
.063 - .093	.156	.125
.0937	.156	.125
.094 - .124	.187	.125
.1250	.187	.125
.126 - .156	.218	.125
.1562	.218	.125
.157 - .187	.250	.125
.1875	.250	.125
.188 - .218	.281	.125
.2187	.281	.125
.219 - .249	.312	.125
.2500	.312	.125
.251 - .312	.437	.187
.3125	.437	.187
.313 - .320	.500	.187

x For mold-ready detail, refer to the templates in section X.

### Features:

- Use of TI Pins allow for wire EDM'ing of the hole to the finish diameter, with no step machining required for the core pin.
- Unlike punches, TI Pin heads are precision ground to standard mold tolerances.

### To order:

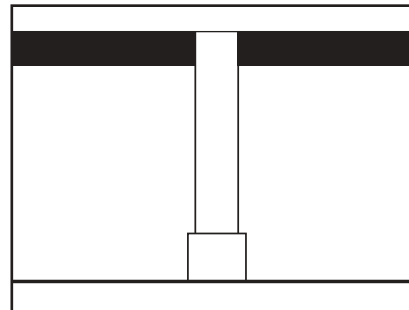
Specify the prefix TI- and the three place decimal of the pin required, followed by a "0" if not nominal:

Ex: .090 $\emptyset$  = TI-0900  
or  
.252 $\emptyset$  = TI-2520

If a nominal size, carry to a four place decimal as listed in the chart at left:

Ex. 5/32 $\emptyset$  nominal = TI-1562  
or  
3/32 $\emptyset$  = TI-0937

Contact Customer Service for availability of additional diameters or lengths.



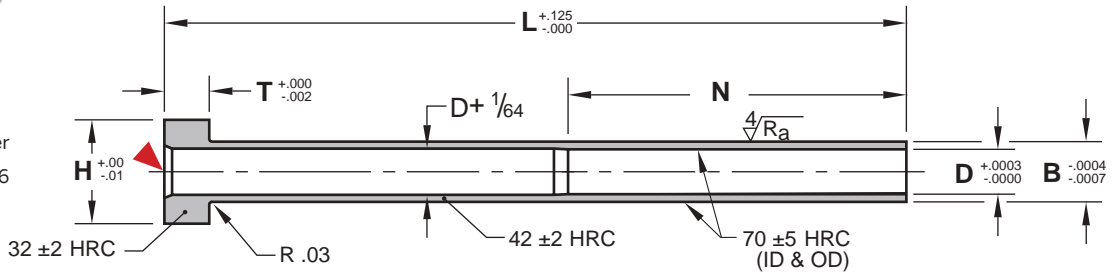
# EJECTOR SLEEVES

## INCH STANDARD



### General Dimensions

N=1-3/4" for ES094 & ES125  
 N=2-1/4" for ES156 and larger  
 T=.187" for ES094 thru ES156  
 T=.250" for ES187 and larger



**M** H-13 **H** Core: 40-44 HRC, Surface: 65-75 HRC

CAD insertion point

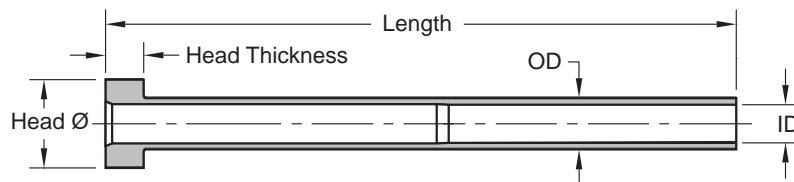
D Nom. I.D.	B O.D.	H Head Dia.	L=3"	L=4"	L=5"	L=6"	L=7"	L=8"	L=9"	L=10"	L=11"	L=12"	L=13"	L=14"
3/32	.1875	.37	ES094L3	ES094L4	ES094L5	ES094L6	ES094L7	ES094L8	ES094L9	ES094L10	ES094L11	—	—	—
1/8	.2187	.40	ES125L3	ES125L4	ES125L5	ES125L6	ES125L7	ES125L8	ES125L9	ES125L10	ES125L11	—	—	—
5/32	.2500	.43	—	ES156L4	ES156L5	ES156L6	ES156L7	ES156L8	ES156L9	ES156L10	ES156L11	ES156L12	ES156L13	ES156L14
3/16	.3125	.50	—	ES187L4	ES187L5	ES187L6	ES187L7	ES187L8	ES187L9	ES187L10	ES187L11	ES187L12	ES187L13	ES187L14
7/32	.3437	.56	—	ES219L4	ES219L5	ES219L6	ES219L7	ES219L8	ES219L9	ES219L10	ES219L11	ES219L12	ES219L13	ES219L14
1/4	.3750	.62	—	ES250L4	ES250L5	ES250L6	ES250L7	ES250L8	ES250L9	ES250L10	ES250L11	ES250L12	ES250L13	ES250L14
5/16	.4375	.68	—	ES312L4	ES312L5	ES312L6	ES312L7	ES312L8	ES312L9	ES312L10	ES312L11	ES312L12	ES312L13	ES312L14
3/8	.5000	.75	—	ES375L4	ES375L5	ES375L6	ES375L7	ES375L8	ES375L9	ES375L10	ES375L11	ES375L12	ES375L13	ES375L14
7/16	.6250	.87	—	ES437L4	ES437L5	ES437L6	ES437L7	ES437L8	ES437L9	ES437L10	ES437L11	ES437L12	ES437L13	ES437L14
1/2	.6875	.93	—	ES500L4	ES500L5	ES500L6	ES500L7	ES500L8	ES500L9	ES500L10	ES500L11	ES500L12	ES500L13	ES500L14
9/16	.7500	1.00	—	ES562L4	ES562L5	ES562L6	ES562L7	ES562L8	ES562L9	ES562L10	ES562L11	ES562L12	ES562L13	ES562L14
5/8	.8750	1.12	—	ES625L4	ES625L5	ES625L6	ES625L7	ES625L8	ES625L9	ES625L10	ES625L11	ES625L12	ES625L13	ES625L14
3/4	1.0000	1.25	—	ES750L4	ES750L5	ES750L6	ES750L7	ES750L8	ES750L9	ES750L10	ES750L11	ES750L12	ES750L13	ES750L14

All sleeves available with the outer diameter (B) .005" oversize. To order, add a -OS to the end of the part number. Ex. ES250L12-OS  
 To achieve longer lengths, use Sleeve Extensions shown on page A-18.

For custom Sleeves, refer to the templates in section X.

## METRIC SPECIFICATION

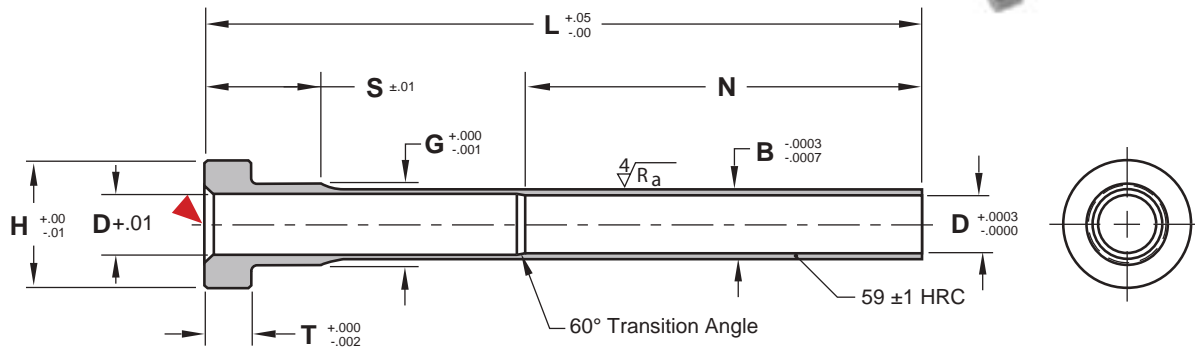
Contact Customer Service for pricing and delivery on metric sleeves (JIS or DIN standard) by specifying the information shown below, or by filling out a template in section X.





# EJECTOR SLEEVES

## THIN WALL SLEEVES



**M** A-2 **H** 58-60 HRC **S** Electroless Nickel Coated .00003"-.00007" Thick

CAD insertion point

D Nominal I.D.	D Decimal I.D.	B O.D.	G Shoulder Diameter	S Shoulder Length	H Head Diameter	T Head Thickness	N Bearing Length	L=4"	L=6"
3/32	.0937	.1563	.188	.500	.37	.187	1.75	ESTW094L4	ESTW094L6
1/8	.1250	.1875	.219	.500	.40	.187	1.75	ESTW125L4	ESTW125L6
5/32	.1562	.2187	.250	.500	.43	.187	2.50	ESTW156L4	ESTW156L6
3/16	.1875	.2500	.312	.625	.50	.250	2.50	ESTW187L4	ESTW187L6
7/32	.2187	.2813	.344	.625	.56	.250	2.50	ESTW219L4	ESTW219L6
1/4	.2500	.3125	.375	.625	.62	.250	2.50	ESTW250L4	ESTW250L6
5/16	.3125	.3750	.438	.625	.68	.250	2.50	ESTW312L4	ESTW312L6
3/8	.3750	.4375	.500	.625	.75	.250	2.50	ESTW375L4	ESTW375L6

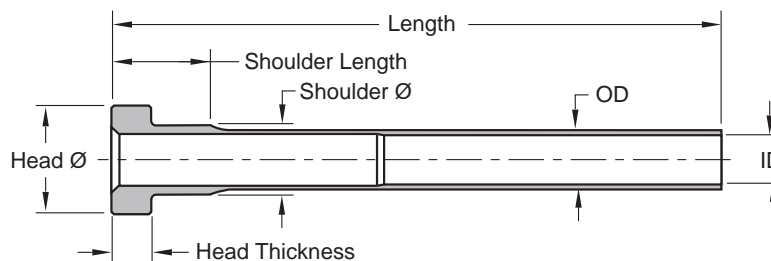
To achieve longer lengths, use Sleeve Extensions shown on page A-18.

x For custom Sleeves, refer to the templates in section X.

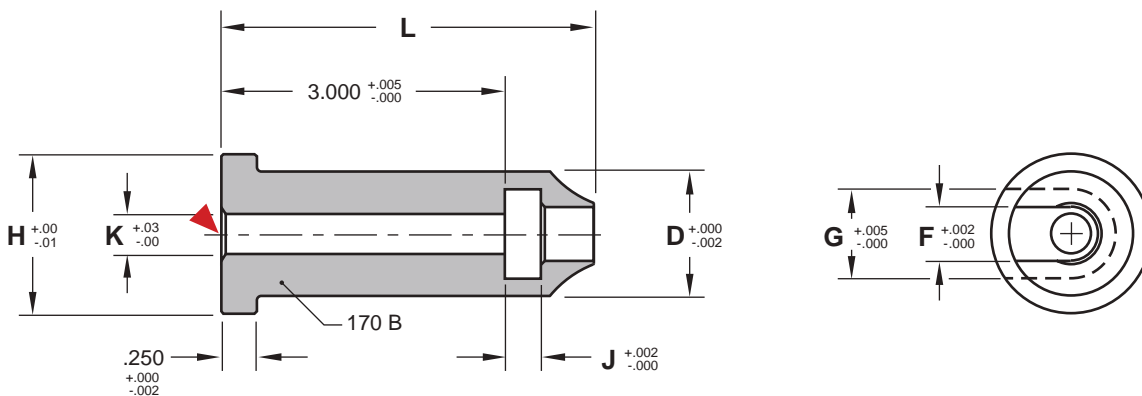
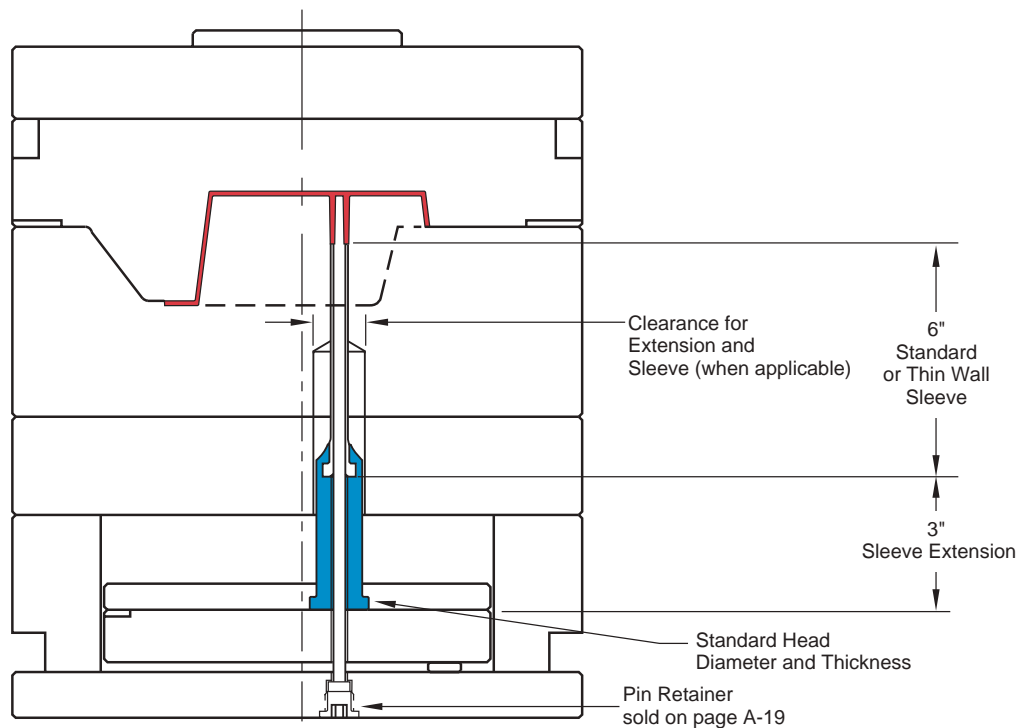
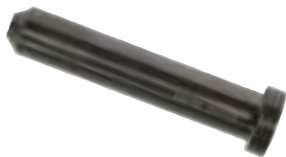
## METRIC SPECIFICATION

MATERIAL: A-2

Contact Customer Service for pricing and delivery for metric Thin Wall Sleeves by specifying the information shown below:



# SLEEVE EXTENSIONS



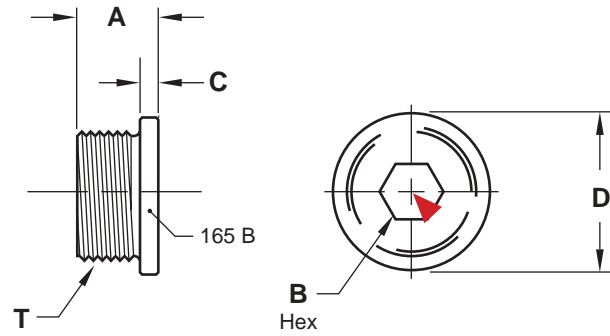
**M** AISI 1215 **H** 170 Brinell **S** Black Oxide

CAD insertion point

CATALOG NUMBER	Nominal Sleeve I.D.	D O.D.	F	G	J	K	H Head Diameter	L Ref
SXT094L3	3/32	.625	.193	.385	.188	.17	.875	3.500
SXT125L3	1/8	.625	.224	.416	.188	.17	.875	3.500
SXT156L3	5/32	.625	.255	.448	.188	.17	.875	3.500
SXT187L3	3/16	.875	.318	.520	.251	.28	1.125	3.625
SXT219L3	7/32	.875	.349	.570	.251	.28	1.125	3.625
SXT250L3	1/4	.875	.380	.630	.251	.28	1.125	3.625
SXT312L3	5/16	1.000	.443	.698	.251	.39	1.250	3.625
SXT375L3	3/8	1.000	.505	.760	.251	.39	1.250	3.625



# CORE PIN RETAINERS



## Inch Standard

**M** AISI 12L14 **H** 165 Brinell **S** Black Oxide ▶ CAD insertion point

CATALOG NUMBER	A +.002 -.000	C +.000 -.002	D O.D.	B Hex	T Thread
<b>CPR-50</b>	.437	.125	.750	.25	1/2-20
<b>CPR-87</b>	.437	.125	1.060	.37	7/8-14

## Metric Standard

**M** AISI 12L14 **H** 165 Brinell **S** Black Oxide

CATALOG NUMBER	A +.00 -.05	C +.00 -.05	D O.D.	B Hex	T Thread
<b>CPRM-16</b>	11	4	20	8	M16-1.5

### CPR-50

Core Pin Diameter	H
3/32ø - 9/64ø	.563
5/32ø	.594
11/64ø - 1/4ø	.625
9/32ø	.688

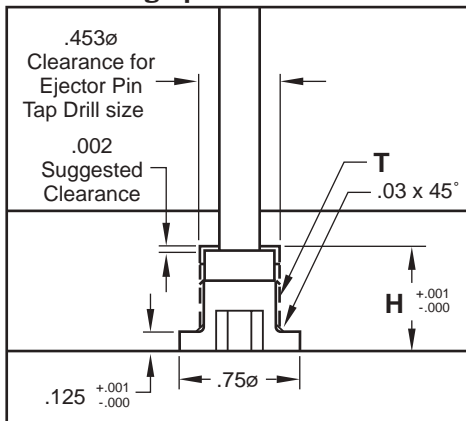
### CPR-87

Core Pin Diameter	H
5/16ø - 1/2ø	.688

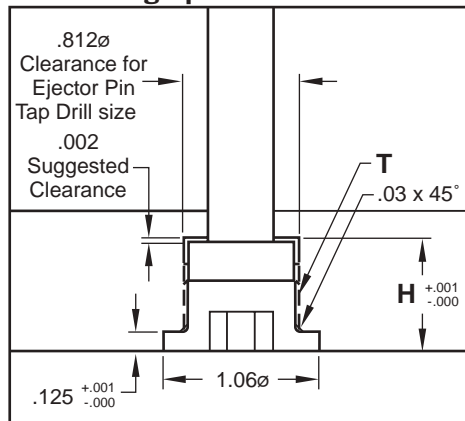
### CPRM-16

Core Pin Diameter	H
2 - 2.5mm	13 mm
3 - 6mm	14 mm

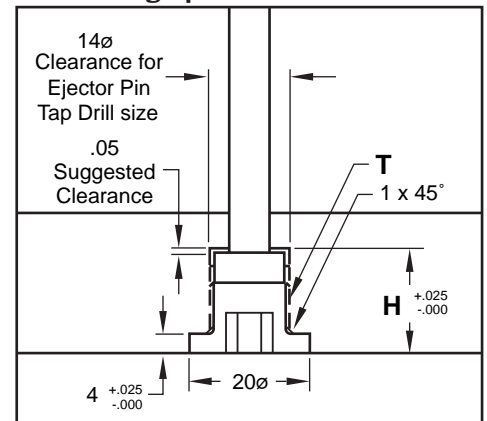
### Machining Specifications: CPR-50



### Machining Specifications: CPR-87



### Machining Specifications: CPRM-16



# MOLD-READY COMPONENTS



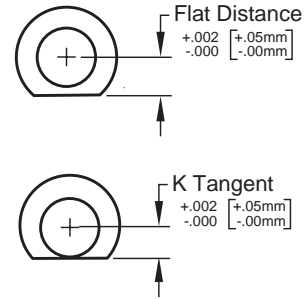
## KEYED PINS

To order pins with the flat machined on the head a specific distance from the center of the pin, specify the catalog number and the specific distance after the "K" designation for the flat as shown below.

Examples:

- EP437L10-K250 for a 7/16 diameter Ejector Pin with a flat 1/4" from center
- EPD10L200-K6 for a 10mm diameter DIN pin with a flat 6mm from center
- EPJ055L250-K4 for a 5.5mm diameter JIS pin with a flat 4mm from center
- CP125L6-K for a 1/8" diameter Core Pin with a flat ground tangent to the pin diameter

Flat will be ground tangent if -K is specified without a dimension.

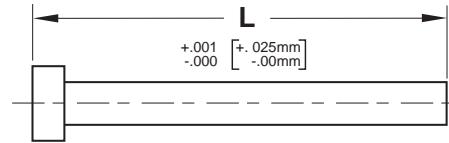
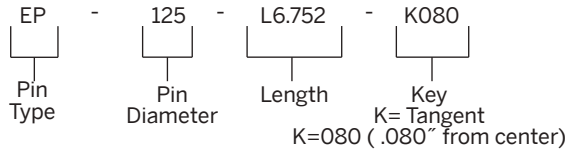


## CUT-TO-LENGTH PINS

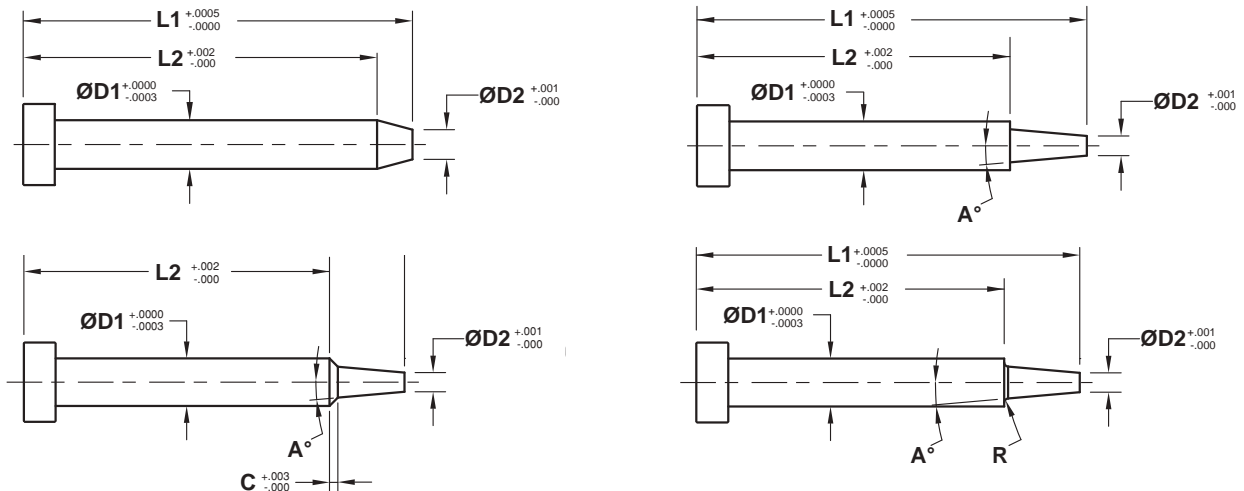
To order Pins cut to your specified length, +.001/- .000 (+.025/- .000mm), with or without keyed heads, specify the length required after the standard Ejector Pin catalog number.

Examples:

- EP437L6.25-K250 for a 7/16" diameter pin x 6.25" long with a flat 1/4" from center
- EPD10L225.5 for a 10mm diameter x 225.5mm long DIN pin



## FINISHED CORE PINS



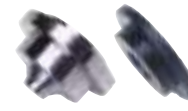
Templates can be found in section X and online at [www.procomps.com](http://www.procomps.com).  
Or, email your drawing to [tech@procomps.com](mailto:tech@procomps.com) for competitive pricing and delivery.





# MOLD BASE COMPONENTS

## SECTION B



PKO Extensions	Locating Rings	Sprue Bushings	Extended Sprues	Puller Pins & Bushings
Prefix: PH, PKP	Prefix: LR	Prefix: SPR	Prefix: ESB, RX	Prefix: PP, PPB
Page: B-1	Page: B-2	Page: B-3	Page: B-4	Page: B-5



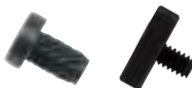
Leader Pins: Straight	Leader Pins: Shoulder	Bushings: Shoulder	Bushings: Straight	QC Bushings: Shoulder
Prefix: LP	Prefix: SLP	Prefix: SAB, SHB, SGP, STL	Prefix: STB, STGP	Prefix: SQC
Page: B-6	Page: B-7	Page: B-8	Page: B-9	Page: B-10



Guided Ejector Bushings	Guided Ejector Pins	Front Load Pins & Bushings	Guide Blocks	Support Pillars & Columns
Prefix: GEB, GGP, GQC	Prefix: GEP, LP	Prefix: FLPB	Prefix: GBK	Prefix: SP, SPH
Page: B-12	Page: B-13	Page: B-14	Page: B-15	Page: B-16



Guided Support Pillars	Urethane Springs	Springs	Stripper Bolts	Stripper Bolt Bushings
Prefix: GESp	Prefix: US	Prefix: MS, HS	Prefix: SBLT	Prefix: SBB
Page: B-19	Page: B-20	Page: B-21	Page: B-24	Page: B-25



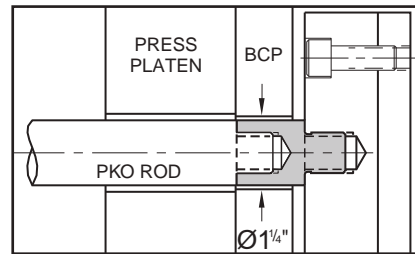
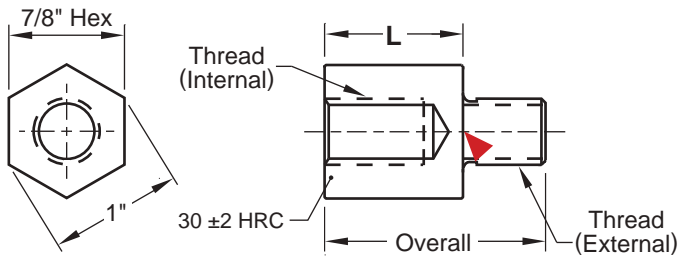
Tubular Dowels	Stop Discs & Pins	Mold Straps
Prefix: TD	Prefix: SD, STP	Prefix: MSTRP
Page: B-26	Page: B-27	Page: B-27





# PKO™ EXTENSIONS

## HEX SERIES



**M** AISI 4140 Pre-Hard **H** 28-32 HRC **S** Black Oxide

CAD insertion point

CATALOG NUMBER	Internal Thread	External Thread	Overall	L	
PH37L10	3/8-16	3/8-16	1.672	1.052	
PH50L10	1/2-13	1/2-13			
PH62L10	5/8-11	5/8-11	1.922		
PH62L10-50	1/2-13	5/8-11			
PH75L10	3/4-10	3/4-10			
PH75L10-NT	N/A	3/4-10	1.922		1.302
PH37L13	3/8-16	3/8-16			
PH50L13	1/2-13	1/2-13			
PH62L13	5/8-11	5/8-11		2.172	
PH62L13-50	1/2-13	5/8-11			
PH75L13	3/4-10	3/4-10			
PH75L13-NT	N/A	3/4-10			

CATALOG NUMBER	Internal Thread	External Thread	Overall	L	
PH37L15	3/8-16	3/8-16	2.172	1.552	
PH50L15	1/2-13	1/2-13			
PH50L15-NT	N/A	1/2-13	2.422		
PH62L15	5/8-11	5/8-11			
PH75L15	3/4-10	3/4-10			
PH75L15-NT	N/A	3/4-10	2.422		1.802
PH37L18	3/8-16	3/8-16			
PH50L18	1/2-13	1/2-13			
PH50L18-NT	N/A	1/2-13		2.672	
PH62L18	5/8-11	5/8-11			
PH75L18	3/4-10	3/4-10			
PH75L18-NT	N/A	3/4-10			

**"L" DIMENSIONS:**

1.052 = .875 (BCP) + .187 (Stop Pins) - .010  
 1.302 = .875 (BCP) + .187 (Stop Pins) + .250 (Insulator Plate) - .010

**"L" DIMENSIONS:**

1.552 = 1.375 (BCP) + .187 (Stop Pins) - .010  
 1.802 = 1.375 (BCP) + .187 (Stop Pins) + .250 (Insulator Plate) - .010

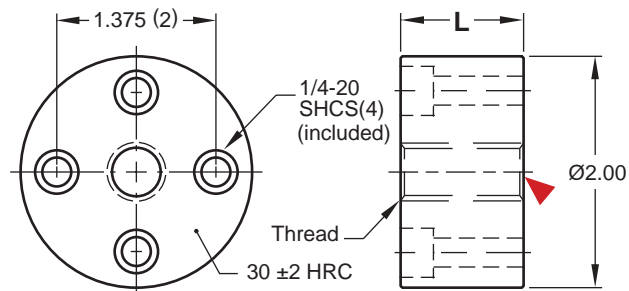
For custom PKO Extensions, refer to the templates in section X.

# PKO™ EXTENSIONS

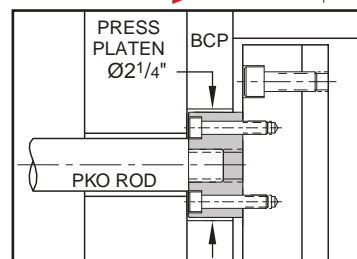
## PUCK SERIES

CATALOG NUMBER	Thread Internal & External	L
PKP37L10	3/8-16	1.052
PKP50L10	1/2-13	
PKP62L10	5/8-11	
PKP75L10	3/4-10	
PKPL10-NT	No Thread*	1.302
PKP37L13	3/8-16	
PKP50L13	1/2-13	
PKP62L13	5/8-11	
PKP75L13	3/4-10	
PKPL13-NT	No Thread*	
PKP37L15	3/8-16	
PKP50L15	1/2-13	
PKP62L15	5/8-11	
PKP75L15	3/4-10	
PKPL15-NT	No Thread*	1.802
PKP37L18	3/8-16	
PKP50L18	1/2-13	
PKP62L18	5/8-11	
PKP75L18	3/4-10	
PKPL18-NT	No Thread*	

**M** AISI 1018 **S** Black Oxide



CAD insertion point



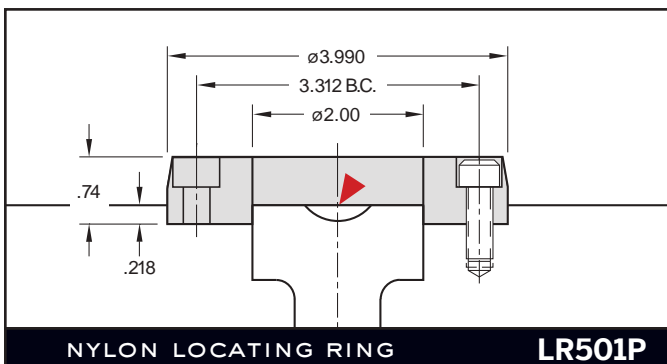
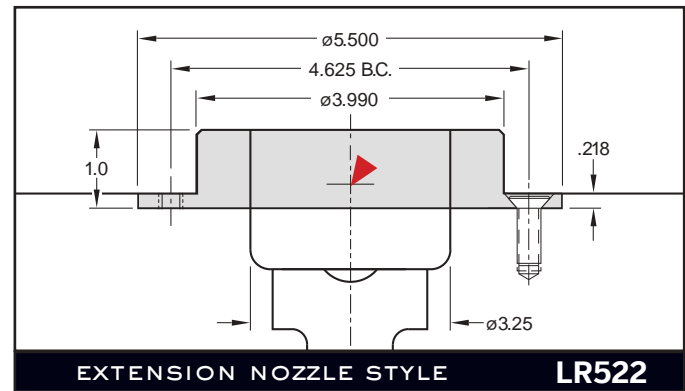
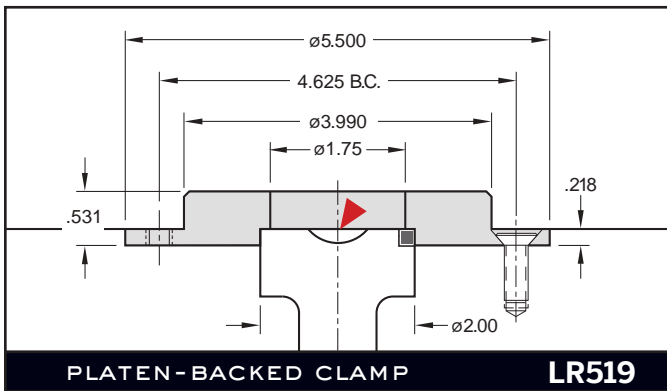
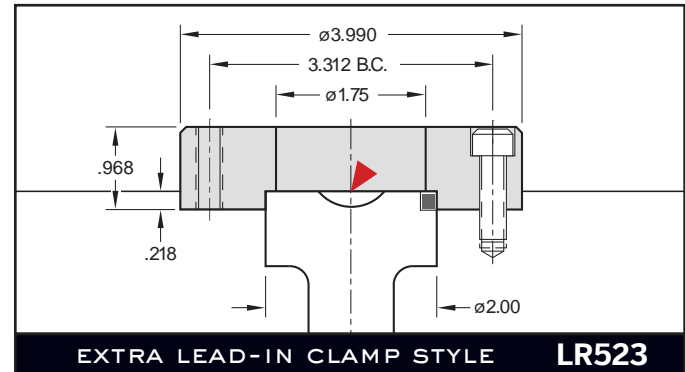
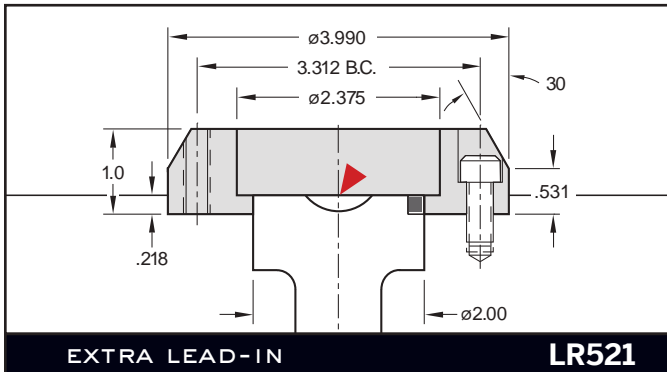
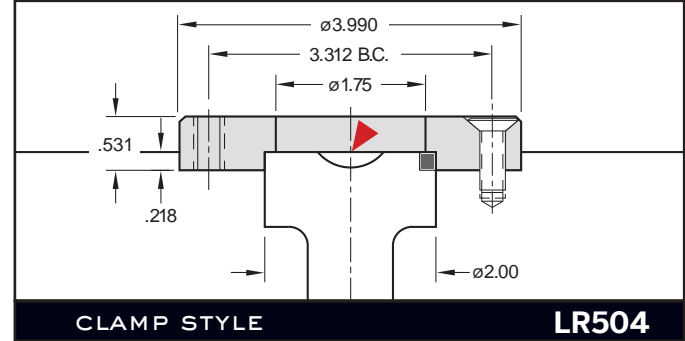
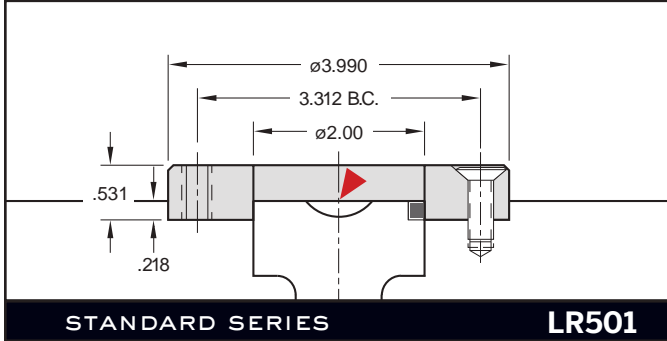
\*Mold maker machines thread on "NT" style to suit non-standard applications.

# LOCATING RINGS



**M** AISI 12L14 **H** 170 Brinell **S** Black Oxide

5/16-18 screws and 3/16" x 2" long dowel pin included.



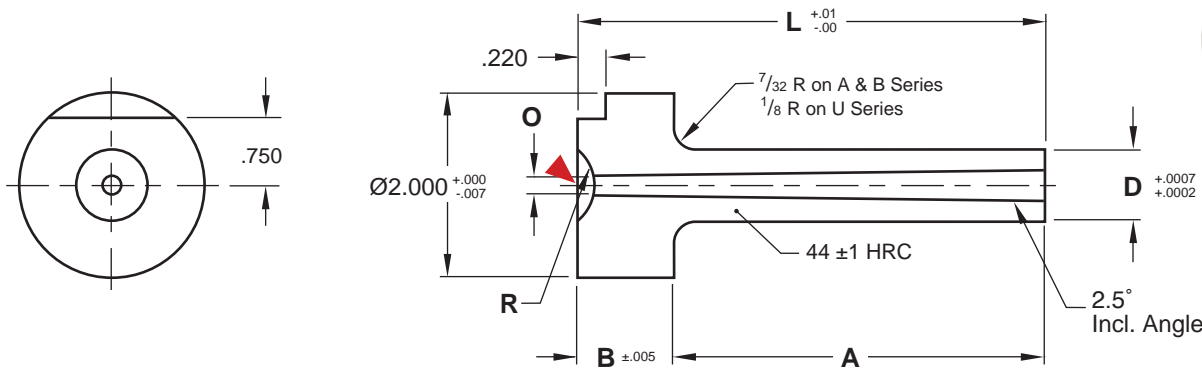
CAD insertion point

Material: 100% recycled reinforced Nylon  
 Maximum temperature: 380 °F (190 °C)  
 Compatible with LR501.  
 5/16-18 screws included.

Patented design by G.A.I.M. Engineering.



# SPRUE BUSHINGS



## B Series D=Ø1.000 B=.875

M AISI 6150 H 43-45 HRC

A	L	O=5/32		O=7/32		O=9/32		O=11/32		NO HOLE	
		R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4
29/32	1-25/32	SPRB1-512	SPRB1-534	SPRB1-712	SPRB1-734	SPRB1-912	SPRB1-934	SPRB1-112	SPRB1-134	—	—
1-13/32	2-9/32	SPRB2-512	SPRB2-534	SPRB2-712	SPRB2-734	SPRB2-912	SPRB2-934	SPRB2-112	SPRB2-134	—	—
1-29/32	2-25/32	SPRB3-512	SPRB3-534	SPRB3-712	SPRB3-734	SPRB3-912	SPRB3-934	SPRB3-112	SPRB3-134	—	—
2-13/32	3-9/32	SPRB4-512	SPRB4-534	SPRB4-712	SPRB4-734	SPRB4-912	SPRB4-934	SPRB4-112	SPRB4-134	—	—
2-29/32	3-25/32	SPRB5-512	SPRB5-534	SPRB5-712	SPRB5-734	SPRB5-912	SPRB5-934	SPRB5-112	SPRB5-134	SPRB5-N12	SPRB5-N34
3-13/32	4-9/32	SPRB6-512	SPRB6-534	SPRB6-712	SPRB6-734	SPRB6-912	SPRB6-934	SPRB6-112	SPRB6-134	—	—
3-29/32	4-25/32	SPRB7-512	SPRB7-534	SPRB7-712	SPRB7-734	SPRB7-912	SPRB7-934	SPRB7-112	SPRB7-134	—	—
4-13/32	5-9/32	SPRB8-512	SPRB8-534	SPRB8-712	SPRB8-734	SPRB8-912	SPRB8-934	SPRB8-112	SPRB8-134	—	—
4-29/32	5-25/32	SPRB9-512	SPRB9-534	SPRB9-712	SPRB9-734	SPRB9-912	SPRB9-934	SPRB9-112	SPRB9-134	SPRB9-N12	SPRB9-N34
5-29/32	6-25/32	—	—	SPRB10-712	SPRB10-734	SPRB10-912	SPRB10-934	—	—	—	—
6-29/32	7-25/32	—	—	SPRB11-712	SPRB11-734	SPRB11-912	SPRB11-934	SPRB11-112	SPRB11-134	SPRB11-N12	SPRB11-N34

▶ CAD insertion point

## A Series D=Ø1.000 B=.625

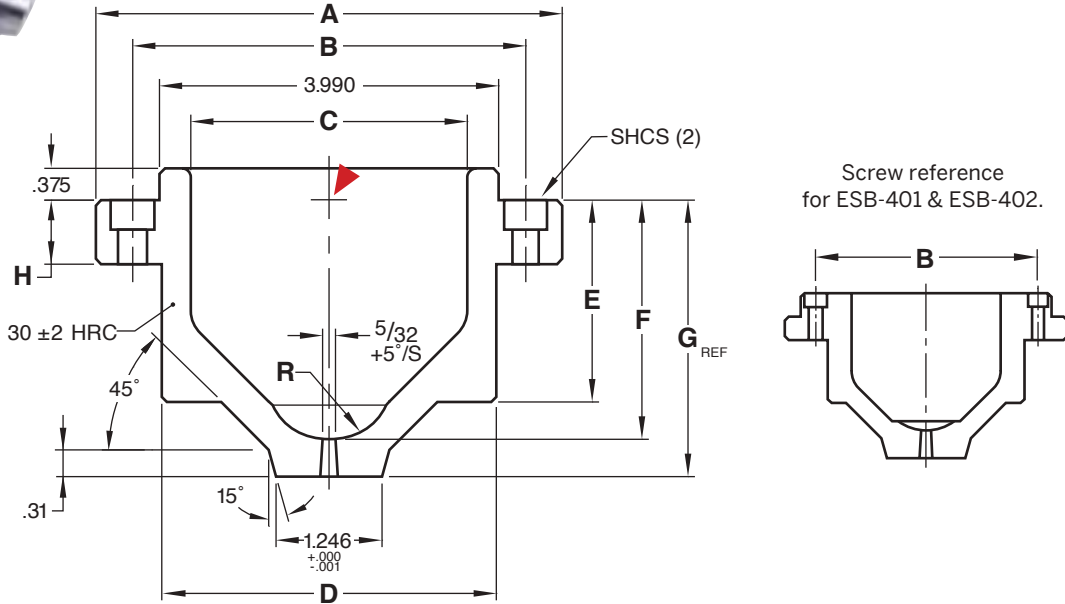
A	L	O=5/32		O=7/32		O=9/32		O=11/32		NO HOLE	
		R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4
1-3/16	1-13/16	SPRA1-512	SPRA1-534	SPRA1-712	SPRA1-734	SPRA1-912	SPRA1-934	SPRA1-112	SPRA1-134	—	—
1-11/16	2-5/16	SPRA2-512	SPRA2-534	SPRA2-712	SPRA2-734	SPRA2-912	SPRA2-934	SPRA2-112	SPRA2-134	—	—
2-3/16	2-13/16	SPRA3-512	SPRA3-534	SPRA3-712	SPRA3-734	SPRA3-912	SPRA3-934	SPRA3-112	SPRA3-134	SPRA3-N12	SPRA3-N34
2-11/16	3-5/16	SPRA4-512	SPRA4-534	SPRA4-712	SPRA4-734	SPRA4-912	SPRA4-934	SPRA4-112	SPRA4-134	—	—
3-3/16	3-13/16	SPRA5-512	SPRA5-534	SPRA5-712	SPRA5-734	SPRA5-912	SPRA5-934	SPRA5-112	SPRA5-134	—	—
3-11/16	4-5/16	SPRA6-512	SPRA6-534	SPRA6-712	SPRA6-734	SPRA6-912	SPRA6-934	SPRA6-112	SPRA6-134	—	—
4-3/16	4-13/16	SPRA7-512	SPRA7-534	SPRA7-712	SPRA7-734	SPRA7-912	SPRA7-934	SPRA7-112	SPRA7-134	SPRA7-N12	SPRA7-N34

## U Series D=Ø.750 B=.875

A	L	O=5/32		O=7/32		O=9/32		NO HOLE	
		R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4
29/32	1-25/32	SPRU1-512	SPRU1-534	SPRU1-712	SPRU1-734	SPRU1-912	SPRU1-934	—	—
1-13/32	2-9/32	SPRU2-512	SPRU2-534	SPRU2-712	SPRU2-734	SPRU2-912	SPRU2-934	—	—
1-29/32	2-25/32	SPRU3-512	SPRU3-534	SPRU3-712	SPRU3-734	SPRU3-912	SPRU3-934	SPRU3-N12	SPRU3-N34
2-13/32	3-9/32	SPRU4-512	SPRU4-534	SPRU4-712	SPRU4-734	SPRU4-912	SPRU4-934	—	—
2-29/32	3-25/32	SPRU5-512	SPRU5-534	SPRU5-712	SPRU5-734	SPRU5-912	SPRU5-934	SPRU5-N12	SPRU5-N34

Notes: For Hot Sprue Bushings, refer to page K-8.  
For custom sized Sprues, refer to the templates in section X.

# EXTENDED SPRUE BUSHINGS



**M** AISI 4140 Pre-Hard **H** 28-32 HRC

CAD insertion point

CATALOG NUMBER	A	B	C	D	E	F	G <sub>REF</sub>	H	R	SHCS
ESB-401	4.490	3.562	2.37	3.12	1.37	1.87	2.256	.375	1/2	#10-32 x 7/8"
ESB-402	4.490	3.562	2.37	3.12	1.37	1.81	2.256	.375	3/4	#10-32 x 7/8"
ESB-551	5.490	4.625	3.25	3.93	1.87	2.37	2.756	.750	1/2	5/16-18 x 1"
ESB-552	5.490	4.625	3.25	3.93	1.87	2.31	2.756	.750	3/4	5/16-18 x 1"
ESB-551L	5.490	4.625	3.25	3.93	2.37	2.87	3.256	.750	1/2	5/16-18 x 1"
ESB-552L	5.490	4.625	3.25	3.93	2.37	2.81	3.256	.750	3/4	5/16-18 x 1"

Screws included.

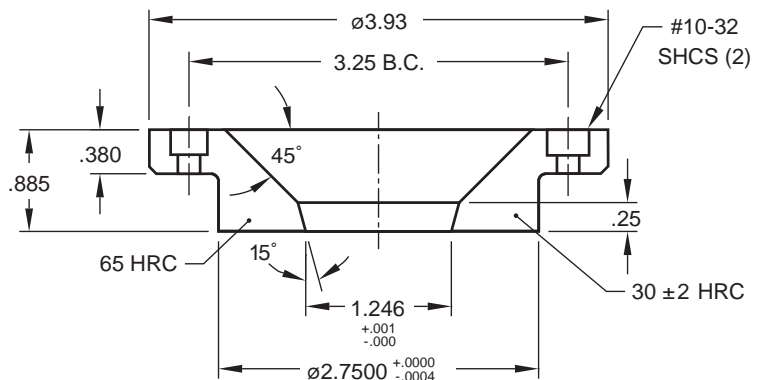
# RUNNER STRIPPER PLATE BUSHING



**M** AISI 4140 Pre-Hard **S** Salt Bath Nitride  
**H** Core: 28-32 HRC, Surface: 65 HRC

CATALOG NUMBER	DESCRIPTION
RX-40	Runner Stripper Plate Bushing

Screws included.



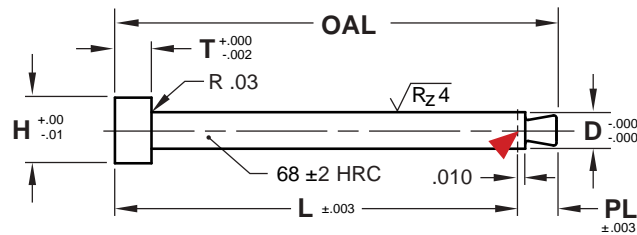


# PULLER PINS™ FOR 3-PLATE RUNNERS

## Pin Length Selection Chart

G Plate Thickness	L for 7/8" Plate	L for 1-3/8" Plate
1-3/8	1.813	2.313
1-7/8	2.313	2.813
2-3/8	2.813	3.313

Note: Standard "L" provides .010 protrusion per graphic below.



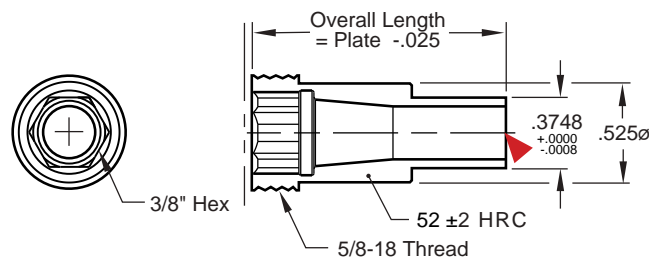
**M** H-13 **H** Core: 40-44 HRC; **S** Ion Nitride 65-70 HRC

CAD insertion point

Nominal Diameter	D	H	T	PL	L=1.813		L=2.313		L=2.813		L=3.313	
					OAL	CAT. #	OAL	CAT. #	OAL	CAT. #	OAL	CAT. #
5/32	.1562	.28	.156	.125	1.938	PP156L1.9	2.438	PP156L2.4	2.938	PP156L2.9	3.438	PP156L3.4
7/32	.2188	.40	.187	.187	2.000	PP219L2.0	2.500	PP219L2.5	3.000	PP219L3.0	3.500	PP219L3.5
9/32	.2812	.43	.250	.250	2.063	PP281L2.0	2.563	PP281L2.5	3.063	PP281L3.0	3.563	PP281L3.5

For custom Puller Pins, refer to the templates in section X

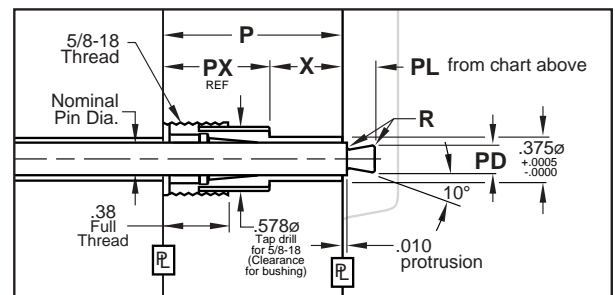
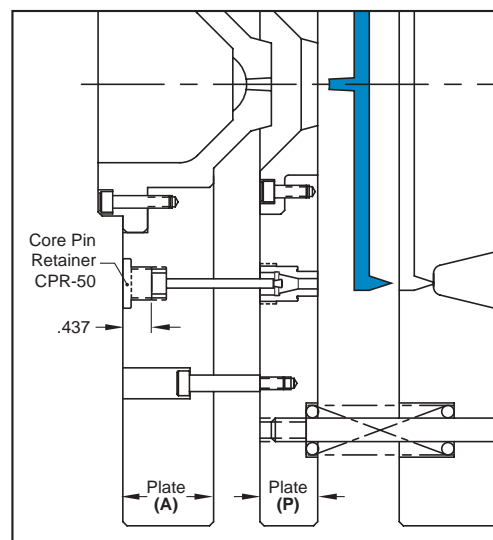
## PULLER PIN BUSHINGS



**M** 440C **H** 50-54 HRC

Puller Pin Diameter	P 7/8" Plate	P 1-3/8" Plate
5/32	PPB156L.87	PPB156L1.37
7/32	PPB219L.87	PPB219L1.37
9/32	PPB281L.87	PPB281L1.37

CAD insertion point

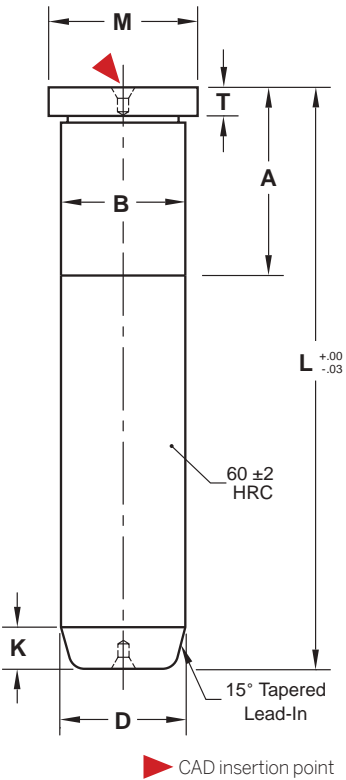


P Plate Thickness	PX REF	X	Nominal Pin Diameter	PD T.S.C.	R
7/8	1/2	.375	5/32	.145	.020
			7/32	.200	.025
			9/32	.265	.030
1-3/8	7/8	.500	5/32	.145	.020
			7/32	.200	.025
			9/32	.265	.030

# LEADER PINS STRAIGHT STYLE



For Leader Pins with a 7/8" press fit for guided ejection applications, please refer to page B-13.



M AISI 1117 H Surface: 58-62 HRC

L	D=3/4"		D=7/8"		D=1"		D=1-1/4"	
	A	Catalog Number	A	Catalog Number	A	Catalog Number	A	Catalog Number
1-3/4	7/8	LP75L1.75	7/8	LP87L1.75	7/8	LP100L1.75	—	—
2-1/4	7/8	LP75L2.25	7/8	LP87L2.25	7/8	LP100L2.25	—	—
2-3/4	7/8	LP75L2.75	7/8	LP87L2.75	7/8	LP100L2.75	7/8	LP125L2.75
3-1/4	7/8	LP75L3.25	7/8	LP87L3.25	7/8	LP100L3.25	7/8	LP125L3.25
3-3/4	7/8	LP75L3.75	7/8	LP87L3.75	7/8	LP100L3.75	7/8	LP125L3.75
4-1/4	1-3/8	LP75L4.25	1-3/8	LP87L4.25	1-3/8	LP100L4.25	7/8	LP125L4.25
4-3/4	1-3/8	LP75L4.75	1-3/8	LP87L4.75	1-3/8	LP100L4.75	1-3/8	LP125L4.75
5-1/4	1-3/8	LP75L5.25	1-3/8	LP87L5.25	1-3/8	LP100L5.25	1-3/8	LP125L5.25
5-3/4	1-7/8	LP75L5.75	1-3/8	LP87L5.75	1-3/8	LP100L5.75	1-3/8	LP125L5.75
6-1/4	1-7/8	LP75L6.25	1-3/8	LP87L6.25	1-3/8	LP100L6.25	1-3/8	LP125L6.25
6-3/4	1-7/8	LP75L6.75	1-7/8	LP87L6.75	1-7/8	LP100L6.75	1-7/8	LP125L6.75
7-1/4	1-7/8	LP75L7.25	1-7/8	LP87L7.25	1-7/8	LP100L7.25	1-7/8	LP125L7.25
7-3/4	1-7/8	LP75L7.75	1-7/8	LP87L7.75	1-7/8	LP100L7.75	1-7/8	LP125L7.75
8-1/4	—	—	1-7/8	LP87L8.25	1-7/8	LP100L8.25	1-7/8	LP125L8.25
8-3/4	—	—	1-7/8	LP87L8.75	1-7/8	LP100L8.75	1-7/8	LP125L8.75
9-1/4	1-7/8	LP75L9.25	—	—	1-7/8	LP100L9.25	1-7/8	LP125L9.25
9-3/4	—	—	—	—	1-7/8	LP100L9.75	1-7/8	LP125L9.75
10-1/4	—	—	—	—	1-7/8	LP100L10.25	1-7/8	LP125L10.25
10-3/4	—	—	1-7/8	LP87L10.75	1-7/8	LP100L10.75	1-7/8	LP125L10.75
11-1/4	—	—	—	—	1-7/8	LP100L11.25	1-7/8	LP125L11.25
11-3/4	—	—	—	—	1-7/8	LP100L11.75	1-7/8	LP125L11.75
12-1/4	—	—	1-7/8	LP87L12.25	1-7/8	LP100L12.25	1-7/8	LP125L12.25
12-3/4	—	—	—	—	—	—	1-7/8	LP125L12.75
13-3/4	—	—	—	—	—	—	1-7/8	LP125L13.75
14-3/4	—	—	—	—	—	—	1-7/8	LP125L14.75
15-3/4	—	—	—	—	—	—	1-7/8	LP125L15.75

L	D=1-1/2"		D=2"		D=2-1/2"		D=3"	
	A	Catalog Number	A	Catalog Number	A	Catalog Number	A	Catalog Number
3-3/4	1-3/8	LP150L3.75	—	—	—	—	—	—
4-1/4	1-3/8	LP150L4.25	—	—	—	—	—	—
4-3/4	1-3/8	LP150L4.75	—	—	—	—	—	—
5-1/4	1-3/8	LP150L5.25	—	—	—	—	—	—
5-3/4	1-3/8	LP150L5.75	1-7/8	LP200L5.75	2-3/8	LP250L5.75	—	—
6-1/4	1-3/8	LP150L6.25	—	—	—	—	—	—
6-3/4	1-3/8	LP150L6.75	1-7/8	LP200L6.75	2-3/8	LP250L6.75	—	—
7-3/4	1-7/8	LP150L7.75	1-7/8	LP200L7.75	2-3/8	LP250L7.75	—	—
8-3/4	1-7/8	LP150L8.75	1-7/8	LP200L8.75	2-3/8	LP250L8.75	2-7/8	LP300L8.75
9-3/4	1-7/8	LP150L9.75	1-7/8	LP200L9.75	2-3/8	LP250L9.75	—	—
10-3/4	1-7/8	LP150L10.75	1-7/8	LP200L10.75	2-3/8	LP250L10.75	2-7/8	LP300L10.75
11-3/4	1-7/8	LP150L11.75	1-7/8	LP200L11.75	2-3/8	LP250L11.75	—	—
12-3/4	1-7/8	LP150L12.75	1-7/8	LP200L12.75	2-3/8	LP250L12.75	2-7/8	LP300L12.75
13-3/4	1-7/8	LP150L13.75	1-7/8	LP200L13.75	2-3/8	LP250L13.75	—	—
14-3/4	1-7/8	LP150L14.75	1-7/8	LP200L14.75	2-3/8	LP250L14.75	2-7/8	LP300L14.75
15-3/4	1-7/8	LP150L15.75	1-7/8	LP200L15.75	2-3/8	LP250L15.75	—	—
16-3/4	—	—	2-3/8	LP200L16.75	2-3/8	LP250L16.75	2-7/8	LP300L16.75
18-3/4	—	—	2-3/8	LP200L18.75	2-3/8	LP250L18.75	2-7/8	LP300L18.75

## General Dimensions

Nominal Diameter	D +0.000 -0.005	M +0.00 -0.01	T +0.000 -0.002	B +0.0005 -0.0000	K
3/4	.749	.990	.187	.751	3/16
7/8	.874	1.115	.250	.876	3/16
1	.999	1.240	.250	1.001	3/16
1-1/4	1.249	1.490	.312	1.251	1/4
1-1/2	1.499	1.740	.312	1.501	1/4
2	1.999	2.240	.312	2.001	1/2
2-1/2	2.499	2.740	.312	2.501	1/2
3	2.999	3.365	.500	3.001	1/2

For custom Leader Pins, refer to the templates in section X.



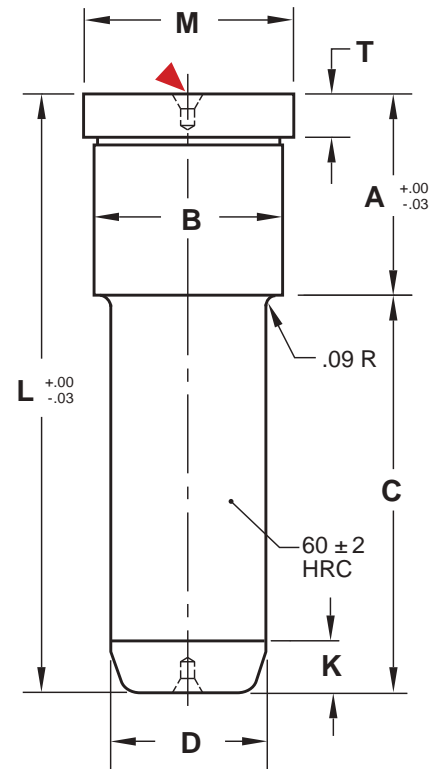


# LEADER PINS SHOULDER STYLE



M AISI 1117 H Surface: 58-62 HRC

A	C	L	D=1/2"	D=3/4"	D=1"	D=1-1/4"
7/8	7/8	1-3/4	SLP50X87L175	SLP75X87L175	—	—
	1-3/8	2-1/4	SLP50X87L225	SLP75X87L225	—	—
	1-7/8	2-3/4	SLP50X87L275	—	—	—
	2-3/8	3-1/4	SLP50X87L325	SLP75X87L325	—	—
	2-7/8	3-3/4	—	SLP75X87L375	SLP100X87L375	—
1-3/8	7/8	2-1/4	SLP50X137L225	SLP75X137L225	—	—
	1-3/8	2-3/4	SLP50X137L275	SLP75X137L275	SLP100X137L275	—
	1-7/8	3-1/4	SLP50X137L325	SLP75X137L325	SLP100X137L325	—
	2-3/8	3-3/4	—	SLP75X137L375	—	—
	2-7/8	4-1/4	—	SLP75X137L425	SLP100X137L425	—
	3-3/8	4-3/4	—	SLP75X137L475	—	SLP125X137L475
1-7/8	7/8	2-3/4	SLP50X187L275	—	—	—
	1-3/8	3-1/4	SLP50X187L325	SLP75X187L325	—	—
	1-7/8	3-3/4	SLP50X187L375	SLP75X187L375	SLP100X187L375	—
	2-3/8	4-1/4	—	SLP75X187L425	SLP100X187L425	SLP125X187L425
	2-7/8	4-3/4	—	SLP75X187L475	SLP100X187L475	—
	3-3/8	5-1/4	—	SLP75X187L525	—	—
	3-7/8	5-3/4	—	SLP75X187L575	—	SLP125X187L575
2-3/8	7/8	3-1/4	SLP50X237L325	—	—	—
	1-3/8	3-3/4	—	SLP75X237L375	—	—
	1-7/8	4-1/4	—	SLP75X237L425	SLP100X237L425	—
	2-3/8	4-3/4	—	SLP75X237L475	SLP100X237L475	—
	2-7/8	5-1/4	—	SLP75X237L525	—	SLP125X237L525
	3-3/8	5-3/4	—	—	SLP100X237L575	—
	3-7/8	6-1/4	—	—	—	SLP125X237L625
2-7/8	1-3/8	4-1/4	—	SLP75X287L425	—	—
	1-7/8	4-3/4	—	SLP75X287L475	SLP100X287L475	—
	2-3/8	5-1/4	—	SLP75X287L525	SLP100X287L525	—
	2-7/8	5-3/4	—	SLP75X287L575	SLP100X287L575	SLP125X287L575
	3-3/8	6-1/4	—	—	SLP100X287L625	—
	3-7/8	6-3/4	—	SLP75X287L675	—	—
	4-3/8	7-1/4	—	—	—	SLP125X287L725
3-3/8	2-3/8	5-3/4	—	SLP75X337L575	—	—
	3-3/8	6-3/4	—	SLP75X337L675	—	—
	4-3/8	7-3/4	—	—	SLP100X337L775	—
3-7/8	2-3/8	6-1/4	—	SLP75X387L625	SLP100X387L625	—
	2-7/8	6-3/4	—	SLP75X387L675	SLP100X387L675	—
4-3/8	2-7/8	7-1/4	—	—	SLP100X437L725	—
	3-3/8	7-3/4	—	—	—	SLP125X437L775
4-7/8	3-7/8	8-3/4	—	—	SLP100X487L875	SLP125X487L875
	3-7/8	9-3/4	—	—	SLP100X587L975	—
5-7/8	3-7/8	9-3/4	—	—	—	—
	5-7/8	11-3/4	—	—	—	SLP125X587L1175



## General Dimensions

Nominal Diameter	D +0.000 -0.005	B +0.005 -0.000	M +0.000 -0.010	T +0.000 -0.002	K
1/2	.499	.751	.853	.187	3/16
3/4	.749	1.126	1.250	.312	3/16
1	.999	1.376	1.500	.312	3/16
1-1/4	1.249	1.626	1.750	.312	1/4

For custom Leader Pins, refer to the templates in section X.

▶ CAD insertion point

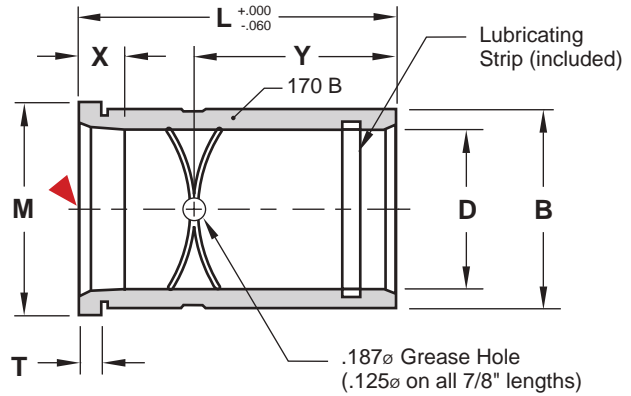
# BUSHINGS

## SHOULDER STYLE



### General Dimensions

Nominal Diameter	D +.0005 -.0000	B +.0005 -.0000	M +.00 -.01	T +.00 -.01
1/2	.5005	.7505	.853	.187
3/4	.7505	1.1255	1.302	.187
7/8	.8755	1.2505	1.427	.187
1	1.0005	1.3755	1.552	.187
1-1/4	1.2505	1.6255	1.802	.187
1-1/2	1.5005	2.0005	2.177	.187
2	2.0005	2.5005	2.677	.187
2-1/2	2.5005	3.2505	3.427	.187
3	3.0005	3.7505	3.990	.500



**M** CA954 Solid Bronze **H** 170 Brinell

CAD insertion point

L	D=1/2"	D=3/4"	D=7/8"	D=1"	D=1-1/4"	D=1-1/2"	D=2"	D=2-1/2"	D=3"
7/8	SAB50L.87	SAB75L.87	SAB87L.87	SAB100L.87	SAB125L.87	SAB150L.87	—	—	—
1-3/8	SAB50L1.37	SAB75L1.37	SAB87L1.37	SAB100L1.37	SAB125L1.37	SAB150L1.37	SAB200L1.37	SAB250L1.37	—
1-7/8	SAB50L1.87	SAB75L1.87	SAB87L1.87	SAB100L1.87	SAB125L1.87	SAB150L1.87	SAB200L1.87	SAB250L1.87	—
2-3/8	SAB50L2.37	SAB75L2.37	SAB87L2.37	SAB100L2.37	SAB125L2.37	SAB150L2.37	SAB200L2.37	SAB250L2.37	—
2-7/8	—	SAB75L2.87	SAB87L2.87	SAB100L2.87	SAB125L2.87	SAB150L2.87	SAB200L2.87	SAB250L2.87	—
3-3/8	—	SAB75L3.37	SAB87L3.37	SAB100L3.37	SAB125L3.37	SAB150L3.37	SAB200L3.37	SAB250L3.37	—
3-7/8	—	SAB75L3.87	SAB87L3.87	SAB100L3.87	SAB125L3.87	SAB150L3.87	SAB200L3.87	SAB250L3.87	SAB300L3.87
4-3/8	—	SAB75L4.37	SAB87L4.37	SAB100L4.37	SAB125L4.37	SAB150L4.37	SAB200L4.37	SAB250L4.37	—
4-7/8	—	SAB75L4.87	SAB87L4.87	SAB100L4.87	SAB125L4.87	SAB150L4.87	SAB200L4.87	SAB250L4.87	SAB300L4.87
5-7/8	—	SAB75L5.87	SAB87L5.87	SAB100L5.87	SAB125L5.87	SAB150L5.87	SAB200L5.87	SAB250L5.87	SAB300L5.87
7-7/8	—	—	—	—	—	—	—	—	SAB300L7.87

### Grease Hole and Clearance Dimensions

For custom Bushings, send specifications to [tech@procomps.com](mailto:tech@procomps.com).

L	D=1/2" - 7/8"		D=1"		D=1-1/4"		D=1-1/2"		D=2"		D=2-1/2" - 3	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
7/8	—	.43	—	.43	—	.43	—	.43	—	—	—	—
1-3/8	—	.62	—	.62	—	.62	—	.62	—	.62	—	.62
1-7/8	—	.62	—	.62	—	.62	—	.62	—	.62	—	.62
2-3/8	.50	.81	—	.81	—	.81	—	.81	—	.81	—	.81
2-7/8	.50	.81	.50	.81	—	.81	—	.81	—	.81	—	.81
3-3/8	1.00	.81	.50	.81	.50	.81	—	.81	—	.81	—	.81
3-7/8	1.00	.81	.50	.81	.50	.81	.50	.81	—	.81	—	.81
4-3/8	1.50	.81	1.00	.81	1.00	.81	.50	.81	—	.81	—	.81
4-7/8	1.50	.81	1.00	.81	1.00	.81	1.00	.81	.50	1.31	—	1.31
5-7/8	2.00	.81	1.50	.81	1.50	.81	1.50	.81	1.00	1.31	.50	1.31
7-7/8	—	—	—	—	—	—	—	—	—	—	.50	1.31



# BUSHINGS SHOULDER STYLE



## BRONZE PLATED SHOULDER BUSHINGS

**M** AISI 1026    **H** 22-28 HRC    **S** Bronze Plated: .004" Deep

To order: Specify "SHB" in the prefix to replace "SAB" in the chart at left.  
Example: SHB200L2.37 for 2" ID x 2.37 long bushings

Notes: Bronze plated shoulder bushings have internal grease grooves.  
Grease entry hole to be machined by mold maker.  
The bearing of the inner diameter is through, where the clearance "X" on the previous page does not apply.  
Not available in 1/2" diameter.

## GRAPHITE PLUGGED SHOULDER BUSHINGS

**M** CA954 with oil impregnated graphite plugs    **H** 170 Brinell

To order: Specify "SGP" in the prefix to replace "SAB" in the chart at left.  
Example: SGP200L2.37 for 2" ID x 2.37 long bushings

Notes: Graphite plugs are not compatible with grease.  
Use a light 20 weight oil at startup to begin lubrication.  
The bearing of the inner diameter is through, where the clearance "X" on the previous page does not apply.  
Not available in 1/2" diameter.

## STEEL SHOULDER BUSHINGS

**M** AISI 1117    **H** 58-62 HRC

To order: Specify "STL" in the prefix to replace "SAB" in the chart at left.  
Example: STL200L2.37 for 2" ID x 2.37 long bushings

Notes: Steel (Hardened) shoulder bushings have internal grease grooves.  
Grease entry hole to be machined by mold maker.  
The bearing of the inner diameter is 2 x the ID, where the clearance "X" on the previous page does not apply.

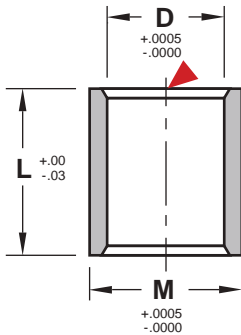
# BUSHINGS STRAIGHT STYLE

**M** Non-Plated Steel: AISI 1117    **H** 58-62 HRC

**M** Graphite Plugged: CA954    **H** 170 Brinell

CAD insertion point

Nominal Diameter	D +.0005 -.0000	M +.0005 -.0000	L +.00 -.03	CATALOG NUMBER STANDARD STEEL	CATALOG NUMBER GRAPHITE PLUGGED
1/2	.5005	.7505	7/8 1-3/8	STB50L.87 STB50L1.37	— —
3/4	.7505	1.1255	7/8 1-3/8	STB75L.87 STB75L1.37	STGP75L.87 STGP75L1.37
7/8	.8755	1.2505	1-3/8 1-1/2	STB87L1.37 —	— STGP87L1.50
1	1.0005	1.3755	1-3/8	STB100L1.37	STGP100L1.37
1-1/4	1.2505	1.6255	1-3/8 1-7/8	STB125L1.37 STB125L1.87	STGP125L1.37 STGP125L1.87
1-1/2	1.5005	2.0005	1-3/8 1-7/8	STB150L1.37 STB150L1.87	STGP150L1.37 STGP150L1.87
2	2.0005	2.5005	3-7/8	STB200L3.87	STGP200L3.87
2-1/2	2.5005	3.2505	4-7/8	STB250L4.87	STGP250L4.87



Using grease will inhibit the function of the graphite plugs. Instead, use a light 20 weight oil at startup to begin lubrication.

# QC™ BUSHINGS

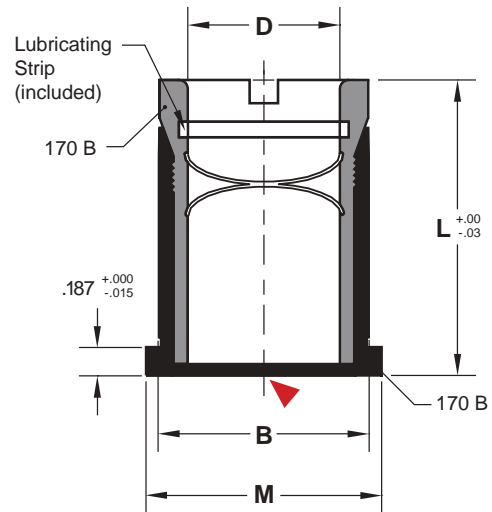
## SHOULDER STYLE



### General Dimensions

Nominal Diameter	D +.0005 -.0000	B +.0005 -.0000	M +.00 -.01
3/4	.7505	1.1255	1.302
7/8	.8755	1.2505	1.427
1	1.0005	1.3755	1.552
1-1/4	1.2505	1.6255	1.802
1-1/2	1.5005	2.0005	2.177
2	2.0005	2.5005	2.677

Sold in assembly.



Liner: **M** CA954 Solid Bronze    **H** 170 Brinell  
 Body: **M** AISI 12L14    **H** 170 Brinell    **S** Black Oxide

CAD insertion point

L	D=3/4"	D=7/8"	D=1"	D=1-1/4"	D=1-1/2"	D=2"
7/8	SQC75L.87	SQC87L.87	—	—	—	—
1-3/8	SQC75L1.37	SQC87L1.37	SQC100L1.37	SQC125L1.37	SQC150L1.37	SQC200L1.37
1-7/8	SQC75L1.87	SQC87L1.87	SQC100L1.87	SQC125L1.87	SQC150L1.87	SQC200L1.87
2-3/8	SQC75L2.37	SQC87L2.37	SQC100L2.37	SQC125L2.37	SQC150L2.37	SQC200L2.37
2-7/8	SQC75L2.87	SQC87L2.87	SQC100L2.87	SQC125L2.87	SQC150L2.87	SQC200L2.87
3-3/8	—	—	SQC100L3.37	SQC125L3.37	SQC150L3.37	SQC200L3.37
3-7/8	—	—	—	SQC125L3.87	SQC150L3.87	SQC200L3.87
4-3/8	—	—	—	—	—	SQC200L4.37
4-7/8	—	—	—	—	—	SQC200L4.87
5-7/8	—	—	—	—	—	SQC200L5.87

Note: Replacement lubricating strips are available with pricing listed in the price list.



# QC™ BUSHINGS REPLACEMENT LINERS



**M** CA954 Solid Bronze **H** 170 Brinell

INNER DIAMETER	LINER #	FIT BUSHINGS
1/2"	BL50L1.50	GQC50
3/4"	BL75L.87	SQC75L.87
	BL75L1.37	GQC75
		SQC75L1.37
		SQC75L1.87
		SQC75L2.37
		SQC75L2.87
7/8"	BL87L.87	SQC87L.87
	BL87L1.37	GQC87
		SQC87L1.37
		SQC87L1.87
		SQC87L2.37
		SQC87L2.87
1"	BL100L1.37	SQC100L1.37
	BL100L1.75	GQC100
		SQC100L1.87
		SQC100L2.37
		SQC100L2.87
		SQC100L3.37

INNER DIAMETER	LINER #	FIT BUSHINGS
1-1/4"	BL125L1.37	SQC125L1.37
	BL125L1.75	GQC125
		SQC125L1.87
	BL125L2.37	SQC125L2.37
		SQC125L2.87
		SQC125L3.37
SQC125L3.87		
1-1/2"	BL150L1.37	SQC150L1.37
	BL150L1.75	GQC150
		SQC150L1.87
	BL150L2.37	SQC150L2.37
		BL150L2.87
	SQC150L3.37	
SQC150L3.87		
2"	BL200L1.37	SQC200L1.37
	BL200L1.87	SQC200L1.87
	BL200L2.25	GQC200
		SQC200L2.37
	BL200L2.87	SQC200L2.87
	BL200L3.37	SQC200L3.37
		SQC200L3.87
		SQC200L4.37
SQC200L4.87		
SQC200L5.87		

Note: Replacement lubricating strips are available with pricing listed in the price list.

## SPANNER WRENCH

**M** Hardened Steel

CATALOG NUMBER	DESCRIPTION
SW-100	Adjustable Spanner Wrench



# GUIDED EJECTOR BUSHINGS

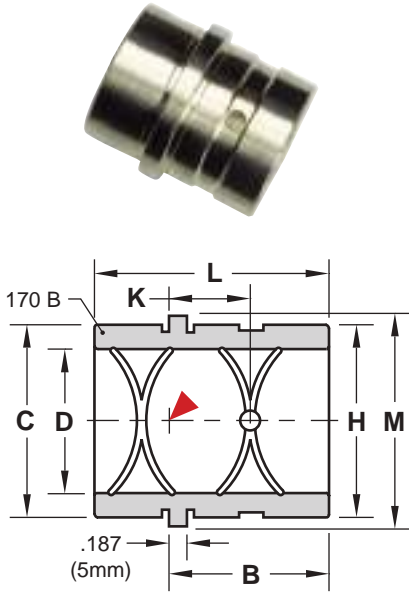
## SOLID BRONZE

**M** CA954 Solid Bronze **H** 170 Brinell

### Inch Standard

CAD insertion point

CATALOG NUMBER	Nominal Diameter	D +0.005 -0.000	H +0.005 -0.000	C +0.00 -0.01	M +0.0 -0.01	B	K	L +0.0 -0.03
GEB50	1/2	.5005	.7505	.7490	.853	1.00	.56	1.50
GEB75	3/4	.7505	1.1255	1.1240	1.302	1.00	.56	1.50
GEB87	7/8	.8755	1.2505	1.2490	1.427	1.00	.56	1.50
GEB100	1	1.0005	1.3755	1.3740	1.552	1.12	.62	1.75
GEB125	1-1/4	1.2505	1.6255	1.6240	1.802	1.12	.62	1.75
GEB150	1-1/2	1.5005	2.0005	1.9990	2.177	1.12	.62	1.75
GEB200	2	2.0005	2.5005	2.4990	2.687	1.62	.80	2.25



### Metric Standard

CATALOG NUMBER	D +0.013 +0.026	H +0.1 -0.0	C -0.1 -0.03	M +0.0 -0.13	B	K	L +0 -8
GEBD20	20	26	26	28	25	15	37
GEBD25	25	32	32	35	29	16	45
GEBD30	30	38	38	41	29	16	45

For custom Bushings, refer to the templates in section X.

## GRAPHITE PLUGGED

**M** CA954 with oil impregnated graphite plugs **H** 170 Brinell



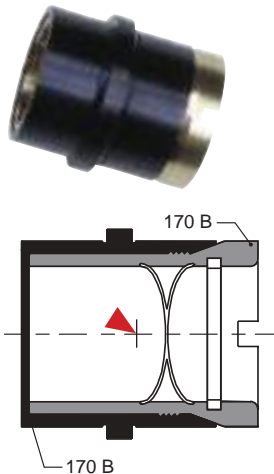
Using grease will inhibit the function of the graphite plugs. Instead, use a light 20 weight oil at startup to begin lubrication.

CATALOG NUMBER	Nominal Diameter	D +0.005 -0.000	H +0.005 -0.000	C +0.00 -0.01	M +0.0 -0.01	B	L +0.0 -0.03
GGP75	3/4	.751	1.1255	1.1240	1.302	1.00	1.50
GGP87	7/8	.876	1.2505	1.2490	1.427	1.00	1.50
GGP100	1	1.001	1.3755	1.3740	1.552	1.12	1.75
GGP125	1-1/4	1.251	1.6255	1.6240	1.802	1.12	1.75
GGP150	1-1/2	1.501	2.0005	1.9990	2.177	1.12	1.75
GGP200	2	2.001	2.5005	2.4990	2.687	1.62	2.25

## QC™ BUSHINGS

Liner: **M** CA954 **H** 170 Brinell

Body: **M** AISI 12L14 **H** 170 Brinell **S** Black Oxide



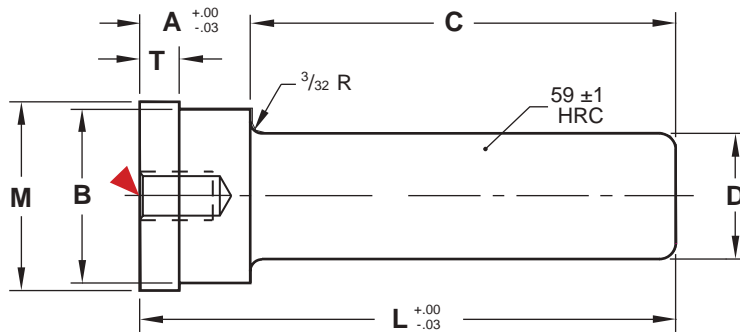
CATALOG NUMBER	Nominal Diameter	D +0.005 -0.000	H +0.005 -0.000	C +0.00 -0.01	M +0.0 -0.01	B	L +0.00 -0.015
GQC50	1/2	.5005	.7505	.7490	.853	1.00	1.50
GQC75	3/4	.7505	1.1255	1.1240	1.302	1.00	1.50
GQC87	7/8	.8755	1.2505	1.2490	1.427	1.00	1.50
GQC100	1	1.0005	1.3755	1.3740	1.552	1.12	1.75
GQC125	1-1/4	1.2505	1.6255	1.6240	1.802	1.12	1.75
GQC150	1-1/2	1.5005	2.0005	1.9990	2.177	1.12	1.75
GQC200	2	2.0005	2.5005	2.4990	2.687	1.62	2.25

Note: Replacement lubricating strips are available with pricing listed in the price list.



# GUIDED EJECTOR PINS

## SHOULDER STYLE



### General Dimensions

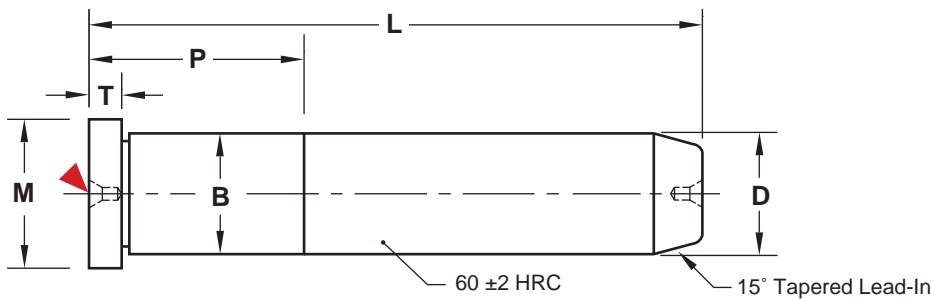
**M** AISI 8620 **H** Core: Approx. 25 HRC, Surface: 58-60 HRC

Nominal Diameter	D +.0000 -.0005	B +.0005 -.0000	M +.00 -.01	T +.000 -.015
1/2	.499	.751	.853	.187
3/4	.749	1.126	1.250	.312
1	.999	1.376	1.500	.312

A	C	L	D=1/2"	D=3/4"	D=1"
7/8	2-7/8	3-3/4	GEP50X87L375	—	—
	3-3/8	4-1/4	GEP50X87L425	GEP75X87L425	GEP100X87L425
	3-7/8	4-3/4	GEP50X87L475	GEP75X87L475	GEP100X87L475
	4-3/8	5-1/4	GEP50X87L525	GEP75X87L525	GEP100X87L525
	4-7/8	5-3/4	—	GEP75X87L575	GEP100X87L575
1-3/8	3-7/8	5-1/4	—	—	GEP100X137L525
	4-3/8	5-3/4	—	—	GEP100X137L575
	4-7/8	6-1/4	—	—	GEP100X137L625

For custom pins, refer to the templates in section X.

CAD insertion point



### STRAIGHT STYLE



### General Dimensions: Inch

**M** AISI 1117 **H** Core: Approx. 25 HRC, Surface: 58-62 HRC

D +.0000 -.0005	B +.0005 -.0000	M +.00 -.01	T +.000 -.015
.749	.751	.990	.187
.874	.876	1.115	.250
.999	1.001	1.240	.250

L +.00 -.03	P	D=3/4"	D=7/8"	D=1"
4-1/4	7/8	LP75L4.25-P	LP87L4.25-P	LP100L4.25-P
4-3/4	7/8	LP75L4.75-P	LP87L4.75-P	LP100L4.75-P
5-1/4	7/8	LP75L5.25-P	LP87L5.25-P	LP100L5.25-P
5-3/4	7/8	LP75L5.75-P	LP87L5.75-P	LP100L5.75-P
6-1/4	7/8	LP75L6.25-P	LP87L6.25-P	LP100L6.25-P

### General Dimensions: Metric

**M** 1.7131 **H** Core: Approx. 25 HRC, Surface: 58-62 HRC

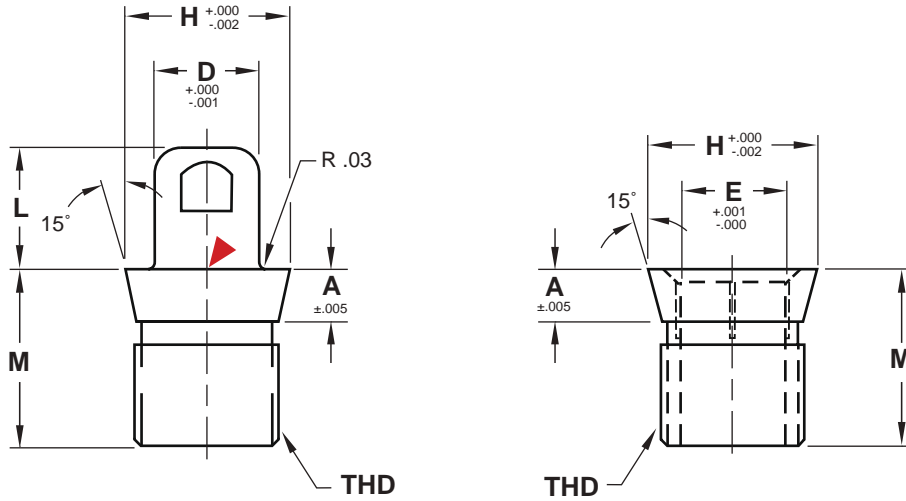
D -.007 -.020	B +.011 +.002	M +.0 -.2	T
20	20	24	8
25	25	28	15
30	30	36	15

L +.0 -.2	P	D=20	P	D=25	P	D=30
100	28	LPD20L100	35	LPD25L100	45	LPD30L100
120	28	LPD20L120	35	LPD25L120	45	LPD30L120
140	28	LPD20L140	35	LPD25L140	45	LPD30L140
160	—	—	—	—	45	LPD30L160

For custom pins, refer to the templates in section X.

CAD insertion point

# FRONT LOADING PINS AND BUSHINGS



**M** H-13 **H** Core: 40-45 HRC, Surface: 65-70 HRC **S** Nitride

CAD insertion point

CATALOG NUMBER	Nominal Diameter	D Pin Diameter	E Bushing Diameter	THD UNF	H	L	M	A
FLPB31L.62	5/16	.3125	.3130	1/2-20	.609	.62	.670	.20
FLPB43L.57	7/16	.4375	.4380	5/8-18	.747	.57	.850	.25
FLPB43L.75	7/16	.4375	.4380	5/8-18	.747	.75	.850	.25
FLPB50L.58	1/2	.5000	.5005	11/16-16	.807	.58	.845	.25
FLPB75L.70	3/4	.7500	.7505	1-12	1.115	.70	1.255	.25
FLPB75L1.10	3/4	.7500	.7505	1-12	1.115	1.10	1.255	.25
FLPB75L1.75	3/4	.7500	.7505	1-12	1.115	1.75	1.255	.25
FLPB100L1.10	1	1.0000	1.0005	11/4-16	1.370	1.10	1.224	.25

Sold in sets of (1) pin and (1) bushing.

## INSTALLATION WRENCH



**M** CRS **H** Case Hardened **S** Black Oxide

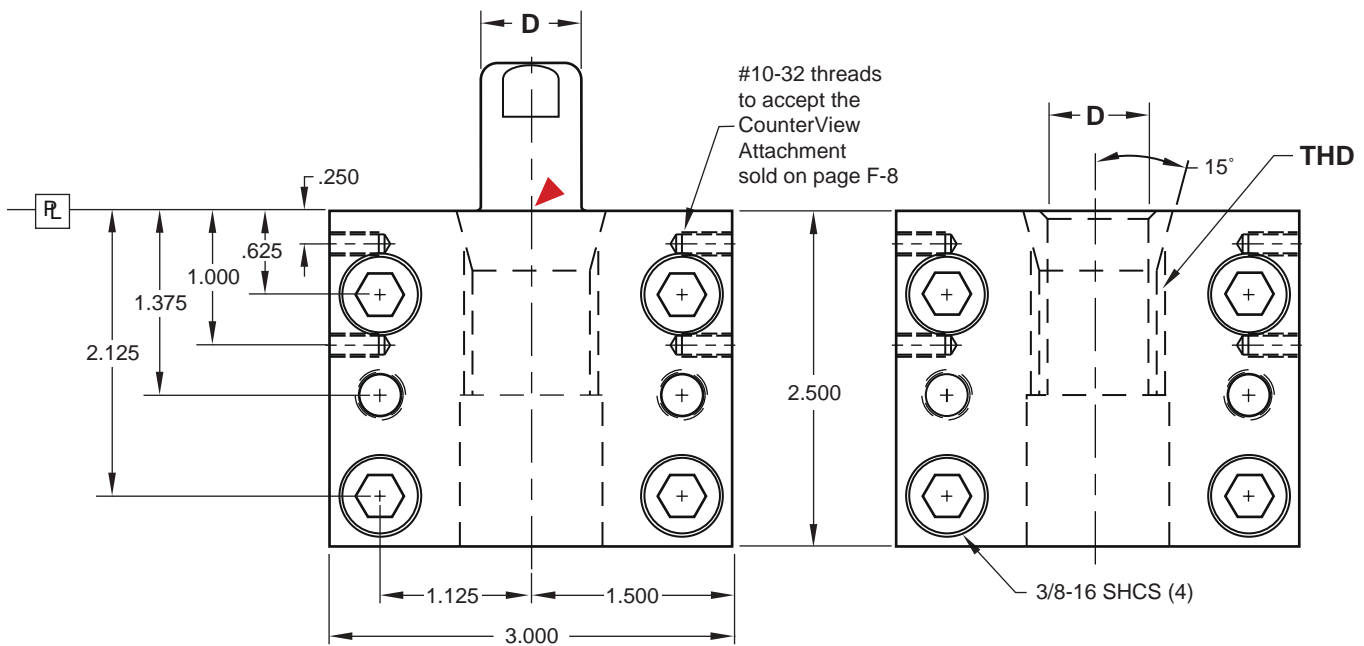
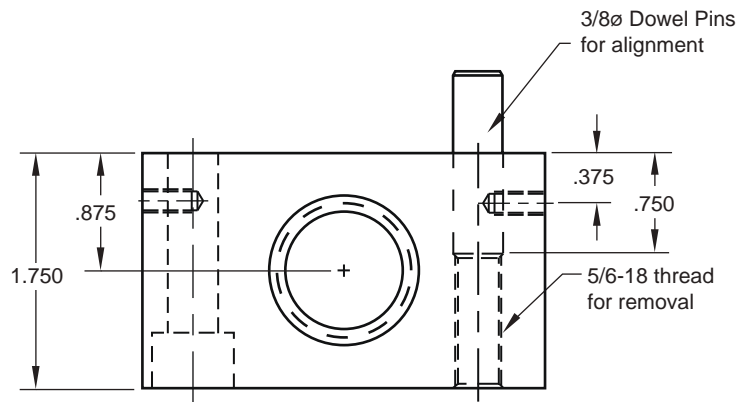
CATALOG NUMBER	DESCRIPTION
WR-312	For 5/16" ID Bushing
WR-437	For 7/16" ID Bushing
WR-500	For 1/2" ID Bushing
WR-750	For 3/4" ID Bushing
WR-100	For 1" ID Bushing





# GUIDE BLOCKS

## FRONT LOADING PINS & BUSHINGS SERIES



**M** A-36   **H** Pre-Hard   **S** Black Oxide   CAD insertion point

CATALOG NUMBER	D Pin/Bushing Diameter	THD UNF
GBK-75	3/4	1-12
GBK-100	1	1 1/4-16

Sold in sets of (2) identical blocks.  
Pins and bushings sold separately on page B-14.

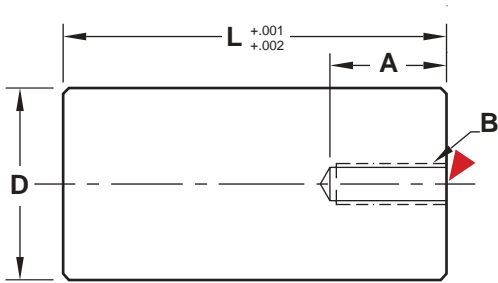
# SUPPORT PILLARS



M AISI 1018 H 90 Brinell

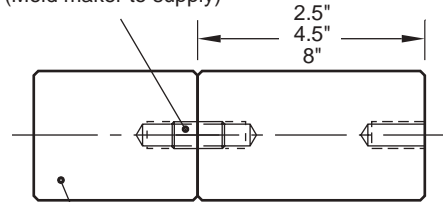
▶ CAD insertion point

## Threaded Support Pillars



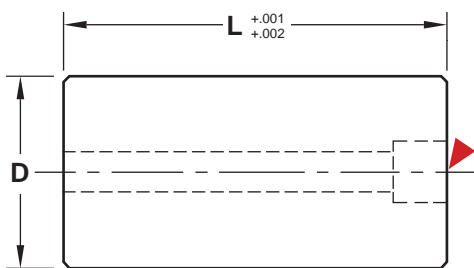
Socket Head Cap Screws are included with all Support Pillars. 1" long screws are used with the Threaded Pillars. Refer to the chart for the Counterbored Pillar screw size.

Optional Set Screw  
(Mold maker to supply)



All 2.5", 4.5" and 8" long Threaded Support Pillars are tapped for a set screw enabling a second pillar to be attached as an extension.

## Counterbored Support Pillars



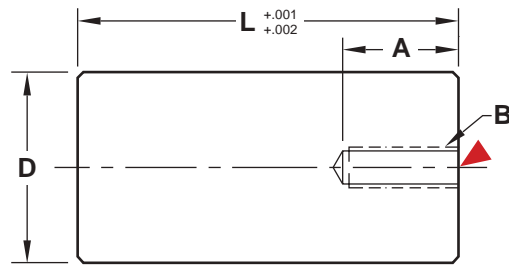
D	L	THREADED SUPPORT PILLARS			COUNTERBORED SUPPORT PILLARS			
		CATALOG NUMBER	A	B	CATALOG NUMBER	SHCS		
1	2.5	SP100L2.5	.62	3/8-16	SP100L2.5-CB	3/8-16 x 2.5"		
	3	SP100L3			SP100L3-CB	3/8-16 x 3"		
	3.5	SP100L3.5			SP100L3.5-CB	3/8-16 x 3.5"		
	4	SP100L4			SP100L4-CB	3/8-16 x 4"		
1.25	4.5	SP100L4.5	.62	3/8-16	SP100L4.5-CB	3/8-16 x 4.5"		
	2.5	SP125L2.5			SP125L2.5-CB	3/8-16 x 2.5"		
	3	SP125L3			SP125L3-CB	3/8-16 x 3"		
	3.5	SP125L3.5			SP125L3.5-CB	3/8-16 x 3.5"		
	4	SP125L4			SP125L4-CB	3/8-16 x 4"		
	4.5	SP125L4.5			SP125L4.5-CB	3/8-16 x 4.5"		
1.5	5	SP125L5	.62	3/8-16	SP125L5-CB	3/8-16 x 5"		
	6	SP125L6			SP125L6-CB	3/8-16 x 6"		
	2.5	SP150L2.5			.62	3/8-16	SP150L2.5-CB	3/8-16 x 2.5"
	3	SP150L3					SP150L3-CB	3/8-16 x 3"
	3.5	SP150L3.5					SP150L3.5-CB	3/8-16 x 3.5"
	4	SP150L4					SP150L4-CB	3/8-16 x 4"
	4.5	SP150L4.5					SP150L4.5-CB	3/8-16 x 4.5"
5	SP150L5	SP150L5-CB	3/8-16 x 5"					
6	SP150L6	SP150L6-CB	3/8-16 x 6"					
2	7	SP150L7	.62	3/8-16	SP150L7-CB	3/8-16 x 7"		
	2.5	SP200L2.5			.62	3/8-16	SP200L2.5-CB	3/8-16 x 2.5"
	3	SP200L3					SP200L3-CB	3/8-16 x 3"
	3.5	SP200L3.5					SP200L3.5-CB	3/8-16 x 3.5"
	4	SP200L4					SP200L4-CB	3/8-16 x 4"
	4.5	SP200L4.5					SP200L4.5-CB	3/8-16 x 4.5"
	5	SP200L5					SP200L5-CB	3/8-16 x 5"
	6	SP200L6					SP200L6-CB	3/8-16 x 6"
	7	SP200L7					SP200L7-CB	3/8-16 x 7"
8	SP200L8	SP200L8-CB	3/8-16 x 8"					
2.5	9	SP200L9	.62	3/8-16	SP200L9-CB	3/8-16 x 9"		
	5	SP250L5			.62	3/8-16	SP250L5-CB	3/8-16 x 5"
	6	SP250L6					SP250L6-CB	3/8-16 x 6"
	7	SP250L7					SP250L7-CB	3/8-16 x 7"
8	SP250L8	SP250L8-CB	3/8-16 x 8"					
3	5	SP300L5	1.25	5/8-11	SP300L5-CB	5/8-11 x 5.5"		
	6	SP300L6			SP300L6-CB	5/8-11 x 6.5"		
	7	SP300L7			SP300L7-CB	5/8-11 x 7.5"		
	8	SP300L8			SP300L8-CB	5/8-11 x 8.5"		
	9	SP300L9			SP300L9-CB	5/8-11 x 9.5"		
	10	SP300L10			SP300L10-CB	5/8-11 x 10.5"		
4	5	SP400L5	1.25	5/8-11	SP400L5-CB	5/8-11 x 5.5"		
	6	SP400L6			SP400L6-CB	5/8-11 x 6.5"		
	8	SP400L8			SP400L8-CB	5/8-11 x 8.5"		

Smaller diameter Support Pillars available on page L-21.  
For custom Support Pillars, refer to section X.



# SUPPORT PILLARS

## STAINLESS STEEL

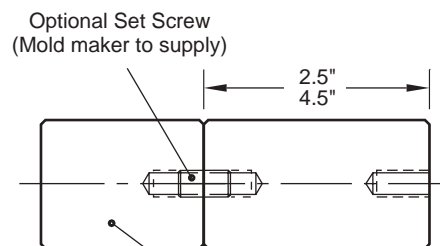


**M** 410 Stainless Steel **H** 30-34 HRC

CAD insertion point

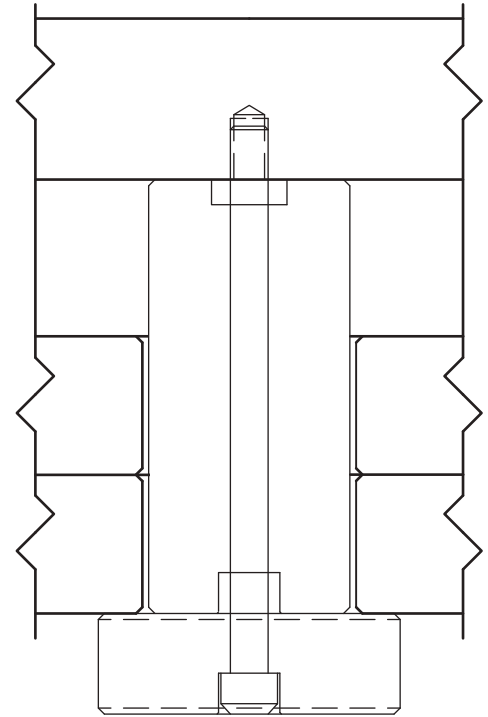
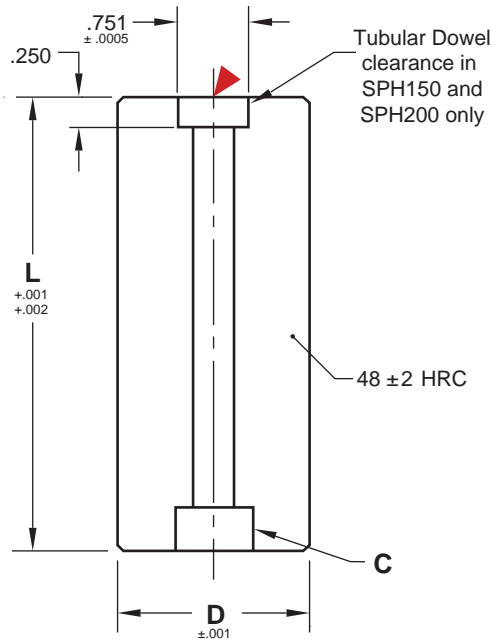
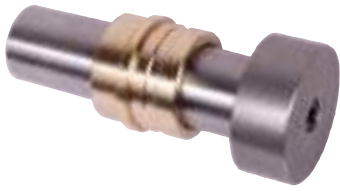
D	CATALOG NUMBER	L	A	B
1	SP100L2.5-SS	2.5	.62	3/8-16
	SP100L3-SS	3		
	SP100L3.5-SS	3.5		
	SP100L4.5-SS	4.5		
1.25	SP125L3-SS	3	.62	3/8-16
	SP125L3.5-SS	3.5		
	SP125L4-SS	4		
	SP125L4.5-SS	4.5		
1.5	SP150L3-SS	3	.62	3/8-16
	SP150L3.5-SS	3.5		
	SP150L4-SS	4		
	SP150L4.5-SS	4.5		
2	SP200L3-SS	3	.62	3/8-16
	SP200L3.5-SS	3.5		
	SP200L4-SS	4		
	SP200L4.5-SS	4.5		
	SP200L5-SS	5		
3	SP300L5-SS	5	1.25	5/8-11
	SP300L6-SS	6		

1" Long Stainless Socket Head Cap Screw included. For custom Support Pillars refer to section X.



All 2.5" and 4.5" long Threaded Support Pillars are tapped for a set screw enabling a second pillar to be attached as an extension.

# SUPPORT COLUMNS FOR DIE CAST DIES



M AISI 4140 H 46-50 HRC

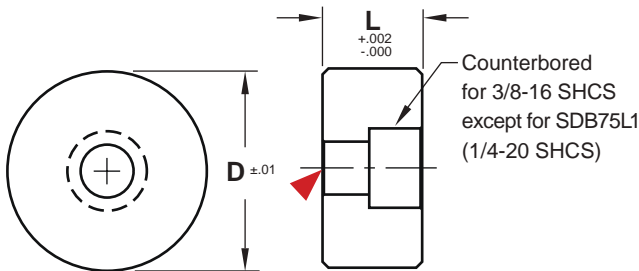
▶ CAD insertion point

Nominal Diameter	D ±.001	CATALOG NUMBER	L +.001 +.002	C
1.5	1.496	SPH150L3	3	3/8-16
		SPH150L3.5	3.5	
		SPH150L4	4	
		SPH150L4.5	4.5	
		SPH150L5	5	
2	1.996	SPH200L3	3	3/8-16
		SPH200L3.5	3.5	
		SPH200L4	4	
		SPH200L4.5	4.5	
		SPH200L5	5	
		SPH200L6	6	

Nominal Diameter	D ±.001	CATALOG NUMBER	L +.001 +.002	C
3	2.996	SPH300L4	4	5/8-11
		SPH300L4.5	4.5	
		SPH300L5	5	
		SPH300L6	6	
		SPH300L7	7	
		SPH300L8	8	
4	3.996	SPH400L5	5	5/8-11
		SPH400L6	6	
		SPH400L7	7	
		SPH400L8	8	

Guided Ejector Bushings sold separately on page B-12.

## SUPPORT COLUMN HEELS



M AISI 1018

▶ CAD insertion point

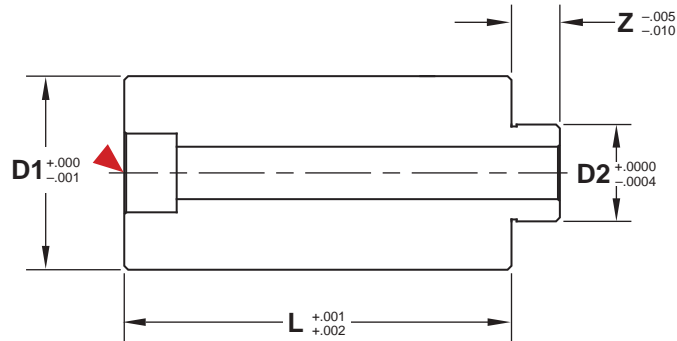
D ±.01	L=.75	L=1.00	L=1.50	L=2.00
.750	—	SDB75L1*	—	—
1.000	SDB100L.75	SDB100L1	SDB100L1.5	—
1.500	SDB150L.75	SDB150L1	SDB150L1.5	—
2.000	—	SDB200L1	SDB200L1.5	—
2.500	—	SDB250L1	SDB250L1.5	SDB250L2
3.000	—	SDB300L1	SDB300L1.5	SDB300L2

Sized for retaining pin plates in die cast dies.

\* L = 1.125 for SDB75L1



# GUIDED SUPPORT PILLARS



**M** AISI 4140    **H** 58-62 HRC    **S** Black Oxide

CAD insertion point

Nominal Diameter	D1 +.000 -.001	D2 +.0000 -.0004	Z -.005 -.010	CATALOG NUMBER	L +.001 +.002	SHCS
<b>0.75</b>	.7495	.4685	.44	GESP75L2.5	2.5	1/4-20 x 2.75"
				GESP75L3	3	1/4-20 x 3.25"
				GESP75L3.5	3.5	1/4-20 x 3.75"
				GESP75L4	4	1/4-20 x 4.25"
<b>1</b>	.9995	.4998	.53	GESP100L2.5	2.5	5/16-18 x 3"
				GESP100L3	3	5/16-18 x 3.5"
				GESP100L3.5	3.5	5/16-18 x 4"
				GESP100L4	4	5/16-18 x 4.5"
				GESP100L4.5	4.5	5/16-18 x 5"
<b>1.25</b>	1.2495	.6873	.53	GESP125L3	3	5/16-18 x 3.5"
				GESP125L3.5	3.5	5/16-18 x 4"
				GESP125L4	4	5/16-18 x 4.5"
				GESP125L4.5	4.5	5/16-18 x 5"
				GESP125L5	5	5/16-18 x 5.5"
<b>1.5</b>	1.4995	.7498	.63	GESP150L3.5	3.5	3/8-16 x 4"
				GESP150L4	4	3/8-16 x 4.5"
				GESP150L4.5	4.5	3/8-16 x 5"
				GESP150L5	5	3/8-16 x 5.5"

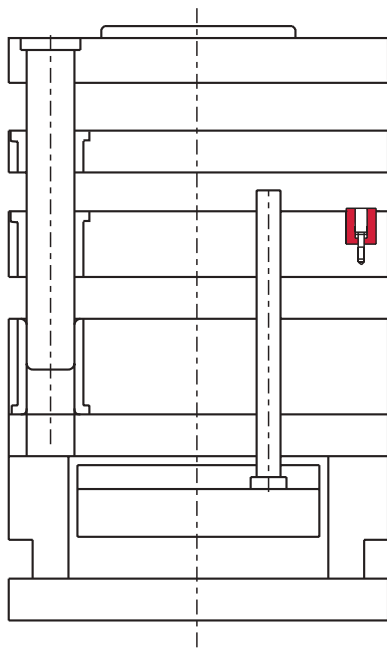
Notes: Includes (1) SHCS as shown in the chart.  
Guided Ejector Bushings are sold separately on page B-12.

# SPRINGS

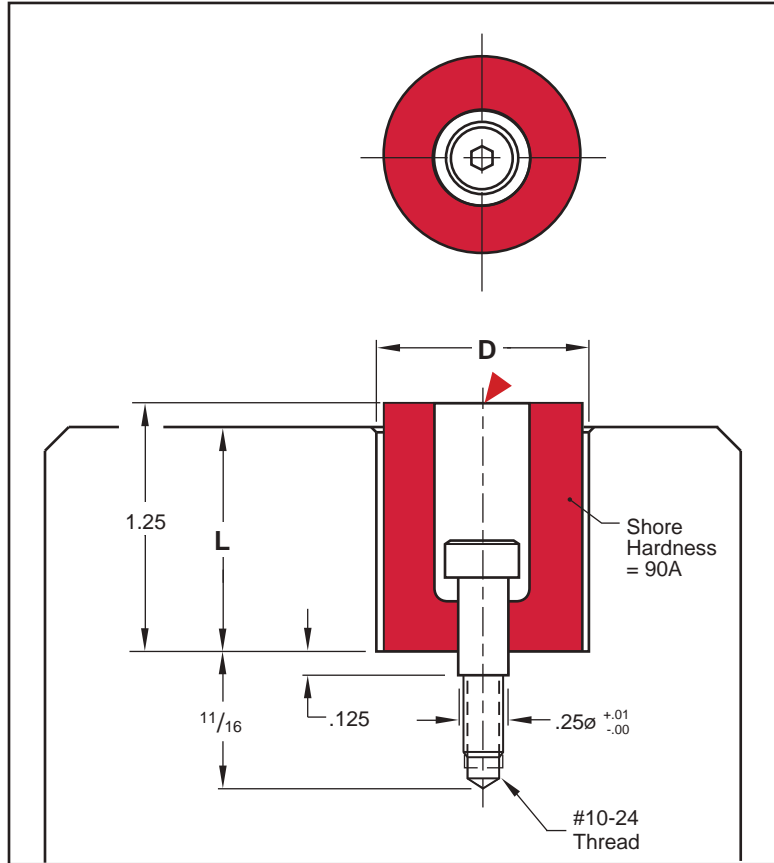
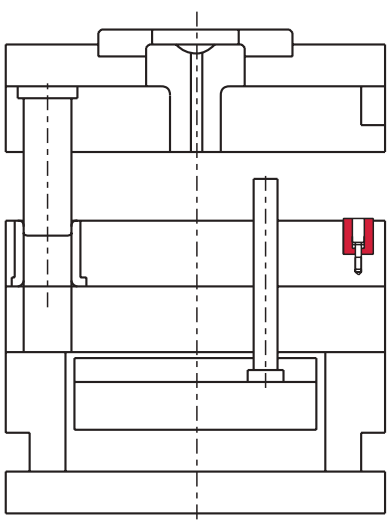
## URETHANE SPRINGS



Separate parting lines in sequence



Cushion parting lines



**Specifications:**

- Maximum Mold Temperature: 150° F (65° C)
- Stripper bolt included.

**M** Solid Urethane

CAD insertion point

Deflection	D	L	Approximate Spring Pressure
1/8"	1.06	1.12	520 lbs.
1/4"	1.12	1.00	790 lbs.

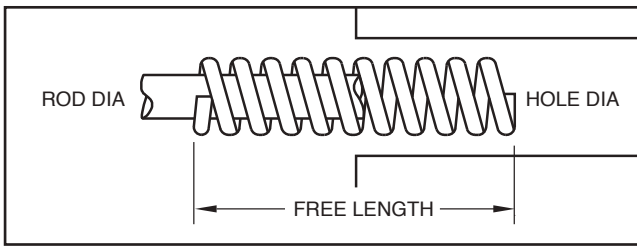
CATALOG NUMBER	DESCRIPTION
<b>US-100</b>	1" Urethane Spring with 1/4 x 1/2" SBLT



# SPRINGS

## INCH, ISO & JIS STANDARDS

**M** Raymond® Chrome-vanadium alloy



### To identify and order replacement springs:

1. Choose the color below.
2. Determine the rod (ID) of the spring.
3. Determine the hole diameter (OD) of the spring.
4. Determine the length.
5. With all information, contact Customer Service for pricing and delivery or refer to the page specified.

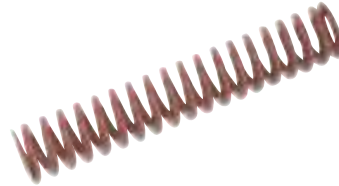
#### Blue

Inch Standard: Medium Duty,  
Full specifications are on page B-18.  
ISO Standard: Medium Duty  
JIS Standard: Light Duty



#### Red

Inch Standard: Medium-Heavy Duty,  
Full specifications are on page B-19.  
ISO Standard: Heavy Duty  
JIS Standard: Medium Duty



#### Green

Inch Standard: Extra Heavy Duty  
ISO Standard: Light Duty  
JIS Standard: Heavy Duty



#### Yellow

ISO Standard: Extra Heavy Duty  
JIS Standard: Extra Light Duty



#### Gold

Inch Standard: Heavy Duty



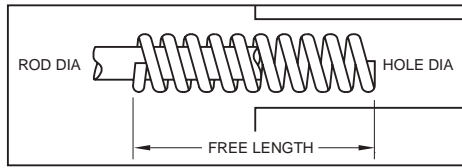
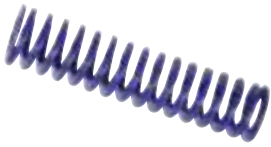
#### Brown

JIS Standard: Extra Heavy Duty



# SPRINGS

## MEDIUM DUTY: INCH STANDARD



Recommended Deflection:  
 25% = Long Life  
 35% = Average Life  
 40% = Maximum Operating Deflection

Hole Diameter	Rod Diameter	Free Length	CATALOG NUMBER	Approx. Load at 1/10" Deflec. (lbs)	Load at 25% Deflec. (lbs)	Load at 40% Deflec. (lbs)		
3/8	3/16	1.00	MS37L1	6.0	15.0	24.0		
		1.25	MS37L1.25	5.4	16.9	27.0		
		1.50	MS37L1.5	4.0	15.0	24.0		
		1.75	MS37L1.75	3.4	14.9	23.8		
		2.00	MS37L2	2.8	14.0	22.4		
		2.50	MS37L2.5	2.4	15.0	24.0		
		3.00	MS37L3	2.1	15.8	25.2		
		12.00	MS37L12	.6	18.0	28.8		
WIRE .039 X .070								
1/2	9/32	1.00	MS50L1	11.0	27.5	44.0		
		1.25	MS50L1.25	8.2	25.6	41.0		
		1.50	MS50L1.5	6.8	25.5	40.8		
		1.75	MS50L1.75	6.0	26.3	42.0		
		2.00	MS50L2	5.5	27.5	44.0		
		2.50	MS50L2.5	4.5	28.1	45.0		
		3.00	MS50L3	3.5	26.3	42.0		
		3.50	MS50L3.5	3.0	26.3	42.0		
		4.50	MS50L4.5	2.5	28.1	45.0		
		5.50	MS50L5.5	2.1	28.9	46.2		
		6.50	MS50L6.5	1.4	22.8	36.4		
		12.00	MS50L12	.7	21.0	33.6		
WIRE .052 X .093								
5/8	11/32	1.00	MS62L1	16.4	41.0	65.6		
		1.25	MS62L1.25	12.8	40.0	64.0		
		1.50	MS62L1.5	10.8	40.5	64.8		
		1.75	MS62L1.75	9.6	42.0	67.2		
		2.00	MS62L2	8.8	44.0	70.4		
		2.50	MS62L2.5	6.0	37.5	60.0		
		3.00	MS62L3	5.6	42.0	67.2		
		3.50	MS62L3.5	4.8	42.0	67.2		
		4.00	MS62L4	4.4	44.0	70.4		
		12.00	MS62L12	1.6	48.0	76.8		
		WIRE .069 X .109						
		3/4	3/8	1.00	MS75L1	31.2	78.0	124.8
1.25	MS75L1.25			25.6	80.0	128.0		
1.50	MS75L1.5			20.0	75.0	120.0		
1.75	MS75L1.75			17.6	77.0	123.2		
2.00	MS75L2			14.4	72.0	115.2		
2.50	MS75L2.5			12.0	75.0	120.0		
3.00	MS75L3			9.6	72.0	115.2		
3.50	MS75L3.5			8.0	70.0	112.0		
4.00	MS75L4			7.2	72.0	115.2		
4.50	MS75L4.5			6.4	72.0	115.2		
5.00	MS75L5			6.0	75.0	120.0		
5.50	MS75L5.5			5.5	75.6	121.0		
6.00	MS75L6			5.0	75.0	120.0		
6.50	MS75L6.5			4.5	73.1	117.0		
12.00	MS75L12			2.4	72.0	115.2		
WIRE .075 X .165								
1	1/2	1.00	MS100L1	55.0	137.5	220.0		
		1.25	MS100L1.25	45.0	140.6	225.0		
		1.50	MS100L1.5	35.0	131.3	210.0		
		1.75	MS100L1.75	30.0	131.3	210.0		
		2.00	MS100L2	26.0	130.0	208.0		
		2.50	MS100L2.5	20.0	125.0	200.0		

Hole Diameter	Rod Diameter	Free Length	CATALOG NUMBER	Approx. Load at 1/10" Deflec. (lbs)	Load at 25% Deflec. (lbs)	Load at 40% Deflec. (lbs)		
1	1/2	3.00	MS100L3	16.5	123.8	198.0		
		3.50	MS100L3.5	15.0	131.3	210.0		
		4.00	MS100L4	12.0	120.0	192.0		
		4.50	MS100L4.5	10.4	117.0	187.2		
		5.00	MS100L5	9.6	120.0	192.0		
		5.50	MS100L5.5	8.8	121.0	193.6		
		6.00	MS100L6	8.0	120.0	192.0		
		7.00	MS100L7	7.2	126.0	201.6		
		8.00	MS100L8	6.0	120.0	192.0		
		12.00	MS100L12	4.0	120.0	192.0		
		WIRE .100 X .215						
		1-1/4	5/8	1.50	MS125L1.5	49.6	186.0	297.6
1.75	MS125L1.75			42.4	185.5	296.8		
2.00	MS125L2			35.2	176.0	281.6		
2.50	MS125L2.5			28.8	180.0	288.0		
3.00	MS125L3			24.0	180.0	288.0		
3.50	MS125L3.5			20.0	175.0	280.0		
4.00	MS125L4			17.6	176.0	281.6		
4.50	MS125L4.5			16.0	180.0	288.0		
5.00	MS125L5			13.6	170.0	272.0		
5.50	MS125L5.5			12.8	176.0	281.6		
6.00	MS125L6			12.0	180.0	288.0		
7.00	MS125L7			10.4	182.0	291.2		
8.00	MS125L8			8.8	176.0	281.6		
10.00	MS125L10			7.2	180.0	288.0		
12.00	MS125L12			6.0	180.0	288.0		
WIRE .115 X .285								
1-1/2	3/4	2.00	MS150L2	53.0	265.0	424.0		
		2.50	MS150L2.5	45.0	281.3	450.0		
		3.00	MS150L3	36.0	270.0	432.0		
		3.50	MS150L3.5	30.0	262.5	420.0		
		4.00	MS150L4	27.0	270.0	432.0		
		4.50	MS150L4.5	23.0	258.8	414.0		
		5.00	MS150L5	21.0	262.5	420.0		
		5.50	MS150L5.5	18.5	254.4	407.0		
		6.00	MS150L6	17.0	255.0	408.0		
		7.00	MS150L7	14.5	253.8	406.0		
		8.00	MS150L8	12.8	256.0	409.6		
		10.00	MS150L10	10.0	250.0	400.0		
12.00	MS150L12	8.0	240.0	384.0				
WIRE .135 X .345								
2	1	2.50	MS200L2.5	100.0	625.0	1000.0		
		3.00	MS200L3	83.0	622.5	996.0		
		3.50	MS200L3.5	64.8	567.0	907.2		
		4.00	MS200L4	60.0	600.0	960.0		
		4.50	MS200L4.5	53.0	596.3	954.0		
		5.00	MS200L5	47.0	587.5	940.0		
		5.50	MS200L5.5	39.2	539.0	862.4		
		6.00	MS200L6	39.0	585.0	936.0		
		7.00	MS200L7	31.2	546.0	873.6		
		8.00	MS200L8	28.5	570.0	912.0		
		10.00	MS200L10	20.8	520.0	832.0		
		12.00	MS200L12	17.5	525.0	840.0		
WIRE .195 X .468								

Note: All pressure ratings are approximate and are subject to +10% over amounts shown for deflection.

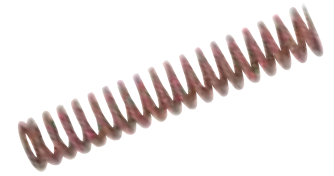
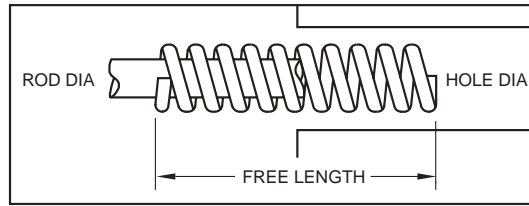




# SPRINGS

## MEDIUM-HEAVY DUTY: INCH STANDARD

Recommended Deflection:  
 20% = Long Life  
 25% = Average Life  
 30% = Maximum Operating Deflection



Hole Diameter	Rod Diameter	Free Length	CATALOG NUMBER	Approx. Load at 1/10' Deflec. (lbs)	Load at 20% Deflec. (lbs)	Load at 30% Deflec. (lbs)
3/8	3/16	1.00	HS37L1	9.0	18.0	27.0
		1.25	HS37L1.25	7.3	18.3	27.4
		1.50	HS37L1.5	6.7	20.1	30.2
		1.75	HS37L1.75	5.8	20.3	30.5
		2.00	HS37L2	5.0	20.0	30.0
		2.50	HS37L2.5	4.2	21.0	31.5
		3.00	HS37L3	3.0	18.0	27.0
		12.00	HS37L12	.9	21.6	32.4
1/2	9/32	1.00	HS50L1	16.8	33.6	50.4
		1.25	HS50L1.25	13.0	32.5	48.8
		1.50	HS50L1.5	9.5	28.5	42.8
		1.75	HS50L1.75	8.5	29.8	44.6
		2.00	HS50L2	7.5	30.0	45.0
		2.50	HS50L2.5	6.0	30.0	45.0
		3.00	HS50L3	5.7	34.2	51.3
		3.50	HS50L3.5	4.0	28.0	42.0
5/8	11/32	1.00	HS62L1	30.0	60.0	90.0
		1.25	HS62L1.25	21.5	53.8	80.6
		1.50	HS62L1.5	19.0	57.0	85.5
		1.75	HS62L1.75	16.8	58.8	88.2
		2.00	HS62L2	14.8	59.2	88.8
		2.50	HS62L2.5	11.5	57.5	86.3
		3.00	HS62L3	10.0	60.0	90.0
		3.50	HS62L3.5	8.5	59.5	89.3
		4.00	HS62L4	7.6	60.8	91.2
		12.00	HS62L12	2.7	64.8	97.2
3/4	3/8	1.00	HS75L1	50.0	100.0	150.0
		1.25	HS75L1.25	38.0	95.0	142.5
		1.50	HS75L1.5	32.0	96.0	144.0
		1.75	HS75L1.75	28.8	100.8	151.2
		2.00	HS75L2	24.8	99.2	148.8
		2.50	HS75L2.5	19.2	96.0	144.0
		3.00	HS75L3	14.4	86.4	129.6
		3.50	HS75L3.5	12.8	89.6	134.4
		4.00	HS75L4	12.0	96.0	144.0
		4.50	HS75L4.5	11.2	100.8	151.2
		5.00	HS75L5	9.0	90.0	135.0
		5.50	HS75L5.5	8.0	88.0	132.0
		6.00	HS75L6	7.5	90.0	135.0
		12.00	HS75L12	3.6	86.4	129.6
1	1/2	1.00	HS100L1	76.0	152.0	228.0
		1.25	HS100L1.25	62.4	156.0	234.0
		1.50	HS100L1.5	49.6	148.8	223.2
		1.75	HS100L1.75	44.0	154.0	231.0
		2.00	HS100L2	40.0	160.0	240.0
		2.50	HS100L2.5	31.0	155.0	232.5

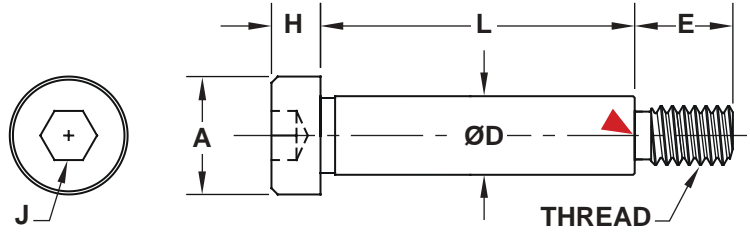
Hole Diameter	Rod Diameter	Free Length	CATALOG NUMBER	Approx. Load at 1/10' Deflec. (lbs)	Load at 20% Deflec. (lbs)	Load at 30% Deflec. (lbs)		
1	1/2	3.00	HS100L3	25.0	150.0	225.0		
		3.50	HS100L3.5	21.6	151.2	226.8		
		4.00	HS100L4	18.4	147.2	220.8		
		4.50	HS100L4.5	17.0	153.0	229.5		
		5.00	HS100L5	14.4	144.0	216.0		
		5.50	HS100L5.5	12.8	140.8	211.2		
		6.00	HS100L6	12.0	144.0	216.0		
		7.00	HS100L7	10.0	140.0	210.0		
		8.00	HS100L8	8.8	140.8	211.2		
		12.00	HS100L12	6.2	148.8	223.2		
		1-1/4	5/8	1.50	HS125L1.5	114.4	343.2	514.8
				1.75	HS125L1.75	100.8	352.8	529.2
2.00	HS125L2			86.4	345.6	518.4		
2.50	HS125L2.5			62.4	312.0	468.0		
3.00	HS125L3			51.2	307.2	460.8		
3.50	HS125L3.5			44.0	308.0	462.0		
4.00	HS125L4			36.8	294.4	441.6		
4.50	HS125L4.5			32.0	288.0	432.0		
5.00	HS125L5			29.0	290.0	435.0		
5.50	HS125L5.5			26.4	290.4	435.6		
6.00	HS125L6			25.0	300.0	450.0		
7.00	HS125L7			20.0	280.0	420.0		
1-1/2	3/4	2.00	HS150L2	108.0	432.0	648.0		
		2.50	HS150L2.5	85.6	428.0	642.0		
		3.00	HS150L3	62.4	374.4	561.6		
		3.50	HS150L3.5	52.8	369.6	554.4		
		4.00	HS150L4	48.0	384.0	576.0		
		4.50	HS150L4.5	43.2	388.8	583.2		
		5.00	HS150L5	36.8	368.0	552.0		
		5.50	HS150L5.5	34.4	378.4	567.6		
		6.00	HS150L6	30.4	364.8	547.2		
		7.00	HS150L7	26.4	369.6	554.2		
		8.00	HS150L8	22.0	352.0	528.0		
		10.00	HS150L10	17.6	352.0	528.0		
2	1	2.50	HS200L2.5	118.4	592.0	888.0		
		3.00	HS200L3	96.0	576.0	864.0		
		3.50	HS200L3.5	80.0	560.0	840.0		
		4.00	HS200L4	66.4	531.2	796.8		
		4.50	HS200L4.5	60.0	540.0	810.0		
		5.00	HS200L5	56.0	560.0	840.0		
		5.50	HS200L5.5	50.4	554.4	831.6		
		6.00	HS200L6	47.2	566.4	849.6		
		7.00	HS200L7	40.0	560.0	840.0		
		8.00	HS200L8	35.2	563.2	844.8		
		10.00	HS200L10	26.0	520.0	780.0		
		12.00	HS200L12	22.4	537.6	806.4		

Note: All pressure ratings are approximate and are subject to +10% over amounts shown for deflection.

# STRIPPER BOLTS



- Precise diameters exceeding industry standards.
- Tighter length tolerance for uniform plate-stop positioning.



M SCM440 H 42-48HRC

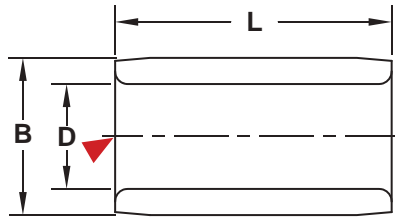
▶ CAD insertion point

ØD +0.000 -0.001	L ± .001	CATALOG NUMBER	J NOM	A	H	E	THREAD 3A
.249	1	SBLT25L1	1/8	.37	.18	.37	#10-24
	1.25	SBLT25L1.25					
	1.5	SBLT25L1.5					
.311	1	SBLT31L1	5/32	.43	.21	.43	1/4-20
	1.25	SBLT31L1.25					
	1.5	SBLT31L1.5					
	1.75	SBLT31L1.75					
	2	SBLT31L2					
.374	1	SBLT37L1	3/16	.56	.25	.50	5/16-18
	1.25	SBLT37L1.25					
	1.5	SBLT37L1.5					
	1.75	SBLT37L1.75					
	2	SBLT37L2					
	2.25	SBLT37L2.25					
	2.5	SBLT37L2.5					
	2.75	SBLT37L2.75					
	3	SBLT37L3					
	3.25	SBLT37L3.25					
	3.5	SBLT37L3.5					
	3.75	SBLT37L3.75					
	4	SBLT37L4					
	4.25	SBLT37L4.25					
4.5	SBLT37L4.5						
.499	1	SBLT50L1	1/4	.75	.31	.62	3/8-16
	1.25	SBLT50L1.25					
	1.5	SBLT50L1.5					
	1.75	SBLT50L1.75					
	2	SBLT50L2					
	2.25	SBLT50L2.25					
	2.5	SBLT50L2.5					
	2.75	SBLT50L2.75					
	3	SBLT50L3					
	3.25	SBLT50L3.25					
	3.5	SBLT50L3.5					
	3.75	SBLT50L3.75					
	4	SBLT50L4					
	4.25	SBLT50L4.25					
	4.5	SBLT50L4.5					
	4.75	SBLT50L4.75					
	5	SBLT50L5					
5.5	SBLT50L5.5						
6	SBLT50L6						
7	SBLT50L7						

ØD +0.000 -0.001	L ± .001	CATALOG NUMBER	J NOM	A	H	E	THREAD 3A
.624	1.25	SBLT62L1.25	5/16	.87	.37	.75	1/2-13
	1.5	SBLT62L1.5					
	1.75	SBLT62L1.75					
	2	SBLT62L2					
	2.25	SBLT62L2.25					
	2.5	SBLT62L2.5					
	2.75	SBLT62L2.75					
	3	SBLT62L3					
	3.25	SBLT62L3.25					
	3.5	SBLT62L3.5					
	3.75	SBLT62L3.75					
	4	SBLT62L4					
	4.25	SBLT62L4.25					
	4.5	SBLT62L4.5					
.749	4.75	SBLT62L4.75	3/8	1.00	.50	.87	5/8-11
	5	SBLT62L5					
	5.5	SBLT62L5.5					
	6	SBLT62L6					
	7	SBLT62L7					
	1.5	SBLT75L1.5					
	1.75	SBLT75L1.75					
	2	SBLT75L2					
	2.25	SBLT75L2.25					
	2.5	SBLT75L2.5					
	2.75	SBLT75L2.75					
	3	SBLT75L3					
	3.25	SBLT75L3.25					
	3.5	SBLT75L3.5					
	3.75	SBLT75L3.75					
	4	SBLT75L4					
	4.25	SBLT75L4.25					
4.5	SBLT75L4.5						
4.75	SBLT75L4.75						
5	SBLT75L5						
5.5	SBLT75L5.5						
6	SBLT75L6						
7	SBLT75L7						
8	SBLT75L8						



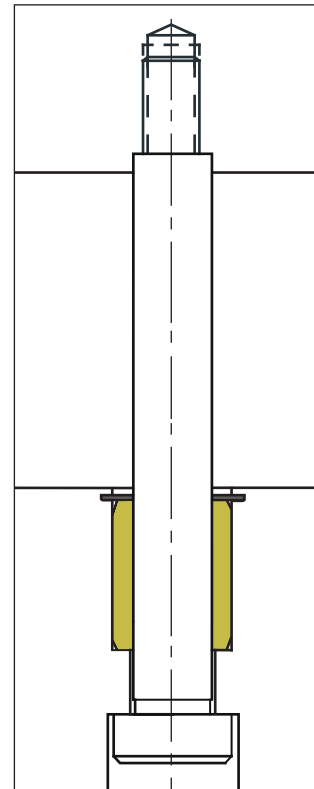
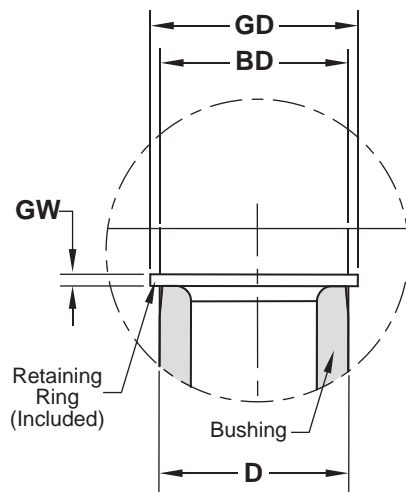
# STRIPPER BOLT BUSHINGS



M SAE841 Bronze

CATALOG NUMBER	D +.001 -.000	B +.000 -.001	L ±.005	GD +.005 -.000	GW +.003 -.000	BD +.004 -.000
SBB25L.50	.251	.439	.500	.462	.029	.440
SBB37L.75	.376	.627	.750	.665	.039	.628
SBB50L1.00	.500	.752	1.000	.796	.039	.754
SBB63L1.50	.625	.877	1.500	1.000	.046	.940
SBB75L1.50	.750	1.002	1.500	1.092	.046	1.028

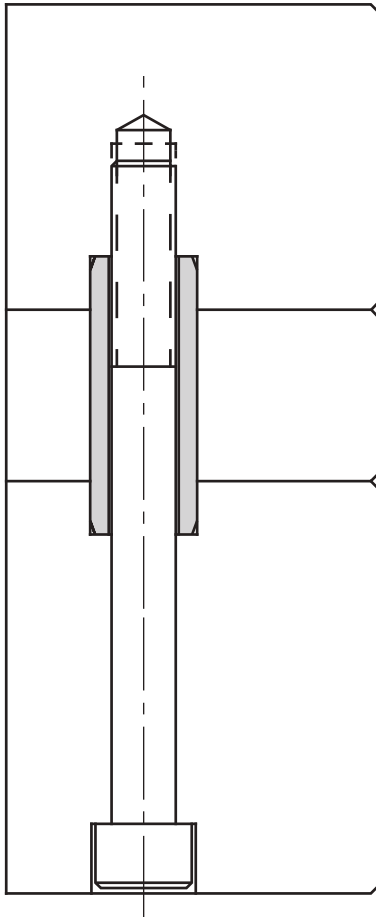
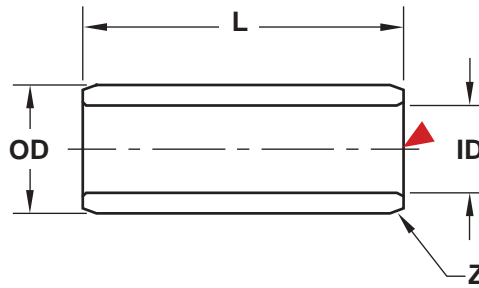
Note: Replacement Retaining Rings are available with pricing listed in the price list.



# TUBULAR DOWELS



Progressive Tubular Dowels provide alignment between mold plates with screw and dowel in one location.



**M** Carbon Steel    **H** 55 HRC

CAD insertion point

CATALOG NUMBER	OD ±.0001	ID +.01 -.00	L +.00 -.02	Z Chamfer
<b>TD37L.37</b>	.3752	.260	.375	.04 x 20°
<b>TD37L.87</b>			.875	.04 x 20°
<b>TD62L.50</b>	.6252	.385	.500	.04 x 20°
<b>TD62L1.37</b>			1.375	.08 x 20°
<b>TD62L1.87</b>			1.875	.08 x 20°
<b>TD62L2.37</b>			2.375	.08 x 20°
<b>TD75L.37</b>	.7502	.510	.375	.04 x 20°
<b>TD75L.50</b>			.500	.04 x 20°
<b>TD75L1.37</b>			1.375	.08 x 20°
<b>TD75L1.87</b>			1.875	.08 x 20°
<b>TD75L2.37</b>			2.375	.08 x 20°
<b>TD75L2.87</b>			2.875	.08 x 20°
<b>TD75L3.37</b>			3.375	.08 x 20°
<b>TD75L3.87</b>			3.875	.08 x 20°
<b>TD87L.50</b>	.8752	.635	.500	.04 x 20°
<b>TD87L2.37</b>			2.375	.08 x 20°
<b>TD87L2.87</b>			2.875	.08 x 20°



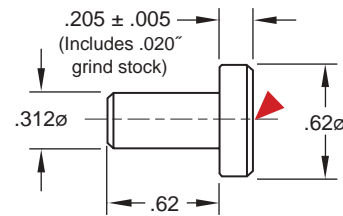
# STOP PINS

## Dowel Type

**M** Pre-Hard Steel **S** Black Oxide

CATALOG NUMBER	DESCRIPTION
STP-1	Stop Pins

▶ CAD insertion point

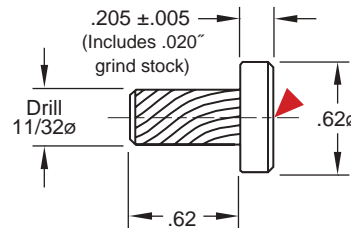


## Self-Tapping

**M** AISI 4037 **H** 40-44 HRC **S** Black Oxide

CATALOG NUMBER	DESCRIPTION
STP-2	Self-Tapping Stop Pins

▶ CAD insertion point



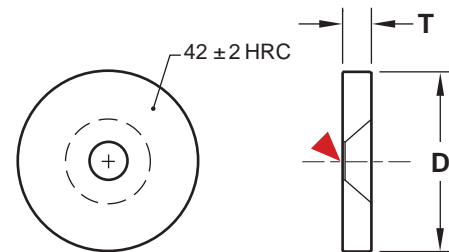
# STOP DISCS

**M** 4140 **H** 40-44 HRC **S** Black Oxide

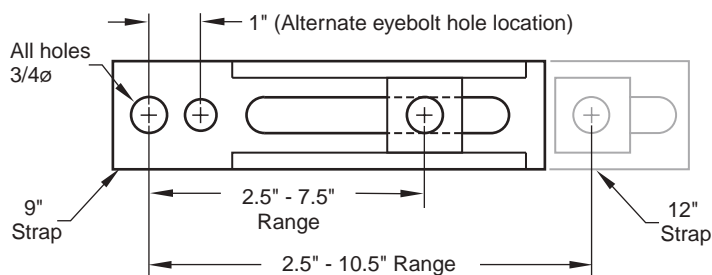
CATALOG NUMBER	D +.000 -.015	T +.003 +.005	Flat Head Counterbore
SD68	.687	.188	#10-24
SD100	1.000	.188	1/4-20
SD118	1.187	.188	1/4-20
SD168	1.687	.251	5/16-18

1/2" long FHCS included.

▶ CAD insertion point



# MOLD STRAPS



For use with shoulder-type eyebolts only (1/2" - 3/4").  
Patented design by G.A.I.M. Engineering.

**M** 100% recycled reinforced Nylon

CATALOG NUMBER	DESCRIPTION
MSTRP-9	Plastic Mold Strap, 9" long
MSTRP-12	Plastic Mold Strap, 12" long



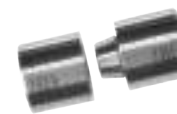


# ALIGNMENT LOCKS

## SECTION C



Side Locks	Top Locks	Guide Locks	X-Style Side Locks
Prefix: SL, SLM	Prefix: TL, TLM	Prefix: GL, GLM	Prefix: SLX
Pages: C-3	Page: C-4	Page: C-5	Page: C-6



Shuttle Mold Sets	Inserted Bar Locks	Bar Locks	Taper Locks and Plates
Suffix: -SF, -SM	Prefix: BLN, BLG	Prefix: BLB, BLG	Prefix: MTL, FTL, TLP
Page: C-6	Page: C-7	Pages: C-8	Page: C-11



Top Lock - 20MM Square	Needle Bearing Locks	Side Locks: Steel	Side Locks: Graphite
Prefix: TLM	Prefix: SLR, SLRM, TLR	Prefix: SLS, SLMS	Prefix: SLPM
Page: C-11	Page: C-12	Page: C-14	Page: C-15







# ALIGNMENT LOCKS PERFORMANCE TESTING

Progressive Components regularly tests products through independent testing facilities nationwide.

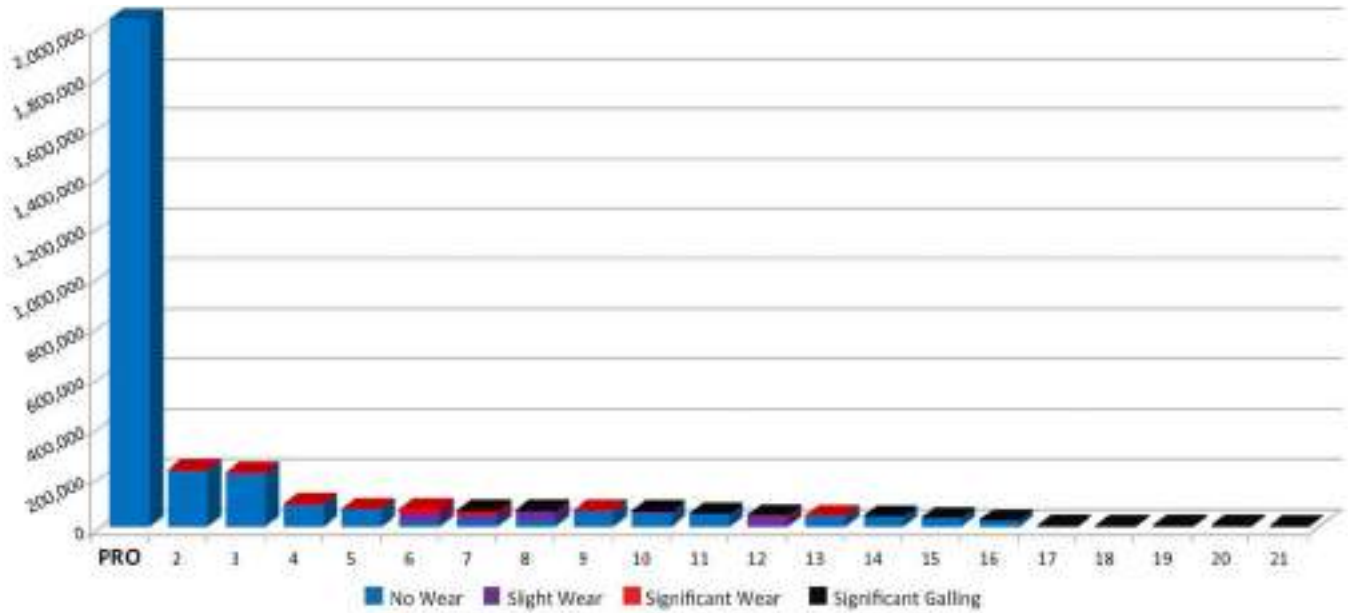
Before launching of the Z-Series™ Alignment Locks, Progressive contracted Element Materials Technology to provide a thorough mold lock Performance Evaluation:

“Element Materials Technology has conducted independent life cycle testing of mold interlocks since 1999. The processes with fixtures and cycling were established to simulate use in the molding environment, but more severe loads were used to accelerate the failures at 4400 lbs of pressure. The locks tested have been from Progressive as well as other standard lock distributors in the US and Asia, plus several additional material and treatment combinations were tested for comparison.”

It was determined that the Progressive Components' Z-Series Alignment Locks exceeded the 2-million cycle mark, and still displayed no measurable signs of wear of any type.

“During the past year, over 21 different tests were performed with the purpose of cycling until failure occurred. At no time during our tests over the years have we seen cycle performance at the level of this new design, represented as PRO in the chart below.”

With the industry's widest selection of sizes in stock and competitively priced, specifying alignment locks from Progressive Components means your molds will have unmatched protection from damage and downtime.



## ONLINE DATA



Learn more at [www.procomps.com/z-series](http://www.procomps.com/z-series)

CATALOG TYPE	T	W	A	B	C	D	S1	S2	R	Z	SHCS
FL500X300	500	1000	300	110	30	75	25	48	10	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL625X325	625	1250	325	100	41	48	33	37	250	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL750X350	750	1500	350	98	48	58	37	250	250	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL875X380	875	1750	380	97	50	47	1000	250	250	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1000X390	1000	2000	390	97	50	50	500	1000	250	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1000X500	1000	2000	500	79	79	79	500	1000	375	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1125X200	1125	2250	200	40	50	75	163	175	375	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1125X300	1125	2250	300	41	100	100	100	100	500	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1125X400	1125	2250	400	42	100	250	100	375	375	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"
FL1250X300	1250	2500	300	42	110	100	100	500	375	M 1/4-20 x 1/2"	F 1/4-20 x 1/2"

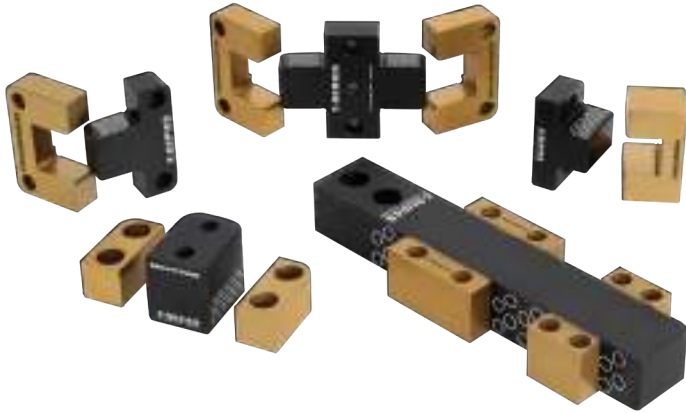
All catalog pages are online for forwarding to suppliers, customers, etc.



View the entire independent testing report online.

# ALIGNMENT LOCKS

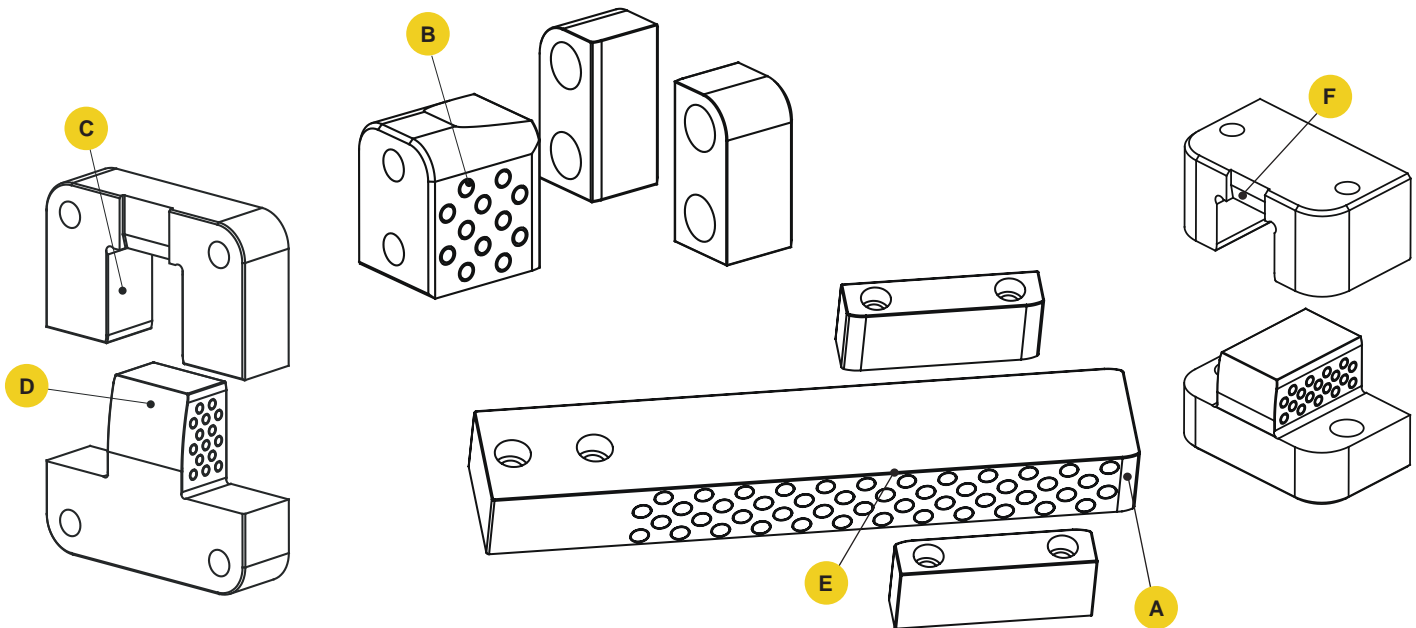
## Z-SERIES™



Progressive's Alignment Locks have been advanced to outperform other styles. This is achieved through a combination of engagement geometry, particulate capturing rings, materials and treatments, and lubrication.

Benefits of the Z-Series Alignment Locks include:

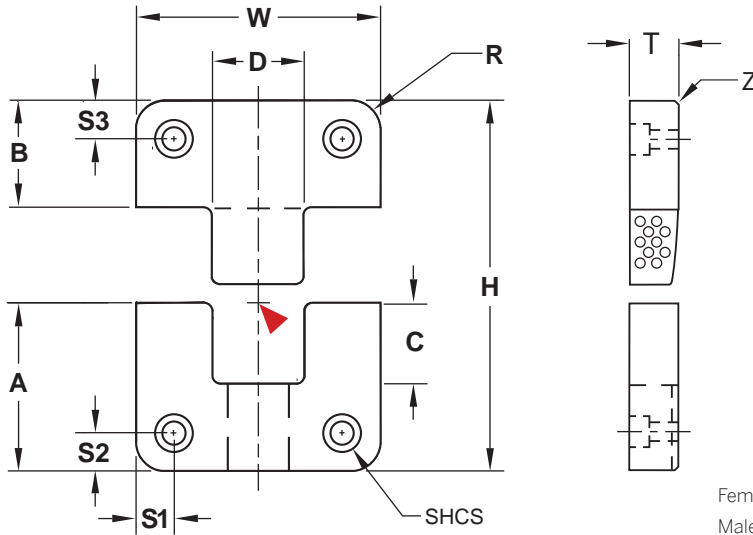
- Longevity that far surpasses others, confirmed by extensive independent lab testing as well as monitoring performance in harsh, 'real world' conditions.
- Exclusive features maintain clean and consistent lubrication.
- Bar Lock, Guide Lock, Side Lock, X-Style Side Lock and Top Lock styles available.



- A Engagement Ramp:** A fine finish radial lead-in for smooth lifting upon engagement of the mold halves.
- B Particle Rings:** Particle rings on the width of the male locks trap material and debris to avoid "picking up" or galling of the alignment surface.
- C Longer Engagement:** Using the maximum allowable engagement area on all locks surpasses previously-established industry standards.
- D Arced Relief:** Reduces the possibility of parts sticking to the lock at the bottom of the mold.
- E Rounded Edges:** A larger radius for all protruding surfaces to eliminate operator "reach in" injury.
- F Pry Slot Lead-In:** Expanded the entry of pry slots to ease removal.
- G Premium Materials:** Males: H-13, 42-48 HRC, Surface: 70 HRC; Females: D-2, 58-62 HRC, Surface: 80 HRC.



# SIDE LOCKS Z-SERIES



Female: **M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated  
 Male: **M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

▶ CAD insertion point

## Inch Standard

CATALOG NUMBER	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D .0001/.0003 Clearance Per Side	H +.000 -.004	R Pocket Radius	S1/S2/S3 ±.01	Z Chamfer	SHCS
SL37X100	.375	1.000	1.125	.875	.62	.500	2.000	.187	.250	.015	#10-32 x 1/2"
SL50X125	.490	1.250	1.125	.875	.68	.500	2.000	.187	.250	.03	#8-32 x 5/8"
SL50X150	.500	1.500	.875	.875	.56	.563	1.750	.187	.250	.03	#8-32 x 5/8"
SL50X200	.500	2.000	1.375	.875	.86	.750	2.250	.187	.312	.03	#10-32 x 5/8"
SL75X300	.750	3.000	1.875	.875	1.18	1.250	2.750	.250	.375	.03	1/4-20 x 3/4"
SL100X400	1.000	4.000	2.375	1.375	1.43	1.500	3.750	.500	.500	.03	3/8-16 x 1"
SL125X500	1.250	5.000	2.875	1.375	1.75	2.000	4.250	.500	.625	.03	1/2-13 x 1-1/4"
SL150X600	1.500	6.000	2.875	1.375	1.87	2.500	4.250	.500	.625	.03	1/2-13 x 1-1/2"

Screws included.

## Inch Standard-Compatible

CATALOG NUMBER	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D .0001/.0003 Clearance Per Side	H +.000 -.004	R Pocket Radius	S1 ±.01	S2 ±.01	S3 ±.01	Z Chamfer	SHCS
SLC62X150	.620	1.500	.870	.870	.41	.500	1.74	.187	.281	.281	.437	.03	1/4-20 x 3/4"
SLC62X200	.620	2.000	.870	.870	.41	.680	1.74	.187	.375	.375	.437	.03	1/4-20 x 3/4"
SLC75X300	.745	3.000	1.370	1.360	.68	1.000	2.73	.187	.375	.688	.688	.03	3/8-16 x 1"

Screws included.

## Metric Standard

CATALOG NUMBER	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D .002/.008 Clearance Per Side	H + 0.0 - 0.1	R Pocket Radius	S1 ±.25	S2/S3 ±.25	Z Chamfer	SHCS
SLM16X50	16	50	21.5	21.5	13	17	43	5	8	11	.8	M6-1.0 x 18
SLM19X75	19	75	36	36	22.5	25	72	5	12.5	18	.8	M10-1.5 x 20
SLM19X100	19	100	45	45	30	35	90	5	15	22	.8	M10-1.5 x 20
SLM25X125	25	125	45	45	28.7	35	90	5	20.5	22	.8	M10-1.5 x 25

Screws included.

For custom Locks, refer to the templates in section X.

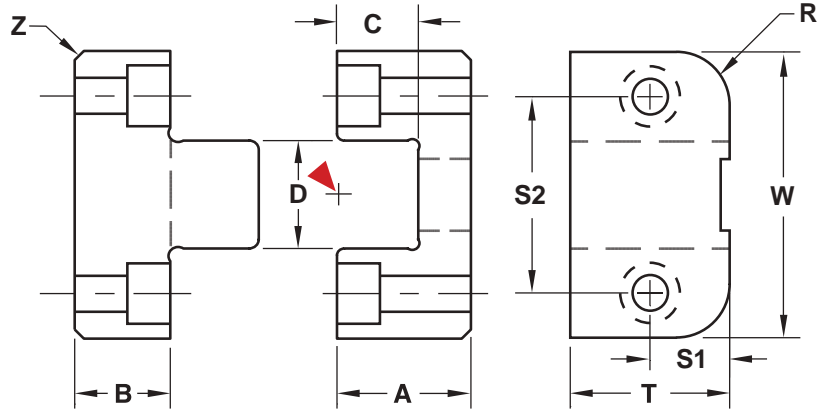
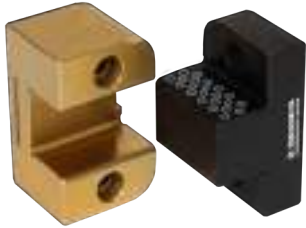
Note: 500°F max operating temperature.

### Lubrication:

- Non-drying, non-hardening food grade grease is applied to all areas, including the particle rings.
- For production, install the locks and wipe down the outside of the Side Locks only; maintain the grease on the mating surfaces and within the rings.

# TOP LOCKS

## Z-SERIES



▶ CAD insertion point

Female: **M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated  
 Male: **M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

**Inch Standard**

CATALOG NUMBER	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D .0001/.0003 Clearance Per Side	S1 ±.01	S2 ±.01	R Pocket Radius	Z Chamfer	SHCS	
TL50X100	.500	1.000	.500	.375	.30	.375	.25	.688	.188	.03	M: #6-32 x 1/2"	F: #6-32 x 5/8"
TL62X125	.625	1.250	.625	.500	.41	.438	.312	.875	.250	.03	M: #6-32 x 5/8"	F: #6-32 x 3/4"
TL75X125	.750	1.250	.625	.500	.38	.438	.375	.875	.250	.04	M: #8-32 x 5/8"	F: #8-32 x 3/4"
TL87X150	.875	1.500	.875	.750	.57	.500	.437	1.000	.250	.04	M: #8-32 x 7/8"	F: #8-32 x 1"
TL100X150	1.000	1.500	.875	.375	.57	.500	.500	1.000	.250	.04	M: #10-32 x 1/2"	F: #10-32 x 1"
TL100X200	1.000	2.000	1.125	.750	.75	.750	.500	1.375	.375	.04	M: #10-32 x 7/8"	F: #10-32 x 1-1/8"
TL112X200	1.125	2.000	.875	.625	.50	.750	.563	1.375	.375	.04	M: 1/4-20 x 3/4"	F: 1/4-20 x 1"
TL112X300	1.125	3.000	1.500	.750	.87	1.125	.563	2.250	.500	.04	M: 1/4-20 x 7/8"	F: 1/4-20 x 1-5/8"
TL150X250	1.500	2.500	1.375	.625	.85	1.000	.750	1.750	.375	.04	M: 1/4-20 x 3/4"	F: 1/4-20 x 1-1/2"
TL175X300	1.750	3.000	1.250	.875	.75	1.125	.875	2.250	.500	.06	M: 5/16-18 x 1"	F: 5/16-18 x 1-1/4"
TL200X350	2.000	3.500	1.750	.750	1.07	1.500	1.000	2.500	.500	.06	M: 3/8-16 x 7/8"	F: 3/8-16 x 2"

Screws included.

**Metric Standard**

CATALOG NUMBER	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D .002/.008 Clearance Per Side	S1 ±.25	S2 ±.25	R Pocket Radius	Z Chamfer	SHCS	
TLM26X35	26	35	25	15	17	11	13	23	8	1	M: M5 x 16	F: M5 x 25
TLM30X45	30	45	25	15	17	15	15	30	8	1	M: M6 x 18	F: M6 x 25
TLM36X55	36	55	30	20	21.5	20	18	37.5	8	1	M: M8 x 22	F: M8 x 35
TLM36X75	36	75	35	20	26	30	18	52	8	1.5	M: M10 x 25	F: M10 x 35
TLM45X100	45	100	60	20	42	40	22.5	70	8	1.5	M: M10 x 25	F: M10 x 65

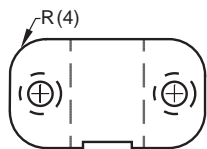
Screws included.

⊠ x For custom Locks, refer to the templates in section X.

Note: 500°F max operating temperature.  
 Note: For 20mm square size, refer to page C-11.

### Additional Option:

Top Locks are also available with dual radii for mounting internally. To order, specify the catalog number followed by "-R".  
 Ex. TL112X200-R.



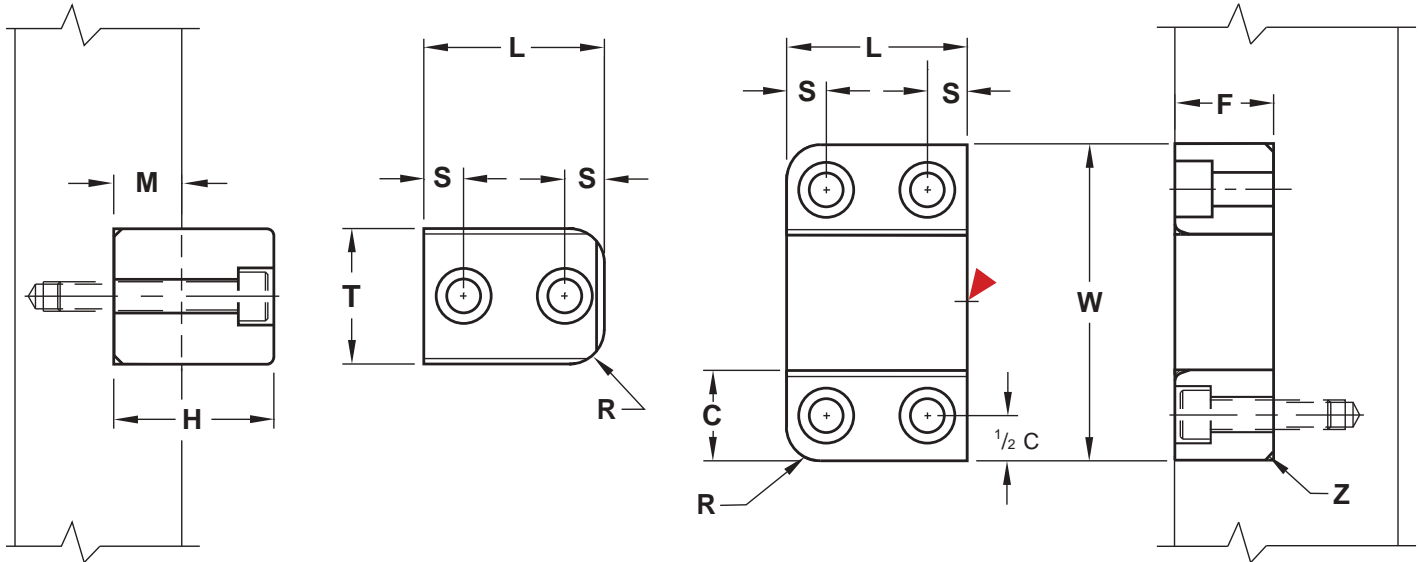
### Lubrication:

- Non-drying, non-hardening food grade grease is applied to all areas, including the particle rings.
- For production, install the locks and wipe down the outside of the Top Locks only; maintain the grease on the mating surfaces and within the rings.



# GUIDE LOCKS

## Z-SERIES



Females (2): **M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated  
 Male: **M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

### Inch Standard

CAD insertion point

CATALOG NUMBER	L +.000 -.010	W +.0003 +.0006	C +.0000 -.0003	F +.000 -.005	T +.0000 -.0003	M	H +.00 -.01	S ±.01	R Pocket Radius	Z Chamfer	SHCS	
GL100X150	1.000	1.500	.500	.500	.500	.375	.85	.25	.187	.03	M: #10-32 x 1"	F: #10-32 x 5/8"
GL150X250	1.500	2.500	.750	.750	1.000	.625	1.35	.31	.250	.06	M: 1/4-20 x 1-1/2"	F: 1/4-20 x 7/8"
GL200X350	2.000	3.500	1.000	1.000	1.500	.750	1.73	.44	.375	.06	M: 3/8-16 x 2"	F: 3/8-16 x 1-1/4"
GL250X450	2.500	4.500	1.250	1.250	2.000	.875	2.11	.56	.500	.09	M: 1/2-13 x 2-1/4"	F: 1/2-13 x 1-1/2"

Screws included.

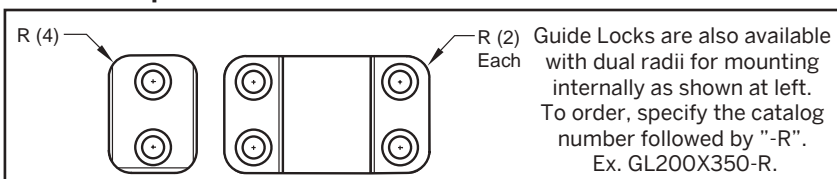
### Metric Standard

CATALOG NUMBER	L +.00 -.25	W +.008 +.015	C +.00 -.01	F +.00 -.12	T +.00 -.01	M	H +.0 -.2	S ±.2	R Pocket Radius	Z Chamfer	SHCS	
GLM25X45	25	45	15	15	15	10	24	7	4	1	M: M4 x 25	F: M4 x 14
GLM40X65	40	65	20	20	25	15	34	10	9	1.5	M: M5 x 35	F: M5 x 22
GLM50X90	50	90	25	25	40	20	44	10	9	1.5	M: M6 x 45	F: M6 x 30

Note: 500°F max operating temperature.

x For custom Locks, refer to the templates in section X.

### Additional Option:

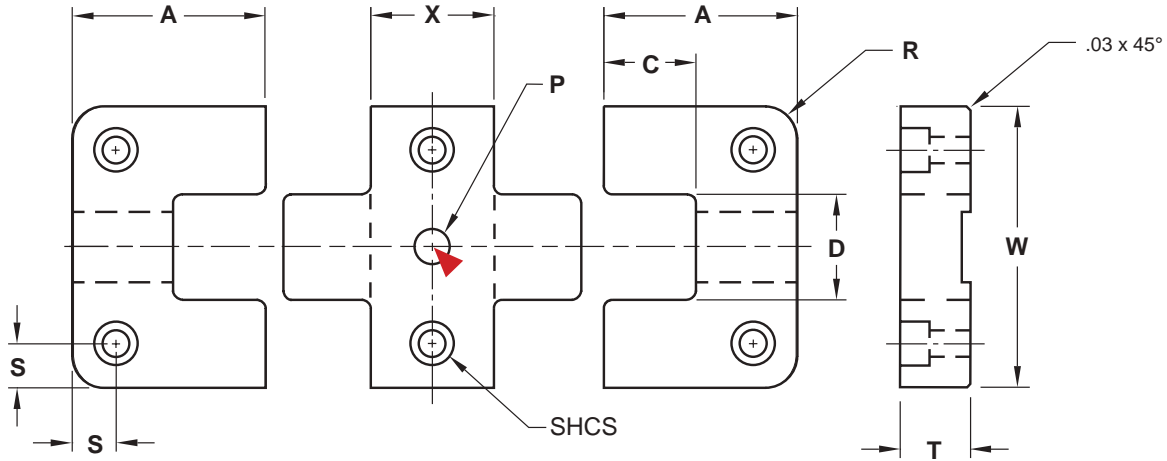


### Lubrication:

- Non-drying, non-hardening food grade grease is applied to all areas, including the particle rings.
- For production, install the locks and wipe down the outside of the Guide Locks only; maintain the grease on the mating surfaces and within the rings.

# X-STYLE SIDE LOCKS


## Z-SERIES



Females (2): **M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated  
 Male: **M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

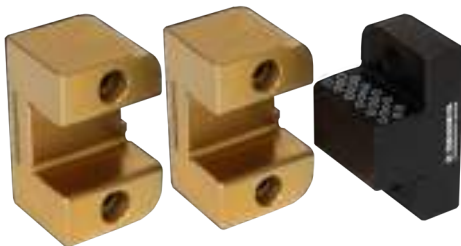
▶ CAD insertion point

CATALOG NUMBER	T +.000 -.002	W +.0000 -.0004	X +.000 -.002	A +.000 -.002	C ±.01	D .0001/.0003 Clearance Per Side	R Pocket Radius	S ±.01	P +.001 -.000	SHCS
SLX50X87	.500	2.000	.875	1.375	.87	.750	.187	.312	.250	#10-32 x 5/8"
SLX75X137	.750	3.000	1.375	1.875	1.18	1.250	.250	.375	.313	1/4-20 x 3/4"
SLX75X187	.750	3.000	1.875	1.875	1.18	1.250	.250	.375	.313	1/4-20 x 3/4"
SLX100X137	1.000	4.000	1.375	2.375	1.43	1.500	.500	.500	.375	3/8-16 x 1"

 For custom Locks, refer to the templates in section X.

Screws included.  
 Note: 500°F max operating temperature.

# SHUTTLE MOLD SETS



Examples of Shuttle Mold configurations:

### 2 Female Inserts : 1 Male Insert

To order, specify "-SF" after the catalog number of the lock.  
 Example: SL50X200-SF GL100X150-SF TL75X125-SF

### 2 Male Inserts : 1 Female Insert

To order, specify "-SM" after the catalog number of the lock.  
 Example: SL75X300-SM GL250X450-SM TL112X200-SM

Contact Customer Service for Pricing at [CustomerService@procomps.com](mailto:CustomerService@procomps.com)

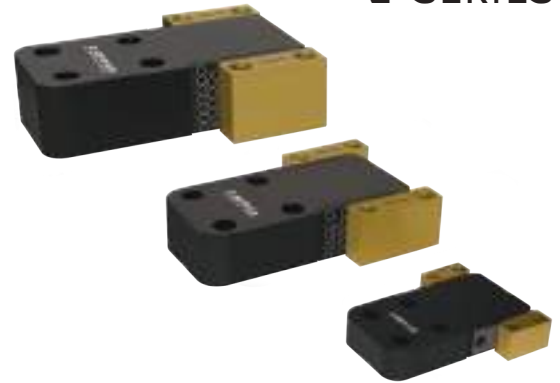


# INSERTED BAR LOCKS

## Z-SERIES

Progressive's Inserted Bar Locks are engineered for long term alignment of very large molds:

- Longevity that far surpasses others, confirmed by extensive independent lab testing as well as monitored performance in harsh, 'real world' conditions.
- Designed to align large injection molds up to 75,000 pounds (B-Side and platen).
- Inserts are also sold individually to retrofit onto existing molds. Refer to the price list for catalog numbers.



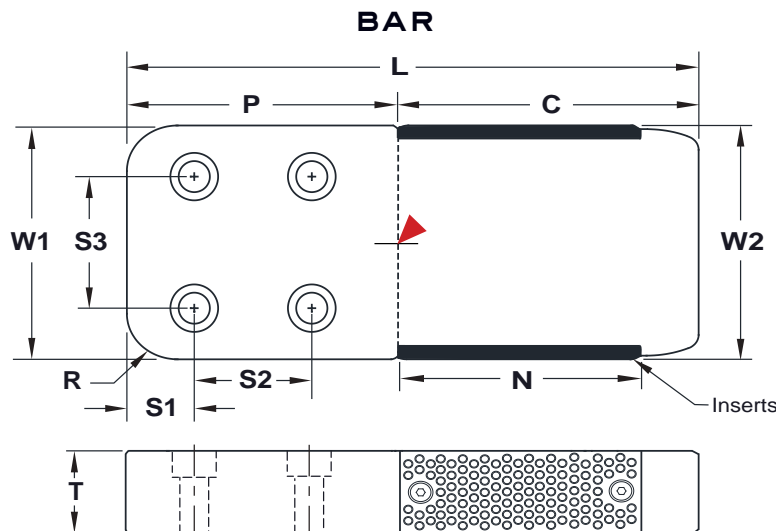
### BAR LOCK ASSEMBLIES

Bar: **M** 4140 **H** Core: 36-40 HRC **S** Black Oxide Inserts: **M** H-13 **H** Core: 42-48 HRC, Surface 70 HRC **S** Salt Bath Nitride

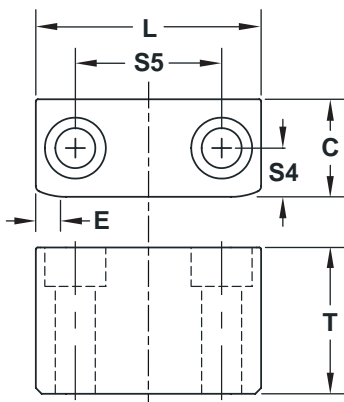
CATALOG NUMBER	T +.000 -.005	W1 +.0000 -.0005	W2	L REF	N	C REF	S1 ±.01	S2 ±.01	S3 ±.01	R Pocket Radius	P Minimum Pocket Length	SHCS	TOTAL MAX LBS. SUPPORTED
<b>BLN150L8</b>	1.500	4.000	4.000 +.000/- .002	7.75	3.000	3.75	1.00	2.00	2.25	.75	4.00	1/2-13 x 1.75	25,000
<b>BLN250L10</b>	2.500	5.000	5.000 +.000/- .002	10.38	4.000	5.00	1.25	3.25	3.25	1.00	5.38	5/8-11 x 2.75	50,000
<b>BLN350L13</b>	3.500	6.000	6.000 +.000/- .003	12.88	5.000	6.00	1.50	4.00	3.50	1.00	6.88	3/4-10 x 3.75	75,000

Note: Each catalog number includes (1) Bar and (2) Inserts with screws. Guides are sold separately.

▶ CAD insertion point



### GUIDES



**M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated

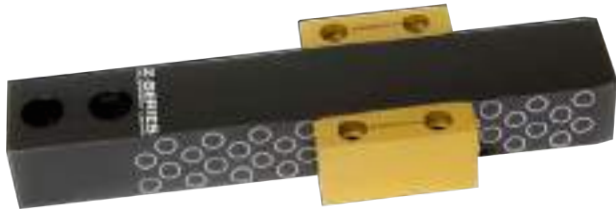
CATALOG NUMBER	T +.000 -.005	L +.000 -.005	PW +.0010 +.0015	C +.0000 -.0003	E REF	S4 ±.01	S5 ±.01	SHCS	USE WITH
<b>BLG150L2.3</b>	1.500	2.310	6.000	1.000	.31	.50	1.50	3/8-16 x 1.75	BLN150L8
<b>BLG150L3.8</b>	1.500	3.810	6.000	1.000	.31	.50	2.50	3/8-16 x 1.75	BLN150L8
<b>BLG250L4.3</b>	2.500	4.310	7.500	1.250	.31	.625	3.00	1/2-13 x 2.75	BLN250L10
<b>BLG350L4.8</b>	3.500	4.810	9.500	1.750	.31	.875	3.25	5/8-11 x 3.75	BLN350L13

Notes: Guides are sold in pairs. Each catalog number includes (2) Guides and (4) screws.  
500°F max operating temperature.

### GUIDES

# BAR LOCKS

## Z-SERIES



Progressive's Bar Locks enable mold designers to select off-the-shelf components for alignment of large molds and molds with multiple moving plates.

Long-term precision alignment of plates is achieved through Progressive's Z-Series proprietary treatments, engagement ramp geometry and particle rings on the guiding surfaces.

Non-drying, non-hardening food grade grease is applied to all areas, including the particle rings. For production, install the locks and wipe down the outside of the Bar Locks only; maintain the grease on the mating surfaces and within the rings.


### BAR

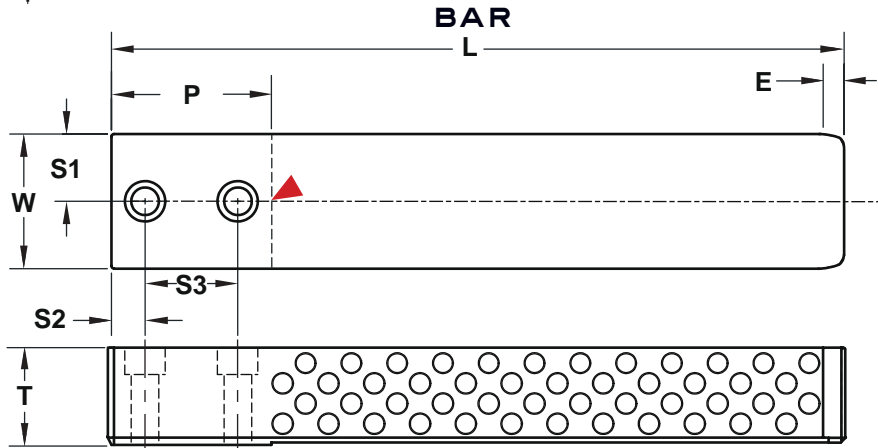
**M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

CATALOG NUMBER	T +0.000 -0.005	L ±0.005	W +0.0000 -0.0005	E REF	P MIN	S1 ±0.005	S2 ±0.005	S3 +0.00 -0.01	SHCS
BLB100L6	1.000	6.00	1.000	.22	1.38	.50	.38	.69	5/16-18 x 1.25
BLB125L9	1.250	8.88	1.500	.28	1.88	.75	.50	1.00	3/8 - 16 x 1.50
BLB137L11	1.375	10.88	2.000	.31	2.38	1.00	.50	1.38	3/8 - 16 x 1.50
BLB150L16	1.500	15.88	3.000	.31	3.38	1.5	.63	2.00	1/2 - 13 x 1.75

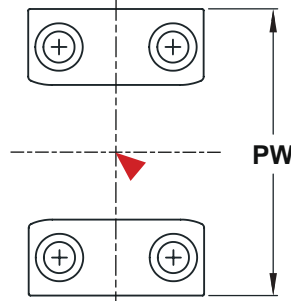
Note: Sold individually. Each catalog number includes (1) Bar Lock and (2) Screws.

▶ CAD insertion point

 For custom Bar Locks, refer to the templates in section X.



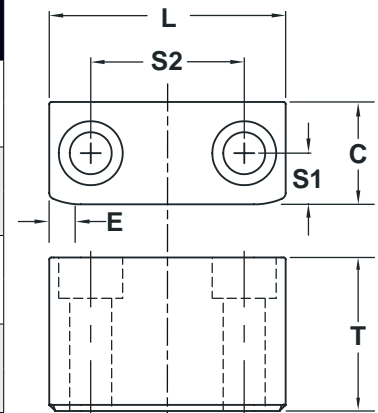
### GUIDES



### GUIDES

**M** D-2 **H** Core: 58-62 HRC, Surface: 80 HRC **S** Titanium Nitride Coated

CATALOG NUMBER	T +0.000 -0.005	L +0.000 -0.005	C +0.0000 -0.0003	PW +0.0003 +0.0006	E REF	S1 ±0.005	S2 ±0.005	SHCS	USE WITH
BLG100L1.3	1.000	1.310	.500	2.000	.22	.250	.750	#10-32 x 1.25	BLB100L6
BLG100L1.8		1.810					1.125		
BLG125L1.3	1.250	1.310	.625	2.750	.28	.310	.750	1/4-20 x 1.50	BLB125L9
BLG125L2.3		2.310					1.25		
BLG137L1.8	1.375	1.810	.750	3.500	.31	.375	1.125	5/16-18 x 1.50	BLB137L11
BLG137L3.3		3.310					2.250		
BLG150L2.3	1.500	2.310	1.000	5.000	.31	.500	1.500	3/8-16 x 1.75	BLB150L16
BLG150L3.8		3.810					2.500		



### GUIDES

Note: Guides are sold in pairs. Each catalog number includes (2) guides and (4) screws.

▶ CAD insertion point

Note: 500°F max operating temperature.

For custom Guides, refer to the templates in section X.

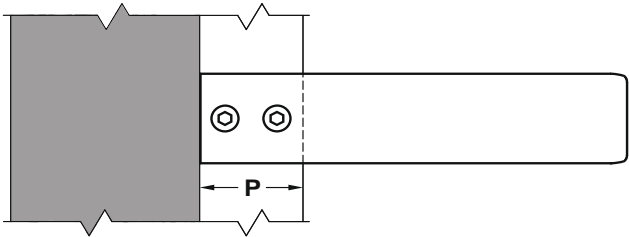
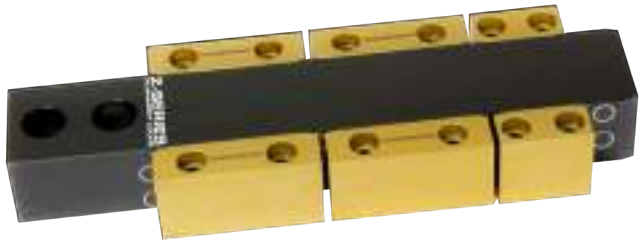
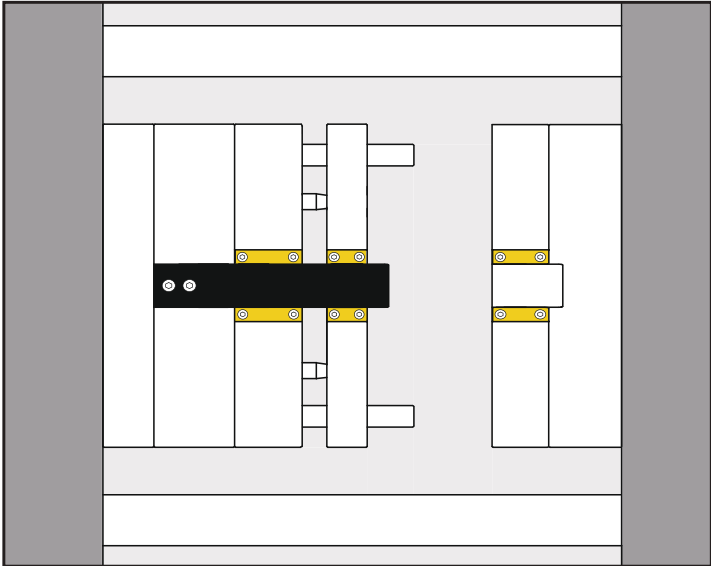




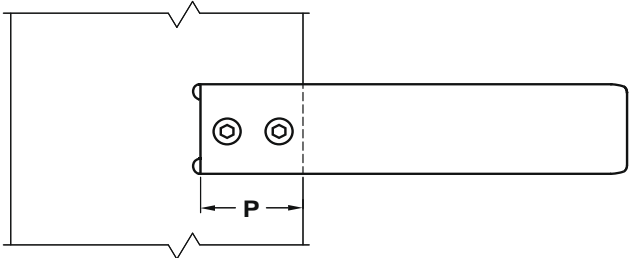
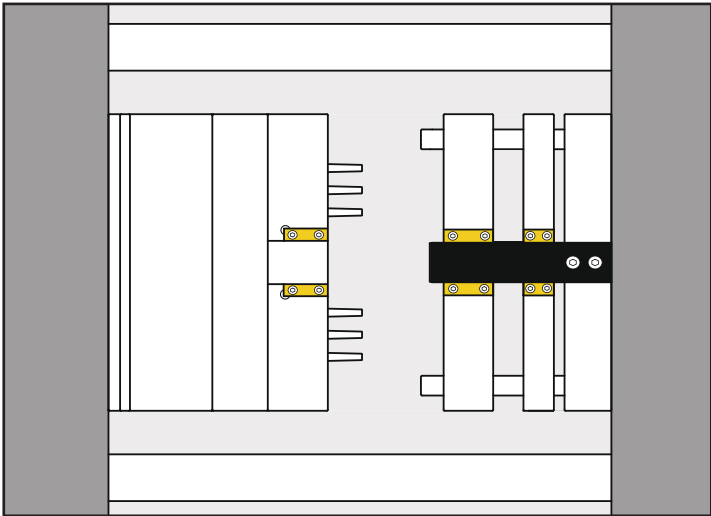


# BAR LOCKS APPLICATIONS

Stripper Plate Application

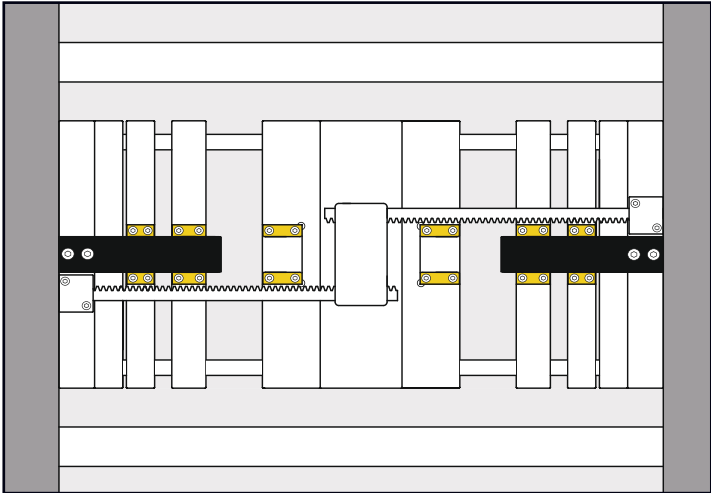


Three Plate Application

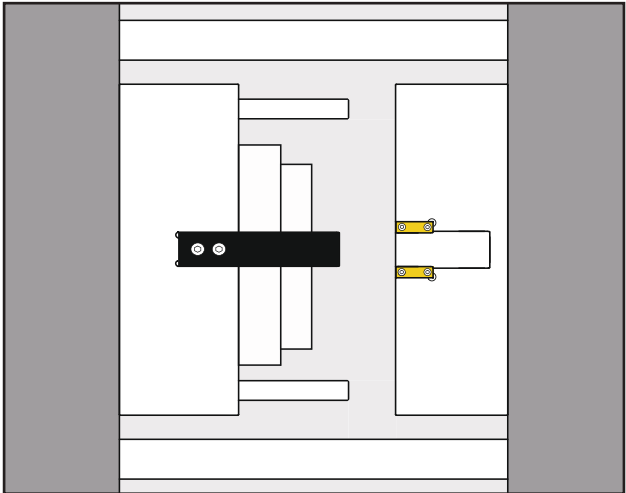


MINIMUM POCKET LENGTH = P

Stack Mold Application



Large Mold Application



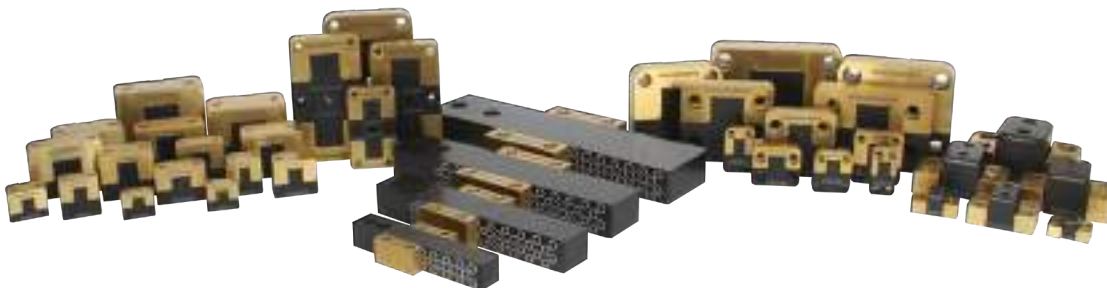
# SIDE/TOP/GUIDE LOCK SELECTION GUIDE

Refer to the chart below to match the correct alignment lock for the corresponding mold size and weight of B-Side and press platen, using four locks per mold. Clean and lubricate lock every 100,000 cycles, and prevent corrosion during mold storage.

RECOMMENDED MAX MOLD SIZE (LXWXH)	SIDE LOCKS	METRIC SIDE LOCKS	GUIDE LOCKS	TOP LOCKS	TOTAL MAX WEIGHT B SIDE + PRESS PLATEN (LBS/KG)
<b>RTI AND MOLDS 8 X 8 X 8 AND SMALLER</b>	SL37X100, SL50X125 SL50X150, SL50X200 SLS62X150, SLS62X200 SLR50X125, SLR50X150	SLM16X50, SLP16X20 SLPM16X40, SLP20X25 SLPM20X50, SLMS13X38 SLMS16X50	GL100X150 GLM25X45	TL50X100, TL62X125 TL75X125, TLM26X35 TLR87X150	2,000 / 900
<b>11 X 16 X 10</b>	SL50X125, SL50X150 SL50X200, SLS62X150 SLS62X200, SLS75X300 SLS75X400, SLR50X150 SLR50X200	SLM16X50, SLMS19X75 SLPM25X32, SLP25X63 SLPM32X40, SLP32X80 SLPM40X50 SLPM40X100 SLMS19X100	GL100X150 GL150X250 GLM25X45	TL62X125, TL75X125 TLM26X35 TLR87X150 TLR112X200	5,000 / 2,300
<b>16 X 24 X 16</b>	SL50X150, SL50X200 SL75X300, SLS112X500 SLS75X300, SLS75X400 SLR75X300, SLR100X400	SLM19X75, SLM19X100 SLMS25X125 SLPM50X56 SLPM50X112	GL150X250 GLM40X65	TL75X125, TL87X150 TLM26X35, TLM30X45 TLR112X200 TLR150X250	7,000 / 3,200
<b>28 X 34 X 24</b>	SL75X300, SLS112X500	SLM19X75, SLM19X100	GL200X350 GL150X250 GLM40X65	TL100X150, TL100X200 TL112X200, TL112X300 TLM26X35, TLM30X45	10,000 / 4,500
<b>32 X 40 X 28</b>	SL100X400	SLM25X125	GL200X350 GLM40X65	TL112X200, TL112X300 TLM36X55, TLM36X75	15,000 / 6,800
<b>42 X 48 X 34</b>	SL125X500		GL250X450 GLM50X90	TL150X250, TL175X300 TLM36X55, TLM36X75	20,000 / 9,000
<b>48 X 52 X 38</b>	SL150X600		GL250X450	TL175X300, TL200X350 TLM45X100	26,000 / 11,800

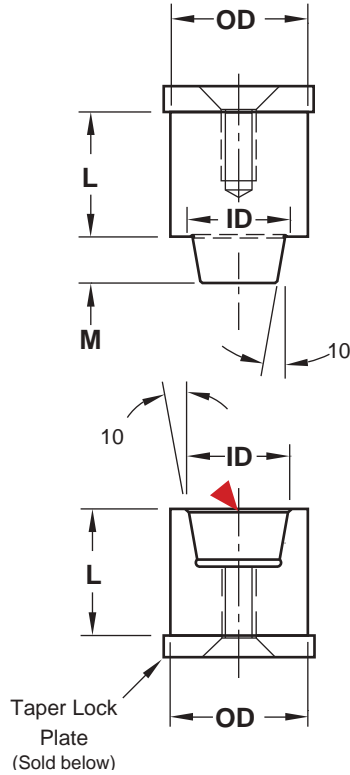
## BAR LOCK SELECTION GUIDE

BAR CATALOG NUMBER	GUIDE CATALOG NUMBER	BAR LOCK ENGAGEMENT	TOTAL MAX LBS. SUPPORTED
BLB100L6	BLG100L1.3, BLG100L1.8	4.50	<b>15,000</b>
BLB125L9	BLG125L1.3, BLG125L2.3	7.00	<b>20,000</b>
BLB137L11	BLG137L1.8, BLG137L3.3	8.50	<b>23,000</b>
BLB150L16	BLG150L2.3, BLG150L3.8	12.50	<b>26,000</b>
BLN150L8	BLG150L2.3, BLG150L3.8	3.75	<b>25,000</b>
BLN250L10	BLG250L4.3	5.00	<b>50,000</b>
BLN350L13	BLG350L4.8	6.00	<b>75,000</b>





# TAPER LOCKS

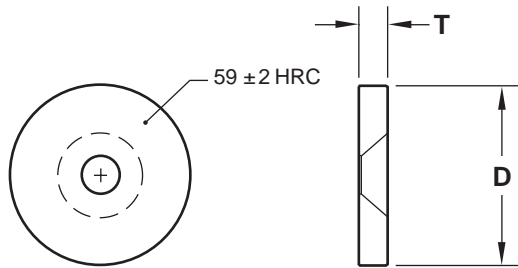


M H-13 H 48-52 HRC

CAD insertion point

O. D. +.0000 -.0003	I. D.	M	Thread Size	L +.004 +.008	MALE CATALOG NUMBER	FEMALE CATALOG NUMBER
1/2	.312	.250	#10-24	11/16	MTL50L.68	FTL50L.68
				7/8	MTL50L.87	FTL50L.87
				1-3/16	MTL50L1.18	FTL50L1.18
				1-3/8	MTL50L1.37	FTL50L1.37
3/4	.500	.281	1/4-20	11/16	MTL75L.68	FTL75L.68
				7/8	MTL75L.87	FTL75L.87
				1-3/16	MTL75L1.18	FTL75L1.18
				1-3/8	MTL75L1.37	FTL75L1.37
1	.625	.343	1/4-20	11/16	MTL100L.68	FTL100L.68
				7/8	MTL100L.87	FTL100L.87
				1-3/16	MTL100L1.18	FTL100L1.18
				1-3/8	MTL100L1.37	FTL100L1.37
1-1/2	1.000	.500	5/16-18	1-1/8	MTL150L1.12	FTL150L1.12
				1-3/8	MTL150L1.37	FTL150L1.37
				1-5/8	MTL150L1.62	FTL150L1.62
2	1.500	.500	5/16-18	1-1/8	MTL200L1.12	FTL200L1.12
				1-3/8	MTL200L1.37	FTL200L1.37
				1-5/8	MTL200L1.62	FTL200L1.62

# TAPER LOCK PLATES



M AISI 52100 H 57-61 HRC S Black Oxide

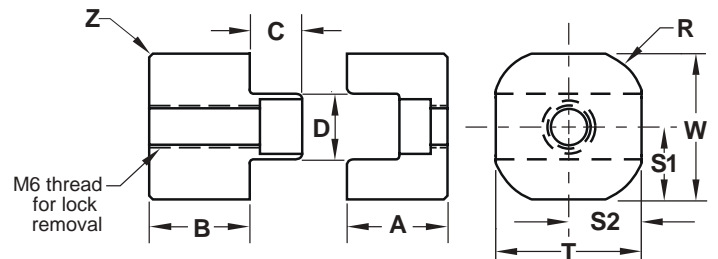
CATALOG NUMBER	Taper Lock OD	D +.000 -.015	T +.000 -.002	Flat Head Counterbore
TLP50	1/2	.687	.187	#10-24
TLP75	3/4	1.000	.187	1/4-20
TLP100	1	1.187	.187	1/4-20
TLP150	1-1/2	1.687	.250	5/16-18
TLP200	2	2.187	.250	5/16-18

1/2" long FHCS included.

# TOP LOCK-20MM SQUARE Z-SERIES



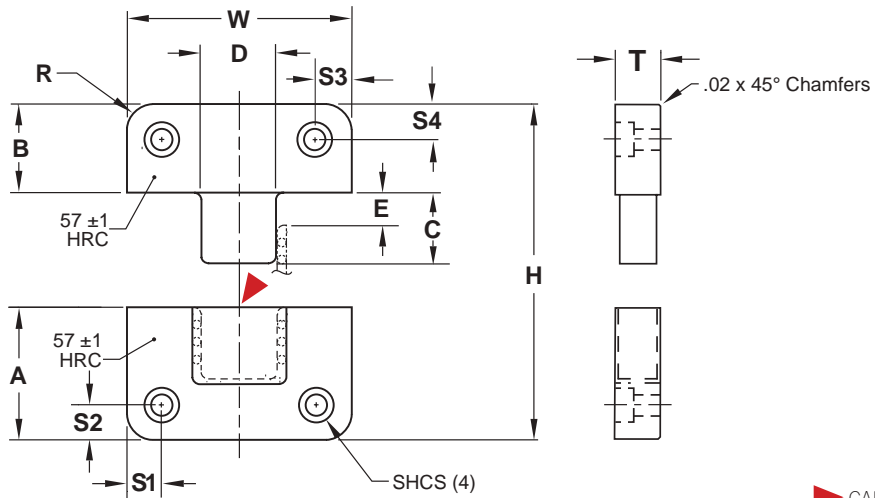
Female: M D-2 H Core: 58-62 HRC, Surface: 80 HRC S Titanium Nitride Coated  
Male: M H-13 H Core: 42-48 HRC, Surface: 70 HRC S Salt Bath Nitride



CATALOG NUMBER	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D .002/.008 Clearance Per Side	S1 ±.25	S2 ±.25	R Pocket Radius	Z Chamfer	SHCS
TLM20X20	20	20	14	14	7	9	Center	Center	5	1	M: M4 x 25 F: M4 x 10

# SIDE LOCKS

## NEEDLE BEARING - INCH STANDARD



**M** 0-2 **H** 56-58 HRC **S** Black Oxide

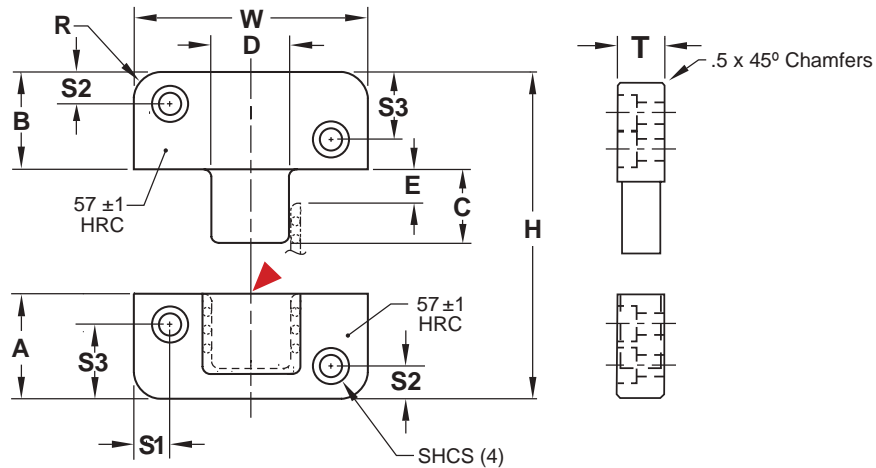
CAD insertion point

CATALOG NUMBER	T +0.00 -0.05	W ±0.002	W Pocket Width +0.005 -0.000	A +0.00 -0.05	B +0.00 -0.05	C	D	E	H +0.00 -0.04	R Pocket Radius	S1 ±0.1	S2 ±0.1	S3 ±0.1	S4 ±0.1	SHCS
SLR50X125	.500	1.2495	1.250	1.375	.875	.66	.412	.210	2.250	.187	.171	.250	.171	.437	#8-32 x 5/8"
SLR50X150	.500	1.4995	1.500	.875	.875	.40	.500	.210	1.750	.187	.250	.250	.250	.250	#8-32 x 5/8"
SLR50X150-L	.500	1.4995	1.500	1.375	.875	.66	.550	.250	2.250	.187	.182	.376	.182	.500	#8-32 x 5/8"
SLR50X200	.500	1.9995	2.000	1.375	.875	.66	.750	.325	2.250	.187	.312	.312	.312	.312	#10-32 x 5/8"
SLR75X300	.750	2.9995	3.000	1.875	.875	.95	1.188	.575	2.750	.250	.375	.375	.375	.375	1/4-20 x 3/4"
SLR100X400	1.000	3.9995	4.000	2.375	1.375	1.34	1.855	.450	3.750	.500	.500	.500	.500	.500	3/8-16 x 1-1/8"

For technical information, refer to page C-13. Note: Cages are manufactured from resin or aluminium, depending on size.

Screws included.

## NEEDLE BEARING - METRIC STANDARD



**M** 0-2 **H** 56-58 HRC **S** Black Oxide

CATALOG NUMBER	T +0.0 -0.12	W ±0.005	W Pocket Width +0.012 -0.000	A +0.0 -0.12	B +0.0 -0.12	C	D	E	H +0.0 -0.1	R Pocket Radius	S1 ±0.25	S2 ±0.25	S3 ±0.25	SHCS
SLRM32X63	32	62.9	63	46	46	27	21	12.1	92	8	9	11	35	M8-1.25 x 35
SLRM40X100	40	99.9	100	66	66	36	33	19.5	132	10	13	18	48	M12-1.75 x 45

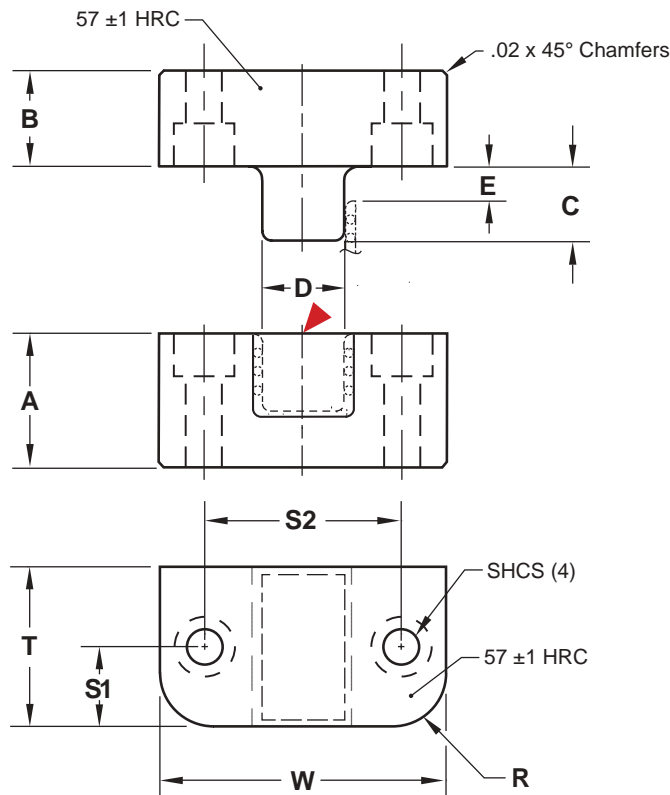
For technical information, refer to page C-13. Note: Cages are manufactured from resin or aluminium, depending on size.

Screws included.



# TOP LOCKS

## NEEDLE BEARING · INCH STANDARD



**M** O-2 **H** 56-58 HRC **S** Black Oxide

CAD insertion point

CATALOG NUMBER	T +.000 -.005	W +.0002 -.0000	W Pocket Width +.0005 -.0000	A +.000 -.005	B +.000 -.005	C	D	E	S1 ±.01	S2 ±.01	R Pocket Radius	SHCS
<b>TLR87X150</b>	.875	1.4995	1.500	1.375	.750	.66	.550	.225	.438	1.143	.250	M: #8-32 x 7/8" F: #8-32 x 1-1/2"
<b>TLR112X200</b>	1.125	1.9995	2.000	1.375	.625	.62	.660	.425	.563	1.375	.375	M: 1/4-20 x 3/4" F: 1/4-20 x 1-1/2"
<b>TLR150X250</b>	1.500	2.4995	2.500	1.375	.625	.62	.900	.400	.750	1.750	.375	M: 1/4-20 x 3/4" F: 1/4-20 x 1-1/2"
<b>TLR150X250-L</b>	1.500	2.4995	2.500	1.875	.875	1.02	1.015	.350	.750	1.875	.375	M: 1/4-20 x 1" F: 1/4-20 x 2"

Note: Cages are manufactured from resin or aluminium, depending on size.

Screws included.

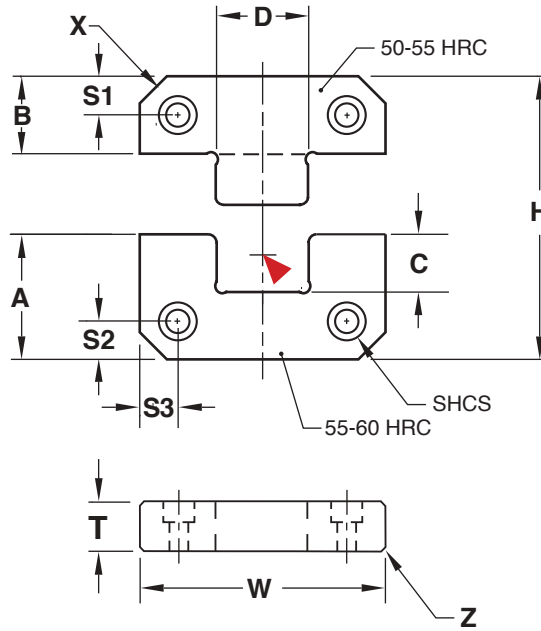
### Technical Information:

- Zero clearance between male and female (D) dimensions.
- Bearings: 64 HRC
- Maximum Mold Temperature: 300° F (150° C)
- Engagement occurs at E dimension shown.
- Locks are to be mounted in the mold base and not in the core or cavity inserts.
- For optimal performance, pockets are to be machined to nominal "W" pocket width dimensions in each table. If replacing locks in existing pockets, ensure .0004" clearance, and the lock may be modified to suit.
- As with other mold mechanisms, clean and maintain locks at the mold's scheduled PMs.



# SIDE LOCKS

## INCH STANDARD



Female: **M** 0-2 **H** 55-60 HRC  
 Male: **M** 0-2 **H** 50-55 HRC

CAD insertion point

CATALOG NUMBER	T +.000 -.002	W +.0000 -.0004	A +.0000 -.0008	B +.0000 -.0008	C	D .0001/.0003 Clearance Per Side	H +.000 -.002	X Corner Chamfer	Z Chamfer	S1 ±.01	S2 ±.01	S3 ±.01	SHCS
SLS62X150	.620	1.500	.870	.870	.33	.500	1.74	.19	.02	.437	.281	.281	1/4-20 x 3/4"
SLS62X200	.620	2.000	.870	.870	.33	.680	1.74	.19	.04	.437	.375	.375	1/4-20 x 3/4"
SLS75X300	.745	3.000	1.370	1.360	.57	1.000	2.73	.38	.04	.688	.688	.375	3/8-16 x 1"
SLS75X400	.745	4.000	1.870	1.870	.79	1.375	3.74	.50	.04	.875	.875	.625	3/8-16 x 1"
SLS112X500	1.120	5.000	1.870	1.870	.79	1.750	3.74	.50	.04	.875	.875	.750	1/2-13 x 1-1/4"

Screws included.

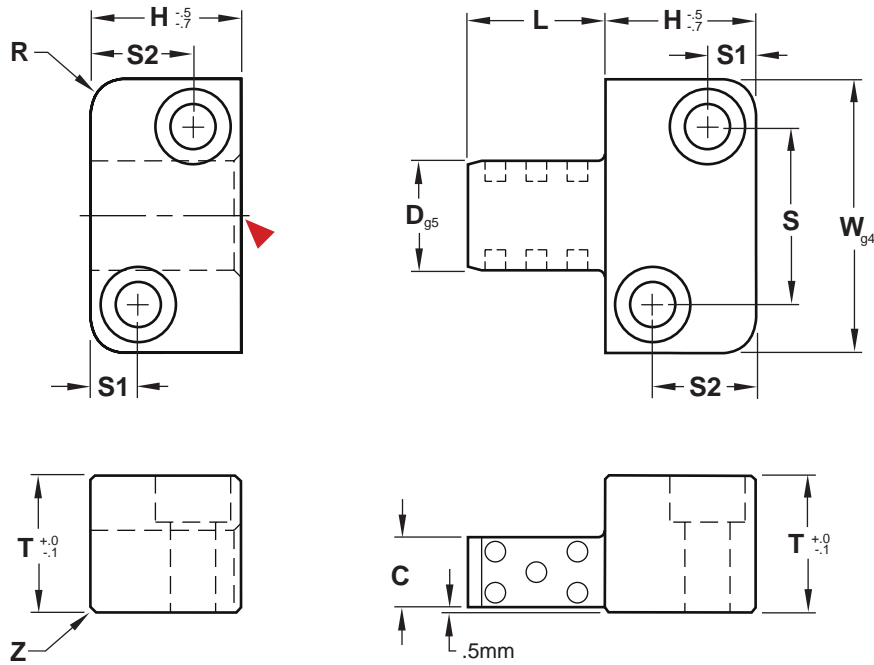
## METRIC STANDARD

CATALOG NUMBER	T +.00 -.05	W +.00 -.01	A +.00 -.02	B +.00 -.02	C	D .002/.008 Clearance Per Side	H +.00 -.04	X Corner Chamfer	Z Chamfer	S1/S2 ±.2	S3 ±.2	SHCS
SLMS13X38	13	38	22	22	8.5	12	44	5	.5	7	8	M5-.8 x 15
SLMS16X50	16	50	21.5	21.5	9.5	17	43	5	1	11	8	M6-1.0 x 18
SLMS19X75	19	75	36	36	15	25	72	8	1	18	12.5	M10-1.5 x 20
SLMS19X100	19	100	45	45	21	35	90	10	1	22	15	M10-1.5 x 20
SLMS25X125	25	125	45	45	21	45	90	10	1	22	20.5	M10-1.5 x 25

Screws included.



# SIDE LOCKS GRAPHITE PLUGGED



M O-2 H 56-60 HRC

CAD insertion point

CATALOG NUMBER	L	D	T	W	C	H	S1	S2	S	R	Z	Screw Size
SLPM16X20	20	16	20	40	11	22	7	15	26	6	1	M6-1.0 x 25
SLPM16X40	40											
SLPM20X25	25	20	22	45	13	27	7	19	31	6	1	M6-1.0 x 25
SLPM20X50	50											
SLPM25X32	32	25	25	50	14	36	9	27	35	8	1	M6-1.0 x 30
SLPM25X63	63											
SLPM32X40	40	32	32	63	19	46	11	35	45	8	1	M8-1.25 x 35
SLPM32X80	80											
SLPM40X50	50	40	36	85	22	56	15	40	60	10	1.5	M10-1.5 x 40
SLPM40X100	100											
SLPM50X56	56	50	40	100	24	66	18	48	74	10	1.5	M12-1.75 x 45
SLPM50X112	112											

Screws included.

Using grease will inhibit the function of the graphite plugs. Instead, use a light 20 weight oil at startup to begin lubrication.







# DATERS, AIR VALVES

## SECTION D



Locking Series	Tapered Series	RF Series	20 Series
Prefix: DN, DTN	Prefix: DTPR	Prefix: DF	Prefix: DL
Pages: D-1	Page: D-3	Page: D-4	Page: D-5



CH Series	FD Series	Multi-Daters	MicroDaters
Prefix: DC	Prefix: DFD	Prefix: DMD	Prefix: MD
Page: D-6	Page: D-7	Page: D-8	Page: D-10



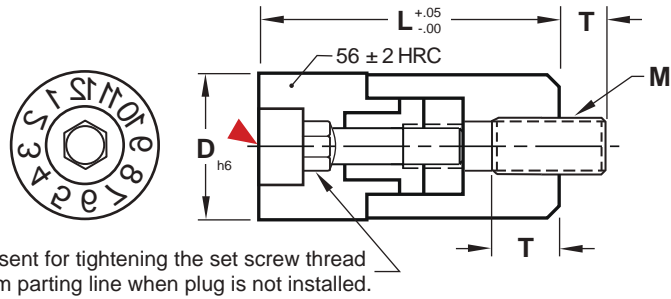
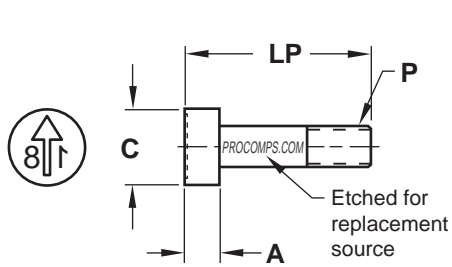
LG Series	Recycle Inserts	Air Valves & Poppets	Die Cast Vacuum Blocks
Prefix: DLB, DLS	Prefix: RI	Prefix: AV, APV	Prefix: SV, SC, UV
Page: D-11	Page: D-12	Page: D-13	Page: D-14





# DATE STAMPS

## LOCKING DETENT SERIES



### PLUGS

### RINGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	A	LP	P	Engraving Depth (Arrow)
DNP04-18	2.5	2.3	10.5	M1.4 x 0.2	.30
DNP05-18	3.1	2.8	13.0	M1.6 x 0.2	.40
DNP06-18	3.1	2.8	13.0	M1.6 x 0.2	.40
DNP08-18	4.6	4.0	14.0	M2.5 x 0.35	.40
DNP10-18	4.6	4.0	14.0	M2.5 x 0.35	.40
DNP12-18	6.4	4.0	17.0	M3 x 0.5	.60
DNP16-18	8.4	5.0	23.0	M3.5 x 0.6	.60


CATALOG NUMBER	D	L	M	T	Engraving Depth
DN04	4	14	M2 x 0.4	3	.10
DN05	5	17	M3 x 0.5	3	.20
DN06	6	17	M3 x 0.5	3	.20
DN08	8	20	M4 x 0.7	4	.20
DN10	10	20	M5 x 0.8	4	.20
DN12	12	25	M6 x 1.0	6	.25
DN16	16	33	M8 x 1.25	8	.25


▶ CAD insertion point


**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.


#### Plug Styles: Recessed Lettering


#### Ring Styles: Recessed Lettering


 **Arrow Only**  
Cat #: DNP-Diam - AO  
Ex.: DNP05-AO

 **0 - 9**  
Cat #: DNN-Diam  
Ex.: DNN05

 **A - L**  
Cat #: DNA-Diam  
Ex.: DNA05


 **C**  
Cat #: DNP-Diam-C  
Ex.: DNP05-C


 **0 - 30**  
Cat #: DNT-Diam  
Ex.: DNT05

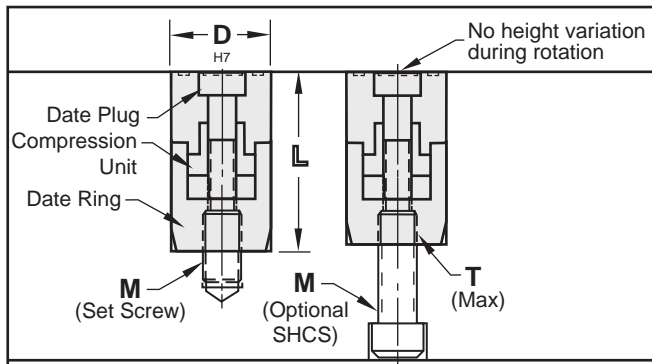
 **M - X**  
Cat #: DNZ-Diam  
Ex.: DNZ05

#### Installation Guidelines:

Ring can be installed using the included set screw or retained with a screw from the back.

 **Blank**  
Cat #: DN-Diam-B  
Ex.: DN05-B

 **Years**  
Cat #: DNY-Diam-Starting Year\*  
Ex.: DNY05-18



\*Where years are specified, any year can be ordered by changing the suffix. Example DNP05-19 or DNY05-20.

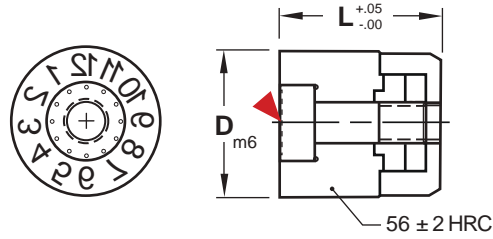
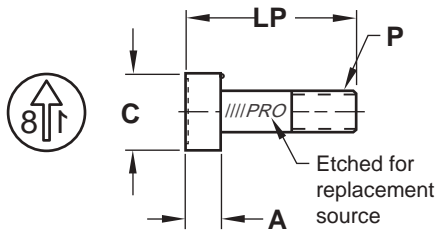
To create Date Stamps for days, purchase both the 0-30 ring (DNT) and the 0-9 ring (DNN) and the desired plugs.

Special configurations are available.  
Contact Customer Service for more information.

Maximum mold temperature: 450° F (230° C)

# DATE STAMPS

## COMPACT LOCKING DETENT SERIES



### PLUGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	A	LP	P	Engraving Depth (Arrow)
DTNP03-18	1.6	1.0	3.8	M1 x 0.25	.20
DTNP04-18	2.5	1.2	4.8	M1.4 x 0.2	.30
DTNP05-18	3.1	2.0	7.8	M1.6 x 0.2	.40
DTNP06-18	3.1	2.0	7.8	M1.6 x 0.2	.40
DTNP08-18	4.4	2.5	9.8	M2.3 x 0.25	.40
DTNP10-18	5.2	3.0	11.8	M2.5 x 0.35	.40
DTNP12-18	6.2	3.0	13.8	M3 x 0.35	.60
DTNP16-18	8.2	3.5	13.8	M4 x 0.35	.60
DTNP20-18	11.0	4.5	15.8	M4 x 0.35	.60

### RINGS



CATALOG NUMBER	D	L	B Max From Graphic Below	Engraving Depth
DTN03	3	4	1.6	.10
DTN04	4	5	2.2	.15
DTN05	5	8	3.2	.20
DTN06	6	8	3.2	.20
DTN08	8	10	4.2	.20
DTN10	10	12	5.2	.20
DTN12	12	14	6.2	.25
DTN16	16	14	8.2	.25
DTN20	20	16	10.2	.30

▶ CAD insertion point

**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.

#### Plug Styles: Recessed Lettering



**Arrow Only**  
Cat #: DTNP-Diam - AO  
Ex.: DTNP05-AO



**C**  
Cat #: DTNP-Diam-C  
Ex.: DTNP05-C

#### Ring Styles: Recessed Lettering



**0 - 9**  
Cat #: DTNN-Diam  
Ex.: DTNN05



**A - L**  
Cat #: DTNA-Diam  
Ex.: DTNA05



**0 - 30**  
Cat #: DTNT-Diam  
Ex.: DTNT05



**M - X**  
Cat #: DTNZ-Diam  
Ex.: DTNZ05

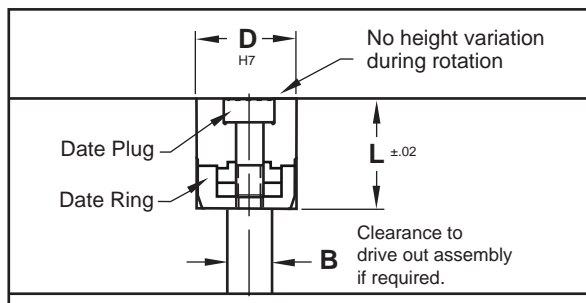


**Blank**  
Cat #: DTN-Diam-B  
Ex.: DTN05-B



**Years**  
Cat #: DTNY-Diam-Starting Year\*  
Ex.: DTNY05-18

#### Installation Guidelines:



Maximum mold temperature: 572° F (300° C)  
Maximum molding pressure: 20,000 psi/2,000 bar

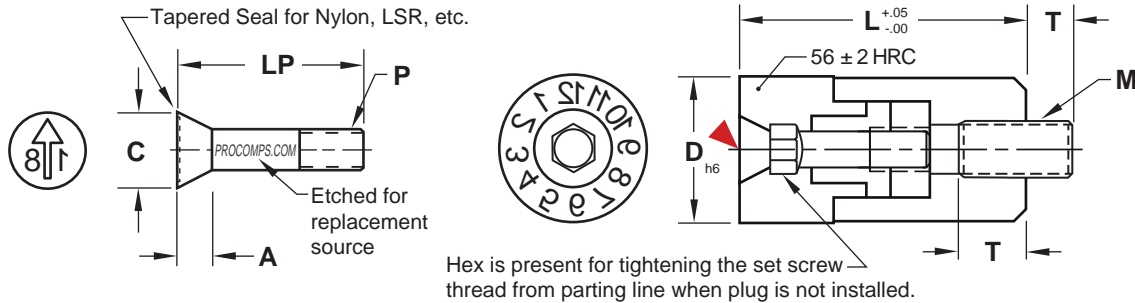
\*Where years are specified, any year can be ordered by changing the suffix. Example DTNP05-19 or DTNY05-20.

To create Date Stamps for days, purchase both the 0-30 ring (DTNT) and the 0-9 ring (DTNN) and the desired plugs.

Special configurations are available.  
Contact Customer Service for more information.



# DATE STAMPS TAPERED SERIES



## PLUGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	A	LP	P	Engraving Depth (Arrow)
DTPRP04-18	2.5	2.3	10.5	M1.4 x 0.2	.30
DTPRP05-18	3.1	2.8	13.0	M1.6 x 0.2	.40
DTPRP06-18	3.1	2.8	13.0	M1.6 x 0.2	.40
DTPRP08-18	4.6	4.0	14.0	M2.5 x 0.35	.60
DTPRP10-18	4.6	4.0	14.0	M2.5 x 0.35	.60
DTPRP12-18	6.4	4.0	17.0	M3 x 0.5	.60
DTPRP16-18	8.4	5.0	23.0	M3.5 x 0.6	.60

## RINGS





CATALOG NUMBER	D	L	M	T	Engraving Depth
DTPR04	4	14	M2 x 0.4	3	.15
DTPR05	5	17	M3 x 0.5	3	.20
DTPR06	6	17	M3 x 0.5	3	.20
DTPR08	8	20	M4 x 0.7	4	.30
DTPR10	10	20	M5 x 0.8	4	.30
DTPR12	12	25	M6 x 1.0	6	.30
DTPR16	16	33	M8 x 1.25	8	.30

▶ CAD insertion point


**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.


### Plug Styles: Recessed Lettering


 **Arrow Only**  
Cat #: DTPRP-Diam - AO  
Ex.: DTPRP05-AO


 **C**  
Cat #: DTPRP-Diam-C  
Ex.: DTPRP05-C


### Ring Styles: Recessed Lettering


 **0 - 9**  
Cat #: DTPR-Diam  
Ex.: DTPR05

 **A - L**  
Cat #: DTPRA-Diam  
Ex.: DTPRA05

 **0 - 30**  
Cat #: DTPRT-Diam  
Ex.: DTPRT05

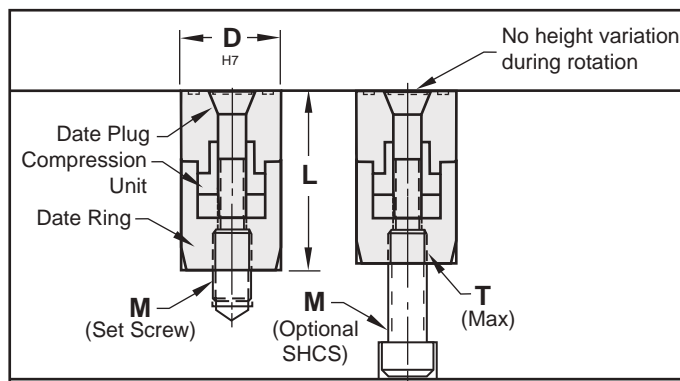
 **M - X**  
Cat #: DTPRZ-Diam  
Ex.: DTPRZ05

 **Blank**  
Cat #: DTPR-Diam-B  
Ex.: DTPR05-B

 **Years**  
Cat #: DTPRY-Diam-Starting Year\*  
Ex.: DTPRY05-18

### Installation Guidelines:

Ring can be installed using the included set screw or retained with a screw from the back.



Maximum mold temperature: 450° F (230° C)

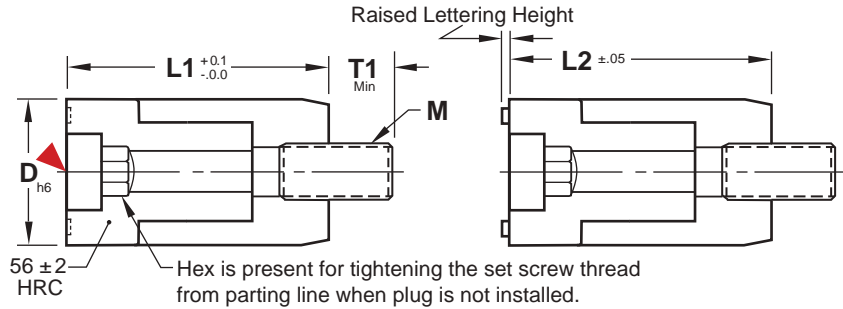
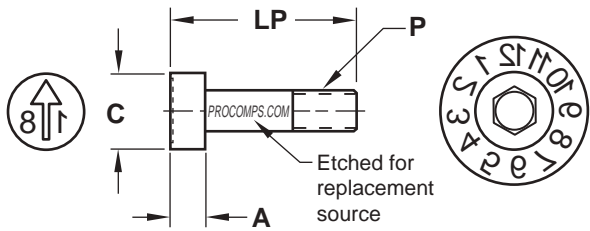
\*Where years are specified, any year can be ordered by changing the suffix. Example DTPRP05-19 or DTPRY05-20.

To create Date Stamps for days, purchase both the 0-30 ring (DTPRT) and the 0-9 ring (DTPRN) and the desired plugs.

Special configurations are available.  
Contact Customer Service for more information.

# DATE STAMPS

## RF-SERIES: REMAINS FLUSH



### PLUGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	A	LP	P	Engraving Depth (Arrow)	Raised Slot Depth
DFP03-18	1.6	2.0	9.0	M1 x 0.25	.30	N/A†
DFP04-18	2.5	2.3	10.5	M1.4 x 0.2	.30	.25
DFP05-18	3.1	2.8	13.0	M1.6 x 0.2	.40	.30
DFP06-18	3.1	2.8	13.0	M1.6 x 0.2	.40	.30
DFP08-18	4.6	4.0	14.0	M2.5 x 0.35	.40	.35
DFP10-18	4.6	4.0	14.0	M2.5 x 0.35	.40	.35
DFP12-18	6.4	4.0	17.0	M3 x 0.5	.60	.40
DFP16-18	8.4	5.0	23.0	M3.5 x 0.6	.60	.40

† 3mm size not available with raised lettering.

### RINGS



CATALOG NUMBER	L1 Recessed	L2 Raised	M	T1	T2
DF03	14	N/A†	M2 x 0.4	4	N/A†
DF04	14	13.80	M2 x 0.4	4	3
DF05	17	16.75	M3 x 0.5	4	3
DF06	17	16.75	M3 x 0.5	4	3
DF08	20	19.70	M4 x 0.7	4	4
DF10	20	19.70	M5 x 0.8	4	4
DF12	25	24.70	M6 x 1.0	6	6
DF16	33	32.70	M8 x 1.25	8	8

▶ CAD insertion point

**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.

#### Plug Styles: Recessed Lettering

- Arrow Only**  
Cat #: DFP-Diam - AO  
Ex.: DFP05-AO
- C**  
Cat #: DFP-Diam-C  
Ex.: DFP05-C

#### Plug Styles: Raised Lettering

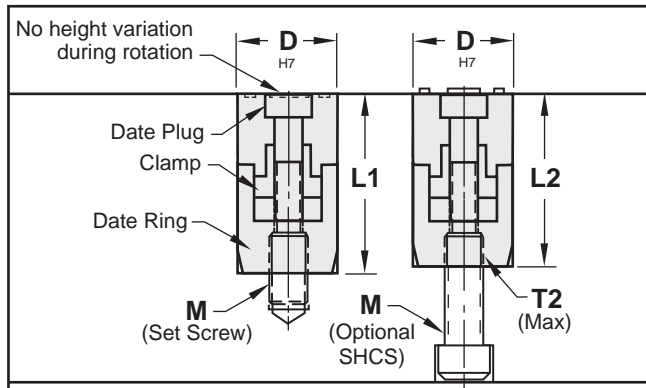
- Year**  
Cat #: DFRP-Diam-Year\*  
Ex.: DFRP05-18
- Arrow Only**  
Cat #: DFRP-Diam-AO  
Ex.: DFRP05-AO
- C**  
Cat #: DFRP-Diam-C  
Ex.: DFRP05-C

#### Ring Styles: Recessed Lettering

- 0 - 9**  
Cat #: DFN-Diam  
Ex.: DFN05
- A - M**  
Cat #: DFA-Diam  
Ex.: DFA05
- N - Z**  
Cat #: DFZ-Diam  
Ex.: DFZ05
- Blank**  
Cat #: DF-Diam-B  
Ex.: DF05-B
- Days**  
Cat #: DFL-Diam  
Ex.: DFL05
- Years**  
Cat #: DFY-Diam-Starting Year\*  
Ex.: DFY05-18

#### Installation Guidelines:

Ring can be installed using the included set screw or retained with a screw from the back.



Maximum mold temperature: 450° F (230° C)

#### Ring Styles: Recessed Lettering

- 0 - 9**  
Cat #: DFRN-Diam  
Ex.: DFRN05
- A-M**  
Cat #: DFRL-Diam  
Ex.: DFRL05
- N-Z**  
Cat #: DFRZ-Diam  
Ex.: DFRZ05
- Days**  
Cat #: DFRL-Diam  
Ex.: DFRL05
- Months**  
Cat #: DFR-Diam  
Ex.: DFR05
- Years**  
Cat #: DFRY-Diam-Starting Year\*  
Ex.: DFRY05-18

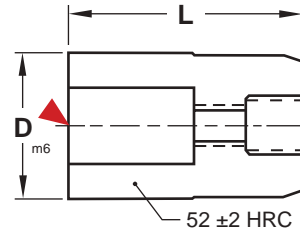
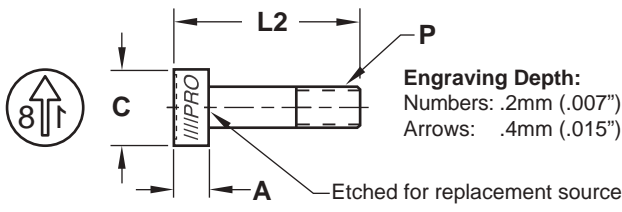
\*Where years are specified, any year can be ordered by changing the suffix. Example DFP05-19 or DFY05-20.

Special configurations are available.  
Contact Customer Service for more information.

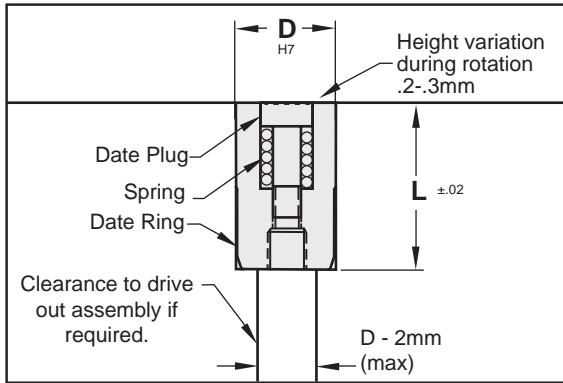


# DATE STAMPS

## 20 SERIES: 20MM LENGTH



### Installation Guidelines:



Maximum mold temperature: 285° F (140° C)

For other date plugs, modify catalog number for the year required. Example: DLP06-19.  
Plugs include springs and replacements are available.

### PLUGS



**M** 420 Stainless Steel **H** 50-54 HRC

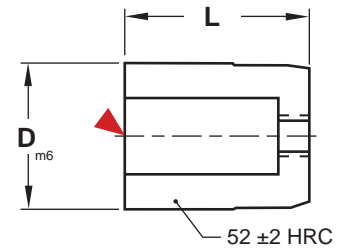
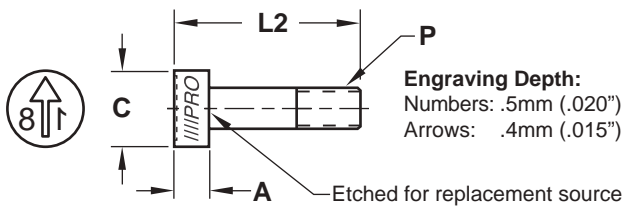
CATALOG NUMBER	D	C	A	L2	P	ARROW ONLY
DLP06-18	6	3.1	3.0	13	M1.6x0.20	DLP06-AO
DLP08-18	8	4.6	4.0	14	M2.5x0.35	DLP08-AO
DLP10-18	10	4.6	4.0	14	M2.5x0.35	DLP10-AO
DLP16-18	16	8.2	3.5	14	M4x0.35	DLP16-AO

### RINGS

CATALOG NUMBER	D	L
DL06	6	20
DL08	8	
DL10	10	
DL16	16	



## D SERIES: DEEP ENGRAVING



### PLUGS

**M** 420 Stainless Steel **H** 50-54 HRC

CATALOG NUMBER	D	C	A	L2	P	ARROW ONLY
DCP10D-18	10	5.2	3.0	12	M2.5x0.35	DCP10-AO
DCP12D-18	12	6.2	3.0	14	M3x0.35	DCP12-AO
DCP16D-18	16	8.2	3.5	14	M4x0.35	DCP16-AO
DCP20D-18	20	11.0	4.5	16	M4x0.35	DCP20-AO

### RINGS

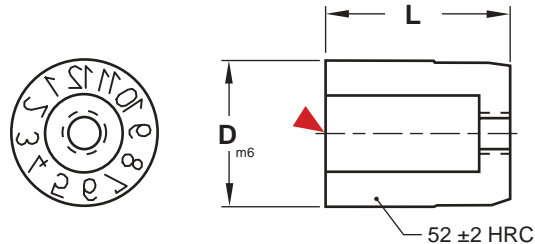
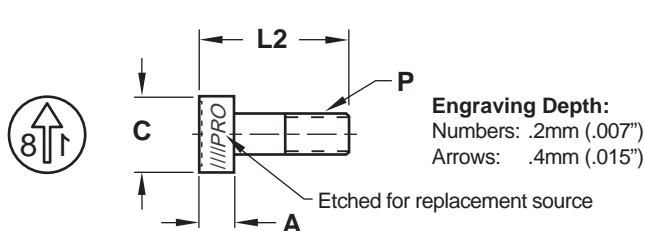
CATALOG NUMBER	D Ring Diameter	L
DC10-D	10	12
DC12-D	12	14
DC16-D	16	14
DC20-D	20	16

For other date plugs, modify catalog number for the year required.  
Example: DCP16D-19. Plugs include springs and replacements are available.

CAD insertion point

# DATE STAMPS

## CH SERIES: COMPACT HEIGHT



### PLUGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	A	L2	P
DCP04-18	2.2	2.0	8	M1x0.25
DCP05-18	3.1	2.0	8	M1.6x0.20
DCP06-18	3.1	2.0	8	M1.6x0.20
DCP08-18	4.4	2.5	10	M2.3x0.25
DCP10-18	5.2	3.0	12	M2.5x0.35
DCP12-18	6.2	3.0	14	M3x0.35
DCP16-18	8.2	3.5	14	M4x0.35
DCP12-18	11.0	4.5	16	M4x0.35

### RINGS



CATALOG NUMBER	D	L	B From Graphic Below
DC04	4	8	1.4
DC05	5	8	2
DC06	6	8	2
DC08	8	10	3
DC10	10	12	3
DC12	12	14	4
DC16	16	14	5
DC12	20	16	5

▶ CAD insertion point

**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.

#### Plug Styles: Recessed Lettering



##### Arrow Only

Cat #: DCP-Diam - AO  
Ex.: DCP05-AO



##### C

Cat #: DCP-Diam-C  
Ex.: DCP05-C

#### Ring Styles: Recessed Lettering



##### 0 - 9

Cat #: DCN-Diam  
Ex.: DCN05



##### A - M

Cat #: DCA-Diam  
Ex.: DCA05



##### Blank

Cat #: DC-Diam-B  
Ex.: DC05-B



##### N - Z

Cat #: DCZ-Diam  
Ex.: DCZ05



##### Days

Cat #: DCL-Diam  
Ex.: DCL05

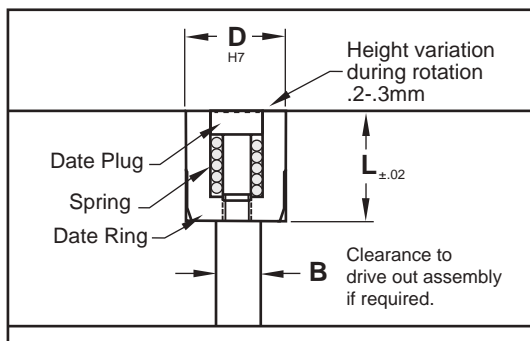


##### Years

Cat #: DCY-Diam-Starting Year\*  
Ex.: DCY05-18

Note: The DCL04 and DCL05 does not have tick marks.

#### Installation Guidelines:



Maximum mold temperature: 285° F (140° C)

\*Where years are specified, any year can be ordered by changing the suffix. Example DCP05-19 or DCY05-20.

Special configurations are available. Contact Customer Service for more information.

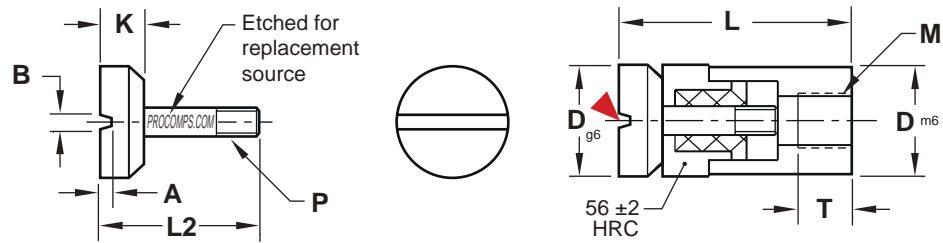
Plugs include springs and replacements are available.





# DATE STAMPS

## FD-SERIES: FULL DIAMETER PLUG



### PLUGS



### SHELL



**M** 1.4034 **H** 54-58 HRC

CATALOG NUMBER	A	B	K	L2	P
<b>DFDP03-18</b>	.3	.3	2.0	9.0	M1x0.25
<b>DFDP04-18</b>	.3	.3	2.3	10.5	M1.4x0.2

CATALOG NUMBER	D	T	L	M
<b>DFD03-S</b>	3	3	14	M2 x 0.4
<b>DFD04-S</b>	4	3	14	M2 x 0.4

CAD insertion point

**To Order Plugs:** Specify catalog number as shown below for the different plug style plugs. Plugs and shells are sold separately.

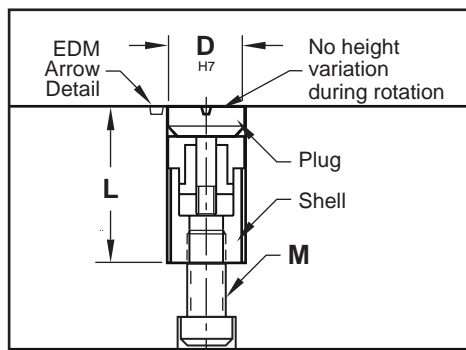


**Month & Year\***  
 Cat #: DFDPY-Diam – Starting Year\*  
 Ex.: DFDPY03-18



**Months**  
 Cat #: DFDP-Diam  
 Ex.: DFDP03

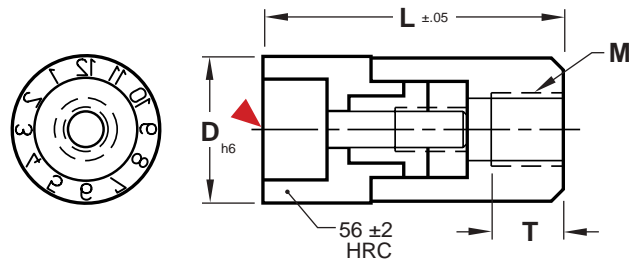
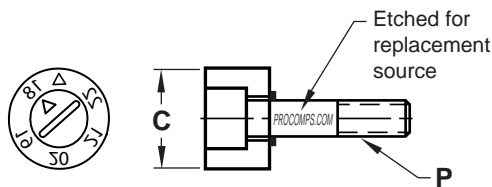
### Installation Guidelines:



\*Where years are specified, any year can be ordered by changing the suffix.  
 Example DFDPY03-19 or DFDPY03-20.  
 Special configurations are available.  
 Contact Customer Service for more information.

# DATE STAMPS

## MULTI-DATERS



### PLUGS



M 1.4034 H 54-58 HRC

CATALOG NUMBER	C	Slot Depth	P	Engraving Depth (Arrow)
DMDP06-18	4.2	0.4	M1.6x0.2	0.10
DMDP08-18	5.8	0.4	M2.5x0.35	0.10
DMDP10-18	7.0	0.4	M2.5x0.35	0.10
DMDP12-18	8.5	0.6	M3.0x0.5	0.20
DMDP16-18	11.5	0.6	M3.0x0.6	0.25

### RINGS



CATALOG NUMBER	D	L	M	T	Engraving Depth
DMD06	6	17	M3 x 0.5	3	0.10
DMD08	8	20	M4 x 0.7	4	0.12
DMD10	10	20	M5 x 0.8	4	0.13
DMD12	12	25	M6 x 1.0	6	0.20
DMD16	16	33	M8 x 1.25	8	0.25



**Years & Months** plug style is featured in the table above.



**Months** ring style is featured in the table above.

▶ CAD insertion point

**Additional Plug and Ring Options:** Specify catalog number as shown below for the different style plugs and rings.

**Plug Styles: Recessed Lettering**

**Ring Styles: Recessed Lettering**



**Arrow & 5 Years**

Cat #: DMDP-Starting Year\* - 5  
Ex.: DMDP06-185



**Days**

Cat #: DMDL-Diam  
Ex.: DMDL06



**Arrow & 11 Years**

Cat #: DMDP-Diam-Starting Year\* - 11  
Ex.: DMDP06-1811



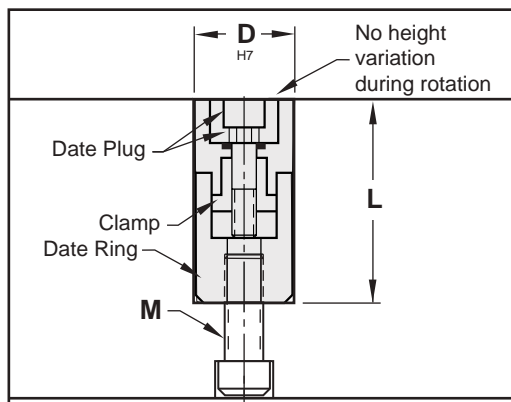
**Weeks**

Cat #: DMDW-Diam  
Ex.: DMDW06

\*Where years are specified, any year can be ordered by changing the suffix. Example DMDP10-19 or DMDP06-20.

Special configurations are available.  
Contact Customer Service for more information.

**Installation Guidelines:**



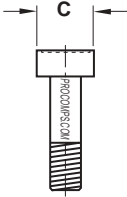
Maximum mold temperature: 450° F (230° C)



# DATE STAMPS REPLACEMENT PLUGS

## Locking Series Plugs

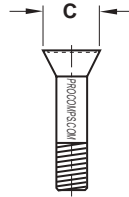
To replace Progressive's Locking Series plugs



CATALOG NUMBER	Date Ring Catalog Number	C
DNP04-18	DN04	2.5
DNP05-18	DN05	3.1
DNP06-18	DN06	3.1
DNP08-18	DN08	4.6
DNP10-18	DN10	4.6
DNP12-18	DN12	6.4
DNP16-18	DN16	8.4

## Tapered Series

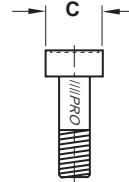
To replace Progressive's Tapered Series plugs



CATALOG NUMBER	Date Ring Catalog Number	C
DTPRP04-18	DTPR04	2.5
DTPRP05-18	DTPR05	3.1
DTPRP06-18	DTPR06	3.1
DTPRP08-18	DTPR08	4.6
DTPRP10-18	DTPR10	4.6
DTPRP12-18	DTPR12	6.4
DTPRP16-18	DTPR16	8.4
DTPRP20-18	DTPR20	11.0

## Compact Locking Plugs

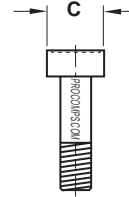
To replace Progressive's Compact Locking Series plugs



CATALOG NUMBER	Date Ring Catalog Number	C
DTNP03-18	DTN03	1.6
DTNP04-18	DTN04	2.5
DTNP05-18	DTN05	3.1
DTNP06-18	DTN06	3.1
DTNP08-18	DTN08	4.4
DTNP10-18	DTN10	5.2
DTNP12-18	DTN12	6.2
DTNP16-18	DTN16	8.2
DTNP20-18	DTN20	11.0

## RF-Series Plugs

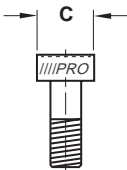
To replace Progressive's RF- or H-Series plugs.



CATALOG NUMBER	Date Ring Catalog Number	C
DFP03-18	DF03	1.6
DFP04-18	DF04	2.5
DFP05-18	DF05	3.1
DFP06-18	DF06	3.1
DFP08-18	DF08	4.6
DFP10-18	DF10	4.6
DFP12-18	DF12	6.4
DFP16-18	DF16	8.4

## CH & D-Series Plugs

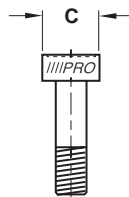
To replace Progressive's CH- or D-Series plugs or DME front style plugs. Springs included.



CATALOG NUMBER	Date Ring Catalog Number	C
DCP04-18	DC04	2.2
DCP05-18	DC05	3.1
DCP06-18	DC06	3.1
DCP08-18	DC08	4.4
DCP10-18	DC10	5.2
DCP12-18	DC12	6.2
DCP16-18	DC16	8.2
DCP20-18	DC20	11.0

## 20 Series Plugs

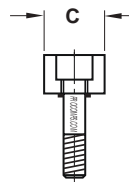
To replace Progressive's 20 Series plugs. Springs included.



CATALOG NUMBER	Date Ring Catalog Number	C
DLP06-18	DL06	3.1
DLP08-18	DL08	4.6
DLP10-18	DL10	4.6
DLP16-18	DL16	8.2

## Multi-Daters

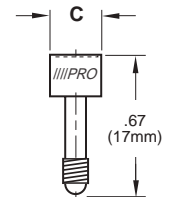
To replace Progressive's Multi-Dater Plugs.



CATALOG NUMBER	Date Ring Catalog Number	C
DMDP06-18	DMD06	4.2
DMDP08-18	DMD08	5.8
DMDP10-18	DMD10	7.0
DMDP12-18	DMD12	8.5
DMDP16-18	DMD16	11.5

## Retro Plugs

To replace plugs previously purchased for PCS/Cumsa style rings.



CATALOG NUMBER	Date Ring Catalog Number	C
DP32-18	DS06	3.2
DP47-18	DS08	4.7
DP57-18	DS10	5.7
DP67-18	DS12	6.7
DP87-18	DS16	8.7

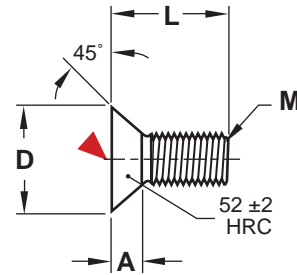
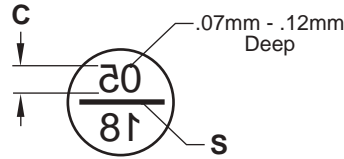
For Retro Plugs outside of North America, call for availability from local distributors. \*Retro Date Rings are not available.

For D-Series replacements, add "D" to the catalog number. Ex. DCP16D-18.

Refer to the catalog pages for the specific series required for plugs with alternate engraving such as "C", "Arrow Only", or raised versions. Contact Customer Service for availability of special plugs or for verification of the plugs required.

# DATE STAMPS

## MICRODATERS®



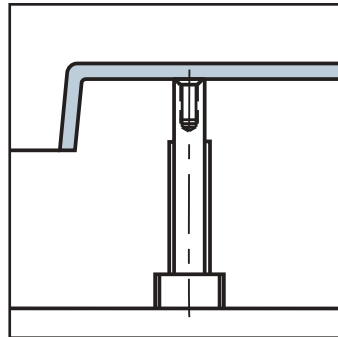
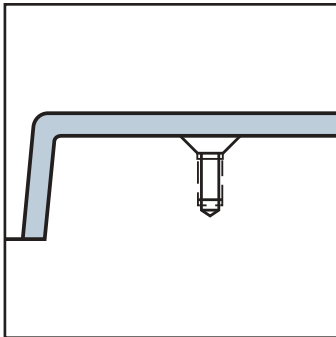
**M** 420 Stainless Steel **H** 50-54 HRC

CAD insertion point

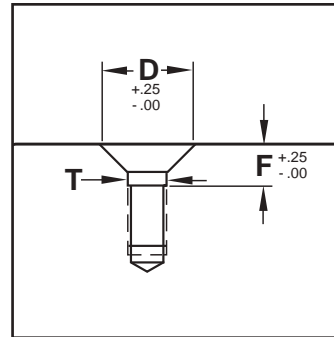
CATALOG NUMBER	D	L	A	M	C	F	T	S Width x Depth	BLANK CAT. NO.
MD02	2	5	.45	M1.4x0.3	.50	1.14	1.4	.38 x .25	MD02-B
MD03	3	5	.76	M1.8x0.35	.75	1.52	1.8	.38 x .38	MD03-B
MD04	4	6	.89	M2.5x0.45	1.0	1.65	2.7	.38 x .38	MD04-B

Blank (-B) MicroDaters do not have numbers or the removal slot, ready for custom engraving by the mold maker.

### Design Options:



### Installation Guidelines:

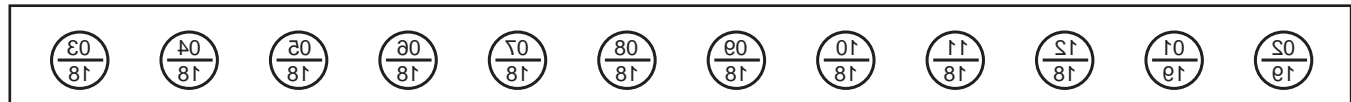


Microdaters can be installed directly into the plates or inserts or into a core pin or ejector pin with the material hardness around 35-40 HRC to utilize conventional machining methods.

Drill, tap and counterbore the dater as shown at left and to the dimensions in the chart above.

### To Order:

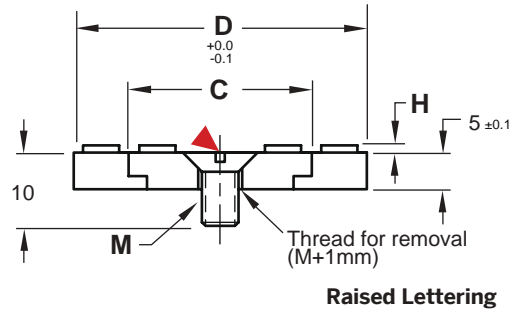
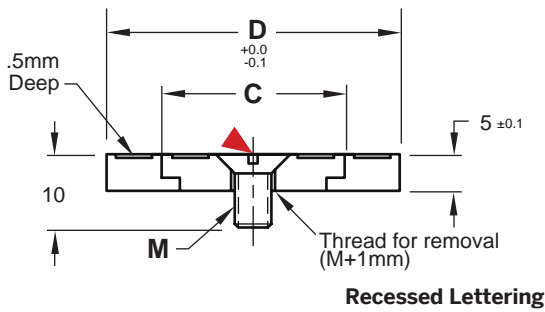
- MicroDaters can be ordered individually or in 12-month sets.
- For individual month daters, specify the 2-digit month and year at the end of the catalog number:  
Ex. MD04-03-18 for a 4mm screw for March 2018.
- To order a 12-month set, specify a "Y" at the end of the catalog number, followed by the 2-digit month and year that begins the series:  
Ex. MD03-Y-03-18 would yield (12) 3mm screws starting with March 2018, ending with February 2019. Shown below at 2:1 scale.





# DATE STAMPS

## LG-SERIES: LARGE MOLD, STRUCTURAL FOAM/BLOW MOLDS

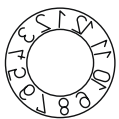


Brass **M** Ms 58  
 Steel **M** 1.2510 **H** 52-56 HRC ▶ CAD insertion point

D Nominal Ring Diameter	C	M	H Raised Height
15	10	M3 x 0.5	0.5
20	13	M3 x 0.5	1.0
30	19	M4 x 0.7	1.0
40	25	M5 x 0.8	1.0

**To Order:** Specify catalog number as shown below for the different style rings and plugs.

### Ring Styles: Recessed Lettering



#### Months

Cat #: DLB-Diam (Brass)  
 DLS-Diam (Steel)  
 Ex.: DLB40, DLS40



#### Days

Cat #: DLBL-Diam (Brass)  
 DLSL-Diam (Steel)  
 Ex.: DLBL40, DLSL40



#### Year

Cat #: DLBY-Diam – Starting Year\* (Brass)  
 DLSY-Diam – Starting Year\* (Steel)  
 Ex.: DLBY40-18, DLSY40-18

### Ring Styles: Raised Lettering



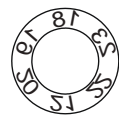
#### Months

Cat #: DLBR-Diam (Brass)  
 DLSR-Diam (Steel)  
 Ex.: DLBR40, DLSR40



#### Days

Cat #: DLBRL-Diam (Brass)  
 DLSRL-Diam (Steel)  
 Ex.: DLBRL40, DLSRL40



#### Year

Cat #: DLBRY-Diam – Starting Year\* (Brass)  
 DLSRY-Diam – Starting Year\* (Steel)  
 Ex.: DLBRY40-18, DLSRY40-18

### Plug Styles: Recessed Lettering



#### Arrow Only

Cat #: DLBP-Diam – AO (Brass)  
 DLSP-Diam – AO (Steel)  
 Ex.: DLBP40-AO, DLSP40-AO



#### Year

Cat #: DLBP-Diam – Year\* (Brass)  
 DLSP-Diam – Year\* (Steel)  
 Ex.: DLBP40-18, DLSP40-18

### Plug Styles: Raised Lettering



#### Arrow Only

Cat #: DLBRP-Diam – AO (Brass)  
 DLSRP-Diam – AO (Steel)  
 Ex.: DLBRP40-AO, DLSRP40-AO



#### Year

Cat #: DLBRP-Diam – Year\* (Brass)  
 DLSRP-Diam – Year\* (Steel)  
 Ex.: DLBRP40-18, DLSRP40-18

\*Where years are specified, any year can be ordered by changing the suffix. Example DLBP15-19 or DLSP15-20.

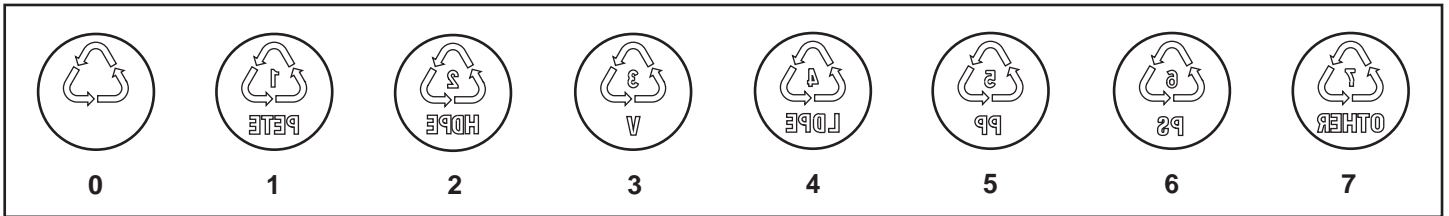
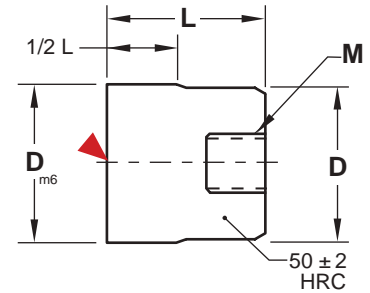
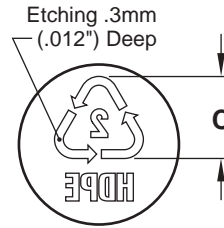
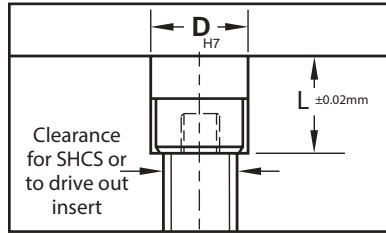
Special configurations are available. Contact Customer Service for more information.

# RECYCLE INSERTS

## SPI STANDARD



**Installation Guidelines:**  
To avoid damage to face, press insert into hole using a brass or plastic mallet.



**M** 420 Stainless Steel **H** 48-52 HRC

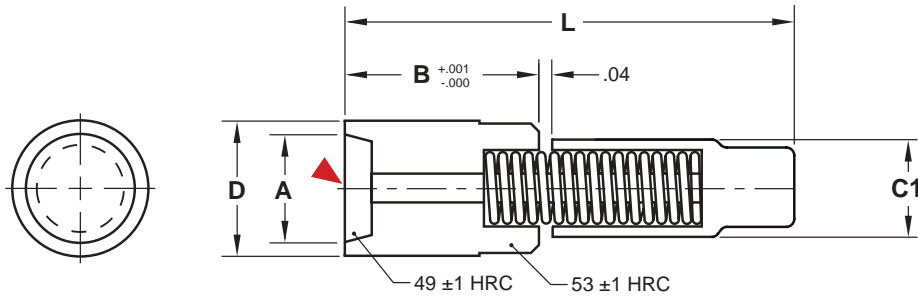
CAD insertion point

CATALOG NUMBER	D	Material Code	Material	L	C	M
RI-10-0	10 mm (.3937")	N/A	BLANK	12 mm (.4724")	6 mm (.2362")	M5 x .08
RI-10-1		1	POLYETHYLENE TEREPHTHALATE			
RI-10-2		2	HIGH DENSITY POLYETHYLENE			
RI-10-3		3	POLYVINYL CHLORIDE			
RI-10-4		4	LOW DENSITY POLYETHYLENE			
RI-10-5		5	POLYPROPYLENE			
RI-10-6		6	POLYSTYRENE			
RI-10-7		7	OTHER			
RI-16-0	16 mm (.6299")	N/A	BLANK	14 mm (.5518")	10 mm (.3937")	M6 x 1.0
RI-16-1		1	POLYETHYLENE TEREPHTHALATE			
RI-16-2		2	HIGH DENSITY POLYETHYLENE			
RI-16-3		3	POLYVINYL CHLORIDE			
RI-16-4		4	LOW DENSITY POLYETHYLENE			
RI-16-5		5	POLYPROPYLENE			
RI-16-6		6	POLYSTYRENE			
RI-16-7		7	OTHER			
RI-20-0	20 mm (.7874")	N/A	BLANK	16 mm (.6299")	12 mm (.4724")	M6 x 1.0
RI-20-1		1	POLYETHYLENE TEREPHTHALATE			
RI-20-2		2	HIGH DENSITY POLYETHYLENE			
RI-20-3		3	POLYVINYL CHLORIDE			
RI-20-4		4	LOW DENSITY POLYETHYLENE			
RI-20-5		5	POLYPROPYLENE			
RI-20-6		6	POLYSTYRENE			
RI-20-7		7	OTHER			

Contact Customer Service for pricing and availability of other sizes or material engraving.

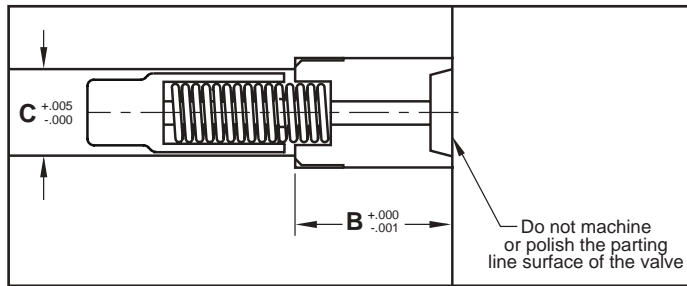


# AIR VALVES



**M** Body: 420 Stainless Steel, Plunger: Tool Steel, coated for lubricity **H** Body: 52-54 HRC, Plunger: 48-50 HRC ▶ CAD insertion point

CATALOG NUMBER	D		A		B		C1		L		
	MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch	
<b>AV-08</b>	8	.3149	+0.0006 +0.0002	6.5	.256	11	.433	6	.24	24	1.0
<b>AV-12</b>	12	.4724	+0.0007 +0.0003	9.7	.382	18	.708	8	.32	34	1.4
<b>AV-18</b>	18	.7086	+0.0007 +0.0003	14.8	.583	22	.866	12	.47	46	1.8

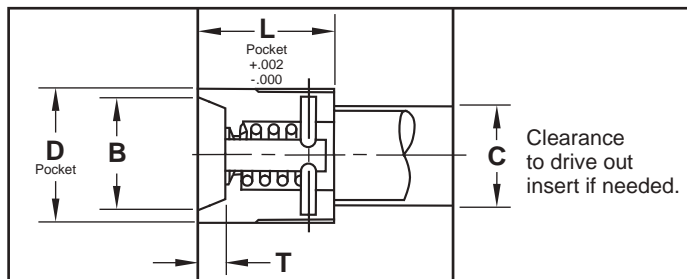


### Suggested Machining Diameters:

CATALOG NUMBER	C
<b>AV-08</b>	.265
<b>AV-12</b>	.354
<b>AV-18</b>	.551

### Specifications:

- Pressure Required: 29-140 psi
- Maximum Mold Temperature: 265°F (130° C)



# AIR POPPETS



### Specifications:

- Pressure Required: 80-100 psi
- Maximum Mold Temperature: 285°F (140° C)
- Repair kit includes spring and pin.

**M** 420 Stainless Steel **H** 40-44 HRC

AIR POPPET CATALOG NUMBER	D ±.0002	B	C	T	L	REPAIR KIT CATALOG NUMBER
<b>APV-25</b>	.250	.215	3/16	.06	.375	<b>APVR-25</b>
<b>APV-37</b>	.375	.325	9/32	.07	.375	<b>APVR-37</b>
<b>APV-50</b>	.500	.437	3/8	.10	.500	<b>APVR-50</b>
<b>APV-75</b>	.750	.656	9/16	.15	.750	<b>APVR-75</b>
<b>APV-100</b>	1.000	.875	3/4	.20	1.000	<b>APVR-100</b>
<b>APV-150</b>	1.500	1.312	1	.30	1.500	<b>APVR-150</b>































# COOLING ITEMS






## SECTION E




				
<b>Baffles</b>	<b>Jumper Baffles</b>	<b>Reverse Flow Baffles</b>	<b>Cascades: Nipple Type</b>	<b>Cascades: Quick Coupler</b>
Prefix: SB, TB	Prefix: JBA	Prefix: RFB	Prefix: NC	Prefix: QC
Page: E-2	Page: E-4	Page: E-5	Page: E-6	Page: E-7



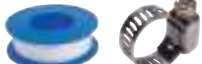
				
<b>Cascades: Hex Key, Compact</b>	<b>Cascades: High Flow</b>	<b>Cascade: Rear Load Nipple</b>	<b>Cascade: RL Quick Coupler</b>	<b>Bubbler Base</b>
Prefix: HKC, CC	Prefix: HFC	Prefix: RLN	Prefix: RLQC	Prefix: BBL
Page: E-8	Page: E-9	Page: E-10	Page: E-11	Page: E-12

				
<b>Inlet Cascades</b>	<b>Metric Tubes: High Flow, Hex</b>	<b>Tubes: High Flow, Hex</b>	<b>Tubes: Piston, Brass</b>	<b>Socket Connectors</b>
Prefix: CF	Prefix: HFTM, HEXM, EHEXM	Prefix: HFT, HEXT	Prefix: PT, T	Prefix: SC
Page: E-13	Page: E-14	Page: E-15	Page: E-16	Page: E-17

				
<b>Connector Plugs</b>	<b>Safety Clips</b>	<b>Extension Plugs</b>	<b>Adjustable Hex Nipples</b>	<b>Pipe Nipples</b>
Prefix: Numeral	Prefix: SC	Prefix: Numeral	Prefix: APN	Prefix: BPN, GPN
Page: E-18	Page: E-19	Page: E-21	Page: E-24	Page: E-24

				
<b>Elbows: Hex Key</b>	<b>Water Jumpers</b>	<b>Push-Lok Hose</b>	<b>Water Jumpers: Swivel</b>	<b>Pipe Plugs</b>
Prefix: HK, HKEE, HKL	Prefix: WJ	Prefix: WJH	Prefix: WJ	Prefix: BR, ST, SS
Page: E-25	Page: E-26	Page: E-26	Page: E-27	Page: E-28

				
<b>Plugs: Water Blockers</b>	<b>Plugs: Threadless</b>	<b>Hose Barbs &amp; Splicers</b>	<b>Elbows: Hex, Extension</b>	<b>Combination Hose Inserts</b>
Prefix: WB	Prefix: TWP, TAP, TDP	Prefix: MB, FB, HS	Prefix: HELS, HELB	Prefix: Numeral
Page: E-29	Page: E-30	Page: E-31	Page: E-32	Page: E-33

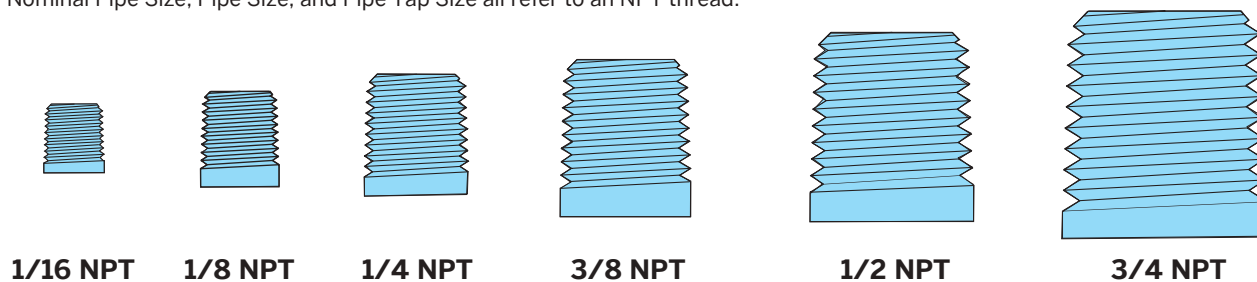
		
<b>Tees &amp; Elbows</b>	<b>Reducers &amp; Couplings</b>	<b>Cover Plugs, Clamps &amp; Tape</b>
Prefix: T, MT, ELS, EL, ELA	Prefix: RB, MR, C, HN	Prefix: CP, HC, TT
Page: E-34	Page: E-35	Page: E-36



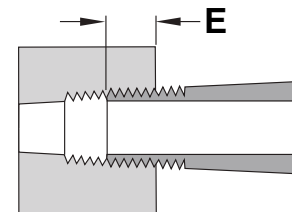


## PIPE THREAD DATA

The table below lists standard pipe sizes along with the actual O.D. and I.D. for each size. The nominal size of any pipe does not in fact refer to either the outside diameter (O.D.) or the inside diameter (I.D.) of the pipe. Actual size drawings of pipes from 1/16" to 3/4" are shown below. Note: Nominal Pipe Size, Pipe Size, and Pipe Tap Size all refer to an NPT thread.



Pipe Size	Threads Per Inch	Outside Diameter of Pipe	Inside Diameter of Pipe	Tap Drill Size Without Ream	Tap Drill Size With Ream	E Thread Engagement
1/16	27	.312	.209	1/4	15/64	.261
1/8	27	.405	.269	11/32	21/64	.263
1/4	18	.540	.364	7/16	27/64	.395
3/8	18	.675	.493	9/16	9/16	.407
1/2	14	.840	.622	45/64	11/16	.534
3/4	14	1.050	.824	29/32	57/64	.545
1	11-1/2	1.315	1.049	1-9/64	1-1/8	.661
1-1/4	11-1/2	1.660	1.380	1-31/64	1-15/32	.681
1-1/2	11-1/2	1.900	1.610	1-23/32	1-45/64	.681
2	11-1/2	2.375	2.067	2-3/16	2-11/64	.697



The Thread Engagement column ("E") can be used to determine the length of the component required to properly assemble when fully tightened. The drawing above illustrates this measurement.

## PIPE CHECK

**M** Hard anodized aluminum

CATALOG NUMBER	DESCRIPTION
PC-100	Pipe Thread Check



## SPECIAL COOLING PRODUCTS

Progressive Components can provide special length items, such as Tubes, Extension Plugs, and Adjustable Pipe Nipples by contacting Customer Service with your product code and the length required.

In addition, custom bubblers, tubes, or blades can be manufactured according to your specifications.

Contact Engineering for an application review by sending your prints or design to [tech@procomps.com](mailto:tech@procomps.com).

Templates for Extension Plugs and Tube configurations are located in section X.

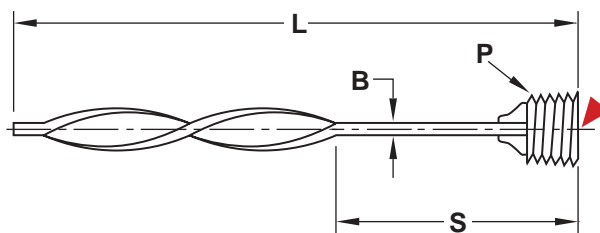
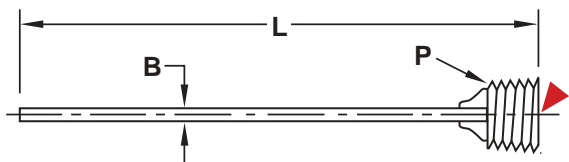


# BAFFLES

## NPT SERIES



Progressive Baffles feature patented XT Extra torque technology. A deeper socket and keyed design provide 3 times the torque over brazed baffles of the past.



### Straight

**M** Brass

CAD insertion point

CATALOG NUMBER	P Plug Size (NPT)	L Overall Length	B Blade Thickness	Blade Width -.005 -.010
SB06L4	1/16-27	4	.057	.250
SB06L8	1/16-27	8	.057	.250
SB06L12	1/16-27	12	.057	.250
SB12L4	1/8-27	4	.057	.312
SB12L8	1/8-27	8	.057	.312
SB12L12	1/8-27	12	.057	.312
SB25L5	1/4-18	5	.085	.437
SB25L10	1/4-18	10	.085	.437
SB25L15	1/4-18	15	.085	.437
SB37L6	3/8-18	6	.093	.562
SB37L12	3/8-18	12	.093	.562
SB37L18	3/8-18	18	.093	.562
SB50L8	1/2-14	8	.093	.687
SB50L16	1/2-14	16	.093	.687
SB75L12	3/4-14	12	.093	.937
SB75L20	3/4-14	20	.093	.937
SB100L16	1-11 1/2	16	.093	1.125
SB100L24	1-11 1/2	24	.093	1.125
SB125L16	1 1/4-11 1/2	16	.093	1.484
SB125L24	1 1/4-11 1/2	24	.093	1.484

### Turbo

**M** Brass

CAD insertion point

CATALOG NUMBER	P Plug Size (NPT)	L Overall Length	S Straight Length	B Blade Thickness	Blade Width -.005 -.010
TB06L4	1/16-27	4	2	.057	.250
TB06L8	1/16-27	8	4	.057	.250
TB06L12	1/16-27	12	6	.057	.250
TB12L4	1/8-27	4	2	.057	.312
TB12L8	1/8-27	8	4	.057	.312
TB12L12	1/8-27	12	6	.057	.312
TB25L5	1/4-18	5	2	.085	.437
TB25L10	1/4-18	10	4	.085	.437
TB25L15	1/4-18	15	6	.085	.437
TB37L6	3/8-18	6	2	.093	.562
TB37L12	3/8-18	12	4	.093	.562
TB37L18	3/8-18	18	6	.093	.562
TB50L8	1/2-14	8	3	.093	.687
TB50L16	1/2-14	16	5	.093	.687
TB75L12	3/4-14	12	4	.093	.937
TB75L20	3/4-14	20	6	.093	.937
TB100L16	1-11 1/2	16	5	.093	1.125
TB100L24	1-11 1/2	24	8	.093	1.125
TB125L16	1 1/4-11 1/2	16	5	.093	1.484
TB125L24	1 1/4-11 1/2	24	8	.093	1.484

## BLADE MATERIAL

CATALOG NUMBER	B Blade Thickness	Blade Width -.005 -.010
BM06	.057	.250
BM12	.057	.312
BM25	.085	.437
BM25-B	.085	.421
BM37	.093	.562
BM50	.093	.687
BM75	.093	.937
BM75-B	.093	.906
BM100	.093	1.125
BM125	.093	1.484



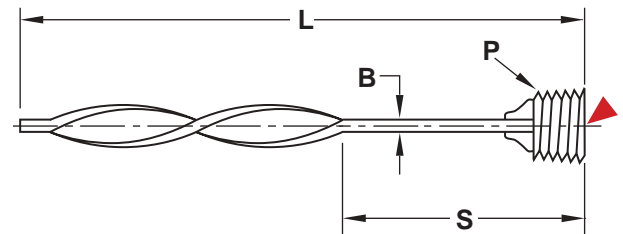
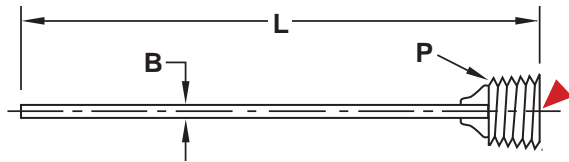
### Alternative configurations and materials available:

- Straight Baffle Blade Material: Order according to the chart at left. Material is sold in 36" lengths, and other lengths can be provided upon request.
- For Baffles with brass blades and stainless steel pipe plugs, add an "-SS" to the end of the catalog number. Ex. SB25L5-SS or TB75L12-SS. Call for pricing on 1-1/4 baffles with stainless steel pipe plugs.
- Baffles can be ordered cut to any length, in any quantity. To order, specify the prefix and plug size and the required length. For Turbo Baffles, the closest straight length (S) is used, but can be provided to a different length, upon request. Ex. SB25L6.25 or TB37L5.75-SS (with a 2" "S" dimension)
- BSPT plug baffles are sold separately on page E-3.



# BAFFLES BSPT SERIES

Progressive Baffles feature patented XT Extra torque technology. A deeper socket and keyed design provide 3 times the torque over brazed baffles of the past.



## Straight

**M** Brass

▶ CAD insertion point

CATALOG NUMBER	P Plug Size (BSPT)	L Overall Length	B Blade Thickness	Blade Width -.005 -.010
SB12L4-BSP	1/8-28	4	.057	.312
SB12L8-BSP	1/8-28	8	.057	.312
SB12L12-BSP	1/8-28	12	.057	.312
SB25L5-BSP	1/4-19	5	.085	.421
SB25L10-BSP	1/4-19	10	.085	.421
SB25L15-BSP	1/4-19	15	.085	.421
SB37L6-BSP	3/8-19	6	.093	.562
SB37L12-BSP	3/8-19	12	.093	.562
SB37L18-BSP	3/8-19	18	.093	.562
SB50L8-BSP	1/2-14	8	.093	.687
SB50L16-BSP	1/2-14	16	.093	.687
SB75L12-BSP	3/4-14	12	.093	.906
SB75L20-BSP	3/4-14	20	.093	.906
SB100L16-BSP	1-11	16	.093	1.125
SB100L24-BSP	1-11	24	.093	1.125

## Turbo

**M** Brass

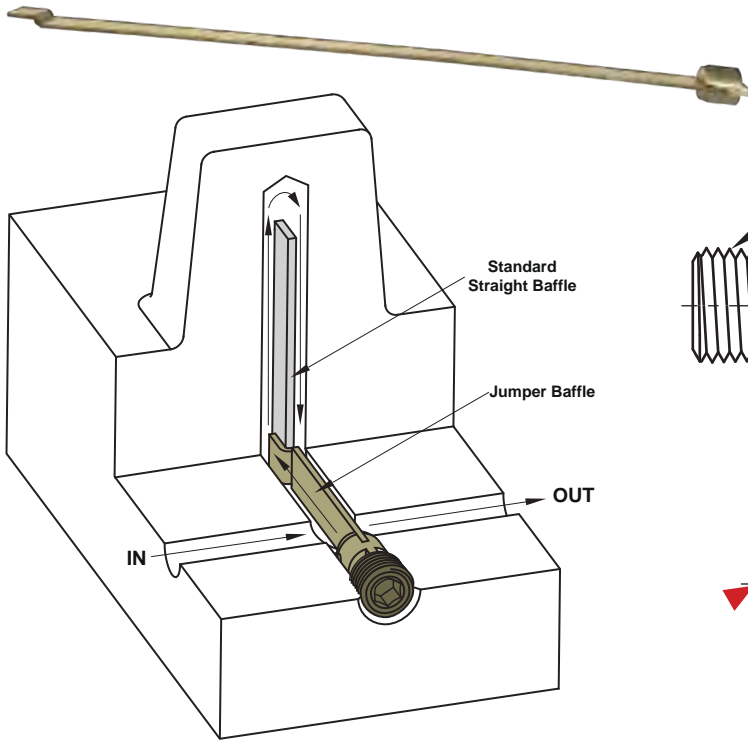
▶ CAD insertion point

CATALOG NUMBER	P Plug Size (BSPT)	L Overall Length	S Straight Length	B Blade Thickness	Blade Width -.005 -.010
TB12L4-BSP	1/8-28	4	2	.057	.312
TB12L8-BSP	1/8-28	8	4	.057	.312
TB12L12-BSP	1/8-28	12	6	.057	.312
TB25L5-BSP	1/4-19	5	2	.085	.421
TB25L10-BSP	1/4-19	10	4	.085	.421
TB25L15-BSP	1/4-19	15	6	.085	.421
TB37L6-BSP	3/8-19	6	2	.093	.562
TB37L12-BSP	3/8-19	12	4	.093	.562
TB37L18-BSP	3/8-19	18	6	.093	.562
TB50L8-BSP	1/2-14	8	3	.093	.687
TB50L16-BSP	1/2-14	16	5	.093	.687
TB75L12-BSP	3/4-14	12	4	.093	.906
TB75L20-BSP	3/4-14	20	6	.093	.906
TB100L16-BSP	1-11	16	5	.093	1.125
TB100L24-BSP	1-11	24	8	.093	1.125

### Alternative configurations and materials available:

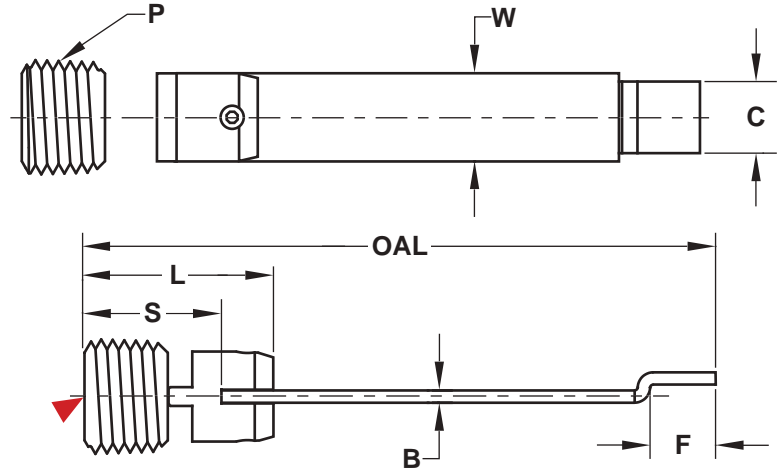
- For Baffles with brass blades and stainless steel pipe plugs, add an "-SS" to the end of the catalog number and contact Customer Service for pricing. Ex. SB25L5-BSP-SS or TB75L12-BSP-SS
- Baffles can be ordered cut to any length, in any quantity. To order, specify the prefix and plug size and the required length. For Turbo Baffles, the closest straight length (S) is used, but can be provided to a different length, upon request. Ex. SB25L6.25-BSP or TB37L5.75-BSP-SS (with a 2" "S" dimension)
- Straight Baffle Material is available on page E-2.

# JUMPER BAFFLES



Jumper Baffles enable water routing via interconnected baffles.

- Allows for flow to turn corners and reach angles within a single circuit.
- Simplifies design and machining of a complex circuit, reducing the number of feedlines required.



M Brass

▶ CAD insertion point

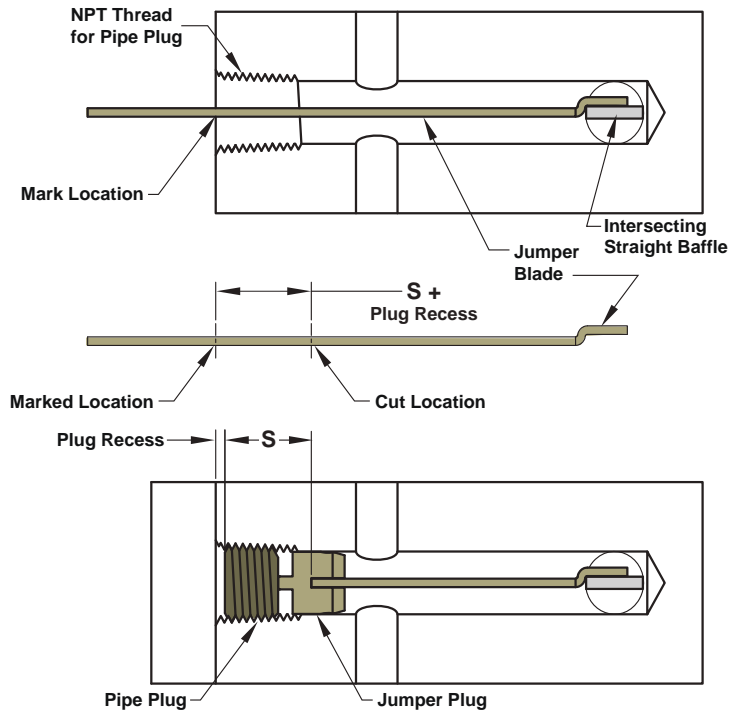
CATALOG NUMBER	P Pipe Plug Size (NPT)	B	W -.005 -.010	L	OAL	S	C	F	Set Screw Size
JBA12	1/8	.06	.312	.66	12.25	.50	.242	.25	#4-40 x 3/32"
JBA25	1/4	.06	.437	.90	12.31	.65	.352	.30	#6-32 x 1/8"

Note: Each assembly includes a Jumper Blade, a Jumper Plug, two (2) Set Screws and a Pipe Plug.

### Installation Guidelines:

1. Install the Jumper Blade so its shoulder rests against the intersection of the Straight Baffle and mark this location.
2. Calculate the distance from this marked location by adding the S dimension of the Jumper Plug to the distance that the plug will be recessed into the insert. Cut the Jumper Blade to this length.
3. Attach the Jumper Blade to the Jumper Plug using the two set screws.
4. Install the assembly into the waterline until it rests against the Straight Baffle. Then, insert the Pipe Plug until it is secured against the Jumper Plug.

For application assistance, contact [tech@procomps.com](mailto:tech@procomps.com).



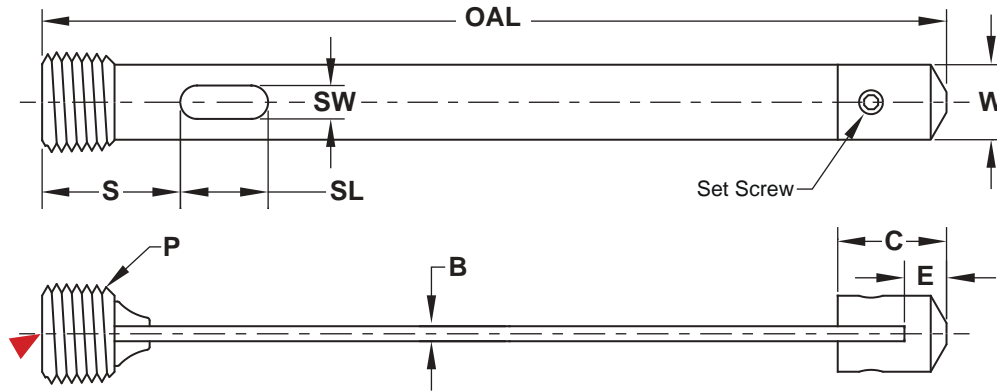




# REVERSE FLOW BAFFLES

Reverse Flow Baffles enables the feed line to a baffle to be located opposite the plug end of the baffle to avoid interfering with bushing holes, return pin holes, etc.

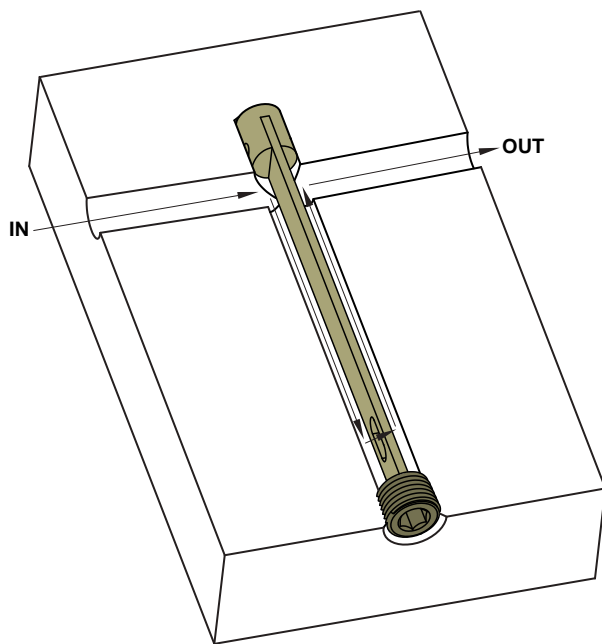
- Provides an alternative to circuits with long cross plate gun drilled lines and placement of in-line diverters, simplifying design, machining, and waterline cleaning.



M Brass

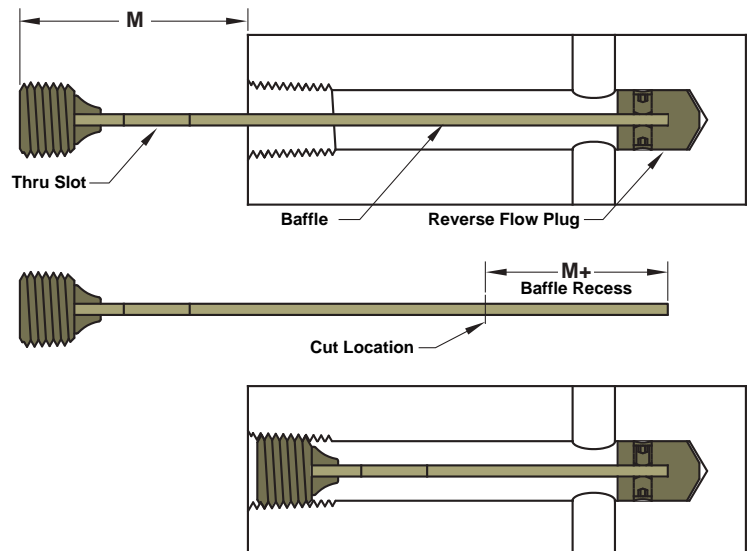
▶ CAD insertion point

CATALOG NUMBER	P Pipe Plug Size (NPT)	OAL (REF)	B	W -.005 -.010	S	SL	SW	C	E	Set Screw Size (2)
RFB06L8	1/16	8.16	.057	.250	.44	.18	.13	.38	.16	#4-40 x 3/32"
RFB12L8	1/8	8.23	.057	.312	.44	.22	.16	.50	.23	#4-40 x 3/32"
RFB25L10	1/4	10.25	.085	.437	.62	.35	.19	.62	.25	#8-32 x 1/8"
RFB37L12	3/8	12.28	.093	.562	.62	.41	.28	.75	.28	#10-32 x 3/16"
RFB50L16	1/2	16.28	.093	.687	.75	.50	.31	.75	.28	1/4-20 x 3/16"
RFB75L20	3/4	20.38	.093	.937	.75	.77	.44	.87	.38	1/4-20 x 3/8"
RFB100L24	1	24.38	.093	1.125	.87	1.00	.50	.87	.38	1/4-20 x 3/8"
RFB125L24	1-1/4	24.50	.093	1.484	1.35	1.22	.50	1.00	.50	1/4-20 x 1/2"



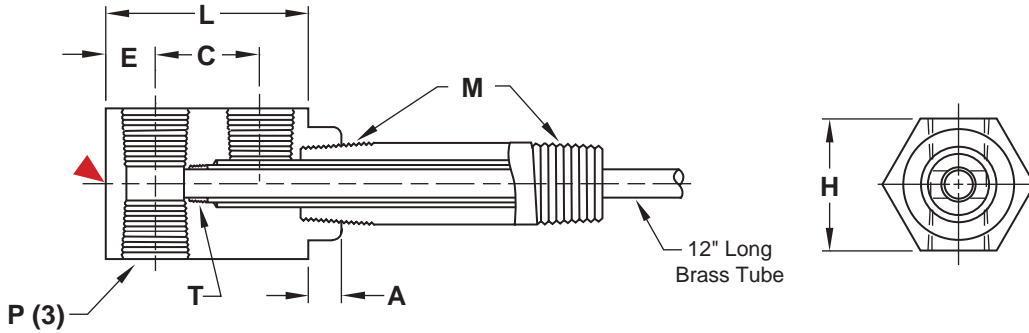
### Installation Guidelines:

1. Install the Reverse Flow Baffle into the waterline and measure the distance the Baffle extends out of the plate, "M" as shown below.
2. Remove the Reverse Flow Plug and cut the measured length from the end of the Baffle including any recess required.
3. Re-attach the Reverse Flow Plug to the Baffle using the two set screws.
4. Install the assembly into the waterline, ensuring a tight seal and proper orientation.



# CASCADES

## NIPPLE TYPE



**M** Head: Brass, Tube: Brass, 2" Long Pipe Nipple: Stainless Steel

CAD insertion point

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	Brass Tube Catalog # (Included)	H Hex Size	E	C	A	L	T	HEAD ONLY CATALOG NUMBER
NC1816	1/8	1/16	T187L12	.75	.21	.50	.28	.937	#10-32	NCH1816
NC1818	1/8	1/8	T187L12	.87	.32	.68	.28	1.343	#10-32	NCH1818
NC18181	1/8	1/8	T187L12	.87	.32	1.00	.28	1.656	#10-32	NCH18181
NC1418	1/4	1/8	T250L12	1.00	.32	.68	.21	1.343	1/4-28	NCH1418
NC1414	1/4	1/4	T250L12	1.00	.32	.68	.21	1.343	1/4-28	NCH1414
NC14181	1/4	1/8	T250L12	1.00	.32	1.00	.43	1.656	1/4-28	NCH14181
NC14141	1/4	1/4	T250L12	1.00	.32	1.00	.43	1.656	1/4-28	NCH14141
NC3818	3/8	1/8	T312L12	1.00	.34	1.00	.40	1.687	5/16-24	NCH3818
NC3814	3/8	1/4	T312L12	1.00	.34	1.00	.40	1.687	5/16-24	NCH3814
NC1214	1/2	1/4	T437L12	1.25	.40	1.00	.56	1.812	7/16-20	NCH1214
NC3438	3/4	3/8	T625L12	1.50	.50	1.25	.75	2.250	5/8-18	NCH3438

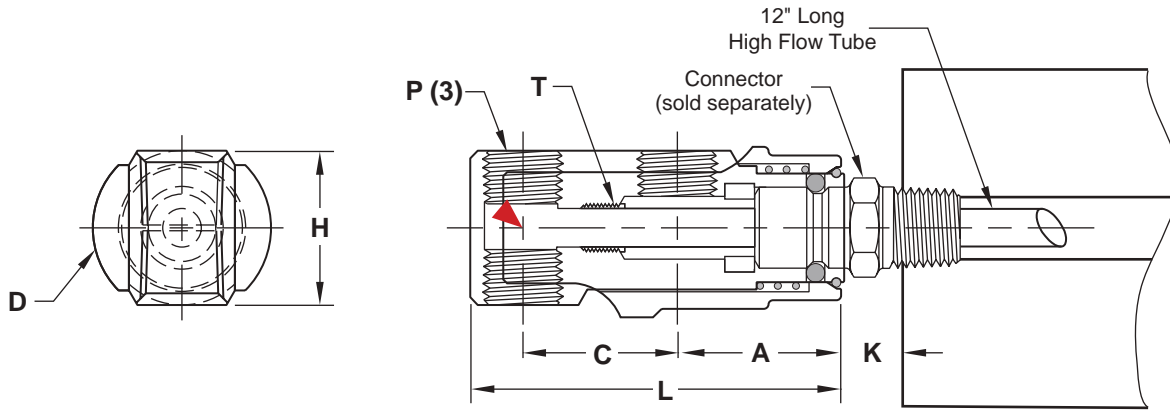
Brass pipe plug included.

### Alternative configurations and materials available:

- For Cascade assemblies with a steel head, add an "S" to the end of the catalog number. Ex. NC1816S or NC3814S
- For Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number. Ex. NCH1414S or NCH1616S
- Cascade Heads are available with thread sizes to accept High Flow Tubes. Contact Customer Service for pricing and delivery.
- These Cascades can also be used with Adjustable Hex Nipples instead of Stainless Nipples. Refer to page E-24 for available sizes and lengths.
- For complete Tube specifications, refer to page E-16.



# CASCADES QUICK COUPLER



**M** Cascade Head: Brass, Tube: Stainless Steel, Seals: Viton

CAD insertion point

CATALOG NUMBER	Connector Series	P Pipe Tap Size NPT	High Flow Tube Catalog # (Included)	T Tube Thread	C	A	H	D	L	HEAD ONLY CATALOG NUMBER
QC1819	200	1/8	HFT187L12	1/4-28	.687	.968	.812	.875	1.937	QCH1819
QC1822	200	1/8	HFT187L12	1/4-28	1.000	.968	.812	.875	2.250	QCH1822
QC1421	300	1/4	HFT250L12	5/16-24	.687	1.156	1.000	1.125	2.187	QCH1421
QC1425	300	1/4	HFT250L12	5/16-24	1.000	1.156	1.000	1.125	2.500	QCH1425
QC1431	500	1/4	HFT437L12	1/2-20	1.250	1.375	1.250	1.375	3.125	QCH1431
QC3831	500	3/8	HFT437L12	1/2-20	1.250	1.375	1.250	1.375	3.125	QCH3831

Longer High Flow Tubes and complete tube specifications can be found on page E-15.

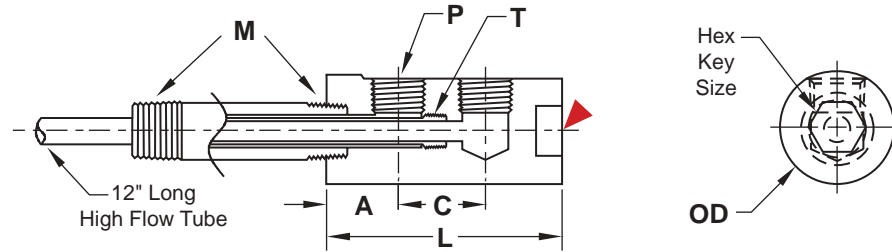
CATALOG NUMBER	Connector	K Min.
QC1819 QC1822	251	.32
	252	.43
QC1421 QC1425	253	.49
	351*	.34
	352	.42
	353	.45
QC1431 QC3831	354	.57
	553**	.55
	554	.54
	556	.57

\* Uses High Flow Tube HFTJ187.

\*\* Uses High Flow Tube HFTJ375.

# CASCADES

## HEX KEY

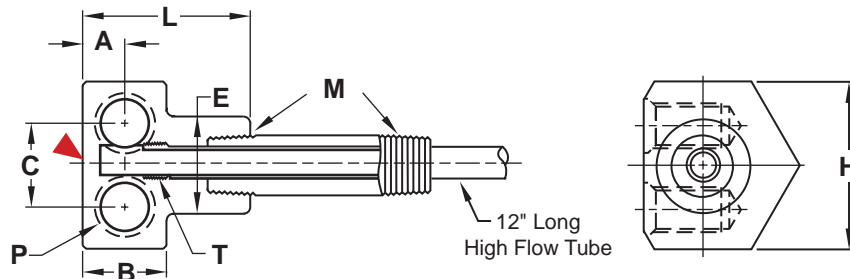


**M** Head: Brass, Tube: Stainless Steel, 2" Long Pipe Nipple: Stainless Steel. Note: HKC1616 includes a Brass Pipe Nipple

CAD insertion point

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	High Flow Tube Catalog # (Included)	T Tube Thread	L	C	A	Hex Key Size	OD	Nominal Clearance Drill	HEAD ONLY CATALOG NUMBER
HKC1616	1/16	1/16	HFT125L12	#10-32	1.625	.56	.50	5/16	.610	5/8	HKCH1616
HKC1816	1/8	1/16	HFT187L12	1/4-28	1.687	.56	.56	3/8	.735	3/4	HKCH1816
HKC1818	1/8	1/8	HFT187L12	1/4-28	1.875	.68	.56	3/8	.860	7/8	HKCH1818
HKC18181	1/8	1/8	HFT187L12	1/4-28	2.187	1.00	.56	3/8	.860	7/8	HKCH18181
HKC1418	1/4	1/8	HFT250L12	5/16-24	2.187	.68	.81	1/2	.985	1	HKCH1418
HKC14181	1/4	1/8	HFT250L12	5/16-24	2.500	1.00	.81	1/2	.985	1	HKCH14181
HKC1414	1/4	1/4	HFT250L12	5/16-24	2.312	.68	.87	1/2	.985	1	HKCH1414
HKC14141	1/4	1/4	HFT250L12	5/16-24	2.625	1.00	.87	1/2	.985	1	HKCH14141
HKC3814	3/8	1/4	HFT312L12	3/8-24	2.625	1.00	.87	1/2	.985	1	HKCH3814
HKC1214	1/2	1/4	HFT375L12	7/16-20	2.812	1.00	1.00	1/2	1.235	1-1/4	HKCH1214

## COMPACT



**M** Head: Brass, Tube: Stainless Steel, 2" Long Pipe Nipple: Stainless Steel

CAD insertion point

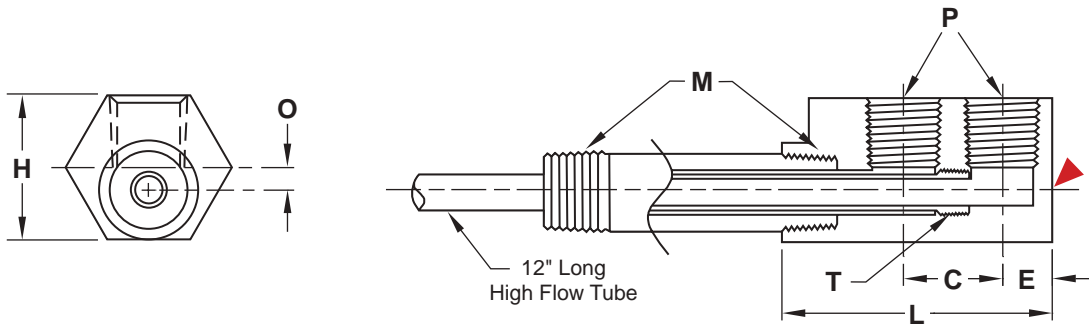
CATALOG NUMBER	M Pipe NPT	P In/Out NPT	High Flow Tube Catalog # (Included)	T Tube Thread	H Hex Size	A	B	C	L	E	HEAD ONLY CATALOG NUMBER
CC1816	1/8	1/16	HFT187L12	1/4-28	.93	.21	.437	.50	1.00	.625	CCH1816
CC1418	1/4	1/8	HFT250L12	5/16-24	1.25	.31	.625	.68	1.25	.750	CCH1418
CC1414	1/4	1/4	HFT250L12	5/16-24	1.50	.37	.750	.75	1.50	.875	CCH1414
CC3814	3/8	1/4	HFT312L12	3/8-24	1.50	.37	.750	.75	1.50	1.000	CCH3814
CC1214	1/2	1/4	HFT375L12	7/16-20	1.75	.37	.750	1.0	1.75	1.187	CCH1214
CC3438	3/4	3/8	HFT500L12	9/16-18	2	.437	.875	1.125	1.875	1.375	CCH3438

### Alternative configurations and materials available:

- For Compact Cascade assemblies with a steel head, add an "S" to the end of the catalog number. Ex. CC3814S
- For Compact Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number. Ex. CCH1418S
- Both the Hex Key and Compact Cascades can also be used with Adjustable Hex Nipples instead of Stainless Nipples. Refer to page E-24 for available sizes and lengths.
- For complete High Flow Tube specifications, refer to page E-15.



# CASCADES HIGH FLOW



**M** Head: Brass, Tube: Stainless Steel, 2" Long Pipe Nipple: Stainless Steel

CAD insertion point

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	High Flow Tube Catalog # (Included)	T Tube Thread	H Hex Size	O Offset	E	C	L	% Actual Flow Increase Over Standard Cascades	HEAD ONLY CATALOG NUMBER
<b>HFC1616</b>	1/16	1/16	HFT125L12	#10-32	.62	.094	.25	.50	1.25	–	<b>HFH1616</b>
<b>HFC1818</b>	1/8	1/8	HFT187L12	1/4-28	.75	.094	.31	.68	1.62	64%	<b>HFH1818</b>
<b>HFC18181</b>	1/8	1/8	HFT187L12	1/4-28	.75	.094	.31	1.00	1.93	64%	<b>HFH18181</b>
<b>HFC1414</b>	1/4	1/4	HFT250L12	5/16-24	1.00	.156	.34	.68	1.87	48%	<b>HFH1414</b>
<b>HFC14141</b>	1/4	1/4	HFT250L12	5/16-24	1.00	.156	.34	1.00	2.18	48%	<b>HFH14141</b>
<b>HFC3814</b>	3/8	1/4	HFT375L12	7/16-20	1.12	.125	.34	1.00	2.25	38%	<b>HFH3814</b>

### Alternative configurations and materials available:

- For High Flow Cascade assemblies with a steel head, add an "S" to the end of the catalog number. Ex. HFC1616S or HFC3814S
- For High Flow Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number. Ex. HFH1414S or HFH1616S
- High Flow Cascades can also be used with Adjustable Hex Nipples instead of Stainless Nipples. Refer to page E-24 for available sizes and lengths.
- For complete High Flow Tube specifications, refer to page E-15.

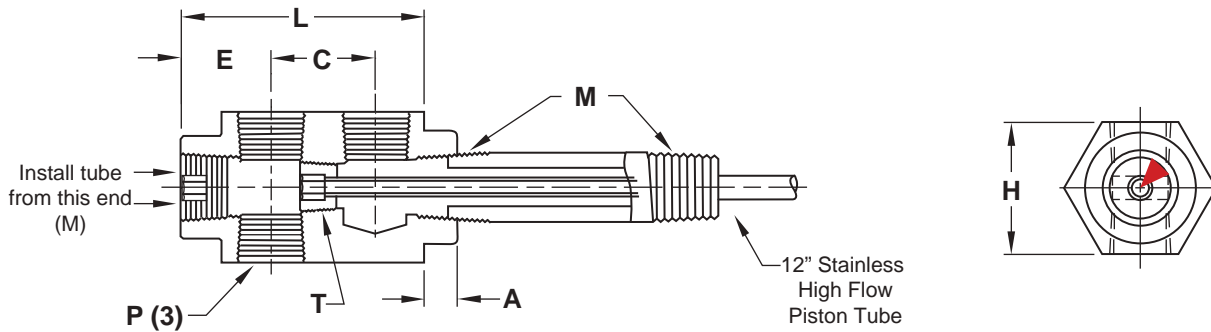
# CASCADES

## REAR LOADING NIPPLE



Progressive's Rear Loading Nipple type cascade provides the following benefits:

- Allows easy access to the High Flow Tube.
- Positive adjustment of inner tube at assembly.
- High flow design for maximum cooling rates.



**M** Head: Brass, Tube & Pipe Nipple: Stainless Steel, 2" Long Pipe Nipple: Stainless Steel

CAD insertion point

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	Piston Tube Catalog # (Included)	H Hex Size	E	C	A	L	T Tube Thread	HEAD ONLY CATALOG NUMBER
<b>RLNC1618</b>	1/8	1/16	PT06-187L12	3/4	.500	5/8	9/32	1.625	1/16	<b>RLCNH1618</b>
<b>RLNC1818</b>	1/8	1/8	PT06-187L12	7/8	.609	11/16	9/32	1.06	1/16	<b>RLCNH1818</b>
<b>RLNC18181</b>	1/8	1/8	PT06-187L12	7/8	.609	1	9/32	2.218	1/16	<b>RLCNH18181</b>
<b>RLNC1414</b>	1/4	1/4	PT12-250L12	1	.781	1	7/16	2.562	1/8	<b>RLCNH1414</b>
<b>RLNC1438</b>	3/8	1/4	PT25-312L12	1	.781	1	7/16	2.562	1/4	<b>RLCNH1438</b>

### Alternative configurations and materials available:

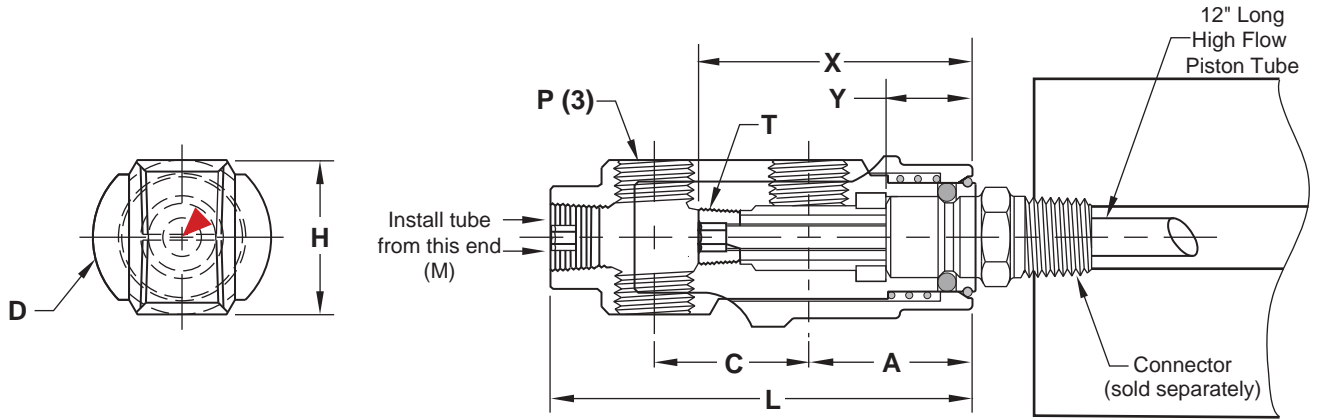
- For Cascade assemblies with a steel head, add an "S" to the end of the catalog number. Ex. RLNC1618S or RLNC18181S
- For Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number. Ex. RLNCH1618S or RLNCH18181S
- For complete Piston Tube specifications and longer lengths, refer to page E-16.
- Includes 12" long Piston Tube, 2" long Stainless Pipe Nipple, and Brass Pipe Plugs (2).



# CASCADES REAR LOAD QUICK COUPLER

Progressive's Rear Load Quick Coupler type cascade provides the following benefits:

- Allows access to the inner cooling tube without removing the cascade assembly.
- Can be installed and removed without disconnecting cooling lines.
- Easy adjustment of inner tube at assembly.
- High flow design provides maximum cooling rates.



**M** Head: Brass, Tube: Stainless Steel, Seals: Viton

CAD insertion point

CATALOG NUMBER	Connector Series	M Plug Size NPT	P In/Out NPT	Piston Tube Catalog # (Included)	T Tube Thread	C	A	H	D	X Tube End-Ref	Y Connector End-Ref	L	HEAD ONLY CATALOG NUMBER
RLQC1814	200	1/8	1/8	PT06-187L12	1/16	11/16	31/32	13/16	7/8	1.45	.370	2.187	RLQCH1814
RLQC1815	200	1/8	1/8	PT06-187L12	1/16	1	31/32	13/16	7/8	1.54	.370	2.500	RLQCH1815
RLQC1418	300	1/8	1/4	PT12-250L12	1/8	1	1-5/32	1	1-1/8	1.89	.590	2.937	RLQCH1418
RLQC1422	500	1/4	1/4	PT37-437L12	3/8	1-1/4	1-3/8	1-1/4	1-3/8	2.25	.730	3.687	RLQCH1422
RLQC3822	500	3/8	3/8	PT37-437L12	3/8	1-1/4	1-3/8	1-1/4	1-3/8	2.25	.730	3.687	RLQCH3822

CATALOG NUMBER	Connector	K Min.
RLQC1814 RLQC1815	251	.37
	252	
	253	
RLQC1418	351*	.59
	352	
	353	
	354	
RLQC1422 RLQC3822	553**	.73
	554	
	556	

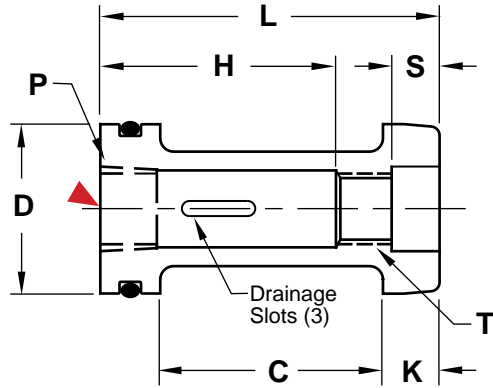
### Alternative configurations and materials available:

- For Cascade assemblies with a steel head, add an "S" to the end of the catalog number. Ex. RLQC1814S or RLQC1418S
- For Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number. Ex. RLQCH1814S or RLQCH1418S
- For complete Piston Tube specifications and longer lengths, refer to page E-16.
- Includes 12" long Piston Tube, 2" long Stainless Pipe Nipple, and Brass Pipe Plugs (2).

\* Uses High Flow Tube JHF187T-

\*\* Uses High Flow Tube JHF375T-

# BUBBLER BASE™



M Brass with Viton O-Ring

▶ CAD insertion point

CATALOG NUMBER	D	L	C	K	S	H Stop for High Flow Tube	T Tube Thread	P Pipe Thread for Removal	Compatible High Flow Tube	Compatible Hex Series Tube
<b>BBL05</b>	.374	.750	.35	.19	.160	.45	#5-44	#10-32	HFT078 / HFT094	HEXT078 / HEXT094
<b>BBL10</b>	.436	1.000	.55	.23	.190	.61	#10-32	1/4-28	HFTJ078 / HFT125	HEXTJ094 / HEXT125
<b>BBL25</b>	.560	1.250	.72	.27	.255	.72	1/4-28	1/16-27 NPT	HFTJ125 / HFT187	HEXTJ125 / HEXT187
<b>BBL31</b>	.748	1.500	.98	.27	.285	.92	5/16-24	1/8-27 NPT	HFTJ187 / HFT250	HEXTJ187 / HEXT250

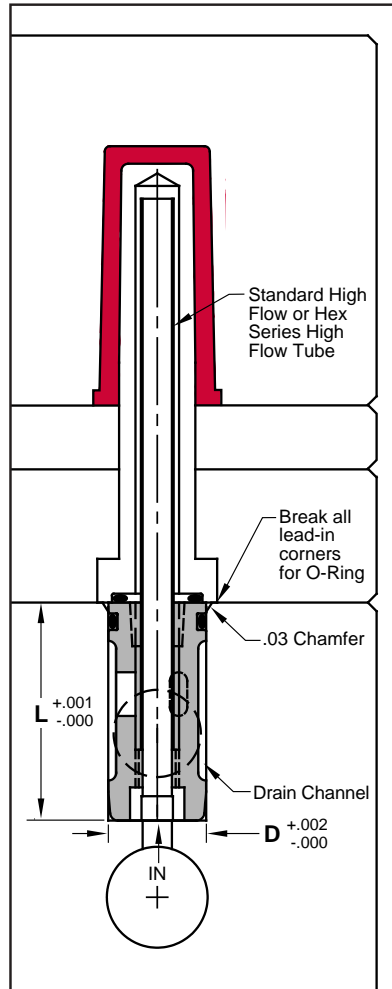
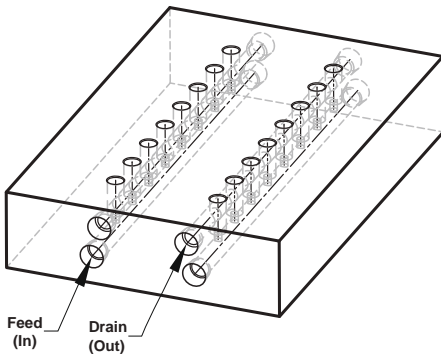
High Flow Tubes and Hex Series Tubes are sold separately on the following page.

### Features:

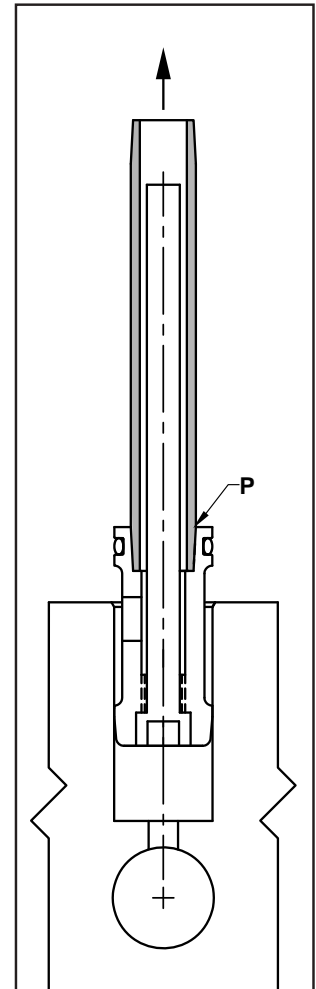
- The Bubbler Base allows for positive positioning of cooling tubes over previous methods.
- The compact design enables minimal center-to-center pin locations.
- Each Bubbler Base includes the O-Ring, to ensure a positive seal within the core pin.
- Compatible with either High Flow Tubes or Hex Series Tubes.
- Maximum temperature: 400° F (200° C)

### Application Guidelines:

- Utilize the largest diameter tube possible, and match the inlet diameter's area.
- Core pin diameter head should be large enough to incorporate a standard O-ring to seal around the tube.
- Water line location can be anywhere within the relief channel.
- To remove the Bubbler Base/Tube without damage, slip a pipe nipple around the tube that matches the "P" thread size, and fasten into the base as shown.
- Easy removal by hand, or by wrench on pipe nipple (P).
- Quantity of Bubbler Bases and Tubes in line is dependent upon the mold design application and waterline calculations. For assistance in determining the optimal waterline circuit, please contact Engineering at tech@procomps.com.



Application



Maintenance/Removal

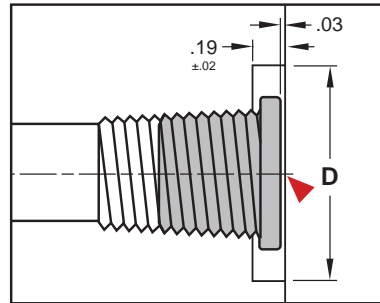
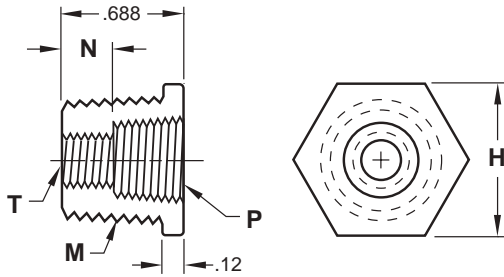




# INLET CASCADE™ CASCADE TUBE FITTING



## Installation Guidelines:

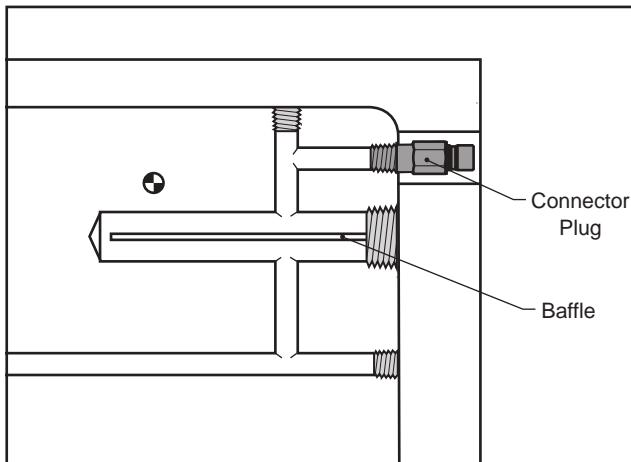


M 303 Stainless Steel H 18-22 HRC

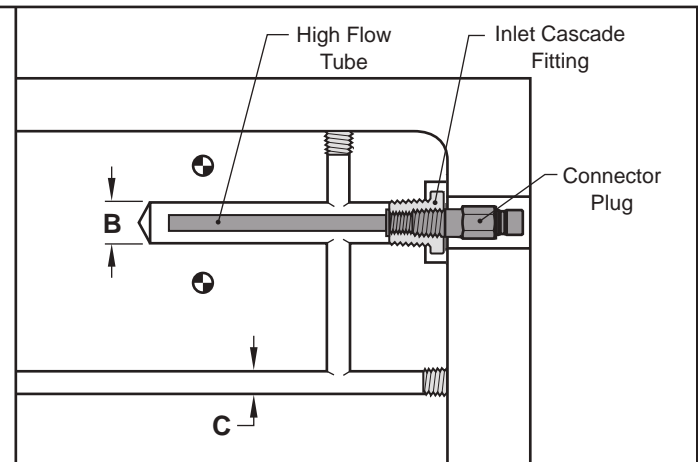
▶ CAD insertion point

CATALOG NUMBER	M Waterline NPT	P NPT	T Tube Thread	N	H Hex	D Hex Clearance	Compatible High Flow Tube	B Diameter	C Diameter	Recommended Connector Plug
CF25	1/4	1/8	5/16-24	.33	.56	1.00	HFT250	7/16	5/16	251, 351
CF37	3/8	1/4	3/8-24	.24	.68	1.12	HFT312	9/16	7/16	352
CF50	1/2	3/8	7/16-20	.24	.87	1.50	HFT375	11/16	9/16	553

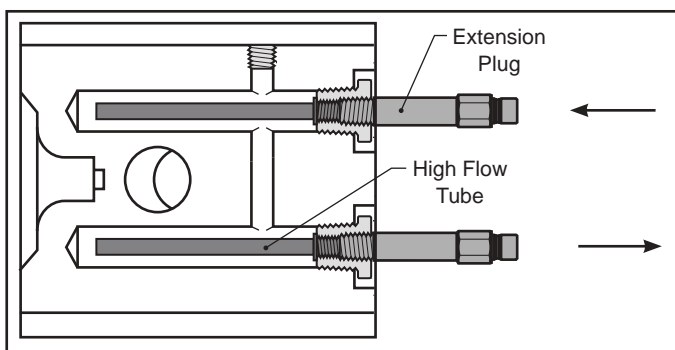
## Previous Method:



## Inlet Cascade Method:



## Slide Application:



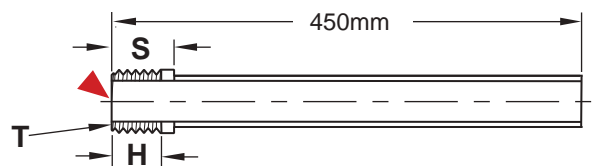
The Inlet Cascade Fitting can be used when waterline space is limited, such as under a runner and between ejector pins or to provide a water circuit in a slide.

The Inlet Cascade Fitting attaches to standard tubes and Extension or Connector Plugs, eliminating the machining required for an extra "in" line to achieve consistent cooling.

## HIGH FLOW TUBES METRIC



Tubes can be ordered cut to a specific length or provided in longer lengths. To order, replace the length on any given catalog number with the desired length: HFTM79L200



M Stainless Steel

▶ CAD insertion point

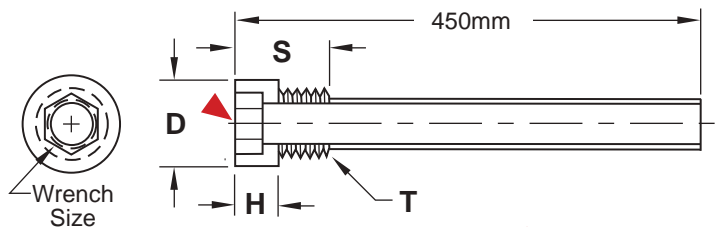
CATALOG NUMBER	Tube O.D.	Tube I.D.	T Thread	S Shoulder Length	H Thread Length
HFTM18L450	1.8	1.5	M4 x .7	5	4
HFTM23L450	2.3	1.9	M5 x .8	6	5
HFTM32L450	3.2	2.8	M6 x 1.0	7	6
HFTM48L450	4.8	4.2	M8 x 1.25	10	8
HFTM64L450	6.4	5.8	M10 x 1.5	12	10
HFTM79L450	7.9	7.3	M12 x 1.75	14	12

## HEX SERIES TUBES METRIC



Metric Hex Series Tubes can be utilized in applications where installation is required from the back.

Tubes can be ordered cut to a specific length or provided in longer lengths. To order, replace the length on any given catalog number with the desired length: HEXM79L200



M Stainless Steel

▶ CAD insertion point

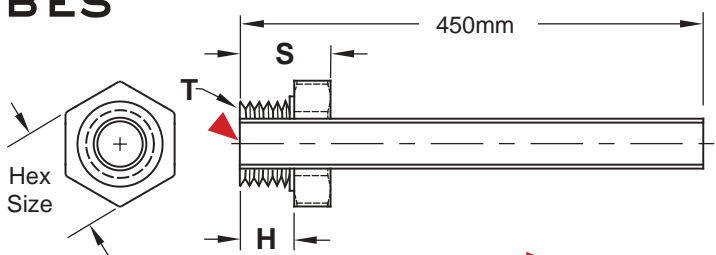
CATALOG NUMBER	Tube O.D.	Tube I.D.	T Thread	S Shoulder Length	D Diameter	H Head Height	Wrench Size
HEXM18L450	1.8	1.5	M4 x .7	8	5	4	3
HEXM23L450	2.3	1.9	M5 x .8	10	6	5	4
HEXM32L450	3.2	2.8	M6 x 1.0	12	8	6	5
HEXM48L450	4.8	4.2	M8 x 1.25	16	10	8	6
HEXM64L450	6.4	5.8	M10 x 1.5	16	12	8	6
HEXM79L450	7.9	7.3	M12 x 1.75	16	14	8	8

## EXTERNAL HEX SERIES TUBES METRIC



Metric External Hex Tubes can be utilized in applications where connectivity to other cooling fittings is necessary.

Tubes can be ordered cut to a specific length or provided in longer lengths. To order, replace the length on any given catalog number with the desired length: EHEXM79L200



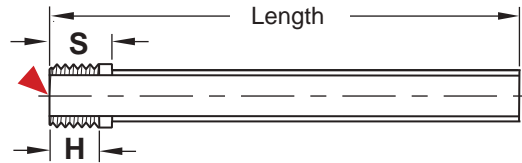
M Stainless Steel

▶ CAD insertion point

CATALOG NUMBER	Tube O.D.	Tube I.D.	T Thread	S Shoulder Length	H Thread Length	Hex Size
EHEXM18L450	1.8	1.5	M4 x .7	7	4	6
EHEXM23L450	2.3	1.9	M5 x .8	9	5	7
EHEXM32L450	3.2	2.8	M6 x 1.0	10	6	8
EHEXM48L450	4.8	4.2	M8 x 1.25	12	8	10
EHEXM64L450	6.4	5.8	M10 x 1.5	15	10	13
EHEXM79L450	7.9	7.3	M12 x 1.75	18	12	15



# HIGH FLOW TUBES



M Stainless Steel

Tube O.D.	Tube I.D.	Thread Size	H Thread Length	S Shoulder Length	12" Length	18" Length	24" Length	36" Length
.072	.060	#5-44	.125	.140	HFT078L12	HFT078L18	HFT078L24	HFT078L36
		#10-32	.156	.203	HFTJ078L12	HFTJ078L18	HFTJ078L24	HFTJ078L36
.090	.076	#5-44	.125	.140	HFT094L12	HFT094L18	HFT094L24	HFT094L36
		#10-32	.156	.203	HFTJ094L12	HFTJ094L18	HFTJ094L24	HFTJ094L36
.125	.109	#10-32	.156	.203	HFT125L12	HFT125L18	HFT125L24	HFT125L36
		1/4-28	.203	.255	HFTJ125L12	HFTJ125L18	HFTJ125L24	HFTJ125L36
.187	.167	1/4-28	.203	.255	HFT187L12	HFT187L18	HFT187L24	HFT187L36
		5/16-24	.235	.290	HFTJ187L12	HFTJ187L18	HFTJ187L24	HFTJ187L36
.250	.230	5/16-24	.235	.290	HFT250L12	HFT250L18	HFT250L24	HFT250L36
		3/8-24	.296	.359	HFTJ250L12	HFTJ250L18	HFTJ250L24	HFTJ250L36
.312	.288	3/8-24	.296	.359	HFT312L12	HFT312L18	HFT312L24	HFT312L36
		7/16-20	.359	.437	HFTJ312L12	HFTJ312L18	HFTJ312L24	HFTJ312L36
.365	.340	7/16-20	.359	.437	HFT375L12	HFT375L18	HFT375L24	HFT375L36
		1/2-20	.421	.500	HFTJ375L12	HFTJ375L18	HFTJ375L24	HFTJ375L36
.427	.397	1/2-20	.421	.500	HFT437L12	HFT437L18	HFT437L24	HFT437L36
		9/16-18	.421	.500	HFTJ437L12	HFTJ437L18	HFTJ437L24	HFTJ437L36
.500	.444	9/16-18	.421	.531	HFT500L12	HFT500L18	HFT500L24	HFT500L36
		5/8-18	.421	.531	HFTJ500L12	HFTJ500L18	HFTJ500L24	HFTJ500L36

High Flow tubes are for use with High Flow Cascade Heads, Compact Cascade Heads, Quick Coupling Cascade Heads and Hex Key Cascade Heads.

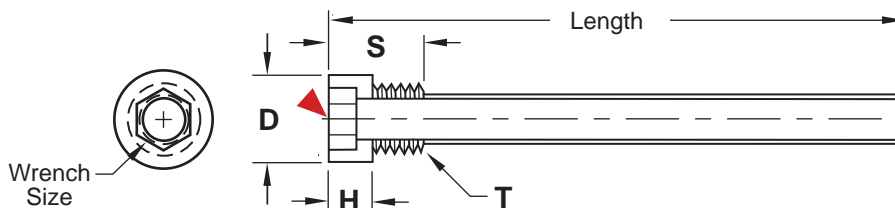
Tubes can be ordered cut to a specific length or provided in longer lengths.

To order, replace the length on any given catalog number with the desired length. Ex. HFT125L14.5



For special High Flow Tube configurations, refer to the templates in section X.

# HEX SERIES TUBES



M Stainless Steel

▶ CAD insertion point

Tube O.D.	Tube I.D.	T Thread	Wrench Size	S	D Diameter	H Head Height	12" Length	18" Length	24" Length	36" Length
.072	.060	#5-44	1/8	.312	.182	.156	HEXT078L12	HEXT078L18	HEXT078L24	HEXT078L36
		#10-32	1/8	.406	.245	.187	HEXTJ078L12	HEXTJ078L18	HEXTJ078L24	HEXTJ078L36
.090	.076	#5-44	1/8	.312	.182	.156	HEXT094L12	HEXT094L18	HEXT094L24	HEXT094L36
		#10-32	1/8	.406	.245	.187	HEXTJ094L12	HEXTJ094L18	HEXTJ094L24	HEXTJ094L36
.125	.109	#10-32	5/32	.406	.245	.187	HEXT125L12	HEXT125L18	HEXT125L24	HEXT125L36
		1/4-28	5/32	.406	.307	.250	HEXTJ125L12	HEXTJ125L18	HEXTJ125L24	HEXTJ125L36
.187	.167	1/4-28	3/16	.500	.307	.250	HEXT187L12	HEXT187L18	HEXT187L24	HEXT187L36
		5/16-24	1/4	.562	.370	.281	HEXTJ187L12	HEXTJ187L18	HEXTJ187L24	HEXTJ187L36
.250	.230	5/16-24	1/4	.562	.370	.281	HEXT250L12	HEXT250L18	HEXT250L24	HEXT250L36
		3/8-24	5/16	.625	.495	.312	HEXTJ250L12	HEXTJ250L18	HEXTJ250L24	HEXTJ250L36
.312	.288	3/8-24	5/16	.625	.495	.312	HEXT312L12	HEXT312L18	HEXT312L24	HEXT312L36
		1/2-20	3/8	.750	.620	.375	HEXTJ312L12	HEXTJ312L18	HEXTJ312L24	HEXTJ312L36



For special Hex Series Tube configurations, refer to the templates in section X.

Hex Series Tubes can be utilized with the Bubbler Tubes or in applications where installation in cores is required from the back as they are easily removed with the wrench hex.

Tubes can be ordered cut to a specific length or provided in longer lengths. To order, replace the length on any given catalog number with the desired length. Ex. HEXT125L14.5

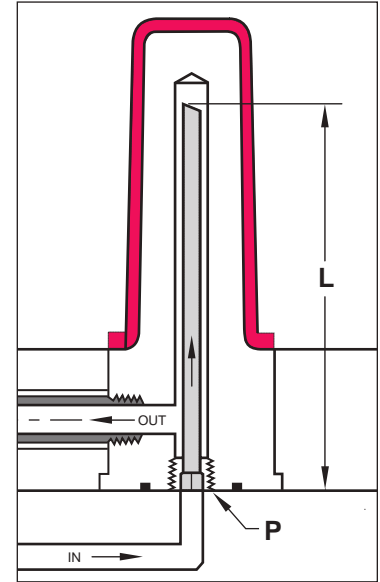
# TUBES

## PISTON TUBES



**M** Tube: High Flow Stainless Steel, Pipe Plug: Stainless Steel

P (NPT)	Tube O.D.	Tube I.D.	12" Length	24" Length	36" Length	48" Length
1/16	.072	.060	PT06-078L12	PT06-078L24	PT06-078L36	PT06-078L48
	.090	.076	PT06-094L12	PT06-094L24	PT06-094L36	PT06-094L48
	.109	.095	PT06-109L12	PT06-109L24	PT06-109L36	PT06-109L48
	.125	.109	PT06-125L12	PT06-125L24	PT06-125L36	PT06-125L48
	.187	.167	PT06-187L12	PT06-187L24	PT06-187L36	PT06-187L48
1/8	.125	.109	PT12-125L12	PT12-125L24	PT12-125L36	PT12-125L48
	.187	.167	PT12-187L12	PT12-187L24	PT12-187L36	PT12-187L48
	.250	.230	PT12-250L12	PT12-250L24	PT12-250L36	PT12-250L48
1/4	.187	.167	PT25-187L12	PT25-187L24	PT25-187L36	PT25-187L48
	.250	.230	PT25-250L12	PT25-250L24	PT25-250L36	PT25-250L48
	.312	.288	PT25-312L12	PT25-312L24	PT25-312L36	PT25-312L48
3/8	.312	.288	PT37-312L12	PT37-312L24	PT37-312L36	PT37-312L48
	.365	.340	PT37-375L12	PT37-375L24	PT37-375L36	PT37-375L48
	.427	.397	PT37-437L12	PT37-437L24	PT37-437L36	PT37-437L48
1/2	.365	.340	PT50-375L12	PT50-375L24	PT50-375L36	PT50-375L48
	.427	.397	PT50-437L12	PT50-437L24	PT50-437L36	PT50-437L48
	.500	.444	PT50-500L12	PT50-500L24	PT50-500L36	PT50-500L48
3/4	.427	.397	PT75-437L12	PT75-437L24	PT75-437L36	PT75-437L48
	.500	.444	PT75-500L12	PT75-500L24	PT75-500L36	PT75-500L48
	.625	.569	PT75-625L12	PT75-625L24	PT75-625L36	PT75-625L48



Stainless steel Piston Tubes available with Brass Pipe Plug. To order, specify "B" at the end of the catalog numbers. Ex. PT25-250L12B, PT50-437L12B.

Also, longer lengths and Piston Tubes cut to length are available. Contact Customer Service for pricing and delivery.

## BRASS TUBES



**M** Half-Hard Tempered Brass

Tube O.D.	Tube I.D.	Thread Size	Thread Length	12" Length	18" Length	24" Length	36" Length
.125	.061	#5-44	.187	T125L12	T125L18	T125L24	T125L36
.187	.123	#10-32	.187	T187L12	T187L18	T187L24	T187L36
.250	.170	1/4-28	.250	T250L12	T250L18	T250L24	T250L36
.312	.210	5/16-24	.312	T312L12	T312L18	T312L24	T312L36
.375	.273	3/8-24	.375	T375L12	T375L18	T375L24	T375L36
.437	.307	7/16-20	.437	T437L12	T437L18	T437L24	T437L36
.625	.495	5/8-18	.625	T625L12	T625L18	T625L24	T625L36

Brass Tubes are for use with Nipple Type Cascade Heads.

To order tubes with both ends threaded, add a "T" to the end of the catalog number. Ex. T125L12T

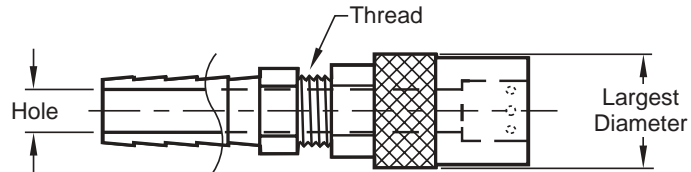
Tubing is available in stainless steel, threaded both ends, with an overall length of 18" and can be cut by the mold maker to suit. To order, specify "-SST" in the catalog number at left. Ex. T125L12-SST. (Note: Not available in 5/8 OD.)

Longer length tubes or tubes cut to length can be ordered by contacting Customer Service or filling out the template in section X.



# SOCKET CONNECTORS

## STANDARD SERIES



**M** Brass with Stainless Steel Bearings and Silicone Seals

- Pressure to 200 psi
- Max temp = 400° F

		200 SERIES (1/4" Hole)			300 SERIES (3/8" Hole)			500 SERIES (1/2" Hole)		
		CATALOG NUMBER	Hose ID	Largest Diam.	CATALOG NUMBER	Hose ID	Largest Diameter	CATALOG NUMBER	Hose ID	Largest Diameter
S T R A I G H T		SC204	1/4	.71	SC306	3/8	.97	SC504	1/2	1.21
		SC205	5/16	.71	SC308	1/2	.97	SC506	3/4	1.21
		SC206	3/8	.71	-	-	-	-	-	-
90° S T E M		SC214	1/4	.71	SC316	3/8	.97	SC514	1/2	1.21
		SC215	5/16	.71	SC318	1/2	.97	SC516	3/4	1.21
		SC216	3/8	.71	-	-	-	-	-	-
45° S T E M		SC224	1/4	.71	SC326	3/8	.97	SC524	1/2	1.21
		SC225	5/16	.71	SC328	1/2	.97	SC526	3/4	1.21
		SC226	3/8	.71	-	-	-	-	-	-
Socket Body Only		CATALOG NUMBER	Thread		CATALOG NUMBER	Thread		CATALOG NUMBER	Thread	
		SC200B	1/8		SC300B	1/4		SC500B	1/2	
		SC200B-4	1/4		SC300B-4	3/8		-	-	
Replacement Seals: Silicone (Red)	SC200S			SC300S			SC500S			
Replacement Seals: Viton (Black)	SC200S-V			SC300S-V			SC500S-V			

Note: 200 and 300 Series Straight Socket Connectors are manufactured from a single piece, not assembled as shown.

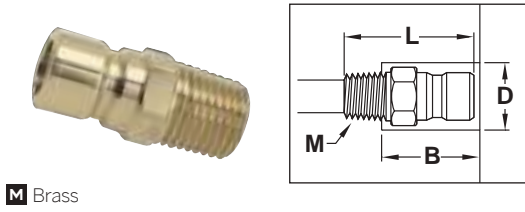
### Alternative configurations and materials available:

- To order valved style Socket Connectors or Bodies, add a "-V" to the end of the catalog number. Ex. SC316-V
- To order Socket Connectors or Bodies with barbs for Push-Lok® hose, specify "-PL" at the end of the catalog number. Ex. SC326-PL or SC306-V-PL
- Note: Valved versions (-V or -V-PL) are not available in the 500 series.

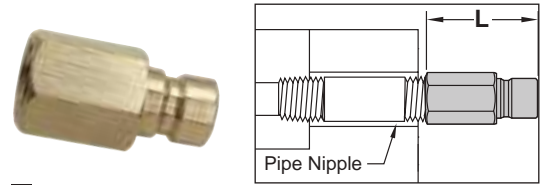
# CONNECTOR PLUGS

## STANDARD SERIES

Inch Standard



M Brass



M Brass

	MALE TYPE: INCH						FEMALE TYPE: INCH			
	CATALOG NUMBER	M NPT	Inner Diameter	D	B	L	CATALOG NUMBER	M NPT	Inner Diameter	L
<b>200 SERIES</b> (1/4" Hole)	250	1/16	3/16	.75	.75	.94	250F	1/16	1/4	1.00
	251	1/8	1/4	.87	.75	.94	251F	1/8	1/4	1.00
	252	1/4	1/4	1.00	.94	1.13	252F	1/4	1/4	1.25
	253	3/8	1/4	1.12	.94	1.19	253F	3/8	1/4	1.38
<b>300 SERIES</b> (3/8" Hole)	351	1/8	1/4	1.00	1.00	1.20	351F	1/8	11/32	1.00
	352	1/4	3/8	1.00	1.09	1.34	352F	1/4	3/8	1.00
	353	3/8	3/8	1.12	1.13	1.38	353F	3/8	3/8	1.62
	354	1/2	3/8	1.50	1.25	1.59	354F	1/2	3/8	1.75
<b>500 SERIES</b> (1/2" Hole)	552	1/4	3/8	1.37	1.37	1.62	552F	1/4	7/16	1.25
	553	3/8	1/2	1.37	1.37	1.62	553F	3/8	9/16	1.37
	554	1/2	5/8	1.50	1.50	1.75	554F	1/2	5/8	1.75
	556	3/4	5/8	1.75	1.56	1.90	556F	3/4	5/8	1.75

International Standard

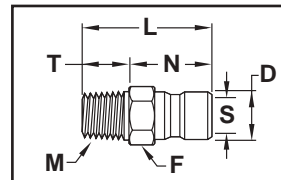
M Brass

M Brass

	MALE TYPE: BSPT								FEMALE TYPE: BSPT			
	CATALOG NUMBER	M	D	L	N	S	T	F	CATALOG NUMBER	M NPT	Inner Diameter	L
<b>200 SERIES</b> (6.35MM Hole)	251-BSPT	1/8	9	24	15	6	9	11	251F-BSPT	1/8	6	25
	252-BSPT	1/4	9	29	17	6	12	14	252F-BSPT	1/4	6	33
<b>300 SERIES</b> (9.525MM Hole)	351-BSPT	1/8	13	30	20	9	10	14	351F-BSPT	1/8	8	25
	352-BSPT	1/4	13	34	21	9	13	14	352F-BSPT	1/4	8	34
	353-BSPT	3/8	13	35	21	9	14	17	353F-BSPT	3/8	8	34
<b>500 SERIES</b> (12.7MM Hole)	553-BSPT	3/8	20	41	27	14	14	21	553F-BSPT	3/8	14	35
	554-BSPT	1/2	20	43	24	16	19	22	554F-BSPT	1/2	15	45

M Brass

	MALE TYPE: METRIC							
	CATALOG NUMBER	M	D	L	N	S	T	F
<b>200 SERIES</b>	252-M10	M10	9	24	15	6	9	11



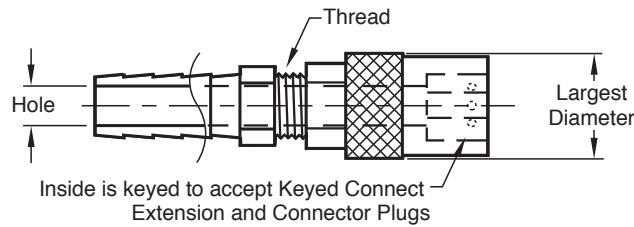
Alternative configurations and materials available:

- For Connector Plugs manufactured from stainless steel, add an "-SS" to the end of the catalog number. Ex. 250-SS or 351-SS or 251-FSS  
Note: The 250F, 351F and all 500 Series Female Plugs are available in brass only.



# SOCKET CONNECTORS

## KEYED CONNECT SERIES



- Eliminate in/out connection mistakes, using the keyed plugs for all inlets
- Enables faster changeovers
- Pressure to 200 psi
- Max temp = 400° F
- Includes Blue Safety Clip

**M** Brass with Stainless Steel Bearings and Silicone Seals

		200 SERIES (1/4" Hole)			300 SERIES (3/8" Hole)			500 SERIES (1/2" Hole)		
		CATALOG NUMBER	Hose ID	Largest Diameter	CATALOG NUMBER	Hose ID	Largest Diameter	CATALOG NUMBER	Hose ID	Largest Diameter
STRAIGHT		SC204-K	1/4	.71	SC306-K	3/8	.97	SC504-K	1/2	1.21
		SC205-K	5/16	.71	SC308-K	1/2	.97	SC506-K	3/4	1.21
		SC206-K	3/8	.71	-	-	-	-	-	-
90° STEM		SC214-K	1/4	.71	SC316-K	3/8	.97	SC514-K	1/2	1.21
		SC215-K	5/16	.71	SC318-K	1/2	.97	SC516-K	3/4	1.21
		SC216-K	3/8	.71						
45° STEM		SC224-K	1/4	.71	SC326-K	3/8	.97	SC524-K	1/2	1.21
		SC225-K	5/16	.71	SC328-K	1/2	.97	SC526-K	3/4	1.21
		SC226-K	3/8	.71	-	-	-	-	-	-
Socket Body Only		CATALOG NUMBER	Thread		CATALOG NUMBER	Thread		CATALOG NUMBER	Thread	
		SC200B-K	1/8		SC300B-K	1/4		SC500B-K	1/2	
		SC200B-4-K	1/4		SC300B-4-K	3/8				
Replacement Seals: Silicone (Red)		SC200S			SC300S			SC500S		
Replacement Seals: Viton (Black)		SC200S-V			SC300S-V			SC500S-V		

Note: 200 and 300 Series Straight Socket Connectors are manufactured from a single piece, not assembled as shown.

### Alternative configurations and materials available:

- To order Socket Connectors or Bodies with barbs for Push-Lok® hose, specify "-PL" before the -K within the catalog number.  
Ex. SC326-PL-K or SC306-PL-K

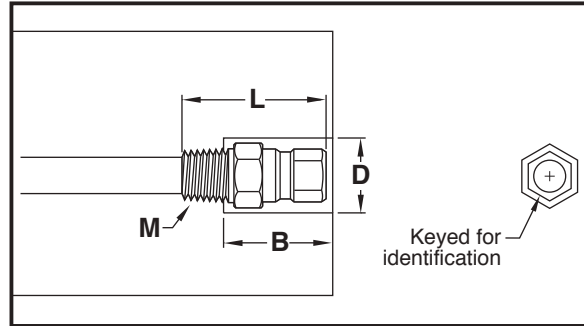
## SAFETY CLIPS



CATALOG NUMBER	Color	Series
SC200-BL	Blue	200
SC300-BL		300
SC500-BL		500
SC200-R	Red	200
SC300-R		300
SC500-R		500

# CONNECTOR PLUGS

## KEYED CONNECT SERIES

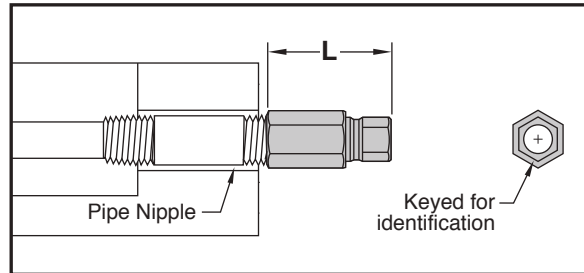


- Eliminate in/out connection mistakes, using the keyed plugs for all inlets
- Enables faster changeover

### Male Type: Inch Standard

**M** Brass

200 SERIES (1/4" Hole)						300 SERIES (3/8" Hole)						500 SERIES (1/2" Hole)					
CATALOG NUMBER	M NPT	Inner Diameter	D	B	L	CATALOG NUMBER	M NPT	Inner Diameter	D	B	L	CATALOG NUMBER	M NPT	Inner Diameter	D	B	L
250-K	1/16	3/16	.75	.75	.94	351-K	1/8	1/4	1.00	1.00	1.20	552-K	1/4	3/8	1.37	1.37	1.62
251-K	1/8	1/4	.87	.75	.94	352-K	1/4	3/8	1.00	1.09	1.34	553-K	3/8	1/2	1.37	1.37	1.62
252-K	1/4	1/4	1.00	.94	1.13	353-K	3/8	3/8	1.12	1.13	1.38	554-K	1/2	5/8	1.50	1.50	1.75
253-K	3/8	1/4	1.12	.94	1.19	354-K	1/2	3/8	1.50	1.25	1.59	556-K	3/4	5/8	1.75	1.56	1.90



- Eliminate in/out connection mistakes, using the keyed plugs for all inlets
- Enables faster changeover

### Female Type: Inch Standard

**M** Brass

200 SERIES (1/4" Hole)				300 SERIES (3/8" Hole)				500 SERIES (1/2" Hole)			
CATALOG NUMBER	M NPT	Inner Diameter	L	CATALOG NUMBER	M NPT	Inner Diameter	L	CATALOG NUMBER	M NPT	Inner Diameter	L
250F-K	1/16	1/4	1.00	351F-K	1/8	11/32	1.00	552F-K	1/4	7/16	1.25
251F-K	1/8	1/4	1.00	352F-K	1/4	3/8	1.00	553F-K	3/8	9/16	1.37
252F-K	1/4	1/4	1.25	353F-K	3/8	3/8	1.62	554F-K	1/2	5/8	1.75
253F-K	3/8	1/4	1.38	354F-K	1/2	3/8	1.75	556F-K	3/4	5/8	1.75

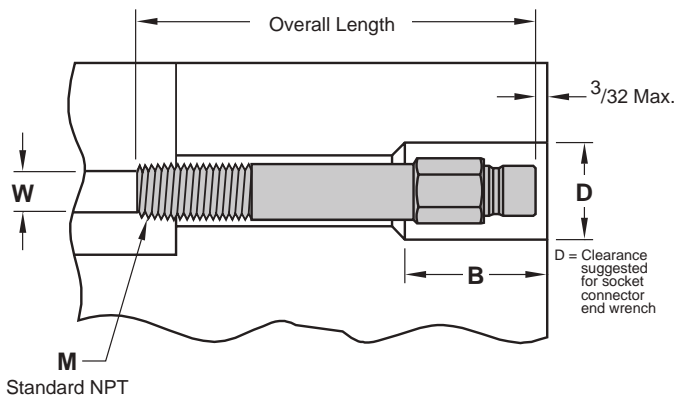
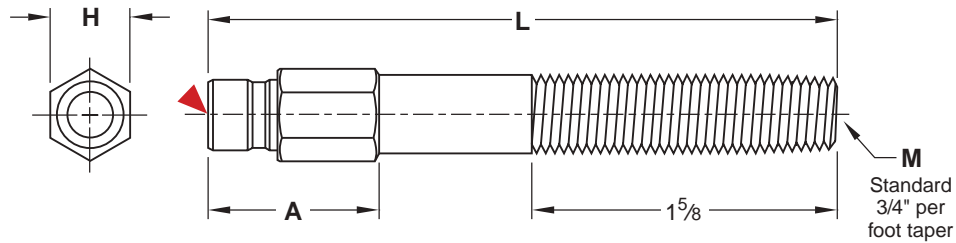
### Alternative configurations and materials available:

- For Connector Plugs manufactured from stainless steel, add an "-SS" to the end of the catalog number. Ex. 250-K-SS or 351F-K-SS  
Note: The 250F-K, 351F-K and all 500 Series Female Plugs are available in brass only.
- Contact Customer Service for metric options.
- Keyed connectors do not fit standard sockets.





# EXTENSION PLUGS



M Brass

CAD insertion point

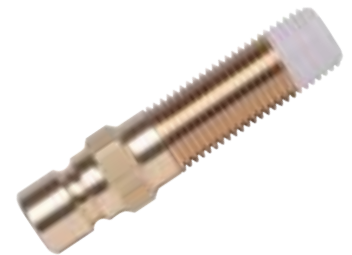
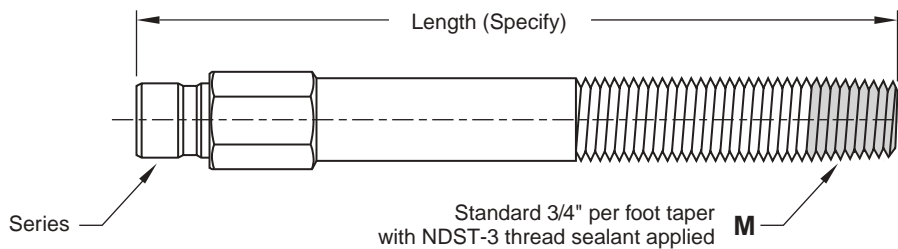
Extension Series	M Pipe Thread	D	B	W (Ref)
250	1/16	.75	1.00	1/4
251	1/8	.87	1.25	5/16
252	1/4	1.00	1.50	7/16
253	3/8	1.12	1.50	9/16
350	1/16	1.00	1.25	1/4
351	1/8	1.00	1.25	5/16
352	1/4	1.00	1.50	7/16
353	3/8	1.12	1.50	9/16
354	1/2	1.50	1.75	11/16
553	3/8	1.37	1.62	9/16
554	1/2	1.50	1.75	11/16

## Alternative configurations and materials available:

- Stainless Steel Extension Plugs are also available. Specify "-SS" at the end of the catalog number. Ex. 252L5.5-SS or 353L4-SS
- Extension Plugs can be obtained made to BSPT specs. The threads are BSPT, and all other dimensions are inch nominal per the chart on page E-14. To order, specify "-BSP" at the end of the catalog number. Ex. 252L5.5-BSP
- ND ST-3 Thread Sealant can be applied to any Extension Plug. To order, specify "-ST" at the end of the catalog number. Ex. 252L5.5-ST
- Note: Standard Series Extension Plugs are shown on page E-18. Keyed Connect Extension Plugs are shown on page E-19.



## CUT-TO-LENGTH EXTENSION PLUGS





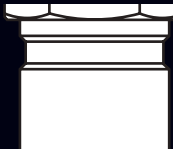
Extension Plugs can be ordered cut to length, in any quantity. All Extension Plugs cut to length have sealant applied to the tapered end for convenience.

To order, specify series and NPT prefix with required length. Ex. 352L6.53

# EXTENSION PLUGS

## STANDARD SERIES



<b>200 Series</b> 1/4" Hole 					<b>300 Series</b> 3/8" Hole 					<b>500 Series</b> 1/2" Hole 				
CATALOG NUMBER	L Length	M NPT	H Hex Size	A	CATALOG NUMBER	L Length	M NPT	H Hex Size	A	CATALOG NUMBER	L Length	M NPT	H Hex Size	A
<b>1/16" PIPE EXTENSIONS</b>														
<b>250L2.5</b>	2.5	1/16	.37	.68	<b>350L2.5</b>	2.5	1/16	.56	.87	AVAILABLE ON REQUEST				
<b>250L4</b>	4.0	1/16	.37	.81	<b>350L4</b>	4.0	1/16	.56	1.00					
<b>250L5.5</b>	5.5	1/16	.37	.81	<b>350L5.5</b>	5.5	1/16	.56	1.00					
<b>250L7</b>	7.0	1/16	.37	.81	<b>350L7</b>	7.0	1/16	.56	1.00					
<b>1/8" PIPE EXTENSIONS</b>														
<b>251L2.5</b>	2.5	1/8	.43	.68	<b>351L2.5</b>	2.5	1/8	.56	.87	AVAILABLE ON REQUEST				
<b>251L4</b>	4.0	1/8	.43	1.00	<b>351L4</b>	4.0	1/8	.56	1.00					
<b>251L5.5</b>	5.5	1/8	.43	1.00	<b>351L5.5</b>	5.5	1/8	.56	1.00					
<b>251L7</b>	7.0	1/8	.43	1.00	<b>351L7</b>	7.0	1/8	.56	1.00					
<b>251L8.5</b>	8.5	1/8	.43	1.00	<b>351L8.5</b>	8.5	1/8	.56	1.00					
<b>251L10</b>	10.0	1/8	.43	1.00	<b>351L10</b>	10.0	1/8	.56	1.00					
<b>251L11.5</b>	11.5	1/8	.43	1.00	<b>351L11.5</b>	11.5	1/8	.56	1.00					
<b>251L13</b>	13.0	1/8	.43	1.00	<b>351L13</b>	13.0	1/8	.56	1.00					
<b>1/4" PIPE EXTENSIONS</b>														
<b>252L2.5</b>	2.5	1/4	.56	.87	<b>352L2.5</b>	2.5	1/4	.56	.87	AVAILABLE ON REQUEST				
<b>252L4</b>	4.0	1/4	.56	1.25	<b>352L4</b>	4.0	1/4	.56	1.25					
<b>252L5.5</b>	5.5	1/4	.56	1.25	<b>352L5.5</b>	5.5	1/4	.56	1.25					
<b>252L7</b>	7.0	1/4	.56	1.25	<b>352L7</b>	7.0	1/4	.56	1.25					
<b>252L8.5</b>	8.5	1/4	.56	1.25	<b>352L8.5</b>	8.5	1/4	.56	1.25					
<b>252L10</b>	10.0	1/4	.56	1.25	<b>352L10</b>	10.0	1/4	.56	1.25					
<b>252L11.5</b>	11.5	1/4	.56	1.25	<b>352L11.5</b>	11.5	1/4	.56	1.25					
<b>252L13</b>	13.0	1/4	.56	1.25	<b>352L13</b>	13.0	1/4	.56	1.25					
<b>3/8" PIPE EXTENSIONS</b>														
<b>253L2.5</b>	2.5	3/8	.68	1.00	<b>353L2.5</b>	2.5	3/8	.68	1.00	<b>553L2.5</b>	2.5	3/8	.81	1.12
<b>253L4</b>	4.0	3/8	.68	1.25	<b>353L4</b>	4.0	3/8	.68	1.25	<b>553L4</b>	4.0	3/8	.81	1.37
<b>253L5.5</b>	5.5	3/8	.68	1.25	<b>353L5.5</b>	5.5	3/8	.68	1.25	<b>553L5.5</b>	5.5	3/8	.81	1.37
<b>253L7</b>	7.0	3/8	.68	1.25	<b>353L7</b>	7.0	3/8	.68	1.25	<b>553L7</b>	7.0	3/8	.81	1.37
<b>253L8.5</b>	8.5	3/8	.68	1.25	<b>353L8.5</b>	8.5	3/8	.68	1.25	<b>553L8.5</b>	8.5	3/8	.81	1.37
<b>253L10</b>	10.0	3/8	.68	1.25	<b>353L10</b>	10.0	3/8	.68	1.25	<b>553L10</b>	10.0	3/8	.81	1.37
<b>253L11.5</b>	11.5	3/8	.68	1.25	<b>353L11.5</b>	11.5	3/8	.68	1.25	<b>553L11.5</b>	11.5	3/8	.81	1.37
<b>253L13</b>	13.0	3/8	.68	1.25	<b>353L13</b>	13.0	3/8	.68	1.25	<b>553L13</b>	13.0	3/8	.81	1.37
<b>1/2" PIPE EXTENSIONS</b>														
AVAILABLE ON REQUEST					<b>354L2.5</b>	2.5	1/2	.87	1.12	<b>554L2.5</b>	2.5	1/2	.87	1.12
					<b>354L4</b>	4.0	1/2	.87	1.50	<b>554L4</b>	4.0	1/2	.87	1.50
					<b>354L5.5</b>	5.5	1/2	.87	1.50	<b>554L5.5</b>	5.5	1/2	.87	1.50
					<b>354L7</b>	7.0	1/2	.87	1.50	<b>554L7</b>	7.0	1/2	.87	1.50
					<b>354L8.5</b>	8.5	1/2	.87	1.50	<b>554L8.5</b>	8.5	1/2	.87	1.50
					<b>354L10</b>	10.0	1/2	.87	1.50	<b>554L10</b>	10.0	1/2	.87	1.50
					<b>354L11.5</b>	11.5	1/2	.87	1.50	<b>554L11.5</b>	11.5	1/2	.87	1.50
<b>354L13</b>	13.0	1/2	.87	1.50	<b>554L13</b>	13.0	1/2	.87	1.50					



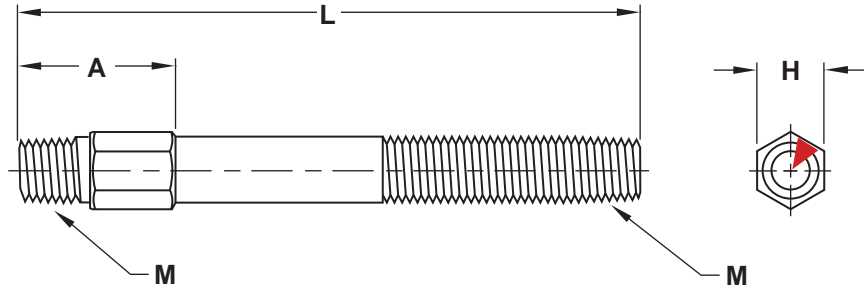
- Eliminate in/out connection mistakes, using the keyed plugs for all inlets
- Enables faster changeovers
- Perfect for die cast jet cooling applications



## EXTENSION PLUGS KEYED CONNECT SERIES

200 Series 1/4" Hole					300 Series 3/8" Hole					500 Series 1/2" Hole				
CATALOG NUMBER	L Length	M NPT	H Hex Size	A	CATALOG NUMBER	L Length	M NPT	H Hex Size	A	CATALOG NUMBER	L Length	M NPT	H Hex Size	A
<b>1/16" PIPE EXTENSIONS (KEYED)</b>														
250L2.5-K	2.5	1/16	.37	.68	350L2.5-K	2.5	1/16	.56	.87	AVAILABLE ON REQUEST				
250L4-K	4.0	1/16	.37	.81	350L4-K	4.0	1/16	.56	1.00					
250L5.5-K	5.5	1/16	.37	.81	350L5.5-K	5.5	1/16	.56	1.00					
250L7-K	7.0	1/16	.37	.81	350L7-K	7.0	1/16	.56	1.00					
<b>1/8" PIPE EXTENSIONS (KEYED)</b>														
251L2.5-K	2.5	1/8	.43	.68	351L2.5-K	2.5	1/8	.56	.87	AVAILABLE ON REQUEST				
251L4-K	4.0	1/8	.43	1.00	351L4-K	4.0	1/8	.56	1.00					
251L5.5-K	5.5	1/8	.43	1.00	351L5.5-K	5.5	1/8	.56	1.00					
251L7-K	7.0	1/8	.43	1.00	351L7-K	7.0	1/8	.56	1.00					
251L8.5-K	8.5	1/8	.43	1.00	351L8.5-K	8.5	1/8	.56	1.00					
251L10-K	10.0	1/8	.43	1.00	351L10-K	10.0	1/8	.56	1.00					
251L11.5-K	11.5	1/8	.43	1.00	351L11.5-K	11.5	1/8	.56	1.00					
251L13-K	13.0	1/8	.43	1.00	351L13-K	13.0	1/8	.56	1.00					
<b>1/4" PIPE EXTENSIONS (KEYED)</b>														
252L2.5-K	2.5	1/4	.56	.87	352L2.5-K	2.5	1/4	.56	.87	AVAILABLE ON REQUEST				
252L4-K	4.0	1/4	.56	1.25	352L4-K	4.0	1/4	.56	1.25					
252L5.5-K	5.5	1/4	.56	1.25	352L5.5-K	5.5	1/4	.56	1.25					
252L7-K	7.0	1/4	.56	1.25	352L7-K	7.0	1/4	.56	1.25					
252L8.5-K	8.5	1/4	.56	1.25	352L8.5-K	8.5	1/4	.56	1.25					
252L10-K	10.0	1/4	.56	1.25	352L10-K	10.0	1/4	.56	1.25					
252L11.5-K	11.5	1/4	.56	1.25	352L11.5-K	11.5	1/4	.56	1.25					
252L13-K	13.0	1/4	.56	1.25	352L13-K	13.0	1/4	.56	1.25					
<b>3/8" PIPE EXTENSIONS (KEYED)</b>														
253L2.5-K	2.5	3/8	.68	1.00	353L2.5-K	2.5	3/8	.68	1.00	553L2.5-K	2.5	3/8	.81	1.12
253L4-K	4.0	3/8	.68	1.25	353L4-K	4.0	3/8	.68	1.25	553L4-K	4.0	3/8	.81	1.37
253L5.5-K	5.5	3/8	.68	1.25	353L5.5-K	5.5	3/8	.68	1.25	553L5.5-K	5.5	3/8	.81	1.37
253L7-K	7.0	3/8	.68	1.25	353L7-K	7.0	3/8	.68	1.25	553L7-K	7.0	3/8	.81	1.37
253L8.5-K	8.5	3/8	.68	1.25	353L8.5-K	8.5	3/8	.68	1.25	553L8.5-K	8.5	3/8	.81	1.37
253L10-K	10.0	3/8	.68	1.25	353L10-K	10.0	3/8	.68	1.25	553L10-K	10.0	3/8	.81	1.37
253L11.5-K	11.5	3/8	.68	1.25	353L11.5-K	11.5	3/8	.68	1.25	553L11.5-K	11.5	3/8	.81	1.37
253L13-K	13.0	3/8	.68	1.25	353L13-K	13.0	3/8	.68	1.25	553L13-K	13.0	3/8	.81	1.37
<b>1/2" PIPE EXTENSIONS (KEYED)</b>														
AVAILABLE ON REQUEST					354L2.5-K	2.5	1/2	.87	1.12	554L2.5-K	2.5	1/2	.87	1.12
					354L4-K	4.0	1/2	.87	1.50	554L4-K	4.0	1/2	.87	1.50
					354L5.5-K	5.5	1/2	.87	1.50	554L5.5-K	5.5	1/2	.87	1.50
					354L7-K	7.0	1/2	.87	1.50	554L7-K	7.0	1/2	.87	1.50
					354L8.5-K	8.5	1/2	.87	1.50	554L8.5-K	8.5	1/2	.87	1.50
					354L10-K	10.0	1/2	.87	1.50	554L10-K	10.0	1/2	.87	1.50
					354L11.5-K	11.5	1/2	.87	1.50	554L11.5-K	11.5	1/2	.87	1.50
					354L13-K	13.0	1/2	.87	1.50	554L13-K	13.0	1/2	.87	1.50

# ADJUSTABLE HEX NIPPLES



**M** Brass

CAD insertion point

CATALOG NUMBER	M Pipe NPT	A	H Hex Size	Available Overall Lengths (L)								
				2.5	4	5.5	7	8.5	10	11.5	13	
APN06	1/16	.68	.37	•	•	•	•	•	•	•	•	•
APN12	1/8	.75	.43	•	•	•	•	•	•	•	•	•
APN25	1/4	.87	.56	•	•	•	•	•	•	•	•	•
APN37	3/8	1.00	.68	•	•	•	•	•	•	•	•	•
APN50	1/2	1.37	.87	•	•	•	•	•	•	•	•	•

**To Order:**

- Specify prefix and length. Ex APN50L11.5.

**Alternative configurations and materials available:**

- For Hex Nipples manufactured from stainless steel, add an "-SS" to the end of the catalog number. Ex. APN25L7-SS or APN50L4-SS
- Hex Nipples can be ordered cut to any length, in any quantity. Specify the catalog number (for brass or stainless steel) with required length. Ex. APN25L6.25 or APN37L5.75-SS

# PIPE NIPPLES



**M** Brass or Stainless Steel

Brass Catalog Number	Stainless Catalog Number	Pipe Size NPT	Close Overall Length	Available Overall Lengths (L)																	
				Close*	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	7	8	9	10	11	12
BPN06	GPN06	1/16	5/8	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN12	GPN12	1/8	3/4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN25	GPN25	1/4	7/8	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN37	GPN37	3/8	1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN50	GPN50	1/2	1-1/8	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

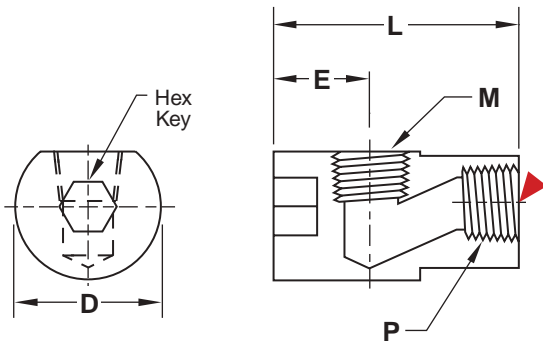
\*Close is the shortest available nipple length.

**To Order:**

- Specify Prefix and length. Ex. BPN37CLOSE or BPN12L3.5
- Pipe Nipples can be ordered cut to any length, in any quantity. To order, specify the prefix (BPN##) and required length. Ex. BPN37L5.25 or GPN12L2.25



## HEX KEY ELBOWS

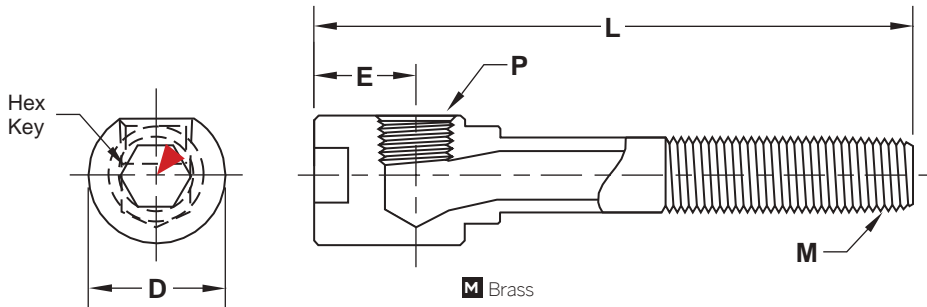


M Brass

▶ CAD insertion point

CATALOG NUMBER	M NPT	P NPT	Hex Key	L	D	E
HK1616	1/16	1/16	1/4	1.12	.552	.531
HK1818	1/8	1/8	5/16	1.25	.615	.580
HK1814	1/8	1/4	3/8	1.375	.860	.593
HK1414	1/4	1/4	3/8	1.50	.860	.660
HK3838	3/8	3/8	1/2	1.75	.985	.780
HK1438	1/4	3/8	1/2	1.625	.985	.712
HK1212	1/2	1/2	1/2	2.12	1.235	.940

## HEX KEY EXTENSION ELBOWS



M Brass

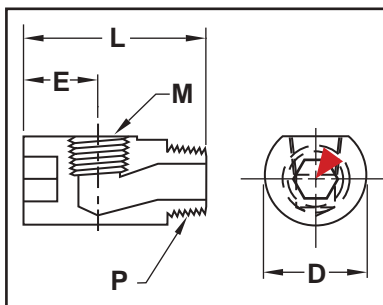
▶ CAD insertion point

### To Order:

- Specify Prefix and length.  
Ex. HKEE1818L2.5 or HKEE1414L11.5
- Hex Key Extension Elbows can be ordered cut to length, and in any quantity.
- To order, specify prefix (HKEE) with the required length.  
Ex. HKEE1414L3.75

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	Hex Size	D	E	Available Overall Lengths (L)							
						2.5	4	5.5	7	8.5	10	11.5	13
HKEE1616	1/16	1/16	1/4	.552	.531	•	•	•	•	•	•	•	•
HKEE1818	1/8	1/8	5/16	.615	.580	•	•	•	•	•	•	•	•
HKEE1414	1/4	1/4	3/8	.860	.660	•	•	•	•	•	•	•	•
HKEE3838	3/8	3/8	1/2	.985	.780	•	•	•	•	•	•	•	•
HKEE1212	1/2	1/2	1/2	1.235	.940	•	•	•	•	•	•	•	•

## HEX KEY STREET ELBOWS



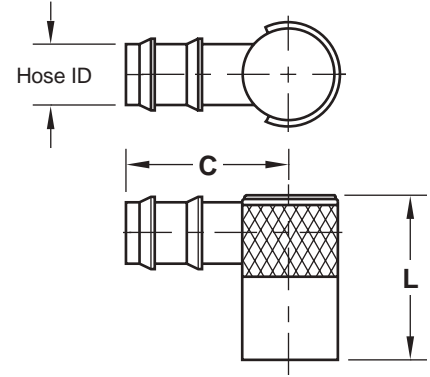
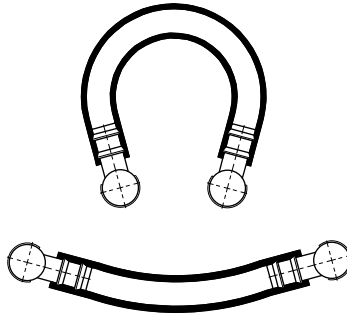
M Brass

▶ CAD insertion point

CATALOG NUMBER	M NPT	P NPT	Hex Size	L	D	E
HKL1616	1/16	1/16	1/4	1.156	.552	.531
HKL1618	1/16	1/8	5/16	1.218	.615	.531
HKL1818	1/8	1/8	5/16	1.312	.615	.580
HKL1814	1/8	1/4	3/8	1.500	.860	.593
HKL1414	1/4	1/4	3/8	1.625	.860	.660
HKL1438	1/4	3/8	1/2	1.625	.985	.712
HKL3838	3/8	3/8	1/2	1.750	.985	.780
HKL1212	1/2	1/2	1/2	2.250	1.235	.940

# WATER JUMPERS

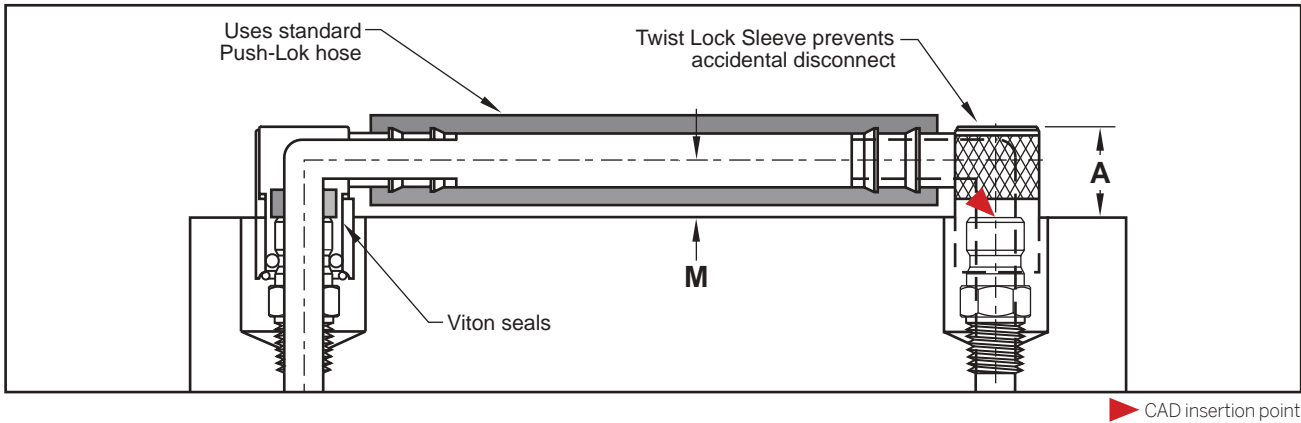
## PUSH-LOK® SERIES



**M** Brass and Stainless Steel

Maximum temp: 400° F (200° C)

CATALOG NUMBER	Fits Plug Series Number	Hose I.D.	L	C	M	A
WJ200-25	200	1/4	1	1-1/4	3/8	5/8
WJ200-37	200	3/8	1	1-1/4	3/8	5/8
WJ300-37	300	3/8	1-7/16	1-9/16	1/2	7/8
WJ300-50	300	1/2	1-7/16	1-9/16	1/2	7/8
WJ500-50	500	1/2	2-1/8	1-7/8	7/8	1-3/8
WJ500-75	500	3/4	2-1/8	2	7/8	1-3/8



# PUSH-LOK HOSE

**M** Synthetic Rubber Tube (Parker Series 801)

CATALOG NUMBER	Hose I.D.	Hose O.D.	Minimum Bend Radius (in)	Inches of Mercury
WJH25-	1/4	.50	2.5	28
WJH37-	3/8	.63	3	28
WJH50-	1/2	.78	5	28
WJH62-	5/8	.91	6	15
WJH75-	3/4	1.03	7	15

### Technical Specifications:

- Sold in 24" lengths.
- Max temperature with water: 190° F (90° C).
- Working pressure: 250 psi
- Burst pressure: 1000 psi

### To Order:

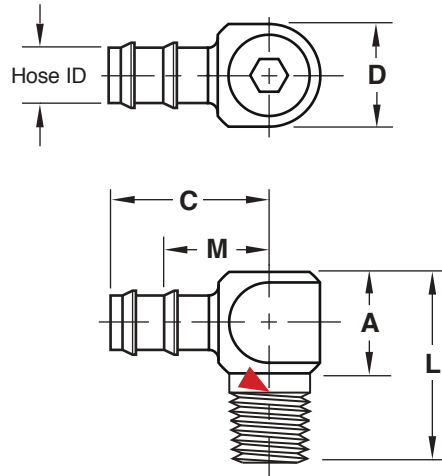
- Specify catalog number with the appropriate color suffix: Gray (GR), Black(BA), Blue (BL), Green (G), Yellow (Y), and Red (R). Ex. WJH50-Y
- For a 50' box, specify -B after the color. Ex. WJH37-Y-B
- Reels also available. Contact Customer Service for pricing.





# WATER JUMPERS

## SWIVEL TYPE

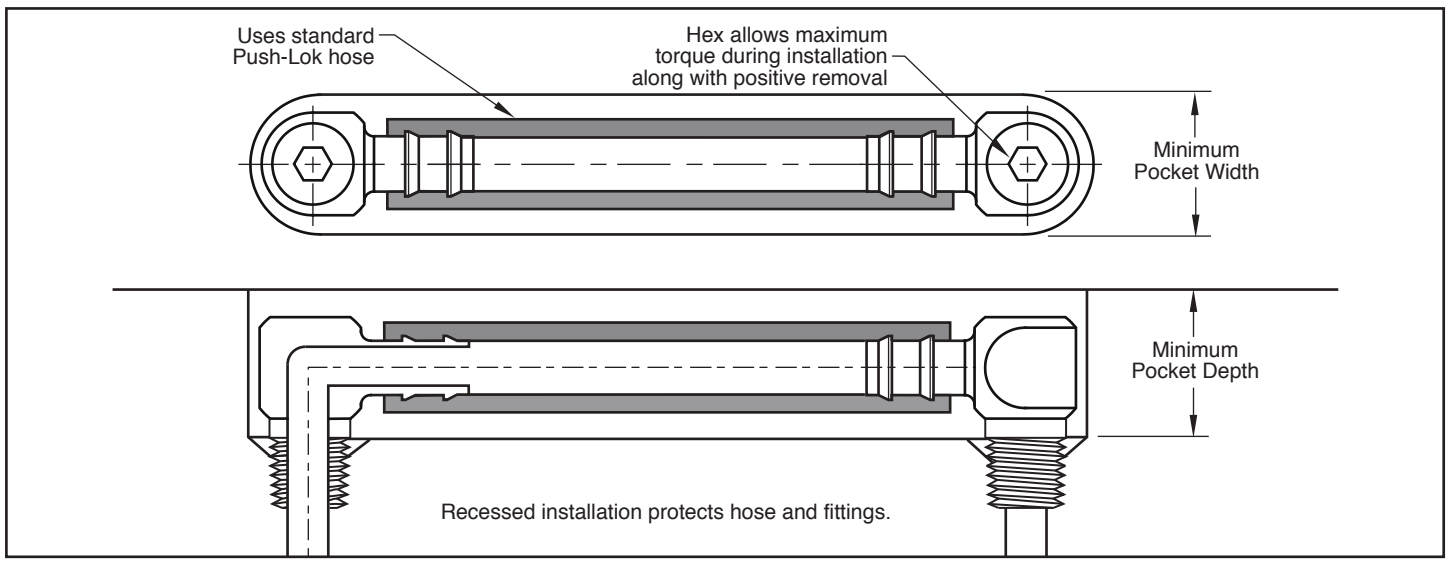


**M** Brass with internal Viton seals

Maximum temp: 400° F (200° C)

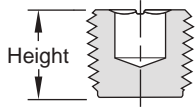
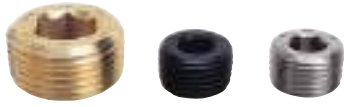
CATALOG NUMBER	Pipe Size NPT	Hose I.D.	Hex Key Size	L	A	C	M	D	Min. Pocket Width	Min. Pocket Depth
WJ125L1.1	1/8	5/16	3/16	1-3/16	11/16	1	5/8	.660	11/16	1
WJ125L2.0	1/8	5/16	3/16	2	11/16	1	5/8	.660	11/16	1
WJ125L3.5	1/8	5/16	3/16	3-1/2	11/16	1	5/8	.660	11/16	1
WJ250L1.4	1/4	3/8	1/4	1-7/16	13/16	1-3/16	25/32	.840	7/8	1-3/16
WJ250L2.3	1/4	3/8	1/4	2-3/8	13/16	1-3/16	25/32	.840	7/8	1-3/16
WJ250L3.8	1/4	3/8	1/4	3-7/8	13/16	1-3/16	25/32	.840	7/8	1-3/16
WJ375L1.6	3/8	1/2	5/16	1-5/8	1	1-3/8	15/16	.980	1	1-3/8
WJ375L2.6	3/8	1/2	5/16	2-5/8	1	1-3/8	15/16	.980	1	1-3/8
WJ375L4.1	3/8	1/2	5/16	4-1/8	1	1-3/8	15/16	.980	1	1-3/8
WJ500L2.0	1/2	3/4	3/8	2	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16
WJ500L2.0-50	1/2	1/2	3/8	2	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16
WJ500L3.0	1/2	3/4	3/8	3	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16
WJ500L3.0-50	1/2	1/2	3/8	3	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16
WJ500L4.5	1/2	3/4	3/8	4-1/2	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16
WJ500L4.5-50	1/2	1/2	3/8	4-1/2	1-1/8	1-1/2	1-1/8	1.235	1-1/4	1-9/16

CAD insertion point



# PIPE PLUGS

## NPT STANDARD



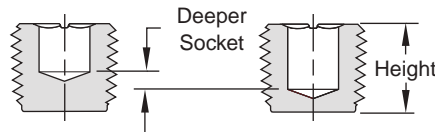
Standard Plugs are flush type, 7/8" taper per foot. Oversize Plugs available with 3/4" taper per foot.

To order oversize pipe plugs, add a "-O" to the end of the catalog number. Ex. BR50-O

**M** Brass, Alloy Steel, and Stainless Steel

Pipe Thread NPT	Brass Catalog Number	Steel Catalog Number	Stainless Catalog Number	Flush Height	Oversize Height
1/16	BR06	ST06	SS06	.25	.31
1/8	BR12	ST12	SS12	.25	.31
1/4	BR25	ST25	SS25	.40	.43
3/8	BR37	ST37	SS37	.40	.50
1/2	BR50	ST50	SS50	.53	.56
3/4	BR75	ST75	SS75	.53	.62
1	BR100	ST100	SS100	.65	.75
1-1/4	BR125	ST125	SS125	.65	.75
1-1/2	BR150	ST150	SS150	.65	.75
2	BR200	ST200	SS200	.65	.75

## HEAVY DUTY INCH

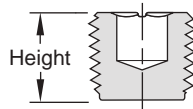


The extra deep socket is stronger, and will not strip out.

**M** Brass

Pipe Thread NPT	CATALOG NUMBER	Height
1/16	BRHD06	.296
1/8	BRHD12	.312
1/4	BRHD25	.421
3/8	BRHD37	.510
1/2	BRHD50	.625
3/4	BRHD75	.625

## BSPT STANDARD



- Fits BSPT and BSPP threads.
- BSP Identification ring.

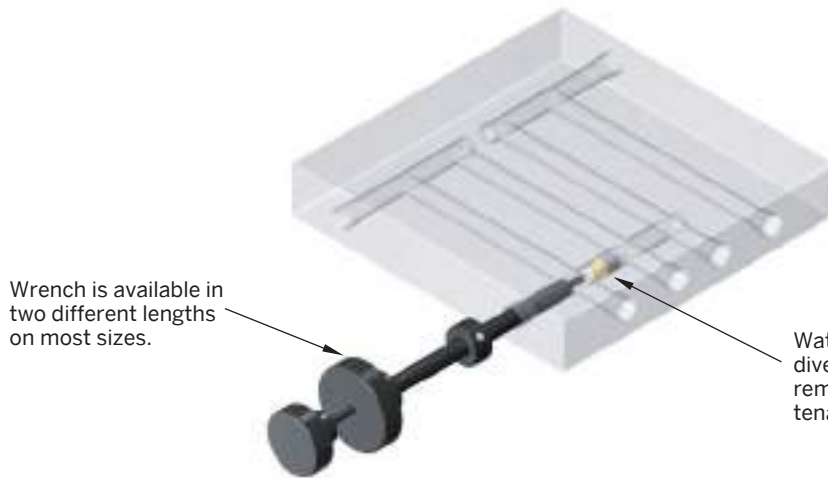
**M** Brass and Alloy Steel

Pipe Thread	Brass Catalog Number	Steel Catalog Number	Stainless Catalog Number	Height (in mm)
1/16-28 BSPT	BR06-BSP	ST06-BSP	SS06-BSP	6
1/8-28 BSPT	BR12-BSP	ST12-BSP	SS12-BSP	8
1/4-19 BSPT	BR25-BSP	ST25-BSP	SS25-BSP	10
3/8-19 BSPT	BR37-BSP	ST37-BSP	SS37-BSP	10
1/2-14 BSPT	BR50-BSP	ST50-BSP	SS50-BSP	10
3/4-14 BSPT	BR75-BSP	ST75-BSP	SS75-BSP	13
1-11 BSPT	BR100-BSP	-	-	14
1 1/4-11 BSPT	BR125-BSP	-	-	14





# WATER BLOCKER™ PLUGS



Wrench is available in two different lengths on most sizes.

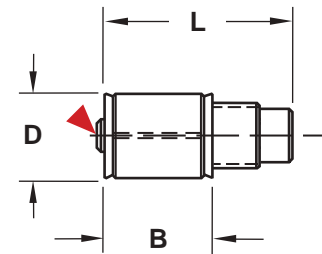
Water Blocker Plugs are used to divert the flow of water, and can be removed and reinstalled for maintenance purposes.



**M** Brass with Stainless Steel Sleeve and Screws

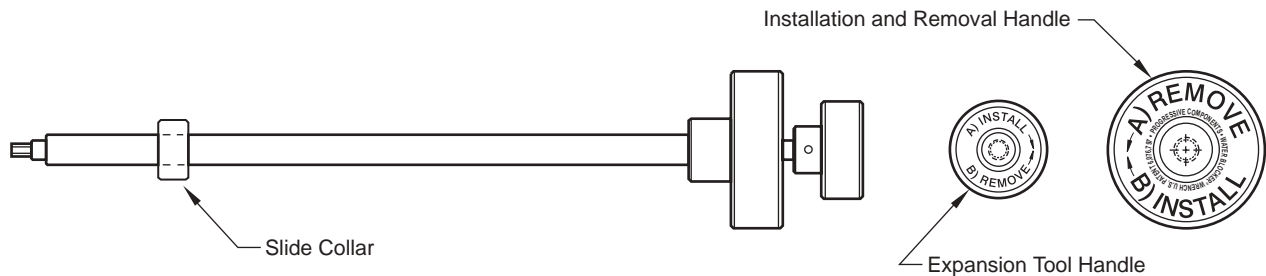
Maximum Pressure: 175 PSI

CATALOG NUMBER	D ±.005	B	L	Waterline Nominal	Waterline Diameter
WB250	.245	.36	.60	1/16 NPT	.250
WB344	.334	.41	.71	1/8 NPT	.344
WB375	.365	.41	.71	1/4 NPT	.375
WB437	.428	.43	.78	1/4 NPT	.437
WB562	.552	.57	.92	3/8 NPT	.562
WB688	.678	.64	1.06	1/2 NPT	.688



▶ CAD insertion point

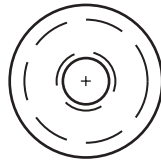
## WRENCHES



CATALOG NUMBER	Water Blocker	Overall Length
WB25S24	WB250	24"
WBS12	WB344, WB375	12"
WBS24	WB344, WB375	24"
WBL12	WB437-WB688	12"
WBL24	WB437-WB688	24"

# THREADLESS PLUGS

## PUSH-IN O-RING PLUGS

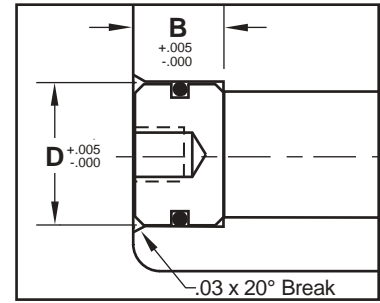
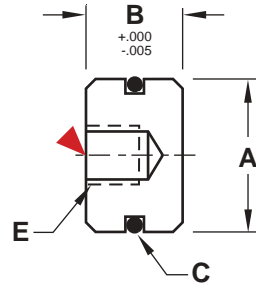


**M** Brass with Buna O-Rings

Maximum temp: 250° F (120° C)

CATALOG NUMBER	A	B	C O-Ring	D Ream Size	E
TWP281	.273	.250	1/16	.281	#6-32
TWP375	.366	.312	1/16	.375	#10-32
TWP500	.494	.312	1/16	.500	#10-32
TWP625	.618	.437	3/32	.625	1/4-20
TWP750	.743	.500	3/32	.750	1/4-20
TWP1000	.990	.625	1/8	1.000	3/8-16
TWP1187	1.177	.625	1/8	1.187	3/8-16

CAD insertion point

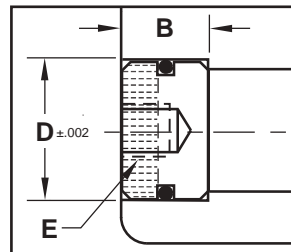


Threadless O-Ring Plugs are designed for inserts backed up by mold steel.

### Alternative configurations and materials available:

- For plugs with Viton O-rings (maximum temperature 400° F, 200° C) specify "-V" at the end of the catalog number. Ex. TWP500-V
- For stainless steel threadless plugs, specify "-SS" at the end of the catalog number. Ex. TWP500-SS or TWP281-SS-V for stainless plugs with Viton O-rings

## TAP-IN O-RING PLUGS



Tap-In O-Ring Plugs do not require steel back up.

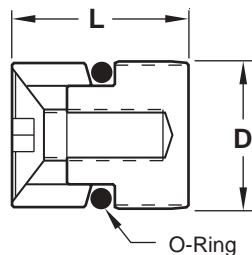
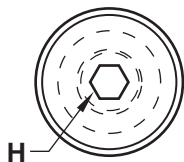
**M** Brass with Buna O-Rings

CATALOG NUMBER	Nominal Pipe Size	D Ream Diam.	B Depth	E
TAP281	1/16	.281	.281	#6-32
TAP375	1/8	.375	.375	#10-32
TAP500	1/4	.500	.500	1/4-20
TAP625	3/8	.625	.625	5/16-18
TAP750	1/2	.750	.750	3/8-16

### Alternative configurations and material available:

- For plugs with Viton O-rings (maximum temperature 400° F, 200° C) specify "-V" at the end of the catalog number. Ex. TAP375-V

## THREADLESS DIVERTING PLUGS



**M** Brass with Buna O-Rings

Maximum pressure: 70 psi

CATALOG NUMBER	Nominal Pipe Size	D Drill Size	H	L
TDP12	1/8	11/32	5/64	.50
TDP12-OS	1/8	23/64	5/64	.50
TDP25	1/4	7/16	1/8	.56
TDP25-OS	1/4	29/64	1/8	.56
TDP37	3/8	9/16	1/8	.62
TDP37-OS	3/8	37/64	1/8	.62
TDP50	1/2	11/16	1/8	.62
TDP50-OS	1/2	45/64	1/8	.62

### Alternative configurations and material available:

- For plugs with Viton O-rings (maximum temperature 400° F, 200° C) specify "-V" at the end of the catalog number. Ex. TDP50-V or TDP50-OS-V



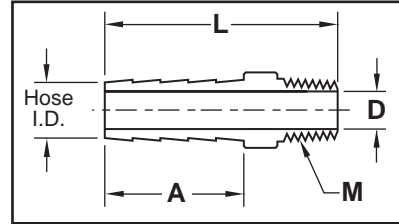
# FITTINGS

## MALE HOSE BARBS

M Brass

CATALOG NUMBER	M NPT	Hose I.D.	D	A	L
MB16-0	#10-32 UNF	1/16	.052	.45	.57
MB18-0	#10-32 UNF	1/8	.090	.56	.81
MB18-2	1/8	1/8	.093	.50	1.03
MB14-2	1/8	1/4	.187	.97	1.54
MB14-4	1/4	1/4	.187	.97	1.64
MB15-2	1/8	5/16	.250	.97	1.54
MB15-4	1/4	5/16	.250	.97	1.64
MB38-2	1/8	3/8	.281	.97	1.54
MB38-4	1/4	3/8	.281	.97	1.64
MB50-4	1/4	1/2	.375	.97	1.64
MB50-6	3/8	1/2	.375	.97	1.76
MB50-8	1/2	1/2	.375	.97	1.86
MB75-8	1/2	3/4	.562	.97	1.86
MB75-12	3/4	3/4	.562	.97	1.97

Note: MB16 and MB18 include Buna O-rings and clamps.



M Brass

## MALE PUSH-LOK HOSE BARBS

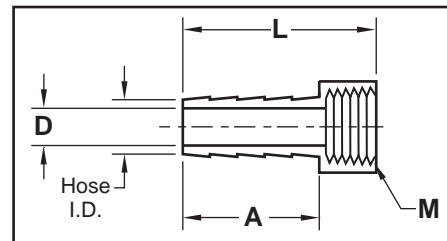
CATALOG NUMBER	M NPT	Hose I.D.	D	A	L
MB14-1-PL	1/16	1/4	.187	.97	1.69
MB14-2-PL	1/8	1/4	.187	.97	1.54
MB14-4-PL	1/4	1/4	.187	.97	1.64
MB38-2-PL	1/8	3/8	.281	.97	1.54
MB38-4-PL	1/4	3/8	.281	.97	1.64
MB38-6-PL	3/8	3/8	.281	.97	1.75
MB38-8-PL	1/2	3/8	.281	.97	1.97
MB50-4-PL	1/4	1/2	.375	.97	1.64
MB50-6-PL	3/8	1/2	.375	.97	1.76
MB50-8-PL	1/2	1/2	.375	.97	1.86
MB50-12-PL	3/4	1/2	.375	.97	1.97
MB75-8-PL	1/2	3/4	.562	.97	1.86
MB75-12-PL	3/4	3/4	.562	.97	1.97



M Brass

## FEMALE HOSE BARBS

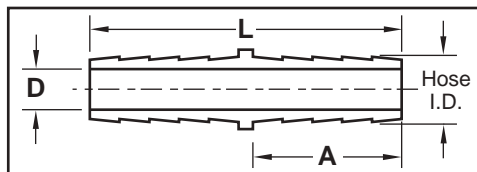
CATALOG NUMBER	M NPT	Hose I.D.	D	A	L
FB14-2	1/8	1/4	.187	.97	1.47
FB14-4	1/4	1/4	.187	.97	1.58
FB15-4	1/4	5/16	.250	.97	1.58
FB38-2	1/8	3/8	.281	.97	1.47
FB38-4	1/4	3/8	.281	.97	1.58
FB50-6	3/8	1/2	.375	.97	1.63
FB50-8	1/2	1/2	.375	.97	1.73



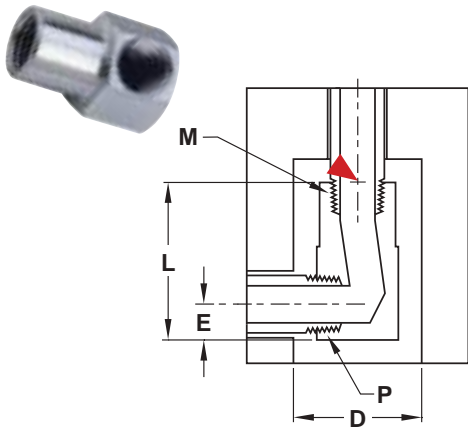
M Brass

## HOSE SPLICERS

CATALOG NUMBER	Hose I.D.	D	A	L
HS14	1/4	.187	.97	2.00
HS38	3/8	.281	.97	2.00
HS50	1/2	.375	.97	2.00



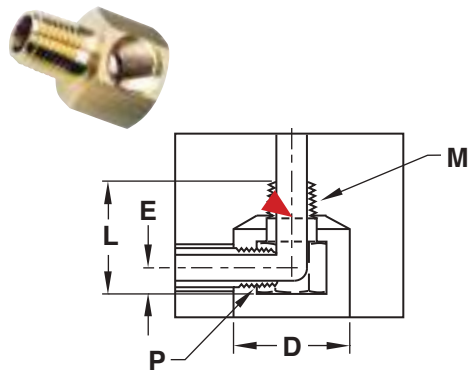
# HEX ELBOWS FEMALE



▶ CAD insertion point

CATALOG NUMBER ALLOY STEEL	CATALOG NUMBER BRASS	M NPT	P NPT	Hex Size	L	D	E
HEL51616	HELB1616	1/16	1/16	9/16	.81	1.00	.218
HEL51818	HELB1818	1/8	1/8	3/4	1.00	1.25	.281
HEL51414	HELB1414	1/4	1/4	7/8	1.37	1.37	.343
HEL53838	HELB3838	3/8	3/8	1	1.62	1.50	.500
HEL51212	HELB1212	1/2	1/2	1-1/4	1.87	1.87	.562
HEL53434	HELB3434	3/4	3/4	1-1/2	2.25	2.25	.625

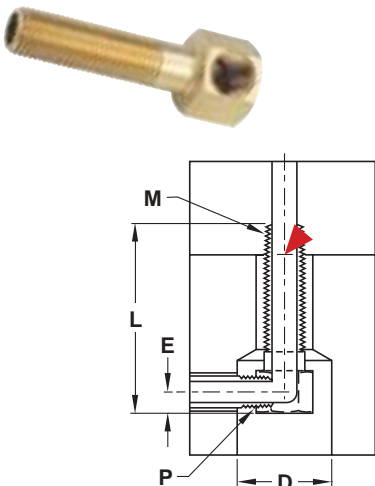
# HEX ELBOWS MALE



▶ CAD insertion point

CATALOG NUMBER ALLOY STEEL	CATALOG NUMBER BRASS	M NPT	P NPT	Hex Size	L	D	E
HEL51616M	HELB1616M	1/16	1/16	9/16	.81	1.00	.218
HEL51818M	HELB1818M	1/8	1/8	3/4	1.06	1.25	.281
HEL51814M	HELB1814M	1/8	1/4	3/4	1.06	1.25	.281
HEL51414M	HELB1414M	1/4	1/4	7/8	1.31	1.37	.343
HEL51438M	HELB1438M	1/4	3/8	7/8	1.31	1.37	.343
HEL53838M	HELB3838M	3/8	3/8	1	1.62	1.50	.437
HEL51212M	HELB1212M	1/2	1/2	1-1/4	2.00	1.87	.562
HEL57575M	HELB7575M	3/4	3/4	1-1/2	2.12	2.25	.625

# EXTENSION ELBOWS MALE



M Brass

CATALOG NUMBER	M Pipe NPT	P In/Out NPT	Hex Size	D	E	Available Overall Lengths (L)							
						2.5	4	5.5	7	8.5	10	11.5	13
HELB1818	1/8	1/8	.75	1.25	.28	•	•	•	•	•	•	•	•
HELB1814	1/8	1/4	.75	1.25	.28	•	•	•	•	•	•	•	•
HELB1414	1/4	1/4	.87	1.37	.34	•	•	•	•	•	•	•	•
HELB1438	1/4	3/8	.875	1.37	.34	•	•	•	•	•	•	•	•
HELB3838	3/8	3/8	1.00	1.50	.50	•	•	•	•	•	•	•	•
HELB1212	1/2	1/2	1.25	1.75	.62	•	•	•	•	•	•	•	•

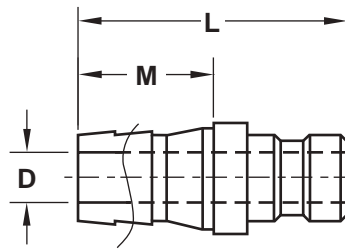
To Order: Specify Prefix and length. Ex. HELB1818L2.5 or HELB1414L11.5

▶ CAD insertion point



# COMBINATION HOSE INSERTS

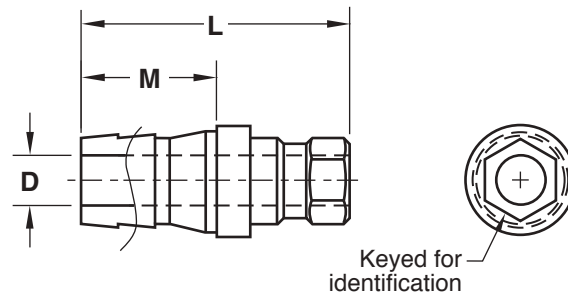
## STANDARD SERIES



M Brass

200 SERIES (1/4" Hole)					300 SERIES (3/8" Hole)					500 SERIES (1/2" Hole)				
CATALOG NUMBER	Hose I.D.	D	M	L	CATALOG NUMBER	Hose I.D.	D	M	L	CATALOG NUMBER	Hose I.D.	D	M	L
200-4	1/4	3/16	.875	1.37	300-4	1/4	3/16	.875	1.81	500-8	1/2	13/32	1.062	2.00
200-5	5/16	1/4	.875	1.37	300-5	5/16	1/4	.875	1.81	500-12	3/4	9/16	1.500	2.50
200-6	3/8	1/4	1.062	1.56	300-6	3/8	9/32	1.062	1.81					
200-8	1/2	1/4	1.062	1.56	300-8	1/2	11/32	1.062	1.81					

## KEYED CONNECT SERIES



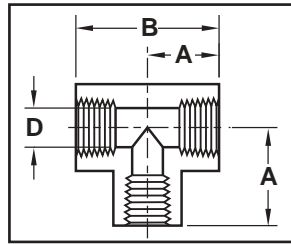
M Brass

200 SERIES (1/4" Hole)					300 SERIES (3/8" Hole)					500 SERIES (1/2" Hole)				
CATALOG NUMBER	Hose I.D.	D	M	L	CATALOG NUMBER	Hose I.D.	D	M	L	CATALOG NUMBER	Hose I.D.	D	M	L
200-4-K	1/4	3/16	.875	1.37	300-6-K	3/8	9/32	1.062	1.81	500-8-K	1/2	13/32	1.062	2.00
200-6-K	3/8	1/4	1.062	1.56	300-8-K	1/2	11/32	1.062	1.81	500-12-K	3/4	9/16	1.500	2.50

Note: Keyed connectors do not fit standard connectors.

# FITTINGS

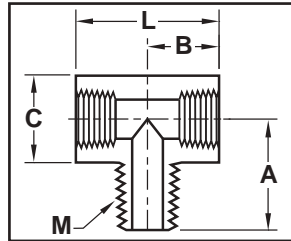
## TEES



M Brass

CATALOG NUMBER	M NPT	A	B	D
T18	1/8	.55	1.10	.328
T14	1/4	.78	1.56	.422
T38	3/8	.87	1.68	.562
T50	1/2	1.07	2.14	.687

## MALE TEES

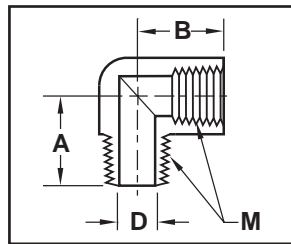


M Brass

CATALOG NUMBER	M NPT	A	B	C	L
MT10	#10-32 UNF	.500	.18	.38	.38
MT18	1/8	.66	.53	.56	1.06
MT14	1/4	.91	.76	.71	1.52
MT38	3/8	.97	.84	.81	1.68
MT50	1/2	1.26	1.09	1.00	2.18

Note: M10 includes O-ring.

## 90° STREET ELBOWS

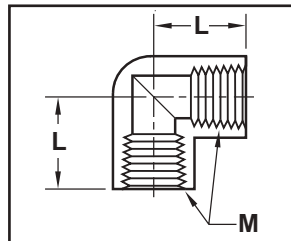


M Brass

CATALOG NUMBER	M NPT	A	B	D
ELS10	#10-32 UNF	.50	.18	.090
ELS18	1/8	.81	.56	.220
ELS14	1/4	.91	.45	.312
ELS38	3/8	.98	.54	.428
ELS50	1/2	1.25	1.03	.522

Note: ELS10 includes O-ring.

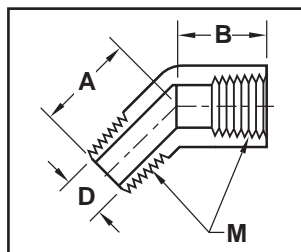
## 90° ELBOWS



M Brass

CATALOG NUMBER	M NPT	L
EL18	1/8	.55
EL14	1/4	.78
EL38	3/8	.84
EL50	1/2	1.09

## 45° STREET ELBOWS



M Brass

CATALOG NUMBER	M NPT	A	B	D
ELA18	1/8	.50	.38	.220
ELA14	1/4	.70	.54	.314
ELA38	3/8	.78	.54	.440
ELA50	1/2	1.00	.73	.562

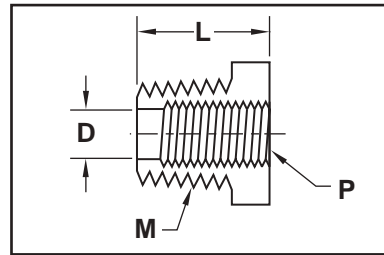


# FITTINGS

## REDUCING BUSHINGS

M Brass

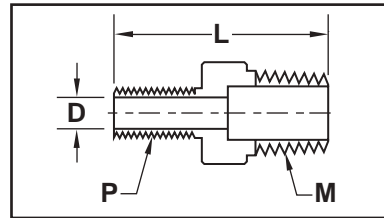
CATALOG NUMBER	M NPT	P NPT	L	D
RB18-0	1/8	#10-32 UNF	.56	.156
RB18-1	1/8	1/16	.56	.250
RB14-0	1/4	#10-32 UNF	.75	.156
RB14-2	1/4	1/8	.75	.328
RB38-4	3/8	1/4	.75	.422
RB50-6	1/2	3/8	1.00	.562



## MALE REDUCERS

M Brass

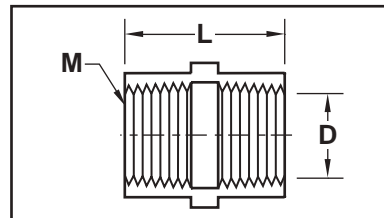
CATALOG NUMBER	M NPT	P NPT	L	D
MR18-1	1/8	1/16	1.19	.187
MR14-2	1/4	1/8	1.22	.220
MR38-4	3/8	1/4	1.41	.314
MR50-6	1/2	3/8	1.62	.440



## COUPLINGS

M Brass

CATALOG NUMBER	M NPT	L	D
C18	1/8	.75	.328
C14	1/4	1.12	.422
C38	3/8	1.12	.562
C50	1/2	1.50	.688



## HEX NIPPLES

M Brass

CATALOG NUMBER	Pipe Size	Hex Size	L
HN18	1/8	7/16	.969
HN14	1/4	9/16	1.375
HN38	3/8	11/16	1.437
HN50	1/2	7/8	1.813



## COVER PLUGS



**M** Brass

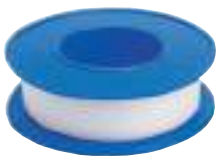
CATALOG NUMBER	Fits Socket Series No.
CP200	200 (1/4")
CP300	300 (3/8")
CP500	500 (1/2")

## CLAMPS



CATALOG NUMBER	Hose O.D.
HC58	5/8
HC78	7/8
HC118	1-1/8

## SEALANT TAPE



CATALOG NUMBER	DESCRIPTION
TT250	1/4" x 520"
TT500	1/2" x 520"



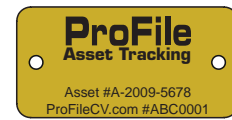
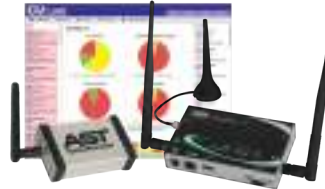






# MOLD MONITORING

## SECTION F



CVe Monitor	CVe OnDemand	CVe Live	Profile Tool Mgt System
Prefix: CVe			
Page: F-1	Page: F-3	Page: F-4	Page: F-5



CounterView: 100/200	CounterView: R-Series	CounterView Attachment Block	System Cooling
Prefix: CV	Prefix: CVR, CVRL	Prefix: CVRA	Prefix: SCTS, SCM
Page: F-6	Page: F-7	Page: F-8	Page: F-9





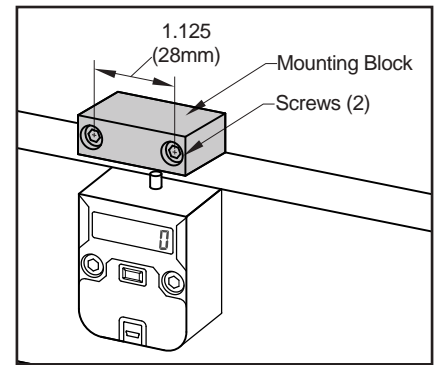
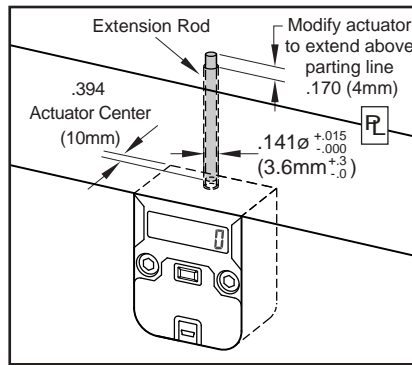
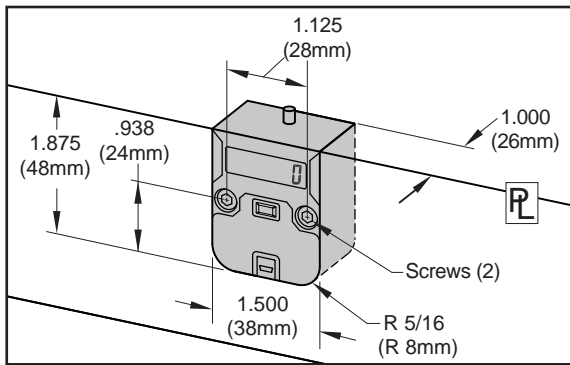
# CVE MONITOR®

Progressive's new CVE Monitor v3 tracks tool activity, allowing users to view data on the display or from comprehensive reports using OnDemand or the new CVE Live System. Features include:

- 7-digit LCD display with a push button to move through the display modes.
- 16GB flash drive for file storage.
- Replaceable battery.
- Water resistant with an ingress protection rating of IP58.
- Maximum temperature: 190° F (90° C). For high temp tools, contact Engineering.
- Recommended mounting is on the stationary half of the mold.
- Dimensional compatibility with Progressive's mechanical CounterViews.
- Mini USB connectivity for data retrieval with cables sold separately.



## MOUNTING OPTIONS



CATALOG NUMBER	DESCRIPTION
<b>CVE-M</b>	CVe Monitor v3 Mold Maker/Molder version including #8-32 x 1" SHCS (2) and M4 x 25mm SHCS (2)
<b>CVE-O</b>	CVe Monitor v3 OEM version including #8-32 x 1" SHCS (2) and M4 x 25mm SHCS (2)

CATALOG NUMBER	DESCRIPTION
<b>CVE-INT</b>	Internal Extension Rod (8"/200mm) including a hex key for CVE Monitor set screw removal.
<b>CVE-EXT</b>	External Mounting Block including #8-32 x 1" SHCS (2) and M4 x 25mm SHCS (2)

OEM-specific CVE Monitors are available. Contact Progressive for more information.

### How to Order:

- For installation below parting line (ie. rails as shown in the center graphic above), order (1) CVE-M and (1) CVE-INT.
- For installation outside of the mold (right graphic), order (1) CVE-M and (1) CVE-EXT.

## ON-MOLD DISPLAY MODES

Each device is provided at -25 cycles to allow for mold set up and initialization of the CVE Monitor. Once it reaches zero (0), all timers and data will reset on the monitor. During production, users can press the button on the front of the monitor and review the following information on the display:

### Cycle Count

Total cycles for the life of the mold is presented on the main screen.



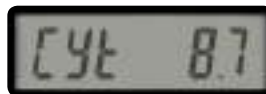
### Efficiency Percentage

The percentage of time that the mold has been actively cycling vs being idle.



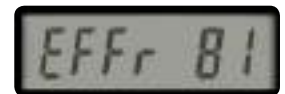
### Cycle Time

Since the first production cycle, cycle time for the life of the mold.



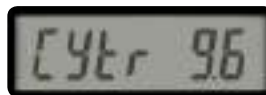
### Efficiency Percentage-Recent

The percentage of time the mold has been active in the past 500 cycles.



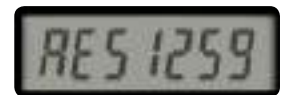
### Cycle Time-Recent

Cycle time for the past 500 cycles is shown in seconds.



### Cycle Count Reset

Press and hold button to reset separate counter to 0 for interim monitoring of cycles.



### Mold Temperature

View current temperature experienced by the monitor (°C) by pressing button twice.



### Flash Drive

Utilize the 16GB flash drive by connecting the CVE to a PC/Tablet with an industry-standard mini USB cable, sold on the next page.



# CVe MONITOR®

## ON DEMAND ALERT MODES

Once data is initialized using the complimentary OnDemand software (from www.CVeMonitor.com) users can choose to be alerted to the following sets of conditions for the CVe Monitor.

### Preventive Maintenance

During initialization, Preventive Maintenance (PM) checkpoints are entered and saved onto the CVe Monitor. If a PM checkpoint is exceeded, the CVe Monitor enters the PM alert mode and displays the wrench icon as shown at right. When a PM is performed using OnDemand, the next checkpoint for the PM will be written. If no PM is performed, the CVe Monitor will remain in PM alert mode until the user performs all PMs whose thresholds have been exceeded.



### Cycle Time

During initialization, the target cycle time can be written to the monitor using OnDemand. Any variation greater than 2% from the target will enter the alert mode and display the clock icon as shown at right. When the cycle time returns to within 2% of the target, the alert is removed.



### Efficiency

During initialization, the target efficiency can be written to the monitor using OnDemand. Any variation greater than 2% from the target will enter the alert mode and display the percentage (%) icon as shown at right. When the efficiency returns to within 2% of the target, the alert is removed.



### Low Battery

The CVe Monitor has a battery life of approximately 4 years in typical molding environments where temperatures are controlled. When the battery reaches a specified level, the display will show a battery icon as shown at right. This is the indication to replace the battery, which can be ordered by contacting Customer Service.



## RETROFITTING

Users can view additional data by double-clicking the button on the monitor:

### Retrofit CVe for CounterView Tools

During initialization, molders can start the cycle count with the tool's actual cycle count from an existing CounterView or known cycles from maintenance records. Once entered, the user can see the total cycles for the tool, which includes the count of the cycles from the counter and those run with the CVe Monitor.

In the graphic at right, the tool had 1,000,000 cycles on it originally, but ran 507,288 after the CVe Monitor was installed.



## CABLES AND CONNECTIVITY

OnDemand Activity Log [Software Version: 2.0/2.0.1/2.1]											
Date	Time	Event	Operator	Machine	Location	Description	Notes	Created By	Created Date	Modified By	Modified Date
April 11, 2014	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	4/11/2014		
April 11, 2014	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	4/11/2014		
March 20, 2014	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	3/20/2014		
March 19, 2014	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	3/19/2014		
December 2, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	12/2/2013		
November 29, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	11/29/2013		
August 13, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	8/13/2013		
July 16, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	7/16/2013		
June 26, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	6/26/2013		
May 27, 2013	10:15	REPORT	Mark	100	Injection Molding	Production Report		Mark	5/27/2013		

Above: OnDemand allows users to view data and keep a record of reports run, outlining the reason for the report generation including PM, General Queries, Revision Changes, and Repairs. Notes can be included and OnDemand records the person generating the document for accurate history.



CABLE CATALOG NUMBER	DESCRIPTION
CVEL-DATA9	USB 2.0 to Type B Mini 9 Foot Long, Right-Angle Cable

Above: Cables are available for use with the CVe Monitor and are required for both connecting to the computer for OnDemand and for the CVe Live system.



Drive comprehensive reporting using data from the CVE Monitor when running OnDemand software, available at no charge from CVEMonitor.com.

OnDemand software enables the user to generate Adobe Acrobat (.pdf), Excel (.xls), and encrypted (.enc) reports to share with customers and other colleagues with these metrics:

- A:** When the CVE is initialized, users can identify their tool and align with the device serial number which is tracked on reports utilizing different field options.
- B:** The target cycle times and efficiency percentages can be entered. OnDemand also supports ten languages: English, German, Mandarin, Spanish, French, Italian, Japanese, Korean, Portuguese and Thai. Reports, generated in the chosen language, compare actual values to targets, providing a quick view of any variances.
- C:** Statistics are provided to show quantity of total cycles and inactivity for the life of the tool.
- D:** Weekly sessions are presented graphically to show production efficiency levels.
- E:** Weekly cycle time tracking identifies tools with variances over the past year.
- F:** The productivity portion of the report takes the target preventive maintenance (PM) points set by the molder and compares them to actual maintenance pulls.



Cve OnDemand is developed and supported by AST Technology, sister company of Progressive Components.

The New Maintenance Tab has 9 user-definable PM points (Incremental or Absolute). It provides an overview of when each type of PM was performed to a tool and when it is next due. It also allows the user to customize PM forms and checklists for their maintenance program. In addition, the CVE Monitor records the temperature each week and these temperatures are shown in the OnDemand reports.



Title	Interval	Last Performed	Next Due
Oilless Maintenance	10000	4,894,000	5,894,000
5 Job Rotation	30000	4,842,000	4,842,000
4 Job Rotation	30000	4,842,000	4,842,000
Spring Season Maintenance	360000	4,892,000	4,500,000
Tool Refurbishment	1000000	0	8,000,000
Internal Tool Maintenance	5000	4870	NA



# CVe LIVE®

For real-time monitoring of tools, AST provides hardware and website access for OEMs and molders utilizing the CVe Monitors.

**Features:**

- Utilizes FCC and CE certified internal components.
- Press Modules act as a node on a network, reducing the distance required in the plant for data submission to the Gateway.
- Radio Frequency (RF) antennas are interference-free in typical molding environments.
- Designated website for data collection, reporting, and file storage.

CVe Live is developed and supported by AST Technology, sister company of Progressive Components.



**Press Module**

- 1 per press connects to the CVe Monitor via cables
- Power supply (US/International) included
- Sends data to the Gateway continuously
- Serves as a node on the network for tools running with a CVe Monitor
- Includes (1) CVEL-DATA9 Cable



**Gateway**

- 1 per facility collects data from all press modules installed via RF transmissions
- Power supply (US/International) and CAT5 Ethernet cable included
- Accesses the internet via cellular technology
- Sends data to the customer's web portal every 15 minutes

**CVe Live Website Features:**

- Secure access for OEMs and molders, set up at the time of installation of the CVe Live hardware.
- Dashboard gives users information at either the enterprise or plant level and allows for drill down into specifics on each tool.
- Users can mark favorites and also save searches for monitoring specific programs or suppliers.
- Graphs for cycle times, efficiencies, cavitation and production loss, and also preventive maintenance, can be shown and saved.
- PM Function allows for user-defined PM stops (Incremental or Absolute). The user can also create or customize PM forms and checklists for a specific maintenance program. This includes PM for molds and machines or other assets.
- Work Order function allows users to create work orders for molds, machines, or other assets.
- Asset Tracking shows where and when the CVe Monitor was last tethered to a CVe Live network.
- Plant exceptions screen shows any out-of-tolerance conditions.
- Downtime and reject tracking can be entered into the system and monitored through various reports.



- Molding data and tool information can be exported to Excel, allowing for easy import into existing systems.
- Administration and security levels are controlled by the user, and access can be given to subcontractors to upload information or to initialize the CVe Monitors to begin submitting data.
- The file cabinet system is designed to store reports, tool and part drawings, and set-up sheets and can be utilized by customers with the CVe Live system installed, or by those using OnDemand who are looking to have or give global access to tool information.

For a CVe Live installation or for CVe Live website access, contact Customer Service or email AST directly at [orderdesk@ASTtech.com](mailto:orderdesk@ASTtech.com).





# PROFILE TOOLING MANAGEMENT SYSTEM

The ProFile Tooling Management System is an online database that enables tool owners or managers to access data from around the globe.

- Assets can be managed free of charge.(10 GB Max. Subscription available for additional capacity.)
- Preventive maintenance and work orders can be generated from the Maintenance Module as a subscription.

**PROFILE CV** Tooling Management System

Welcome: Tooling Portal User

Home Contact Us Settings Help Sign Out

Dashboard Activity Work Orders Administration

**Asset #ABC0001** [★ Mark as Favorite](#) [View 1 Open Work Order](#)

Tool Owner:	Craig Industries	Engineer:	Davis Crowley	Cavitation:	16
OEM ID:	CRIN	Processor:	ABC Molding	Shot Size:	5.5
Asset ID:	A-2009-5678	Tool Type:	Hot Runner	Max Ej Stroke:	2.5
Tool Builder:	The Mold Shoppe	Tool Size:	24 x 36 x 18	Last Cycle Count:	162,504
Location:	Plant B				
Tool ID:	T-487	Target Efficiency:	90.0		
Program Name:	Viper	Target Cycle Time:	64.0		
Part ID:	ADM-4567	Counter/Monitor S/N:	ONZ1234		
Customer:	Craig Industries				

**File Cabinet**

- Tooling Documents
- Part Documents
- Process / Set Up Sheets
- PM Reports

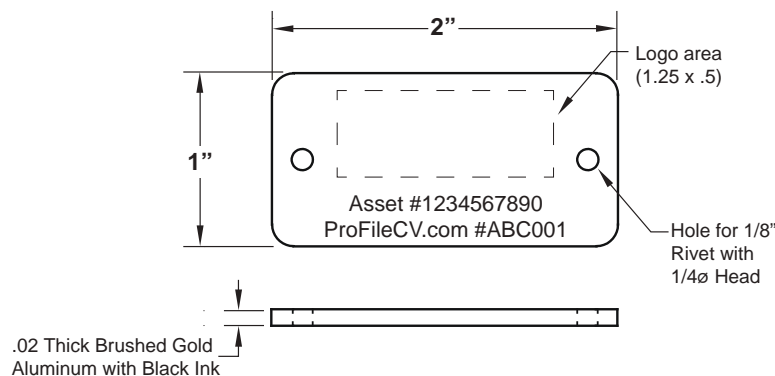
Next PM Due:	180,000
Last PM:	145,125
Last Repair:	5,160
Last Revision:	

## ASSET TAGS

Made to order with your company's logo and asset identification, tool managers can easily locate information and files from ProFileCV.com.

Features:

- Customer and database asset fields printed on the tag.
- Free access to tooling information and file storage.
- Minimum quantity per order is 25 tags. Contact Customer Service for a quotation.



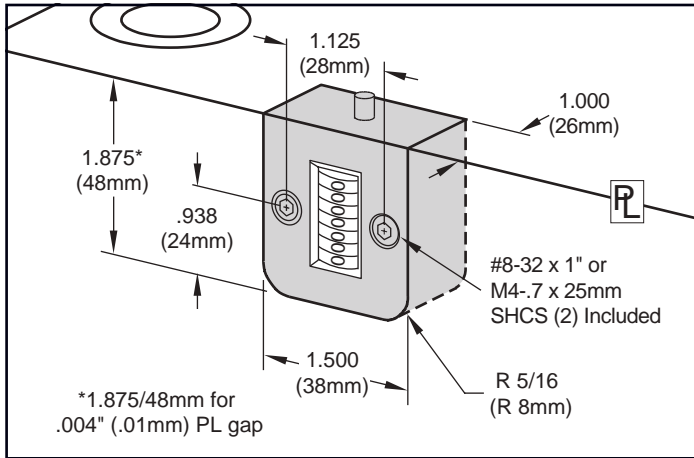
# COUNTERVIEW® 100/200 SERIES



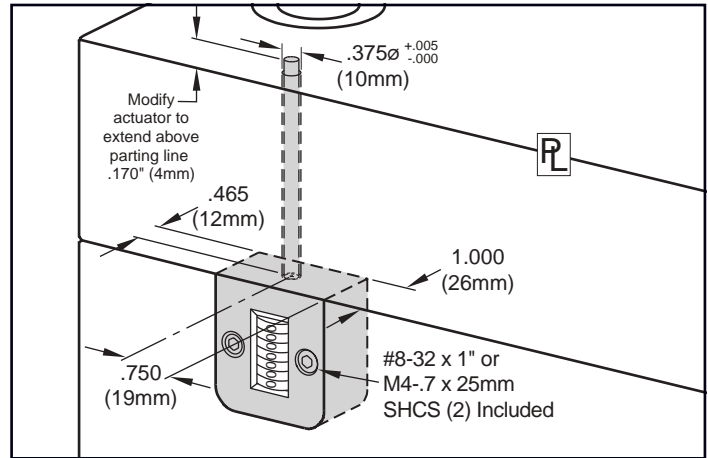
Progressive's CounterView positively monitors mold activity, validates process monitoring data, and assists mold maintenance procedures.

- Maximum operating temperature is 250° F (120° C)
- Counter: Non-resettable mechanical, 7-digit

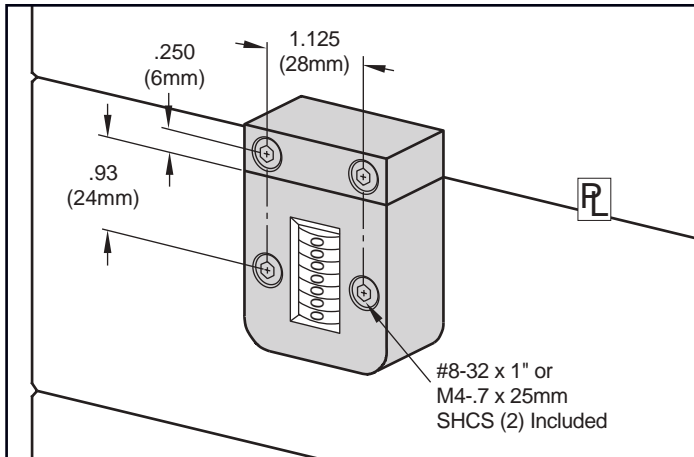
**M** Glass-filled Nylon housing



PARTING LINE MOUNT	Parting line mount makes unit easily visible to operator.
<b>CVPL-100</b>	Inch Standard
<b>CVPL-200</b>	Metric Standard



INTERNAL EXTENSION MOUNT	Machinable 8" (200mm) extension allows installation in sup. plate or rail.
<b>CVIN-100</b>	Inch Standard
<b>CVIN-200</b>	Metric Standard



EXTERNAL MOUNT	No pocket machining necessary. Designed specifically for retrofit applications.
<b>CVEX-100</b>	Inch Standard
<b>CVEX-200</b>	Metric Standard



ID Plates for tool identification sold separately.

Contact Customer Service for special ID Plates with your company's logo.

CATALOG NUMBER	DESCRIPTION
<b>CVID</b>	ID Plate for tool identification



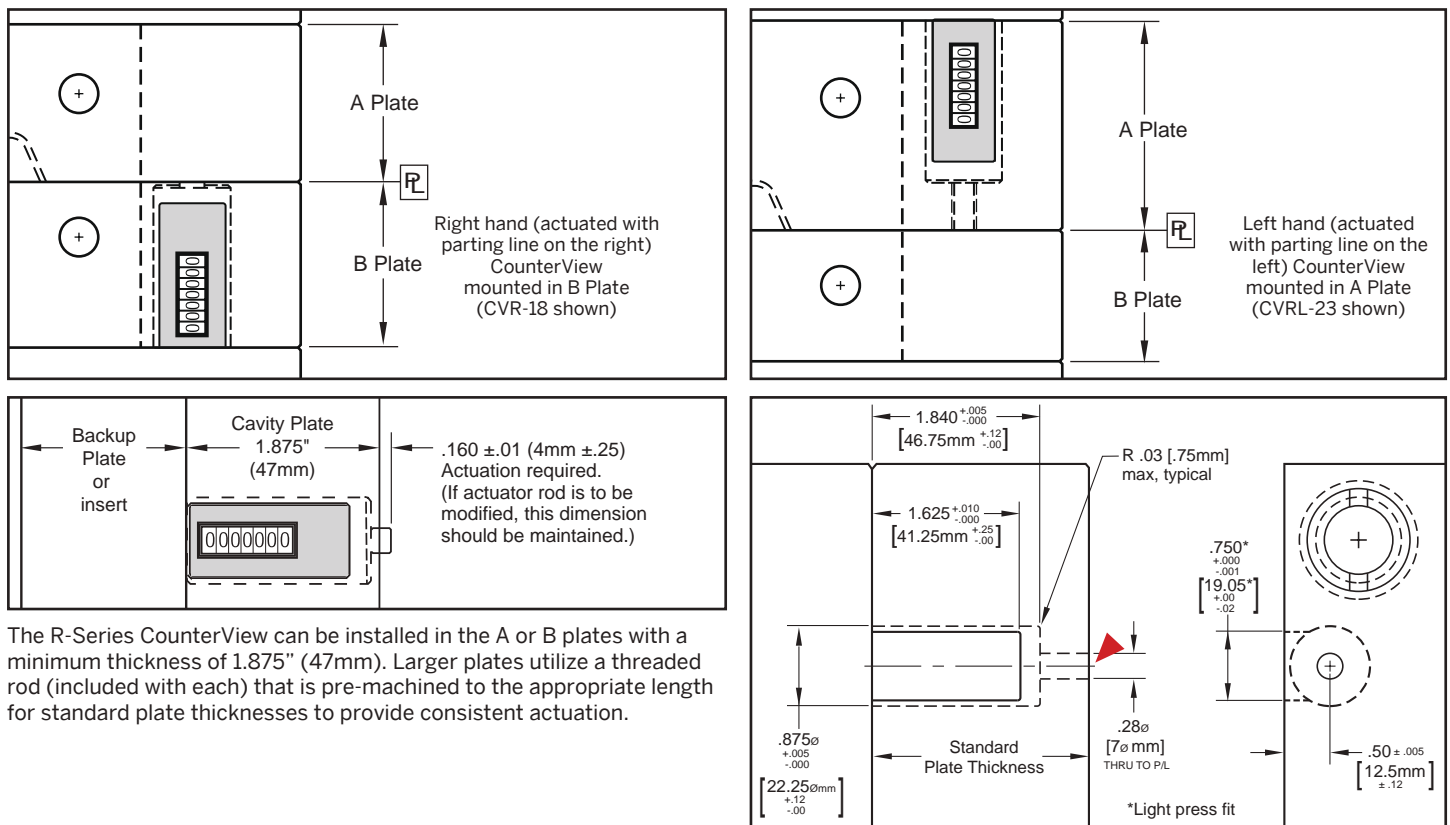
# COUNTERVIEW® R-SERIES

Progressive's CounterView positively monitors mold activity, validates process monitoring data, and assists mold maintenance procedures.

- Maximum operating temperature is 250 °F (120 °C)
- Counter: Non-resettable mechanical, 7-digit



**M** Glass-filled Nylon housing



The R-Series CounterView can be installed in the A or B plates with a minimum thickness of 1.875" (47mm). Larger plates utilize a threaded rod (included with each) that is pre-machined to the appropriate length for standard plate thicknesses to provide consistent actuation.

▶ CAD insertion point

## PARTING LINE AT LEFT



### Inch Standard

CATALOG NUMBER	Nominal Plate Thickness
CVRL-18	1.875
CVRL-23	2.375
CVRL-28	2.875
CVRL-33	3.375
CVRL-38	3.875
CVRL-43	4.375
CVRL-83	8.375

### Metric Standard

CATALOG NUMBER	Nominal Plate Thickness
CVRL-56	56
CVRL-66	66
CVRL-76	76
CVRL-96	96
CVRL-116	116
CVRL-196	196

## PARTING LINE AT RIGHT



### Inch Standard

CATALOG NUMBER	Nominal Plate Thickness
CVR-18	1.875
CVR-23	2.375
CVR-28	2.875
CVR-33	3.375
CVR-38	3.875
CVR-43	4.375
CVR-83	8.375

### Metric Standard

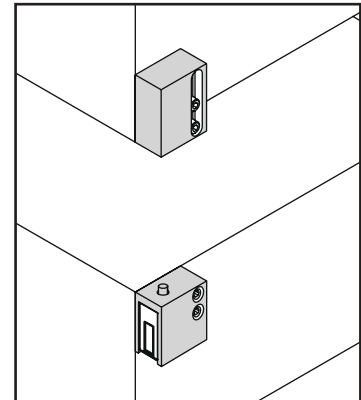
CATALOG NUMBER	Nominal Plate Thickness
CVR-56	56
CVR-66	66
CVR-76	76
CVR-96	96
CVR-116	116
CVR-196	196

Each R-Series CounterView includes the actuator. All except CVR-18 and CVRL-18 require attachment of the actuator rod to the threaded CounterView unit.

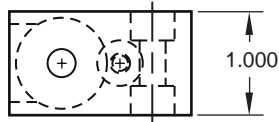
# CV ATTACHMENT BLOCK FOR R-SERIES COUNTERVIEWS



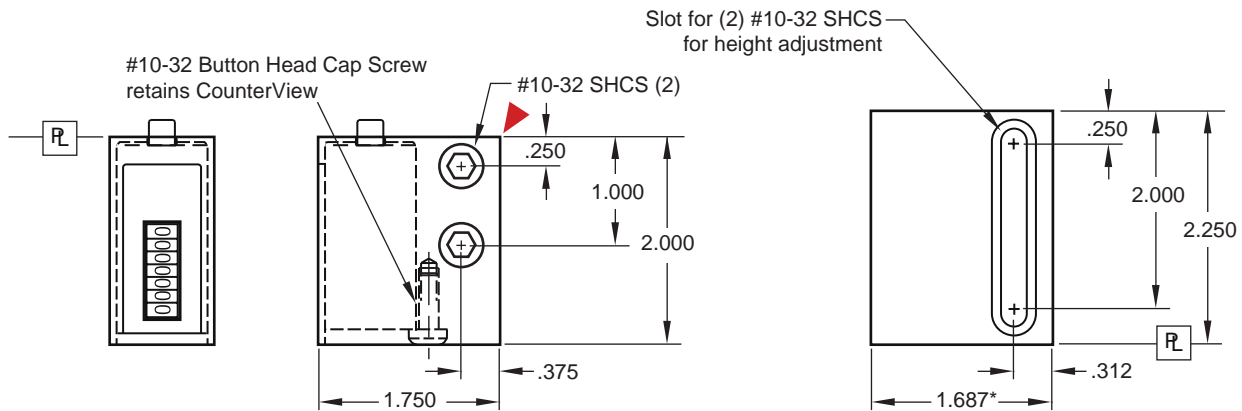
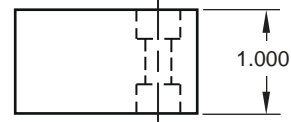
The CV Attachment Block allows for external mounting of the R-Series CounterView while offering protection from shop floor damage. The block can be adjusted to accommodate changeovers of different insert heights.



## COUNTERVIEW BLOCK



## ACTUATION BLOCK



Note: The width of the Actuation Block is smaller by 1/16" to allow for clearance if the CounterView Block is recessed into the mold.

M A36 S Black Oxide

CAD insertion point

CATALOG NUMBER	DESCRIPTION
CVRA-100	CounterView Attachment Block Set

The CV Attachment Block set includes both blocks and mounting screws. R-Series CounterViews are sold separately on page F-6.



# SYSTEM COOLING™

System Cooling offers Injection Molders an exclusive and affordable solution for monitoring flow and temperature circuits within an injection mold.

The efficiency of the mold cooling circuits are critical to a stable process and the manufacturer of high quality, dimensionally stable parts. System Cooling can protect your mold and improve quality by quickly identifying cooling problems and alerting the user to various common cooling circuit problems, such as:

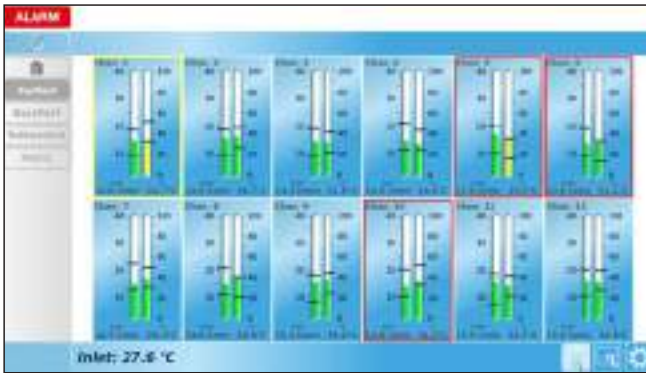
- Flow deviation
- No water flow from the mold heater
- Blocked waterways
- Scale / rust build-up
- Incorrect piping
- Temperature deviation



Touch Screen Controller



Interface Module



Server



Manifold

Molders that run parts with critical tolerances and require consistency of mold cooling can generate reports to support their industry certifications.

## SERVER AND TOUCH CONTROL

The System Cooling Server is a compact computer with software installed. The integrated VNC feature allows easy integration on the machine control, laptop or tablet via Ethernet. Using a remotely mounted touch screen, the system will display the flow and temperature for every circuit. The Touch Screen is used to access:

- Set warning and alarm limits for flow and temperature to all monitored zones individually.
- View current temperature, flow, and pressure status graphically or as text.
- Store data and mold setups in the internal memory where they are time and date stamped for ultimate traceability.



### Simple Overview

The user can see an immediate overview of cooling circuit status 'at a glance' on a single screen with instant display status alarms should the flow / temperature go outside of tolerance.



### Historical Data

Historical data recording means that a performance log for each circuit and manifold is stored on the internal memory, allowing the user to track the performance and easily identify problems.



### Event Log

Alarm errors, warnings and operator changes are all stored with a time and date stamp and can be reviewed at any time.

## MANIFOLD

The slim line and compact design has been developed to enable the System Cooling manifold to be mounted into the smallest space possible next to the machine platens, keeping pipe runs to an absolute minimum, improving flow rates to the mold and reducing cycle times. Other notable features include:

- Feed and return ports on both the top and bottom of the manifold provide flexibility in connection
- Can be mounted on either the fixed or moving half of the molding machine
- Is supplied with color-coded ball valves
- Available with 4, 8 or 12 ports as standard (other sizes are available on request)
- Multiple manifolds can be electronically 'daisy-chained' to accommodate the necessary number of flow channels. (Maximum 4 manifolds/48 zones.)
- Available in Aluminum or Stainless Steel.

The System Cooling Manifold is equipped with very compact sensors that are capable of reading both flow and temperature:

- Sensors measure based on the Vortex Flow principle.
- It has no moving parts and a large flow path.
- Ideally suited to mold cooling even when using heavily contaminated water.
- Integrated directly into the manifold, keeping size to an absolute minimum.



*Individual port sensors are embedded in the manifold providing increased accuracy.*



*12-port manifold with staggered color coded ball valves for convenient, visual connection.*

## INTERFACE MODULE

System Cooling is equipped with a DIN-Rail mounted interface module (MFIO). This is the hub of the system and allows the manifolds to be easily connected to external devices.

- The interface module facilitates true 'plug and play' operation, allowing multiple manifolds to be monitored.
- Enables simple connection to the touch screen, power supply, alarm signals in/out and machine communications.
- Allows data to be fed into production monitoring systems or other devices using the onboard communication ports.





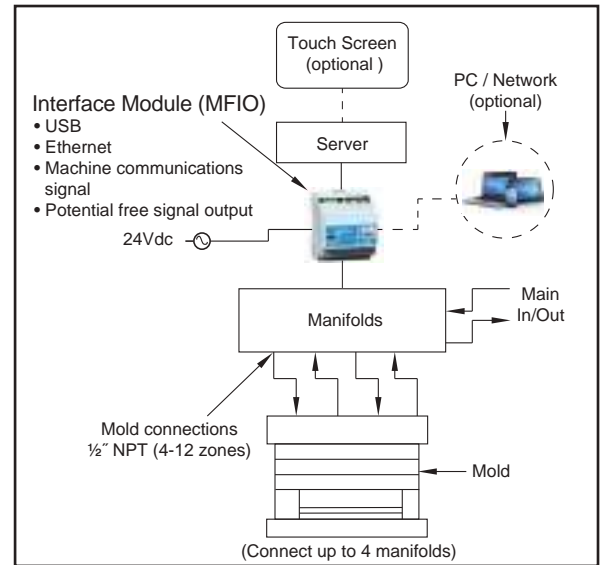
# INTEGRATED SOLUTION CAPABILITY

Custom solutions are offered where the electronics are built into the machine control panel and integrated directly into the injection molding machine.

- Eliminate the need for another controller.
- Display all System Cooling screens on an existing display.
- Closed loop design provides safety against starting molds without flow.

The manifold is equipped with network-ready electronics and can be connected to the network/internet via the ethernet connection.

- Monitor flow from any location directly on your smartphone or laptop.
- Configure settings on site or remotely.
- Feed data to an external production monitoring system.



## PORTABLE TESTING

A Test Rig oriented towards mold maintenance, and a portable cart oriented towards production validation and troubleshooting are offered. The Test Rig is an all-inclusive stand alone unit that is equipped with a water reservoir, pump, 8 zone manifold, and control system. The portable cart is an alternative mounting solution for a complete press side monitoring system.

### New Molds

Moldmakers must often supply new molds to the customer complete with a report of operating parameters including data relating to the cooling circuits in the mold. Now moldmakers can easily connect the System Cooling Test Rig to the mold as part of the benchmarking process.

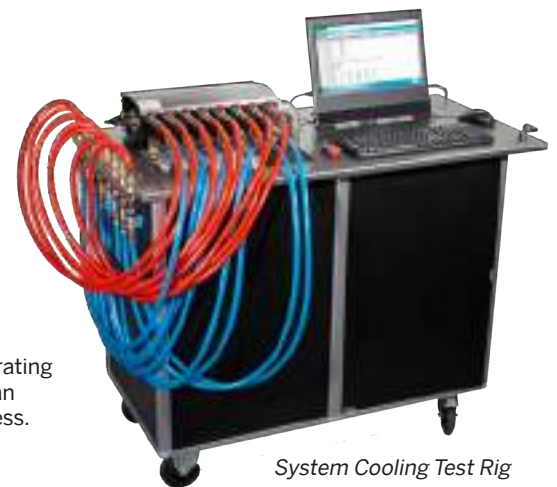
### Mold Maintenance

Mold cooling circuits need to be maintained regularly to remove scale and rust to ensure maximum productivity. With the System Cooling Test Rig, the cooling channels can be analyzed and tested. The flow and pressure can be precisely controlled to simulate the production setup.

### Measurement Report

After maintenance, users can generate fully documented reports from any location, directly on a smartphone or laptop, certifying that all flow and pressure values are regained. The reports generated document:

- Flow - volume/capacity; restriction in the mold.
- Pressure leak down test results.
- Reports can be saved for future comparison.



System Cooling Test Rig



# SYSTEM COOLING SPECIFICATIONS

MANIFOLD	
Manifold feed	1" NPT SS / 1-1/2" BSPT ALU
Manifold ports	1/2" NPT
Number of ports	4/8/12 Standard (other sizes on request)
Regulation	Color coded ball valves per circuit
Manifold connection	Customer specified
Operating pressure (max)	145 PSI / 10 bar
Temperature sensing	Per circuit (return)
Flow sensing	Per circuit (return)
Temperature sensing main inlet	Yes (optional)
Power supply	12 - 24 VDC

FLOW SENSOR	
Sensor type	Vortex
Range (flow)	ALU .25-4 GPM (1-15 LPM) or .5-10.5 GPM (2-40GPM) SS .25-5.25 GPM (1-20LPM) or .5-10.5 GPM (2-40 LPM)
Accuracy (flow)	1.5% fs
Operating Temperature (max)	200° F / 95° C (Std) 250° F / 120° C (High Temp)
Resolution (temperature)	0.5°C / 0.9°F
Accuracy (temperature)	+/- 1.5% fs
Sensor signal	0.35 – 3.5 V
Output signal	Voltage
Response time	< 1 s
Seal	EPDM
Burst pressure	260 PSI (105°F) / 18 bar (40 °C)
Connection	Quick connect - plug and play

SERVER AND TOUCH CONTROL	
Display	15.6" touch screen (optional)
Control	Microprocessor based / computer based
Communication ports	Ethernet / USB
Communication system	ASCII (USB) / HTML / SSH (optional) / VNC (optional)
Protocols	USB Serial / TCP/IP
Storage (log and settings)	Internal / USB
Machine control integration	Yes (optional). Contact Progressive for compatibility.
Remote Access via internet/network	Yes.
Number of zones (flow and temperature)	Max 12 Zones / manifold (expandable)
Number of manifolds	Multiple (plug/play, max 4 per MFIO & Server)
Display units (flow)	Litres / gallons switchable / RAW (optional)
Display units (temperature)	°C / °F switchable / RAW (optional)
Warning limits	10% of alarm limits (optional)
Alarm limits	User definable per zone (optional)
Alarm output	Potential free output warning / alarm
Marker input	Potential free
Idle mode input	Potential free
Power supply	12 - 24 VDC

## ORDERING INFORMATION

Manifolds		CATALOG NUMBER	SENSOR SPECIFICATIONS
4	ALU	SCM-4-1	.25 - 4 GPM / 1 - 15 LPM
		SCM-4-2	.5 - 10.5 GPM / 2 - 40 LPM
	SS	SCM-4-1-SS	.5 - 5.25 GPM / 1 - 20 LPM
		SCM-4-2-SS	.5 - 10.5 GPM / 2 - 40 LPM
8	ALU	SCM-8-1	.25 - 4 GPM / 1 - 15 LPM
		SCM-8-2	.5 - 10.5 GPM / 2 - 40 LPM
	SS	SCM-8-1-SS	.5 - 5.25 GPM / 1 - 20 LPM
		SCM-8-2-SS	.5 - 10.5 GPM / 2 - 40 LPM
12	ALU	SCM-12-1	.25 - 4 GPM / 1 - 15 LPM
		SCM-12-2	.5 - 10.5 GPM / 2 - 40 LPM
	SS	SCM-12-1-SS	.5 - 5.25 GPM / 1 - 20 LPM
		SCM-12-2-SS	.5 - 10.5 GPM / 2 - 40 LPM

## Test Rig

CATALOG NUMBER	TYPE
SCTR-1	8 Zone Test Rig - .25 - 4 GPM / 1 - 15 LPM
SCTR-2	8 Zone Test Rig - .5 - 10.5 GPM / 2 - 40 LPM
SCTR-W	Automatic Water Change System
SCTR-HK	Custom Hose Kit and Filters
SCTR-C	Calibration Service of Custom Hoses
SCTR-CU	Calibration Unit

## Cart

CATALOG NUMBER	TYPE
SCP-CART8	Portable Cart

Manifolds require additional hardware to complete a system. Please contact [tech@procomps.com](mailto:tech@procomps.com) for system information and quotes. Replacement parts are available.



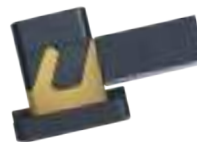




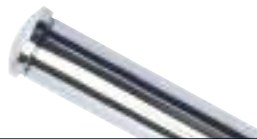


# CAM ACTIONS SLIDE COMPONENTS

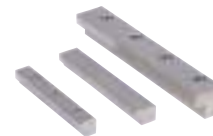
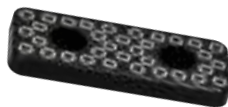
## SECTION G



CamAction: 100 Series	CamAction: 200 Series	CamAction: 300/350 Series	CamAction: 400 Series
Prefix: CA, CABB	Prefix: CA, CABB	Prefix: CA, CABB	Prefix: CA
Page: G-1	Page: G-2	Page: G-5	Page: G-10



Slide Retainers	SRT Bases & Bushings	Angle Pin	Slide Retainers: Urethane
Prefix: SRT, SRTM	Prefix: SRTBA, SRTBU	Prefix: AP	Prefix: RET
Page: G-12	Page: G-13	Page: G-14	Page: G-14



Wear Plates	Bronze Wear Plates	L- GIB
Prefix: WP	Prefix: WP	Prefix: LGIB
Page: G-15	Page: G-16	Page: G-16

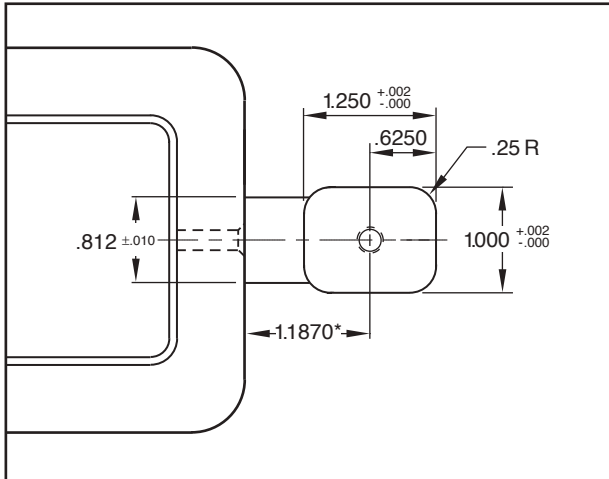




# CAM ACTION® 100 SERIES

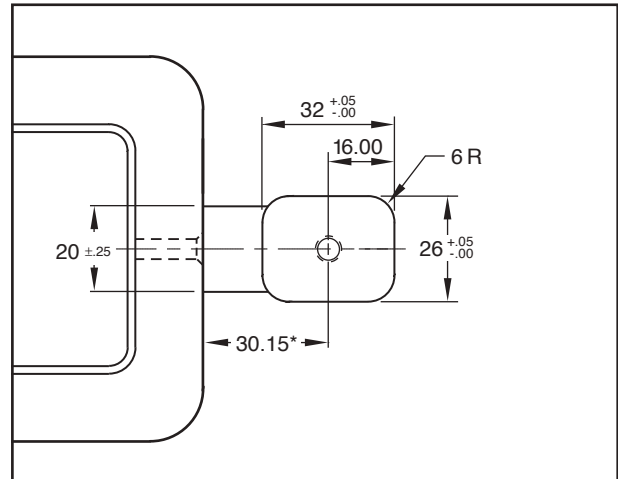


## Inch Standard

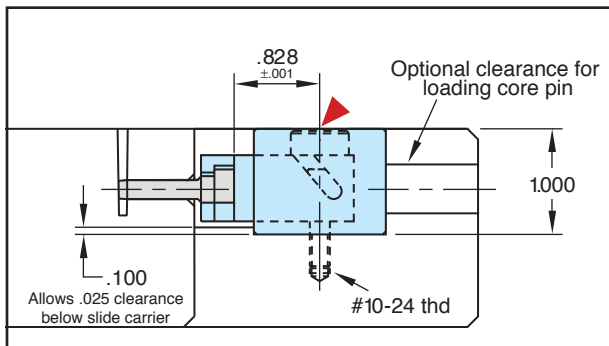


Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 1.142 for the slide carrier to shut off against the core insert.

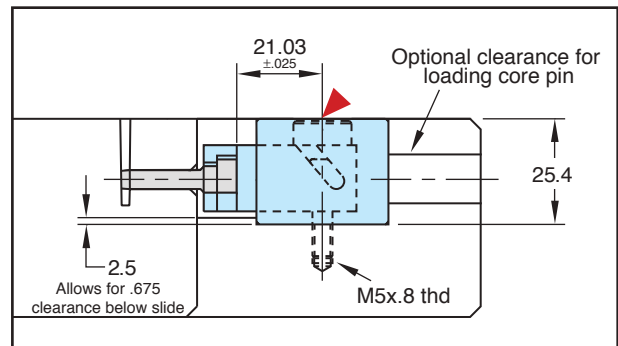
## Metric Standard



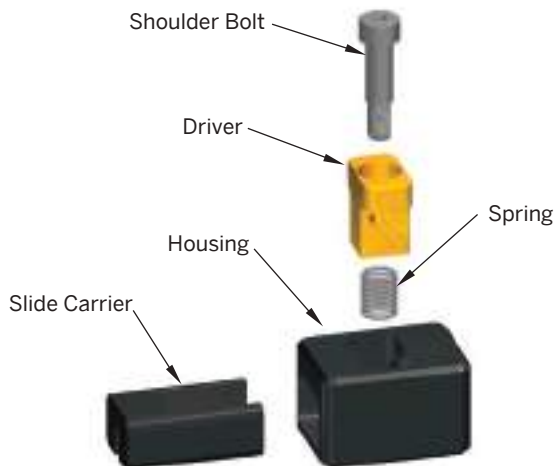
Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 29.00 for the slide carrier to shut off against the core insert.



Note: .828 dimension must be maintained to avoid improper spring pre-load or damage to internal components.



Note: 21.03 dimension must be maintained to avoid improper spring pre-load or damage to internal components.



Travel = .160" (4mm)

▶ CAD insertion point

CATALOG NUMBER	DESCRIPTION
CA-100	CamAction Unit
CAMM-100	Metric CamAction Unit

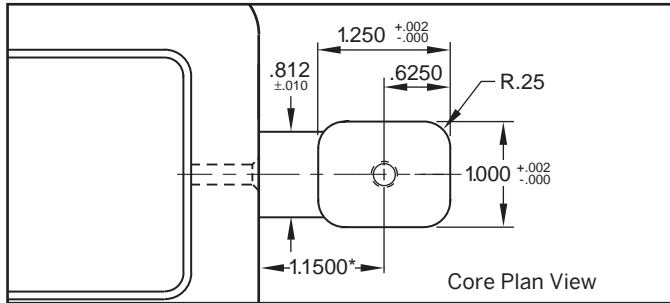
Note: Max operating temperature 300°F.

Replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.

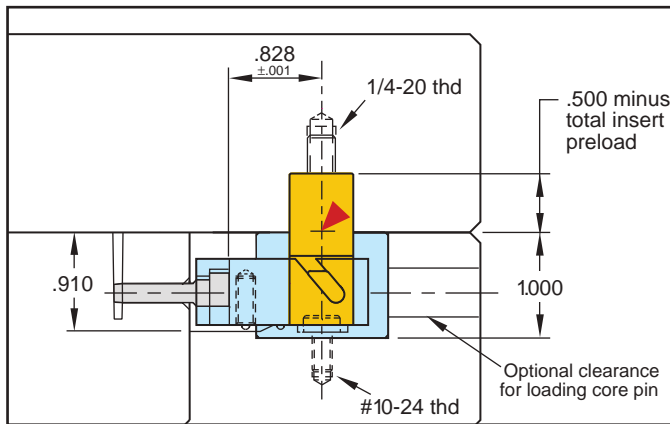
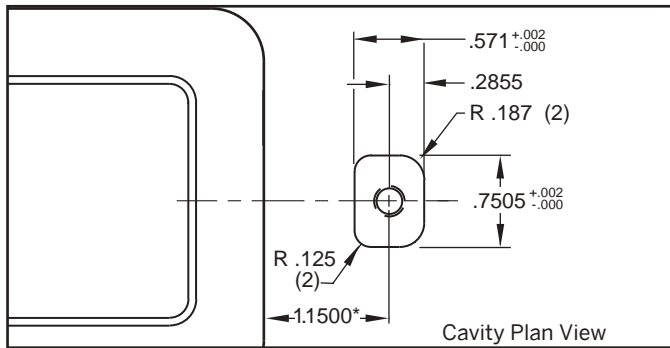
# CAM ACTION® 200 SERIES



## Inch Standard

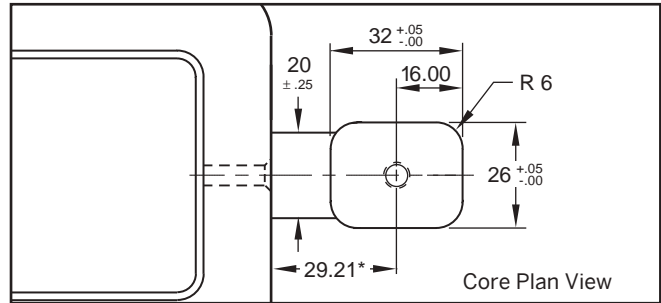


Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 1.1425 for the slide carrier to shut off against the core insert.

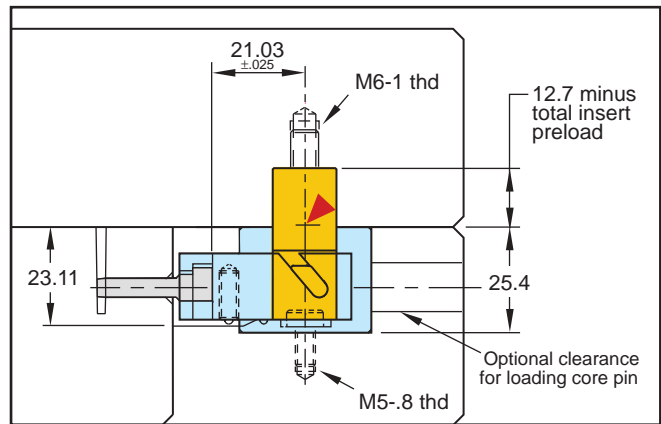
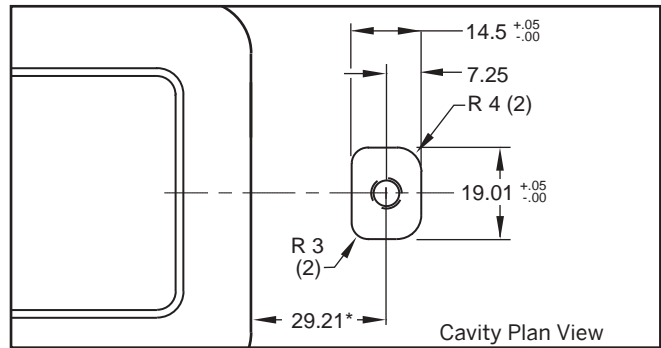


Note: .828 dimension must be maintained to ensure proper shut-off.

## Metric Standard



Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 29.02 for the slide carrier to shut off against the core insert.



Note: 21.03 dimension must be maintained to ensure proper shut-off.

Travel = .230" (5.8mm)

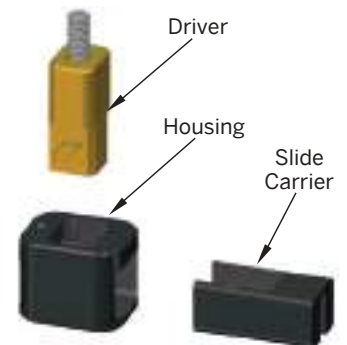
▶ CAD insertion point

CATALOG NUMBER	DESCRIPTION
CA-200	CamAction Unit-Standard Driver
CA-200L	CamAction Unit-Longer Driver
CAMM-200	Metric CamAction Unit-Standard Driver
CAMM-200L	Metric CamAction Unit-Longer Driver

Note: Longer driver allows for extension below parting line up to 3" (76mm).

Note: Max operating temperature 300°F.

Replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.



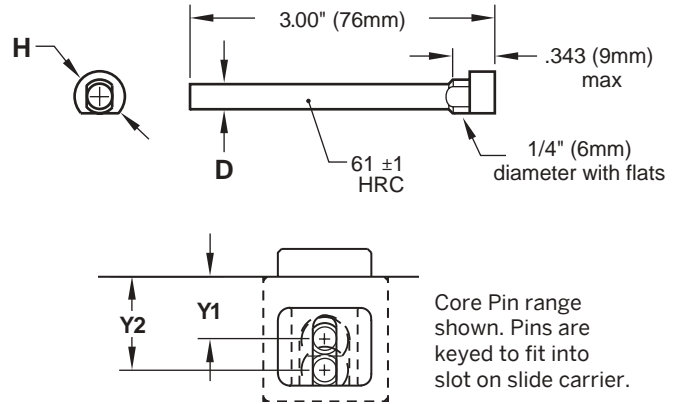


# CAM ACTION® ACCESSORIES

## 100/200 SERIES CORE PINS

**M** M-2 **H** 60-62 HRC **S** Chrome Plated

CATALOG NUMBER	D	H	Y1	Y2
<b>CAP1-187</b>	$\frac{.1872}{.1869}$	.37	.500	.750
<b>CAP1-375</b>	$\frac{.3747}{.3744}$	.37	.500	.688
<b>CAPMM-5</b>	$\frac{4.984 \text{ mm}}{4.992 \text{ mm}}$	9.5 mm	12.7 mm	19.05 mm
<b>CAPMM-10</b>	$\frac{9.985 \text{ mm}}{9.992 \text{ mm}}$	9.5 mm	12.7 mm	17.40 mm

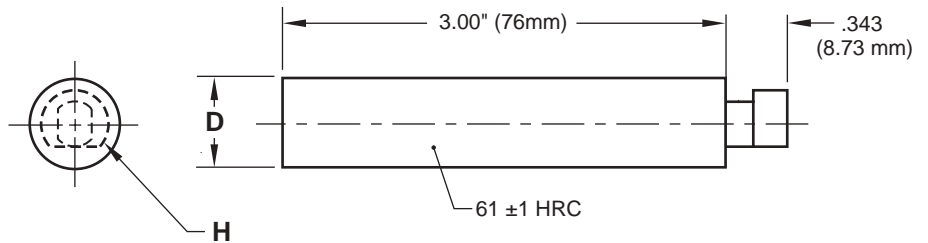


For use with 100 and 200 Series CamActions.  
When using with the 100 Series, 2° draft per side (minimum) is required in the molding area.

## 200 SERIES CORE PINS

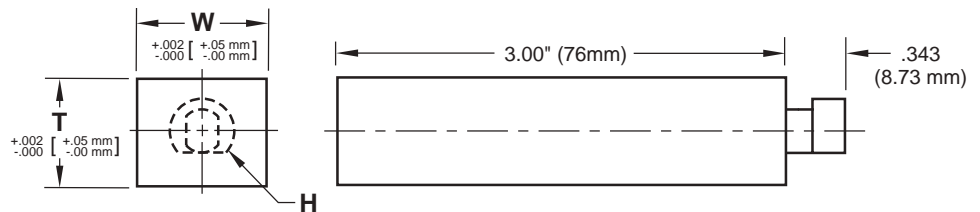
**M** M-2 **H** 60-62 HRC **S** Chrome Plated

CATALOG NUMBER	D	H
<b>CAP2-500</b>	$\frac{.5001}{.5003}$	.37
<b>CAP2MM-13</b>	$\frac{13.002 \text{ mm}}{13.007 \text{ mm}}$	9.5 mm



For use with 200 Series CamActions only.

## 200 SERIES INSERTS



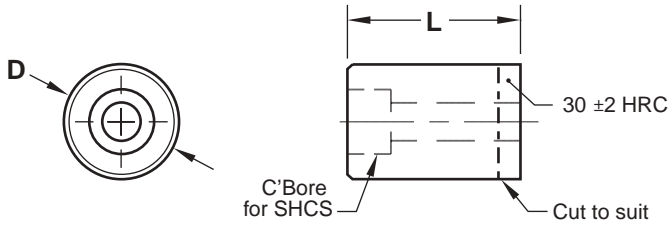
**M** P-20 Pre-Hard **S** Salt Bath Nitride

CATALOG NUMBER	T	W	H
<b>CSE2-62X75</b>	.625	.750	.37
<b>CSE2MM-16X19</b>	15.98 mm	19 mm	9.5 mm

For use with 200 Series CamActions only.

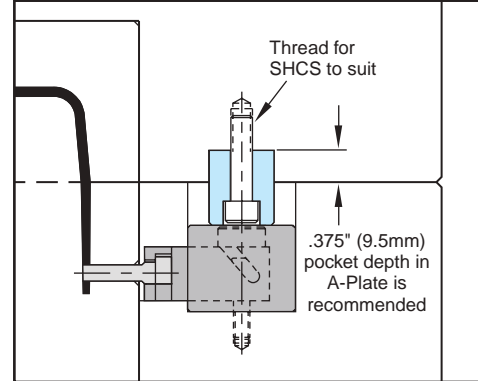
# CAM ACTION® ACCESSORIES

## “A” EXTENSION

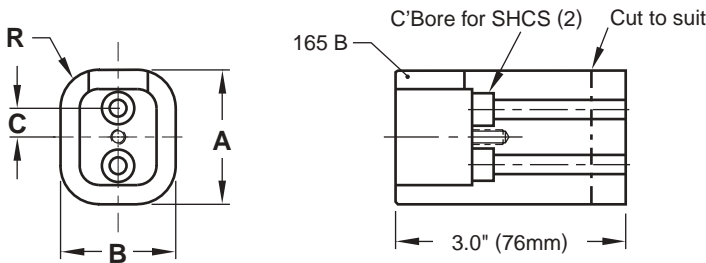


**M** 4140 **H** 28-32 HRC **S** Black Oxide

CATALOG NUMBER	D	L	SHCS
<b>CAE-100</b>	.750	1.125	1/4-20
<b>CAEMM-100</b>	19 mm	28 mm	M6-1

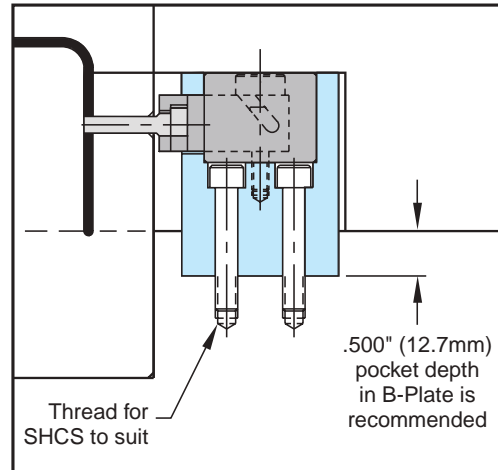


## “B” RISER



**M** AISI 4140 PH **H** 28-32 HRC **S** Black Oxide

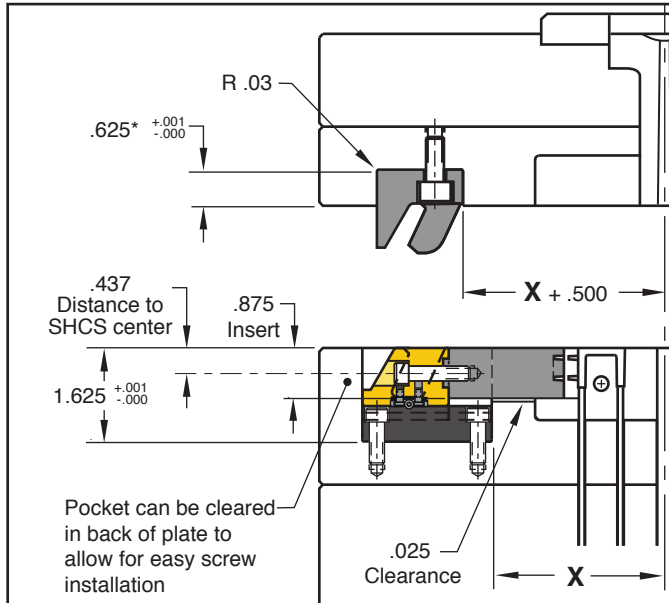
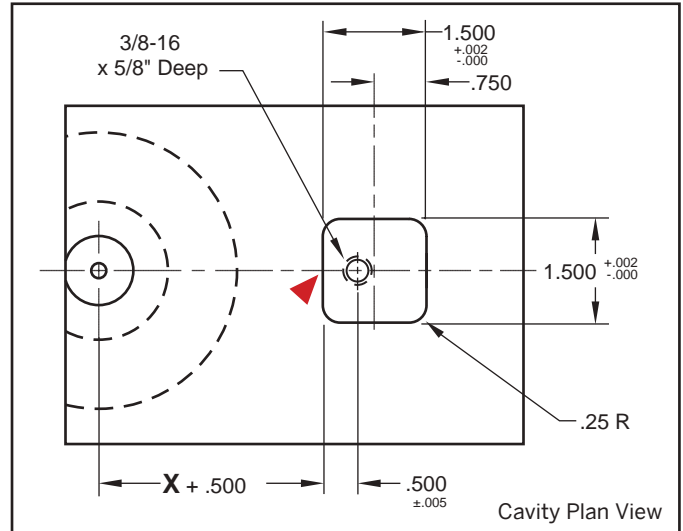
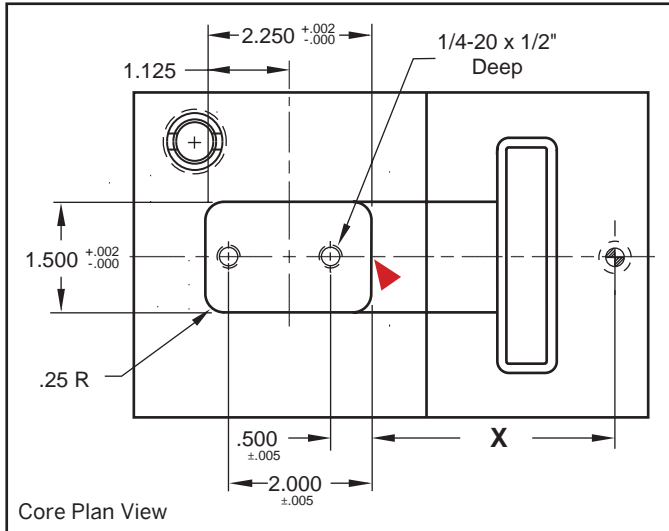
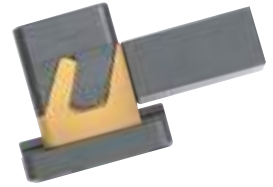
CATALOG NUMBER	A	B	C	R	SHCS
<b>CBR-100</b>	1.750	1.500	.375	.50	1/4-20
<b>CBRMM-100</b>	44 mm	38 mm	10 mm	12.7 mm	M6-1



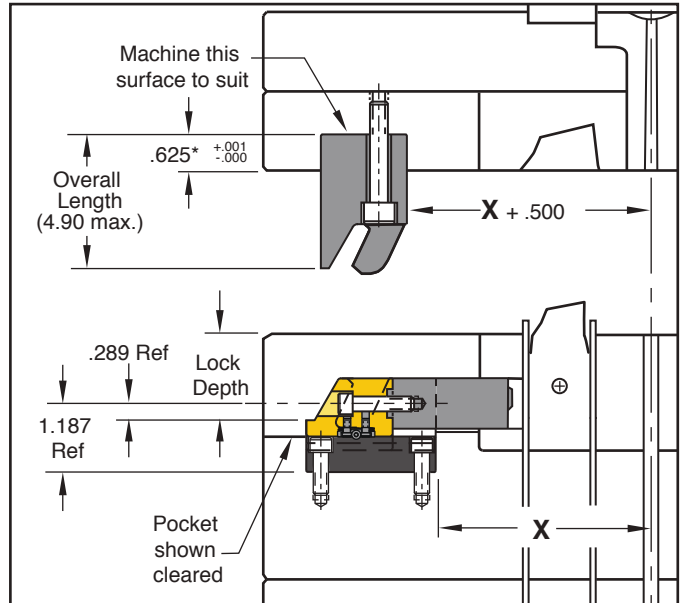




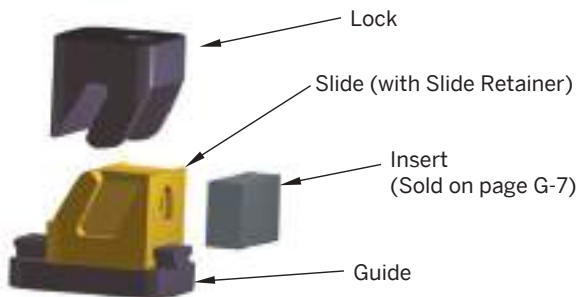
# CAM ACTION® 300 SERIES: INCH STANDARD



\*Minus pre-load.



\*Minus pre-load.



Travel = .250"

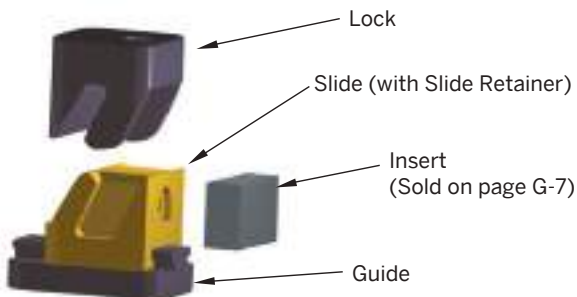
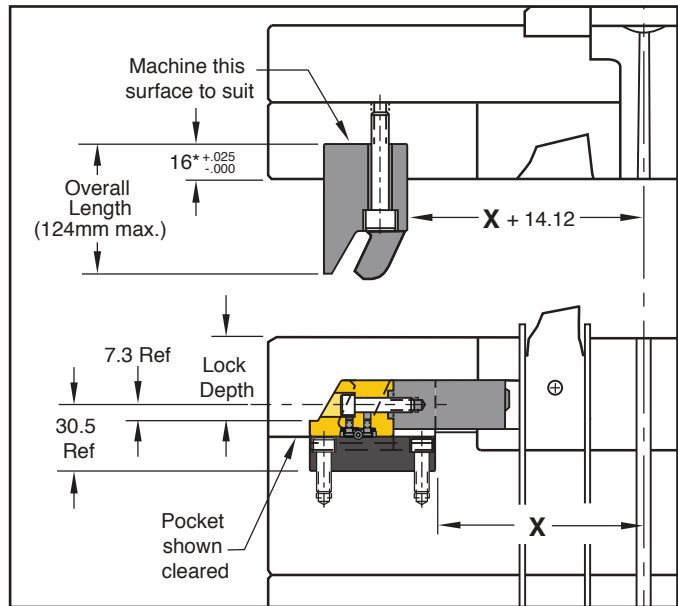
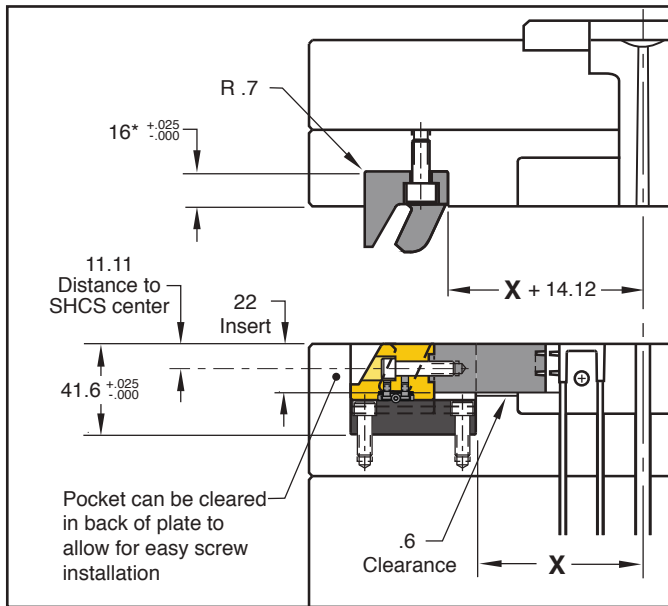
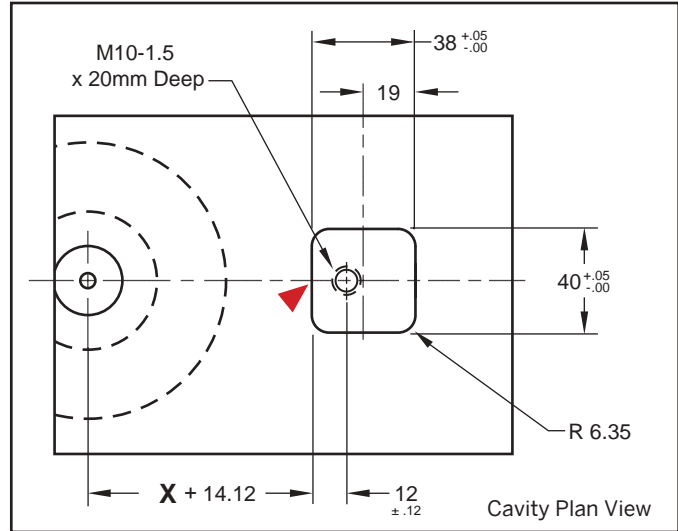
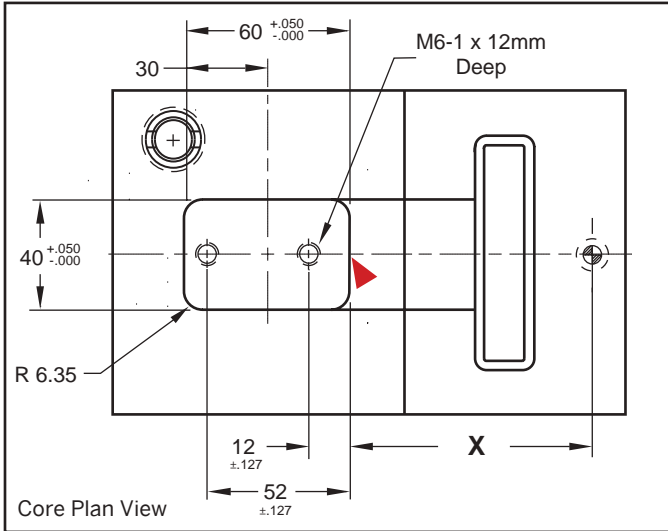
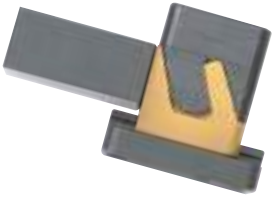
CAD insertion point

CATALOG NUMBER	DESCRIPTION
CA-300	CamAction Unit-Standard Lock
CA-300L	CamAction Unit-Longer Lock

Each assembly includes SRT-10 Slide Retainer and (3) mounting screws. Individual replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.

# CAM ACTION®

## 300 SERIES: METRIC STANDARD



Travel = 6.35 mm

CAD insertion point

CATALOG NUMBER	DESCRIPTION
<b>CAMM-300</b>	Metric CamAction Unit-Standard Lock
<b>CAMM-300L</b>	Metric CamAction Unit-Longer Lock

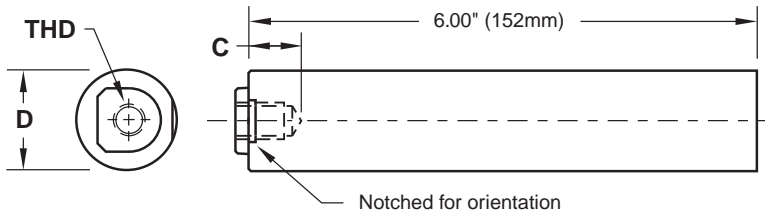
Each assembly includes SRTM-04 Slide Retainer and (3) mounting screws. Individual replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.



# CAM ACTION® ACCESSORIES

## 300 SERIES CORE PINS

**M** M-2 **H** 58-62 HRC **S** Chrome Plated

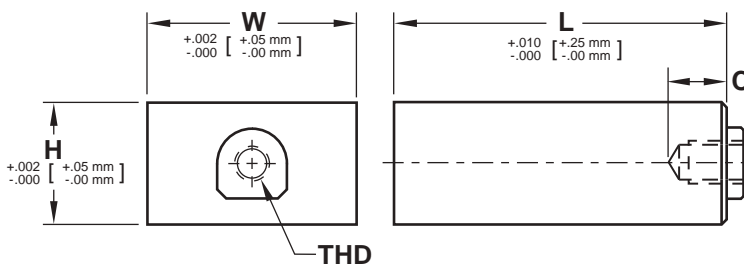


CATALOG NUMBER	D	THD	C
<b>CAP3-750</b>	.7504 .7508	1/4-20	3/4
<b>CAP3MM-19</b>	19.009 mm 19.019 mm	M6-1	20 mm

Socket head cap screw included.

## 300 SERIES INSERTS

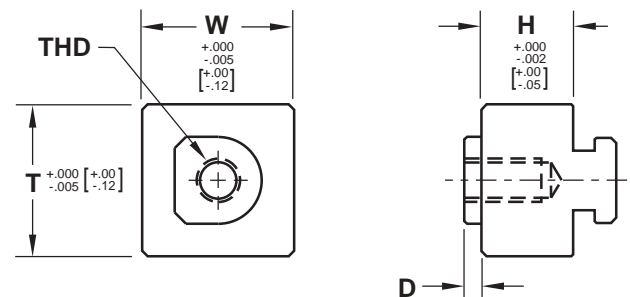
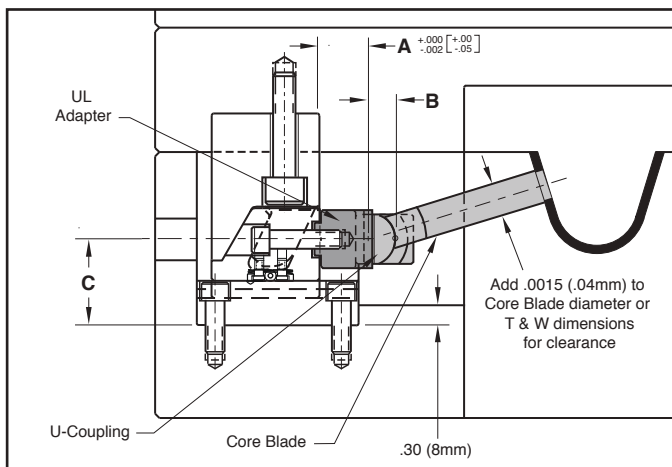
**M** P-20 Pre-Hard **S** Salt Bath Nitride



CATALOG NUMBER	H	W	L	THD	C
<b>CSE3-50</b>	.875	1.500	.50	1/4 - 20	5/8
<b>CSE3-200</b>	.875	1.500	2.00	1/4 - 20	5/8
<b>CSE3MM-12</b>	22 mm	38 mm	12 mm	M6 - 1mm	15 mm
<b>CSE3MM-50</b>	22 mm	38 mm	50 mm	M6 - 1mm	15 mm

Socket head cap screw included.

## 300 SERIES UL ADAPTERS



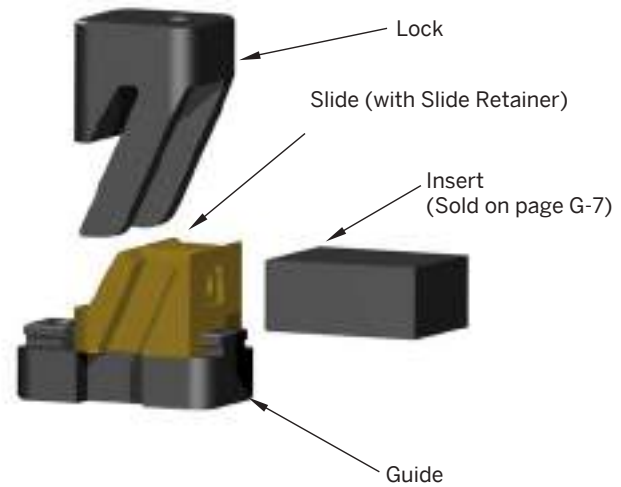
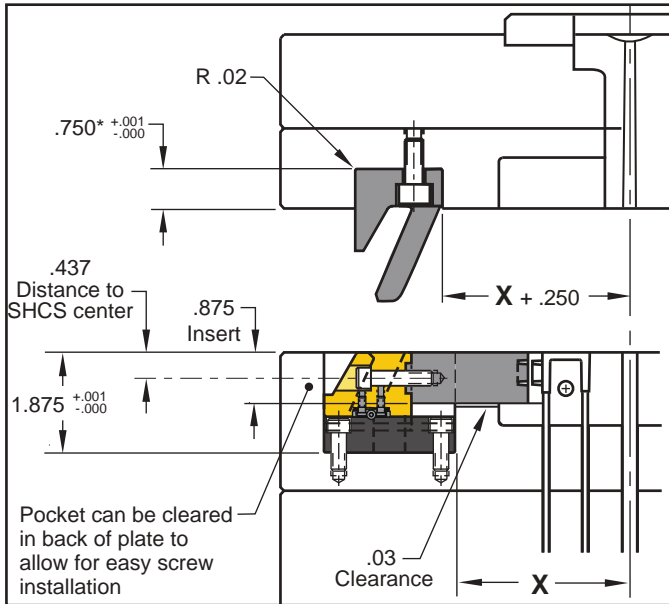
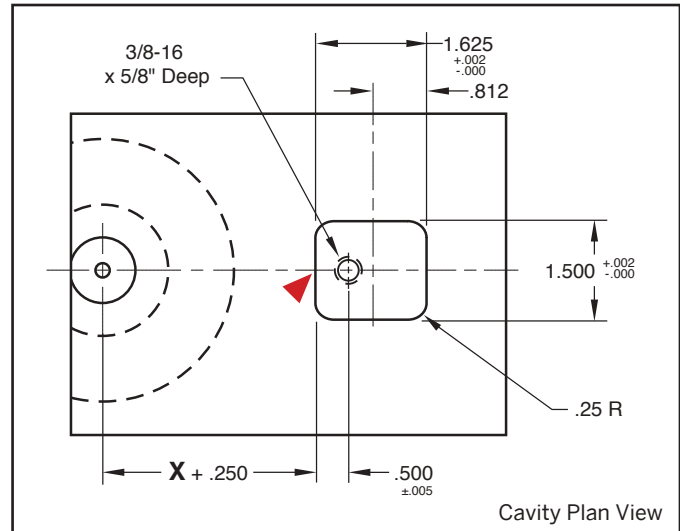
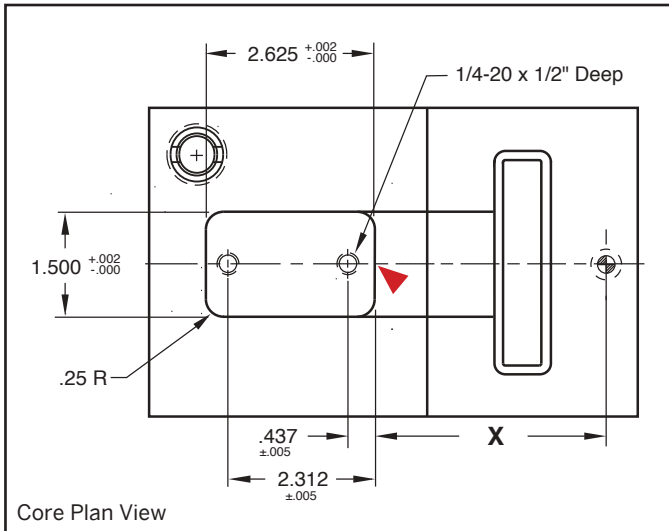
**M** 4140 **S** Salt Bath Nitride

CATALOG NUMBER	T	W	H	D	THD	A	B	C	COMPATIBLE U-COUPLING
<b>CTG-300</b>	.875	.875	.563	.098	1/4-20	.75	.406	1.187	UCU87
<b>CTGMM-300</b>	23 mm	23 mm	6 mm	2.5 mm	M6-1	12 mm	10 mm	30.15 mm	UCMM22

Socket head cap screw included. Core Blades and U-Couplings are sold on page H-2 and H-3.

# CAM ACTION®

## 350 SERIES: INCH STANDARD



Travel = .750"

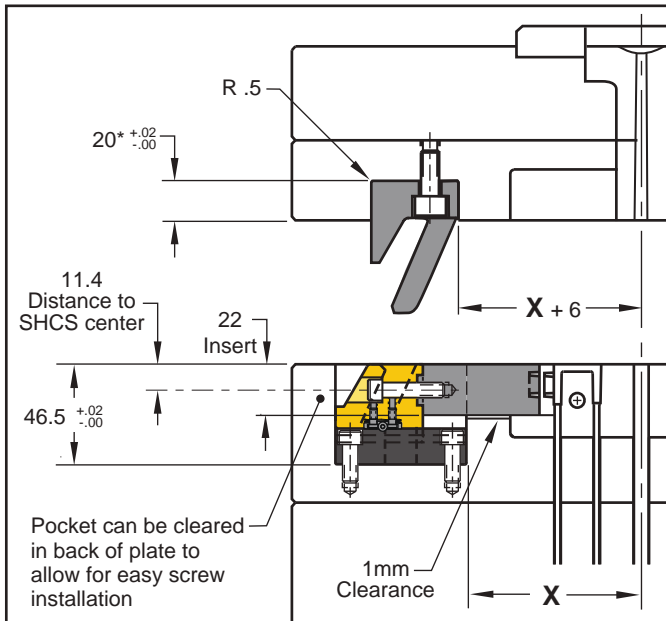
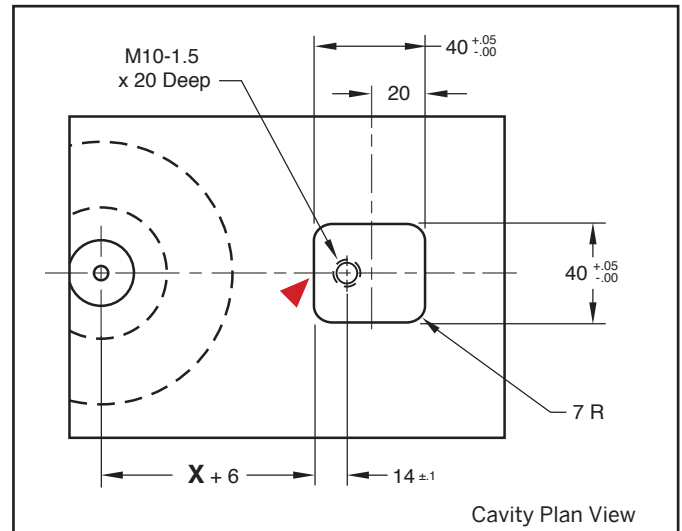
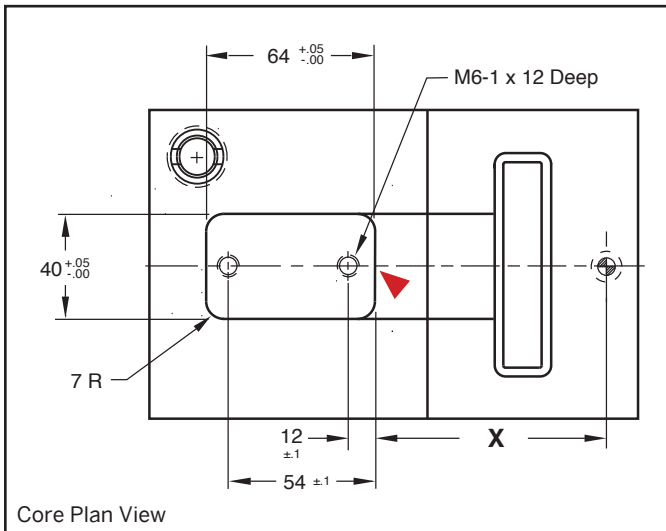
CAD insertion point

CATALOG NUMBER	DESCRIPTION
CA-350	CamAction Unit: 350 Series

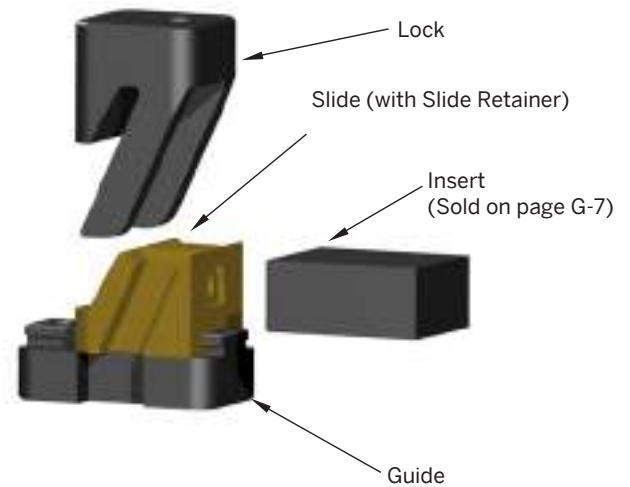
Each assembly includes SRT-10 Slide Retainer and (3) mounting screws. Individual replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.



# CAMACTION® 350 SERIES: METRIC STANDARD



\*Minus pre-load.



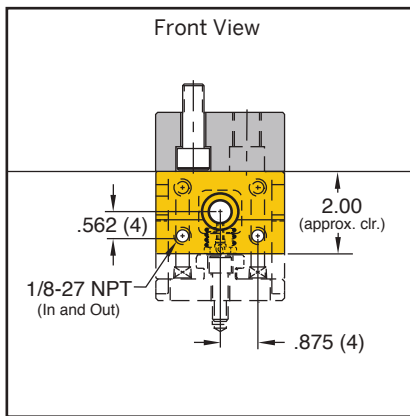
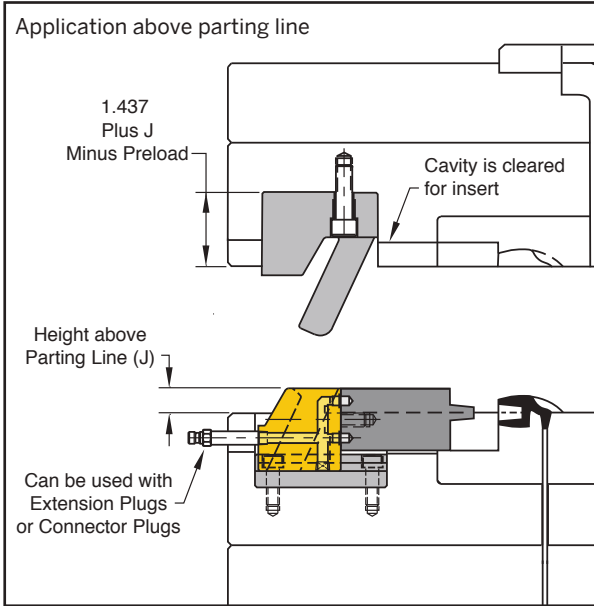
Travel = 18mm

CAD insertion point

CATALOG NUMBER	DESCRIPTION
<b>CAMM-350</b>	CamAction Unit: 350 Series (Metric)

Each assembly includes SRTM-04 Slide Retainer and (3) mounting screws. Individual replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.

# CAM ACTION® 400 SERIES

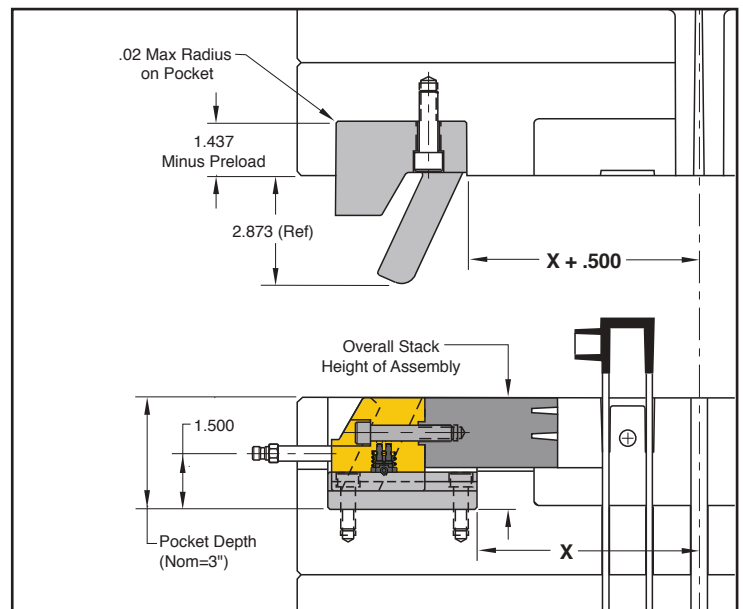
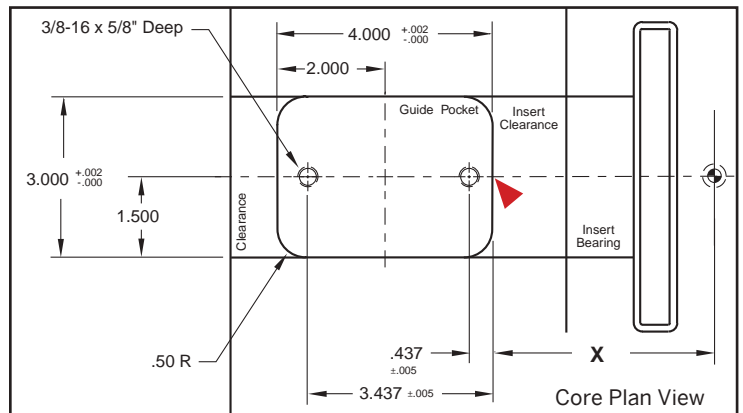
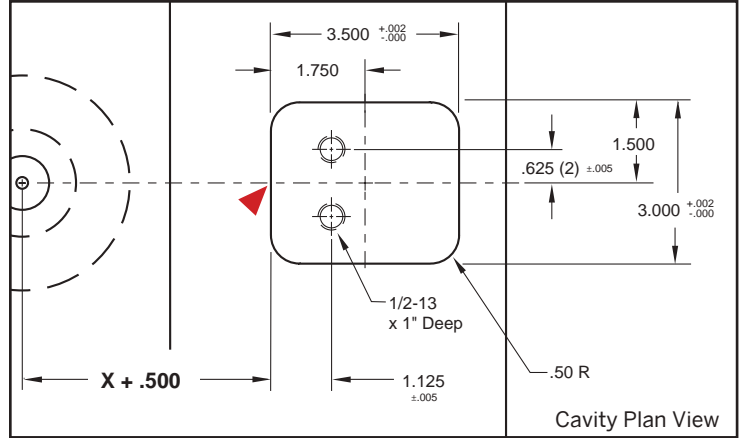


Each assembly includes an installed SRT-30 Slide Retainer, Threadless Waterline Plugs (2), O-Rings (2), and (4) mounting screws.

Travel = 1.00"

CAD insertion point

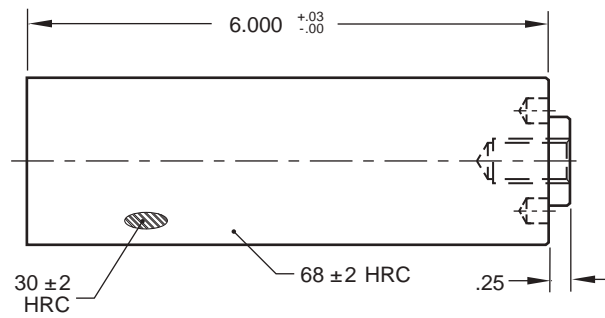
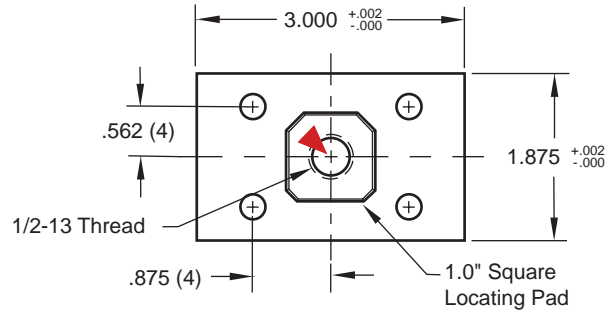
CATALOG NUMBER	DESCRIPTION
CA-400	CamAction Unit with 1" Travel





# CAM ACTION® ACCESSORIES

## 400 SERIES INSERTS

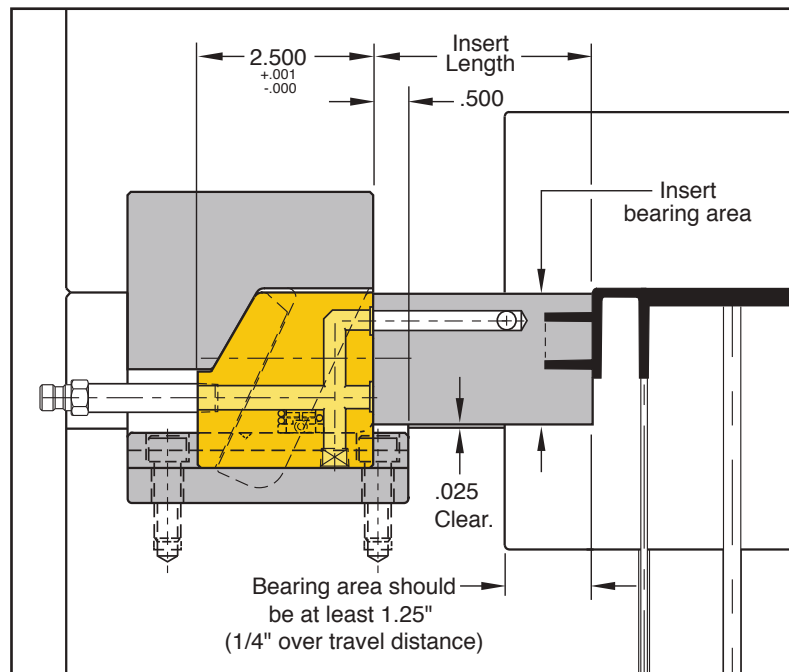


**M** P-20 Pre-Hard **S** Salt Bath Nitride (SBN)

CATALOG NUMBER	DESCRIPTION
<b>CSE4-18X30</b>	CA-400 Insert

Socket head cap screw included.

CAD insertion point



# SLIDE RETAINERS

Progressive's SRT® Series Slide Retainers reliably hold from 2 to 80 pounds (1 to 36 kgs) each. This slide retention design now features color-coded springs to indicate force rating. This compact design allows for installation in a mold base or wear plates.

Optional cleats may be selected or the V-Groove for roller retention may be machined in the bottom of the slide as shown on opposing page.



## Inch Standard

Roller: **M** M-2 **H** 60-62 HRC **S** Titanium Nitride Coated 80 HRC

SLIDE RETAINER								CLEAT				
SLIDE RETAINER CATALOG NUMBER	Max Weight Per Unit (lbs)	ØD +.005 -.000	L ±.001	S ±.002	T Screws (2)	E Minimum Thread Depth	Color	CLEAT CATALOG NUMBER	G ±.001	C ±.002	H Screws (2)	J Minimum Thread Depth
SRT-02	2	.625	.160	.155	#4-48	.075	GRN	SRTC-10	.250	.190	#6-32	.250
SRT-04	4						BLU					
SRT-10	10						RED					
SRT-20	20	.750	.500	.150	#8-32	.190	GRN	SRTC-30	.250	.250	#6-32	.250
SRT-30	30						BLU					
SRT-50	50	.875	.750	.150	#8-32	.245	RED	SRTC-80	.250	.300	#6-32	.250
SRT-80	80						YEL					

Cleats sold separately.



## Metric Standard

Roller: **M** M-2 **H** 60-62 HRC **S** Titanium Nitride Coated 80 HRC

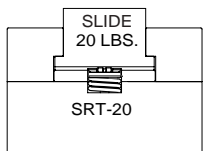
SLIDE RETAINER								CLEAT				
SLIDE RETAINER CATALOG NUMBER	Max Weight Per Unit (kgs)	ØD +1 -.0	L ±.025	S ±.05	T Screws (2)	E Minimum Thread Depth	Color	CLEAT CATALOG NUMBER	G ±.025	C ±.05	H Screws (2)	J Minimum Thread Depth
SRTM-01	1	15.9	4.06	3.95	M3 x .5	1.9	GRN	SRTMC-04	6.35	4.85	M3 x .5	6.35
SRTM-02	2						BLU					
SRTM-04	4						RED					
SRTM-09	9	19.1	12.70	3.80	M4 x .7	4.8	GRN	SRTMC-13	6.35	6.35	M3 x .5	6.35
SRTM-13	13						BLU					
SRTM-22	22	22.3	19.05	3.80	M4 x .7	6.2	RED	SRTMC-36	6.35	7.60	M3 x .5	6.35
SRTM-36	36						YEL					

Cleats sold separately.

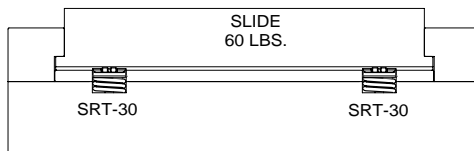


## Technical Information:

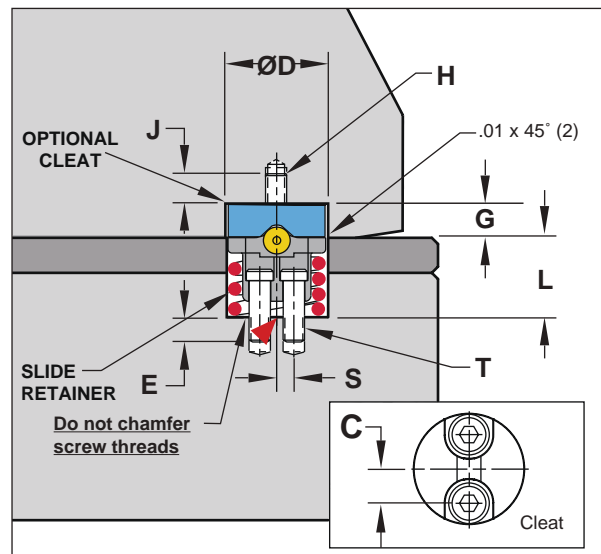
- Maximum operating temperature is 425° F (218° C).
- Match total Slide Retainers Spring force to slide weight; excess spring force could induce wear.
- Do not chamfer screw threads.
- Machine 10° lead-in on all slides to aid in assembly once the SRT is installed.
- Optional Bases and Bushings shown on the following page allow for installation in plates made from materials such as aluminum, copper, bronze, etc. and contain the screw/thread installation.



Select the single Slide Retainer to match the slide weight.



Or add the force of multiple Slide Retainers to match the slide weight.

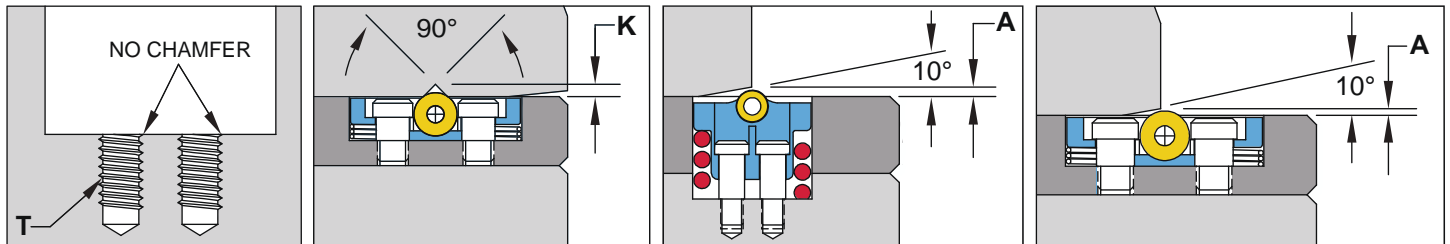






# SRT DESIGN GUIDELINES

INCH					METRIC				
RETAINER CATALOG NUMBER	T Thread (2)	Tap Class Required	K V-Groove	A 10° Angle Lead - In	RETAINER CATALOG NUMBER	T Thread (2)	Tap Class Required	K V-Groove	A 10° Angle Lead - In
SRT-02	#4-48	2B GH2	.041"	.02"	SRTM-01	M3x.5	6H D3	1 mm	.50 mm
SRT-04					SRTM-02				
SRT-10					SRTM-04				
SRT-20	#8-32	2B GH3	.078"	.04"	SRTM-09	M4x.7	6H D4	2 mm	1.00 mm
SRT-30					SRTM-13				
SRT-50					SRTM-22				
SRT-80	#8-32	2B GH3	.078"	.05"	SRTM-36	M4x.7	6H D4	2 mm	1.27 mm
SRT-80					SRTM-36				



## SRT BASES

Base: **M** D-2 **H** 58-60 HRC

Inch Standard



Bushing: **M** D-2 **H** 58-60 HRC

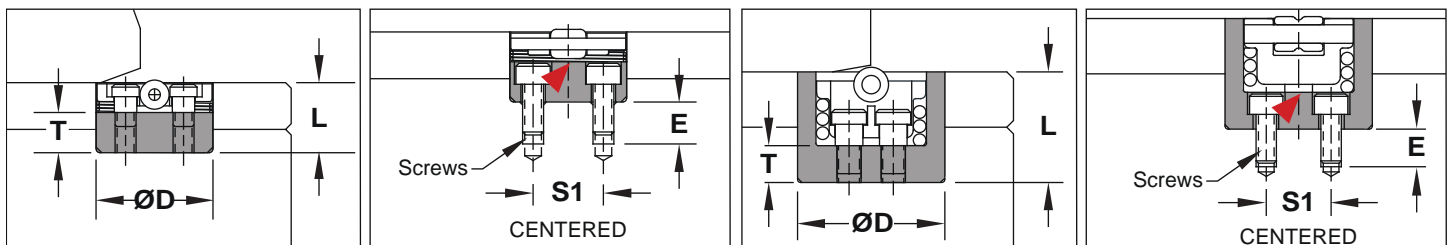
CATALOG NUMBER	ØD +.005 -0.000	L ±.001	SI ±.005	T	E REF	Screws (2)	USE WITH	CATALOG NUMBER	ØD +.001 -0.000	L +.002 -0.000	SI ±.005	T	E REF	Screws (2)
SRTBA-10	.625	.375	.375	.215	.220	#4-40 x .31	SRT-02 SRT-04 SRT-10	SRTBU-10	.875	.375	.375	.215	.220	#4-40 x .31
SRTBA-30	.750	.750	.440	.250	.280	#6-32 x .37	SRT-20 SRT-30	SRTBU-30	1.000	.750	.440	.250	.280	#6-32 x .37
SRTBA-80	.875	1.000	.500	.250	.280	#6-32 x .37	SRT-50 SRT-80	SRTBU-80	1.125	1.000	.500	.250	.280	#6-32 x .37

Base: **M** D-2 **H** 58-60 HRC

Metric Standard

Bushing: **M** D-2 **H** 58-60 HRC

CATALOG NUMBER	ØD +.1 -0	L ±.03	SI ±.1	T	E REF	Screws (2)	USE WITH	CATALOG NUMBER	ØD +.03 -0.00	L +.05 -0.00	SI ±.1	T	E REF	Screws (2)
SRTMBA-04	15.9	9.56	8.0	5.50	5.30	M2.5-.45 x 8	SRTM-01 SRTM-02 SRTM-04	SRTMBU-04	22.3	9.50	8.0	5.44	5.35	M2.5-.45 x 8
SRTMBA-13	19.1	19.05	11.0	6.35	4.95	M3-.5 x 8	SRTM-09 SRTM-13	SRTMBU-13	25.4	19.10	11.0	6.35	4.95	M3-.5 x 8
SRTMBA-36	22.3	25.40	13.0	6.35	4.95	M3-.5 x 8	SRTM-22 SRTM-36	SRTMBU-36	28.5	25.40	13.0	6.35	4.95	M3-.5 x 8

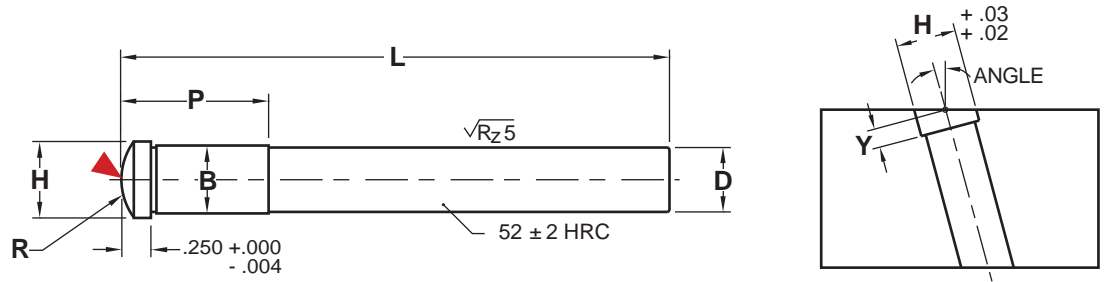


SRT Bases enable the Slide Retainer to be installed in a hardened plate when mold base steel is aluminum, for example. (SRTBA-10 shown in graphics.)

SRT Bushings accept the standard Slide Retainer to allow for installation in soft materials (aluminum, copper bronze, etc.) Also, the SRT Bushing can provide hardened guidance against wear rather than bearing on a bronze wear plate. (SRTBU-30 shown in graphics.)

► CAD insertion point

# ANGLE PINS



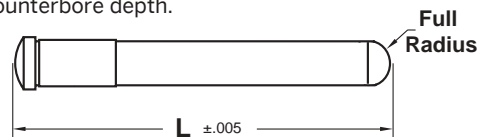
M 8620 H Surface: 50-54 HRC

CAD insertion point

Nominal Diameter	CATALOG NUMBER	D +.0000 -.0005	L +.125 -.000	B +.0005 -.0000	H +.000 -.010	R Head Radius	P Press Fit Length	Angle	Y Depth
3/8	AP375L6	.374	6	.376	.500	.375	.87	10°	.258
	AP375L10		10				1.37	15°	.265
			20°				.276		
1/2	AP500L6	.499	6	.501	.625	.500	.87	10°	.260
	AP500L10		10				1.37	15°	.270
			20°				.284		
5/8	AP625L6	.624	6	.626	.750	.625	.87	10°	.262
	AP625L10		10				1.37	15°	.274
			20°				.292		
3/4	AP750L10	.749	10	.751	.875	.750	1.37	10°	.264
	AP750L14		14				1.37	15°	.278
			20°				.300		
								25°	.329

### Installation Instructions:

The spherical radius included on the head of the Angle Pin saves grinding after installation. To install on a specific angle, use the chart at the top of the page to determine the correct counterbore depth.

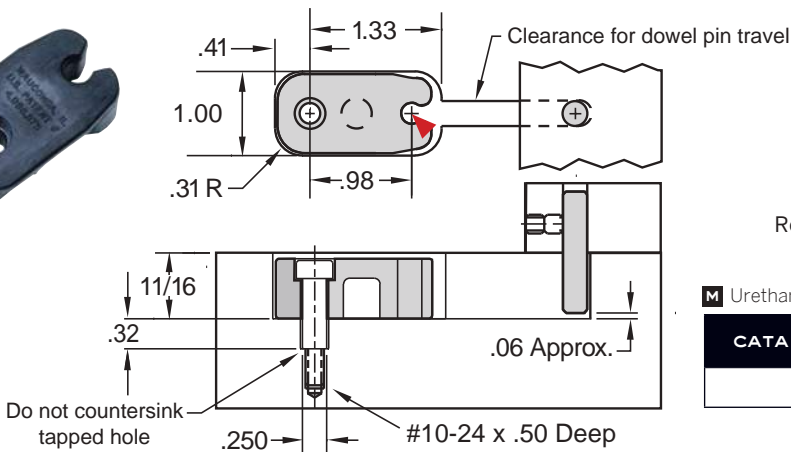


Angle Pins Special Order  
 APR - 625 - L7.244  
 Angle Pin With Full Radius  
 Diameter can be 375, 500, 625, 750  
 Length Specified to 3 decimals

### Special Order Instructions:

Full Radius option is available as a special order by specifying APR prefix.  
 Example: APR 500- L6.500 : Angle pin with 1/2" diameter 6.500" long with full radius. P will be 1.37" per table above.

# URETHANE RETAINERS



Maximum slide weight for retainer weight: 25 lbs.  
 Maximum operating temperature is 150° F (65° C).  
 Retainer, 1/4 Ø x 3/4" Shoulder Bolt, 1/4 Ø x 1 1/4" Dowel Pin

M Urethane

CATALOG NUMBER	DESCRIPTION
RET-1	Retainer, Stripper Bolt & Dowel

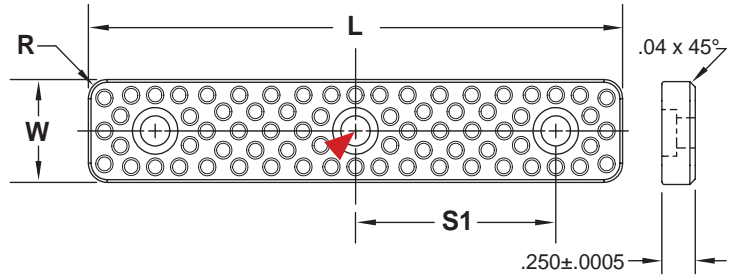
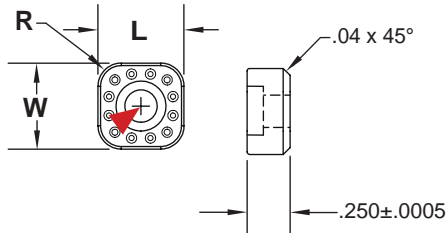
CAD insertion point



# WEAR PLATES

Progressive's Wear Plates enable moldmakers to select off-the-shelf standard sizes versus manufacturing in-house. Wear Plates leverage the long lasting Z-Series proprietary treatments and particle rings for lubrication retention.

- Standardized "plug and play" design ready to install.
- Place multiple sizes in a series as needed.
- Low Head Cap Screws included.



**M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

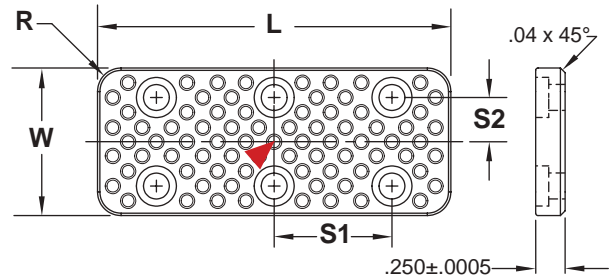
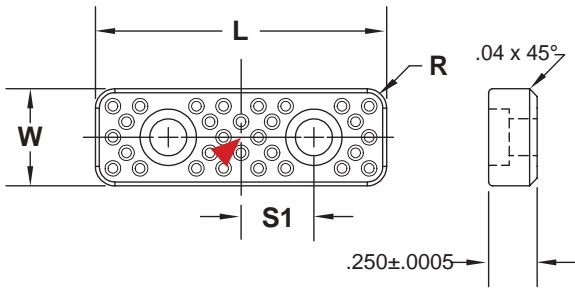
CATALOG NUMBER	W +.000 -.005	L +.000 -.005	R Pocket Radius	LHCS (1)
WP050X050	.500	.500	.125	#8-32 X .38

▶ CAD insertion point

**M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

CATALOG NUMBER	W +.000 -.005	L +.000 -.005	S1 ±.005	R Pocket Radius	LHCS (3)
WP050X250	.500	2.500	.875	.094	#8-32 X .38
WP050X350	.500	3.500	1.375	.094	#8-32 X .38
WP075X400	.750	4.000	1.500	.125	#10-32 X .38
WP075X600	.750	6.000	2.500	.125	#10-32 X .38

▶ CAD insertion point



**M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

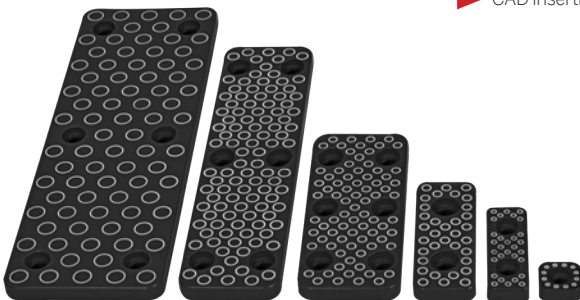
CATALOG NUMBER	W +.000 -.005	L +.000 -.005	S1 ±.005	R Pocket Radius	LHCS (2)
WP050X150	.500	1.500	.375	.094	#8-32 X .38
WP075X200	.750	2.000	.500	.125	#10-32 X .38

▶ CAD insertion point

**M** H-13 **H** Core: 42-48 HRC, Surface: 70 HRC **S** Salt Bath Nitride

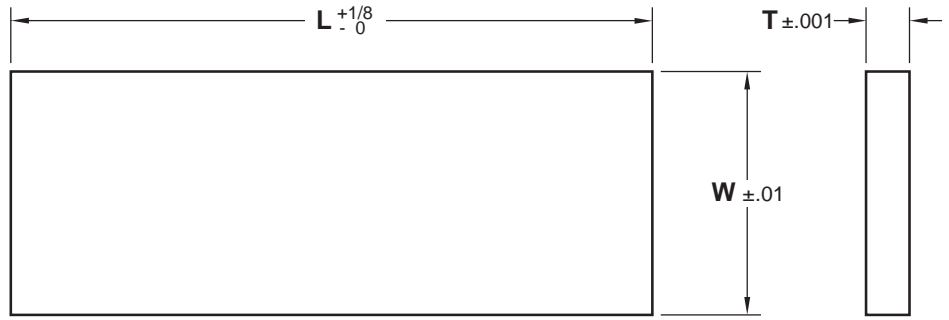
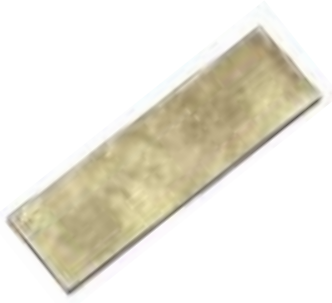
CATALOG NUMBER	W +.000 -.005	L +.000 -.005	S1 ±.005	S2 ±.005	R Pocket Radius	LHCS (6)
WP125X300	1.250	3.000	1.00	.375	.187	#10-32 X .38
WP125X500	1.250	5.000	2.00	.375	.187	#10-32 X .38
WP125X800	1.250	8.000	3.50	.375	.187	#10-32 X .38
WP200X600	2.000	6.000	2.50	.625	.187	#10-32 X .38
WP200X800	2.000	8.000	3.50	.625	.187	#10-32 X .38
WP250X600	2.500	6.000	2.50	.750	.187	#10-32 X .38
WP300X600	3.000	6.000	2.50	.750	.187	#10-32 X .38

▶ CAD insertion point



Wear Plates can be cut as long as the edges have radii.

# BRONZE WEAR PLATES

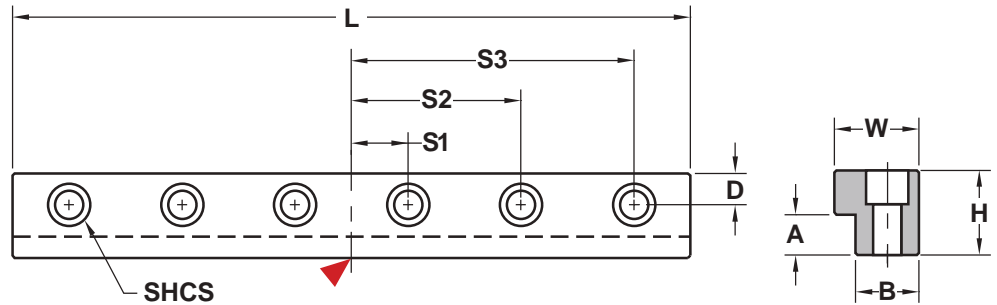


**M** CA954 Solid Bronze **H** 170 Brinell

T	W	L=4"	L=5"	L=6"	L=8"	L=10"	L=12"
1/4	1.000	WP25X1X4	WP25X1X5	WP25X1X6	WP25X1X8	WP25X1X10	WP25X1X12
	1.500	WP25X1.5X4	WP25X1.5X5	WP25X1.5X6	WP25X1.5X8	WP25X1.5X10	WP25X1.5X12
	2.000	WP25X2X4	WP25X2X5	WP25X2X6	WP25X2X8	WP25X2X10	WP25X2X12
	2.500	WP25X2.5X4	WP25X2.5X5	WP25X2.5X6	WP25X2.5X8	WP25X2.5X10	WP25X2.5X12
	3.000	WP25X3X4	WP25X3X5	WP25X3X6	WP25X3X8	WP25X3X10	WP25X3X12
	4.000	WP25X4X4	WP25X4X5	WP25X4X6	WP25X4X8	WP25X4X10	WP25X4X12
3/8	1.000	WP37X1X4	WP37X1X5	WP37X1X6	WP37X1X8	WP37X1X10	WP37X1X12
	1.500	WP37X1.5X4	WP37X1.5X5	WP37X1.5X6	WP37X1.5X8	WP37X1.5X10	WP37X1.5X12
	2.000	WP37X2X4	WP37X2X5	WP37X2X6	WP37X2X8	WP37X2X10	WP37X2X12
	2.500	WP37X2.5X4	WP37X2.5X5	WP37X2.5X6	WP37X2.5X8	WP37X2.5X10	WP37X2.5X12
	3.000	WP37X3X4	WP37X3X5	WP37X3X6	WP37X3X8	WP37X3X10	WP37X3X12
	4.000	WP37X4X4	WP37X4X5	WP37X4X6	WP37X4X8	WP37X4X10	WP37X4X12

Other materials and graphite plug configurations available upon request. Call Customer Service for pricing and delivery.

# L-GIBS



**M** CA954 Solid Bronze **H** 170 Brinell

CAD insertion point

CATALOG NUMBER	W +.002 -.000	L +.125 -.000	H ±.005	A +.002 -.000	B +.002 -.000	# Screw Holes	SHCS	S1	S2	S3	D
LGIB75L5.25	.750	5.25	.750	.312	.563	3	1/4	1.625	—	—	.281
LGIB75L8.75	.750	8.75	.750	.312	.563	4	1/4	1.000	3.375	—	.281
LGIB100L6	1.000	6.00	.750	.375	.750	4	5/16	.750	2.250	—	.375
LGIB100L10	1.000	10.00	.750	.375	.750	4	5/16	1.250	3.750	—	.375
LGIB125L6	1.250	6.00	.875	.500	.875	4	3/8	.750	2.250	—	.438
LGIB125L10	1.250	10.00	.875	.500	.875	4	3/8	1.250	3.750	—	.438
LGIB150L9	1.500	9.00	1.250	.750	1.000	4	3/8	1.125	3.375	—	.500
LGIB150L15	1.500	15.00	1.250	.750	1.000	6	3/8	1.250	3.750	6.250	.500

Available with or without screw counterbores. To order undrilled L-Gibs, specify "N" at the end of the catalog number.







# LIFTERS

## UNDERCUT RELEASE

### SECTION H



UniLifter System	ModuLifter System	Versa-Lifter System
Prefix: CB, UC, TG	Prefix: MLB, MLC, MLR, MLH	Prefix: UGV, SGV, CBV
Page: H-1	Page: H-4	Page: H-10



Spherical Bushings	Lifter Guides	FlexiCore System
Prefix: LSB	Prefix: LG, LHK	Prefix: FCA, FCR, FCDA
Page: H-12	Page: H-13	Page: H-14



Lifter Blades & Cores
Prefix: LBA, LCA
Page: H-20



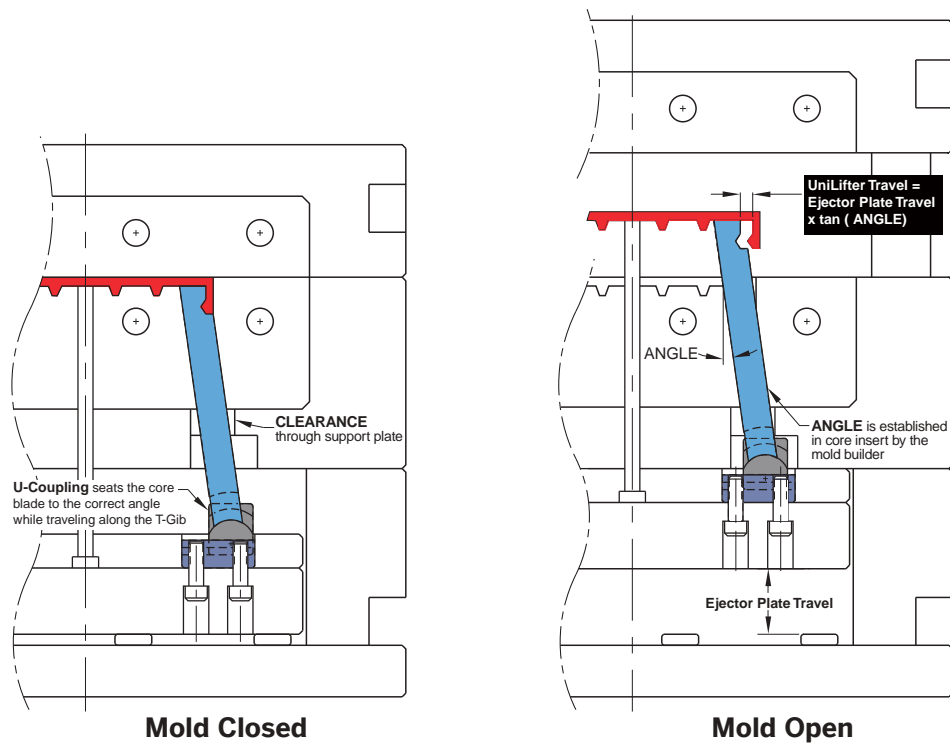




# UNILIFTER® UNDERCUT RELEASE SYSTEM



The UniLifter undercut release system incorporates a three piece set: Core Blade, U-Coupling, and T-Gib.



### Application Guidelines:

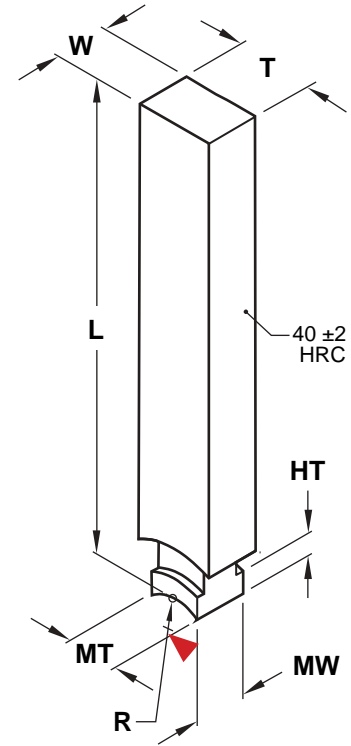
- Typical angle is 5-10°, though users report success at greater angles with guides installed. Contact Engineering for application review.
- Guided Ejection is recommended, and if there is less than half of the Core Blade bearing in the insert, lifter guide plates should be added.
- Recommended clearance is .001"-.0015" (.025-.038 mm) where permissible.
- Core insert material should be at least 10 HRC higher in hardness than the Core Blade, and for maximum longevity consider coatings or treatments for increased lubricity or hardness.
- Locking angles can be designed to accept molding pressure, and non-standard sizes or pre-roughed Core Blades can be provided by accessing [www.procomps.com](http://www.procomps.com).

# UNILIFTER® CORE BLADES

## Flat Core Blades - Inch Standard

**M** H-13 **H** 38-42 HRC

MW	R	HT	CATALOG NUMBER	T +0.000 -0.001	W +0.000 -0.001	L +0.06 -0.00	MT MIN. THK.
MiniLifter® .250	.250	.156	CBS37X25L8	.385	.260	8	.25
			CBS50X25L8	.510	.260	8	.31
			CBS75X37L8	.760	.385	8	.31
UniLifter .500	.406	.187	CBS50X50L8	.510	.510	8	.49
			CBS50X50L14	.510	.510	14	.49
			CBS50X100L8	.510	1.010	8	.49
			CBS50X100L14	.510	1.010	14	.49
			CBS50X150L14	.510	1.510	14	.49
			CBS75X50L14	.760	.510	14	.62
			CBS75X150L8	.760	1.510	8	.62
			CBS75X150L14	.760	1.510	14	.62
			CBS100X50L8	1.010	.510	8	.62
			CBS100X50L14	1.010	.510	14	.62
			CBS150X50L8	1.510	.510	8	.62
			CBS150X50L14	1.510	.510	14	.62
			CBS150X75L8	1.510	.760	8	.62
			CBS150X75L14	1.510	.760	14	.62
XL 1.000	.875	.375	CBS100X100L10	1.010	1.010	10	1.00
			CBS100X100L18	1.010	1.010	18	1.00
			CBS100X150L10	1.010	1.510	10	1.00
			CBS100X150L18	1.010	1.510	18	1.00
			CBS150X100L10	1.510	1.010	10	1.00
			CBS150X100L18	1.510	1.010	18	1.00



The UniLifter Series (MW=.500) is also available in aluminum bronze. To order, replace "CBS" with "CBA" in the catalog number as shown: CBA50X50L14.

▶ CAD insertion point

## Flat Core Blades - Metric Standard

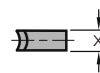
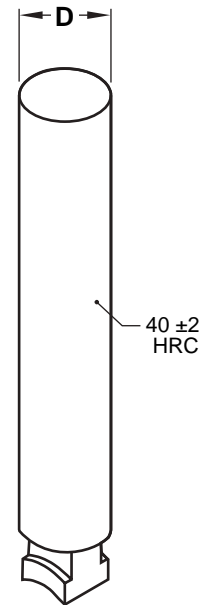
MW	R	HT	CATALOG NUMBER	T +0.000 -0.025	W +0.000 -0.025	L +2 -0	MT MIN. THK.
10	10	5	CBMM10X10L250	10.25	10.25	250	10.0
			CBMM10X20L250	10.25	20.25	250	10.0
			CBMM15X15L250	15.25	15.25	250	15.0
			CBMM15X30L400	15.25	30.25	400	15.0
			CBMM20X10L250	20.25	10.25	250	15.0
			CBMM20X20L400	20.25	20.25	400	15.0
			CBMM30X15L400	30.25	15.25	400	15.0

## Round Core Blades - Inch Standard

MW	R	HT	CATALOG NUMBER	D +0.000 -0.001	L +0.06 -0.00	MT MIN. THK.
MiniLifter .250	.250	.156	CBS43DL8	.437	8	.31
UniLifter .500	.406	.187	CBS75DL8	.750	8	.62
			CBS75DL14	.750	14	.62
			CBS75DL18	.750	18	.62
XL 1.000	.875	.375	CBS125DL10	1.250	10	1.00
			CBS125DL18	1.250	18	1.00

## Round Core Blades - Metric Standard

MW	R	HT	CATALOG NUMBER	D +0.000 -0.025	L +2 -0	MT MIN. THK.
10	10	5	CBMM10DL250	10.00	250	10.0
			CBMM15DL250	15.00	250	10.0



For core blades in different materials or mold-ready sizes refer to the templates in section X.

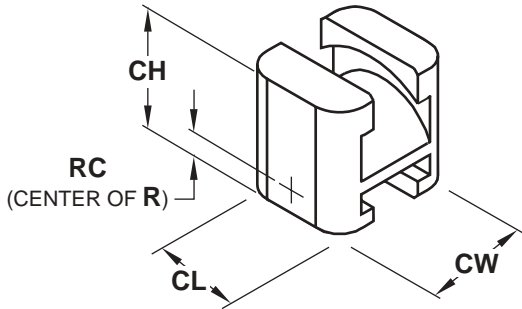


# UNILIFTER® U-COUPPLINGS

## Inch Standard

**M** H-13 **S** Salt Bath Nitride

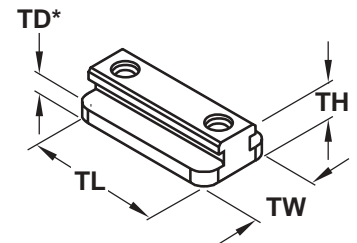
SERIES	R	RC	CATALOG NUMBER	CW	CL	CH
MiniLifter	.250	.125	UCM50	.50	.44	.62
UniLifter	.406	.187	UCU87	.87	.75	.87
XL	.875	.125	UCX175	1.75	1.50	1.65



## Metric Standard

SERIES	R	RC	CATALOG NUMBER	CW	CL	CH
Metric	10	6	UCMM22	22	18	25

# UNILIFTER® T-GIBS

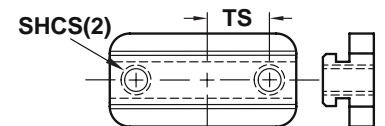
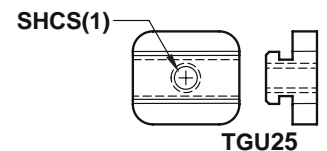
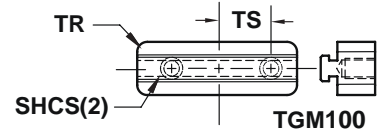
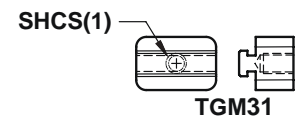


## Inch Standard

**M** 4140 **H** 28-32 HRC **S** Salt Bath Nitride

SERIES	TW +0.00 -0.01	TH +0.01 -0.00	TD* +0.01 -0.00	TR	SHCS (INCLUDED)	CATALOG NUMBER	TS	TL +0.00 -0.10	TRAVEL ALLOWED
MiniLifter	.500	.500	.344	.093	#10-32x1	TGM31	-	.750	.312
						TGM100	.500	1.50	1.000
UniLifter	.875	.468	.219	.187	1/4-20x3/4	TGU25	-	1.00	.250
						TGU50	.375	1.25	.500
						TGU100	.625	1.75	1.000
						TGU150	.750	2.25	1.500
XL	1.750	.615	.250	.312	3/8-16x1-1/4	TGX50	.625	2.00	.500
						TGX100	.875	2.50	1.000
						TGX250	1.375	4.00	2.500

\*TD Includes fitting stock for final adjustments.



TGU50, TGU100, TGU150  
TGX50, TGX100, TGX250  
TGM10, TGM30

## Metric Standard

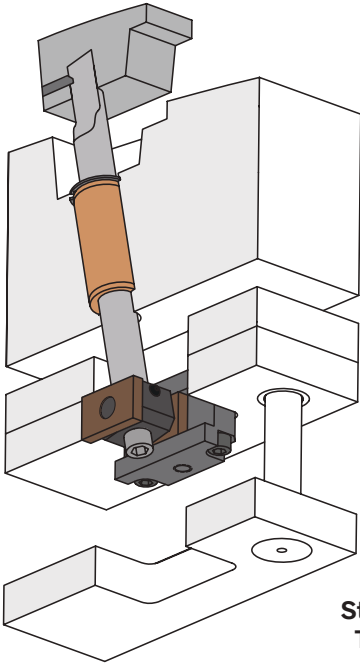
SERIES	TW +0.00 -0.25	TH +0.25 -0.00	TD* +0.25 -0.00	TR	SHCS (INCLUDED)	CATALOG NUMBER	TS	TL +0.00 -0.25	TRAVEL ALLOWED
Metric	22	13	6	5	M-5x20	TGMM10	10	33	10
						TGMM30	15	52	30

\*TD Includes fitting stock for final adjustments.

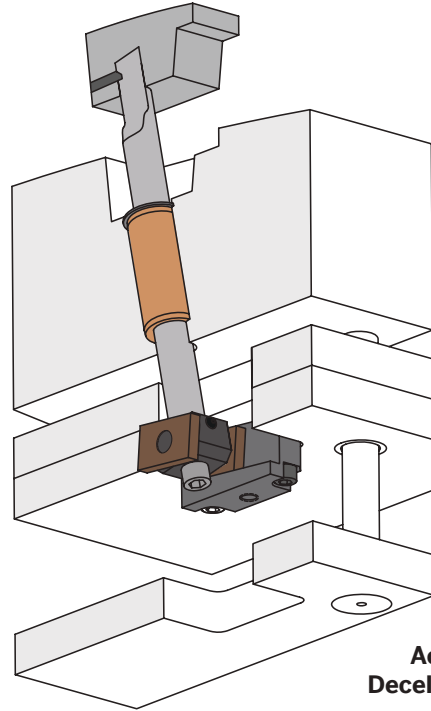
# MODULIFTER™ UNDERCUT RELEASE SYSTEM

A standardized modular lifter assembly simplifies undercut release:

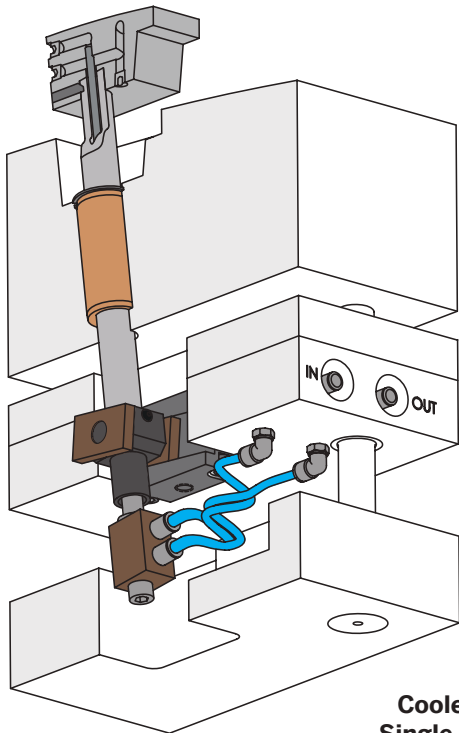
- Specialized design for accelerated and decelerated applications.
- Additional lifter cooling options and components available.



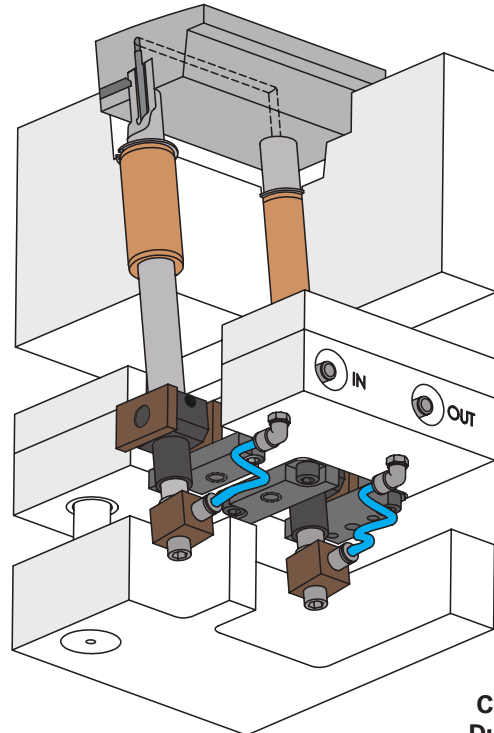
**Straight  
Travel**



**Accelerated/  
Decelerated Options**



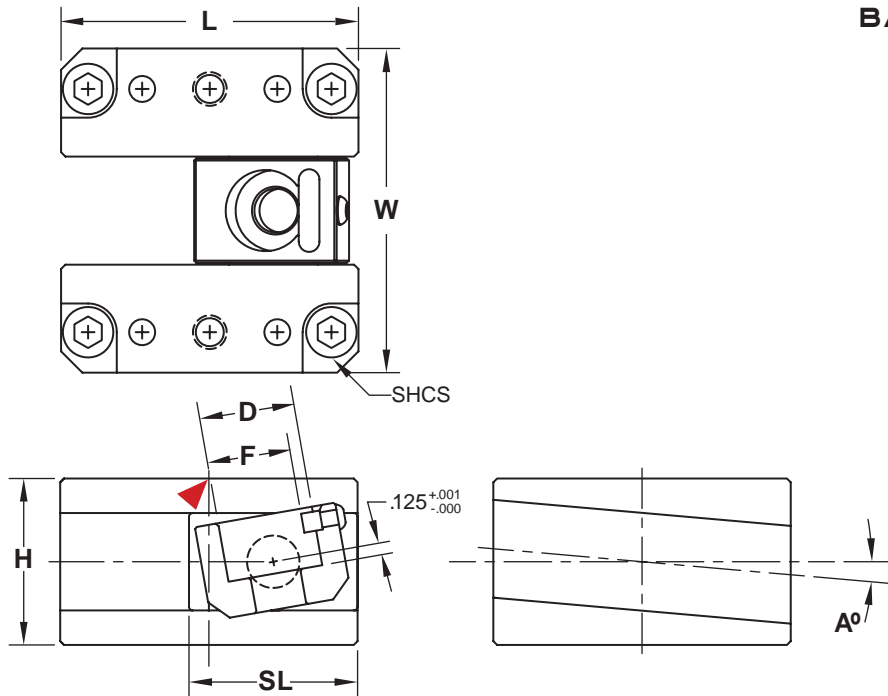
**Cooled:  
Single Rod  
In/Out**



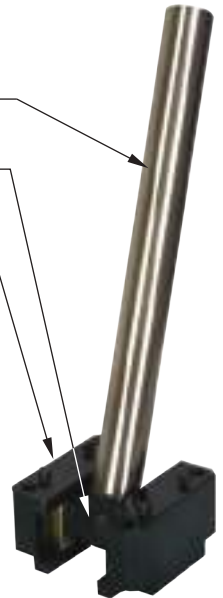
**Cooled:  
Dual Rod  
In/Out**



# MODULIFTER™ BASE ASSEMBLY/LIFTER ROD



- Rod (sold separately)
- Base Assembly includes:
- Rod Coupling Assembly
  - Gibs (2)
  - Mounting Screws (4)
  - Dowels installed



## BASE ASSEMBLY

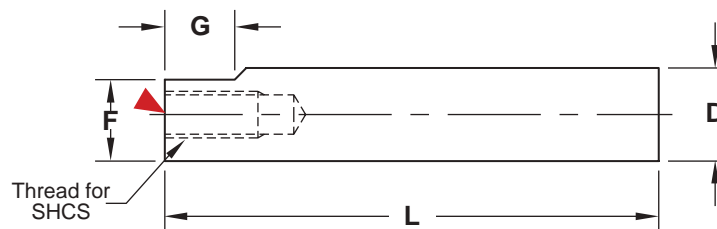
Gibs/Coupling: **M** 1045 **H** 28-32 HRC **S** Nitride Slides: **M** C86300 (Graphite Plugs if specified)

NOMINAL ROD DIAMETER Ø	CATALOG NUMBER			L +.000 -.015	W +.000 -.002	H +.000 -.001	D +.0003 -.0000	F +.0015 -.0000	SHCS	SL	TRAVEL (L-SL)
	A = 0°	A = 5°	A = 10°								
1/2	MLBA050	MLBA050-5	MLBA050-10	2.250	2.250	1.375	.5003	.4505	1/4-20 x 1-1/2	1.38	.87
5/8	MLBA063	MLBA063-5	MLBA063-10	2.625	2.500	1.375	.6253	.5905	1/4-20 x 1-1/2	1.57	1.06
3/4	MLBA075	MLBA075-5	MLBA075-10	2.750	3.000	1.750	.7503	.6905	5/16-18 x 2	1.57	1.18
1	MLBA100	MLBA100-5	MLBA100-10	3.125	3.250	1.750	1.0003	.8755	5/16-18 x 2	1.77	1.35
1-1/4	MLBA125	MLBA125-5	MLBA125-10	3.875	4.000	2.250	1.2503	1.1605	3/8-16 x 2-1/2	2.76	1.12
1-1/2	MLBA150	MLBA150-5	MLBA150-10	4.750	4.250	2.500	1.5003	1.4005	3/8-16 x 2-3/4	3.15	1.60

Note: Includes (4) SHCS and (4) Dowels. For ModuLifter Base Assemblies with different Gib angles, contact tech@procomps.com.  
To order with Graphite Plugged Base, add GP to the part number as shown, Ex: MLBAGPxxx.



## LIFTER ROD



**M** 1045 **H** Core: 28-32 HRC, Surface: 56-58 HRC

D +.0000 -.0003	CATALOG NUMBER	L +.13 -.00	F +.000 -.001	G +.03 -.00	SHCS
.500	MLR050L14	14	.450	.50	1/4-20 x 5/8
.625	MLR063L14	14	.590	.56	5/16-18 x 3/4
.750	MLR075L16	16	.690	.68	3/8-16 x 7/8
1.000	MLR100L16	16	.875	.75	1/2-13 x 1
1.250	MLR125L18	18	1.160	.94	5/8-11 x 1-1/2
1.500	MLR150L18	18	1.400	1.00	5/8-11 x 1-1/2

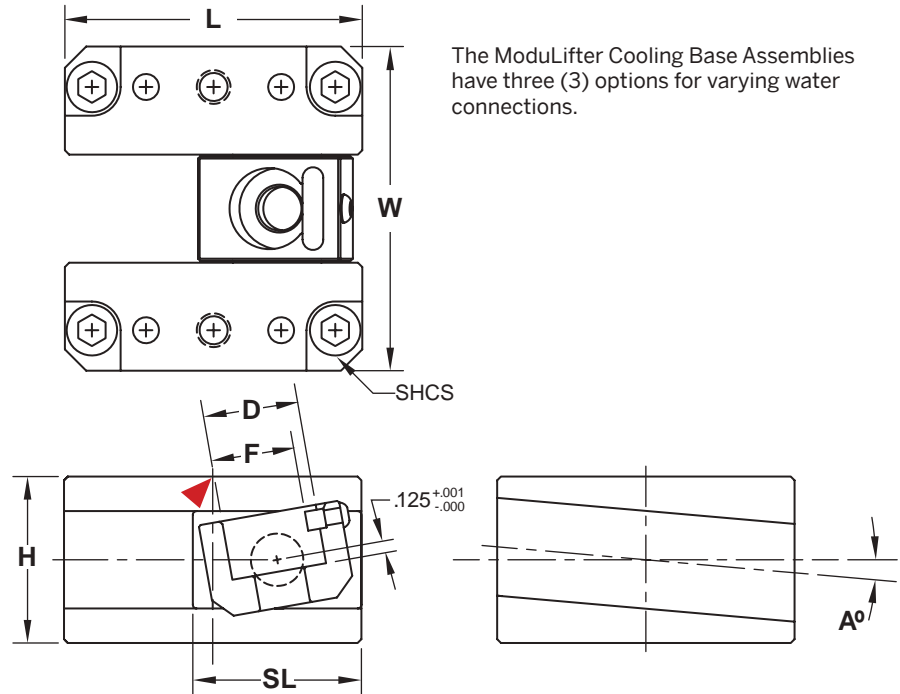
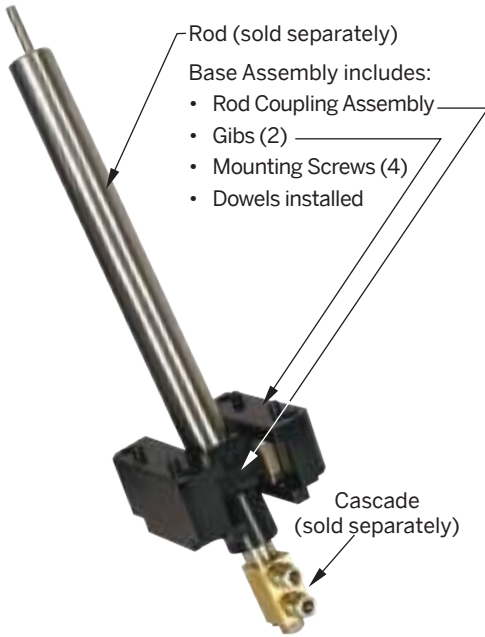
Note: Includes (1) screw for installation.

For additional Lifter Rod lengths, contact tech@procomps.com.



# MODULIFTER™

## COOLED BASE ASSEMBLY/LIFTER ROD



### COOLED BASE ASSEMBLY

Gibs/Coupling: **M** 1045 **H** 28-32 HRC **S** Nitride

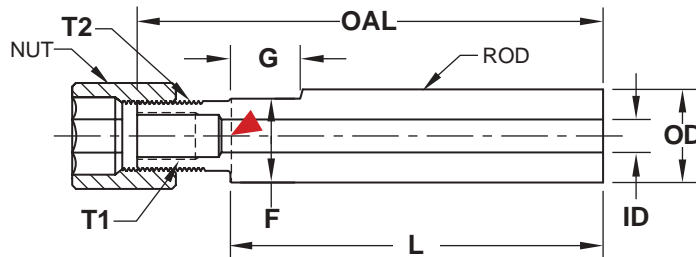
Slides: **M** C86300 (Graphite Plugs if specified)

NOMINAL ROD DIAMETER	CATALOG NUMBER			L +.000 -.015	W +.000 -.002	H +.000 -.001	D +.0003 -.0000	F +.0015 -.0000	SHCS	SL	TRAVEL (L-SL)
	A = 0°	A = 5°	A = 10°								
5/8	MLCBA063	MLCBA063-5	MLCBA063-10	2.625	2.500	1.375	.6253	.5905	1/4-20 x 1-1/2	1.57	1.06
3/4	MLCBA075	MLCBA075-5	MLCBA075-10	2.750	3.000	1.750	.7503	.6905	5/16-18 x 2	1.57	1.18
1	MLCBA100	MLCBA100-5	MLCBA100-10	3.125	3.250	1.750	1.0003	.8755	5/16-18 x 2	1.77	1.35
1-1/4	MLCBA125	MLCBA125-5	MLCBA125-10	3.875	4.000	2.250	1.2503	1.1605	3/8-16 x 2-1/2	2.76	1.12
1-1/2	MLCBA150	MLCBA150-5	MLCBA150-10	4.750	4.250	2.500	1.5003	1.4005	3/8-16 x 2-3/4	3.15	1.60

Note: Includes (4) SHCS and (4) Dowels. For ModuLifter Base Assemblies with different Gib angles, contact tech@procomps.com.  
To order with Graphite Plugged Base, add GP to the part number as shown, Ex. MLCBAGPxxx.



### COOLED LIFTER ROD



**M** 1045 **H** Core: 28-32 HRC, Surface: 56-58 HRC

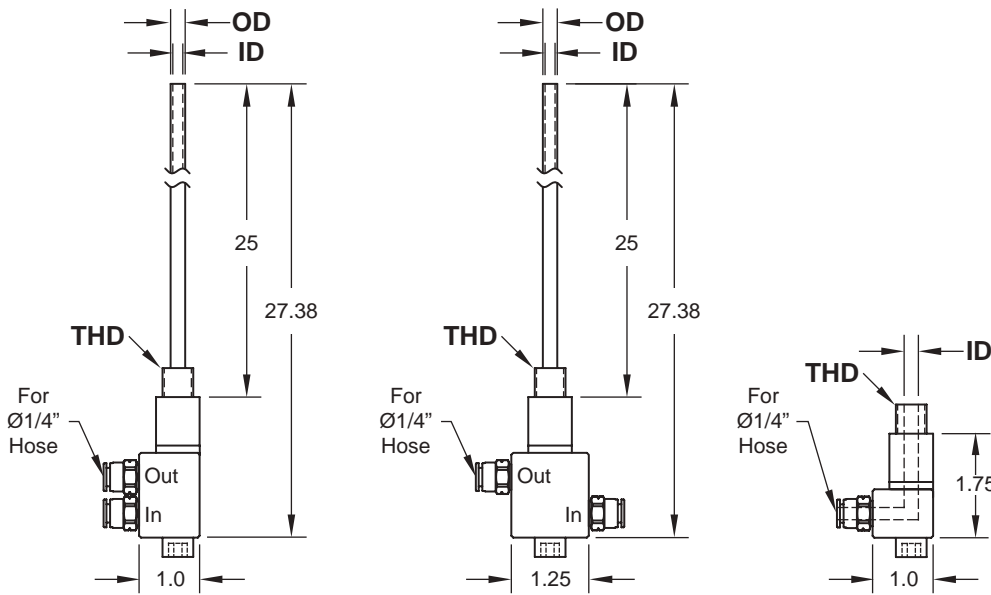
OD +.0000 -.0003	CATALOG NUMBER	ID	OAL	L +.13 -.00	T1 Internal Thread	T2 External Thread	G +.03 -.00	F +.000 -.001
.625	MLCR063L14	.250	14.75	14	5/16-24	1/2-20	.56	.590
.750	MLCR075L16	.250	16.88	16	5/16-24	1/2-20	.68	.690
1.000	MLCR100L16	.375	17.00	16	1/2-20	3/4-20	.75	.875
1.250	MLCR125L18	.375	19.25	18	1/2-20	7/8-20	.94	1.160
1.500	MLCR150L18	.375	19.38	18	1/2-20	7/8-20	1.00	1.400

Note: Includes (1) Installation Nut. Replacement nuts are available; refer to the price list.  
For additional Cooled Lifter Rod lengths, contact tech@procomps.com.





# MODULIFTER™ COOLING CASCADES

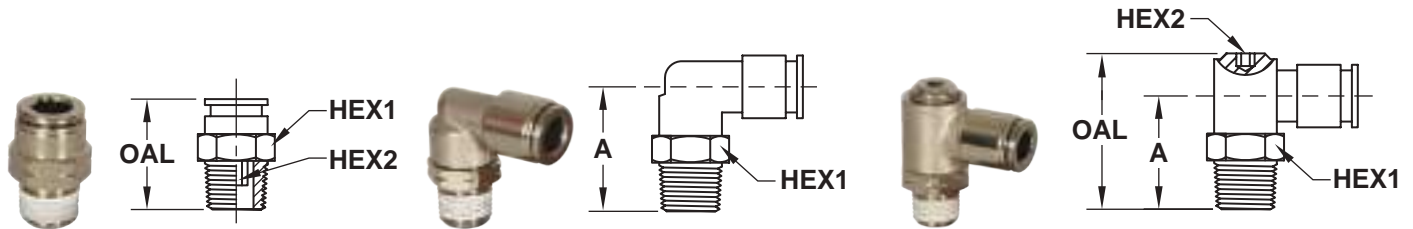


M C86300 and Stainless Steel. Fittings: Nickel Plated Brass.

Parallel (In & Out)			Series (In & Out)			Single (In Only)		THD	MAX TORQUE	NOMINAL ROD DIAMETER Ø
OD	ID	CATALOG NUMBER	OD	ID	CATALOG NUMBER	ID	CATALOG NUMBER			
.157	.12	MLCP16L25	.157	.12	MLCS16L25	.12	MLC12	5/16-24	75 in-lbs	5/8, 3/4
.236	.20	MLCP23L25	.236	.20	MLCS23L25	.20	MLC20	1/2-20	20 ft-lbs	1, 1-1/4, 1-1/2

Note: Straight Fittings included with Cooling Cascades.

## PUSH-TO-CONNECT HOSE FITTINGS



FITTING TYPE	CATALOG NUMBER	HOSE OD	THD (NPT)	HEX1	HEX2	A	OAL
Straight	MLFS25	1/4	1/8	1/2	5/32	—	.87
Elbow	MLFE25	1/4	1/8	1/2	—	.83	—
Banjo	MLFB25	1/4	1/8	9/16	1/8	.81	1.22

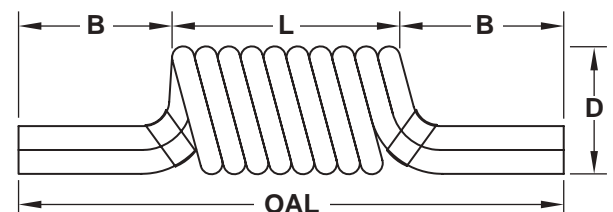
M Nickel Plated Brass with Sealant

Note: Maximum Operating Temperature 160° F.

## PUSH-TO-CONNECT SPIRAL AND STRAIGHT HOSES

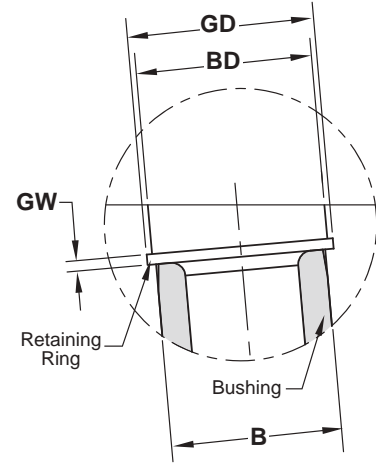
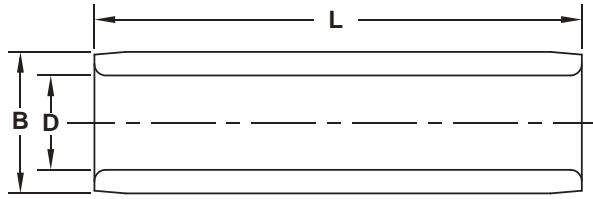
M Polyurethane

CATALOG NUMBER	HOSE OD	HOSE ID	TURNS	OAL	L	B	D
MLH25-5	1/4	5/32	5	10.5 in	2.5	4	1.5
MLH25-10	1/4	5/32	10	13.0 in	5.0	4	1.5
MLH25-25	1/4	5/32	Straight	25.0 ft	—	—	—



Note: Maximum Operating Temperature 160° F.

# MODULIFTER™ LIFTER ROD BUSHING

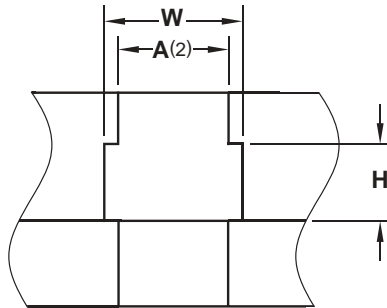


Bushings: **M** C95400 Retaining Ring: **M** Steel **S** Black Oxide

CATALOG NUMBER	D +.001 -.000	B +.0005 -.0000	L +.00 -.01	GD +.005 -.000	GW +.005 -.000	BD ±.002
MLBSH50L1.37	.5005	.750	1.375	.862	.046	.813
MLBSH63L1.37	.6255	.875	1.375	1.000	.046	.934
MLBSH75L3.37	.7505	1.125	3.375	1.262	.056	1.188
MLBSH100L4.37	1.0005	1.375	4.375	1.528	.056	1.438
MLBSH125L4.87	1.2505	1.625	4.875	1.792	.068	1.688
MLBSH150L5.87	1.5005	2.000	5.875	2.186	.086	2.063

Note: Includes (1) Retaining Ring. Replacement rings are available with pricing listed in the price list.

## ROD COUPLING ASSEMBLY PLATE MACHINING OPTION



Coupling: **M** 1045 **H** 28-32 HRC **S** Nitride  
Slides: **M** C86300 (Graphite Plugs if specified)

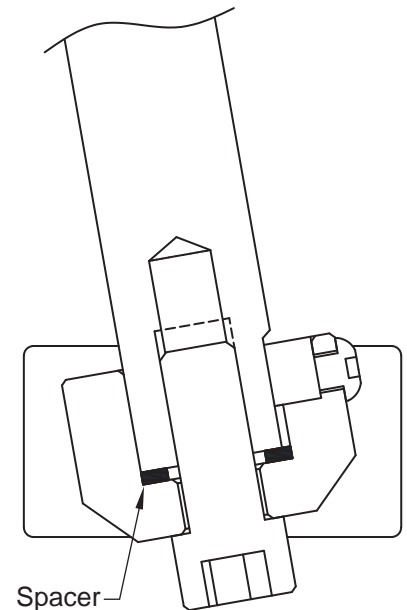
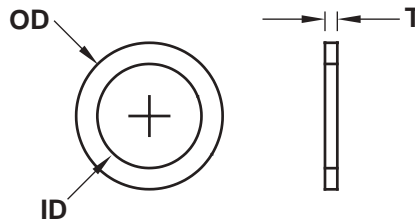
NOMINAL ROD DIA. Ø	CATALOG NUMBER		W +.002 -.000	H ±.001	A +.010 -.000
	Non-Cooled	Cooled			
1/2	RC050	—	1.187	.788	.66
5/8	RC063	RCC063	1.310	.788	.78
3/4	RC075	RCC075	1.500	.946	.97
1	RC100	RCC100	1.781	1.024	1.21
1-1/4	RC125	RCC125	2.375	1.340	1.64
1-1/2	RC150	RCC150	2.656	1.498	1.84

Note: To order slides with Graphite Plugs, add GP to the part number as shown, Ex: RCGP050 or RCCGP125.

## LIFTER ROD SPACER

**M** D-2 **H** 58-60 HRC

CATALOG NUMBER	OD +.00 -.01	ID +.000 -.005	T +.000 -.001
MLRS050	.500	.30	.063
MLRS063	.625	.53	
MLRS075	.750	.53	
MLRS100	1.000	.80	
MLRS125	1.250	.93	
MLRS150	1.500	.93	

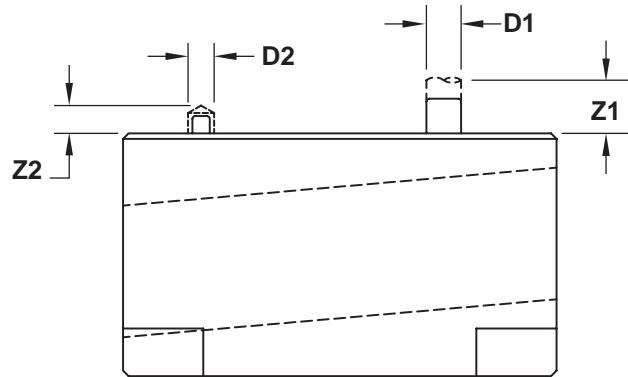
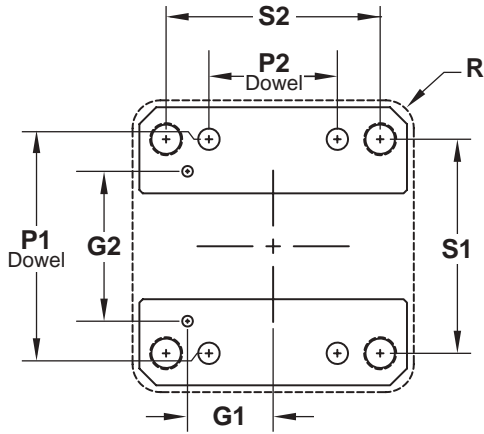






# MODULIFTER™

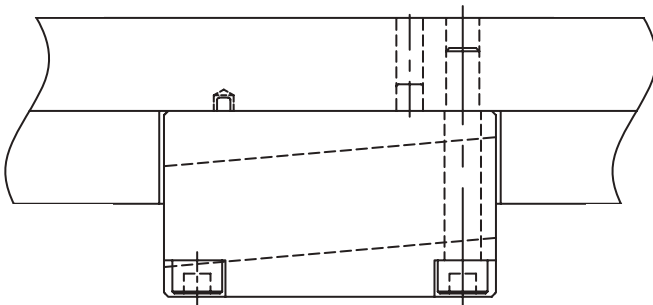
## INSTALLATION GUIDELINES FOR BASE ASSEMBLIES



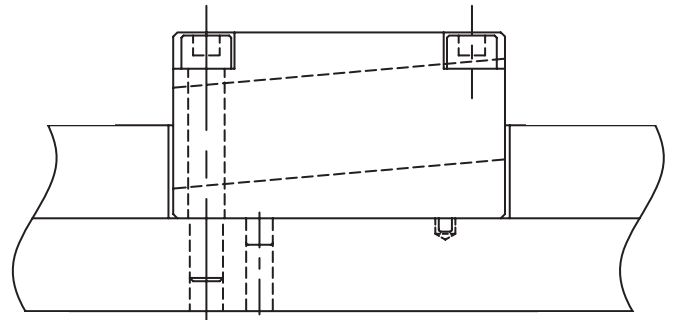
Installation Dimensions							
NOMINAL ROD DIAMETER Ø	S1 ±.005	S2 ±.005	P1 Dowel ±.0005	P2 Dowel ±.0005	R Pocket Max	D1 +.0005 -0.0000	Z1 +.03 -0.00
1/2	1.750	1.750	1.750	.750	.19	.2500	.28
5/8	2.000	2.000	2.000	1.000			
3/4	2.250	2.250	2.250	1.250			
1	2.500	2.500	2.500	1.500			
1-1/4	3.250	3.250	3.250	1.750	.25	.3750	.41
1-1/2	3.500	4.000	3.500	2.500			

Accel./Decel. Keying Dowel			
G1 ±.005	G2 ±.005	D2 Drill Ø	Z2 Drill Depth +.03/-0.00
.75	1.00	.125	.19
.75	1.25		
.75	1.50		
1.00	1.75		
1.25	2.25	.188	
1.50	2.50		

### INSTALLATION METHODS



Bottom Mount



Top Mount

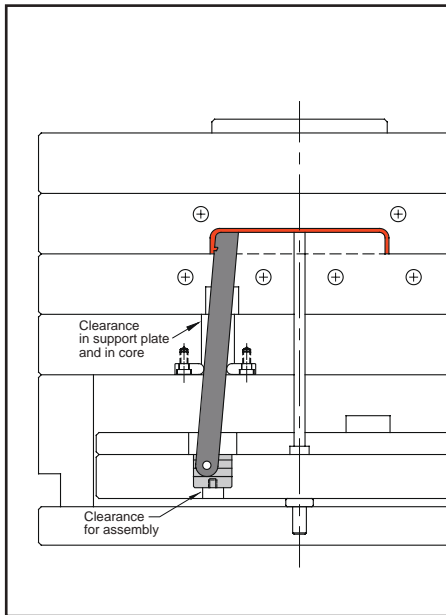
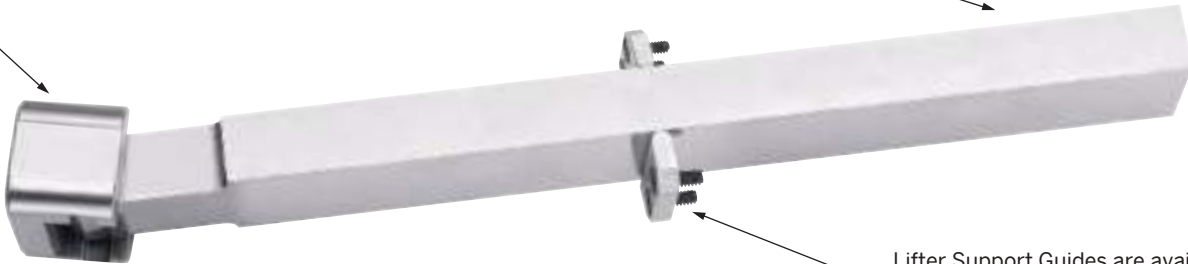
# VERSA-LIFTER™

## UNDERCUT RELEASE SYSTEM

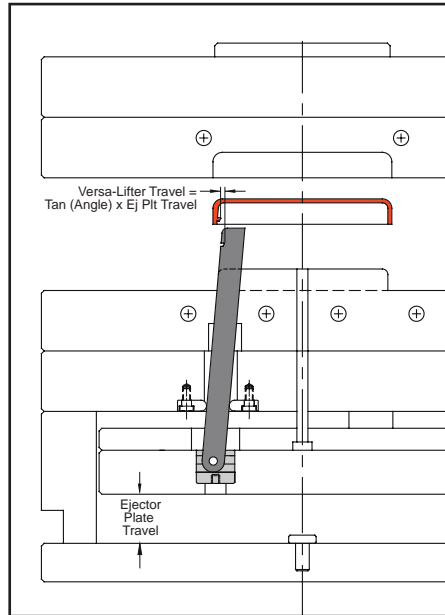
Gib Coupling retains the Core Blade and supports vertical movement.

Core Blades are manufactured from A-10 material, ready for molding detail

Lifter Support Guides are available for when support plate alignment is required.



Mold Closed



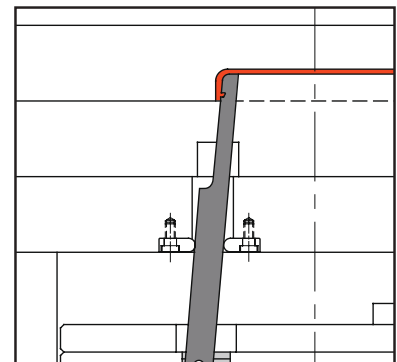
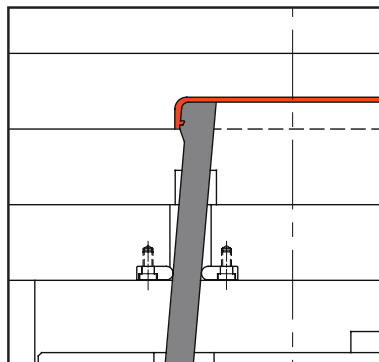
Mold Open

### Design Guidelines:

- Typical angles are 5-15°, but users have reported success at larger angles for unique applications with greater bearing, such as cavity side core pulls. Contact Engineering for an application review.
- Guided Ejection is required, and the Lifter Support Guides are recommended in all applications.
- Recommended total clearance is .001"-.0015" (.025-.038mm) where permissible.
- Core material should be at least 10 HRC different than the Core Blade material.
- Locking angles can be designed to counter molding pressure.
- Non-standard sizes or mold-ready Core Blades can be provided by sending a request to [tech@procomps.com](mailto:tech@procomps.com).

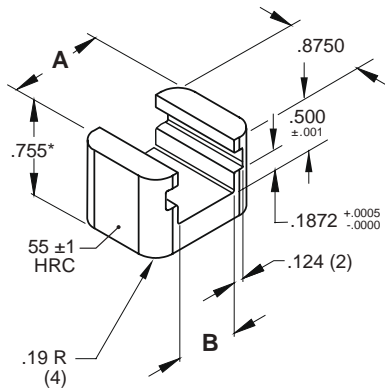
### Design Options:

- For positive return, a locking angle can be designed into the Core Blade as shown at right.
- In addition, if space is limited at parting line, the Core Blade can be stepped.





## GIB COUPLINGS

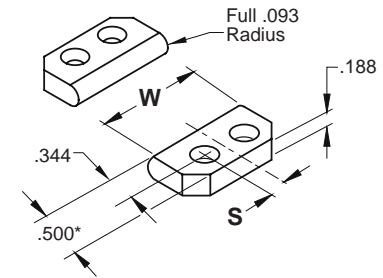


**M** S-7 **H** 54-56 HRC **S** Salt Bath Nitride

CATALOG NUMBER	A Central	B +.001 -.000	Compatible Core Blade Widths (W)	Omni Catalog Number
<b>UGV68</b>	.6860	.190	.1875 & .4375	LG-10
<b>UGV87</b>	.8735	.377	.6250	LG-20
<b>UGV112</b>	1.1235	.627	.8750	LG-30
<b>UGV137</b>	1.3735	.877	1.1250	LG-40

\*.005" stock is included on the bottom for fitting.

## VERSA-LIFTER™ LIFTER SUPPORT GUIDES

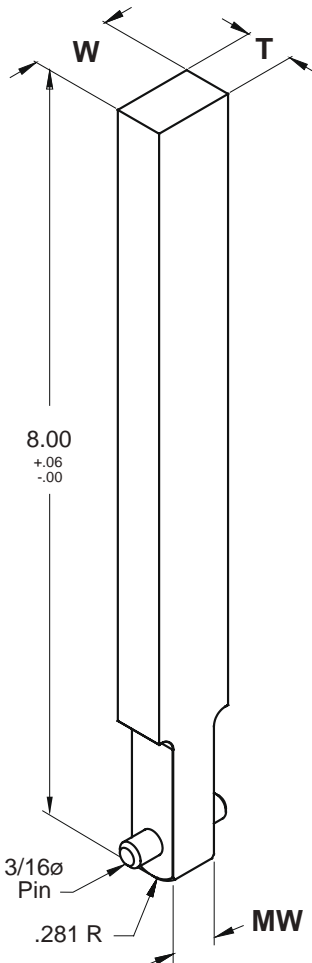


**M** S-7 **H** 54-56 HRC

CATALOG NUMBER	W	S	Omni Catalog Number
<b>SGV43</b>	.436	On Center	SG-10
<b>SGV62</b>	.624	On Center	SG-20
<b>SGV87</b>	.874	.187	SG-30
<b>SGV112</b>	1.124	.312	SG-40

Notes:

- \*.005" fit stock on flat side.
- The Lifter Support Guides are sold in pairs.
- Four (4) #6-32 LHCS are included.



**M** Bohler K340 **H** 58-60 HRC

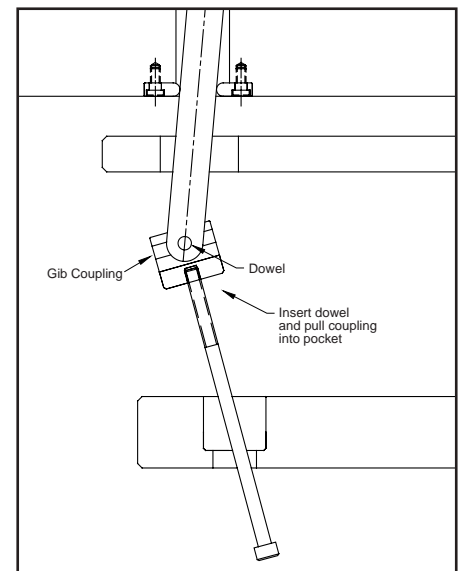
T +.0000 -.0003	CATALOG NUMBER	W +.0000 -.0003	MW +.000 -.001
.5000	<b>CBV50X18L8</b>	.1875	.188
	<b>CBV50X43L8</b>	.4375	.188
	<b>CBV50X62L8</b>	.6250	.375
	<b>CBV50X87L8</b>	.8750	.625
	<b>CBV50X112L8</b>	1.1250	.875

Pre-engineered pin is included.

### Assembly Guidelines:

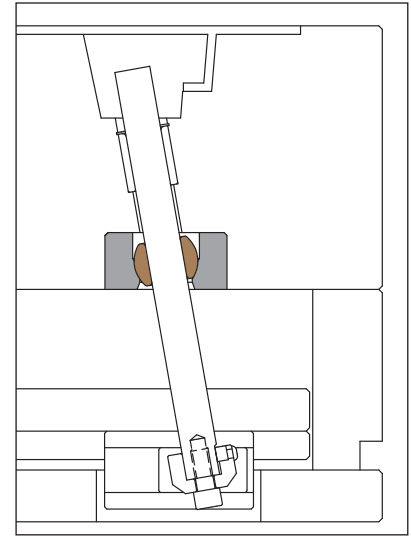
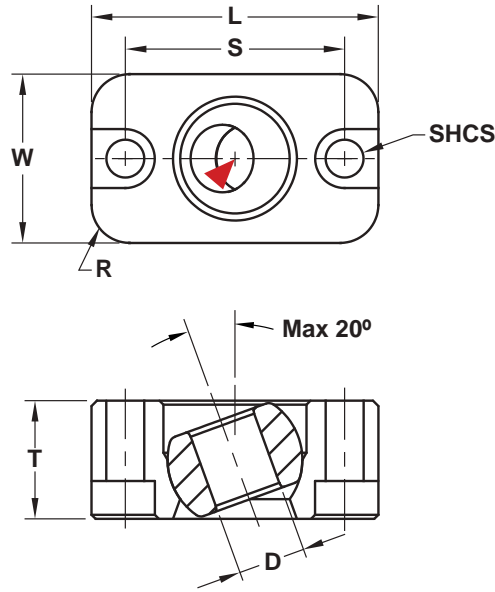
- Assembly length (4") cap screw (#10-32) is included with each lifter.
- Install the assembly screw in the Gib Coupling as shown.
- Connect the lifter pin and pull unit into pocket in ejector plate, removing the screw afterwards.

## VERSA-LIFTER™ CORE BLADES



# LIFTER GUIDES

## SPHERICAL BUSHINGS



**Design Notes:**

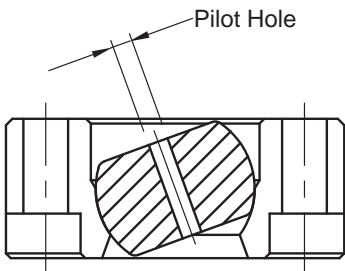
- Machine pocket with clearance on length and width
- Tighten bolts after inserting lifter rod

M Housing: 1045 18-22 HRC, Bushing: C86300 Bronze

▶ CAD insertion point

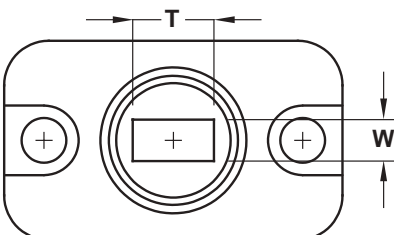
CATALOG NUMBER	D +.001 -.000	L +.000 -.002	W +.000 -.002	T +.000 -.002	S ±.005	R Pocket Radius	SHCS
LSB050	.5005	2.000	1.250	.875	1.500	.250	1/4-20 x 1.00"
LSB063	.6255	2.250	1.500	1.125	1.750	.250	1/4-20 x 1.25"
LSB075	.7505	2.625	1.750	1.375	2.125	.375	5/16-18 x 1.50"
LSB100	1.0005	2.875	2.125	1.500	2.375	.375	5/16-18 x 1.75"
LSB125	1.2505	4.000	2.750	2.000	3.250	.500	3/8-16 x 2.25"
LSB150	1.5005	4.250	3.000	2.375	3.500	.500	3/8-16 x 2.75"

Screws included.



**Blank Spherical Bushings**

To order: Add a "-B" to the end of the part number. Ex: LSB100-B  
 Sizes 075-B and smaller have a .23 Pilot Hole.  
 Sizes 100-B and larger have a .47 Pilot Hole.

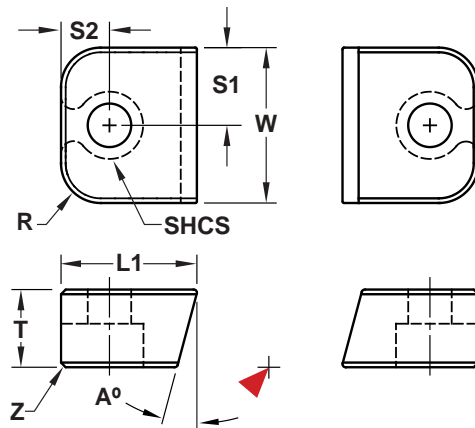


Use the blank bushing to cut alternative core blade sizes. See chart for recommended sizing.

Spherical Bushing Size	Lifter T x W (MAX)	UniLifter Size Chart
LSB050	1/2 X 1/2	CBS37X25, CBS50X25, CBS50X50, CBS43D, CBV50X18, CBV50X43, CBMM10D, CBMM10X10
LSB063	5/8 X 5/8	CBV50X62, CBMM15D, CBMM15X15
LSB075	3/4 X 3/4	CBS75X37, CBMM20X10, CBMM20X20
LSB100	1 X 1	CBS100X50, CBS100X100, CBS75D, CBV50X87
LSB125	1-1/4 X 1-1/4	CBS125D, CBV50X112, CBMM30X15
LSB150	1-1/2 X 1-1/2	CBS150X150, CBS150X75, CBS150X100



# LIFTER GUIDES

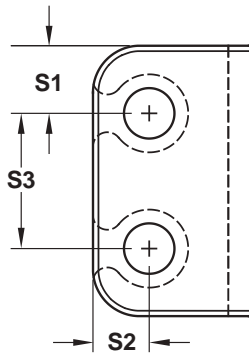


**M** O-1 **H** 58-60 HRC **S** Black Oxide

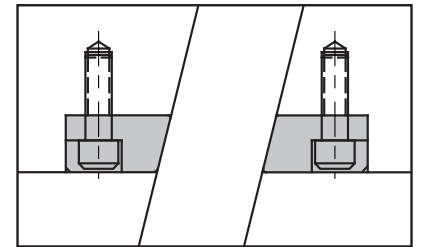
CAD insertion point

W +.000 -.001	CATALOG NUMBER			T ±.015	L1	S1 ±.005	S2 ±.005	S3 ±.005	R Pocket Radius	Z Chamfer	SHCS
	A = 5°	A = 10°	A = 15°								
.375	LG37-5	LG37-10	LG37-15	.375	.500	.188	.188	--	.125	.02	#6-32 x 1/2"
.500	LG50-5	LG50-10	LG50-15		.750	.250	.250	--			
.750	LG75-5	LG75-10	LG75-15			.375		--	.187		
1.000	LG100-5	LG100-10	LG100-15			.500	.250	--	.250		
1.500	LG150-5	LG150-10	LG150-15		.875	.312	.750	.250			

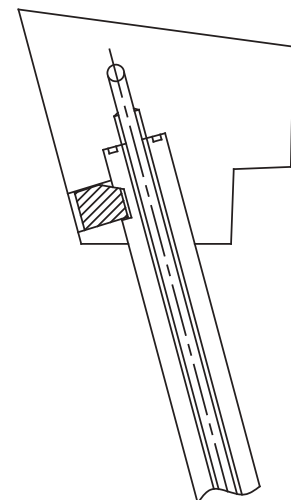
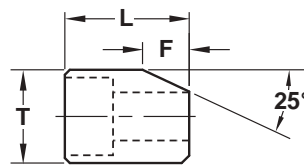
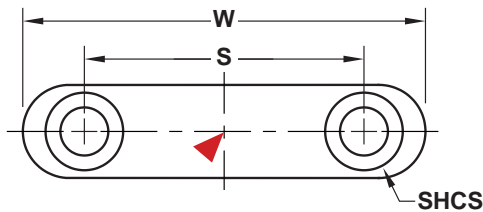
Lifter Guides are sold in sets with Socket Head Cap Screws included. LG150 items have 4 screws as shown in the locations below.



Size of Guide	Can Be Used with UniLifter Core Blade Size	Max Blade Width (For Other Systems)
LG37	37X25 50X25 75X37	.385
LG50	50X50 75X50 100X50 150X50	.510
LG75	150X75	.760
LG100	100x100 150x100	1.010
LG150	50X150 75X150 100X150	1.510



## LIFTER HEAD KEY



**M** 4140 **H** 28-32 HRC

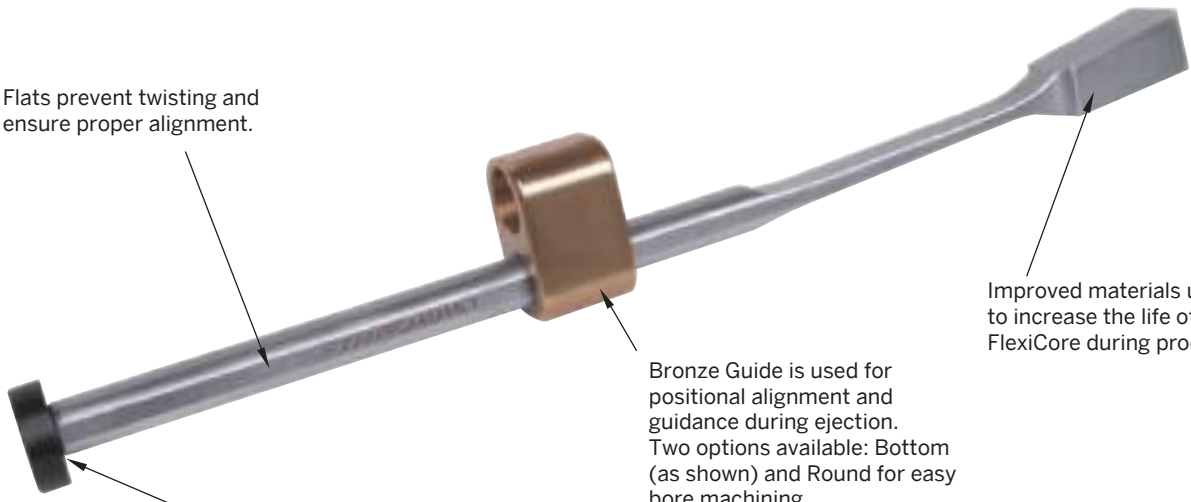
CAD insertion point

NOMINAL ROD DIAMETER Ø	CATALOG NUMBER	W +.00 -.01	L ±.005	T +.000 -.005	F	S	SHCS
1/2	LHK050	1.370	.500	.375	.19	.875	#6-32 x 1/2
5/8	LHK063	1.495	.500	.375	.19	1.000	#6-32 x 1/2
3/4	LHK075	1.620	.500	.500	.19	1.125	#8-32 x 1/2
1	LHK100	1.870	.500	.500	.19	1.375	#8-32 x 1/2
1-1/4	LHK125	2.620	.750	.625	.25	2.000	1/4-20 x 7/8
1-1/2	LHK150	2.870	.750	.625	.25	2.250	1/4-20 x 7/8

Screws included.

# FLEXICORE™ UNDERCUT RELEASE SYSTEM

Flats prevent twisting and ensure proper alignment.

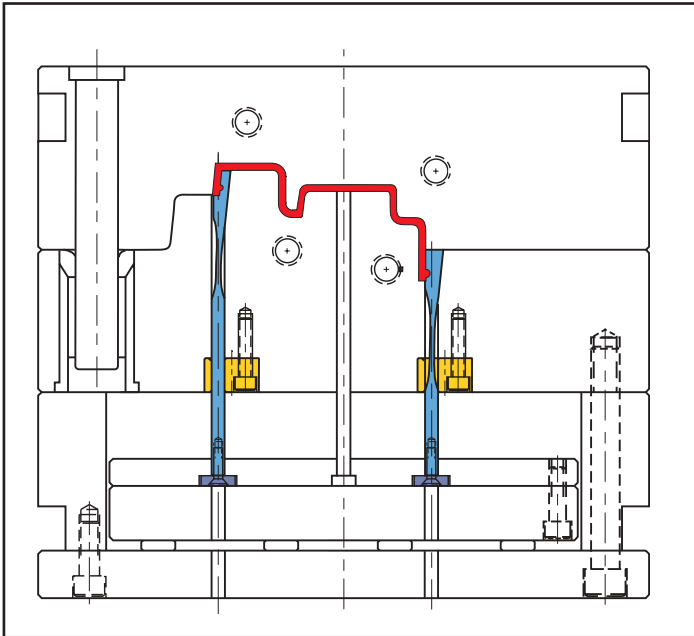


Improved materials used to increase the life of the FlexiCore during production.

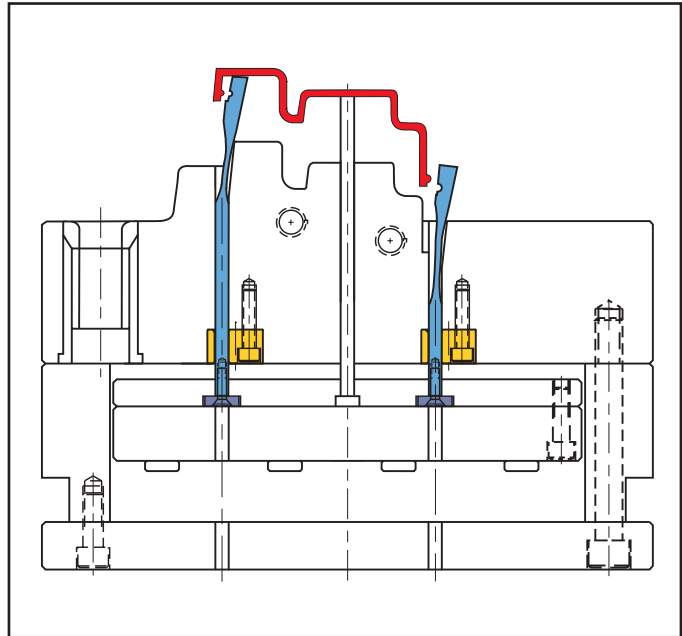
Bronze Guide is used for positional alignment and guidance during ejection. Two options available: Bottom (as shown) and Round for easy bore machining.

Heel Plate is included to retain FlexiCore.

FlexiCore Assembly includes: FlexiCore, Bronze Guide (Bottom or Round), Heel Plate, and Flat Head Cap Screw.



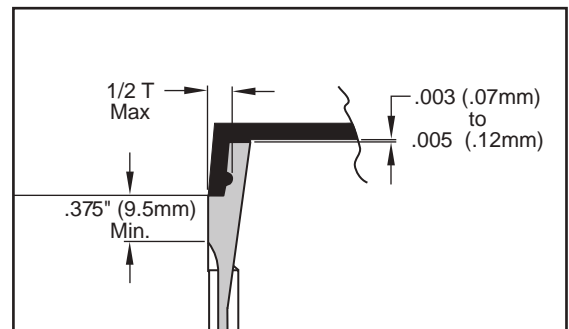
**Mold Closed**



**Mold Open**

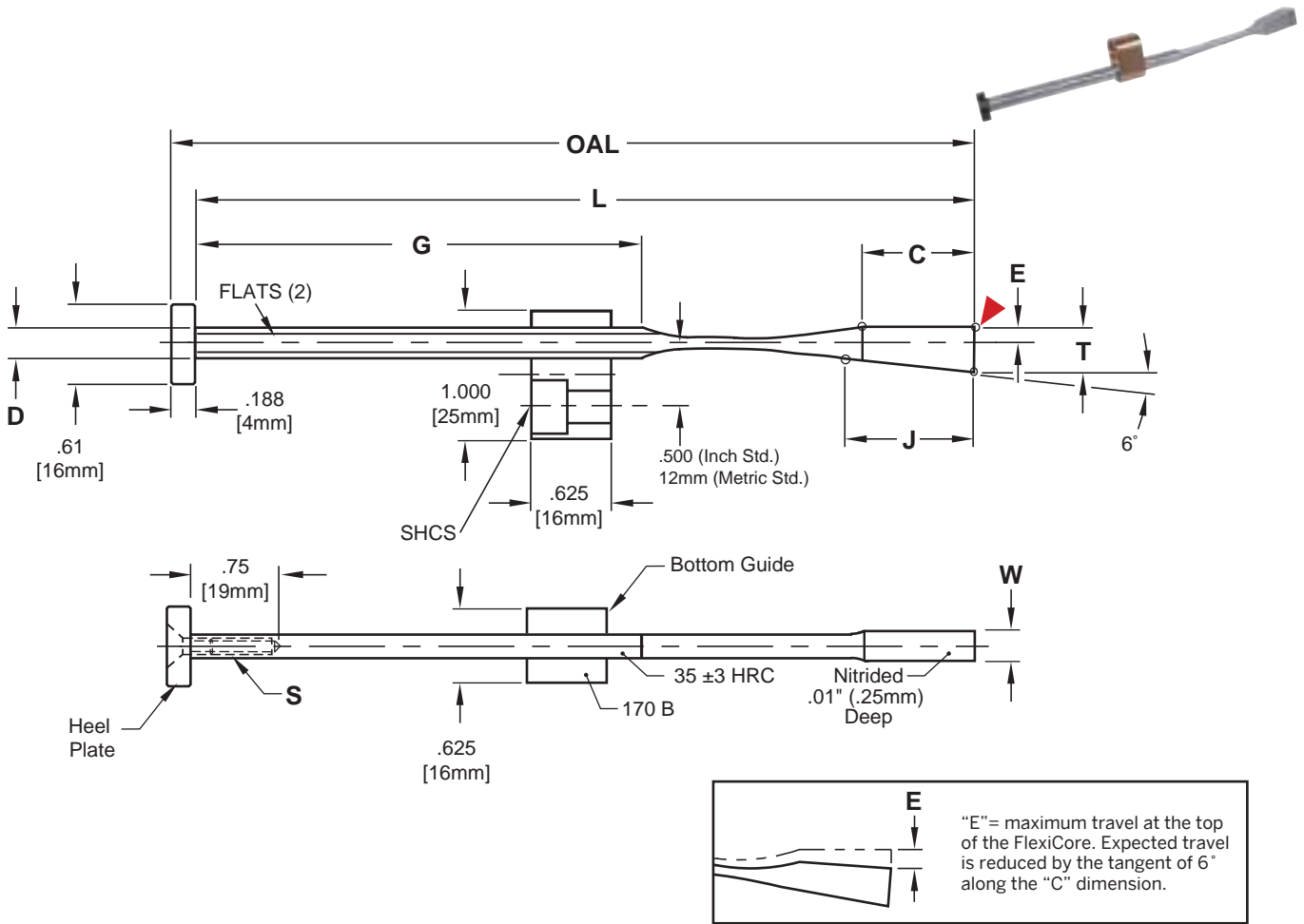
### Application Guidelines:

- The FlexiCore diameter (D) must be within the Guide prior to ejection as shown above.
- Only surface treatments applied at low temperatures such as Electroless Nickel-based or chromium deposition treatments are permitted.
- Maximum temperature is 250° F (125° C).
- Please contact Engineering to review any designs if questions arise or if your application differs from the examples shown.





# FLEXICORE™ BOTTOM GUIDE ASSEMBLY



## Inch Standard

**M** FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

CAD insertion point

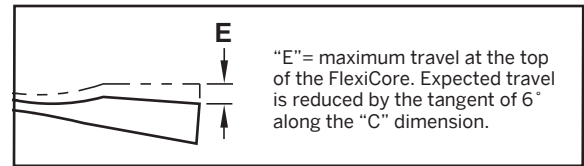
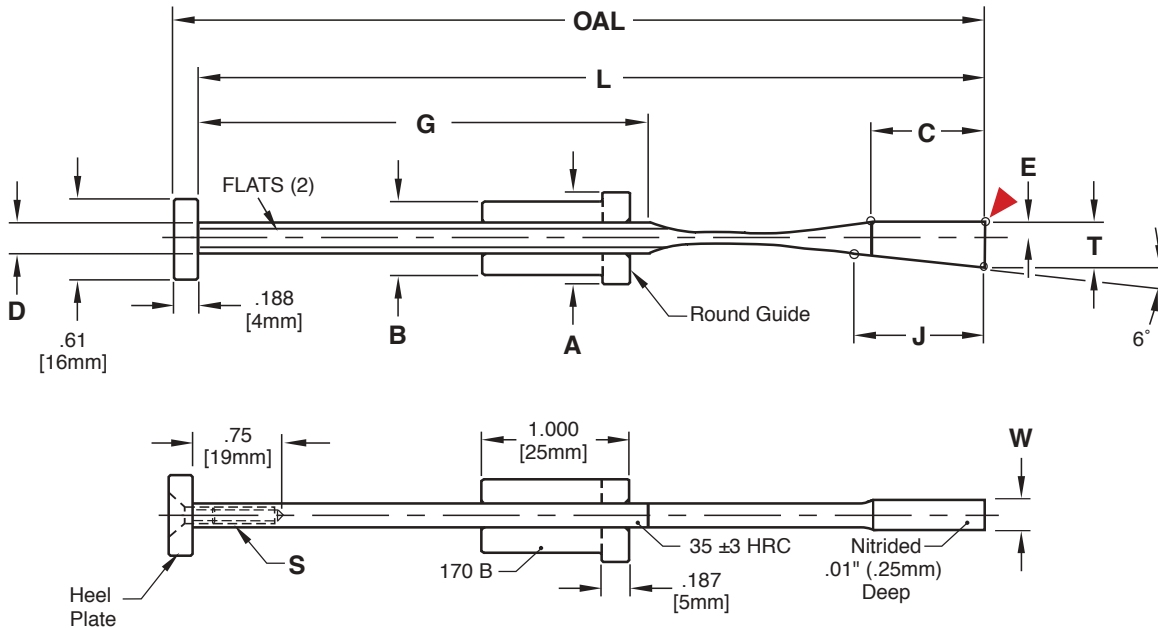
CATALOG NUMBER	T +.002 -.000	W +.002 -.000	L +.010 -.000	OAL REF	D +.000 -.001	C ± .015	E	G +.01 -.00	J	S	SHCS
FCA35X24L6	.354	.244	6.400	6.588	.234	.875	.137	3.49	.957	#8-32	1/4-20
FCA35X32L6	.354	.322	6.400	6.588	.250	.875	.137	3.48	.957	#8-32	1/4-20
FCA45X40L7	.453	.401	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	1/4-20
FCA45X48L7	.453	.480	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	1/4-20

## Metric Standard

CATALOG NUMBER	T +.05 -.00	W +.05 -.00	L +.25 -.00	OAL REF	D +.000 -.025	C ± .35	E	G +.25 -.00	J	S	SHCS
FCA9X6L160	9	6.2	162.5	166.5	5.94	22	3.5	88.6	24.3	M4-.7 x 20	M6-1
FCA9X8L160	9	8.2	162.5	166.5	6.35	22	3.5	88.4	24.3	M4-.7 x 20	M6-1
FCA11X10L200	11.5	10.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20	M6-1
FCA11X12L200	11.5	12.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20	M6-1
FCA12X14L200	12.5	14.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20	M6-1
FCA12X16L200	12.5	16.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20	M6-1

Assemblies include: FlexiCore, Bottom Guide, Heel Plate, and Flat Head Cap Screw.  
Assembly components also sold individually on page H-11.

# FLEXICORE™ ROUND GUIDE ASSEMBLY



## Inch Standard

**M** FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

CATALOG NUMBER	T +.002 -.000	W +.002 -.000	L +.010 -.000	OAL REF	D +.000 -.001	C ±.015	E	G +.01 -.00	J	S	A	B
<b>FCR35X24L6</b>	.354	.244	6.400	6.588	.234	.875	.137	3.49	.957	#8-32	.625	.500
<b>FCR35X32L6</b>	.354	.322	6.400	6.588	.250	.875	.137	3.48	.957	#8-32	.625	.500
<b>FCR45X40L7</b>	.453	.401	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	.750	.625
<b>FCR45X48L7</b>	.453	.480	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	.750	.625

CAD insertion point

## Metric Standard

CATALOG NUMBER	T +.05 -.00	W +.05 -.00	L +.25 -.00	OAL REF	D +.000 -.025	C ±.35	E	G +.25 -.00	J	S	A	B
<b>FCR9X6L160</b>	9	6.2	162.5	166.5	5.94	22	3.5	88.6	24.3	M4-.7 x 20	16	12
<b>FCR9X8L160</b>	9	8.2	162.5	166.5	6.35	22	3.5	88.4	24.3	M4-.7 x 20	16	12
<b>FCR11X10L200</b>	11.5	10.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20	20	16
<b>FCR11X12L200</b>	11.5	12.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20	20	16
<b>FCR12X14L200</b>	12.5	14.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20	20	16
<b>FCR12X16L200</b>	12.5	16.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20	20	16

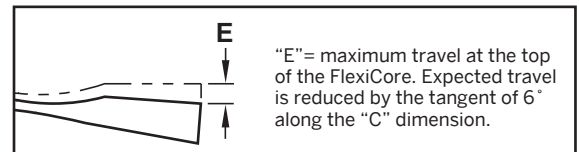
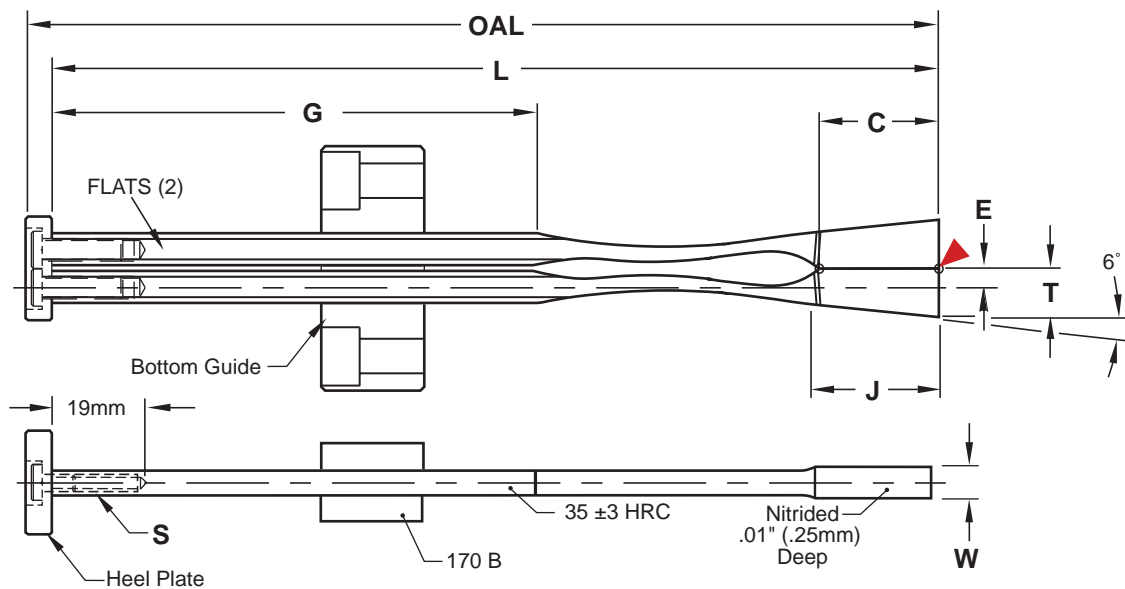
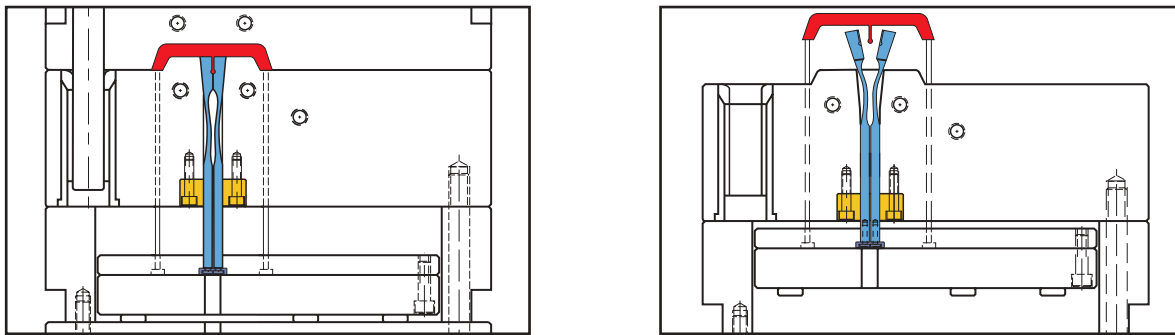
Assemblies include: FlexiCore, Round Guide, Heel plate, and Flat head Cap Screw.  
Assembly components also sold individually. Refer to page H-11 for information.





# FLEXICORE™ DOUBLE ACTUATION

The double action bottom guide allows for the FlexiCore System to be used to release boss details with undercuts. FlexiCore Double Assembly (FCDA) includes: two FlexiCores, one Bottom Guide, one Heel Plate, and two Low Head Cap Screws.



## Inch Standard

**M** FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

CATALOG NUMBER	T +.002 -.000	W +.002 -.000	L +.010 -.000	OAL REF	D +.000 -.001	C ±.015	E .015	G +.01 -.00	J +.01 -.00	S +.000 -.025
FCDA35X24L6	.354	.244	6.400	6.588	.234	.875	.137	3.49	.957	#8-32
FCDA45X48L7	.453	.480	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24

## Metric Standard

CATALOG NUMBER	T +.05 -.00	W +.05 -.00	L +.25 -.00	OAL REF	D +.000 -.025	C ±.035	E 015	G +.25 -.00	J +.01 -.00	S +.000 -.025
FCDA9X6L160	9	6.2	162.5	166.5	5.94	22	3.5	88.6	24.3	M4-.7 x 20
FCDA11X12L200	11.5	12.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20
FCDA12X14L200	12.5	14.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20
FCDA12X16L200	12.5	16.2	200.0	204.0	7.92	30	4.5	107.2	28.5	M5-.8 x 20

CAD insertion point

# FLEXICORE™ ACCESSORIES

## WEAR BLOCKS

### Inch Standard

**M** P-20 Pre-Hard **H** Nitrided .005" Deep

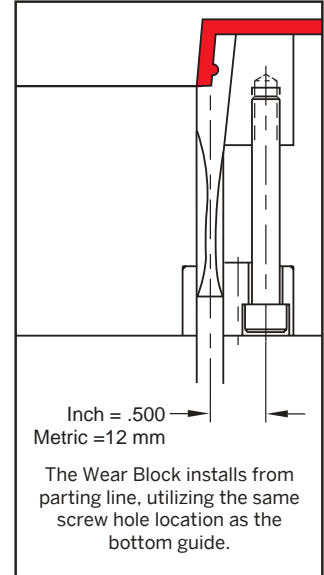
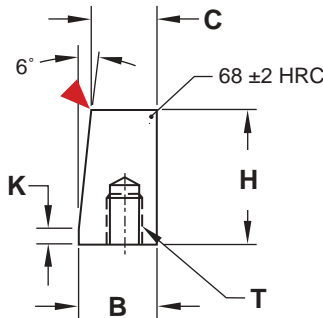
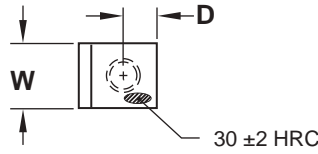
CATALOG NUMBER	W +.002 -.000	D ± .01	B +.001 -.000	C +.001 -.000	H	K	T Thread
FCWB-24	.244	.250	.626	.533	1.000	.115	#10-24
FCWB-32	.322	.250	.626	.533	1.000	.115	1/4-20
FCWB-40	.401	.250	.567	.474	1.000	.115	1/4-20
FCWB-48	.480	.250	.567	.474	1.000	.115	1/4-20

Note: FCWB-24 is designed for use with a 1/4ø shoulder bolt.

### Metric Standard

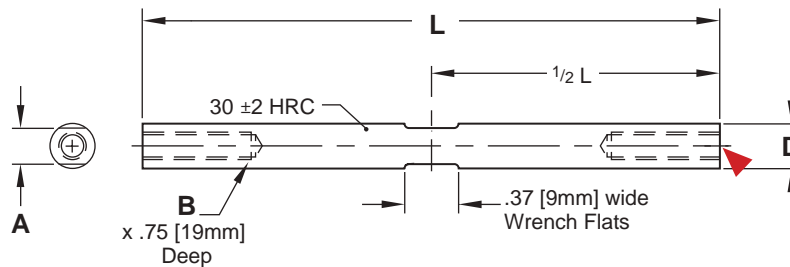
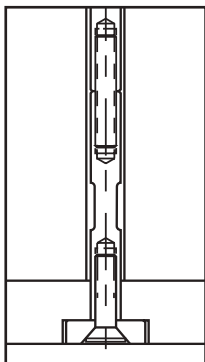
CATALOG NUMBER	W +.05 -.00	D ± .25	B +.025 -.000	C +.025 -.000	H	K	T Thread
FCWBM-6	6.2	7.2	15.9	13.55	25.4	2.9	M5-.8
FCWBM-8	8.2	7.2	15.9	13.55	25.4	2.9	M6-1
FCWBM-10	10.2	7.2	14.4	12.05	25.4	2.9	M6-1
FCWBM-12	12.2	7.2	14.4	12.05	25.4	2.9	M6-1
FCWBM-14	14.2	8.0	15.2	12.11	33.2	3.5	M6-1
FCWBM-16	16.2	8.0	15.2	12.11	33.2	3.5	M6-1

▶ CAD insertion point



# FLEXICORE™ ACCESSORIES

## EXTENSIONS



### Inch Standard

**M** 4140 Pre-Hard

D +.000 -.005	B	A	L +.01 -.00	
			2"	4"
.232	#8-32	.187	FCX8L2	FCX8L4
.310	#10-24	.250	FCX10L2	FCX10L4

### Metric Standard

D +.00 -.12	B	A	L +.25 -.00	
			50MM	100MM
6	M4-.7	4.8	FCXM4L50	FCXM4L100
8	M5-.8	6.3	FCXM5L50	FCXM5L100

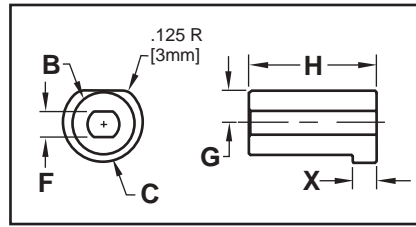
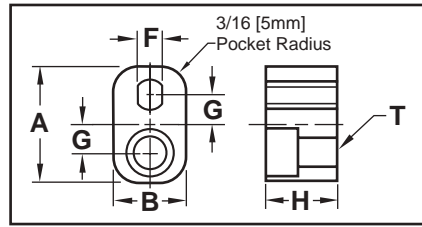
Includes threaded stud for attachment to FlexiCore.

▶ CAD insertion point



# FLEXICORE™ ACCESSORIES

## REPLACEMENT GUIDES



### Inch/Metric Standard

**M** CA954 Solid Bronze

CATALOG NUMBER	A	B	H	F	G	T
<b>FCBG-24</b>	1.000	.625	.625	.190	.250	1/4-20
<b>FCBG-32</b>	1.000	.625	.625	.200	.250	1/4-20
<b>FCBG-40</b>	1.000	.625	.625	.290	.250	1/4-20
<b>FCBG-6</b>	25	16	16	4.8	6	M6-1
<b>FCBG-8</b>	25	16	16	5.0	6	M6-1
<b>FCBG-10</b>	25	16	16	7.3	6	M6-1

### Inch/Metric Standard

**M** CA954 Solid Bronze

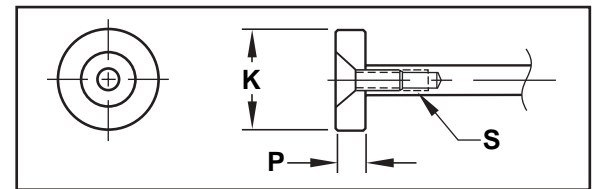
CATALOG NUMBER	B	C	H	F	X	G
<b>FCRG-24</b>	.5000	.625	1.000	.190	.187	.250
<b>FCRG-32</b>	.5000	.625	1.000	.200	.187	.250
<b>FCRG-40</b>	.6250	.750	1.000	.290	.187	.312
<b>FCRG-6</b>	12	16	25	4.8	5	6
<b>FCRG-8</b>	12	16	25	5.0	5	6
<b>FCRG-10</b>	16	20	25	7.3	5	8

### Inch/Metric Standard

**M** 4140 Pre-Hard **S** Black Oxidized

CATALOG NUMBER	K	P	S
<b>FCHP-8</b>	.61	.188	#8-32
<b>FCHP-10</b>	.61	.188	#10-24
<b>FCHP-4</b>	16	4	M4-.7
<b>FCHP-5</b>	16	4	M5-.8

### REPLACEMENT HEEL PLATES

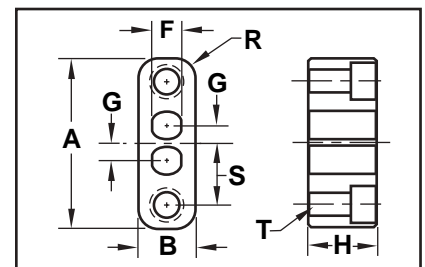


Screw included.

### Inch/Metric Standard

**M** CA954 Solid Bronze

CATALOG NUMBER	A	B	H	F	G	R	S	T
<b>FCDBG-24</b>	1.750	.625	.750	.190	.136	.218	.636	1/4-20
<b>FCDBG-48</b>	1.875	.625	.750	.290	.176	.218	.676	1/4-20
<b>FCDBG-6</b>	45	16	20	4.8	3.5	5	15.5	M6-1
<b>FCDBG-12</b>	48	16	20	7.3	4.5	5	16.5	M6-1

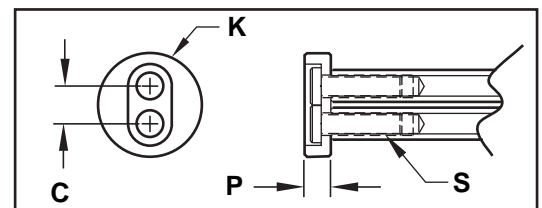


### Inch/Metric Standard

**M** 4140 Pre-Hard **S** Black Oxidized

CATALOG NUMBER	C	K	P	S
<b>FCDHP-8</b>	.272	.750	.188	#8-32
<b>FCDHP-10</b>	.352	.875	.188	#10-24
<b>FCDHP-4</b>	7	20	6	M4-.7
<b>FCDHP-5</b>	9	22	6	M5-.8

### REPLACEMENT HEEL PLATES: DOUBLE ACTUATION



Screws included.

# LIFTER BLADES & CORES

## UNDERCUT RELEASE SYSTEM



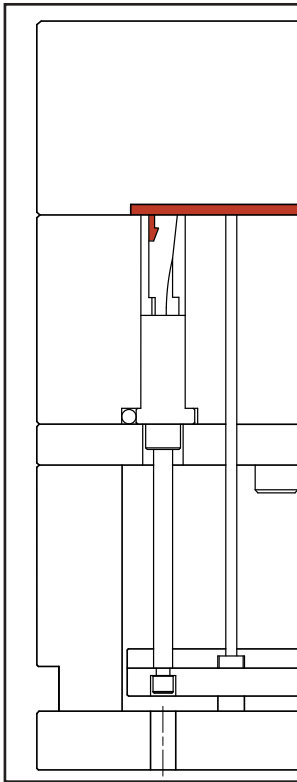
**Lifter Blades™**  
for details 1.8mm-4.2mm wide.



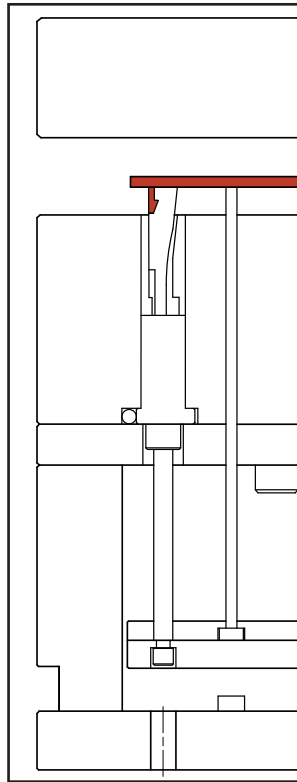
**Lifter Cores™**  
for details 6mm-12mm wide.

Lifter Blades and Cores offer unique advantages for undercut release:

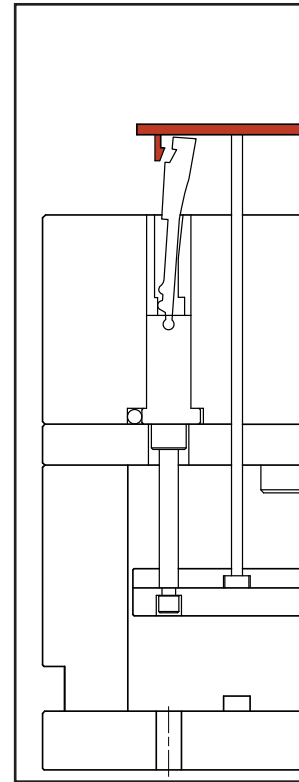
- The “up, then over” motion assists part ejection, for addressing small parts prone to sticking to lifters.
- With the lifter traveling radially away from the undercut, the top of the blade can be flush with the core, requiring no standing pad on molded part that may interfere with snap function.
- Compact, no angled machining, with blades beginning as thin as .070” / 1.8mm.



**Ejection Retracted**  
Lifter seated within bushing to prevent molding pressure movement.



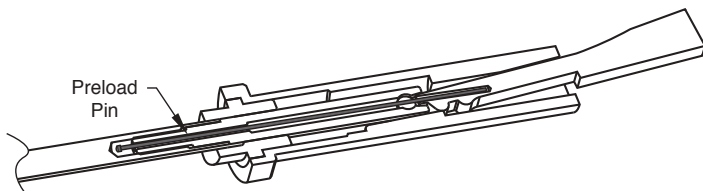
**Initial Ejection**  
Ejector plates move forward 7mm with part remaining on lifter.



**Release Point**  
The Lifter is mechanically forced away from the undercut

**Preload Pin Use:**

Use the provided preload pin to prevent the lifter from falling back on the part.

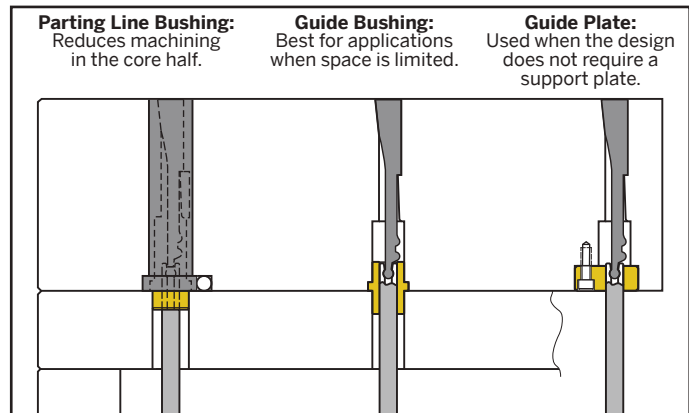


**Installation Options:**

**Parting Line Bushing:**  
Reduces machining in the core half.

**Guide Bushing:**  
Best for applications when space is limited.

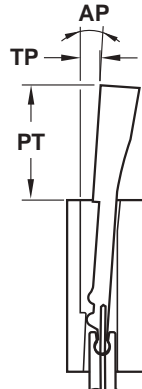
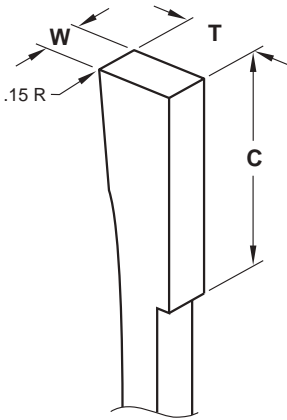
**Guide Plate:**  
Used when the design does not require a support plate.



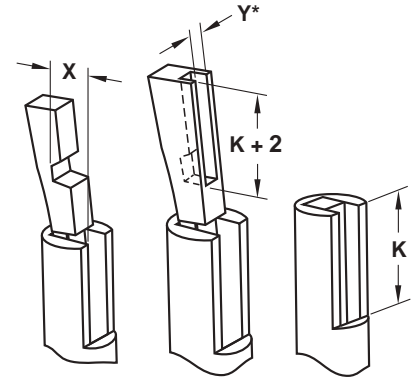
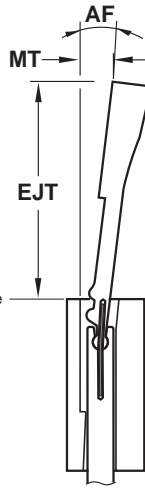


# LIFTER BLADES & CORES

**Preliminary Travel**  
For mechanical activation, removal of the pin will achieve the travel shown below, using any Bushing or Guide Plate installation.



**Maximum Travel**  
With the preload pin installed, the lifter arcs away from the undercut.



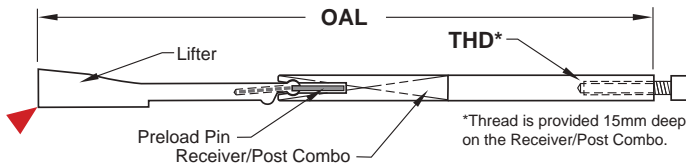
Machining guidelines shown above for all Lifter Assemblies when using the Parting Line Bushing or machining the detail in the core insert. Refer to the Undercut Limits in the chart below.

\*Note: On all Lifter Blades (LBA), the undercut must go through the Lifter; "Y" is not applicable.

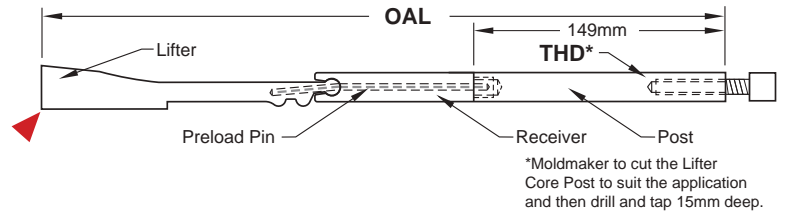
	CATALOG NUMBER	T -.004 -.009	W -.004 -.009	C ±.005	OAL Ref	TP Horiz. Prelim Travel	PT Prelim Ejection Length	AP Prelim Travel Angle	MT Max. Travel	EJT Full Ejection Length	AF Full Ejection Angle	S Maximum Stroke for Removal	THD Thread Size	Undercut Limits		
														X	Y	K
BLADES	LBA08X018	8	1.8	20	162	3	17	4.0°	6	38	8°	50	M4	3.0	N/A	15
	LBA08X024	8	2.4	20	162	3	17	4.0°	6	38	8°	50	M4	3.0	N/A	15
	LBA08X032	8	3.2	20	162	3	17	4.0°	6	38	8°	50	M4	3.0	N/A	15
	LBA08X042	8	4.2	20	162	3	17	4.0°	6	38	8°	50	M4	3.0	N/A	15
CORES	LCA09X06	9	6	26	246	6	26	6.0°	9	56	9°	65	M4	3.5	4	21
	LCA10X08	10	8	26	246	6	26	6.0°	9	56	9°	65	M4	4.0	6	21
	LCA12X10	12	10	30	256	8	32	6.5°	10	66	8°	75	M5	5.0	8	25
	LCA12X12	12	12	30	256	8	32	6.5°	10	66	8°	75	M5	5.0	10	25

▶ CAD insertion point

**Lifter Blade Assemblies:**  
Widths 1.8mm to 4.2mm



**Lifter Core Assemblies:**  
Widths 6mm to 12mm



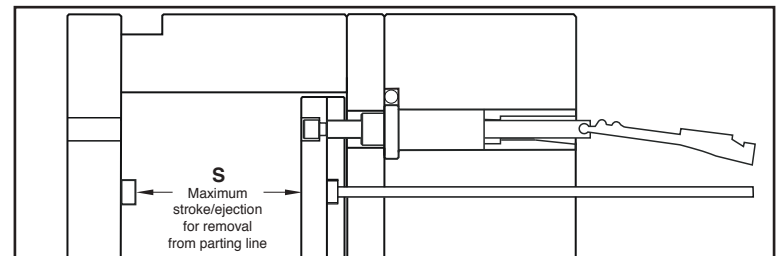
## Assembly Part Information:

PART NAME	MATERIAL/TREATMENT
Lifter	H-13, 50-52 HRC Nitride .25 Deep
Receiver	H-13, 50-52 HRC, Titanium Nitride
Post	P-20 Pre-Hard, Black Oxided
Preload Pin	M-2, 62-64 HRC

Note: On the Lifter Blade Assemblies (LBA), the Post and Receiver are a single piece, made from pre-hardened P-20 and TiN coated.

Replacement items are available. Contact Customer Service for pricing and delivery.

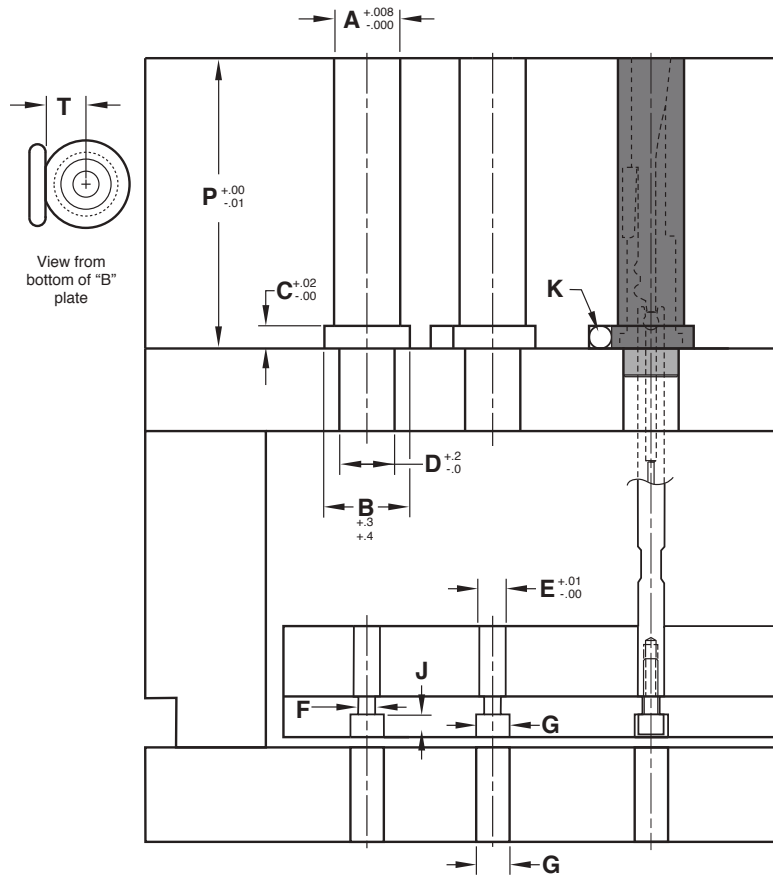
## Removability from Parting Line:



With ejector stops removed, the ejector plates can be moved forward to expose the Lifter Blade Assembly, and then the Lifter and the Preload Pin can slide sideways out of the Receiver/Post Combo. On the Lifter Cores, the Receiver can be unscrewed from the Post and then removed from parting line.

# LIFTER BLADES & CORES

## PARTING LINE BUSHING INSTALLATION

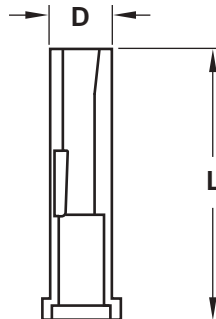


ASSEMBLY REF	A Diam.	B Diam.	C	D Diam.	E Diam.	F Diam.	G Diam.	J	K Dowel Size	T	P
LBA08X018	12	16	5	9.6	6	4.5	8	4.5	5	7	56
LBA08X024	12	16	5	9.6	6	4.5	8	4.5	5	7	56
LBA08X032	12	16	5	9.6	6	4.5	8	4.5	5	7	56
LBA08X042	12	16	5	9.6	6	4.5	8	4.5	5	7	56
LCA09X06	14	20	5	11	6	4.5	8	4.5	5	8.5	66
LCA10X08	16	22	5	13	6	4.5	8	4.5	5	9.5	66
LCA12X10	20	26	6	15	8	5.5	10	5.5	6	11	76
LCA12X12	20	26	6	15	8	5.5	10	5.5	6	11	76

## PARTING LINE BUSHINGS

### Features:

- Use of the Parting Line Bushing simplifies machining in the mold base.
- Each bushing assembly incorporates a wedge that creates a stop for the Lifter to avoid push back due to molding pressure.
- The Guide Bushing should be utilized with the Parting Line Bushings to locate and guide the Lifter Blade/Core Assembly in the support plate. The bushings, along with Guide Plates, are sold separately on page H-15.



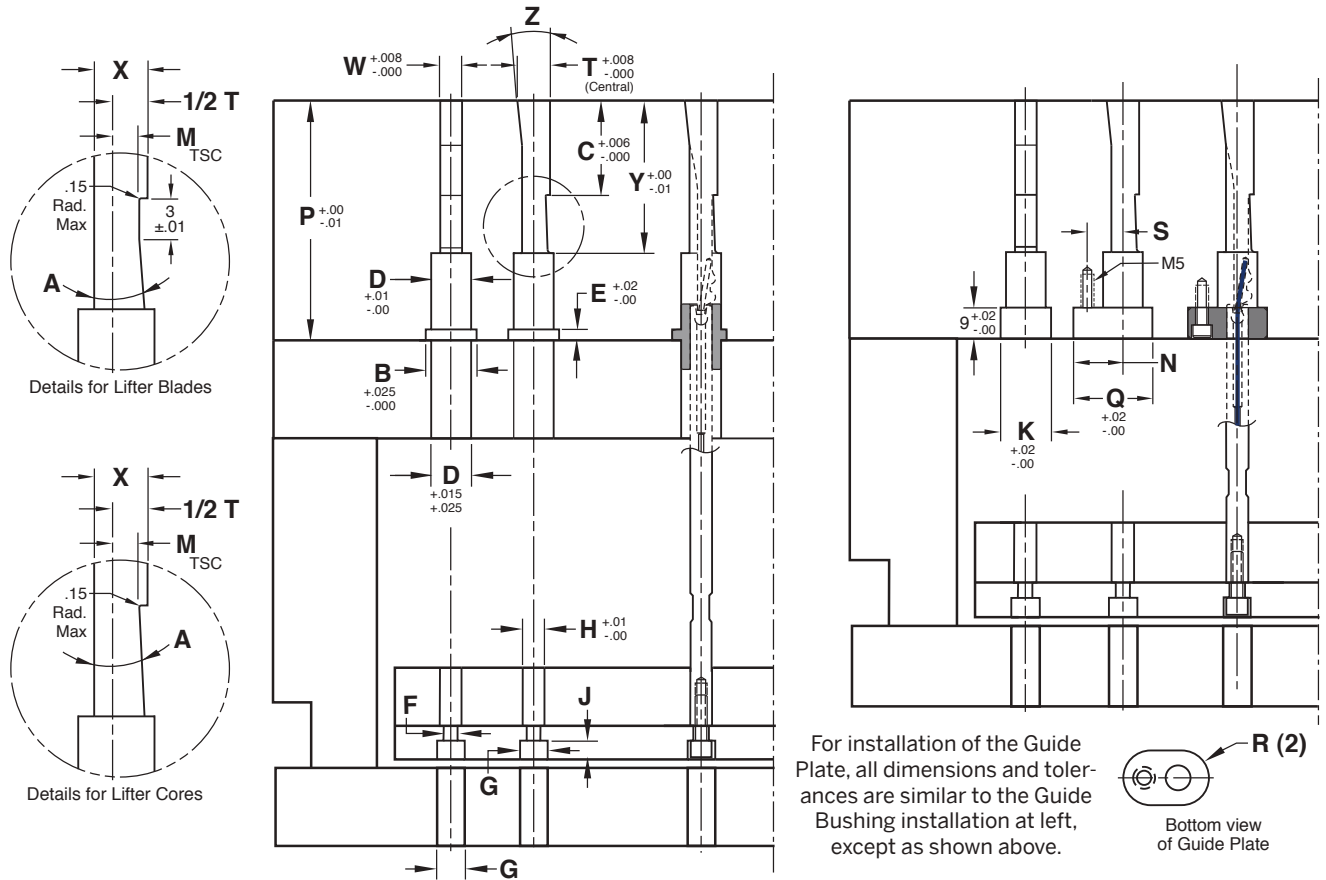
**M** A-2 **S** 58-60 HRC

CATALOG NUMBER	For Lifter Widths	D -.003 -.008	L ± .010
<b>LBB018</b>	1.8	12	56
<b>LBB024</b>	2.4	12	56
<b>LBB032</b>	3.2	12	56
<b>LBB042</b>	4.2	12	56
<b>LCB06</b>	6	14	66
<b>LCB08</b>	8	16	66
<b>LCB10</b>	10	20	76
<b>LCB12</b>	12	20	76



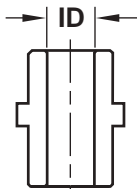
# LIFTER BLADES & CORES

## GUIDE BUSHING & GUIDE PLATE INSTALLATION



ASSEMBLY REF	T	W	X	C	Y	M	Z	A	D	B	E	F	G	H	J	K	N	Q	S	R	P
LBA08X018	8	1.8	7.3	20	28	3.1	5°	13.5°	9.6	12.8	3	4.5	8	6	4.5	12	18	24	12	6	56
LBA08X024	8	2.4	7.3	20	28	3.1	5°	13.5°	9.6	12.8	3	4.5	8	6	4.5	12	18	24	12	6	56
LBA08X032	8	3.2	7.3	20	28	3.1	5°	13.5°	9.6	12.8	3	4.5	8	6	4.5	12	18	24	12	6	56
LBA08X042	8	4.2	7.3	20	28	3.1	5°	13.5°	9.6	12.8	3	4.5	8	6	4.5	12	18	24	12	6	56
LCA09X06	9	6	7.7	26	46	3.3	6°	2°	11	14	3	4.5	8	6	4.5	14	18.5	26	12	7	66
LCA10X08	10	8	8.5	26	46	3.6	8°	2°	13	16	4	4.5	8	6	4.5	16	19.5	28	12	8	66
LCA12X10	12	10	10.1	30	55	4.2	8°	2°	15	20	4	5.5	10	8	5.5	18	20.5	30	13	9	76
LCA12X12	12	12	10.1	30	55	4.2	8°	2°	15	20	4	5.5	10	8	5.5	18	20.5	30	13	9	76

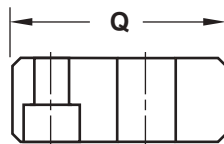
### GUIDE BUSHINGS



**M** CA954 Bronze **H** 170 Brinell

CATALOG NUMBER	For Lifter Widths	ID
LGB0696	1.8-4.2	6
LCGB0611	6	6
LCGB0613	8	6
LCGB0817	10 & 12	8

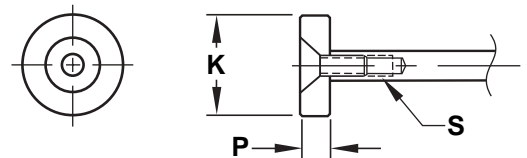
### GUIDE PLATES



**M** CA954 Bronze **H** 170 Brinell

CATALOG NUMBER	For Lifter Widths	Q
LGBP1212	1.8-4.2	24
LCGP1426	6	26
LCGP1628	8	28
LCGP1830	10 & 12	30

### ALTERNATIVE HEEL PLATES



**M** 4140 Pre-Hard **S** Black Oxided

CATALOG NUMBER	K	P	S
FCHP-4	16	4	M4 -.7
FCHP-5	16	4	M5 -.8







# COLLAPSIBLE CORES EXPANDABLE CAVITIES

## SECTION I



C-Cores: DT Series	DT Core Grinding Fixtures	DT Core Sub-10mm Series
Prefix: DT	Prefix: DTG	Prefix: S10
Page: I-1	Page: I-6	Page: I-7



C-Cores: RT Series	RT Core Grinding Rings	Expandable Cavities
Prefix: CC, CCM	Prefix: RTGR	Prefix: EXCAV
Page: I-9	Page: I-11	Page: I-12





# COLLAPSIBLE CORES

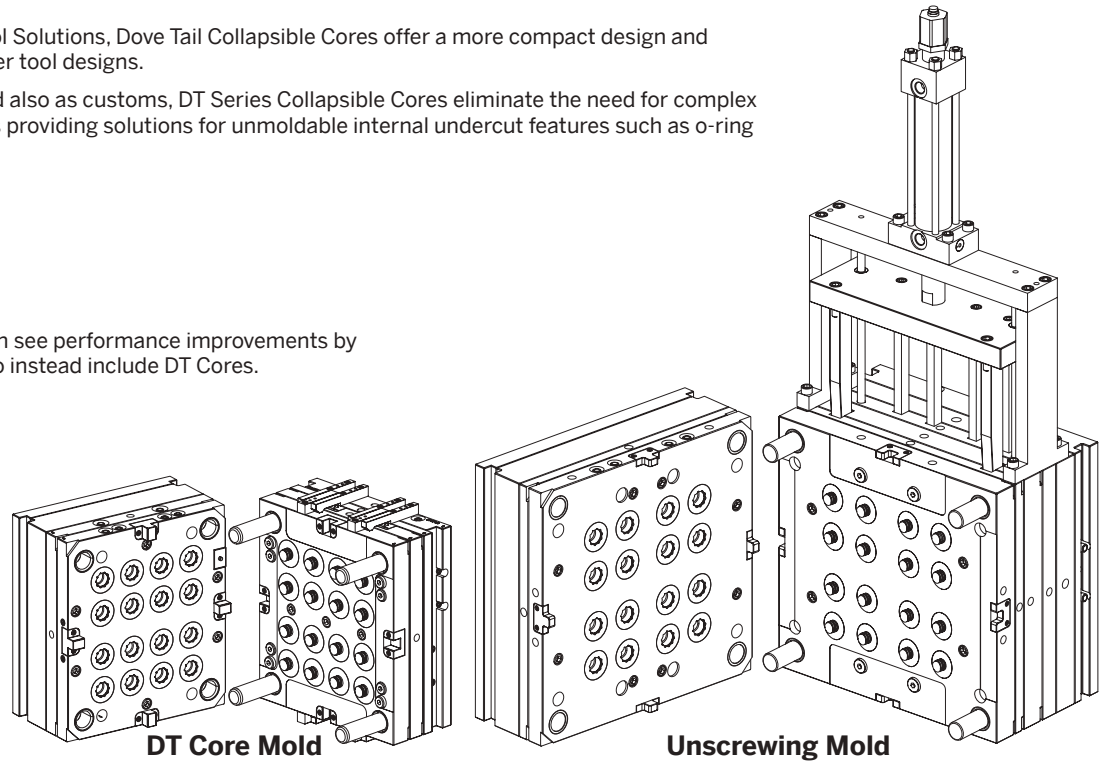
## DT SERIES

Through an alliance with Roehr Tool Solutions, Dove Tail Collapsible Cores offer a more compact design and simplified mold approach over other tool designs.

Available in four standard sizes and also as customs, DT Series Collapsible Cores eliminate the need for complex unscrewing mechanisms as well as providing solutions for unmoldable internal undercut features such as o-ring grooves, slots, and snap fit details.

DT Cores allow for:

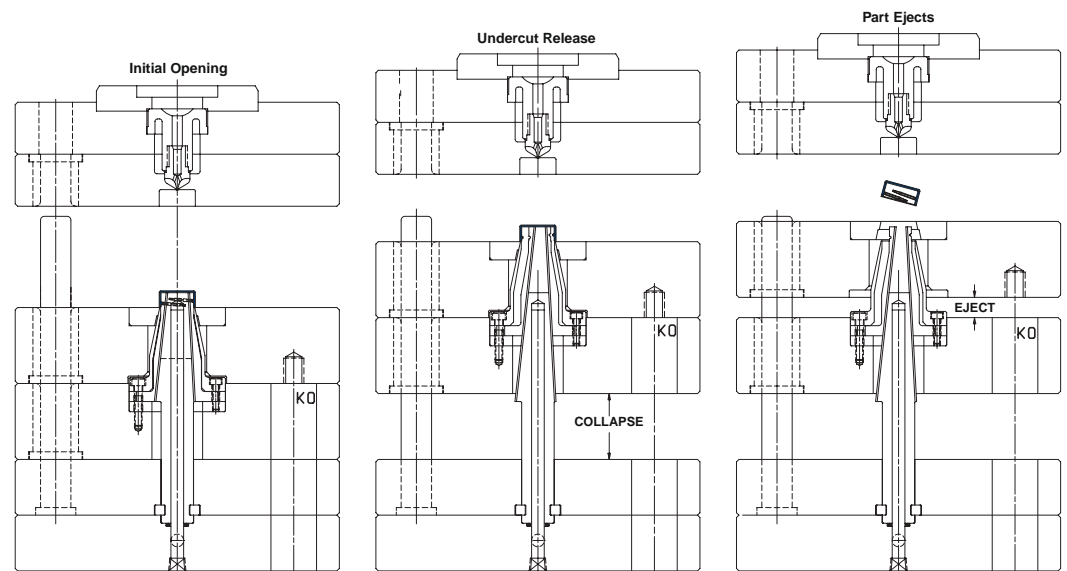
- Simplified, smaller molds
- Faster cycle times
- Improved part quality
- Reduced mold maintenance
- Existing unscrewing molds can see performance improvements by converting the movable half to instead include DT Cores.



The DT Collapsible Core is a positive, mechanically actuated collapsible core that eliminates complex gear and rack approaches, resulting in a simpler mold and a faster cycle time.

The maintenance advantage is dramatic due to a patented quick-lock feature that allows removal and servicing of the core unit while the mold is still in the press.

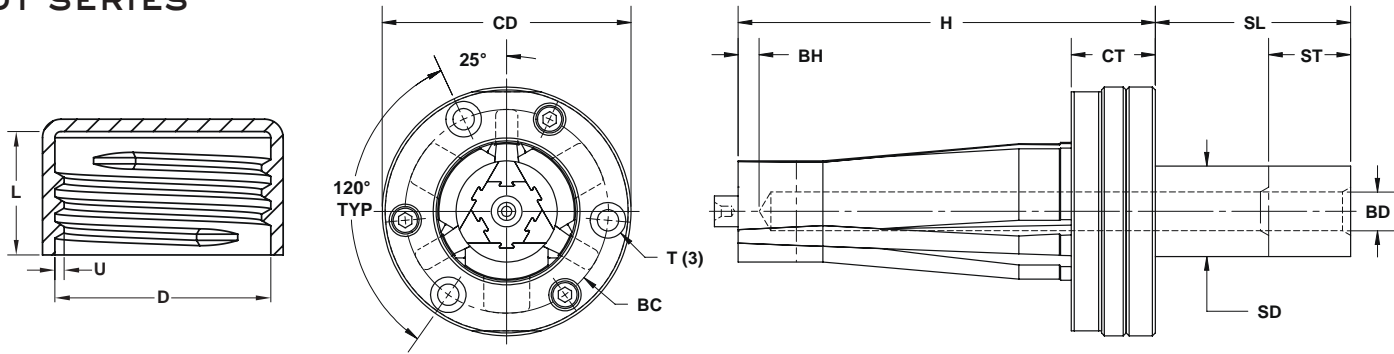
The DT Core's compact design allows for shorter stack height, tighter cavity spacing, and also creates opportunities for use in slides or on the stationary side of the mold.



DT Cores use a simple single stage collapse/eject sequence typically run by the machine KO.

# COLLAPSIBLE CORES

## DT SERIES



CATALOG NUMBER	D Maximum Outer Diameter	U Max Undercut	L Maximum Molding Length	ST Maximum Collapse Stroke	H Core Length	SD Shaft Diameter	BD Cooling Hole Diameter	BH Distance to Cooling Hole	SL Shaft Length	CD Carrier Diameter	CT Carrier Assembly Thickness	BC Mounting Screw Bolt Circle	T Mounting Screws (SHCS)
DT1010	10.00-10.99mm .394-.433in	.36mm .014in	7.5mm .295in	43.5mm 1.713in	87mm 3.425in	10.5mm .413in	3mm .1in	5mm .2in	58mm 2.283in	50mm 1.969in	21mm .827in	37mm 1.457in	M5 x 25
DT1111	11.00-11.99mm .433-.472in	.41mm .016in	8mm .315in	44.5mm 1.752in		12mm .472in	4mm .2in	5mm .2in	59mm 2.323in	52mm 2.047in	21mm .827in	38mm 1.496in	
DT1212	12.00-12.99mm .472-.511in	.46mm .018in	8.5mm .335in	45.5mm 1.791in	87mm 3.425in	14mm .551in	5mm .2in	5mm .2in	60mm 2.362in	54mm 2.126in	21mm .827in	41mm 1.614in	M5x25
DT1313	13.00-13.99mm .512-.551in	.51mm .020in	9mm .354in	46.5mm 1.831in		15.5mm .610in	6mm .2in	5mm .2in	62mm 2.441in	56mm 2.205in	21mm .827in	43mm 1.693in	
DT1414	14.00-14.99mm .551-.590in	.56mm .022in	9.5mm .374in	47mm 1.850in	87mm 3.425in	18mm .709in	8mm .3in	6mm .2in	61mm 2.402in	63mm 2.480in	24mm .945in	49mm 1.929in	M6x30
DT1515	15.00-15.99mm .591-.630in	.61mm .024in	10mm .394in	47.5mm 1.870in		22mm .866in	10mm .4in	6mm .2in	64mm 2.520in	69mm 2.717in	24mm .945in	55mm 2.165in	
DT1616	16.00-16.99mm .630-.669in	.66mm .026in	10.5mm .413in	48mm 1.890in	99mm 3.898in	28mm 1.102in	12mm .5in	6mm .2in	60mm 2.362in	77mm 3.031in	26mm 1.024in	63mm 2.480in	M6x30
DT1717	17.00-17.99mm .669-.708in	.71mm .028in	11mm .433in	48.5mm 1.909in		34mm 1.339in	14mm .6in	6mm .2in	64mm 2.520in	93mm 3.661in	27mm 1.063in	75mm 2.953in	
DT1819	18.00-19.99mm .709-.787in	.82mm .032in	12mm .472in	50mm 1.969in	129mm 5.079in	39mm 1.535in	17mm .7in	6mm .2in	65mm 2.559in	101mm 3.976in	32mm 1.260in	83mm 3.268in	M8x35
DT2021	20.00-21.99mm .787-.866in	.92mm .036in	12.5mm .492in	55mm 2.165in		42mm 1.654in	20mm .8in	6mm .2in	69mm 2.717in	110mm 4.331in	32mm 1.260in	90mm 3.543in	
DT2224	22.00-24.99mm .866-.984in	1.04mm .041in	13mm .512in	59mm 2.323in	151mm 5.945in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT2527	25.00-27.99mm .984-1.102in	1.20mm .047in	15mm .591in	66.5mm 2.618in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT2830	28.00-30.99mm 1.102-1.220in	1.36mm .053in	18mm .709in	71mm 2.795in	183mm 7.205in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT3133	31.00-33.99mm 1.220-1.338in	1.50mm .059in	21mm .827in	78mm 3.071in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT3436	34.00-36.99mm 1.339-1.456in	1.73mm .068in	22mm .866in	79mm 3.110in	161mm 6.339in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT3739	37.00-39.99mm 1.457-1.574in	1.88mm .074in	24mm .945in	85mm 3.346in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT4042	40.00-42.99mm 1.575-1.693in	2.06mm .081in	25mm .984in	86mm 3.386in	183mm 7.205in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT4345	43.00-45.99mm 1.693-1.811in	2.24mm .088in	27mm 1.063in	93mm 3.661in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT4648	46.00-48.99mm 1.811-1.929in	2.42mm .095in	28mm 1.102in	94mm 3.701in	183mm 7.205in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT4951	49.00-51.99mm 1.929-2.047in	2.57mm .101in	31mm 1.220in	99mm 3.898in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT5254	52.00-54.99mm 2.047-2.165in	2.77mm .109in	32mm 1.260in	100mm 3.937in	183mm 7.205in	50mm 1.969in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45
DT5557	55.00-57.99mm 2.165-2.283in	2.95mm .116in	34mm 1.339in	106mm 4.173in		58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	
DT5860	58.00-60.99mm 2.283-2.401in	3.10mm .122in	36mm 1.417in	111mm 4.370in	58mm 2.283in	22mm .9in	6mm .2in	85mm 3.346in	130mm 5.118in	39mm 1.535in	107mm 4.213in	M10x45	

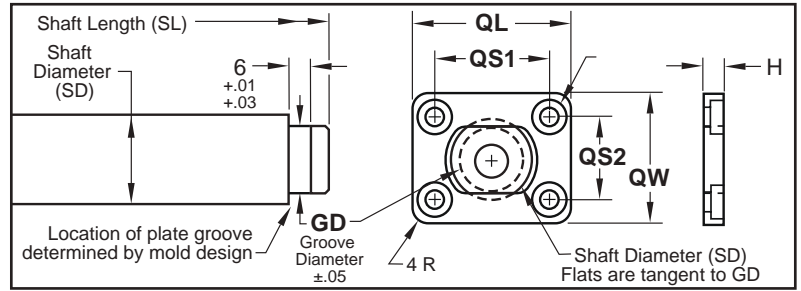
For sizes larger than 60mm, contact Roehr directly.



# COLLAPSIBLE CORES

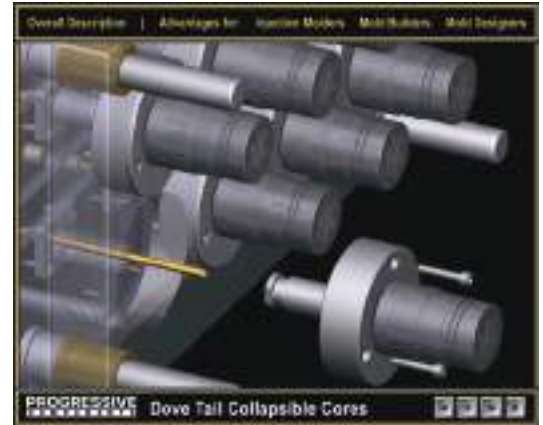
## DT SERIES QUICK LOCK PLATE

Utilizing the optional Quick Lock mounting configuration, the DT Core can be removed and serviced while the mold remains in the press. This feature allows for a higher cavitation percentage and lower maintenance costs than other tool design approaches.

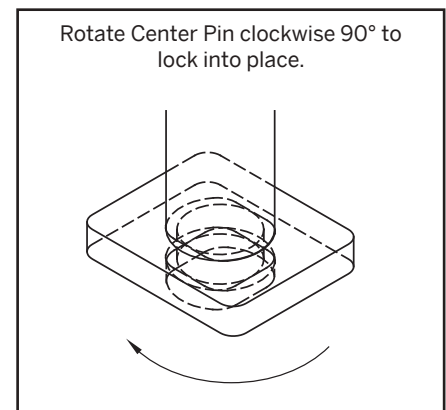
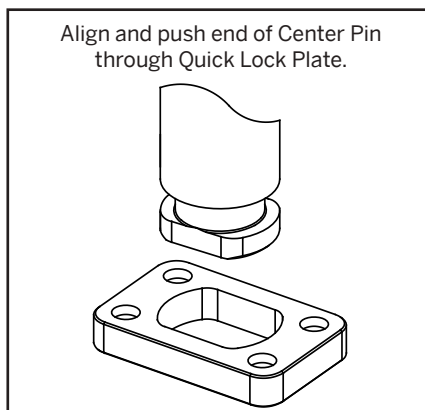
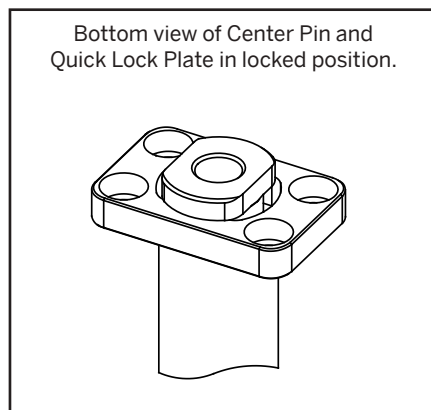


**M** A-2   **H** 54-57 HRC

CATALOG NUMBER	GD	QL +0.00 -0.05	QW +0.00 -0.05	QS1	QS2	H	B Mounting Screws
DTQLP1011	7.43mm .93in	26.01mm 1.024in	18.01mm .709in	17.50mm .689in	9.50mm .374in	4mm .1575in	M3 LHCS
DTQLP1213	9.02mm .355in	27.99mm 1.102in	18.01mm .709in	19.51mm .768in	9.50mm .374in	4mm .1575in	M3 LHCS
DTQLP1415	9.81mm .386in	30mm 1.181in	19.99mm .787in	21.49mm .846in	11.51mm .453in	5mm .1969in	M3 SHCS
DTQLP1617	10.60mm .417in	32mm 1.260in	22mm .866in	23.50mm .925in	13.49mm .531in	5mm .1969in	M3 SHCS
DTQLP1821	12.99mm .511in	35mm 1.378in	24.99mm .984in	24.99mm .984in	15.01mm .591in	6mm .2362in	M4 SHCS
DTQLP2227	16.16mm .636in	38mm 1.496in	27.99mm 1.102in	27.99mm 1.102in	18.01mm .709in	6mm .2362in	M4 SHCS
DTQLP2833	21.72mm .855in	43.99mm 1.732in	32mm 1.260in	34.01mm 1.339in	22mm .866in	6mm .2362in	M4 SHCS
DTQLP3439	25.69mm 1.011in	51.99mm 2.047in	40.01mm 1.575in	40.01mm 1.575in	27.99mm 1.102in	8mm .3150in	M5 SHCS
DTQLP4045	30.45mm 1.199in	56.01mm 2.205in	43.99mm 1.732in	43.99mm 1.732in	32mm 1.260in	8mm .3150in	M5 SHCS
DTQLP4651	34.42mm 1.355in	57.99mm 2.283in	46mm 1.811in	46mm 1.811in	34.01mm 1.339in	8mm .3150in	M5 SHCS
DTQLP5260	39.18mm 1.543in	65.99mm 2.598in	54mm 2.126in	53.01mm 2.087in	41mm 1.614in	10mm .3937in	M6 SHCS
DTQLP18	12mm .472in	35mm 1.378in	22mm .866in	25mm .984in	12mm .472in	6mm .236in	M4 SHCS
DTQLP28	15mm .591in	38mm 1.496in	25mm .984in	28mm 1.102in	15mm .591in	6mm .236in	M4 SHCS
DTQLP38	19mm .748in	41mm 1.614in	31mm 1.220in	30mm 1.181in	20mm .787in	6mm .236in	M4 SHCS
DTQLP48	23mm .906in	44mm 1.732in	35mm 1.378in	34mm 1.339in	25mm .984in	6mm .236in	M4 SHCS

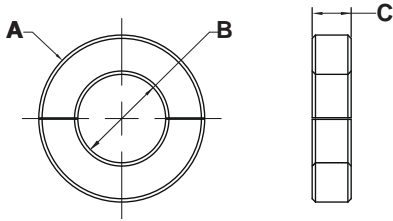


View the ability to remove a core from parting line at [www.procomps.com/demo](http://www.procomps.com/demo).

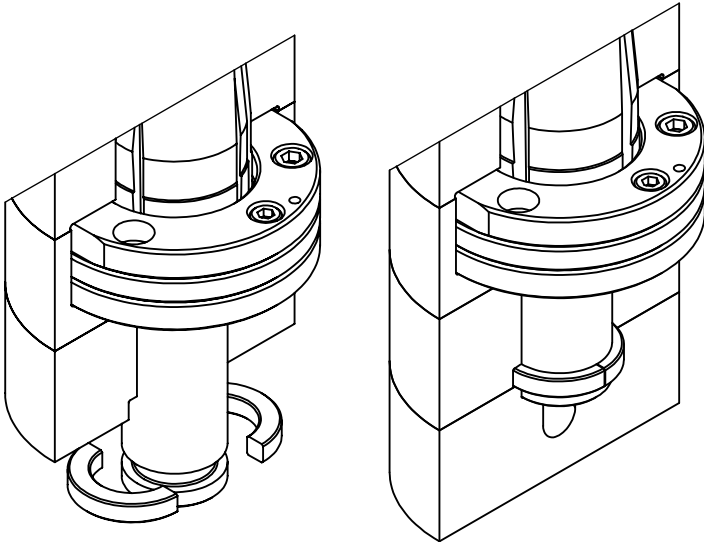


# COLLAPSIBLE CORES

## DT SERIES SPLIT RING



Utilizing the optional split ring allows for an alternative attachment method.



Assemble Core into Mold. Then collapse core to install split ring

Push Center pin forward to molding position and install back plate

**M** A-2 **H** 54-57 HRC

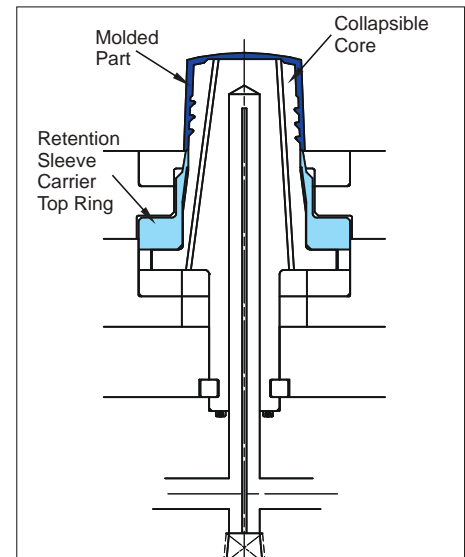
CATALOG NUMBER	A Outer Diameter	B Inner Diameter	C Thickness
DTSR1011	16mm .63in	7.95mm .313in	3.99mm .157in
DTSR1213	17.53mm .69in	9.53mm .375in	3.99mm .157in
DTSR1415	20.32mm .80in	10.31mm .406in	5mm .197in
DTSR1617	21.08mm .83in	11.13mm .438in	5mm .197in
DTSR1821	25.40mm 1.00in	13.49mm .531in	5.99mm .236in
DTSR2227	28.70mm 1.13in	16.66mm .656in	5.99mm .236in
DTSR2833	34.29mm 1.35in	22.23mm .875in	5.99mm .236in
DTSR3439	42.16mm 1.66in	26.19mm 1.031in	8mm .315in
DTSR4045	46.99mm 1.85in	30.96mm 1.219in	8mm .315in
DTSR4651	50.80mm 2.00in	34.93mm 1.375in	8mm .315in
DTSR5260	59.69mm 2.35in	39.70mm 1.563in	9.98mm .393in
DTSR18	24.89mm .98in	12.70mm .500in	6.35mm .250in
DTSR28	27.94mm 1.10in	15.88mm .625in	6.35mm .250in
DTSR38	34.80mm 1.37in	20.62mm .812in	6.35mm .250in
DTSR48	37.59mm 1.48in	25.40mm 1.000in	6.35mm .250in

# COLLAPSIBLE CORES

## DT SERIES RETENTION SLEEVE

Retention Sleeves for DoveTail Collapsible Cores assure the position of the molded part during core collapse and part ejection.

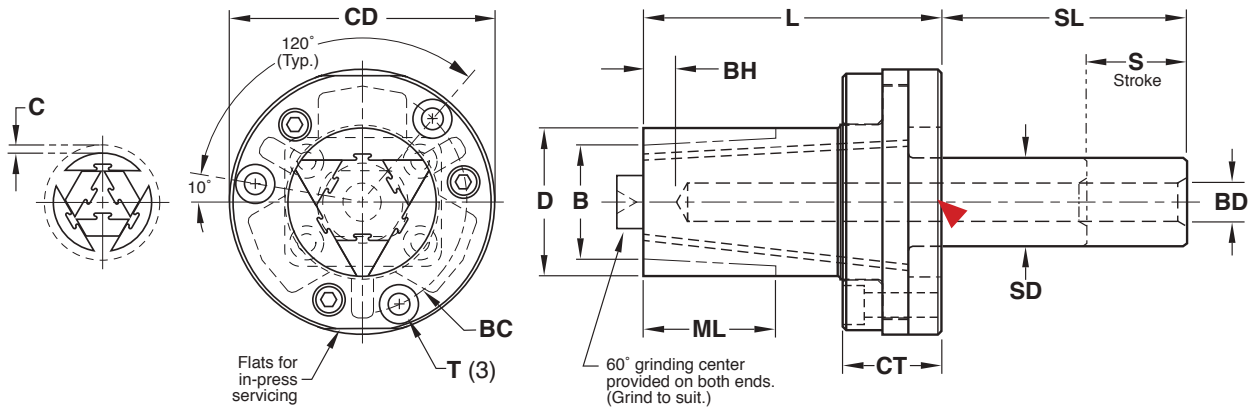
**M** D-2 **H** 60-62 HRC





# COLLAPSIBLE CORES

## DT SERIES



CAD insertion point

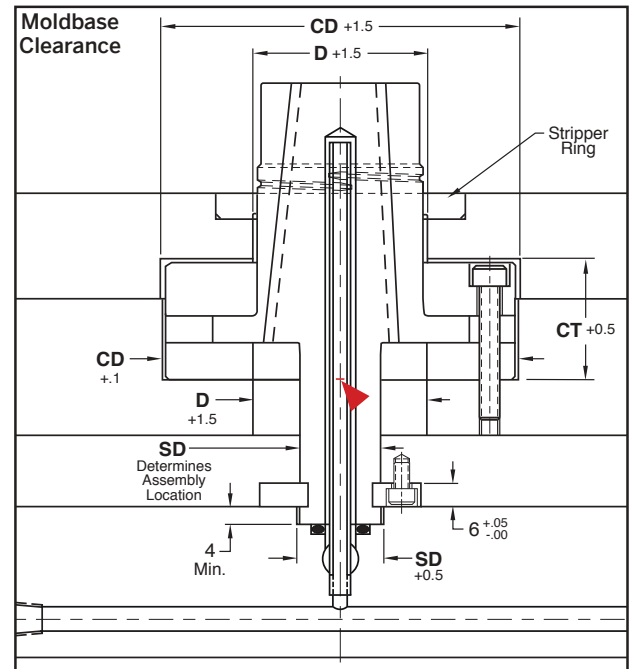
CATALOG NUMBER	D Maximum Outer Diameter	B Minimum Inner Diameter +3°/Side	ML Maximum Molding Length	C Maximum Collapse	CD Carrier Diameter +0.00 -0.05	CT Carrier Assembly Thickness ± 0.05	L Core Length +0.1 -0.0	SL Shaft Length	SD Shaft Diameter +0.00 -0.02	BD Cooling Hole Diameter	BH Distance to Cooling Hole	BC Mounting Screw Bolt Circle	T Mounting Screws	S Maximum Collapse Stroke
DT18	21mm .827in	17mm .669in	22mm .866in	1.1mm .043in	53mm 2.087in	21mm .827in	60mm 2.362in	60mm 2.362in	16mm .630in	6mm .236in	6mm .236in	40mm 1.575in	M5 x 25	34mm 1.339in
DT28	33mm 1.299in	25mm .984in	28mm 1.102in	1.6mm .063in	60mm 2.362in	22mm .866in	67mm 2.638in	60mm 2.362in	20mm .787in	8mm .315in	8mm .315in	47mm 1.850in	M5 x 25	38mm 1.496in
DT38	42mm 1.654in	33mm 1.299in	43mm 1.693in	2.1mm .083in	76mm 2.992in	28mm 1.102in	85mm 3.346in	60mm 2.362in	25mm .984in	10mm .394in	10mm .394in	60mm 2.362in	M6 x 35	54mm 2.126in
DT48	54mm 2.126in	42mm 1.654in	50mm 1.969in	2.4mm .094in	98mm 3.858in	37mm 1.457in	104mm 4.094in	70mm 2.756in	30mm 1.181in	12mm .472in	12mm .472in	78mm 3.071in	M8 x 40	62mm 2.441in

### Each Dove Tail Collapsible Core includes:

- DT Series Core/Pin/Carrier Assembly
- Split Ring
- All mounting screws

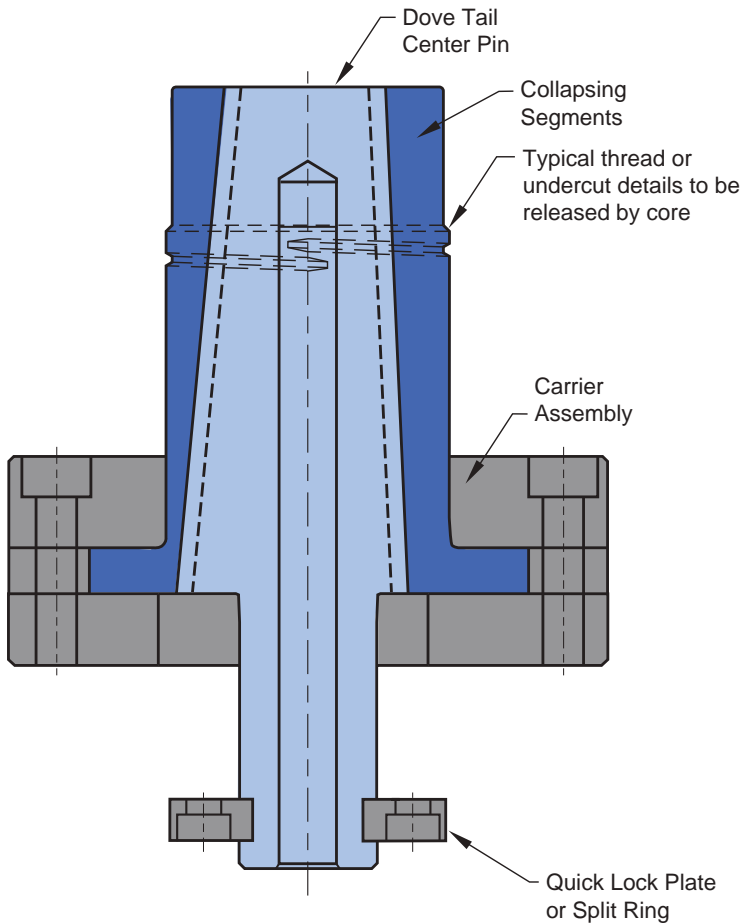
### Application Guidelines

- All standard DT Cores offer 360° molding of threads or other undercuts.
- Molded parts do not need to be closed at one end. They may be partially or completely open.
- In the chart above, the actual collapse is dependent upon the final major diameter ground onto DT core. Please email [information@roehrtool.com](mailto:information@roehrtool.com) for an application review prior to ordering the DT Cores.
- Stripper ring can be provided by moldmaker with either a tapered or straight fit, as shown in the machining guidelines at right.
- Parts with size requirements that fall outside of the standard sizes are available on a custom order basis.
- Roehr Tool can provide DT Cores with your thread and undercut details already machined. In addition, coatings and treatments may also be provided. Email your part drawing or application to [information@roehrtool.com](mailto:information@roehrtool.com) for a review.



# COLLAPSIBLE CORES

## DT SERIES OVERVIEW



### Collapsing Segments

**M** A-2 **H** 54-57 HRC

- Designed to mechanically collapse when the center pin is withdrawn.
- The fit between the segments is controlled to permit flash-free molding.

### Center Pin

**M** D-2 **H** 60-62 HRC

- Serves to expand the segments of the core to their molding position
- The pin may be flush to the core face.

### Carrier Assembly

**M** D-2 **H** 60-62 HRC

- Mounts DT Core assembly to the mold carrier plate.
- Provides guided and anti-rotational segment movement.

## GRINDING FIXTURES



**M** A-2 **H** 54-57 HRC **S** Black Oxide

CATALOG NUMBER	CORE SIZE
DTGF1011	DT1011
DTGF1213	DT1213
DTGF1415	DT1415
DTGF1617	DT1617
DTGF1821	DT1821
DTGF2227	DT2227
DTGF2833	DT2833
DTGF3439	DT3439
DTGF4045	DT4045
DTGF4651	DT4651
DTGF5260	DT5260

CATALOG NUMBER	CORE SIZE
DTGF18	DT18
DTGF28	DT28
DTGF38	DT38
DTGF48	DT48



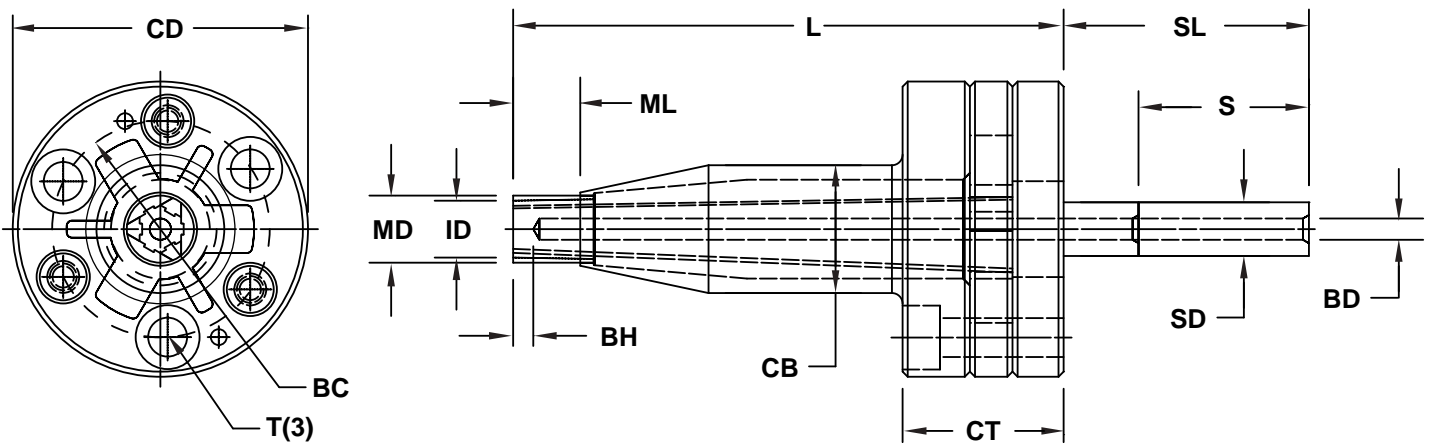


# COLLAPSIBLE CORES

## DT CORE SUB-IOMM SERIES

The Sub-10mm DT Cores make it possible to release very small threads and undercuts in molded caps, connectors and small medical applications.

- Allows molding of parts with 7-10mm ID.
- Quick Lock plates enable core removal from parting line.
- Simpler alternative to unscrewing molds.
- Reduces cycle time and maintenance requirements.

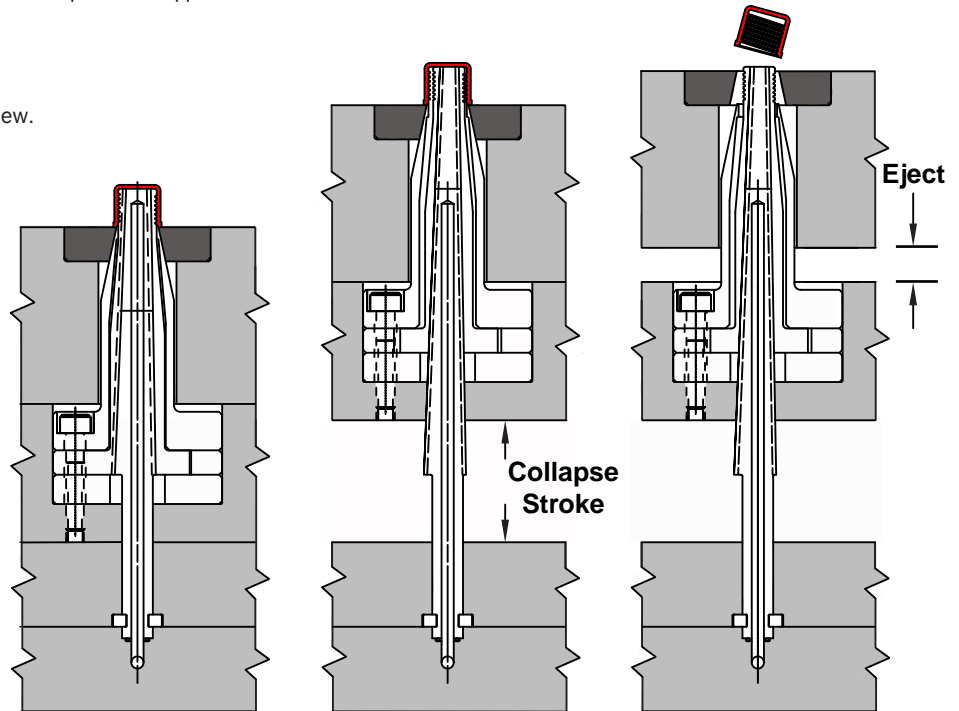
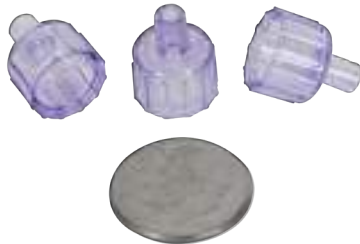


CATALOG NUMBER	MD Maximum Molding Diameter	ID Minimum Molding Diameter	ML Maximum Molding Length	UC Maximum Undercut	CD Carrier Assembly Diameter	CB Carrier Assembly Body	CT Carrier Assembly Thickness	L Length	SL Shaft Length	SD Shaft Diameter	S Maximum Collapse Stroke	BD Cooling Hole Diameter	BH Cooling Hole Height	BC Mounting Bolt Circle	T Mounting Bolt (3)
S10-Custom	10	7	10	.38	44	19	24	82	36	8	50	3	3	32	M5x25

NOTE: Submit part geometry to [information@roehrtool.com](mailto:information@roehrtool.com) for quotes and application review.

### Application Guidelines:

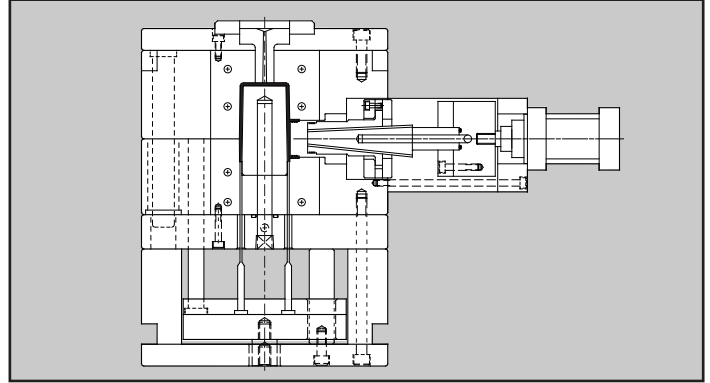
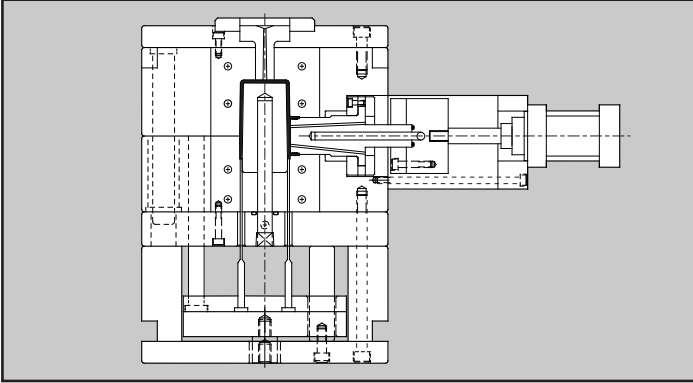
- Maximum undercut depth is determined by final molding diameter from application review.
- Collapse stroke is determined by undercut depth from application review.
- Cores are supplied complete with machined molding details.



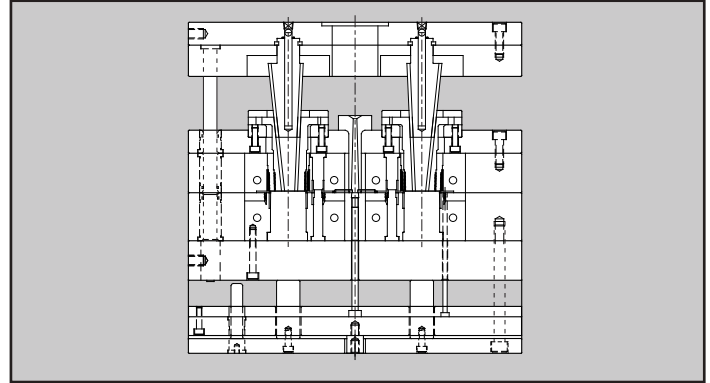
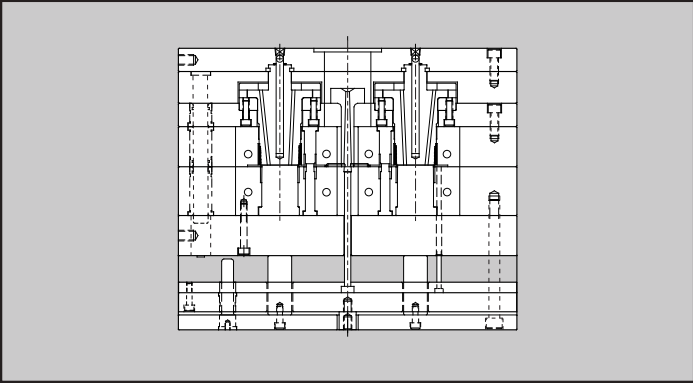
# COLLAPSIBLE CORES

## DT SERIES APPLICATIONS

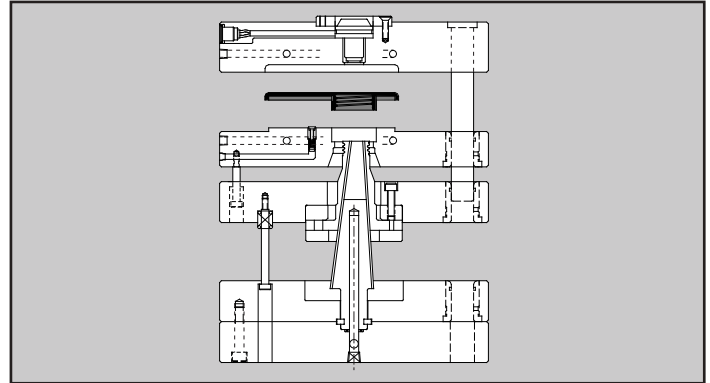
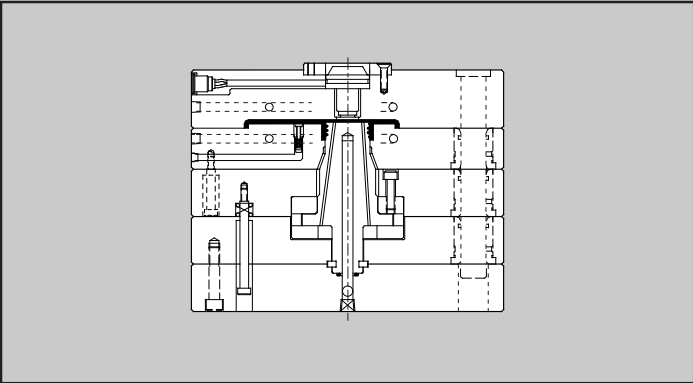
### Side Action



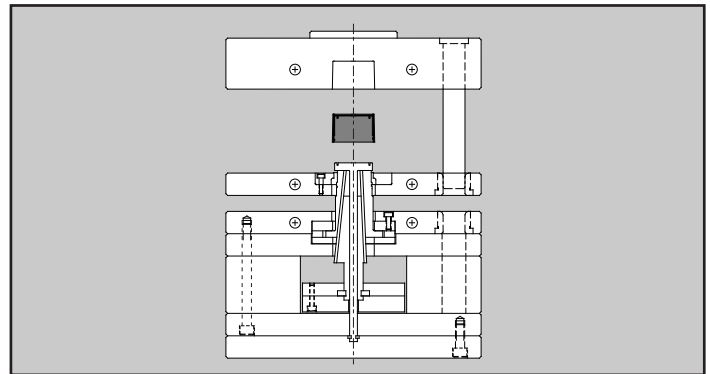
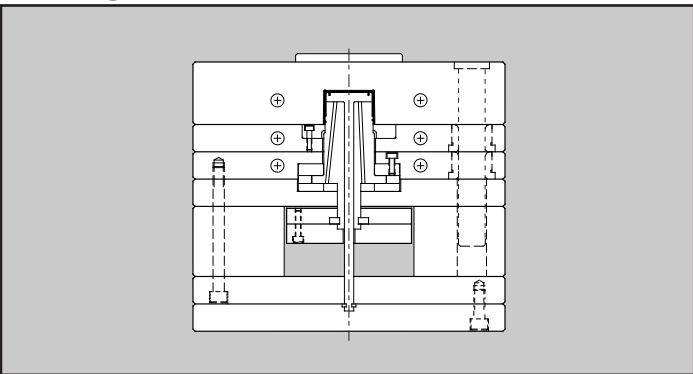
### Cavity Side



### Boss Detail



### Seal Ring





# COLLAPSIBLE CORES & MINICORES<sup>®</sup>

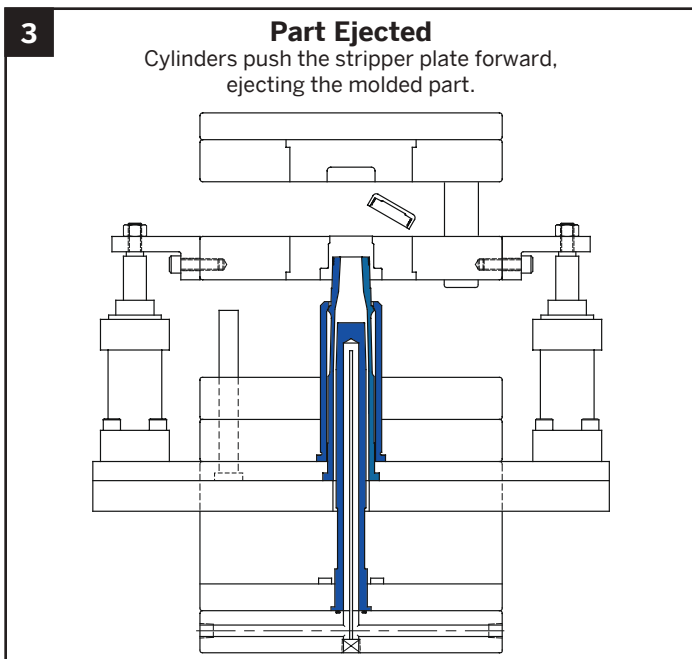
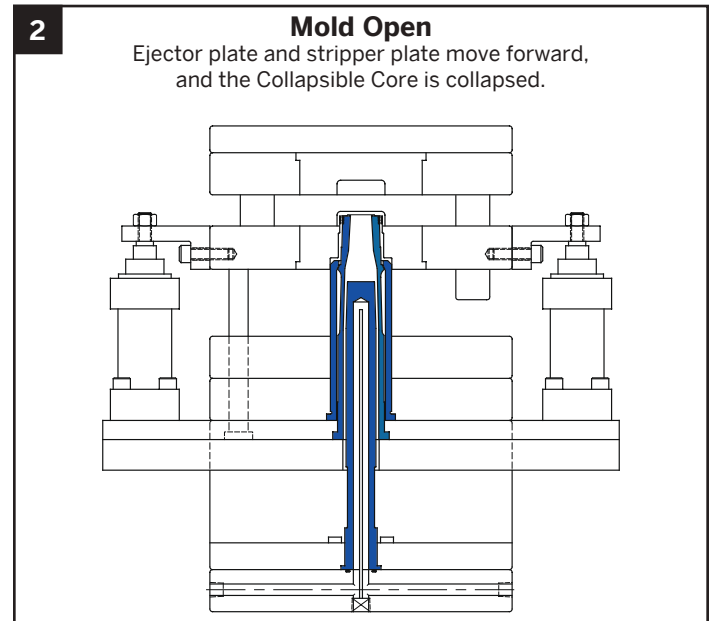
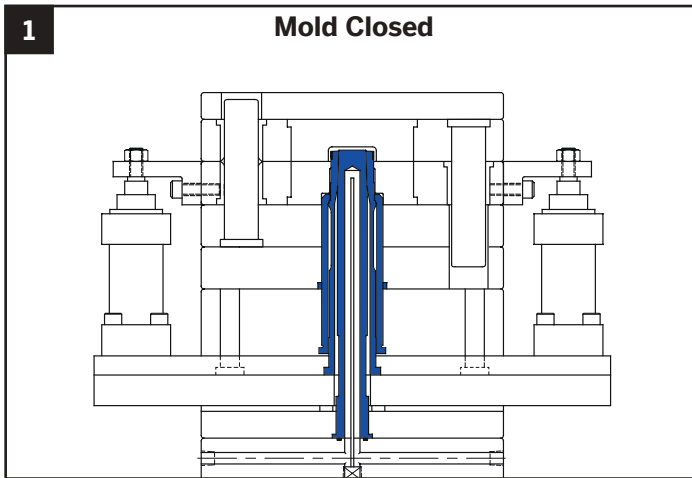
## RT SERIES

The RT Series Collapsible Cores are available in sizes to fit most inside detail applications. Whether molding threads or complex details, these cores can simplify design and production. Collapsible Cores allow for smaller molds to run faster cycles with less moving parts.

Standard sized Collapsible Cores (RT) and MiniCores (RT) are engineered and manufactured for Progressive Components through an alliance with Roehr Tool Solutions.

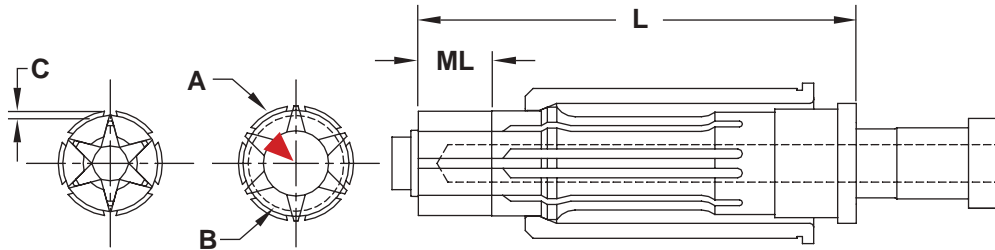
Made from premium tool steels and heat treated using proprietary heat treating methods.

Standard diameters range from 13mm to 105mm.



# COLLAPSIBLE CORES

## RT SERIES

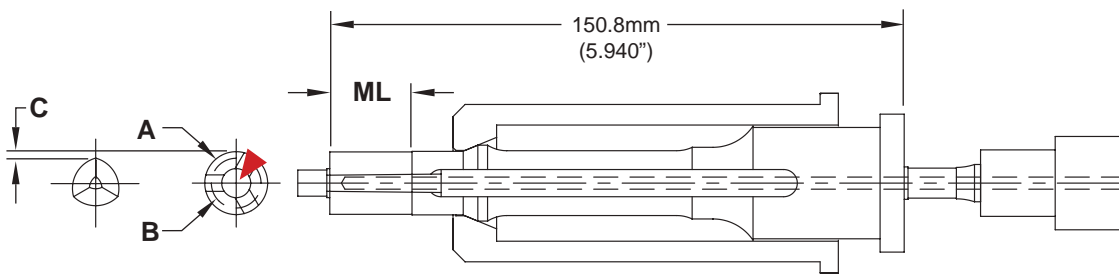


▶ CAD insertion point

CATALOG NUMBER	A Maximum Outer Diameter		B Minimum Inner Diameter		Center Pin Diameter (At top of Collapsible Core)		ML Max. Molded Length (Including Mold Shut-Off)		C Collapse per Side at Top of Core** (Range Shown)			L Length of Collapsible Core		
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
CC-125-PC	.720	18.29	.620	15.75	.485	12.32	.800	20.32	.027	.69	.032	.81	5.605	142.37
CC-150-PC	.850	21.59	.700	17.78	.580	14.73	1.000	25.40	.037	.94	.042	1.07	6.615	168.02
CC-175-PC	.970	24.64	.760	19.30	.640	16.25	1.000	25.40	.043	1.09	.048	1.21	6.615	168.02
CC-200-PC	1.270	32.25	.910	23.11	.785	19.93	1.150	29.21	.043	1.09	.048	1.21	7.315	185.80
CC-250-PC	1.270	32.25	.910	23.11	.785	19.93	1.150	29.21	.043	1.09	.048	1.21	5.440	138.17
CC-202-PC	1.390	35.30	1.010	25.65	.885	22.47	1.150	29.21	.055	1.39	.064	1.62	7.315	185.80
CC-252-PC	1.390	35.30	1.010	25.65	.885	22.47	1.150	29.21	.055	1.39	.064	1.62	5.440	138.17
CC-302-PC	1.740	44.19	1.270	32.25	1.105	28.06	1.400	35.56	.068	1.72	.083	2.10	7.315	185.80
CC-352-PC	1.740	44.19	1.270	32.25	1.105	28.06	1.400	35.56	.068	1.72	.083	2.10	6.065	154.05
CC-402-PC	2.182	55.42	1.593	40.46	1.388	35.25	1.700	43.18	.090	2.28	.103	2.61	7.815	198.50
CC-502-PC	2.800	71.12	2.060	52.32	1.750	44.45	1.900	48.26	.115	2.92	.125	3.17	9.625	244.47
CC-602-PC	3.535	89.78	2.610	66.29	2.175	55.24	2.400	60.96	.140	3.55	.148	3.75	11.250	285.75
CC-652-PC	3.800	96.52	2.890	73.41	2.450	62.23	2.400	60.96	.150	3.81	.160	4.06	11.250	285.75
CC-702-PC	4.225	107.31	3.350	85.09	2.790	70.86	2.400	60.96	.165	4.19	.170	4.32	11.250	285.75

# MINICORES®

## RT SERIES



CATALOG NUMBER	For Closure Diameter Range	A Maximum Outer Diameter		B Minimum Inner Diameter		Center Pin Dia. (At top of Collapsible Core)		Width of (3) Non-Collapsing Center Pin Blades (At Top of Core)		ML Max. Molded Length (Including Mold Shut-Off)		C Collapse per Side at Top of Core	
		mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
CCM-0001	13-16	.645	16.38	.425	10.80	.300	7.62	.170	4.32	.850	21.59	.052	1.32
CCM-0002	17-20	.805	20.45	.560	14.22	.420	10.67	.190	4.83	.850	21.59	.057	1.45
CCM-0003	21-24	.965	24.51	.710	18.03	.560	14.22	.200	5.08	1.000	25.40	.059	1.50

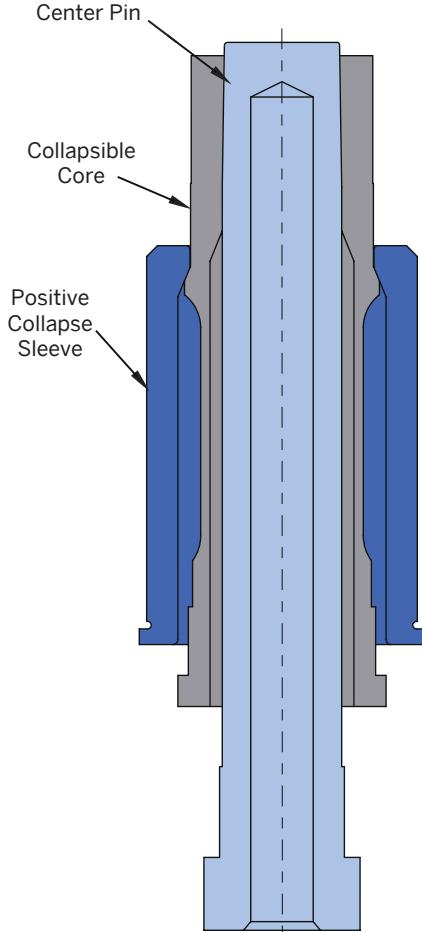


# COLLAPSIBLE CORES & MINICORES®

## RT SERIES

### Description of Components and Basic Operation

Both styles of the Collapsible Cores (Standard and MiniCores®) are three-part assemblies, designed for simplicity of installation, reliability in operation, and long life. The three parts include a Collapsible Core, a Positive Collapse Sleeve, and a Center Pin.



#### Collapsible Core

**M** A-2 **H** 54-57 HRC

- Designed to collapse independently when the center pin is withdrawn.
- The fit between segments is controlled to permit flash-free molding.

#### Positive Collapse Sleeve

**M** 52100 **H** 54-57 HRC

- Designed to function when the Collapsible Core fails to collapse independently. In normal operation, the PC Sleeve is not functioning. It is essential to have such a unit for maximum safety and reliability in automatic and semi-automatic operation.

#### Center Pin

**M** D-2 **H** 60-62 HRC

- Serves to expand the segments of the Collapsible Core to their molding position.
- The pin must protrude beyond the face of the collapsing core segments, and it must have a radius around its top edge to operate properly.

#### Application Guidelines

- Standard Collapsible Cores have a Max. OD ("A") of thread or configuration ranging from .720" (18.29mm) - 4.225" (107.31mm) and offer complete 360° thread or undercut geometry.
- MiniCores have a Max. OD of thread or configuration ranging from .645" (16.38mm) - .965" (24.51mm) and offer up to 70% full thread or undercut geometry. (Internal geometry is interrupted in three places to allow core segments to collapse.)
- Molded parts do not need to be closed at one end. They can be partially or completely open. Also, undercuts do not need to be continuous.
- Cores are capable of operating without benefit of lubrication, however, treating the Collapsible Core with an additional treatment for wear reduction or corrosion resistance is beneficial.
- Custom cores with size requirements that fall outside of the standard Collapsible Core and MiniCore ranges are available. In addition, finished cores with machined, EDM'd, or ground details can be supplied. Contact [information@roehrtool.com](mailto:information@roehrtool.com) for an application review and quotation.

## RT CORE GRINDING RINGS

Grinding Rings for Collapsible Cores securely hold the core segments in place against the center pin when grinding or EDM'ing details.

**M** Aluminum **S** Black Anodize

CATALOG NUMBER	CORE SIZE (PREFIX CC)
RTGR125	125
RTGR150	150/175
RTGR200	175/200/202/250/252
RTGR300	302/352
RTGR400	402
RTGR500	502
RTGR600	602
RTGR650	652
RTGR700	702

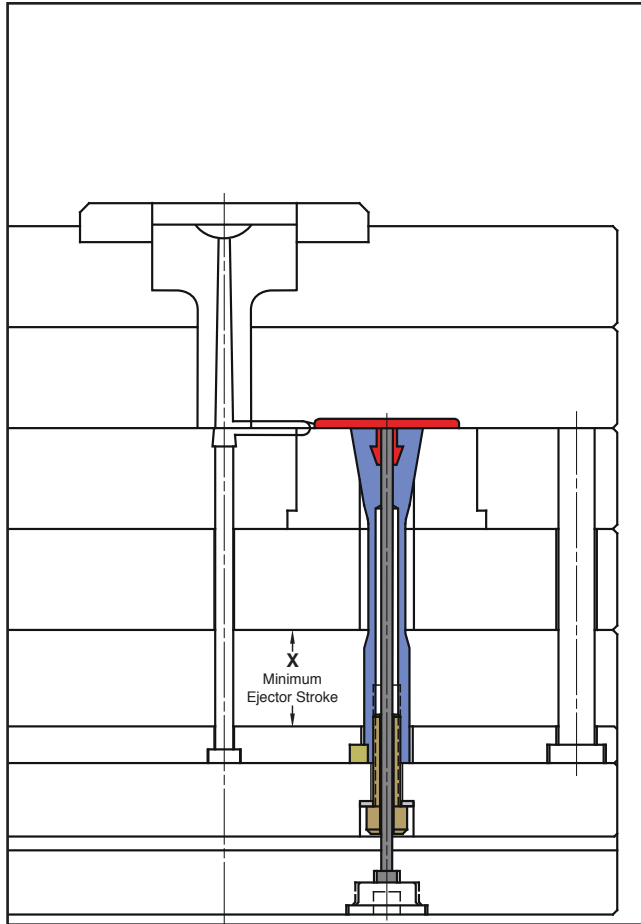


## EXPANDABLE CAVITIES

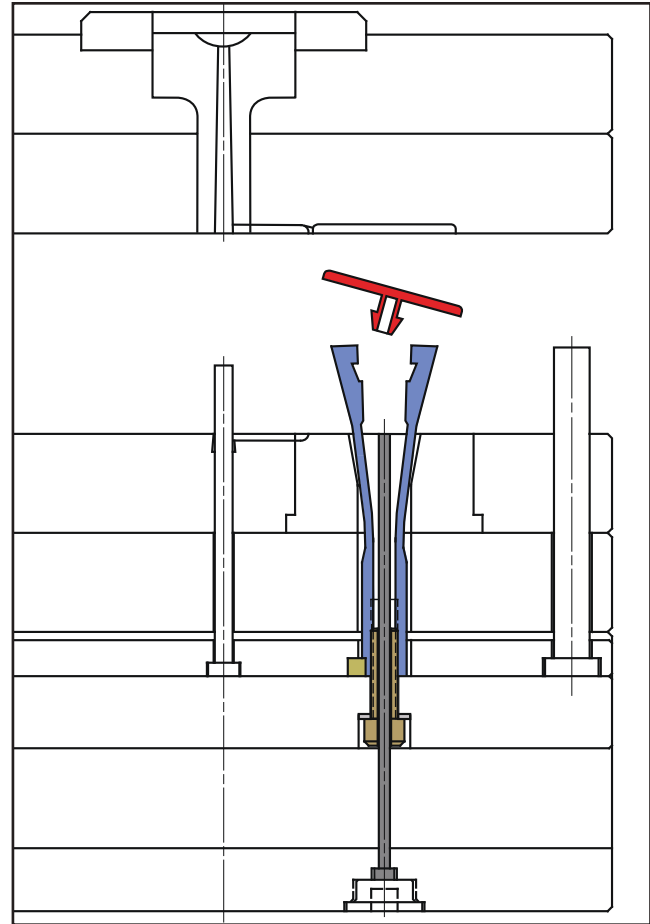
EX-CAV<sup>®</sup> SYSTEM

Expandable Cavities mold undercuts such as threads, dimples, and protrusions. The patented Ex-Cav design eliminates the engineering, maintenance, and machining required for side action mechanisms which results in smaller molds or higher mold cavitation.

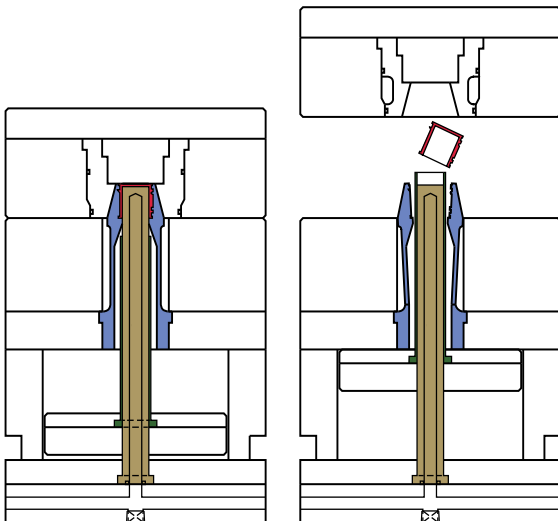
Standard sized Expandable Cavities (Ex-Cavs) are engineered and manufactured for Progressive Components through an alliance with Roehr Tool Solutions.



Mold Closed



Mold Open

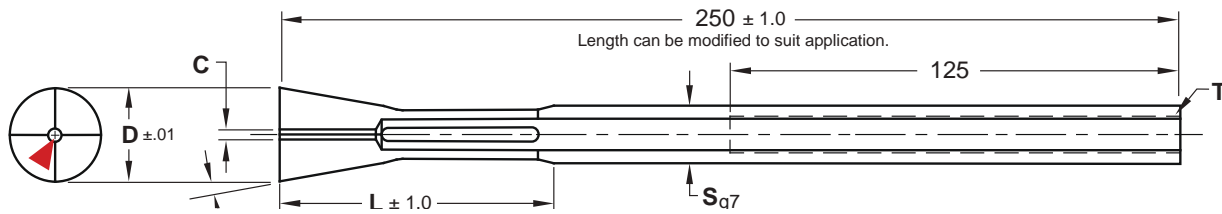
**Technical Information:**

- Four sizes offered to satisfy a wide range of parts.
- The Ex-Cav expands along a conical shape, 10° per side.
- Manufactured from A-2, 54-57 HRC material for repeatable expansion. For optimal performance, the Ex-Cavs should ride against a hardened insert.
- Maximum temperature: 260°C / 500° F
- Expandable Cavities are capable of operating without lubrication.
- However, treating the Ex-Cav with an additional coating for wear reduction or corrosion resistance is beneficial.
- Ex-Cavs can be ordered with molding detail for a 'mold ready' component.
- Fixturing bushings for machining details in house are also available.
- Custom Ex-Cavs are available. Also, when an entire part is formed within the cavity, an A-Series Ex-Cav can be provided, shown at left.



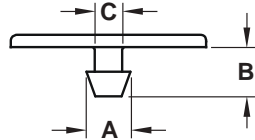
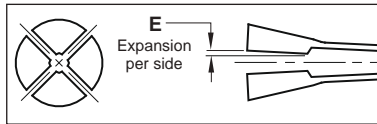
# EXPANDABLE CAVITIES

## EX-CAV® SYSTEM



**M** A-2    **H** 54-57 HRC

CAD insertion point



CATALOG NUMBER	D Ex-Cav Diameter	A Maximum Part Diameter -10 per side	B Maximum Molding Length	C Minimum Part Inner Diameter	E Expansion Per Side	F Min. Wall Thickness	L	S Body Diameter	T Thread	X Minimum Ejection Stroke (Prev. page)
EXCAV20	20	14	13	2.5	1.6	3	59	14	M8	15
EXCAV26	26	18	20	3.5	2.5	4	76	16	M10	15
EXCAV38	38	30	27	4.0	3.0	4	89	27	M18	20
EXCAV50	50	40	39	5.5	3.5	5	101	34	M24	20

Mounting kits sold separately below.  
Ex-Cav sizes outside of this chart are available as customs.

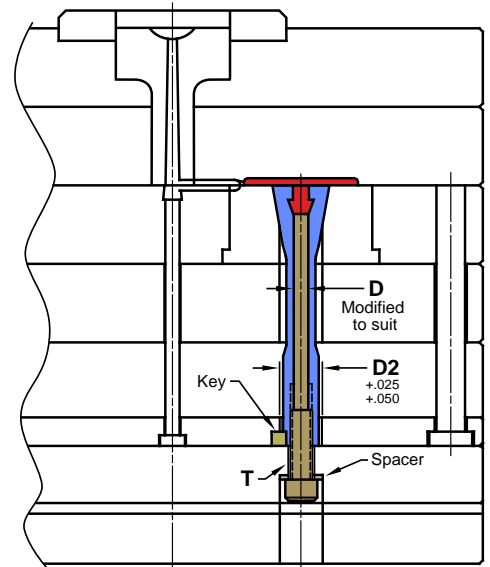
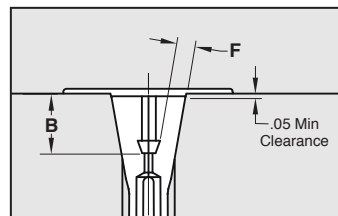
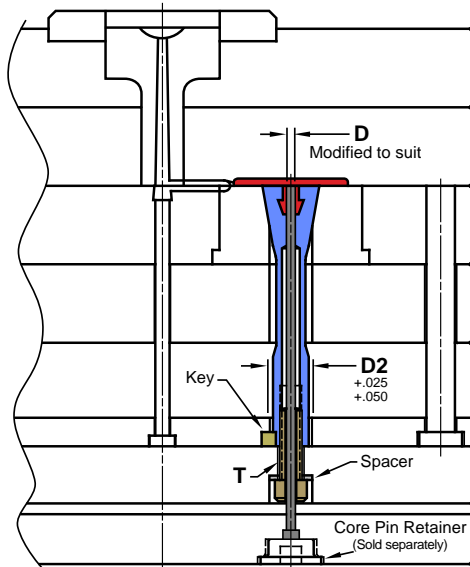
## MOUNTING KITS & MACHINING SPECS

### Hollow Bolt Mounting Kit Includes:

- Key (7 Thk. x 8 x 40)
- Hollowed Bolt
- Standard DIN H-13 Ejector Pin (400mm Long)
- Spacer

### Pin Bolt Mounting Kit Includes:

- Key (7 Thk. x 8 x 40)
- Threaded Bolt/Pin (H-13, 40-44 HRC, 280mm Long)
- Spacer



EX-CAV NUMBER	D Nominal Pin Diameter	T Bolt Size	Spacer Size (IDxODxThk)	D2	HOLLOW BOLT KIT NUMBER
EXCAV20	3.5	M8-1.25 x 40	8x22x4	14	EXC20BH
EXCAV26	4	M10-1.5 x 40	10x23x4	16	EXC26BH
EXCAV38	10	M18-2.5 x 50	19x33x6	27	EXC38BH
EXCAV50	14	M24-3 x 55	25x42x6	34	EXC50BH

EX-CAV NUMBER	D Pin Diam. ± .05	T Bolt Thread	Spacer Size (IDxODxThk)	D2	PIN BOLT KIT NUMBER
EXCAV20	6.0	M8-1.25	8x22x4	14	EXC20BP
EXCAV26	7.7	M10-1.5	10x23x4	16	EXC26BP
EXCAV38	14.5	M18-2.5	19x33x6	27	EXC38BP
EXCAV50	19.8	M24-3	25x42x6	34	EXC50BP

Replacement DIN Ejector Pins are sold on page A-4.  
Core Pin Retainers are sold on pg A-19.







# PLATE SEQUENCE CONTROL

## SECTION J



Plate Locks	Friction Puller	Roller Puller
Prefix: PLC, PLCM, PLN	Prefix: FP	Prefix: RPL
Page: J-1	Page: J-7	Page: J-8



StackKit System
Prefix: SK
Page: J-9



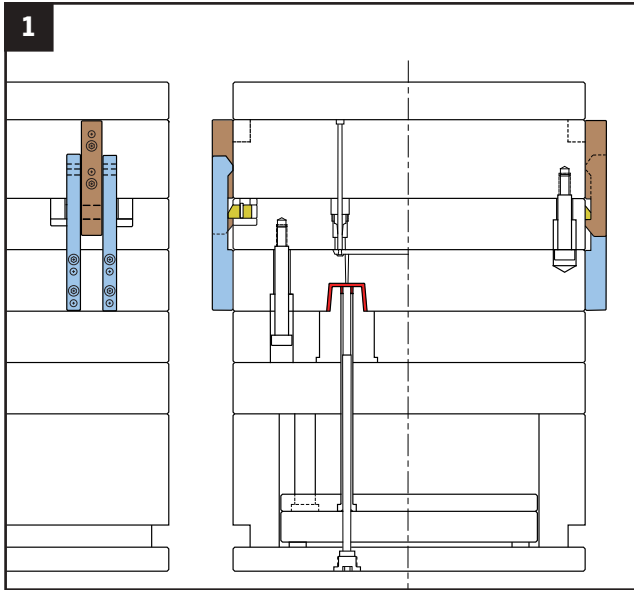


# PLATE LOCKS

## EXTERNAL CAM-DRIVEN SYSTEM

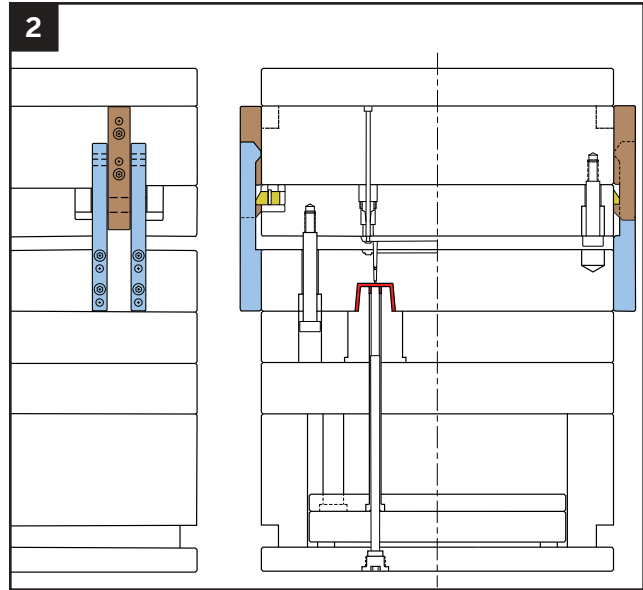
The Cam-Driven External Plate Locks allow for parting line sequencing via a versatile design with minimal machining for different applications, including:

- 3-Plate Sequencing
- Dual Ejection
- Stripper Plate Sequencing



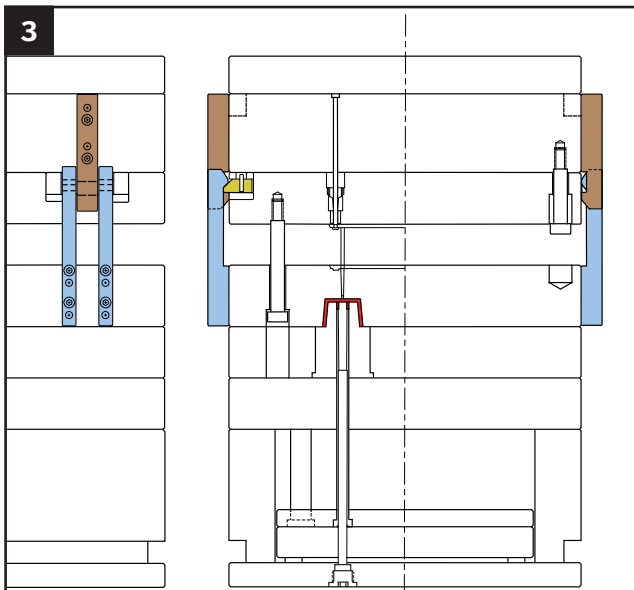
### Mold Closed: Lock Engaged

In this 3-plate application, three parting lines are utilized for ejecting the part and runner.



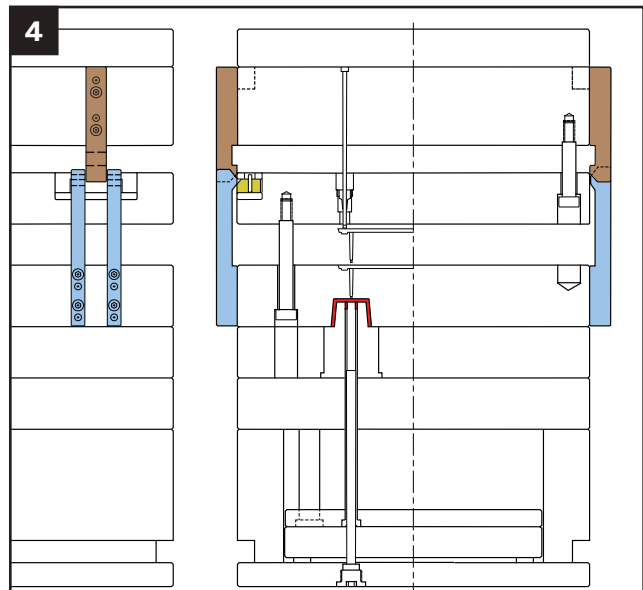
### First Parting Line Opens

The Puller Pin pulls the runner and breaks the gate, while parting line #2 is held closed by the Plate Lock.



### Stroke Continues

The Plate Lock release point is reached and the 2nd parting line begins to open.



### Second Parting Line Opens

With parting line #1 and #2 fully open, the mold continues to open with parting line #3 next, and the part is then ejected.

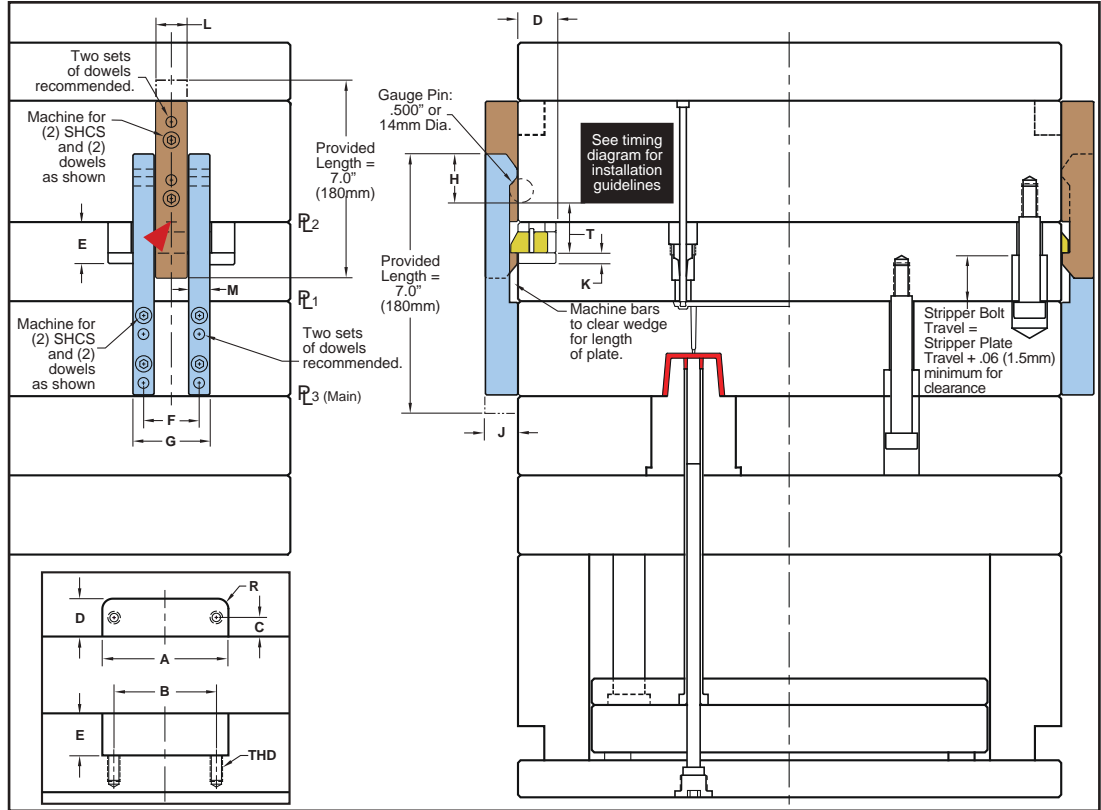
- On molds that are 12" wide (or more), Progressive recommends four assemblies, two sets per side on the opposite ends of the mold.
- Using four assemblies of the -S version (to push plates) is recommended for plates 12" or greater in width.

# PLATE LOCKS

## 3-PLATE APPLICATION

### Design & Installation Guidelines:

- Determine mold stroke.
- Determine stripper bolt travel (.06 minimum clearance past release point).
- Determine the cam bar length by utilizing the gauge pin diagram. Reference [procomps.com/platelockguide](http://procomps.com/platelockguide) for more detailed explanation.
- Machine the latch bar so that with the mold closed there is .001" clearance between the wedge block and latch bar (see graphic #1).
- Machine (2) fasteners and (2) dowels for latch and cam bar as shown.



### Inch Standard

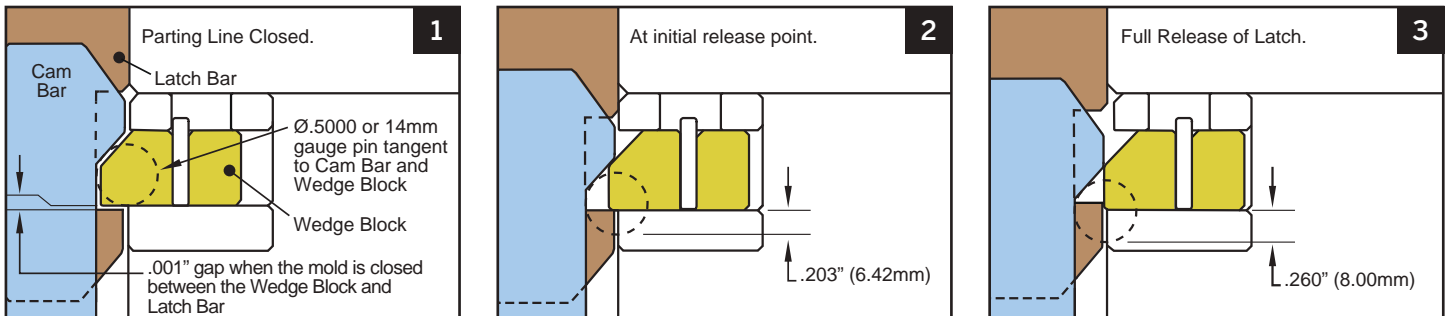
CATALOG NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	R	THD
PLC75	+0.01 -0.00	±.005	±.005	+0.01 -0.00	+0.01 -0.00	±.005	REF	REF	.750	+0.00 -0.001	.750	.500	Pocket	1/4-20 x .50 Deep

CAD insertion point

### Metric Standard

CATALOG NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	R	THD
PLCM20	+0.03 -0.00	±1	±1	+0.03 -0.00	+0.03 -0.00	±1	REF	REF	20	+0.00 -0.03	20	14	Pocket	M6-1.0 x 10mm Deep

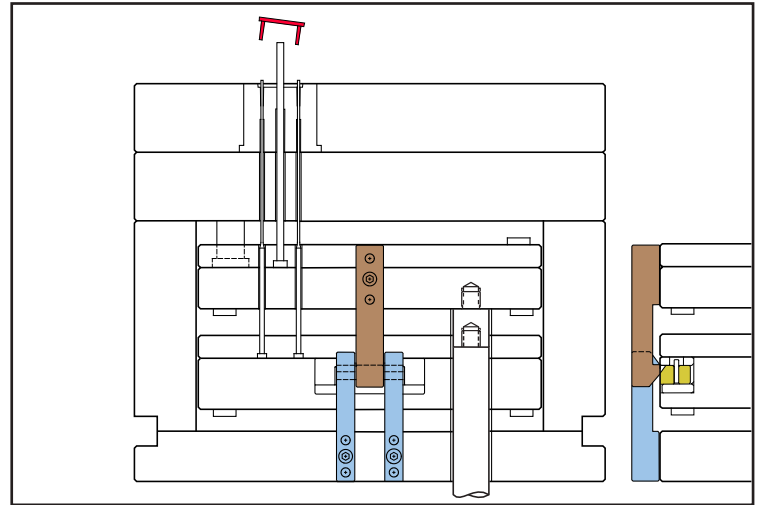
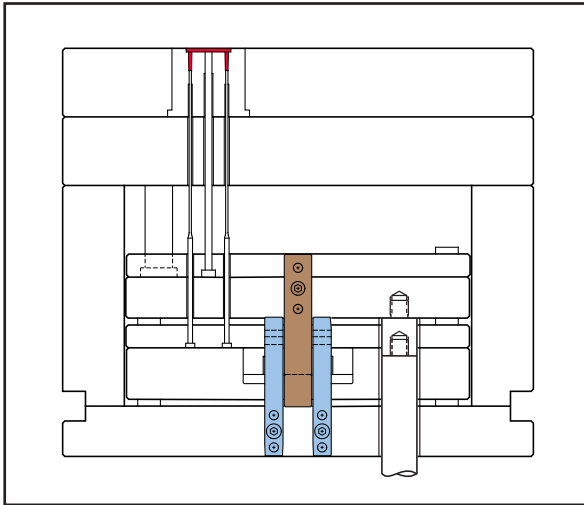
### Timing Diagram for Cam Bar Release Point



- In graphic #1 above, Cam Bar location is shown when the Ø.5000 gauge pin is tangent in three places.
- In graphic #2, from tangency of pin, the Cam Bar must travel .203" to initial release.
- In graphic #3, the Cam has engaged the Wedge and traveled .260 total in the mold open direction fully releasing the Latch.
- Example: To calculate the initial release point for a 1.00" plate travel:  $T = 1.00" - .203"$

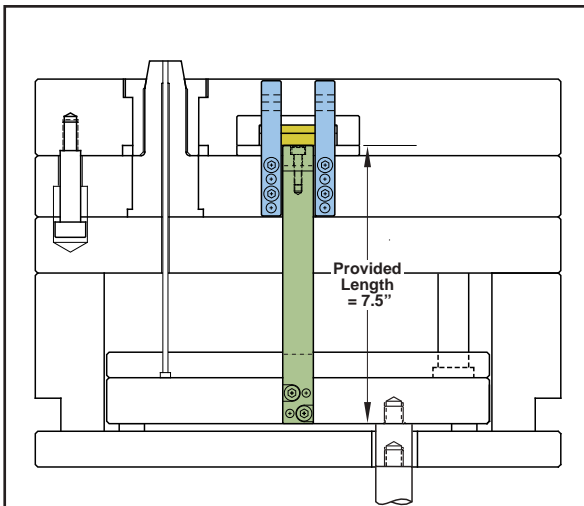


## PLATE LOCKS DUAL EJECTION APPLICATION

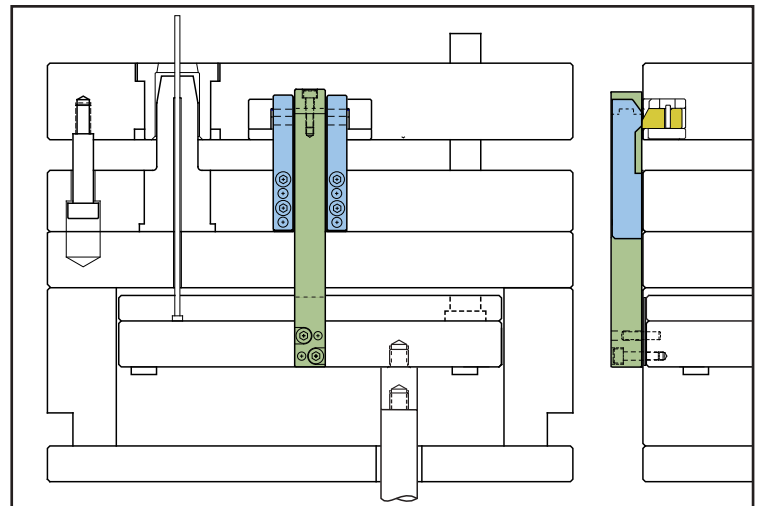


- Utilize Plate Locks for keeping both ejector sets together until preset release point.
- Machine all pockets as shown on the previous page, mounting the Guide Assembly/Wedge Block in the bottom Ejector Plate.

## PLATE LOCKS STRIPPER PLATE APPLICATION



**Mold Closed: Stripper Plate Retracted**

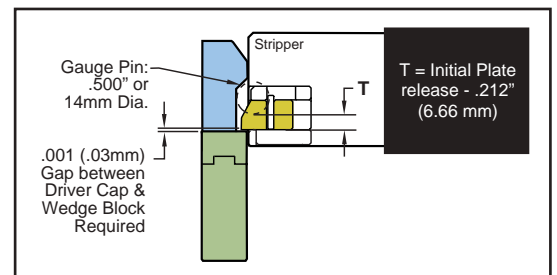


**Mold Open: Stripper Plate Released**

The Drivers push the stripper plate forward until the parts are stripped from the core. The lock then releases, allowing the ejector pins to push the parts from the stripper plate.

### Design & Installation Guidelines:

- Stripper plate applications can be utilized as shown above with the optional Stripper Plate Kit as sold on page J-4. The Latch Bar will be discarded and replaced with the Driver, Cap, and Spacer offered in the kit.
- All pocket and component machining is similar to the 3-plate application shown on page J-2 except for calculation of the "T" dimension for timing the release point according to the graphic at right.
- Use the Spacer as a template for machining the bolts/dowels on the Driver/Cap assembly.
- Attach the Spacer to the Driver, which will provide .03" / .75mm gap between the Driver and the mold to avoid interference.
- Install all components as shown.



# PLATE LOCKS

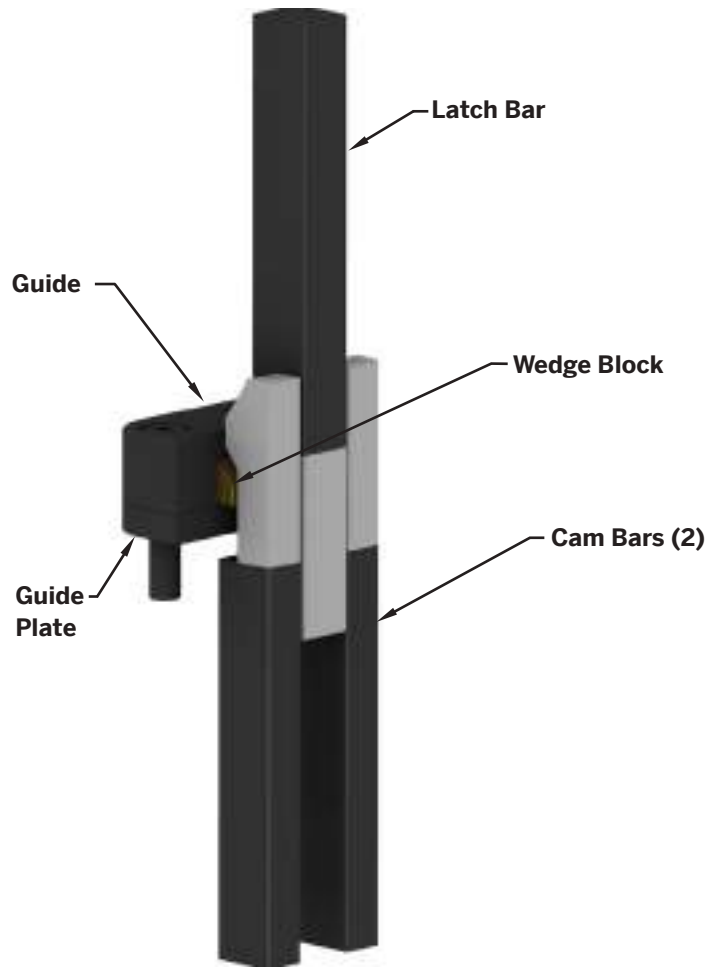
## EXTERNAL CAM-DRIVEN SYSTEM

CATALOG NUMBER	DESCRIPTION
PLC75	External Plate Lock Assembly: Inch
PLCM20	External Plate Lock Assembly: Metric

**Assembly includes:**

- All five machined components listed below.
- Compression Springs (2)
- 1/4-20 LHCS/M6-1.0 LHCS (2-Within Housing)
- ø1/8/ø3mm Dowel Pin (Within Housing)

PART NAME	MATERIAL/TREATMENT
Latch Bar	4340, 35-40 HRC, Nitrided/Black Oxide
Cam Bar (2)	4340, 35-40 HRC, Nitrided/Black Oxide
Wedge Block	A-2, 58-60 HRC Titanium Nitrided
Guide	H-13, 52-54 HRC Nitrided/Black Oxide
Guide Plate	H-13, 52-54 HRC, Nitrided/Black Oxide



# PLATE LOCKS

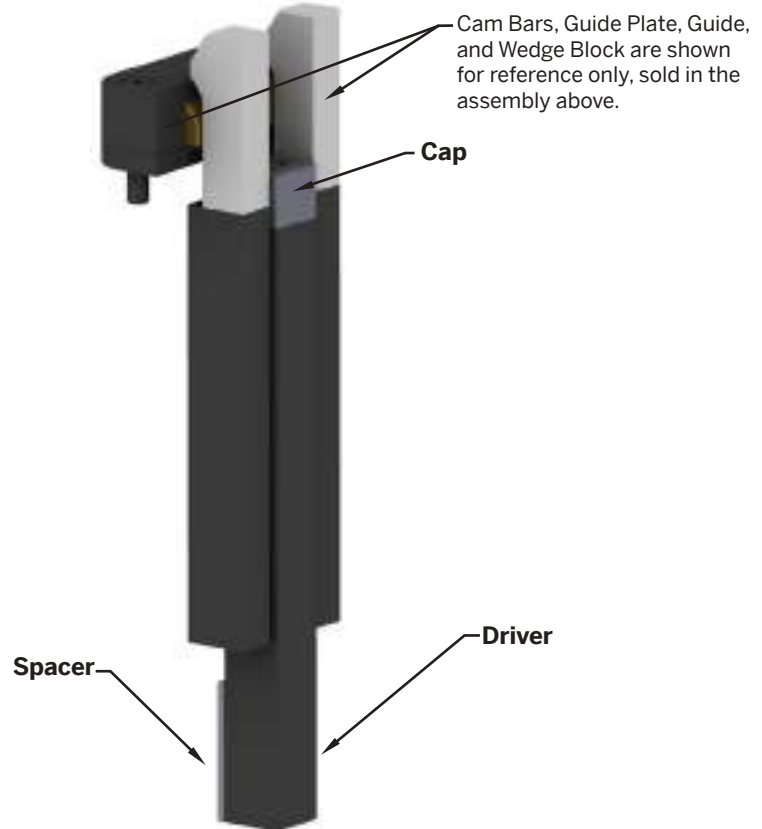
## STRIPPER PLATE KIT

For stripper plate applications, purchase the appropriate metric or inch assembly from the top of the page and the matching kit below. The mold maker will discard the Latch Bar, replacing it with the Cap/Driver/Spacer shown at left.

CATALOG NUMBER	DESCRIPTION
PLC75-S	Stripper Plate Kit: Inch
PLCM20-S	Stripper Plate Kit: Metric

**Assembly includes:**

- Cap (4340, 34-38 HRC, Nitrided)
- Driver (4140, 28-35 HRC, Black Oxide)
- Spacer (303 Stainless, 35-40 HRC)
- (1) #10-32 x .75/M5-.8 x 30mm SHCS for the Cap/Driver assembly.

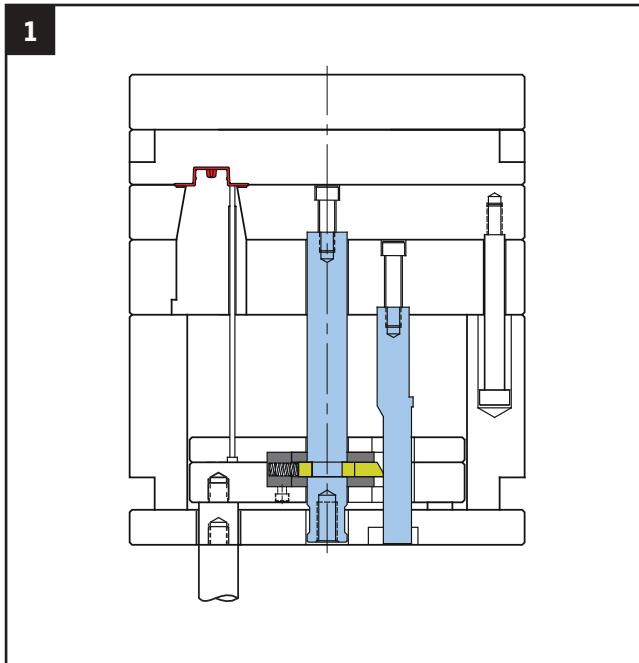




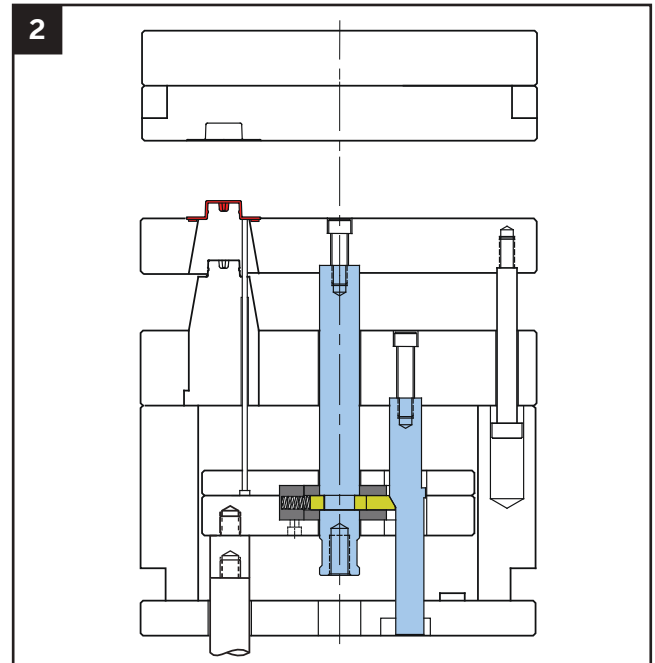
# PLATE LOCKS

## INTERNAL EJECTION SYSTEM

Internal Plate Locks provide a positive, mechanical method for locking and actuating plates in molds requiring multiple ejection actions. Optionally, using the press knock-out locations, the internal ejection system can be used to actuate the ejectors after the stripper plates.

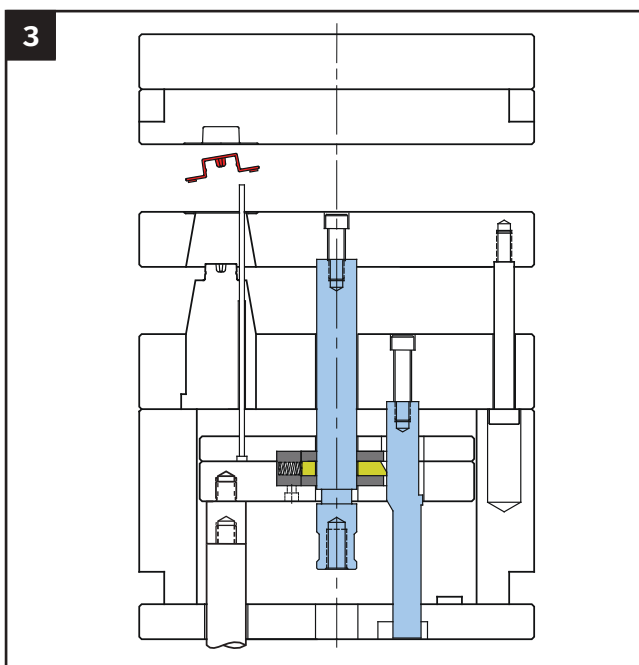


**Mold Closed**



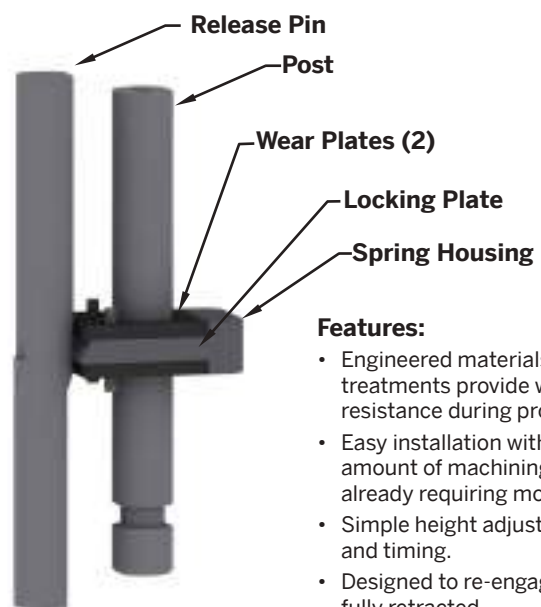
**Mold Open: Plate Strips Part From Core**

Lock begins to disengage and stripper and ejector plates move forward.



**Mold Open: Part Ejected From Plate**

With the stripper plate stopped, the ejector system continues and pushes the part from the plate.



**Features:**

- Engineered materials and treatments provide wear resistance during production.
- Easy installation with only a small amount of machining on plates already requiring modification.
- Simple height adjustment and timing.
- Designed to re-engage when fully retracted.
- For activating large mold plates, multiple Internal Plate Locks can be installed.



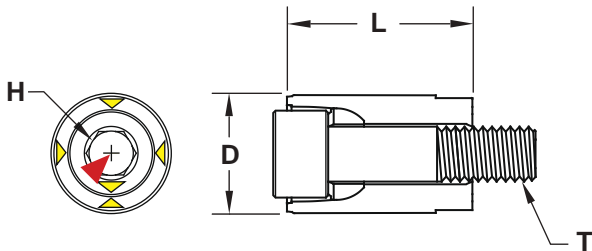




# FRICTION PULLERS

## PARTING LINE SEQUENCE CONTROL

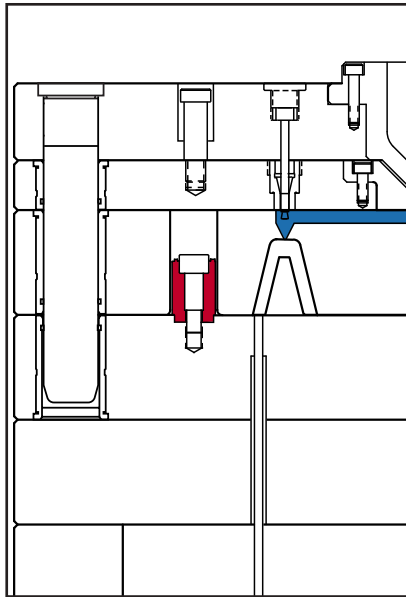
Progressive's Friction Pullers can be used to uniformly draw floating plates and inserts. Designed to replace shoulder bolts, the Friction Pullers initiate movement and utilize friction at a particular setting to release the plate when travel limits are reached.



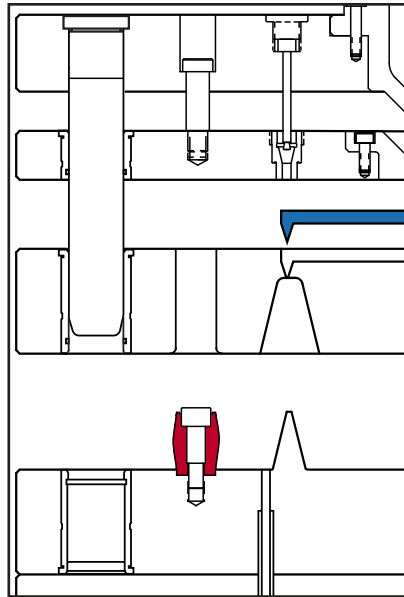
M Custom PPA Resin with 8620 Fastener

▶ CAD insertion point

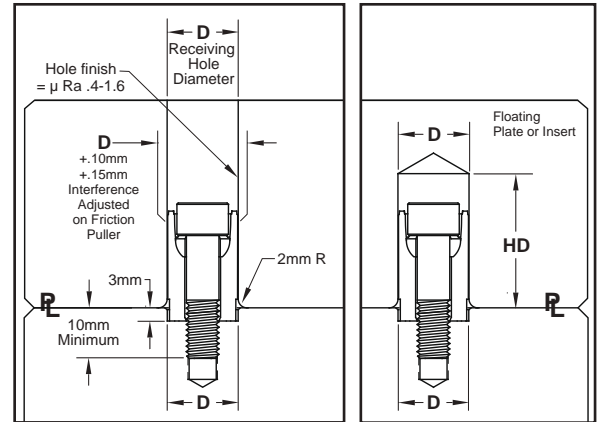
CATALOG NUMBER	D	L	T	H Hex	HD Hole Depth	Maximum Force (Each)
FP-10	10	17	M5-.8	3	20	32.5 kg (70 lbs)
FP-13	13	20	M6-1	4	23	62.5 kg (135 lbs)
FP-16	16	25	M8-1.25	5	30	150.0 kg (330 lbs)
FP-20	20	28	M10-1.5	6	32	212.5 kg (470 lbs)



Mold Closed



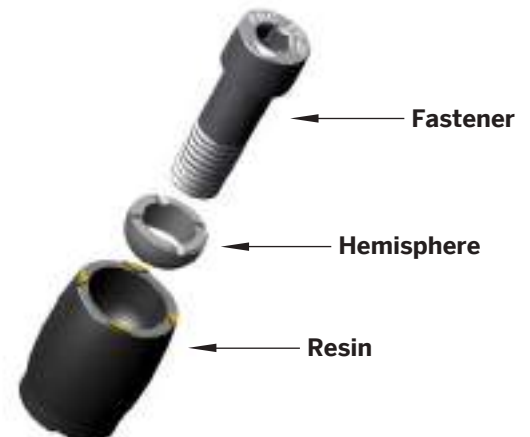
Mold Open



Recommended interference fit is .1 to .15mm larger than the receiving hole. To adjust the Friction Puller, rotate the screw clockwise and measure bulge to achieve the proper fit. Further adjustments can be performed with 1/4 turn increments, lining up the reference arrows on the fastener to the resin.

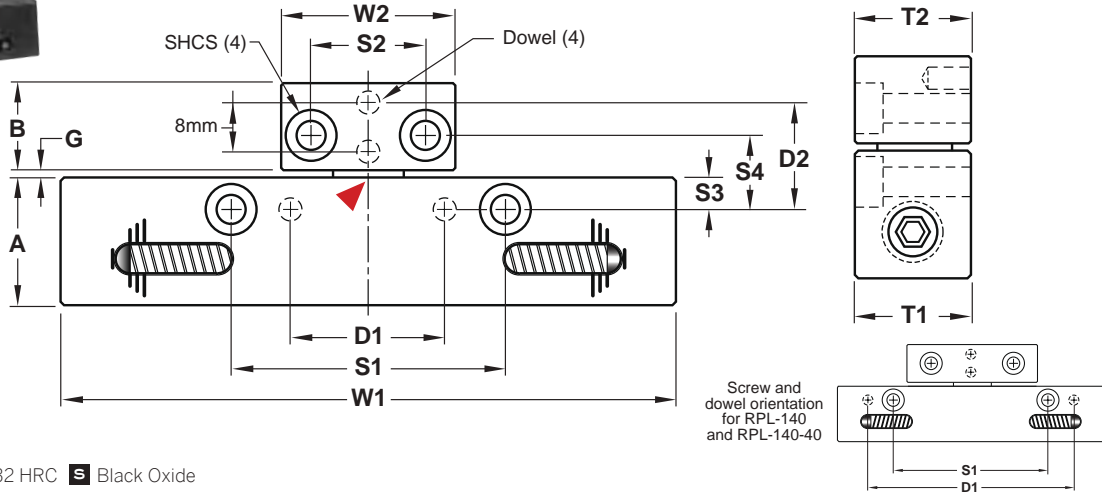
### Technical Information:

- For mold maintenance, before removing the mold from the press, rotate the screw counter-clockwise 3/4 turn. This will allow easy separation of plates.
- Maximum operating temperature is 300° F (150° C).
- Fastener includes Nylok® patch for secure installation.
- The hemisphere is plated for additional lubricity during adjustments.
- Friction Pullers are self-venting. Additional venting not required when using blind holes.
- Replacement items are available. Contact Customer Service for availability.



# ROLLER PULLERS™

## PARTING LINE SEQUENCE CONTROL

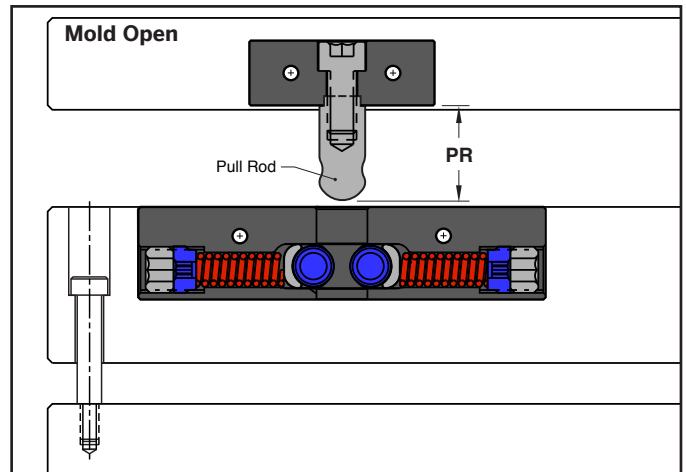
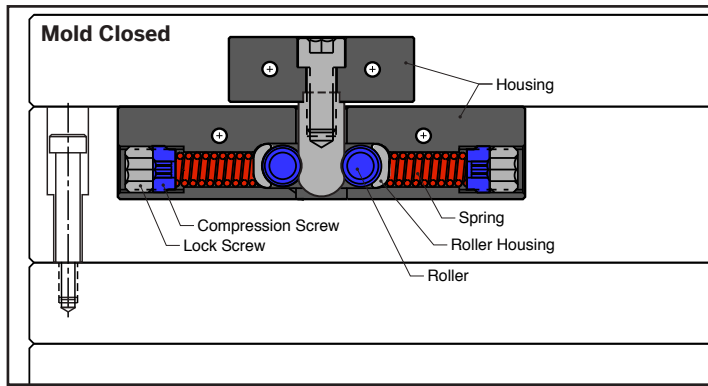


Housing: **M** 4140 **H** 27-32 HRC **S** Black Oxide  
 Roller: **M** M-2 **H** 62-64 HRC, Nitrided  
 Pull Rod: **M** M-2 **H** 62-64 HRC, Nitrided

CAD insertion point

CATALOG NUMBER	W1	T1	W2	T2	A	B	G	S1	S2	S3	S4	D1	D2	Dowel Size	SHCS	PR See Below
RPL-135	135	25	38	25	28	19	1	60.0	25.0	7.0	15.6	30.0	22.1	ø5	M6-1.0 x 25	26
RPL-135-40	135	25	38	25	28	19	40	60.0	25.0	7.0	54.6	30.0	61.1	ø5	M6-1.0 x 25	65
RPL-140	140	32	64	25	32	22	2	70.0	35.0	10.0	23.1	100.0	28.1	ø6	M10-1.5 x 35	30
RPL-140-40	140	32	64	25	32	22	38	70.0	35.0	10.0	59.3	100.0	64.3	ø6	M10-1.5 x 35	66

Roller Pullers are available with special length rods to suit applications where a different distance between the housings is required. For pricing and delivery, contact Customer Service with the catalog number above along with the required gap or "G" dimension.



### Pull Force

Tighten lock screws equally to achieve forces below.

CATALOG NUMBER			
RPL-135	45 Kg (100 lbs)	75 Kg (160 lbs)	100 Kg (220 lbs)
RPL-135-40	45 Kg (100 lbs)	75 Kg (160 lbs)	100 Kg (220 lbs)
RPL-140	45 Kg (100 lbs)	100 Kg (220 lbs)	150 Kg (330 lbs)
RPL-140-40	45 Kg (100 lbs)	100 Kg (220 lbs)	150 Kg (330 lbs)

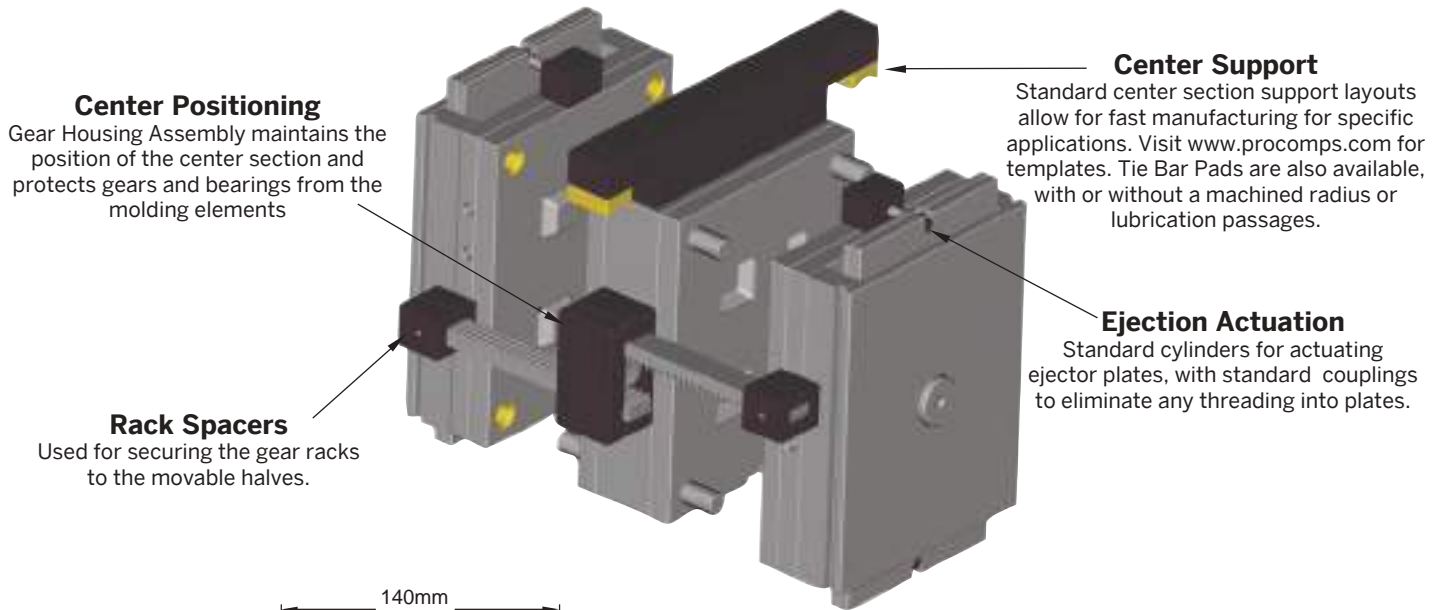
### Technical Information:

- Mounting pattern matches industry standards.
- Compression screw provides adjustable pull force.
- Roller design allows for smooth action.
- Mounting screws and dowels included.



# STACKIT® STACK MOLD SYSTEM

Introducing a system for efficiently designing, building, and maintaining stack molds. The product range addresses Center Section Positioning, Center Section Support, and Ejector Actuation. Available as standard components with center support systems made to order.



### Center Positioning

Gear Housing Assembly maintains the position of the center section and protects gears and bearings from the molding elements

### Rack Spacers

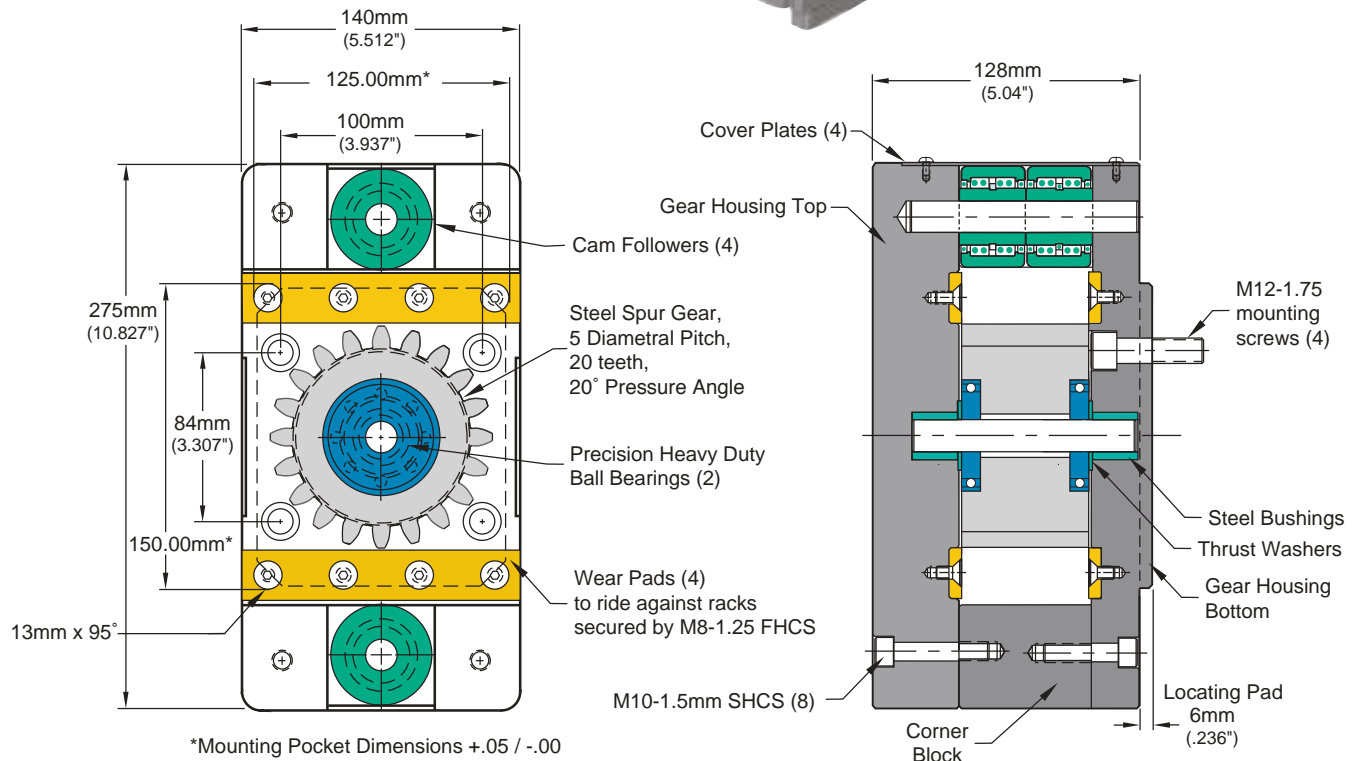
Used for securing the gear racks to the movable halves.

### Center Support

Standard center section support layouts allow for fast manufacturing for specific applications. Visit [www.procomps.com](http://www.procomps.com) for templates. Tie Bar Pads are also available, with or without a machined radius or lubrication passages.

### Ejection Actuation

Standard cylinders for actuating ejector plates, with standard couplings to eliminate any threading into plates.



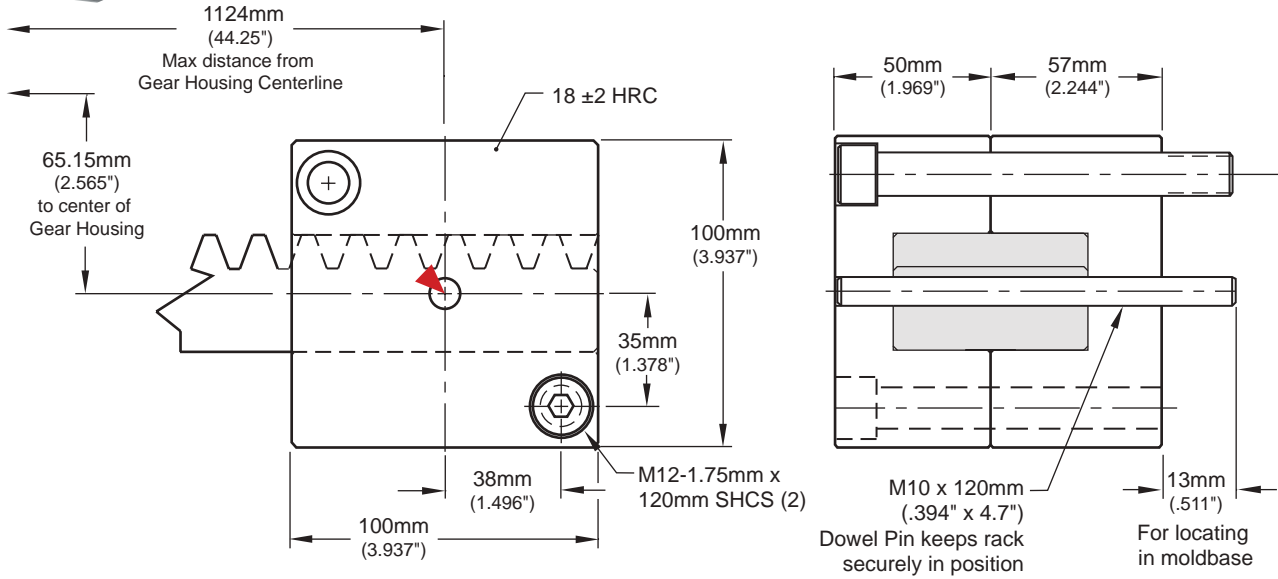
### Design Installation Guidelines:

- Max center section effective weight per StackKit pair is 10,000 lbs.
- Ensure mold is within maximum projected weight of molding machine
- When mounting racks to a mold ensure both sides are timed equally
- Install two gear housings in center, as shown above. For large molds, four housings should be installed—two per side.

CATALOG NUMBER	DESCRIPTION
<b>SK-GHA-250</b>	Gear Housing Assembly

Replacement parts are available. Contact Customer Service for availability at [CustomerService@procomps.com](mailto:CustomerService@procomps.com).

# STACKIT® RACK SPACER

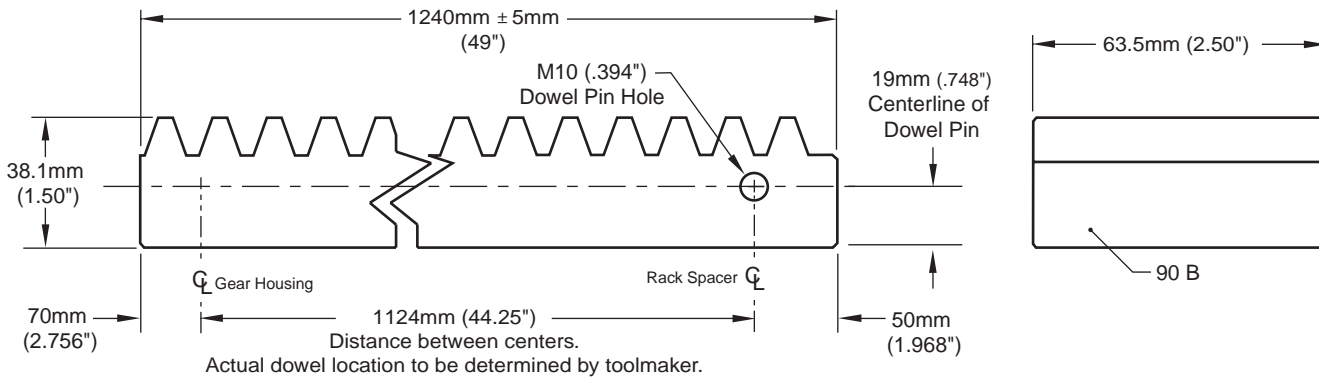


**M** A-36   **H** Pre-Hard   **S** Black Oxide

CATALOG NUMBER	DESCRIPTION
<b>SK-RSA-250</b>	Rack Spacer Assembly

Screws and locating dowel included. ▶ CAD insertion point

# STACKIT® RACK

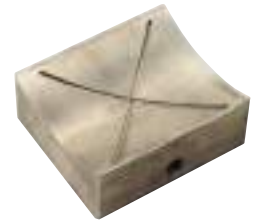


**M** CRS

CATALOG NUMBER	DESCRIPTION
<b>SK-RC-250</b>	Rack (Sold Individually)

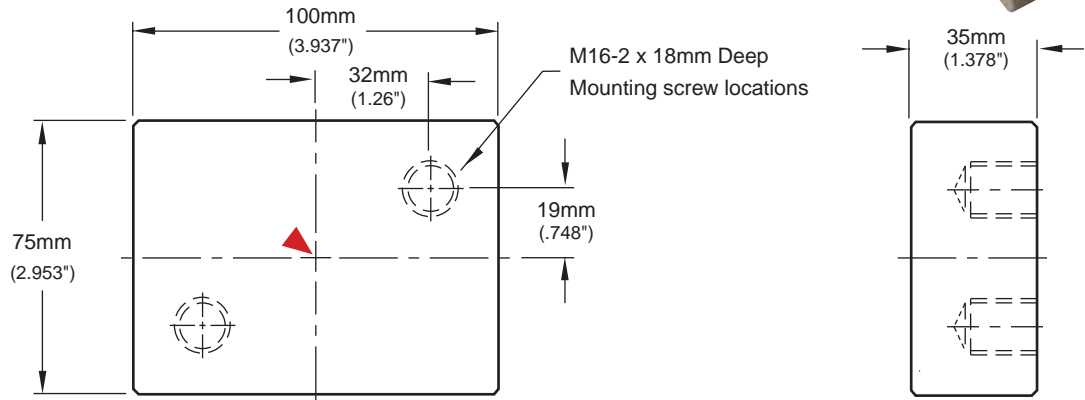


# STACKIT® TIE BAR PADS



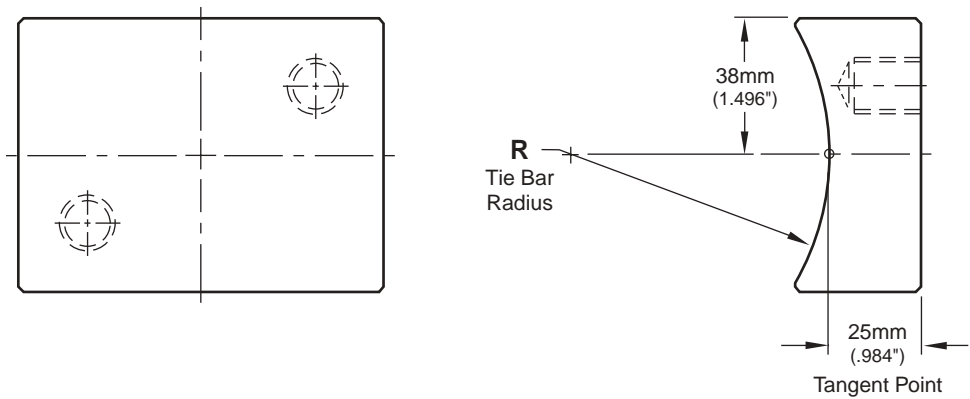
## SK-TBP-35

Tie Bar Pad Blanks



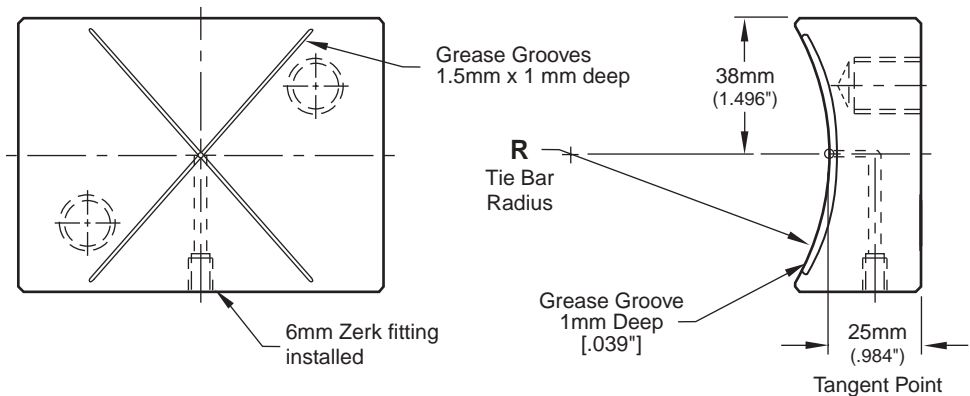
## SK-TBP-R

Tie Bar Pad with finished radius. Please specify “-R” when ordering.



## SK-TBP-RG

Tie Bar Pad with finished radius, grease grooves, and zerk fitting. Please specify “-RG” when ordering.



**M** CA954 Solid Bronze

CAD insertion point

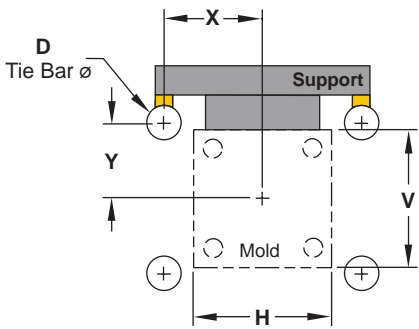
CATALOG NUMBER	DESCRIPTION
SK-TBP-35	Tie Bar Pad Blanks (No Radius)
SK-TBP-R	Tie Bar Pads with machined radius
SK-TBP-RG	Tie Bar Pads with machined radius, grease grooves and zerk fitting

Sold individually.

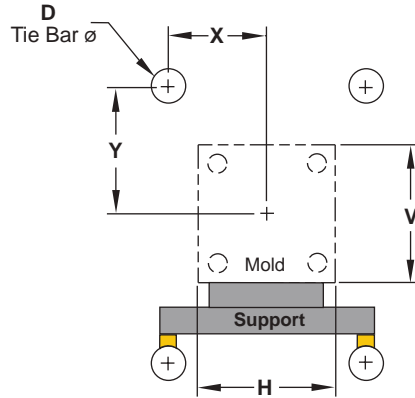
# STACKIT® CENTER SUPPORT SYSTEMS

Center Supports augment the pin and bushing engagement between the center section and movable mold halves. Manufactured for specific applications out of AISI 4140, Progressive center sections utilize standard layouts, templates, and components.

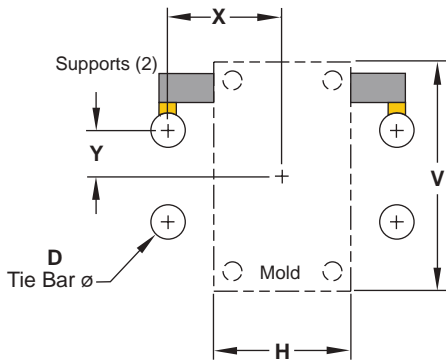
**Style 1**  
Top Reach Support



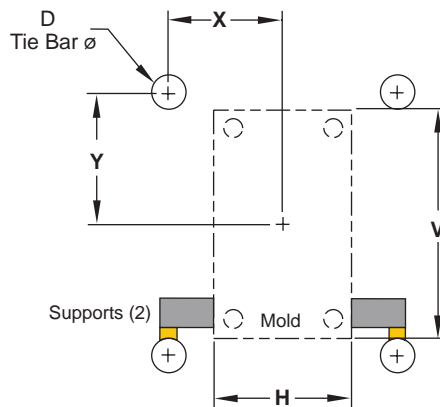
**Style 2**  
Bottom Reach Support



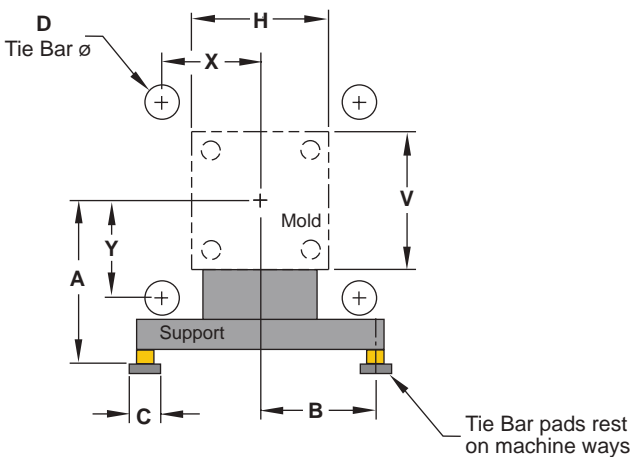
**Style 3**  
Side Support (Top)



**Style 4**  
Side Support (Bottom)



**Style 5**  
Way Support

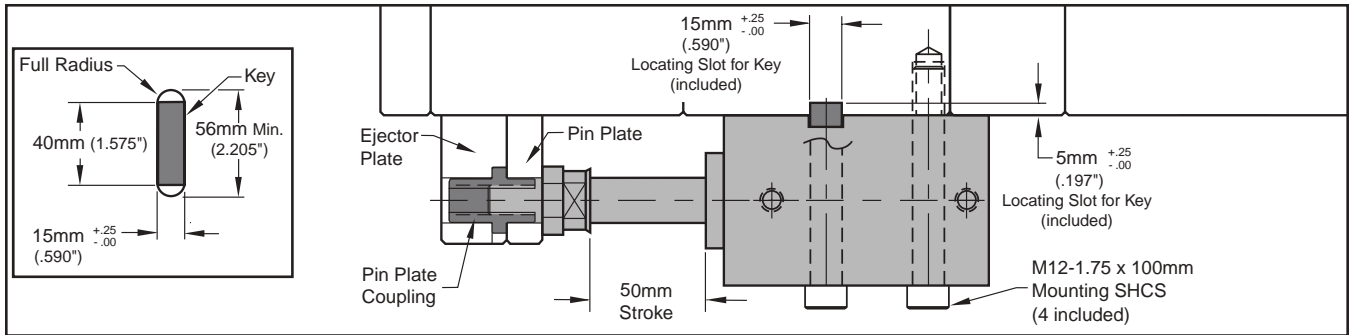


**To obtain a quote:**

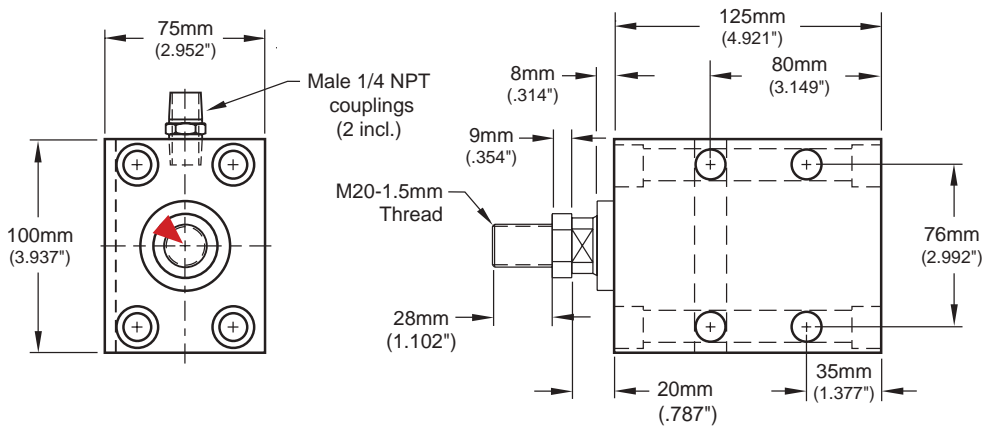
1. Select the style of center support system based on the general press layout and preference.
2. Determine the variables based on the Graphics for the corresponding support required.
3. Send the information via email to [tech@procomps.com](mailto:tech@procomps.com) and an Applications Engineer will provide pricing and turnaround for the quantity required.



# STACKIT® EJECTION ACTUATION



## CYLINDERS



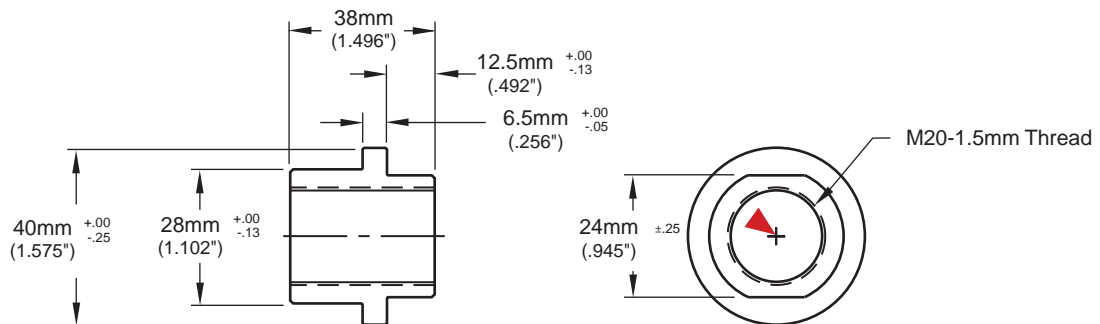
### Specifications:

- 50mm (2") Stroke
- Rated up to 3200 psi
- Temperature: 220° F (100° C) max
- Includes (2) NPT couplings and Locating Key

▶ CAD insertion point

CATALOG NUMBER	DESCRIPTION
<b>SK-CYL-50</b>	50 mm Block Cylinder

## PIN PLATE COUPLINGS



**M** AISI 4140 **S** Black Oxide

▶ CAD insertion point

CATALOG NUMBER	DESCRIPTION
<b>SK-PPC-20</b>	M20-1.55 mm Pin Plate Coupling







# ELECTRICAL COMPONENTS

## SECTION K



KO Switches	CamAction Switch	Plate Position Switch	Side Action Switch
Prefix: SWKO	Prefix: SWCA	Prefix: SWPPS	Prefix: SWSA
Page: K-1	Page: K-3	Page: K-4	Page: K-4



External Mount Switch	Thermocouples	Hot Sprue Bushings	Pressure Transducers
Prefix: SWXM	Prefix: TC	Prefix: BX	Prefix: CPT
Page: K-5	Page: K-7	Page: K-8	Page: K-10



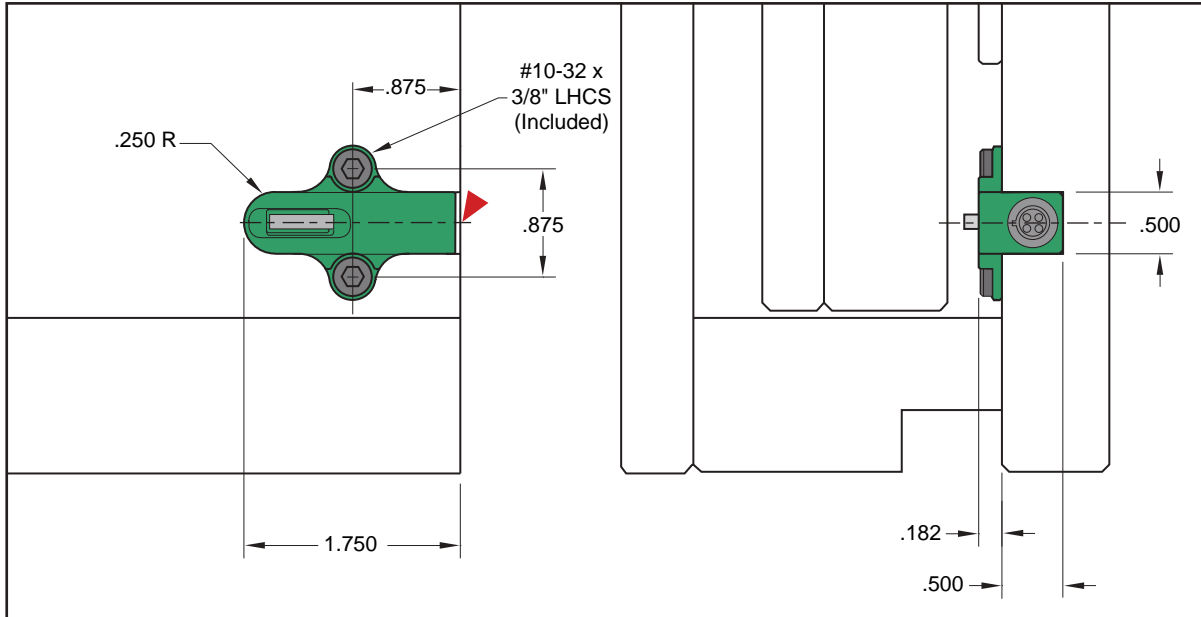
Patch Cables	Jumper Plugs	Recessed Connectors	Wire Channel Inserts
Prefix: ECCA	Prefix: ECJP	Prefix: ECRC	Prefix: WC
Page: K-12	Page: K-12	Page: K-13	Page: K-13





# SWITCHES

## KO™ SWITCH



CAD insertion point

GENERAL SPECIFICATIONS FOR SWITCHES		
VOLTAGE		
	28 VDC	115 VAC 60 HZ
Resistive Load	300mA min / 5A max	300mA min / 5A max
Inductive Load	300mA min / 3A max	300mA min / 5A max
Mechanical Life	10 million cycles	10 million cycles
Max Temperature	221° F	221° F
Features:	Color-coded, keyed for specific function. Gold-plated contacts for switching logic level signals. Switches are wired normally open. Sealed and splash resistant. UL/CSA rating: 5A, 250 vac	

CATALOG NUMBER	Color	Function
SWKO-187	Green	Ejection

## KO™ SWITCH CABLES

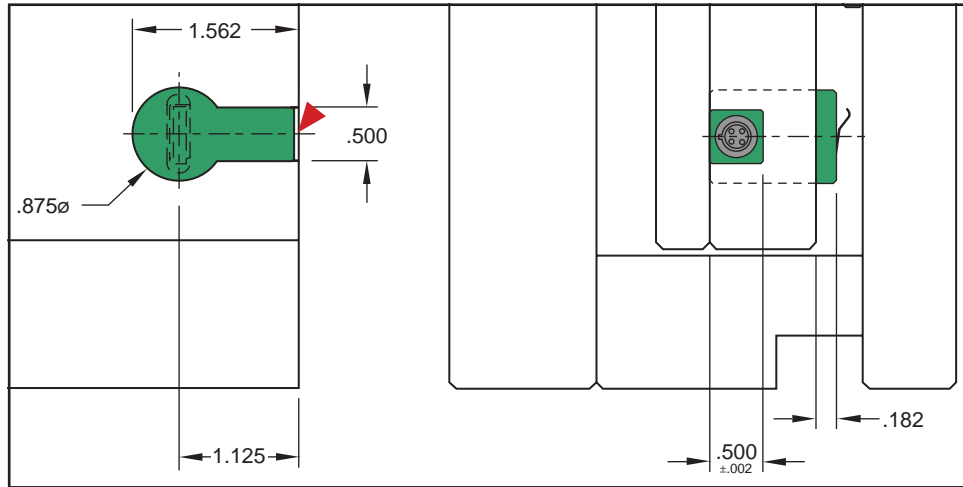
CATALOG NUMBER	Color	Function	Ends	Length (ft)
ECCA-6-10	Green	Ejector Switch	Male/Male	10
ECCA-6-20	Green	Ejector Switch	Male/Male	20
ECCA-6-20S	Green	Ejector Switch	Single Male	20



Single-ended cables also available in 20' lengths.

## SWITCHES

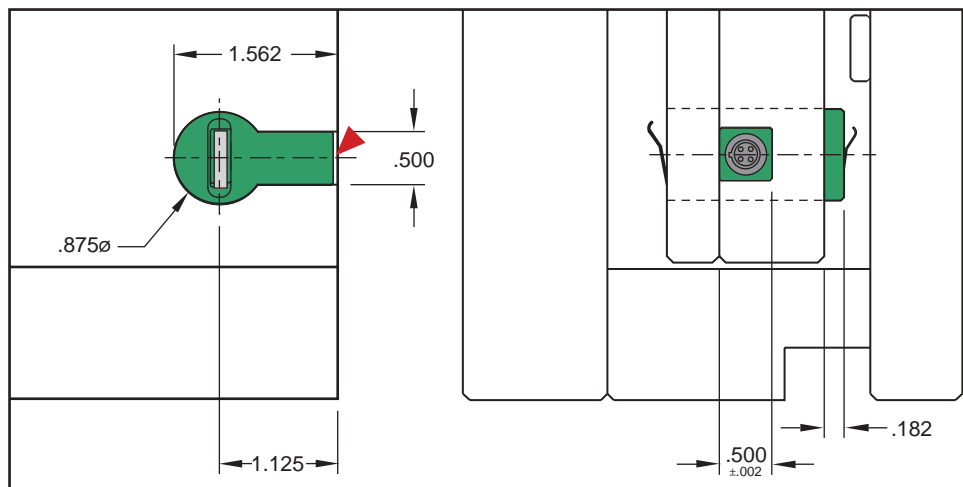
## KO™ SWITCH: SINGLE EJECTOR



 CAD insertion point

CATALOG NUMBER	Ej. Plate Thickness	Color	Function
SWKOS-100	1.000	Green	Ejection
SWKOS-112	1.125	Green	Ejection
SWKOS-118	1.187	Green	Ejection

## KO™ SWITCH: DUAL EJECTOR



 CAD insertion point

CATALOG NUMBER	Ej. Plate Thickness	Retainer Plate Thickness	Color	Function
SWKOD-100	1.000	.500	Green	Ejection
SWKOD-112	1.125	.500	Green	Ejection
SWKOD-118	1.187	.500	Green	Ejection

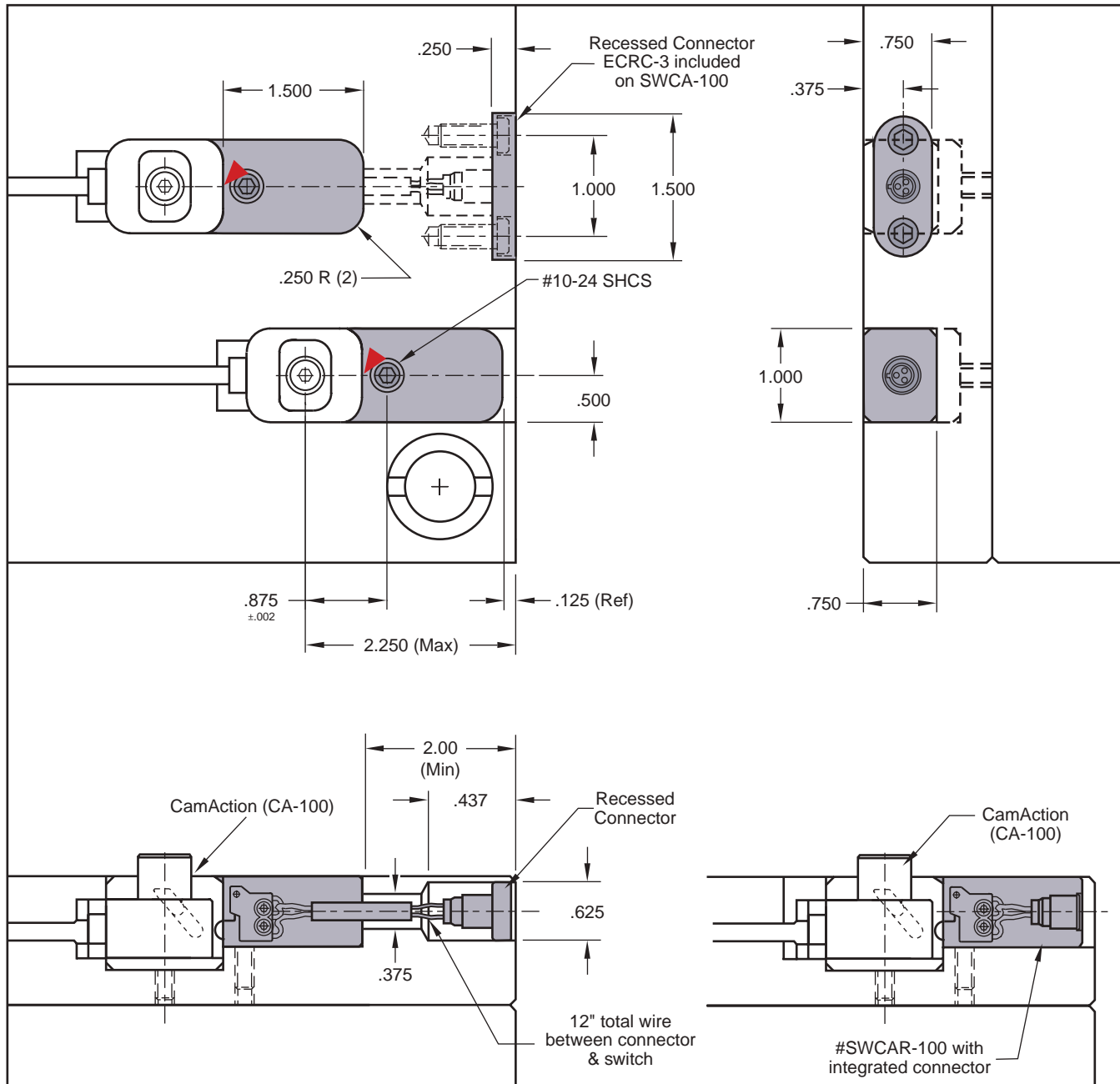


# SWITCHES

## CAMACTION® SWITCH



Progressive CamAction Switches verify that the slide carrier is fully retracted before the next controller sequence. Available with or without receptacle, depending on the position of the CamAction within the mold. Refer to page G-1 for CamAction data.

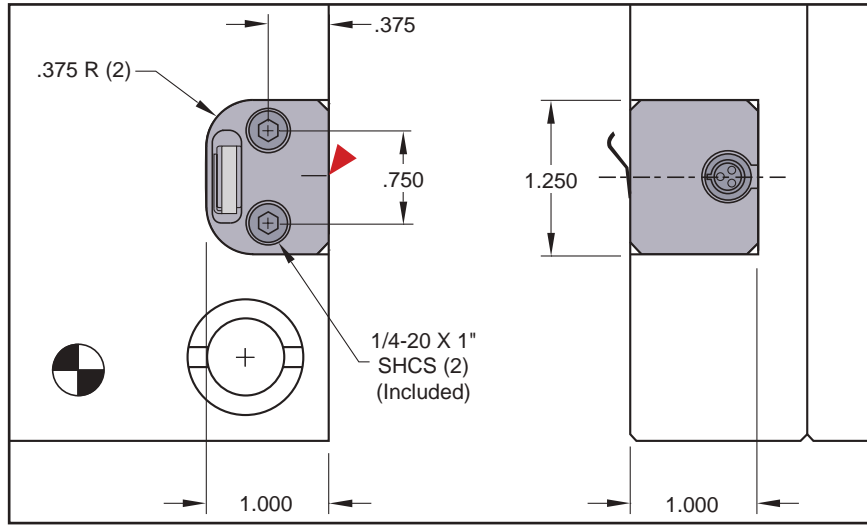


CAD insertion point

CATALOG NUMBER	Description	Color	Function
SWCA-100	Recessed Connector	Gray	Enable
SWCAR-100	Integrated Connector	Gray	Enable

# SWITCHES

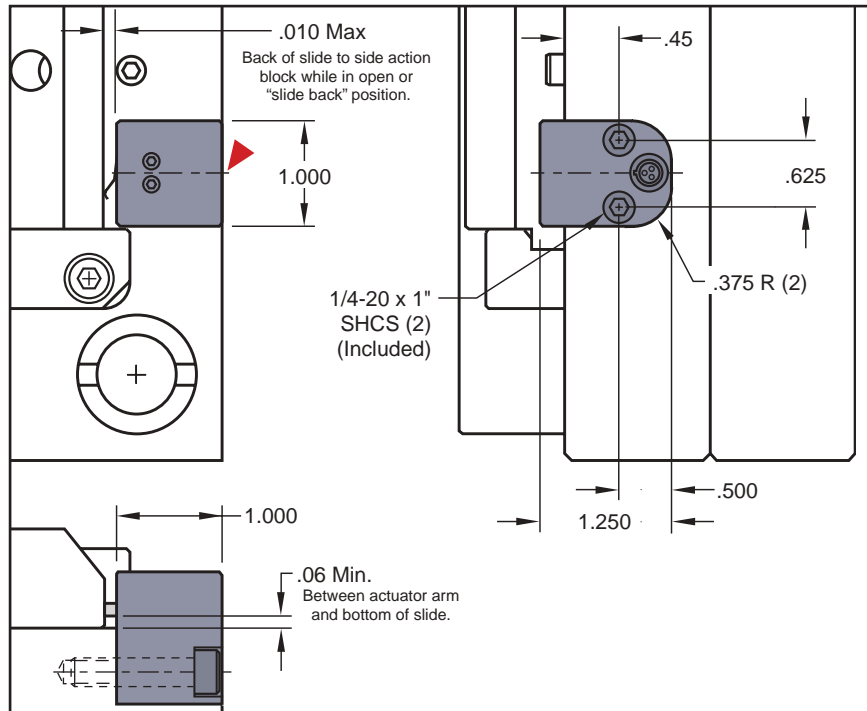
## PLATE POSITION SWITCH



▶ CAD insertion point

CATALOG NUMBER	Color	Function
SWPPS-100	Gray	Enable

## SIDE ACTION SWITCH



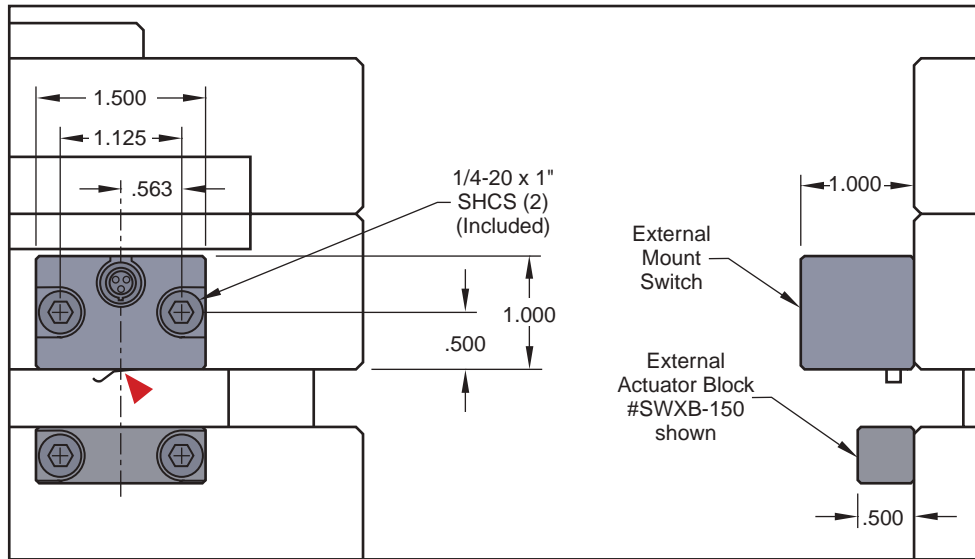
▶ CAD insertion point

CATALOG NUMBER	Color	Function
SWSA-100	Gray	Enable



# SWITCHES

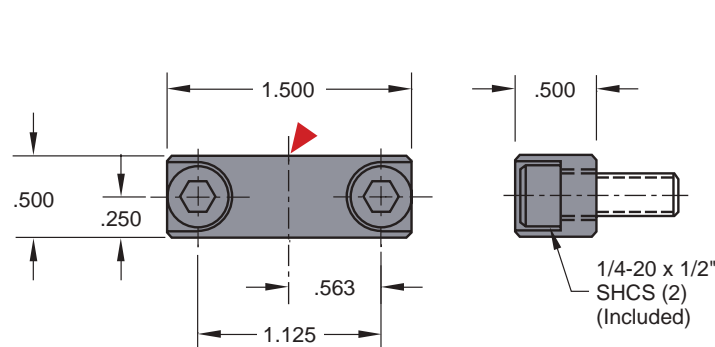
## EXTERNAL MOUNT SWITCHES



▶ CAD insertion point

CATALOG NUMBER	Color	Function
SWXM-3	Gray	Enable
SWXM-4	Black	Core In
SWXM-5	White	Core Out

## EXTERNAL ACTUATOR BLOCK

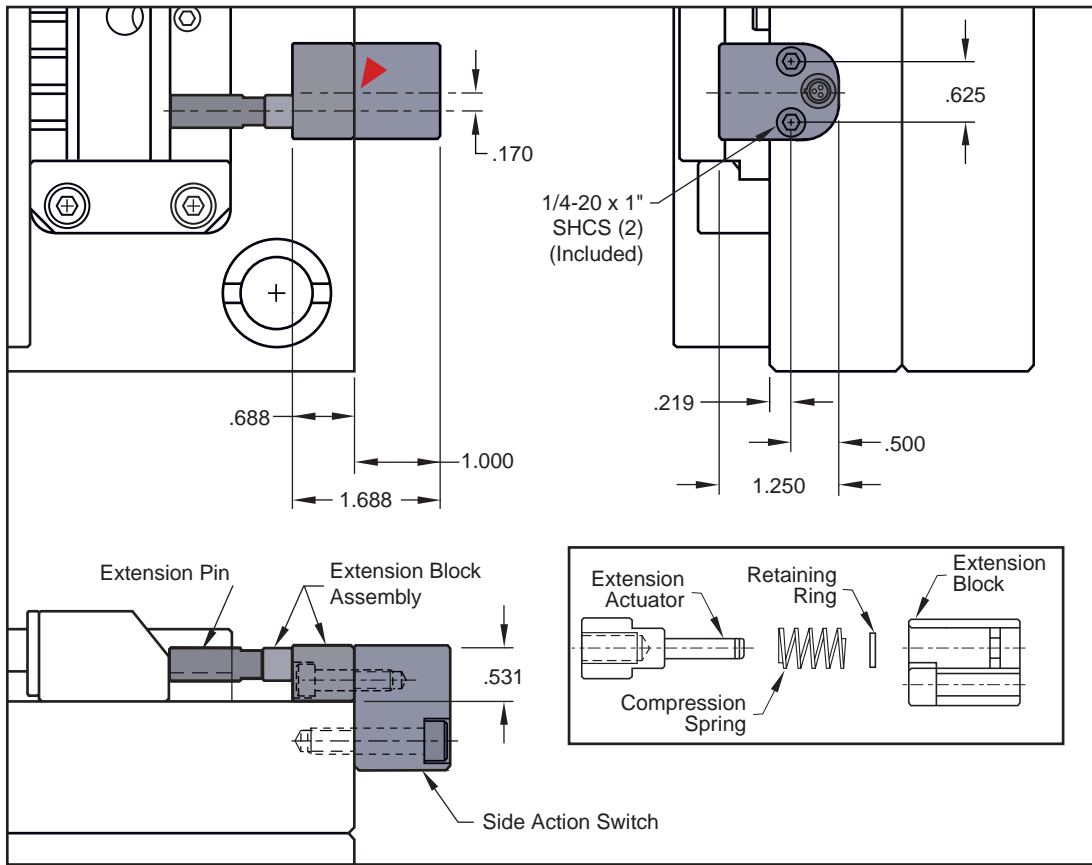


▶ CAD insertion point

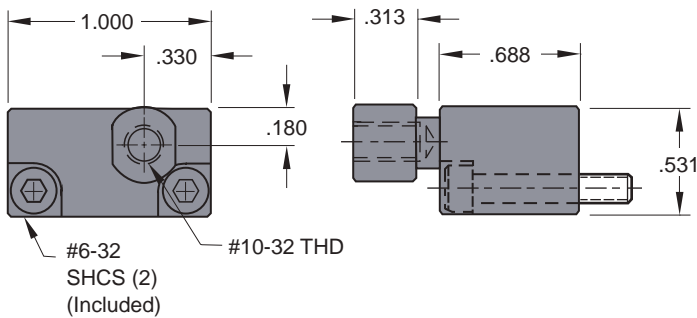
CATALOG NUMBER	DESCRIPTION
SWXB-150	Extension Actuator Block

# SWITCHES

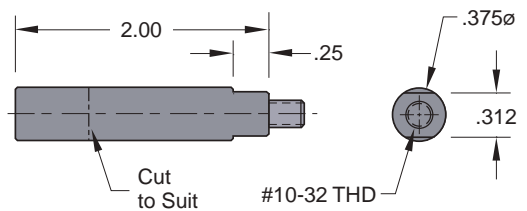
## EXTENSION BLOCK ASSEMBLY



### EXTENSION BLOCK ASSEMBLY



### EXTENSION PIN



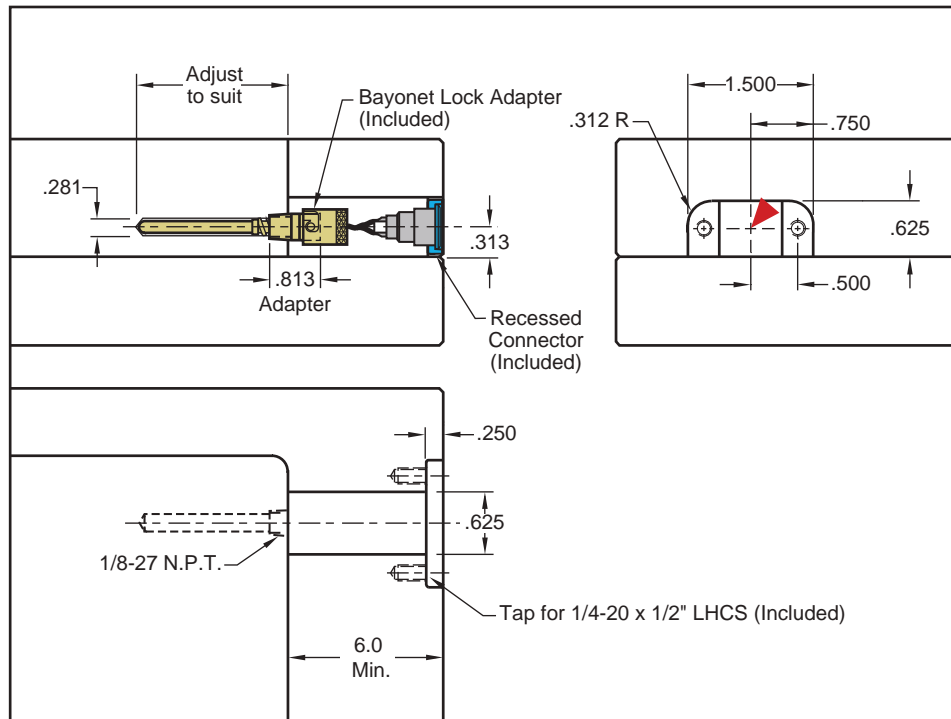
CAD insertion point

CATALOG NUMBER	DESCRIPTION
SWXB-100	Extension Block Assembly
SWEP-100	Extension Pin





# THERMOCOUPLES



▶ CAD insertion point

CATALOG NUMBER	Color	Function
TC-7	Orange	Stationary Side T/C
TC-8	Blue	Movable Side T/C

### Specifications:

- Type "J"-Grounded
- 3/16" Diameter Ball Tip
- Maximum 750° F over probe
- 30" of wire included
- Maximum temperature of wire and connector: 220° F (104° C)

Each Thermocouple assembly includes: Thermocouple, Bayonet Lock Adapter, Recessed connector, & Screws. Replacement Thermocouples (TC-100) and Bayonet Lock Adapters (TCA-100) are also available. Replacement Recessed Connectors sold on page K-13.

# HOT SPRUE BUSHINGS

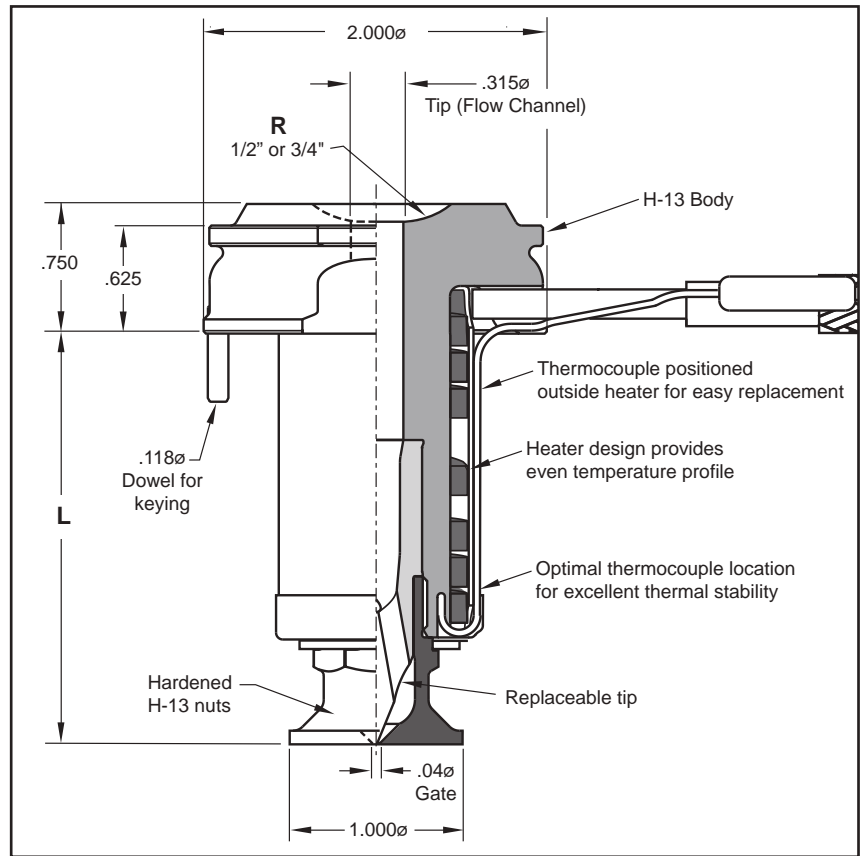
## INCH SERIES



Progressive's BX Inch Series Hot Sprue Bushings are designed as an advancement from previous Hot Sprue technology. This bushing's heater design and thermocouple placement provide excellent temperature distribution and thermal stability, resulting in superior performance both at start-up and during production, increased reliability, and easier maintenance.

Existing tools will benefit by replacing cold sprues, inefficient hot sprues, or applications used to feed cold runner systems.

Engineered and manufactured for Progressive by Mastip™ Technology Ltd.



**To Order:** Specify all options within catalog number as shown:

### Radius Options:

- 1/2" Specify **-50**
- 3/4" Specify **-75**

### Nut Options:

- Standard Length (.080) Specify **-SL**
- Extra Stock (+.250) Specify **-XS**
- Sprue Picker (+1.250) Specify **-SP**

### Tip Options:

- Nickel-Plated Be/Cu Tip:  
Used for unfilled commodity thermoplastics.  
Specify **-A** for Nickel-Plated Be/Cu
- Carbide-Tipped Be/Cu Tip:  
Used for fast cycling, thin-wall, high injection pressure olefins or multi-cavity molds with a single tip gating into a cold runner.  
Specify **-C** for Carbide-Tipped Be/Cu

Note: Engineering grade materials such as PC, PA, PBT and any heavy glass-filled materials should not be used with the BX series sprues. Contact Engineering for metric alternatives.

Prefix/ Length	L	Watts
<b>BX25137</b>	1.375	295
<b>BX25187</b>	1.875	350
<b>BX25237</b>	2.375	455
<b>BX25287</b>	2.875	490
<b>BX25337</b>	3.375	505

**BX25187** - **50** - **SL** - **C**  
Prefix/Length - Radius - Nut - Tip Material

Example: BX25237-75-SP-A or BX25337-50-XS-C

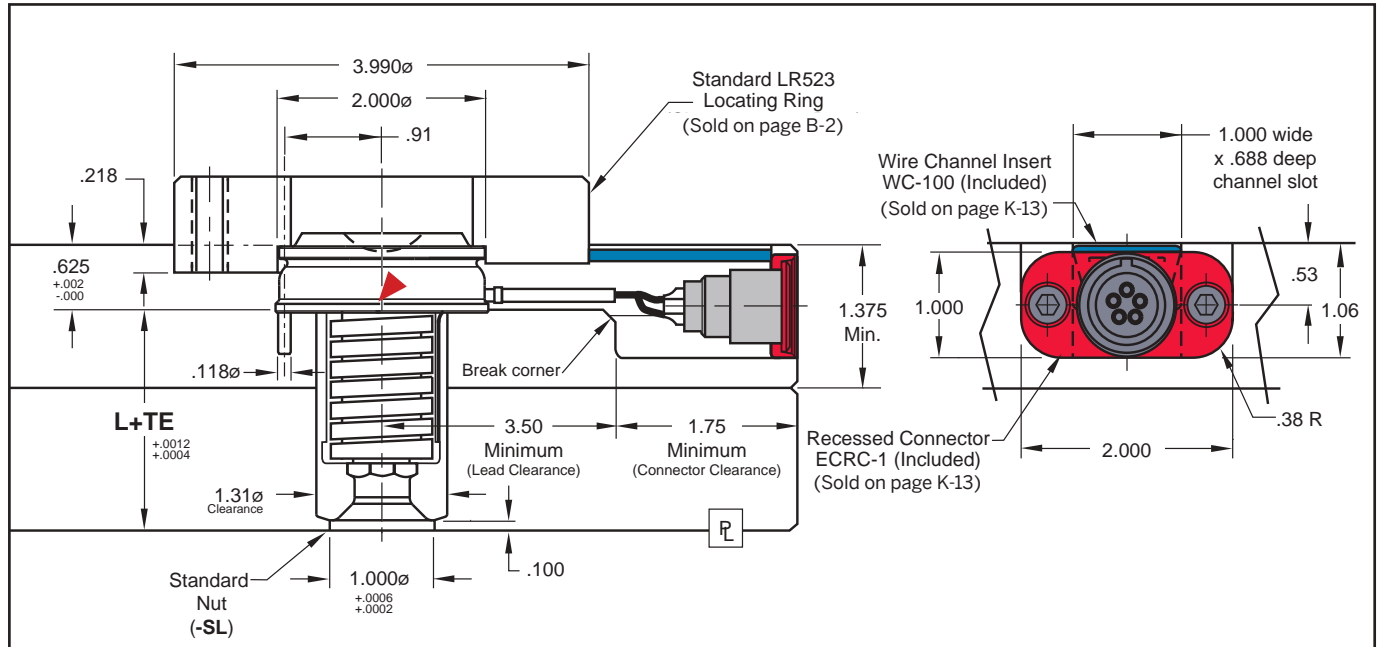
### Each Hot Sprue Bushing Assembly includes:

- Body, Tip, Nut, Thermocouple and wiring, Recessed Connector (ECRC-1), and Wire Channel Insert (WC-100).
- Replacement parts are available. Refer to the price list for catalog numbers.



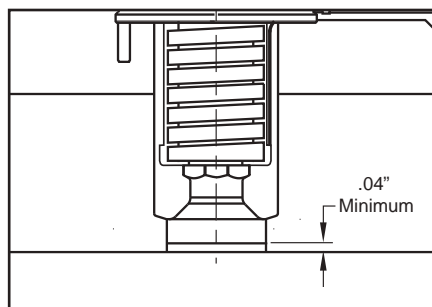
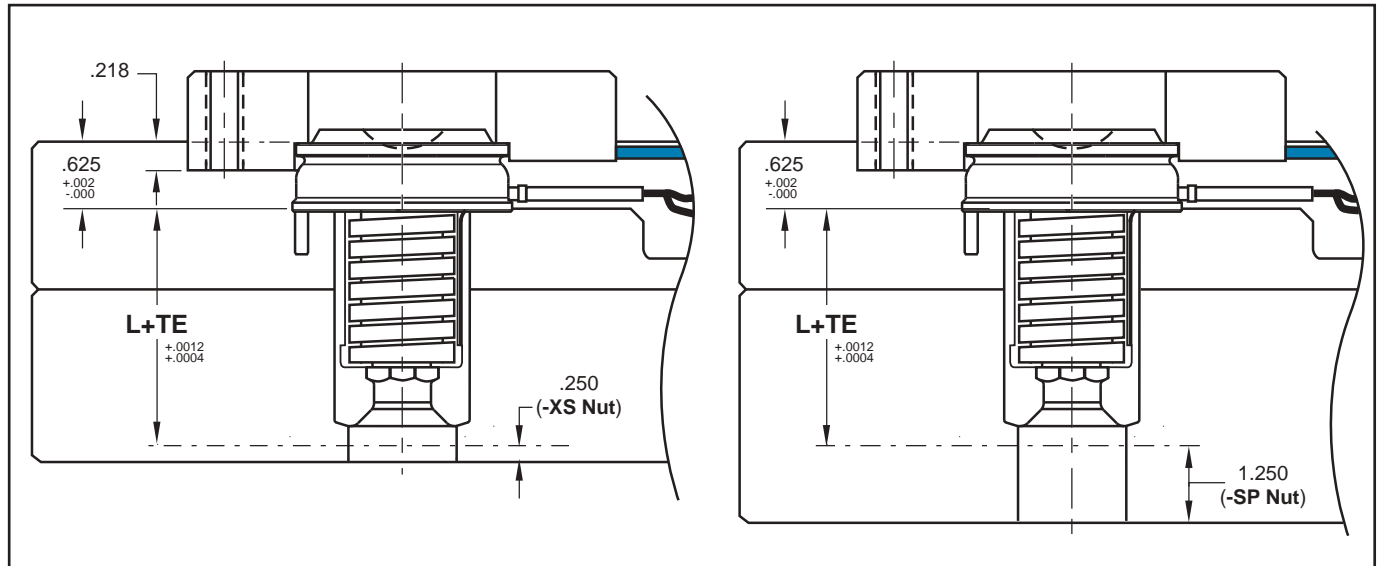
# HOT SPRUE BUSHINGS INSTALLATION

## Typical installation instructions:



CAD insertion point

## Longer nut installation instructions:



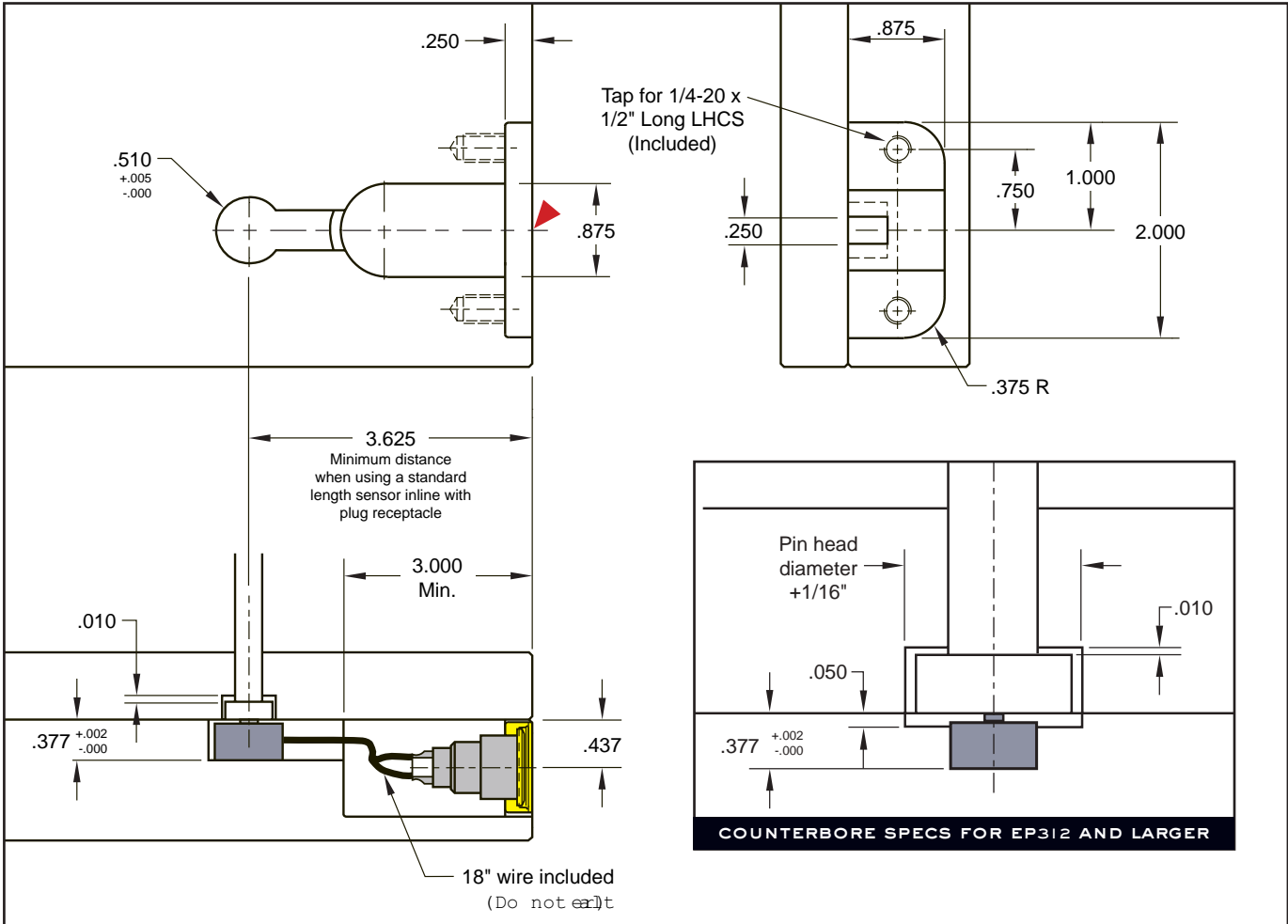
To ensure optimal performance, design for a minimum .04" gap between the face of the bushing nut and "B" side of the mold after thermal expansion when gating into a cold runner.

### General specifications:

- Expansion formula (TE):  $000007 \times (\text{Processing Temp } ^\circ\text{F} - \text{Mold Temp } ^\circ\text{F}) \times L$
- 230 volt-15 amps
- "J" type thermocouple

# CAVITY PRESSURE TRANSDUCERS

## BUTTON STYLE



CAD insertion point

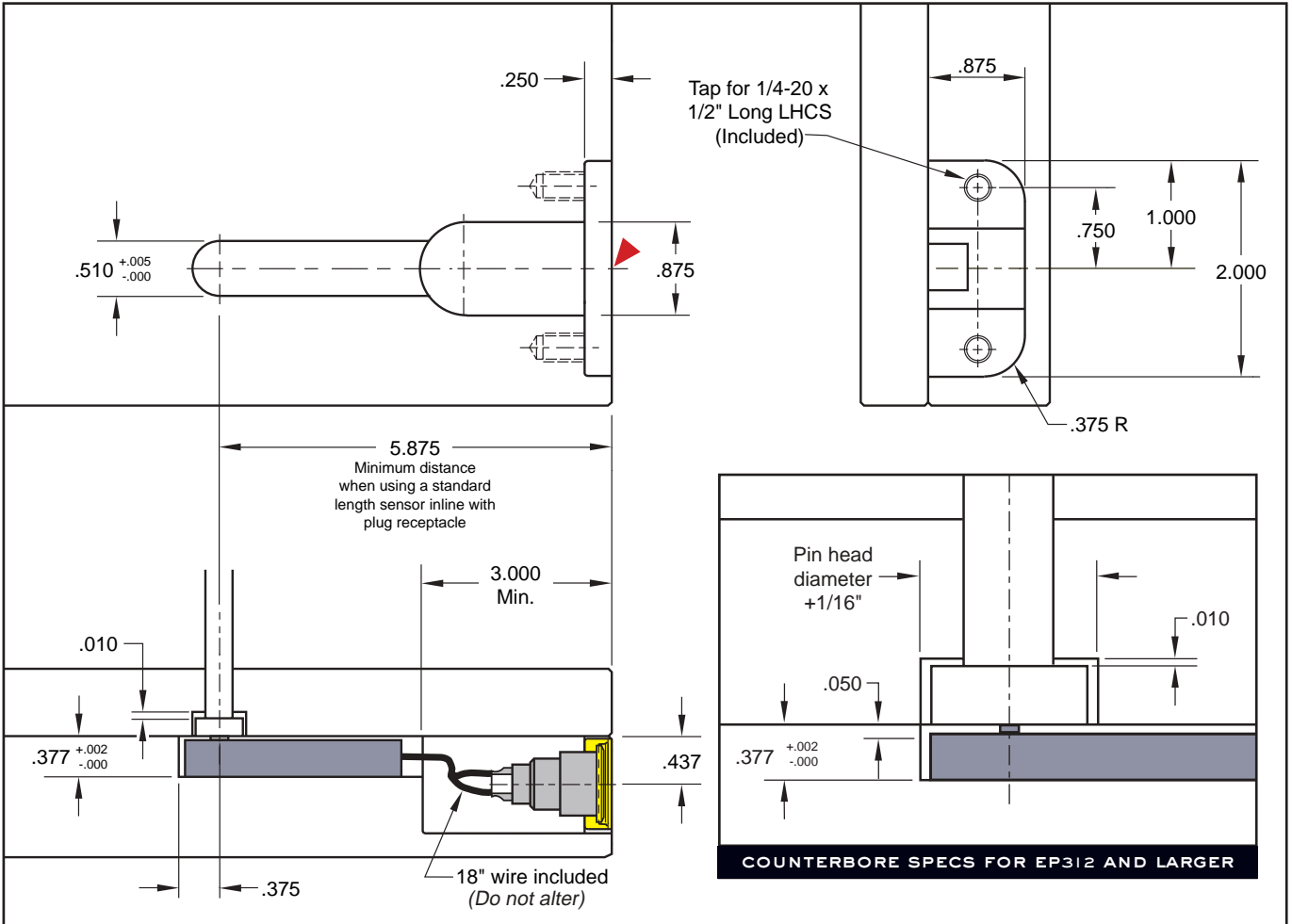
CATALOG NUMBER	Ejector Pin Size
CPT-412C	1/16 $\phi$ to 3/16 $\phi$
CPT-413C	3/16 $\phi$ to 1/2 $\phi$

Specifications	
Press Measure Range	0-2000 PSI
Force Range	CPT-412C 500LB (225Kg) CPT-413C 2000LB (900Kg)
Maximum Load	150% Full Scale
Temperature Range	0 $^{\circ}$ - 450 $^{\circ}$ F
Temperature Comp.	2% Full Scale
Input	12 Volt Max
Output	2.0mV/V Full Scale
Accuracy	3/4% Full Scale
Repeatability	0.1% Full Range Output
Full Range Deflection	Less than .0008
Circuit	4-ARM 350 OHM Bridge



# CAVITY PRESSURE TRANSDUCERS

## FLAT STYLE



▶ CAD insertion point

Specifications	
Press Measure Range	0-2000 PSI
Force Range	CPT-405C 500LB (225Kg) CPT-406C 2000LB (900Kg)
Maximum Load	150% Full Scale
Temperature Range	0° - 450° F
Temperature Comp.	2% Full Scale
Input	12 Volt Max
Output	2.0mV/V Full Scale
Accuracy	3/4% Full Scale
Repeatability	0.1% Full Range Output
Full Range Deflection	Less than .0008
Circuit	4-ARM 350 OHM Bridge

CATALOG NUMBER	Ejector Pin Size
CPT-405C	1/16ø to 3/16ø
CPT-406C	3/16ø to 1/2ø

## PATCH CABLES



CATALOG NUMBER	Color	Function	Ends	Length (ft)
ECCA-1-10	Red	Hot Sprue	Male/Female	10
ECCA-1-20	Red	Hot Sprue	Male/Female	20
ECCA-1-20SF	Red	Hot Sprue	Single Female	20
ECCA-1-10CC	Red	Hot Sprue	5 Pin M/5 Pin F	10
ECCA-1-10LC	Red	Hot Sprue	5 Pin M/Female	10
ECCA-2-10	Yellow	Cav. Press	Male/Male	10
ECCA-2-20	Yellow	Cav. Press	Male/Male	20
ECCA-2-20S	Yellow	Cav. Press	Single Male	20
ECCA-3-10	Gray	Enable Switch	Male/Male	10
ECCA-3-20	Gray	Enable Switch	Male/Male	20
ECCA-3-20S	Gray	Enable Switch	Single Male	20
ECCA-4-10	Black	Core In	Male/Male	10
ECCA-4-20	Black	Core In	Male/Male	20
ECCA-4-20S	Black	Core In	Single Male	20
ECCA-5-10	White	Core Out	Male/Male	10
ECCA-5-20	White	Core Out	Male/Male	20
ECCA-5-20S	White	Core Out	Single Male	20
ECCA-6-10	Green	Ejector Switch	Male/Male	10
ECCA-6-20	Green	Ejector Switch	Male/Male	20
ECCA-6-20S	Green	Ejector Switch	Single Male	20
ECCA-7-10	Orange/Blue	Stationary/Movable	Male/Male	10
ECCA-7-20	Orange/Blue	Stationary/Movable	Male/Male	20
ECCA-7-20S	Orange/Blue	Stationary/Movable	Single Male	20



ECCA-1-10CC has a 5-pin hooded connector compatible with most standard single zone controllers.



ECCA-1-10LC connects the Hot Sprue Recessed Connector and most standard single zone controllers.



Single-ended cables also available in 20' lengths.

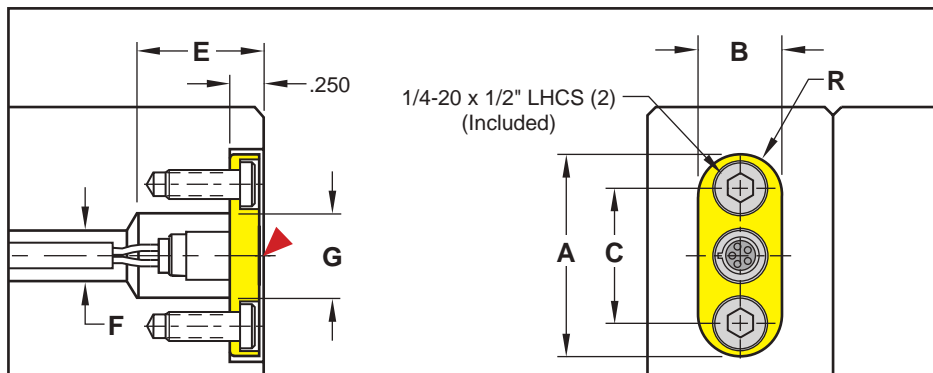
## JUMPER PLUGS



CATALOG NUMBER	Color	Function
ECJP-3	Gray	Enable Switches
ECJP-4	Black	Core In
ECJP-5	White	Core Out
ECJP-6	Green	Ejector Switches



# RECESSED CONNECTORS



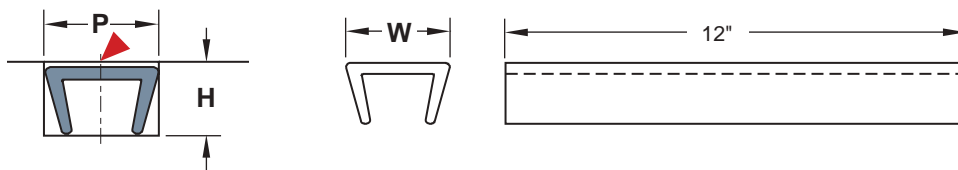
▶ CAD insertion point

CATALOG NUMBER	Color	Function	Pin Outs	A	B	C	R	E	F Diameter	G Diameter
<b>ECRC-1</b>	Red	Hot Sprue	5	2.000	1.00	1.500	.375	1.312	.500	1.00
<b>ECRC-2</b>	Yellow	Cav. Press	5	2.000	.875	1.500	.375	1.187	.375	.875
<b>ECRC-3</b>	Gray	Enable Switch	3	1.500	.625	1.000	.312	.937	.375	.625
<b>ECRC-4</b>	Black	Core In	3	1.500	.625	1.000	.312	.937	.375	.625
<b>ECRC-5</b>	White	Core Out	3	1.500	.625	1.000	.312	.937	.375	.625
<b>ECRC-6</b>	Green	Ejector Switch	4	1.500	.625	1.000	.312	.937	.375	.625
<b>ECRC-7</b>	Orange	Stationary T/C	2	1.500	.625	1.000	.312	.937	.375	.625
<b>ECRC-8</b>	Blue	Movable T/C	2	1.500	.625	1.000	.312	.937	.375	.625

Note: As a safety precaution, the ECRC-1 for the Hot Sprues include a male plug, which is compatible with the ECCA-1-20SF female ended patch cable. Hot Sprue Bushings are sold on page K-8.

Crimp-style bullet snap connectors included.

# WIRE CHANNEL INSERTS



**M** Nylon

▶ CAD insertion point

CATALOG NUMBER	P Pocket Width	H Pocket Depth	W Wire Channel Width
<b>WC-50</b>	.550	.500	.564 ±.01
<b>WC-100</b>	1.000	.688	1.021 ±.02

Maximum mold temperature: 450° F (230° C)

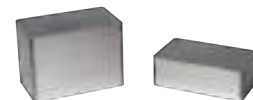
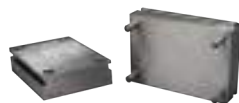






# RAPID TOOLING INSERTS

## SECTION L



Rapid Tooling Inserts	RTI: S-Series	RTI: Complete	RTI Cavity & Core Inserts
Prefix: RTS, RTL, RTT	Prefix: RTS	Prefix: RTLTP	Prefix: RCI, RCIA
Page: L-1	Page: L-15	Page: L-16	Page: L-17



RTI Frames	RTI Pins & Bushings	Frame Sprue Bushing	Support Pillars
Prefix: RTF	Prefix: RLP, RSB, RGEB	Prefix: RFS	Prefix: RSP
Page: L-18	Page: L-22	Page: L-23	Page: L-23



Straps	Frame Clamps	T-Handles
Prefix: MS	Prefix: RFC	Prefix: T
Page: L-24	Page: L-24	Page: L-24





# RAPID TOOLING INSERTS®



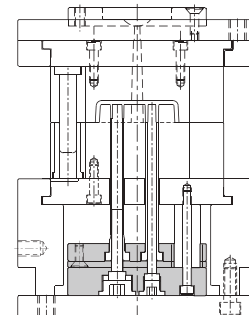
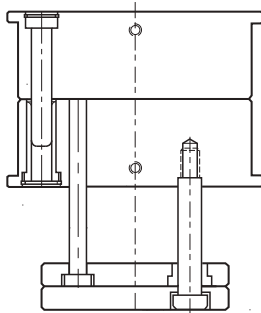
## Special design configurations and accessories available:

### Installed Guide Pins and Bushings:

Rapid Tooling Inserts can include Guide Pins and Bushings and/or Return Pins at standard Progressive locations or modified to suit your application. See individual pages for more details.

### Sleeve Ejector Plate Systems:

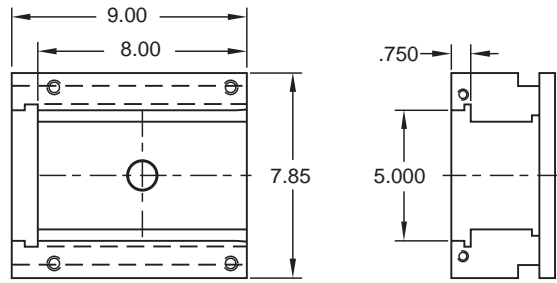
Available as an option on all Rapid Tooling Inserts, Sleeve Ejector Plates allow mold makers to install standard or Thin-Wall Sleeves. See individual pages for more details.



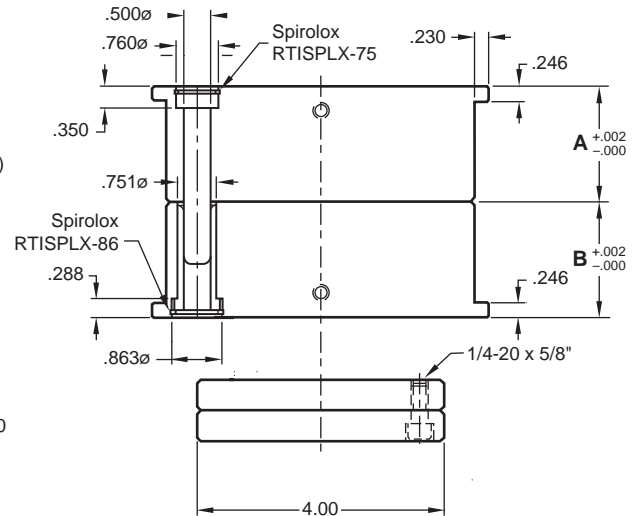
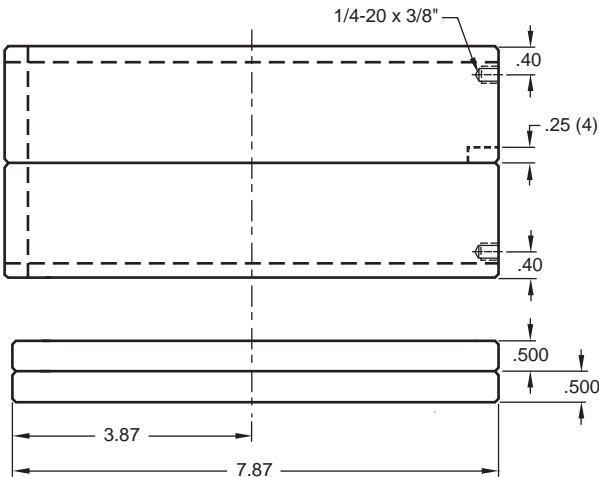
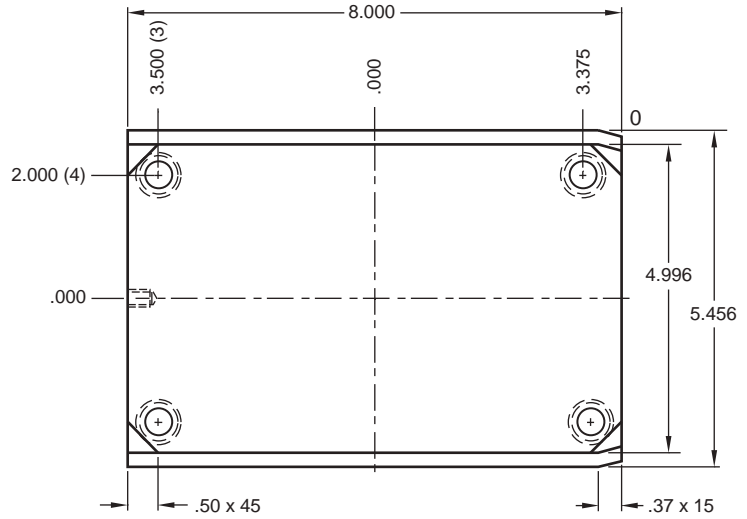
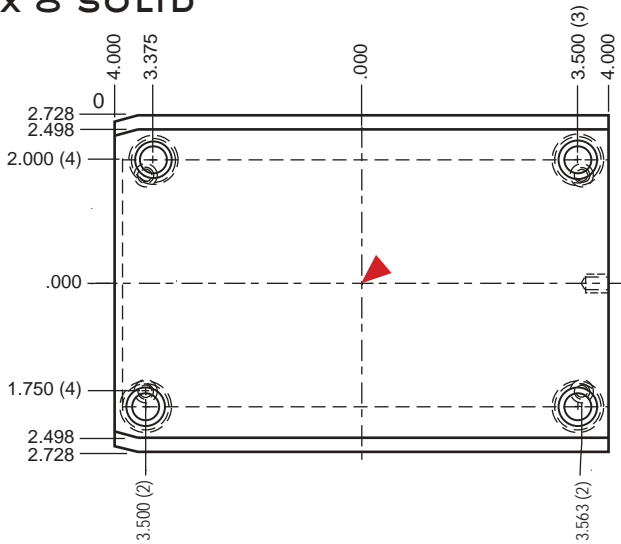
# RTI® 08/09 SERIES

The following inserts are used with frame 08/09:

- 5 x 8 Solid
- 5 x 8 Laminated
- 7.85 x 9 T-Style



## 5 x 8 SOLID



To order the 5 x 8 Solid RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTS0809-1313-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTS0809-1313-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTS0809-1313-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTS0809-1313-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

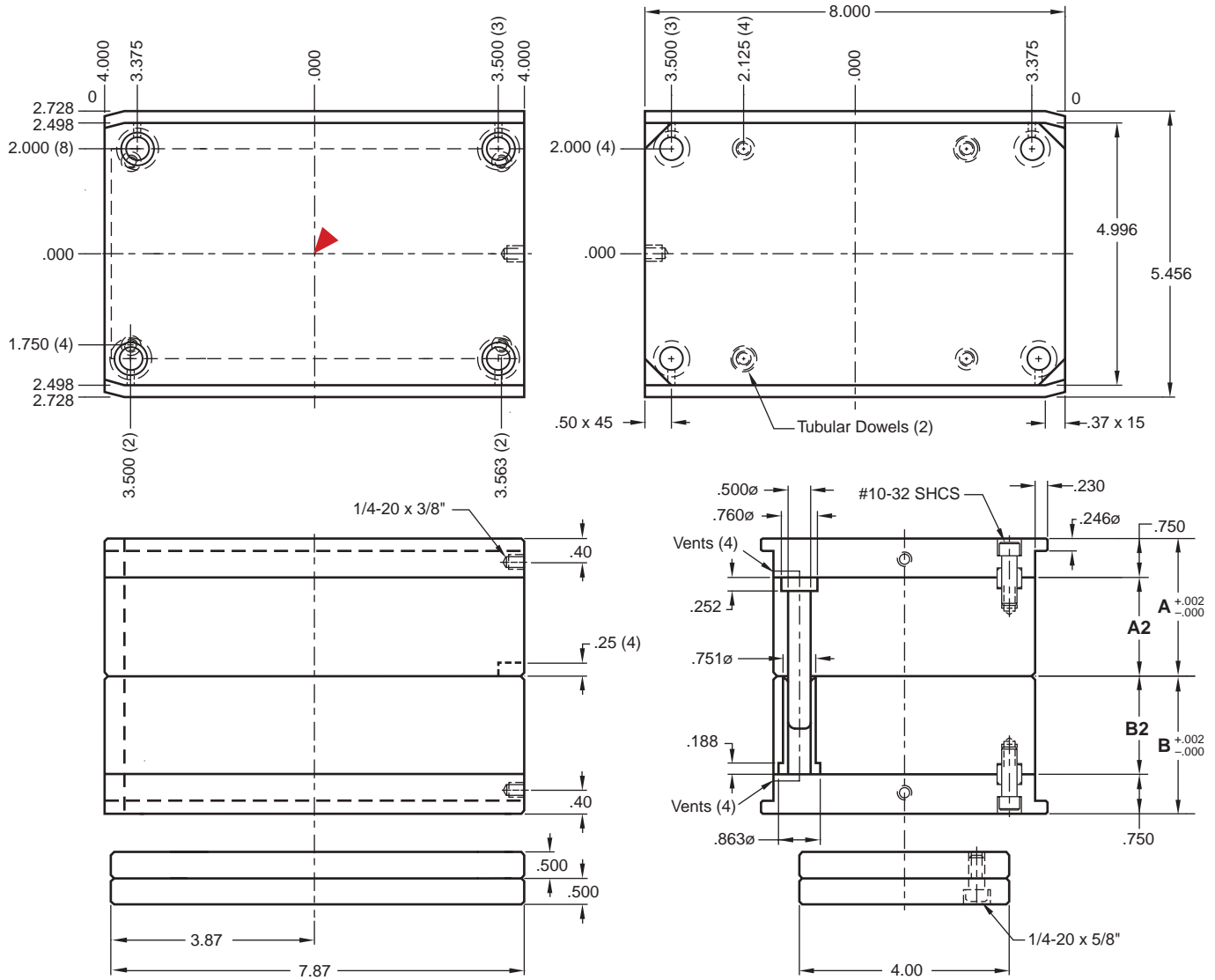
CATALOG NUMBER	A	B
RTS0809-1313	1.376	1.376
RTS0809-1318	1.376	1.876
RTS0809-1813	1.876	1.376
RTS0809-1818	1.876	1.876
RTS0809-1823	1.876	2.376
RTS0809-2318	2.376	1.876
RTS0809-2323	2.376	2.376

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.



# RTI® 08/09 SERIES

## 5 x 8 LAMINATED



To order the 5 x 8 Laminated RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTL0809-1313-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTL0809-1313-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTL0809-1313-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTL0809-1313-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

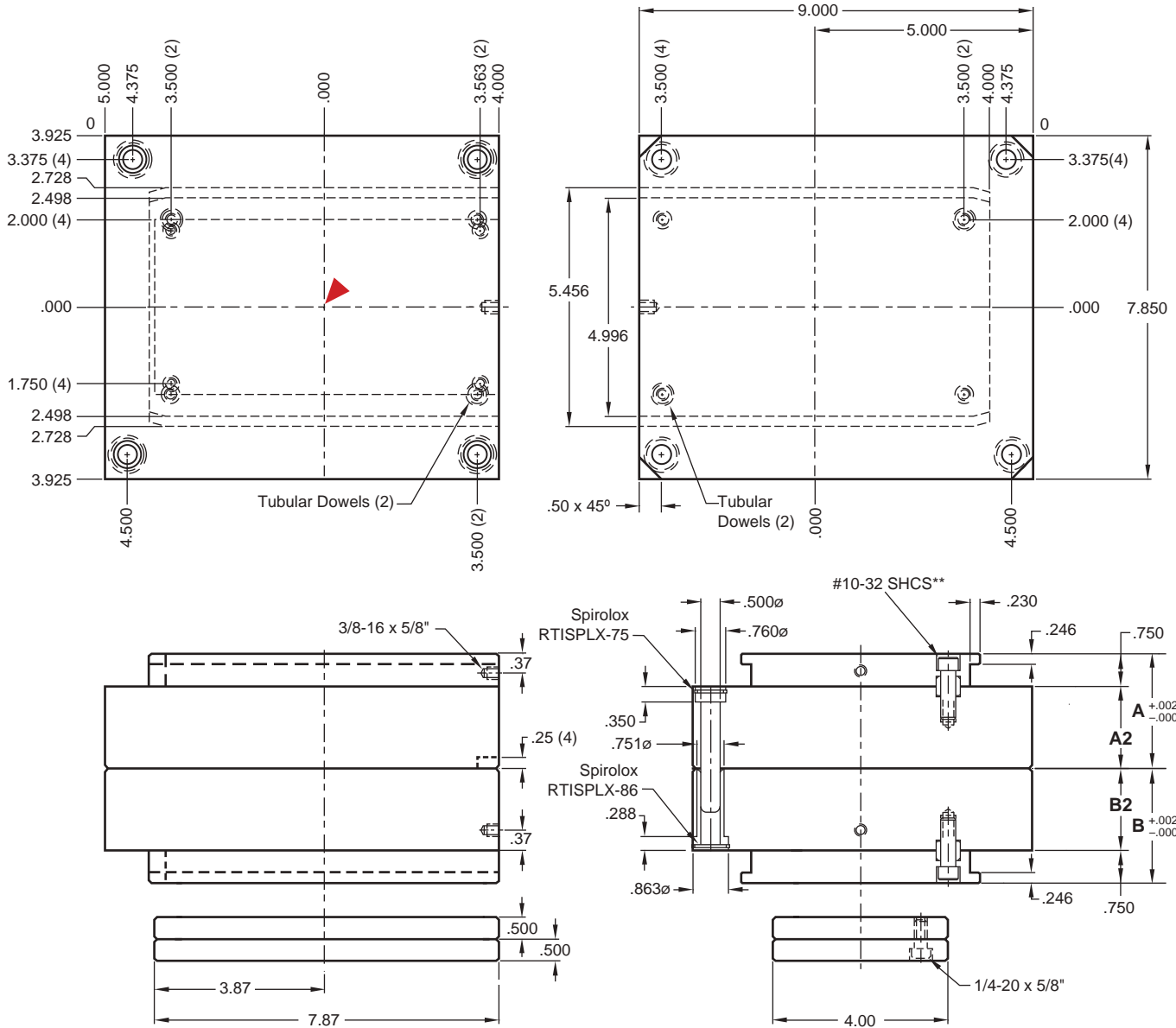
CATALOG NUMBER	A	A2	B	B2
RTL0809-1313	1.376	.626	1.376	.626
RTL0809-1318	1.376	.626	1.876	1.126
RTL0809-1813	1.876	1.126	1.376	.626
RTL0809-1818	1.876	1.126	1.876	1.126
RTL0809-1823	1.876	1.126	2.376	1.626
RTL0809-2318	2.376	1.626	1.876	1.126
RTL0809-2323	2.376	1.626	2.376	1.626

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.

# RTI® 08/09 SERIES

## 7.85 x 9 T-STYLE

Note: Offset zero location.



\*\*RTT0809-2222 & -2626 have 1/4-20 SHCS

To order the 7.85 x 9 T-Style RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTT0809-1717-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTT0809-1717-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTT0809-1717-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTT0809-1717-RPGPB.

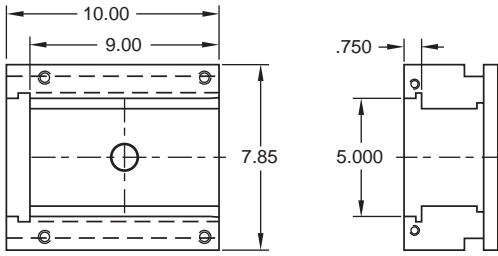
**M** All plates are P-20 Pre-Hard.  CAD insertion point

CATALOG NUMBER	A	A2	B	B2
<b>RTT0809-1717</b>	1.751	1.001	1.751	1.001
<b>RTT0809-1722</b>	1.751	1.001	2.251	1.501
<b>RTT0809-2222</b>	2.251	1.501	2.251	1.501
<b>RTT0809-2626</b>	2.626	1.876	2.626	1.876

Includes Leader Pins, Bushings, all Screws, and MS65 Mold Strap and Screws.



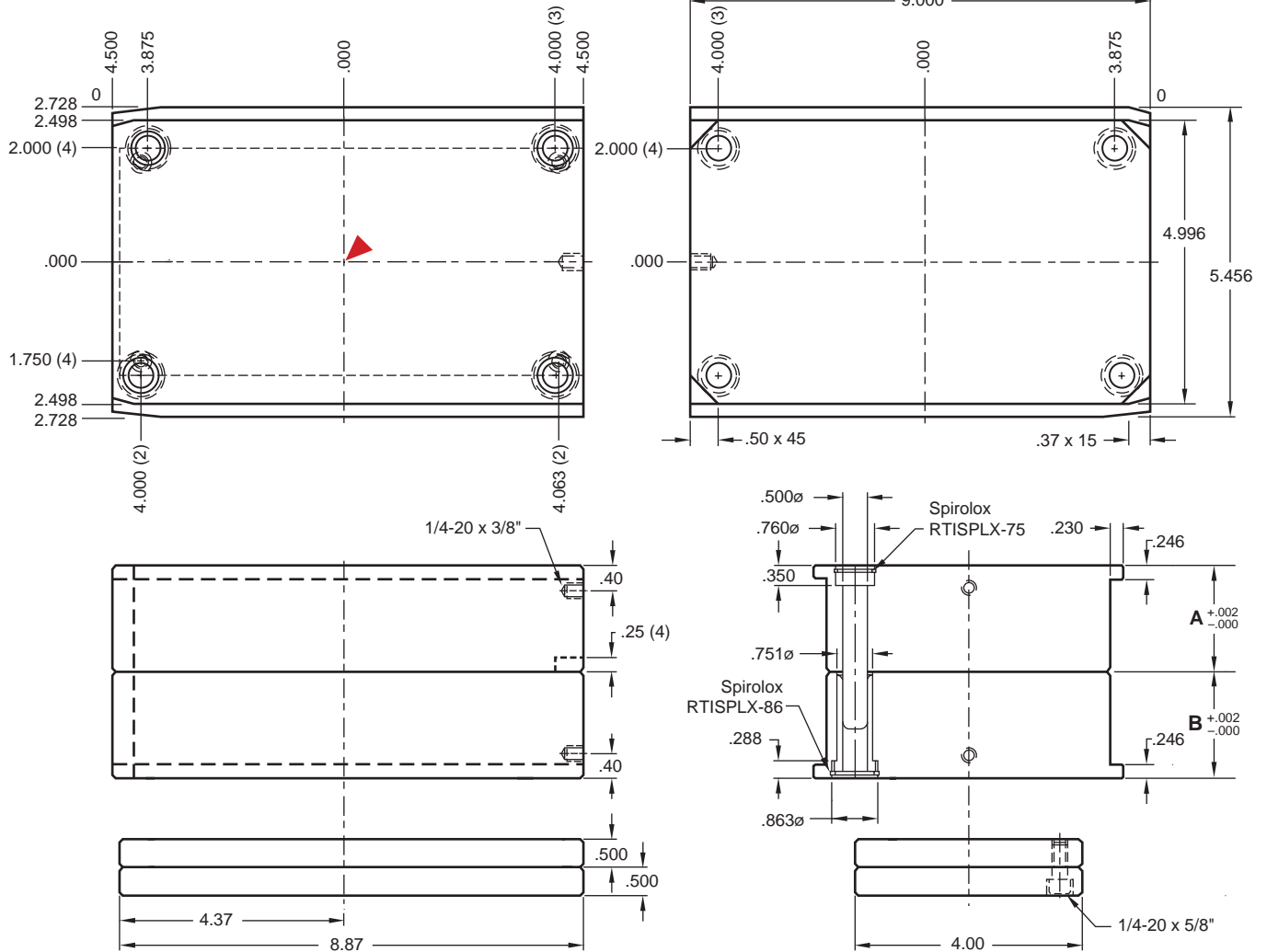
# RTI® 08/10 SERIES



The following inserts are used with frame 08/10:

- 5 x 9 Solid
- 5 x 9 Laminated
- 7.85 x 9 T-Style

## 5 x 9 SOLID



To order the 5 x 9 Solid RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTS0810-1313-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTS0810-1313-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTS0810-1313-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTS0810-1313-RPGPB.

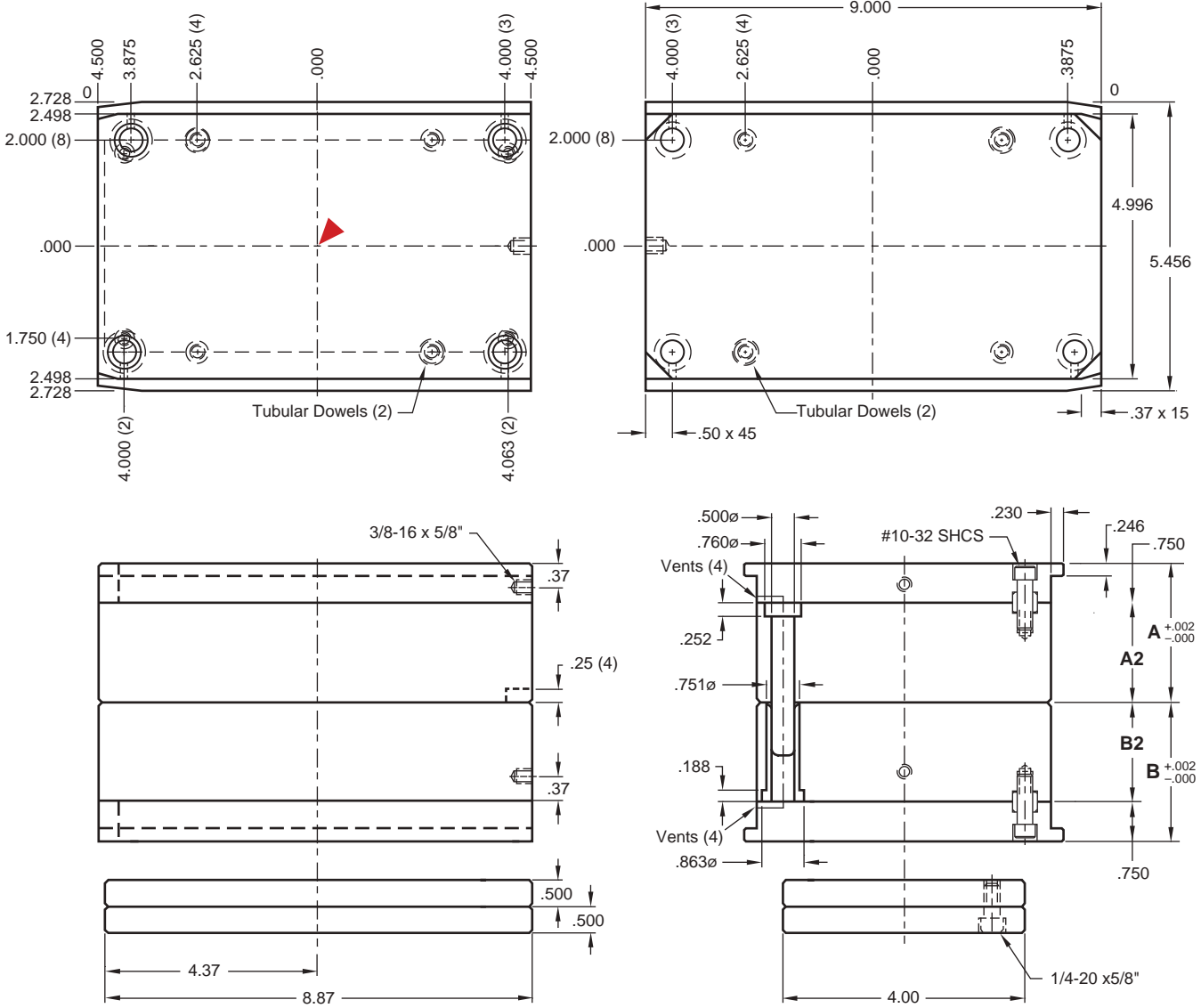
**M** All plates are P-20 Pre-Hard. CAD insertion point

CATALOG NUMBER	A	B
RTS0810-1313	1.376	1.376
RTS0810-1318	1.376	1.876
RTS0810-1813	1.876	1.376
RTS0810-1818	1.876	1.876
RTS0810-1823	1.876	2.376
RTS0810-2318	2.376	1.876
RTS0810-2323	2.376	2.376

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.

# RTI® 08/10 SERIES

## 5 x 9 LAMINATED



To order the 5 x 9 Laminated RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTL0810-1313-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTL0810-1313-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTL0810-1313-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTL0810-1313-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

CATALOG NUMBER	A	A2	B	B2
RTL0810-1313	1.376	.626	1.376	.626
RTL0810-1318	1.376	.626	1.876	1.126
RTL0810-1813	1.876	1.126	1.376	.626
RTL0810-1818	1.876	1.126	1.876	1.126
RTL0810-1823	1.876	1.126	2.376	1.626
RTL0810-2323	2.376	1.626	2.376	1.626

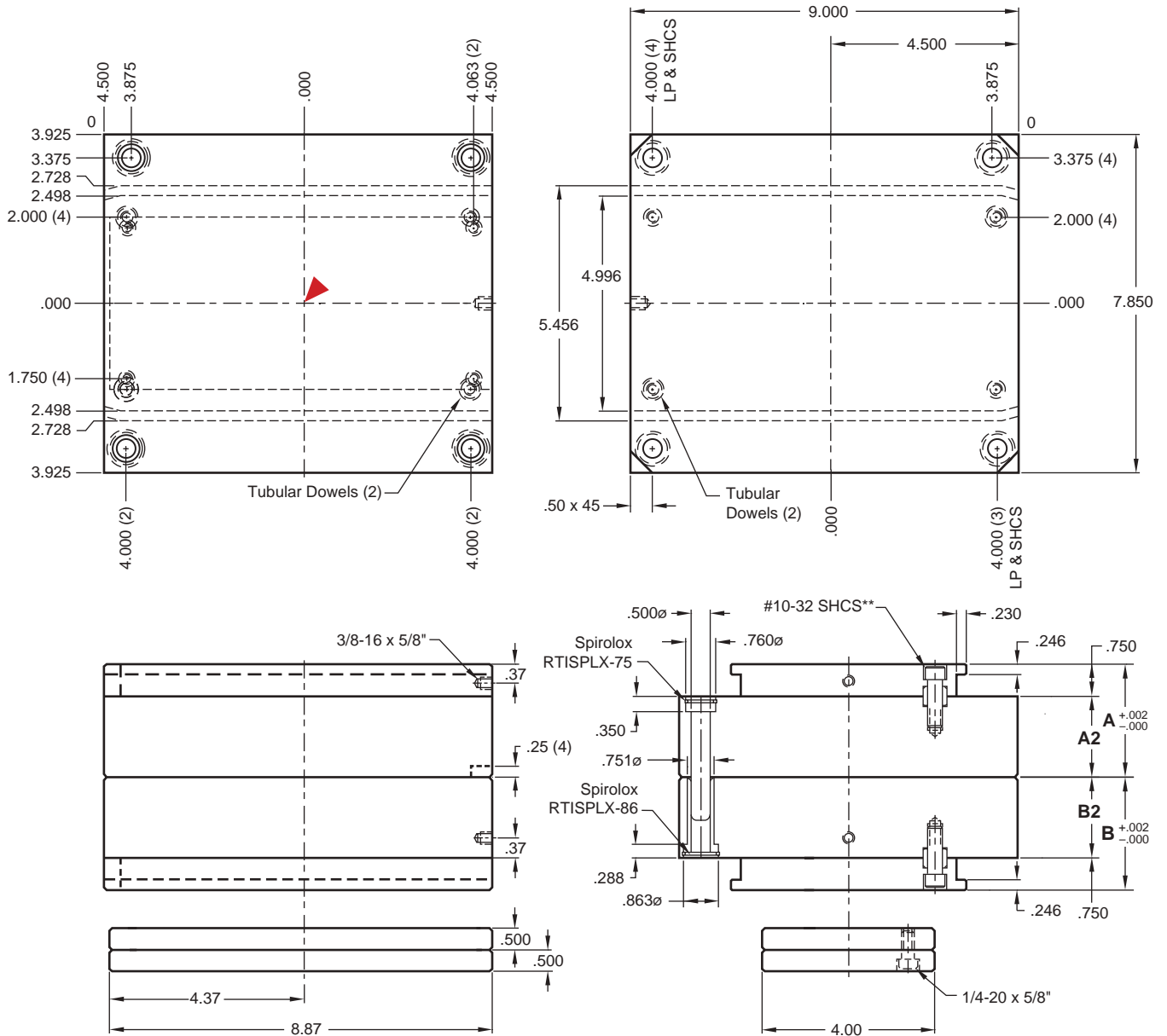
Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.





# RTI® 08/10 SERIES

## 7.85 x 9 T-STYLE



\*\*RTT0810-2626 has a 1/4-20 SHCS.

To order the 7.85 x 9 T-Style RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTT0810-1717-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTT0810-1717-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTT0810-1717-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTT0810-1717-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

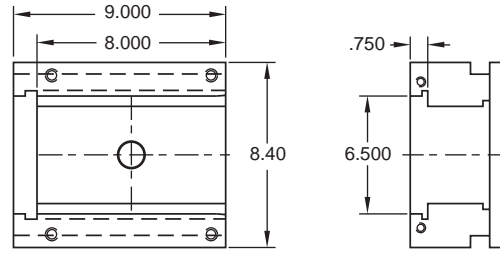
CATALOG NUMBER	A	A2	B	B2
<b>RTT0810-1717</b>	1.751	1.001	1.751	1.001
<b>RTT0810-1722</b>	1.751	1.001	2.251	1.501
<b>RTT0810-2626</b>	2.626	1.876	2.626	1.876

Includes Leader Pins, Bushings, all Screws, and MS65 Mold Strap and Screws.

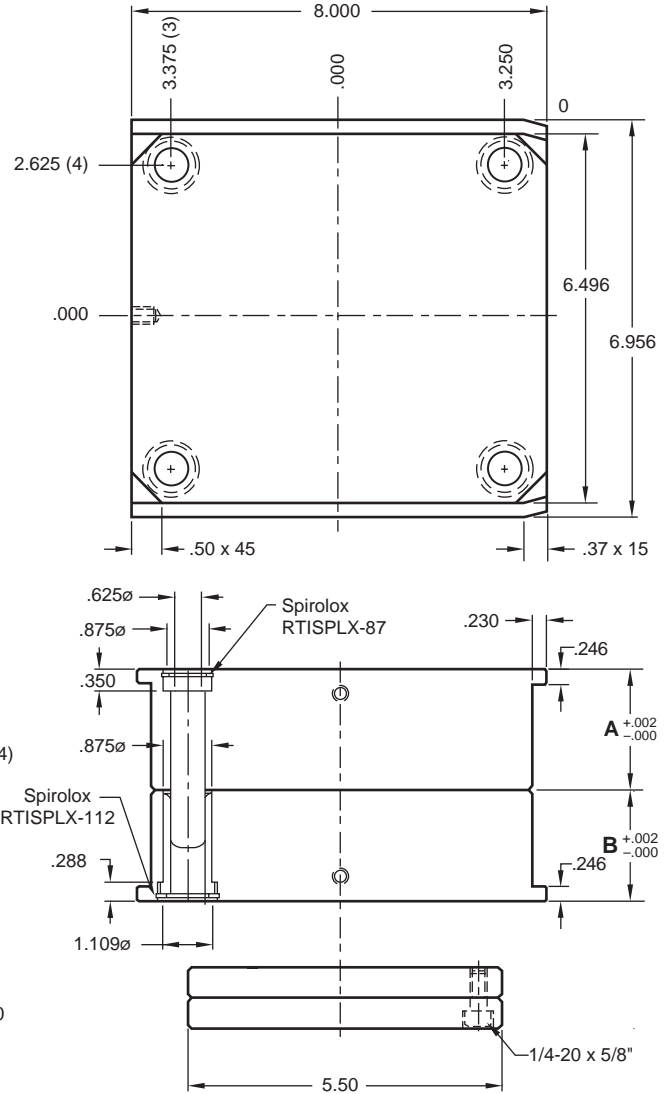
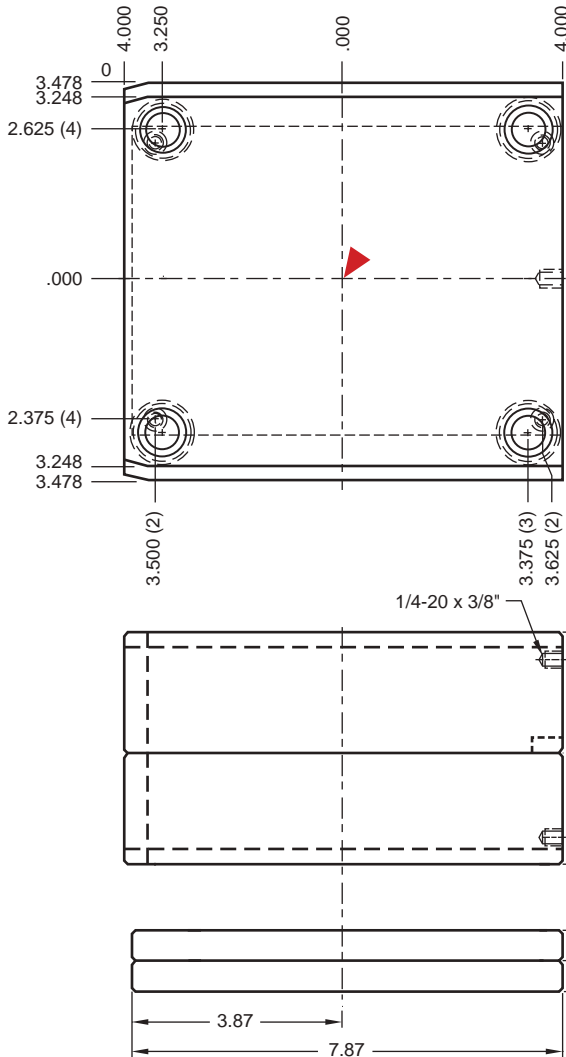
# RTI® 84/90 SERIES

The following inserts are used with frame 84/90:

- 6.5 x 8 Solid
- 6.5 x 8 Laminated
- 8.4 x 9 T-Style



## 6.5 x 8 SOLID



To order the 6 x 5 Solid RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTS8490-1313-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTS8490-1313-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTS8490-1313-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTS8490-1313-RPGPB.

**M** All plates are P-20 Pre-Hard. CAD insertion point

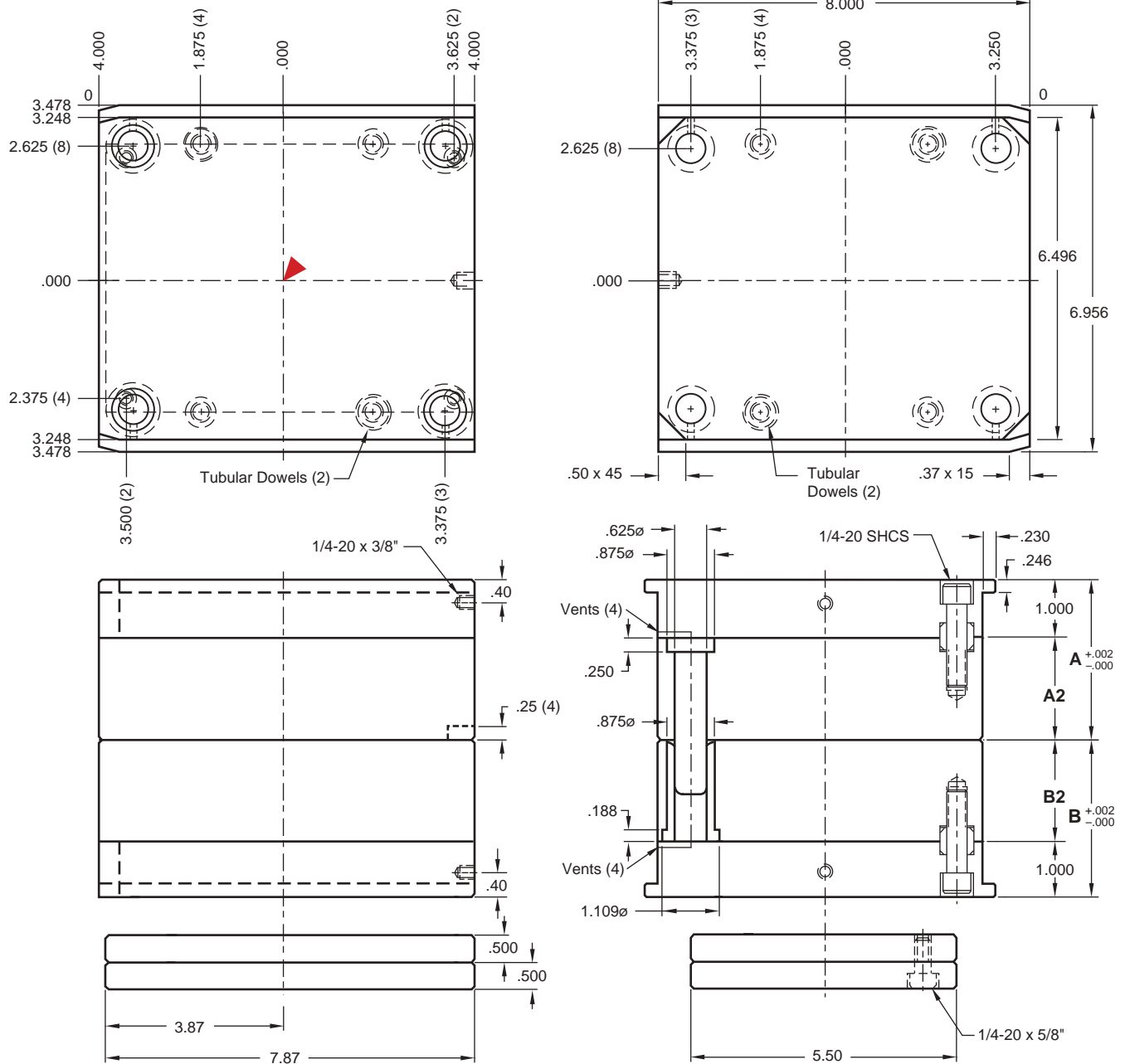
CATALOG NUMBER	A	B
<b>RTS8490-1313</b>	1.376	1.376
<b>RTS8490-1318</b>	1.376	1.876
<b>RTS8490-1813</b>	1.876	1.376
<b>RTS8490-1818</b>	1.876	1.876
<b>RTS8490-1823</b>	1.876	2.376
<b>RTS8490-2318</b>	2.376	1.876
<b>RTS8490-2323</b>	2.376	2.376

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.



# RTI® 84/90 SERIES

## 6.5 x 8 LAMINATED



To order the 6 x 5 Laminated RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTL8490-1818-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTL8490-1818-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTL8490-1818-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTL8490-1818-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

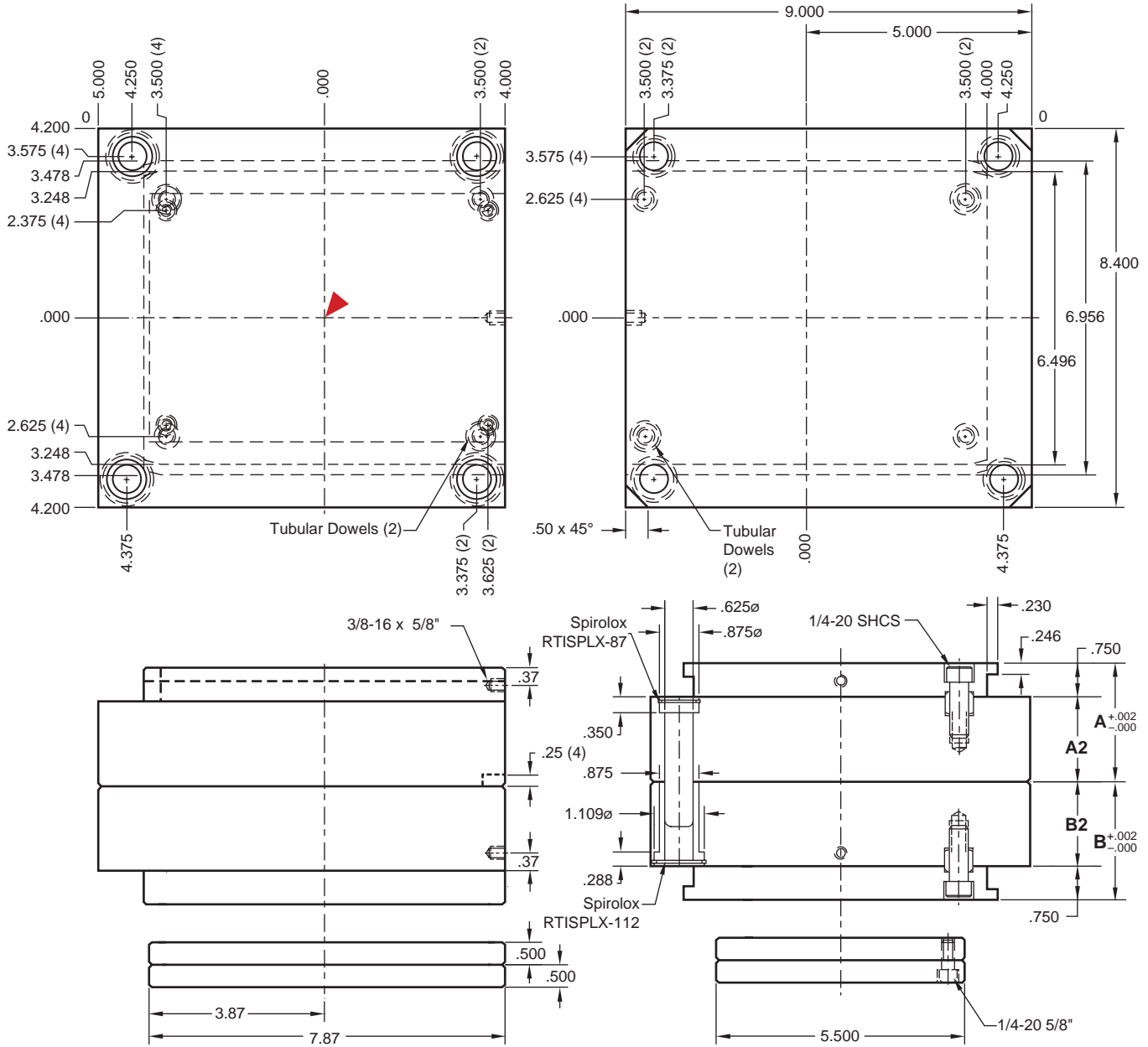
CATALOG NUMBER	A	A2	B	B2
<b>RTL8490-1818</b>	1.876	.876	1.876	.876
<b>RTL8490-1823</b>	1.876	.876	2.376	1.376
<b>RTL8490-2318</b>	2.376	1.376	1.876	.876
<b>RTL8490-2323</b>	2.376	1.376	2.376	1.376

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.

# RTI® 84/90 SERIES

## 8.4 x 9 T-STYLE

Note: Offset zero location.



To order the 8.4 x 9 T-Style RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTT8490-2020-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTT8490-2020-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTT8490-2020-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTT8490-2020-RPGPB.

**M** All plates are P-20 Pre-Hard.

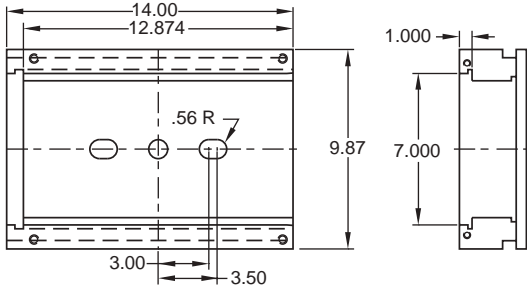
CAD insertion point

CATALOG NUMBER	A	A2	B	B2
RTT8490-2020	2.001	1.251	2.001	1.251
RTT8490-2222	2.251	1.501	2.251	1.501
RTT8490-2626	2.626	1.876	2.626	1.876

Includes Leader Pins, Bushings, Screws, and MS65 Mold Strap and Screws.



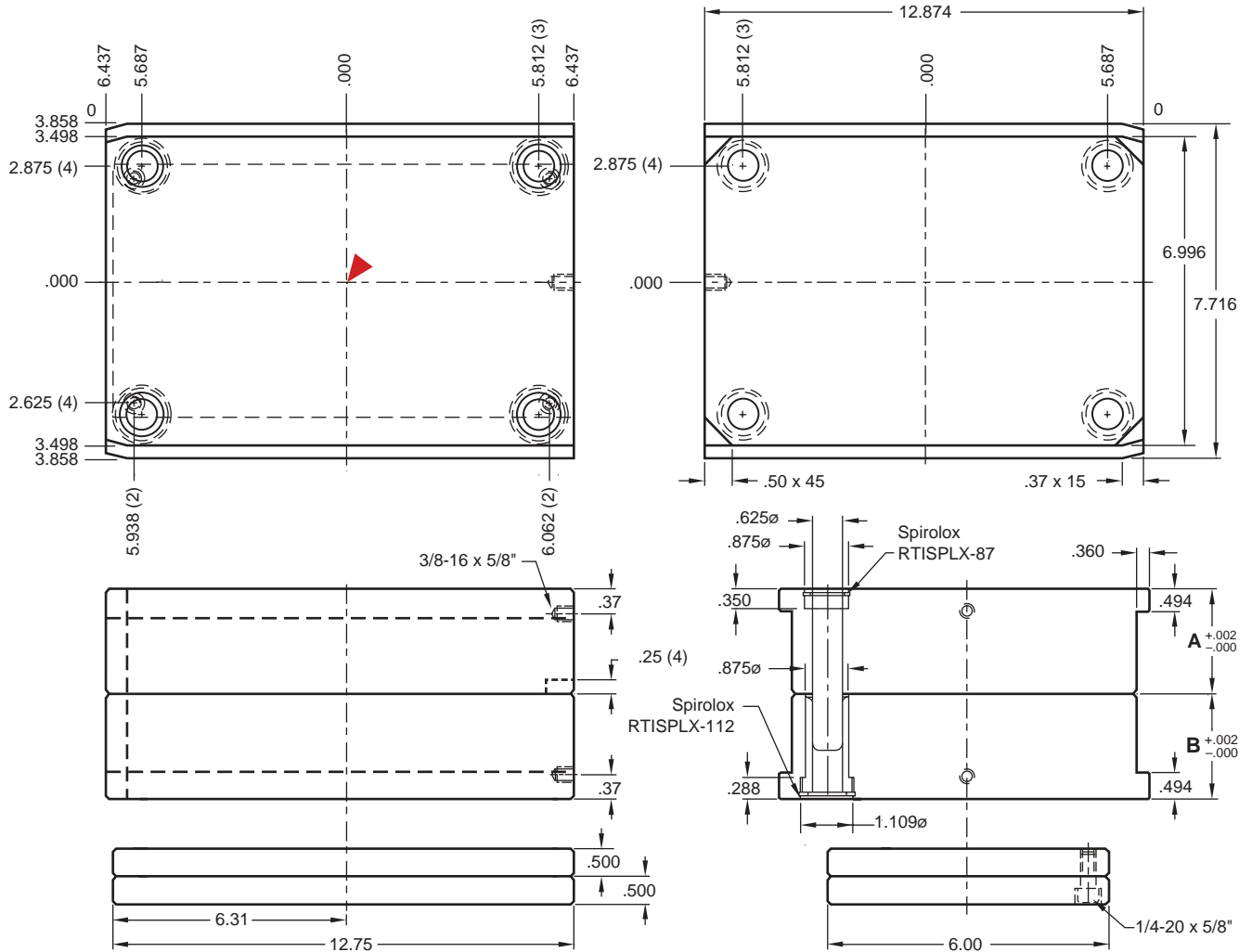
# RTI® 10/14 SERIES



The following inserts are used with frame 10/14:

- 7 x 12.9 Solid
- 7 x 12.9 Laminated

## 7 x 12.9 SOLID



To order the 7 x 12.9 Solid RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTS1014-1818-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTS1014-1818-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTS1014-1818-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTS1014-1818-RPGPB.

**M** All plates are P-20 Pre-Hard.

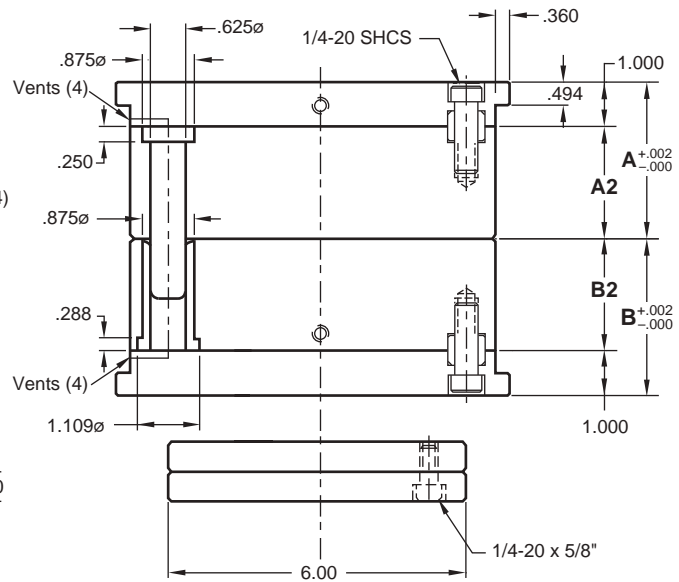
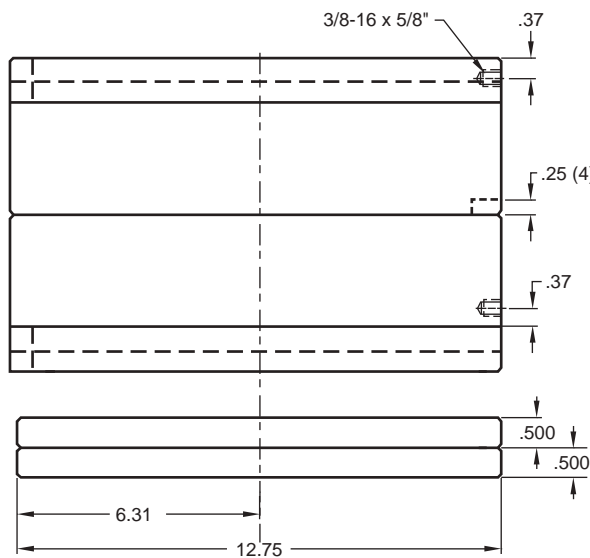
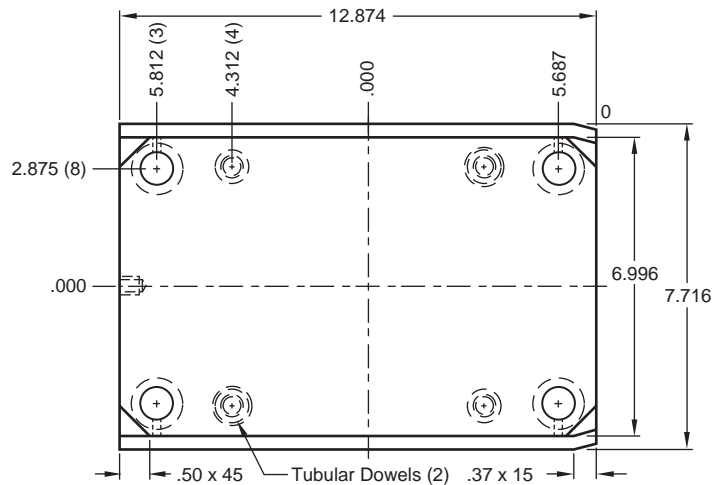
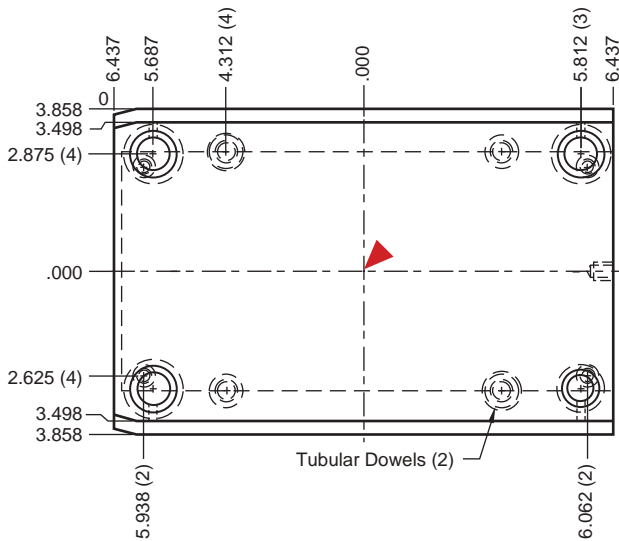
CAD insertion point

CATALOG NUMBER	A	B
<b>RTS1014-1818</b>	1.876	1.876
<b>RTS1014-1823</b>	1.876	2.376
<b>RTS1014-2318</b>	2.376	1.876
<b>RTS1014-2323</b>	2.376	2.376
<b>RTS1014-2328</b>	2.376	2.876
<b>RTS1014-2823</b>	2.876	2.376
<b>RTS1014-2828</b>	2.876	2.876

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.

# RTI® 10/14 SERIES

## 7 x 12.9 LAMINATED



To order the 7 x 12.9 Laminated RTI as shown above, specify the catalog number at right. Call for other materials, sizes, or component omissions and replacement plates.

### Options Available:

Refer to page L-13 for the default locations.

With Sleeve Ejector Plates and all components, extra plate: Specify the catalog number at right with -SEP as the suffix. Ex. RTL1014-2323-SEP.

With Return Pins (4) machined and included: Specify the catalog number at right with -RP as the suffix. Ex. RTL1014-2323-RP.

With Guide Pins and Bushings (2) machined and included: Specify the catalog number at right with -GPB as the suffix. Ex. RTL1014-2323-GPB.

With Guide Pins and Bushings (2) and Return Pins (4) machined and included: Specify the catalog number at right with -RPGPB as the suffix. Ex. RTL1014-2323-RPGPB.

**M** All plates are P-20 Pre-Hard.

CAD insertion point

CATALOG NUMBER	A	A2	B	B2
RTL1014-2323	2.376	1.376	2.376	1.376
RTL1014-2328	2.376	1.376	2.876	1.876
RTL1014-2823	2.876	1.876	2.376	1.376
RTL1014-2828	2.876	1.876	2.876	1.876

Includes Leader Pins, Bushings, all screws, and mold strap/thumb screws.

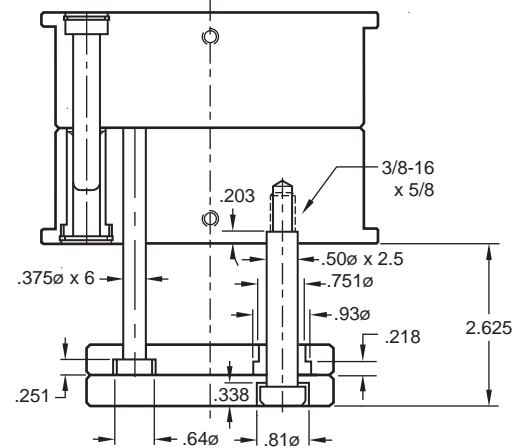
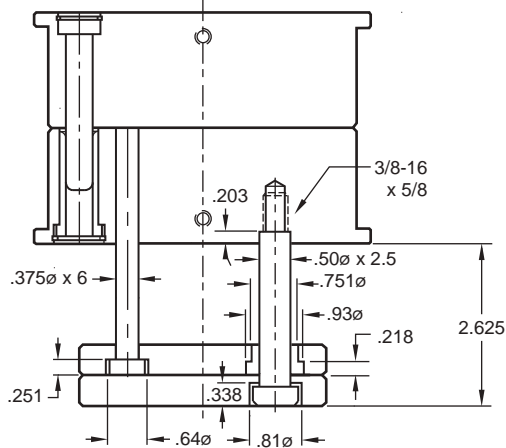
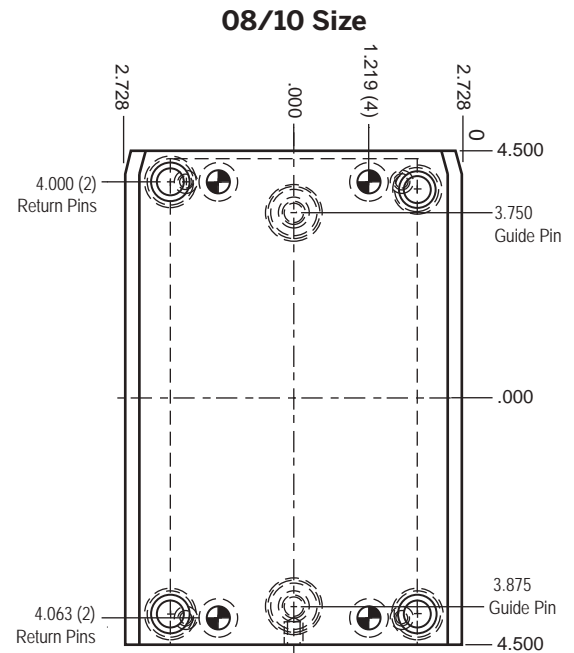
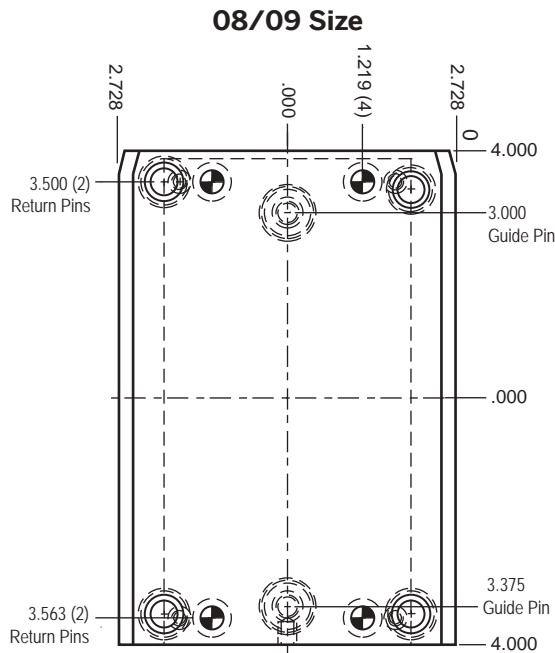


# RAPID TOOLING INSERTS®

## ADDITIONAL COMPONENT OPTIONS

RTIs are available with optional component configurations in the standard locations shown on these pages. To order, specify the catalog number from the previous pages and add the appropriate suffix as shown:

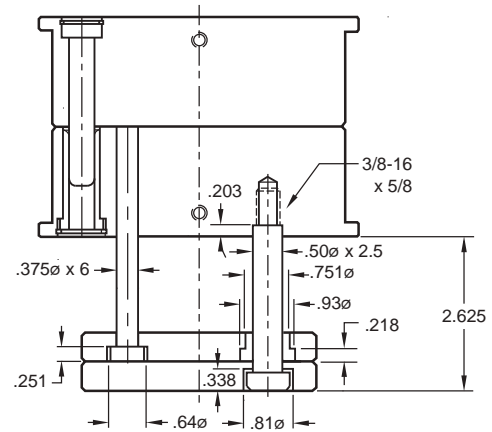
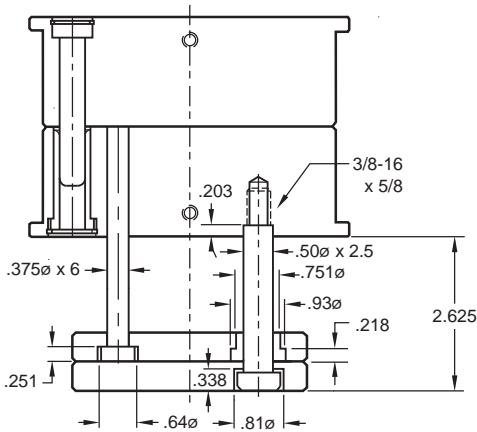
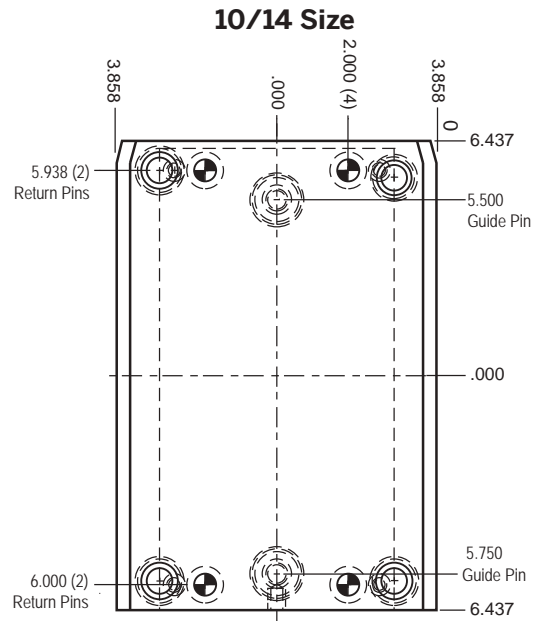
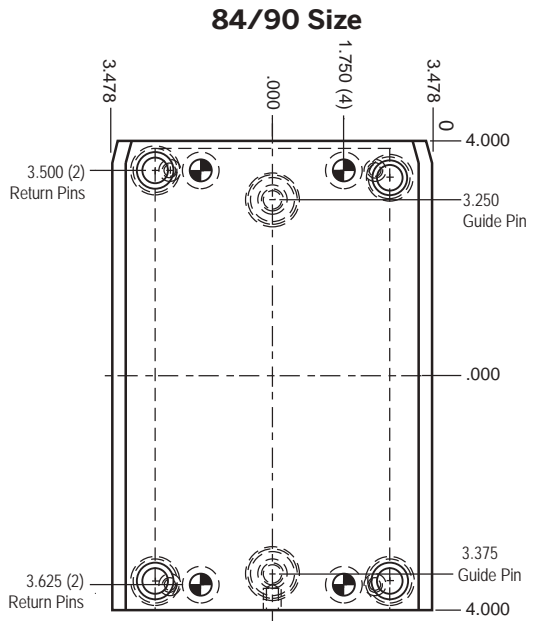
- RP = Return Pins (4) machined and included.
- GPB = Guide Pins and Bushings (2) machined and included.
- RGPB = Return Pins (4), Guide Pins, and Bushings machined and included.
- SEP = Sleeve Ejector Plate option



Return Pins, Guide Pins/Bushings are in the same locations for all sizes of Solid (shown), Laminated, and T-Style Inserts. Components may be relocated and other items machined. Contact [tech@procomps.com](mailto:tech@procomps.com) for a quotation.

# RAPID TOOLING INSERTS®

## ADDITIONAL COMPONENT OPTIONS

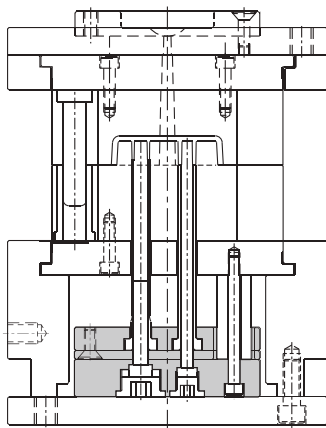


The Sleeve Ejector Plate (-SEP) option includes the following:

- Extra plate
- Guide Pins & Bushings (2)
- Return Pins (4)

For individual plates: A, B, Ear Plates, and Pin or Ejector Plates, contact Customer Service.

For additional material options for any plates, including stainless steel, contact [tech@procomps.com](mailto:tech@procomps.com).



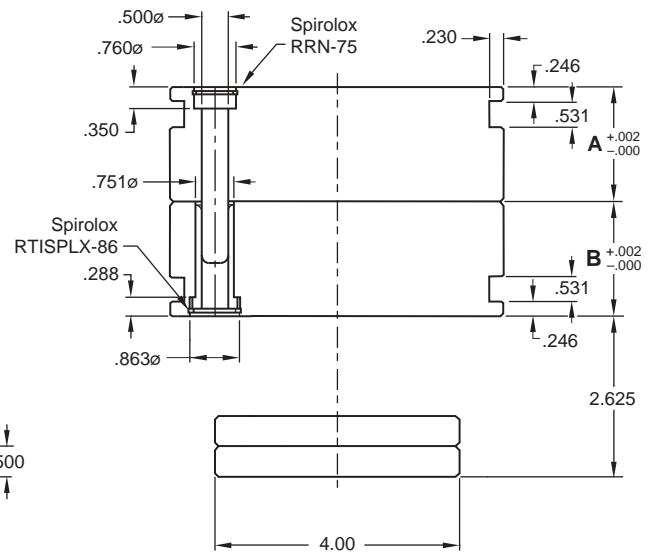
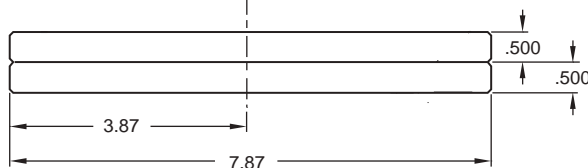
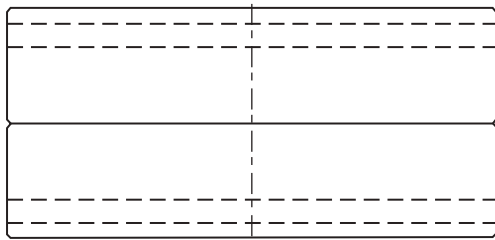
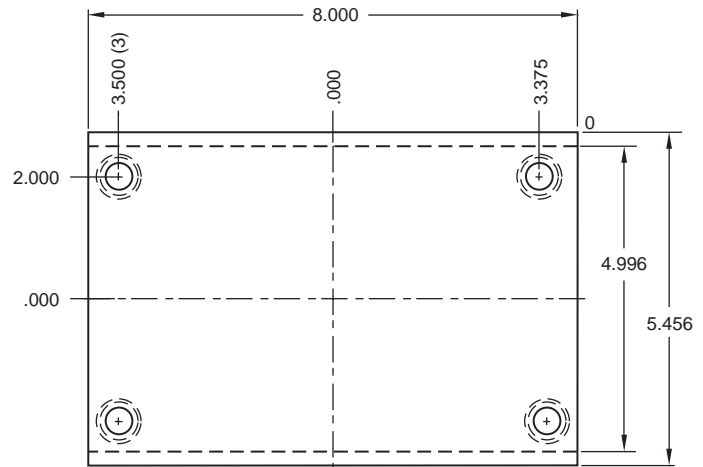
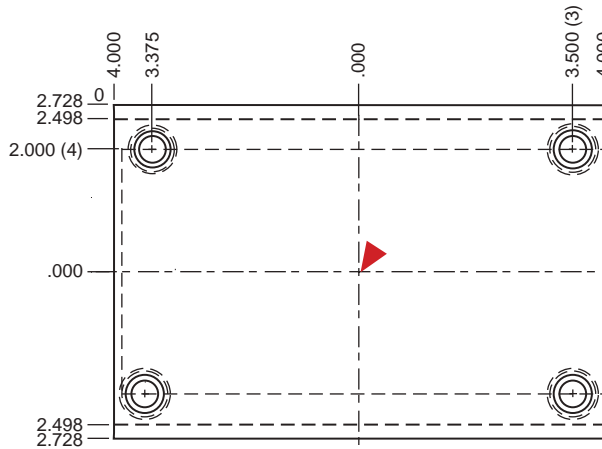
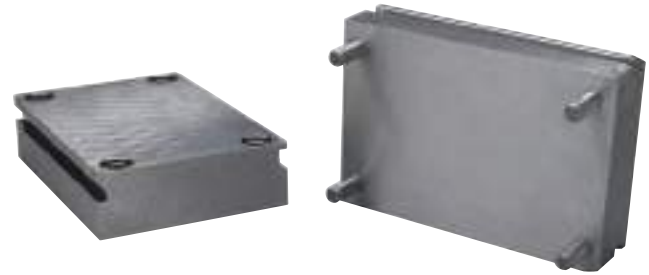




# RTI® S-SERIES

An economical alternative for prototype applications, the S-Series inserts offer an even surface for easy holding of the work piece. The S-Series also includes a finish ground parting line and four leader pins and bushings for positive alignment.

Size: 08/09 Series, 5x8 Solid Unit



**M** A & B Plates are FM-15 (#1 Steel) ▶ CAD insertion point

CATALOG NUMBER	A	B
RTS-0809-1818-S	1.876	1.876

Call for other materials, or sizes.

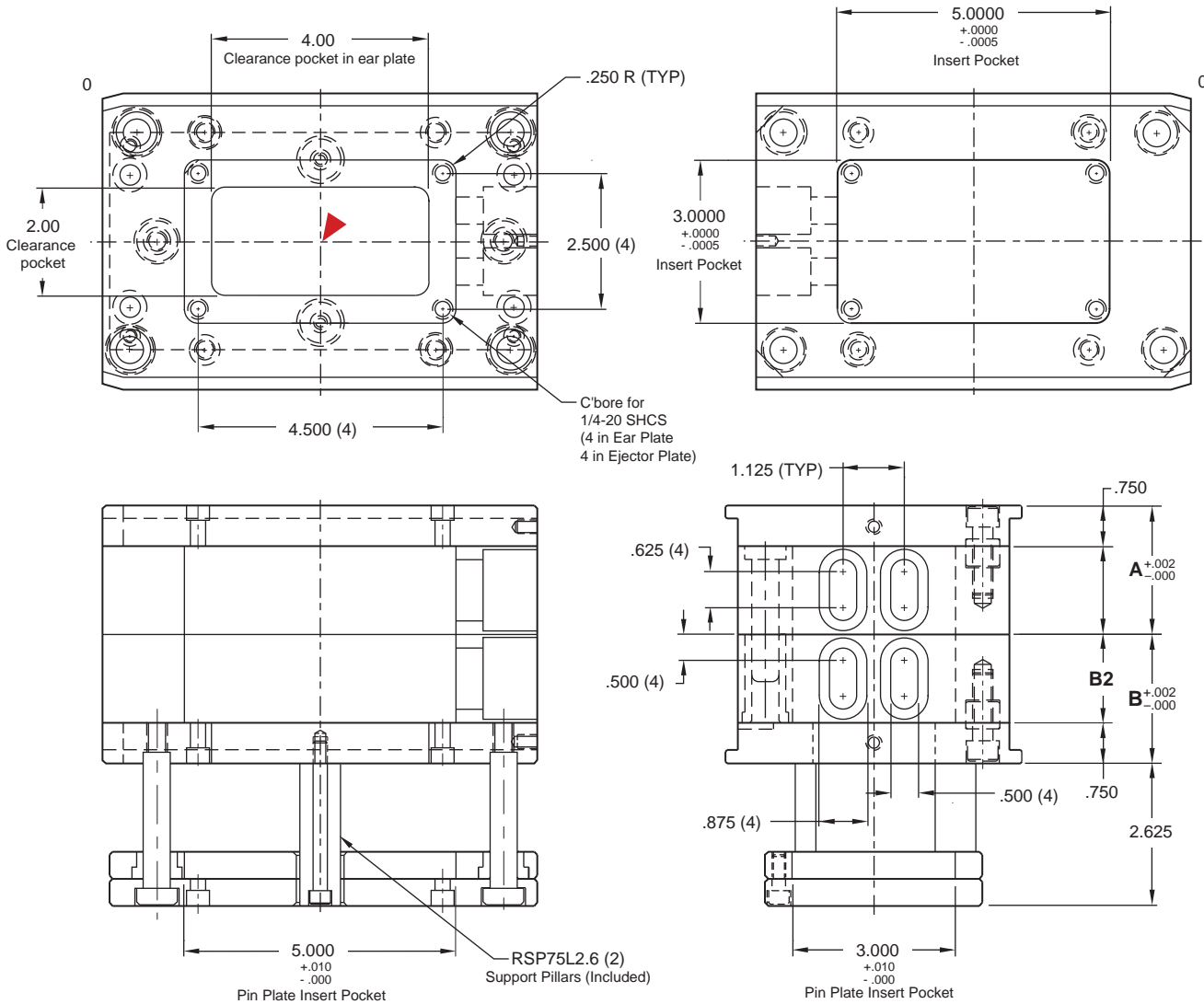
# RTI® COMPLETE



Rapid Tooling Inserts are now available with pre-machined pockets for core and cavity inserts. Also, the pin plate area is pocketed for complete quick tooling changes.

Size: 08/09 Series, 5x8 Laminated unit. Full specs are shown on page L-3.

Cavity, core, and pin plate inserts are available on page L-15.



**M** A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018 ▶ CAD insertion point

CATALOG NUMBER	A	A2	B	B2
<b>RTL-0809-2323-P</b>	2.376	1.626	2.376	1.626

Call for other materials, sizes, or component omissions.  
For ejector plates, pin plates, or full ejector assembly sets,  
refer to the price list for specific catalog numbers and pricing.



# RTI<sup>®</sup> COMPLETE CORE AND CAVITY INSERTS

## Material Options:

### DH2F, Modified H-13 40-42 HRC

This through-hardened material requires no additional heat treatment and is ready for machining of cavity and core details.

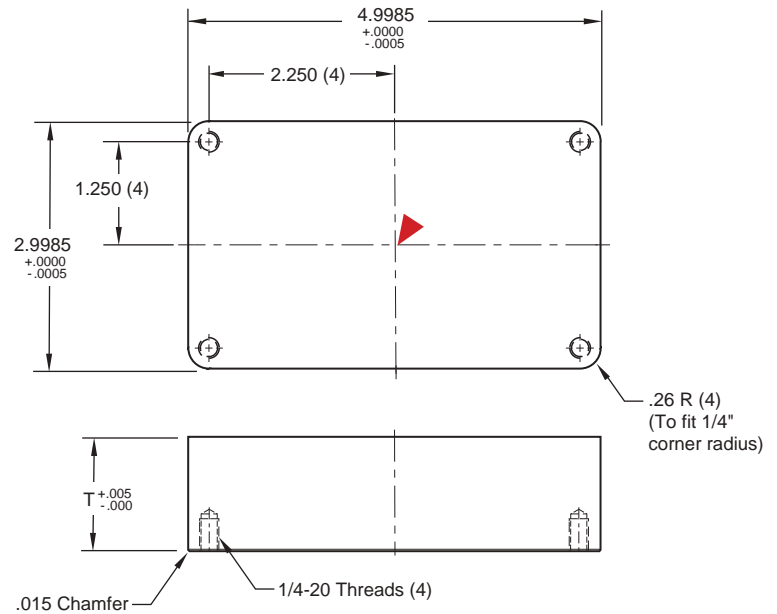
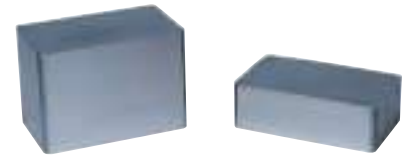
CATALOG NUMBER	T
RCI-0809-16	1.630
RCI-0809-35	3.500

### Alumec 99, Aluminum Alloy 164-168 Brinell

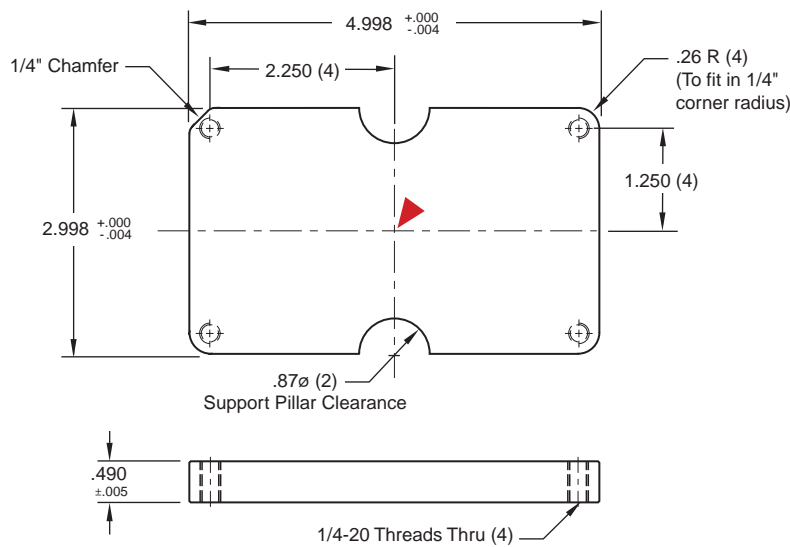
This aluminum material has excellent machinability, allowing faster cutting speeds for prototype tools which are not subjected to abrasive plastics.

CATALOG NUMBER	T
RCIA-0809-16	1.630
RCIA-0809-35	3.500

Screws included.



## PIN PLATE INSERTS



M AISI 1018

▶ CAD insertion point

CATALOG NUMBER	DESCRIPTION
RPI-0809-5	Pin Plate Insert

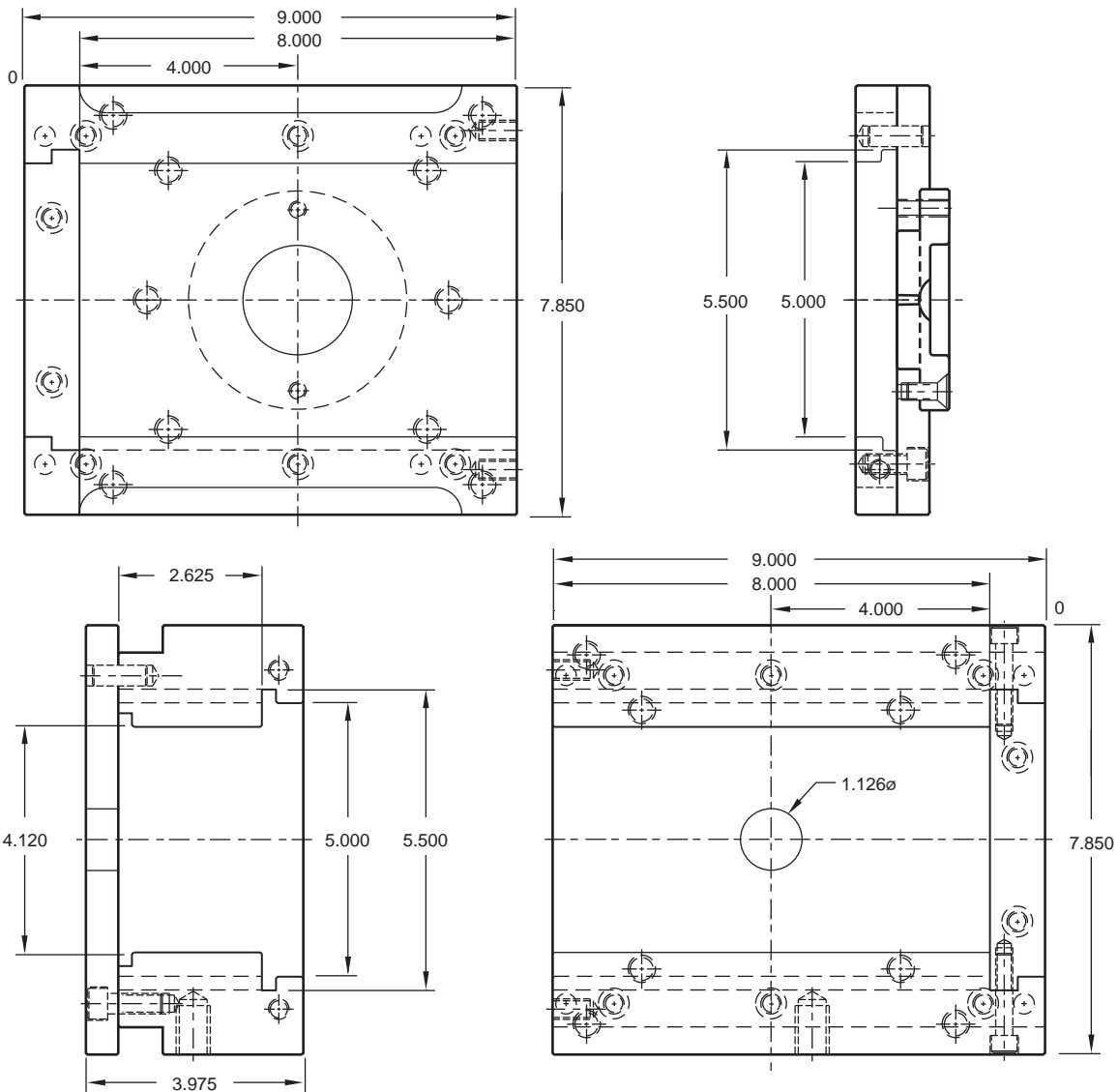
# RTI® 08/09 FRAME



Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

**Accepts:**

- 5 x 8 Solid Units, RTS-0809 on Page L-2
- 5 x 8 Laminated Units, RTL-0809 on Page L-3
- 7.85 x 9 T-Style Units, RTT-0809 on Page L-4



**M** Pre-Hardened Stainless Steel, 32-36 HRC

**Includes:**

- Frame
- RTI Frame Sprue Bushing
- Quick Change Clamps (4)

**To Order:**

- Specify Catalog Number: RTF-0809
- Sprue Bushing Orifice: 5/32, 7/32, 9/32
- Sprue Bushing Radius: 1/2 or 3/4

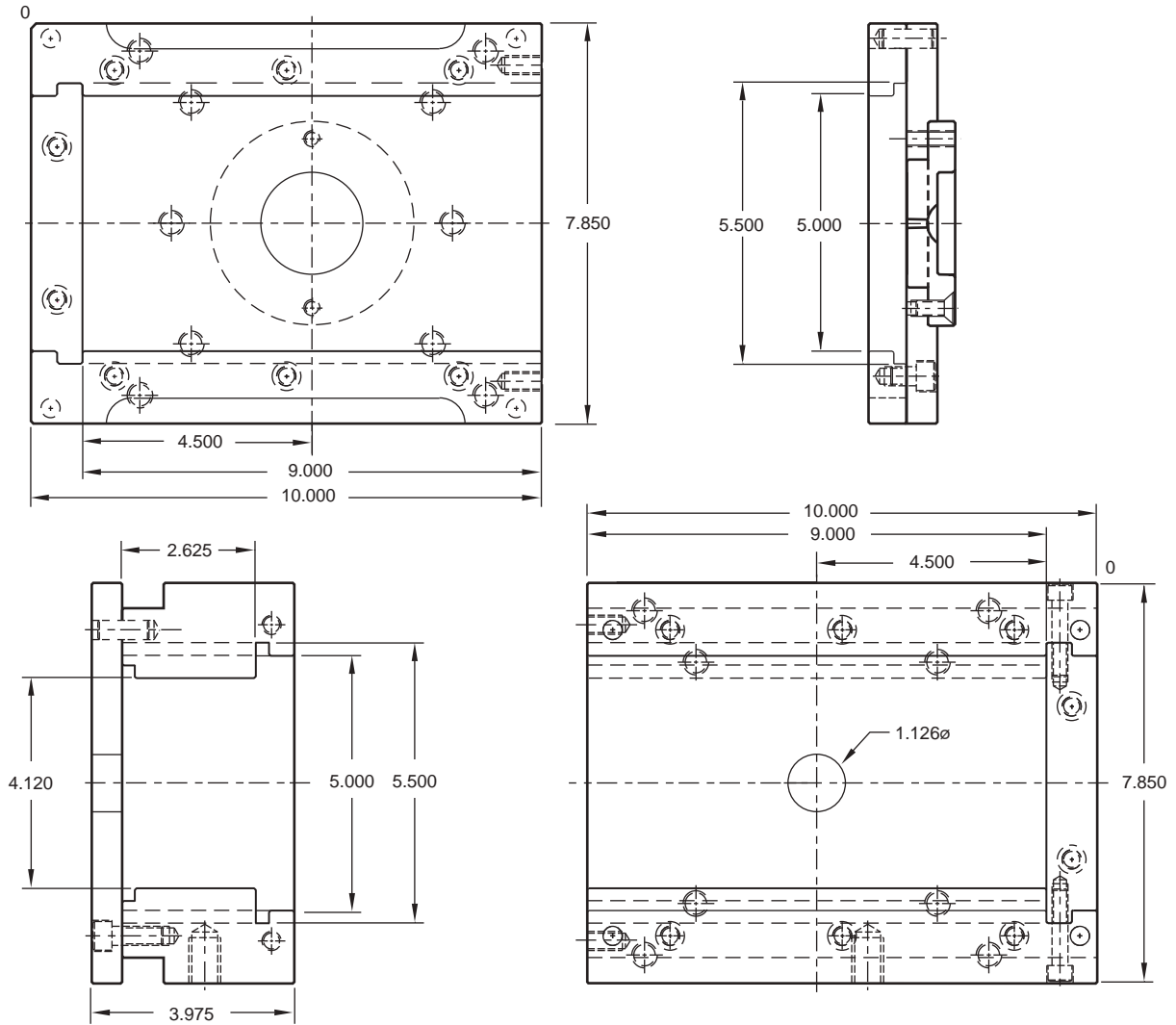


# RTI® 08/10 FRAME

Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

**Accepts:**

- 5 x 9 Solid Units, RTS-0810 on Page L-5
- 5 x 9 Laminated Units, RTL-0810 on Page L-6
- 7.85 x 9 T-Style Units, RTT-0810 on Page L-7



**M** Pre-Hardened Stainless Steel, 32-36 HRC

**Includes:**

- Frame
- RTI Frame Sprue Bushing
- Quick Change Clamps (4)

**To Order:**

- Specify Catalog Number: RTF-0810
- Sprue Bushing Orifice: 5/32, 7/32, 9/32
- Sprue Bushing Radius: 1/2 or 3/4

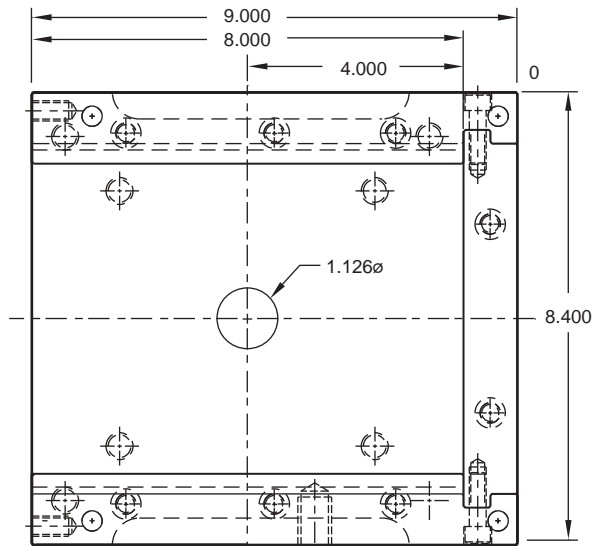
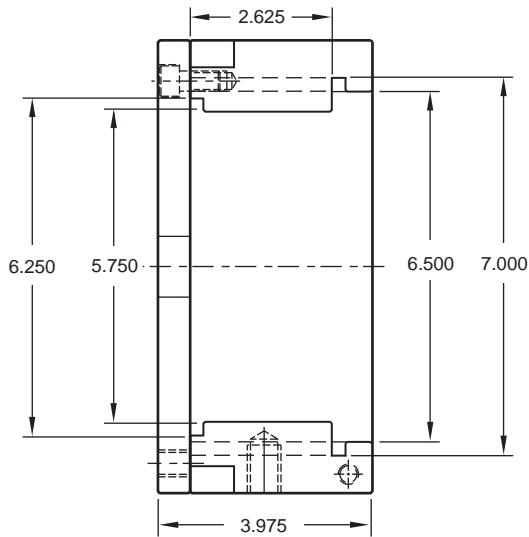
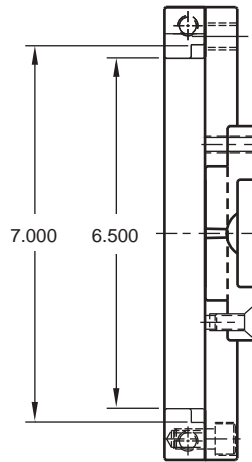
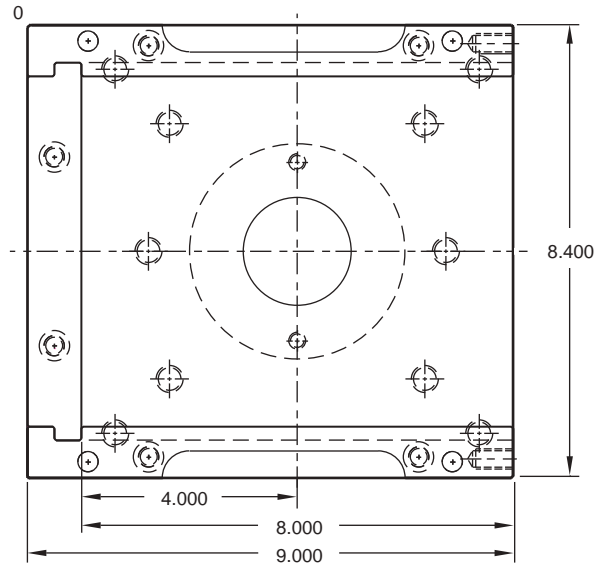
# RTI® 84/90 FRAME



Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

**Accepts:**

- 6.5 x 8 Solid Units, RTS-8490 on Page L-8
- 6.5 x 8 Laminated Units, RTL-8490 on Page L-9
- 8.4 x 9 T-Style Units, RTT-8490 on Page L-10



**M** Pre-Hardened Stainless Steel, 32-36 HRC

**Includes:**

- Frame
- RTI Frame Sprue Bushing
- Quick Change Clamps (4)

**To Order:**

- Specify Catalog Number: RTF-8490
- Sprue Bushing Orifice: 5/32, 7/32, 9/32
- Sprue Bushing Radius: 1/2 or 3/4

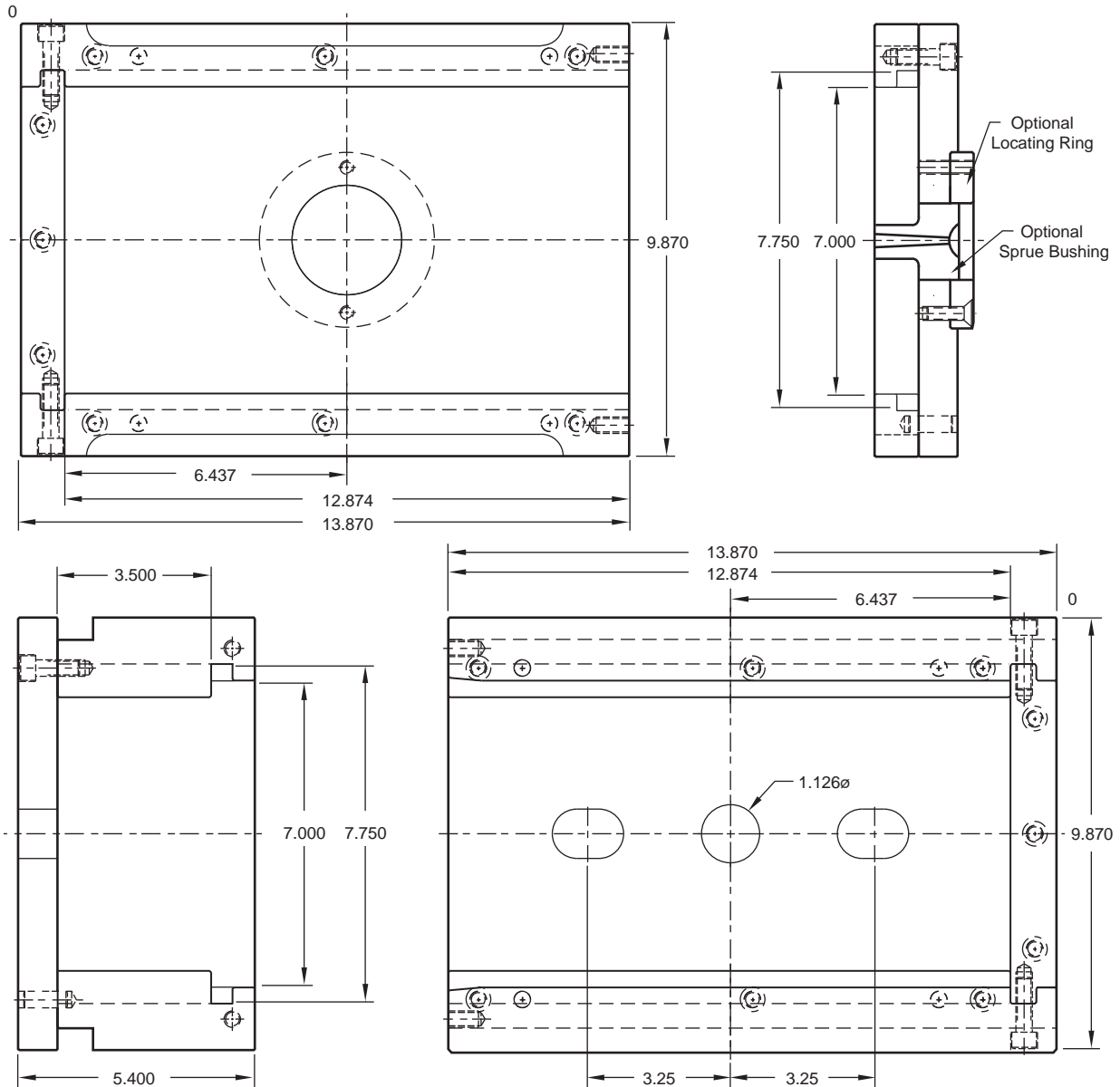


# RTI® 10/14 FRAME

Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

**Accepts:**

- 7 x 12.9 Solid Units, RTS-1014 on Page L-11
- 7 x 12.9 Laminated Units, RTL-1014 on Page L-12



**M** Pre-Hardened Stainless Steel, 32-36 HRC

**Includes:**

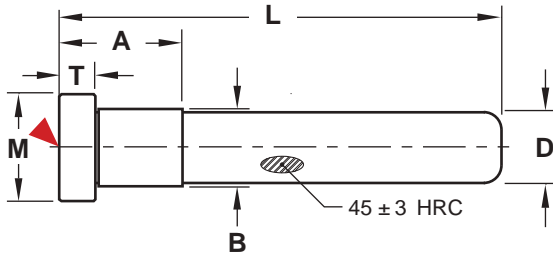
- Frame
- Quick Change Clamps (4)

**To Order:**

- Specify Catalog Number: RTF-1014
- Sprue Catalog Number, if required (see page B-3)
- Locating Ring, if required (see page B-2)

# RTI® ACCESSORIES

## LEADER PINS



NOMINAL DIAMETER	D +.0000 -.0005	A +.00 -.03	B +.0005 -.0000	M +.00 -.01	T +.000 -.002
1/2	.499	.75	.500	.750	.250
5/8	.624	.87	.625	.865	.250

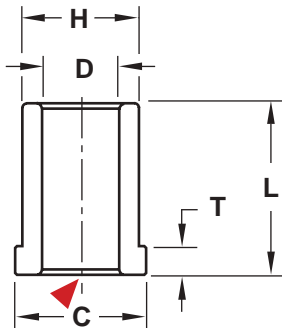
Note: The RLP50L1.25 has an "A" dimension of .62".

M AISI 1117

CAD insertion point

L	D=1/2"	D=5/8"
1.250	RLP50L1.25	—
1.750	RLP50L1.75	RLP62L1.75
2.000	RLP50L2.00	—
2.250	RLP50L2.25	RLP62L2.25
2.500	RLP50L2.50	RLP62L2.50
3.000	RLP50L3.00	RLP62L3.00
3.500	RLP50L3.50	RLP62L3.50
4.000	—	RLP62L4.00

## SHOULDER BUSHINGS



NOMINAL DIAMETER	D +.0008 -.0000	H +.0005 -.0000	C +.000 -.005	T +.000 -.005
1/2	.5000	.7505	.863	.188
5/8	.6250	.8755	1.100	.188

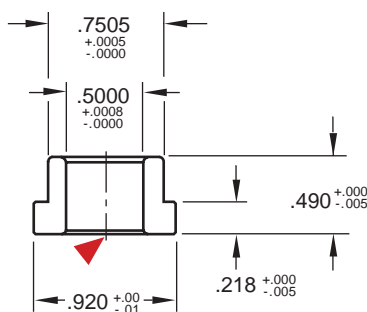
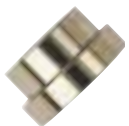
M CA954 Solid Bronze

CAD insertion point

Nominal Plate Thickness	L	D=1/2"	D=5/8"
.625	.625	RSB50L.62	—
.875	.875	—	RSB62L.87
1.000	.900	RSB50L1.00	—
1.125	1.125	RSB50L1.12	—
1.250	1.150	—	RSB62L1.25
1.375-S	1.275	RSB50L1.27	RSB62L1.27
1.375	1.375	—	RSB62L1.37
1.500	1.400	RSB50L1.50	RSB62L1.50
1.625	1.625	RSB50L1.62	—
1.875-S	1.775	RSB50L1.87	RSB62L1.77
1.875	1.875	—	RSB62L1.87
2.375	2.275	RSB50L2.37	RSB62L2.37
2.875	2.775	—	RSB62L2.87

Note: The "-S" signifies use with solid inserts.

## GUIDE PIN BUSHINGS



M CA954 Solid Bronze

CAD insertion point

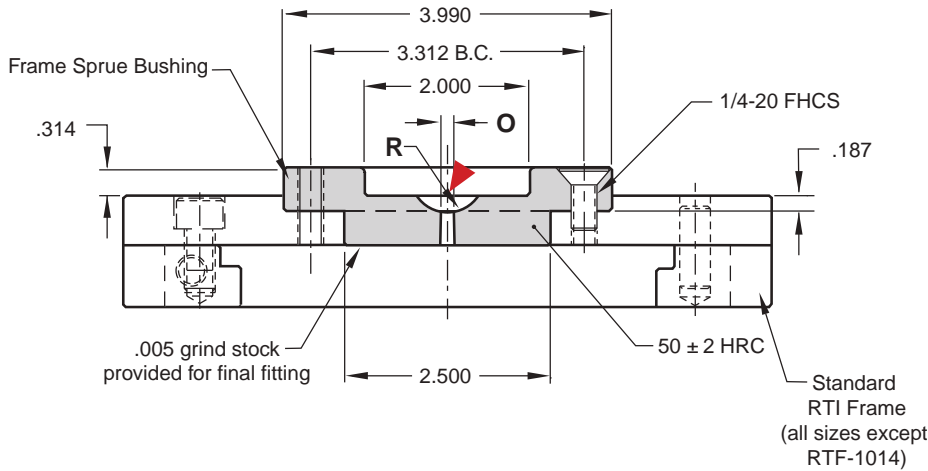
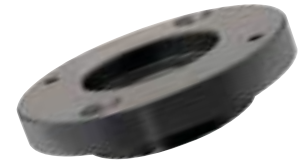
CATALOG NUMBER	DESCRIPTION
RGB50	1/2" ID Guided Ejector Bushing





# RTI® ACCESSORIES

## FRAME SPRUE BUSHINGS

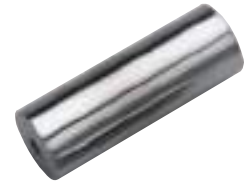


**M** H-13 **S** Melonite (SBN)

CATALOG NUMBER	O	R
RFS-512	5/32	1/2
RFS-534	5/32	3/4
RFS-712	7/32	1/2
RFS-734	7/32	3/4
RFS-912	9/32	1/2
RFS-934	9/32	3/4

Screws included.

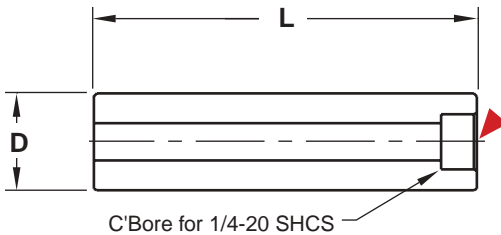
## SUPPORT PILLARS



### Counterbored

**M** AISI 1117

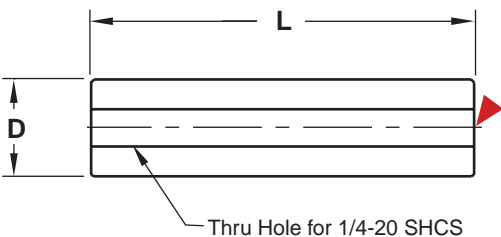
▶ CAD insertion point



C'Bore for 1/4-20 SHCS

D	CATALOG NUMBER	L +0.002 +0.000	Screw Length (1/4-20 SHCS)
3/4	RSP75L2.1	2.125	2.25
	RSP75L2.6	2.625	2.75
	RSP75L3.5	3.500	3.75
1	RSP100L2.1	2.125	2.25
	RSP100L2.6	2.625	2.75
	RSP100L3.5	3.500	3.75
1-1/4	RSP125L2.1	2.125	2.25
	RSP125L2.6	2.625	2.75
	RSP125L3.5	3.500	3.75

Screw included.



Thru Hole for 1/4-20 SHCS

### Clearance Hole

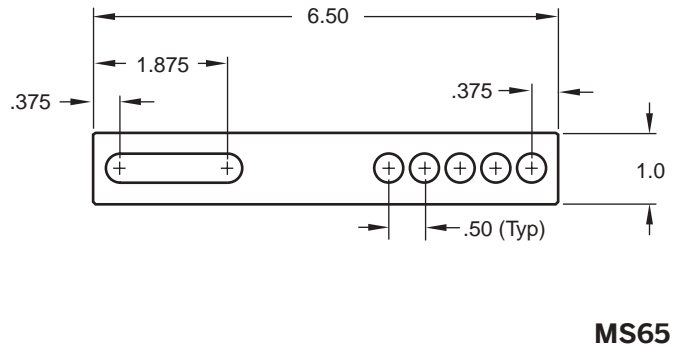
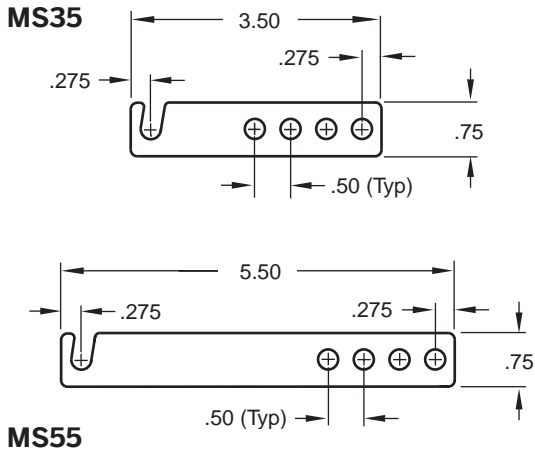
**M** AISI 1117

D	CATALOG NUMBER	L +0.001 +0.000	Screw Length (1/4-20 SHCS)
3/4	RSP75L1.8	1.813	2.75
	RSP75L2.7	2.688	3.75

Screw included.

# RTI® ACCESSORIES

## STRAPS

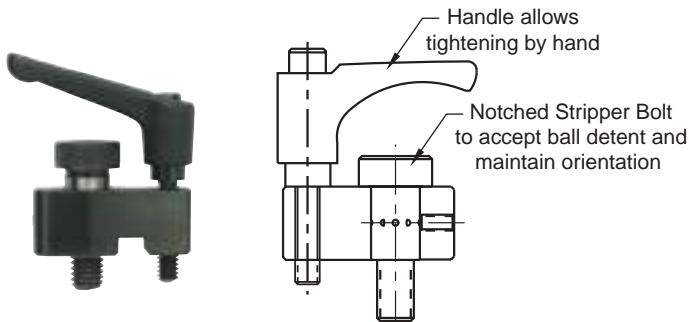


**M** MS35 & MS55: Polycarbonate, MS65: AISI 1018

CATALOG NUMBER	DESCRIPTION	THICKNESS
<b>MS35</b>	3.5" Long RTI Strap	.200
<b>MS55</b>	5.5" Long RTI Strap	.200
<b>MS65</b>	6.5" Long Heavy Duty Strap	.500

MS35 & MS55 includes 1/4-20 thumb screw.  
MS65 includes (2) 3/8-16 SHCS.

## FRAME CLAMPS



CATALOG NUMBER	DESCRIPTION
<b>RFC-100</b>	RTI Frame/Insert Clamp (Sold Individually)

## T-HANDLES



CATALOG NUMBER	DESCRIPTION
<b>T100</b>	RTI T-Handle

Designed for inserts less than 75 pounds.

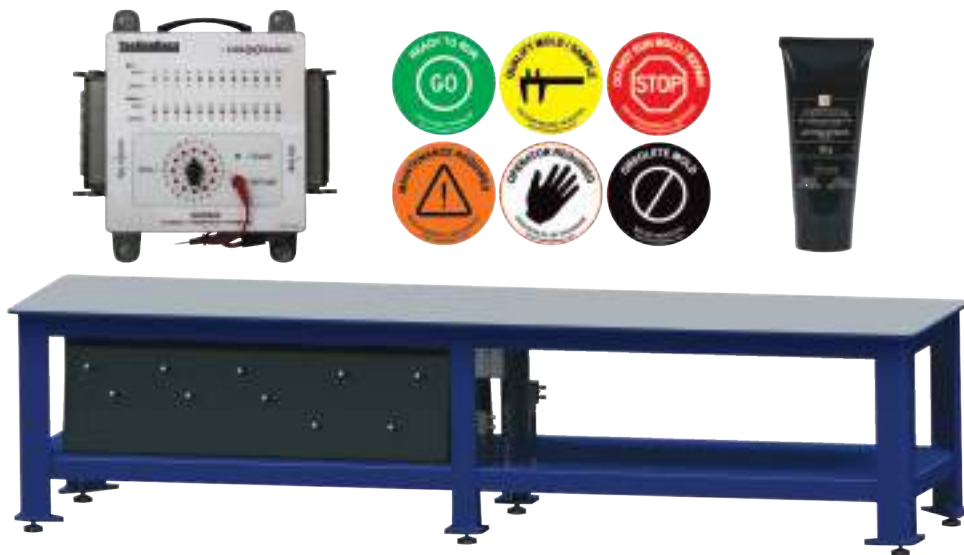






# MAINTENANCE PRODUCTS

## SECTION M



Status Tags	Toolroom Bench	Cable Checker	Mold Checker
Prefix: ST	Prefix: TRB	Prefix: CCT, CCTX	Prefix: MCY, MCTY
Page: M-1	Page: M-2	Page: M-4	Page: M-5



Mold Light Bar	Synthetic Grease
Prefix: MLB, MLBTF	Prefix: SYN
Page: M-6	Page: M-6





# STATUS TAGS

Status Tags magnetically attach to molds and are color-coded for easy identification of mold status at a glance.

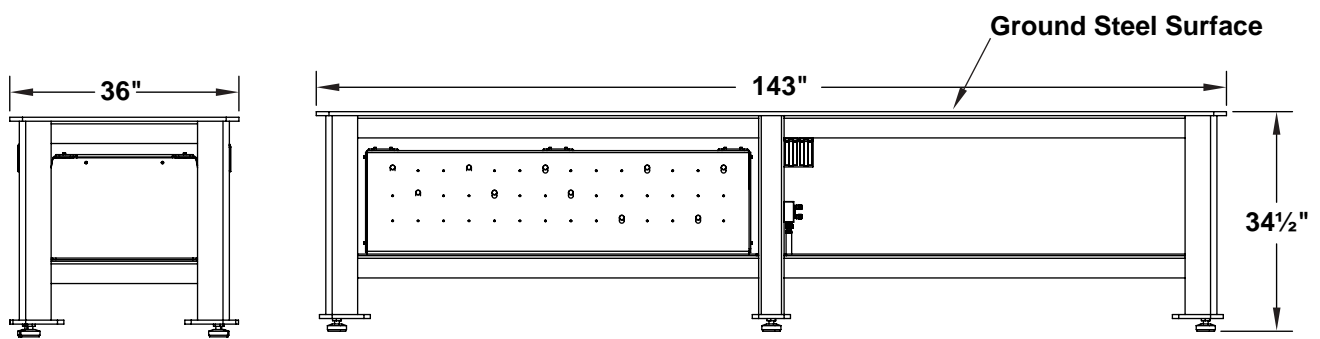


CATALOG NUMBER	COLOR	DESCRIPTION	QUANTITY
ST-GRE	Green	Ready to Run	12
ST-YEL	Yellow	Qualify Mold / Sample	12
ST-RED	Red	Do Not Run Mold / Repair	12
ST-ORN	Orange	Maintenance Required	12
ST-WHT	White	Operator Required	12
ST-BLK	Black	Obsolete Mold	12

### Specifications:

- 3.75" Diameter
- Magnetic back
- Laminated Vinyl Surface

# TOOLROOM BENCH



### Bench Optimized for Mold Assembly/Disassembly:

- More efficient mold assembly and disassembly
- Convenient working height
- Shelf for storage
- 5/8" thick Blanchard Ground steel work surface for smooth and easy positioning of mold plates
- Radiused corners on legs to reduce knee injuries
- Bench is all-welded construction
- Max static load rating is 30,000 lbs

### Standardized Design:

- Adopt best practices across your facility
- Consistent so all work areas are equal



### Tool Storage Option:

- Easy access to tools needed on the bench
- Prevent clutter
- Pre-drilled holes and repositionable aluminum pegs for organized and flexible tool storage
- Tool Storage unit fits under one section of the bench
- 1/4" steel, black powder coated
- Recessed 2" from shelf edge and angled back to keep tools in place
- Each tool storage unit includes 1 board on each side of bench



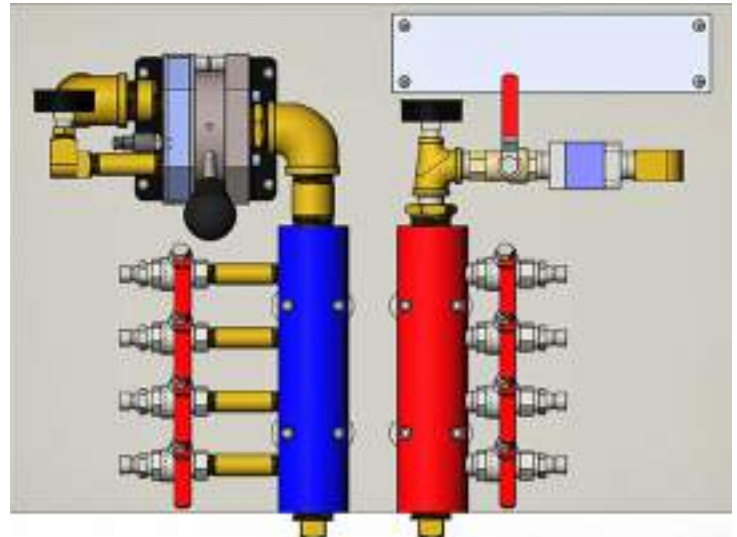




# TOOLROOM BENCH

## Water Manifold and Flow Meter Option:

- Manifold and valves allow quick connection for mold water testing
- Flow meter can be used to ensure flow is even and there are no restrictions
- Ability to bench test for leaks saves valuable time versus testing in the press
- Red and blue manifold similar to what is at the press
- Convenient drain feature provides cleaner, more efficient drainage after testing



## Air Manifold Option:

- Convenient connection of air tools
- One on each side of the bench
- Hooks to hold air hose

## Electrical Option:

- 2 outlets on either side of the bench
- Electrical hookups are routed under the bench to minimize obstructions
- Positioned centrally on bench for easy access



## Ordering and Configuration Information:

TRB34 - F T A E

### Options:

F = Manifold and Flow Meter

T = Tool Storage

A = Air

E = Electrical

Note: Standard Toolroom Bench dimensions are 3' wide, by 12' long and 34" high. Custom configurations are available by request.

### Examples:

TRB34-FTAE = Toolroom Bench with all options installed

TRB34-AE = Toolroom Bench with Air and Electrical options installed

# CABLE CHECKER

### Cross Check Hot Runner Cables Before Use:

- The Cable Checker tests hot runner cables in a matter of minutes to ensure proper connectivity.
- This portable, battery-operated unit can be used in the Toolroom or for rapid press-side troubleshooting.
- Use to correctly assemble and repair cables.
- Reduce or eliminate downtime by quickly identifying mis-wired or non-operational cables.

### How to Cross Check Hot Runner Cables:

- Select a cable to be tested. Attach the controller side of the cable to the connector on the left side of the unit. Next, attach the mold side of the cable to the right side of the unit.
- Cycle the dial through each zone and note the results. LED's light up to a corresponding zone to indicate proper wiring. If a zone's corresponding LED fails to light, or shows multiple lights, there is an issue with the cable.

### What is Cross Checked:

- Correct point-to-point wiring of cables and short circuits.

### Cable Checker Information:

- Size: 8" L x 8" W x 4" D / Weight: 7 Lbs
- Requires 1 standard 9V battery – included

Manufactured for Progressive through an alliance with Fast Heat, Inc.



The Cable Checker has a test lead that greatly speeds up the cable assembly process by allowing cable ends on the first side to be terminated without regard to pin numbers. When probing the second side of the wire, the display will indicate which wire goes to which pin. The cable can be tested again quickly after assembly completion.



Simple continuity checks cannot detect short circuits, which can damage equipment and melt wires. With the Cable Checker, all potential short circuit paths on a 24-pin cable can be verified, equating to 300 point-to-point measurements. This is significantly less labor intensive versus using a standard multi-meter.

### Cable Checker Ordering Information:

- Review standard configurations below
- If standard configurations do not meet your requirements, specify a custom configuration

### Ordering Custom Configurations:

- Specify Control-Side Connector, Mold-Side Connector and Wiring Diagram
- Use custom template

CATALOG NUMBER	ZONES	LATCH	CONTROL-SIDE CONNECTOR	MOLD-SIDE CONNECTOR	WIRING DIAGRAM/DESCRIPTION
CCT011079	12	Dual	24 Pin Female	24 Pin Male	Straight-Wired (1-1, 2-2, ...24-24)
CCT011044	12	Single	24 Pin Female	24 Pin Male	Straight-Wired (1-1, 2-2, ...24-24)
CCTX10121	12	Single	H: 25 Pin Female T/C: 25 Pin Male	H: 25 Pin Male T/C: 24 Pin Male	12 Zone American Standard
CCTX10081	8	Single	H: 25 Pin Female T/C: 25 Pin Male	H: 25 Pin Male T/C: 16 Pin Male	8 Zone American Standard
CCTX10374	5	Single	H: 25 Pin Female T/C: 25 Pin Male	H: 25 Pin Male T/C: 10 Pin Male	5 Zone American Standard

CableXChecker™ is a trademark of Fast Heat, Inc.



# MOLD CHECKER

### Cross Check Hot Runner Manifolds Before Use:

- The Mold Checker tests hot runner manifolds in a matter of minutes to ensure that resistances of all thermocouples and heaters are within range.
- This portable, battery-operated unit can be used when assembling manifolds in the toolroom or for press-side troubleshooting.
- Reduce or eliminate downtime due to mis-wiring or faulty components within the hot runner system.

### How to Cross Check Hot Runner Manifolds:

- Use a properly functioning cable to connect the Hot Runner Manifold to the Mold Checker.
- Cycle the dial through the zones and note the resistances.
- Troubleshoot specific zones as indicated.

### What is Cross Checked:

- Resistance of thermocouples and heaters.
- Determine any shorts in the wiring (zero resistance).

### Mold Checker Information:

- Size: 8" L x 8" W x 4" D / Weight: 7 Lbs
- Requires 2 standard 9V batteries – included



Manufactured for Progressive through an alliance with Fast Heat, Inc.



The Mold Checker finds pinched cables within a mold if the conductors are making contact with metal. This can be caught at the bench and may save hours of set-up and troubleshooting, and prevent damage to costly controllers and components.



The Mold Checker quickly isolates the thermocouple or heater that is in need of service. This can be done quickly and safely in the toolroom or press-side.

### Mold Checker Ordering Information:

- Review standard configurations below
- If standard configurations do not meet your requirements, specify a custom configuration

### Ordering Custom Configurations:

- Specify Connectors (Heater, Thermocouple, Combo) and Wiring Diagram
- Use custom template

CATALOG NUMBER	ZONES	LATCH	HEATER CONNECTOR	THERMOCOUPLE CONNECTOR	WIRING DIAGRAM/DESCRIPTION
MCY57843	12	Single	24 Pin Female	24 Pin Male	Straight-Wired (1-1, 2-2, ...24-24)
MCY011079	12	Dual	24 Pin Female	24 Pin Male	Straight-Wired (1-1, 2-2, ...24-24)
MCTY10121	12	Single	25 Pin Female	25 Pin Male	12 Zone American Standard (will test the 5, 8 and 12 Zone American Standard)

MoldXChecker™ is a trademark of Fast Heat, Inc.

# MOLD LIGHT BAR



Mold Light Bars provide illumination at the molding press to reduce eye strain and increase visibility for operators and repair technicians.

**Light Bar Technical Information:**

- Wire direct to 24V machine power or optional transformer
- Mounts to press platen magnetically to direct light on mold
- 12w 450mA

**Light Bar Product Information:**

- Six LED floodlights per unit. Rated for 50,000 hours
- Aluminum casting with tempered glass is water and shock resistant
- 45° and 90° swivel mounting brackets included
- IP67 Rated

**Transformer Information:**

- Plugs directly into 110v outlet
- Two screw wire connection



CATALOG NUMBER	DESCRIPTION	VOLTAGE	L	W
MLB2X16	Light Bar	24V	16"	2"
MLBTF	Transformer	110V 24V	—	—

# SYNTHETIC MOLD GREASE



Premium synthetic mold grease provides superior lubrication to sliding or moving components within molds and tooling.

- Engineered for food and medical molding environments
- Low migration
- Should only be applied in a thin layer, by hand

**Technical Information:**

- NSF H1 Registered
- Thermally stable to 300 °C

CATALOG NUMBER	DESCRIPTION
SYN-100	100g Tube







# SOFTWARE, LITERATURE

## SECTION N



### MoldTRAX

Literature	Mold Finish Guides	Mold Maintenance Software
Prefix: LIT	Prefix: LIT	
Page: N-1	Page: N-1	Page: N-2







# LITERATURE



## Introduction to Mold Making

Includes a comparison of common molding processes of injection molding and injection molds, molds for die casting, standard mold components, producing cavities and components, and mold repair techniques. Introduces the reader to basic concepts of plastic mold building.

Written by Eric L. Buckleitner, 117 pages.

CATALOG NUMBER

LIT-IMM



## What is a Mold?

A thorough introduction to Plastic Injection Molding and Injection Mold Construction. Topics covered include: description of common plastics and their uses, the injection molding machine and molding process, and detailed functional characteristics of components within the mold.

Written by Len Graham, 121 pages.

CATALOG NUMBER

LIT-WM



## Moldmaking and Die Cast Dies for Metalworking Trainees

Presents moldmaker trainees with basic fundamentals of mold construction with an emphasis on plastics molds. Die cast dies and rubber molds are also described. Defines and describes the types and parts of common molds. Properties of common molding materials and processes are also described.

Written by John Kluz, 306 pages.

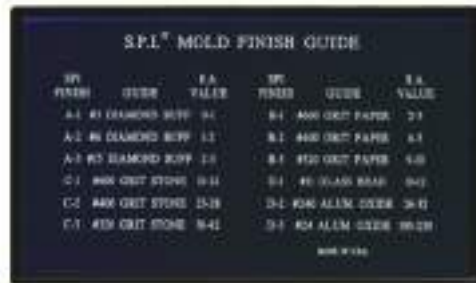
CATALOG NUMBER

LIT-MDC

# MOLD FINISH GUIDES STEEL INSERT



Front



Back

Manufactured by Bales Mold Service, this SPI Mold Finish Guide shows several finishes, including several diamond comparisons, for measurement of tooling surfaces. The gauge is easy to read and includes data on the back to cross-reference the Roughness Average (RA) and SPI scales.

The 72 HRC surface hardness prevents damage or wear to the finishes after continual usage. In addition, the 3.5" x 6" guide is stored in a plastic sleeve for safe handling.

CATALOG NUMBER

LIT-BMG



Molded, ABS plastic plaque, 8-1/2 x 11, showing typical finishes to aid in communication with customers.

Includes A-1, A-2, A-3, B-1, B-2, B-3, C-1, C-2, C-3, D-1, and D-3 finishes.

Provided by the Society of Plastics Industry

CATALOG NUMBER

LIT-MFC

# MOLDED PLASTIC

# MOLDTRAX™

## MOLD MAINTENANCE SOFTWARE

MoldTrax, the most comprehensive and user-friendly mold management system of its kind designed for injection, rubber, blow and die cast molds, is bigger, faster and stronger than ever before. With the release of MoldTrax 6 (MT6), new features, functions and capabilities make it an indispensable tool for molders and OEMs to track the performance, maintenance efficiency and repair costs of a variety of molds and dies.

“Born on the Bench”, only MoldTrax can generate the worksheets necessary for establishing a proactive toolroom, and can easily be adapted to track a wide range of tools as well as create customized financial reports.

### Product Description

#### Mold Data:

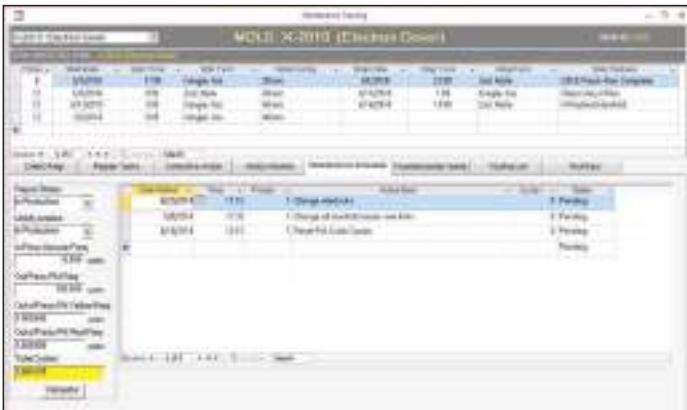
MoldTrax serves as a file cabinet for all important mold information from mold number to cavitation to the press in which it ran, and includes such details as designer contact information, mold cost, runner, resin and part information.



The detailed mold information section allows quick access to mold identification, cavity configurations, resin, mold ownership and other administrative information.

#### Scheduling:

The user can schedule activities, such as mold pulls for detail changes or preventative maintenance, and a Master Schedule list may be printed out daily for shop use. In addition, a new Maintenance Alert field has been added to allow users to be notified when a mold will be due for servicing.



MoldTrax™ is trademarked by MoldTrax LLC. To order a copy of MoldTrax 6 or the MoldTrax Upgrade, please contact MoldTrax LLC direct at 1-419-281-0790 or email Steve@MoldTrax.com.

#### Troubleshooting:

MoldTrax incorporates several sections dedicated to the analysis and corrective measures incorporated for any defects found in the parts during production. Photos and detailed text can be entered into the program to ensure repair consistency if similar problems occur in the future.



#### Reporting:

MoldTrax includes several reports that allow users to view mold and performance data through statistical and referential reports. In addition, the “FastTrax Reports” enable users to review maintenance data by a date range through 20 standard report templates that can be modified by the user to control the information shared with others in the facility. Mold cycles and Run Hours are included in the Defects Position Analysis and the Corrective Action Analysis FastTrax reports to more accurately determine PM frequencies, tooling requirements and budgetary decisions.

Press #	Mold	Configuration	Description	Cycles Over Red Limit	Cycles To Reach Red Limit	Cycles To Reach Yellow Limit
12	3-2810	40mm	Electric Cover	416,003	415,870	414,238
11	3-2808	40mm	Electric Cover	417,026	417,010	416,025
3	3-2819-120	32mm	Red Hot	36,310	36,010	35,140
2	3-2819-120	32mm	T-Die-10	40,328	40,328	38,335
123	3-2819-120	32mm	T-Die-10	51,838	51,800	49,320

Cycle thresholds may be set to reflect “getting close” (yellow) or “Due” (red). All molds in production and their PM status will then show up on a Maintenance Alert report available in FastTrax reports.



# MOLDTRAX™

## MOLD MAINTENANCE SOFTWARE

### MoldTrax 6 Features Include:

- A Moldtrax "Dashboard" is now available from the main screen that shows the ongoing ratio of Scheduled vs. Un-Scheduled mold stops and also the number of molds currently in production and overall PM status.
- Tracking all costs associated with individual or grouped molds, products, or mold frame styles.
- Comes pre-loaded with industry mold maintenance terms and explanations/descriptions in several important fields that can be edited/customized as the user requires.
- Over 40 standard reports, specifically created for mold and maintenance tracking and cost analysis---simply put in your date range and pick a report.
- Creates a baseline of data to set targets and goals and to measure continuous improvement.
- Follows the logical progression of mold maintenance (8-Stages of Repair)
- Contact database allows for entries of customers, vendors, and employees for easy accessibility.
- MoldTrax exclusive "Tech Tips" has been expanded to include a "Hot Runner Specifications" section that offers users quick access to manifold maintenance and repair instructions, images and specifications of the system. In addition, Techs Tips is now available from the Maintenance Tracking Screen.



The Maintenance Tracking Section displays mold production run dates and times, press number and stop reasons, along with mold configuration change-overs.

- Link to images, video's and other external documentation instantly
- All screens have been enlarged and many include Zoom windows with rich (customizable) text.



The new Hot Runner section in Tech Tips allows the user to store HR specification information and also bench information about how to work on, service and process the hot runner. A Links tab takes the user directly to stored images that greatly aid in familiarization of the system.



An Inventory Monitoring feature has been added to allow the user to see how many components are left in stock (Parts on Hand) and reorder amounts and dates. Users can store and track tooling components by mold number or description, category, part or detail number, vendor, or costs. An Inventory Report may be run to monitor the inventory and check the balance on hand of all components, in all molds---making this the simplest inventory system you will ever use.

### System requirements:

- Microsoft®, Windows 7, 8 or Vista
- Pentium III 1.2Ghz microprocessor or higher
- 512 MB RAM
- 100 MB free disk space

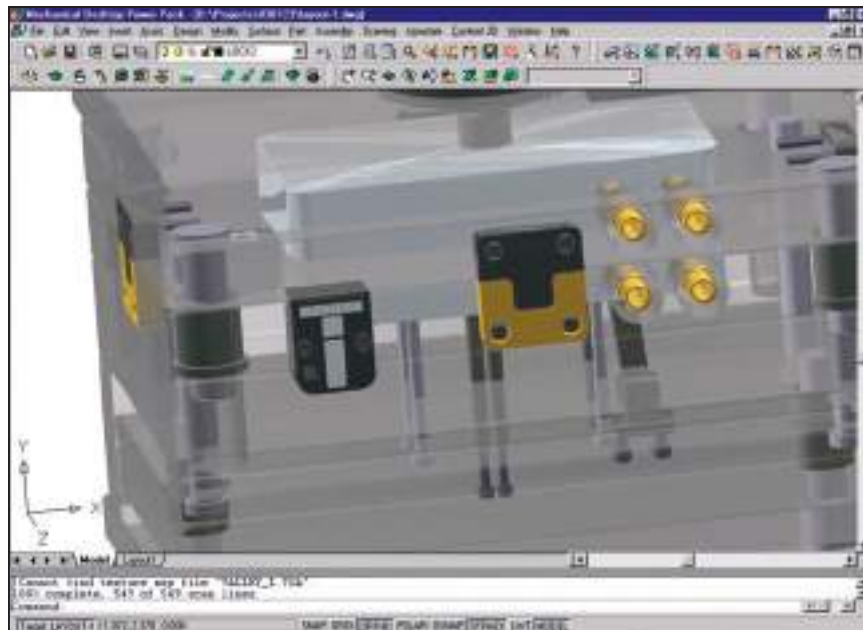
### MoldTrax Ordering Information:

- To order a copy of MoldTrax 6 or the MoldTrax Upgrade, please contact MoldTrax LLC at 1-419-281-0790 or email Steve@MoldTrax.com.



The Tech Tips section allows for critical bench procedures, techniques and special tools required to be documented, organized and shared with toolroom employees to keep repairs consistent and safe.

# ONLINE RESOURCES



Progressive Components offers verified CAD geometry in 2D and 3D files in eight different formats online. Designers can download the geometry specific for their application and review product catalog pages, technical data, pricing calculators, as well as download a full working demo of MoldTrax.

Additionally, at [procomps.com](http://procomps.com), new product announcements with animations are available so designers and mold makers can see the items in a production tool environment.

For automatic notification of product announcements and software upgrades, subscribe to our "Progress Report" newsletter at [procomps.com/subscribe](http://procomps.com/subscribe)

[www.procomps.com](http://www.procomps.com)







# MOLD-READY COMPONENTS

## SECTION X



<b>Pins: Keyed &amp; Special</b> Page: X-1	<b>Finished Core Pins</b> Page: X-2	<b>Pins: Straight</b> Page: X-3	<b>Pins: Single Step</b> Page: X-4
<b>Pins: Two Step</b> Page: X-5	<b>Pins: Water Cooled</b> Page: X-6	<b>Blade Ejectors</b> Page: X-7	<b>Ejector Sleeves: Straight</b> Page: X-8
<b>Ejector Sleeves: Stepped</b> Page: X-9	<b>Ejector Sleeves: Thin Wall</b> Page: X-10	<b>Leader Pins: Straight</b> Page: X-11	<b>Leader Pins: Shoulder</b> Page: X-12
<b>Angle Pins</b> Page: X-13	<b>Puller Pins</b> Page: X-14	<b>Side Locks</b> Page: X-15	<b>Top Locks</b> Page: X-16
<b>X-Style Side Locks</b> Page: X-17	<b>Guide Locks</b> Page: X-18	<b>Bar Locks</b> Page: X-19	<b>Press Knock Out: Hex Series</b> Page: X-20
<b>Support Pillars</b> Page: X-21	<b>UniLifter Core Blades</b> Page: X-22	<b>UniLifter Core Blades: L-Shaped</b> Page: X-23	<b>UniLifter Core Blades: T-Shaped</b> Page: X-24
<b>UniLifter Core Blades: Round</b> Page: X-25	<b>Extension Plugs: Finished Length</b> Page: X-26	<b>Special Tubes</b> Page: X-27	







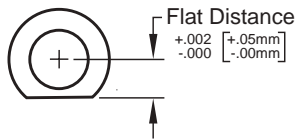
# PINS: KEYED & SPECIAL LENGTHS



Standard Inch, DIN, or JIS Ejector Pins (Straight or Shoulder style) can be provided cut to your specific length and/or keyed for maintaining positioning during production.

## KEYED PINS

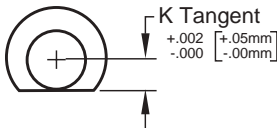
To order pins with the flat machined on the head a specific distance from the center of the pin, specify the catalog number and the specific distance after the "K" designation for the flat as shown below.



Examples:

- EP437L10-K250 for a 7/16 diameter Ejector Pin with a flat 1/4" from center
- EPD10L200-K6 for a 10mm diameter DIN pin with a flat 6mm from center
- EPJ055L250-K4 for a 5.5mm diameter JIS pin with a flat 4mm from center

Flat will be ground tangent if -K is specified without a dimension.

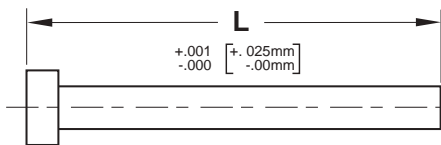


Example:

- CP125L6-K for a 1/8" diameter Core Pin with a flat ground tangent to the pin diameter

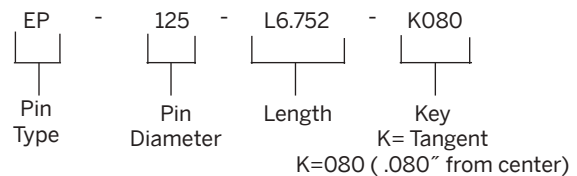
## CUT-TO-LENGTH PINS

To order Pins cut to your specified length, +.001/-.000 (+.025/-.000mm), with or without keyed heads, specify the length required after the standard Ejector Pin catalog number.

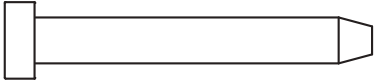


Examples:

- EP437L6.25-K250 for a 7/16" diameter pin x 6.25" long with a flat 1/4" from center
- EPD10L225.5 for a 10mm diameter x 225.5mm long DIN pin



# FINISHED CORE PINS



Material: H-13

Core Pins are Hard (**H**=50-55 HRC) or Soft (**S**=30-35 HRC).

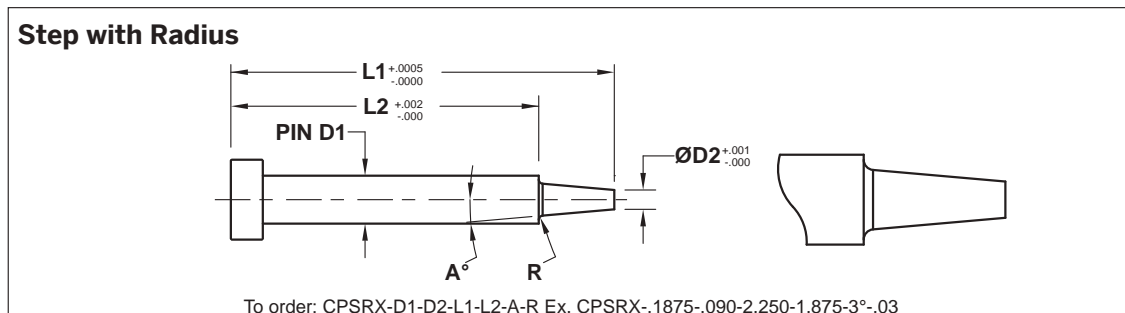
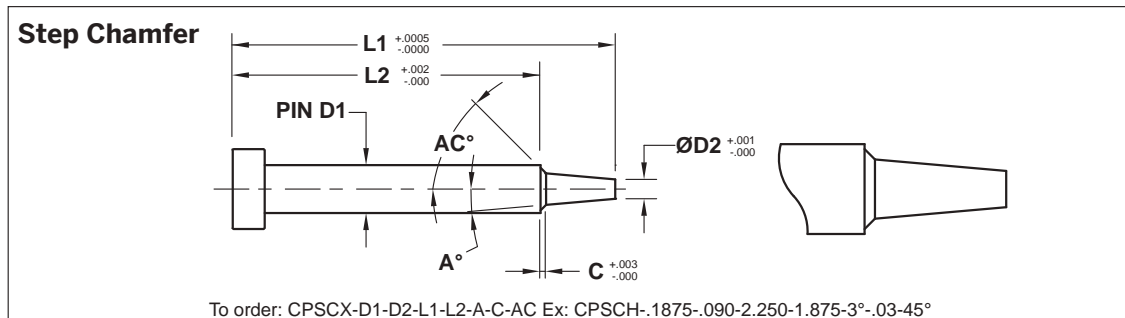
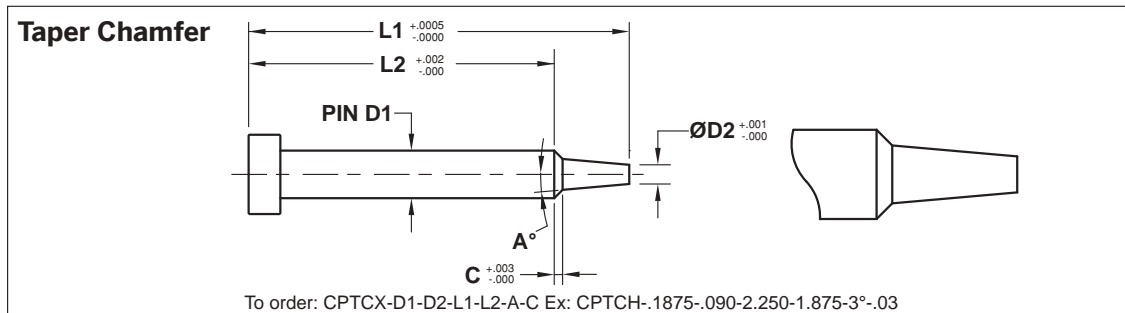
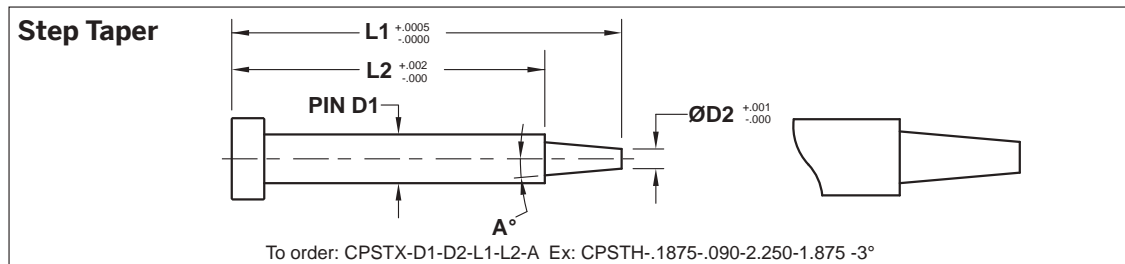
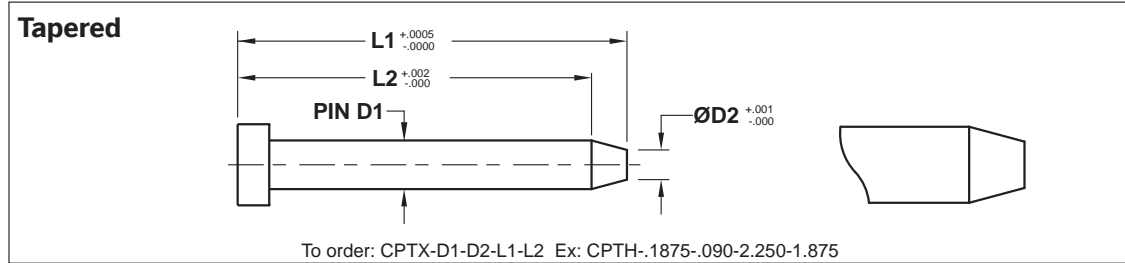
Specify "**H**" or "**S**" as "**X**" in the catalog number below.

All unspecified inside corners = R.010

Angles  $\pm .25^\circ$

Radii  $\pm .004$

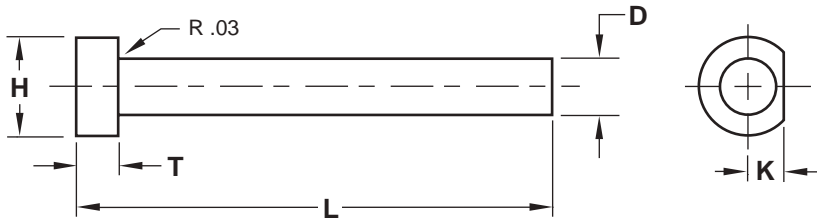
Note: Pin Diameter (D1), head diameter and head thickness are per standard Core Pins as shown on page A-12.





# EJECTOR PINS

## STRAIGHT



STANDARD TOLERANCES		
EJECTOR PIN		
D	-0.0004	-0.01
	-0.0007	-0.02
CORE PINS		
D	+0.0010	+0.02
	+0.0005	+0.01
TI PINS		
D	+0.0003	+0.008
	-0.0000	-0.000
T	+0.000	+0.00
	-0.002	-0.05
H	+0.000	+0.0
	-0.010	-0.2
L	+0.060	+1.5
	-0.000	-0.0
K	+0.002	+0.5
	-0.000	-0.0
	INCH	METRIC

- Material:**
- Ejector Pin**  
Material = H-13  
Core = 48-50 HRC  
Surface = 65-70 HRC
  - Ultra Pin**  
Material = H-13  
Core = 48-50 HRC  
Surface = 65-70 HRC  
Treatment = Chrome  
Final pin tolerances: -.0003/- .0006
  - Core Pin**  
Material = H-13  
 Hard = 50-55 HRC  
 Soft = 30-35 HRC
  - TI Pin**  
Material = M-2  
Core = 60-64 HRC

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

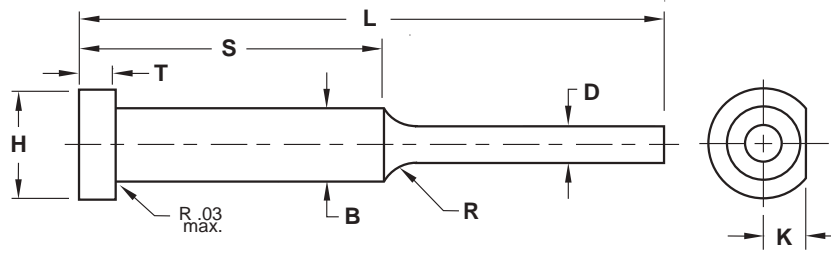
PIN #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard Ejector Pin	+
		<input type="checkbox"/> Standard Core Pin	-
		<input type="checkbox"/> Standard TI Pin	
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>K</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

PIN #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard Ejector Pin	+
		<input type="checkbox"/> Standard Core Pin	-
		<input type="checkbox"/> Standard TI Pin	
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>K</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

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# EJECTOR PINS

## SINGLE STEP



STANDARD TOLERANCES		
EJECTOR PINS		
D	-0.0004 -0.0007	-0.01 -0.02
B	+0.0005 -0.001	+0.00 -0.02
CORE PINS		
D	+0.0005 +0.0000	+0.02 +0.00
B	+0.0005 +0.0010	+0.01 +0.02
L	+0.06 -0.00	+1.5 -0.0
H	+0.000 -0.010	+0.00 -0.2
T	+0.000 -0.002	+0.00 -0.05
K	+0.002 -0.000	+0.05 -0.00
S	±0.03	±1.0
	INCH	METRIC

**Material:**

- Ejector Pin**  
Material = H-13  
Core = 48-50 HRC  
Surface = 65-70 HRC
- Ultra Pin**  
Material = H-13  
Core = 48-50 HRC  
Surface = 65-70 HRC  
Treatment = Chrome  
Final pin tolerances: -.0003/-0.0006
- Core Pin**  
Material = H-13  
 Hard = 50-55 HRC  
 Soft = 30-35 HRC

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

PIN #1			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
B	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
L	<input type="checkbox"/> Standard		+
			-
S	<input type="checkbox"/> Standard		+
			-
H	<input type="checkbox"/> Standard		+
			-
T	<input type="checkbox"/> Standard		+
			-
K	<input type="checkbox"/> Standard		+
			-
R	<input type="checkbox"/> To Suit		+
			-
<b>Quantity:</b>			

PIN #2			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
B	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
L	<input type="checkbox"/> Standard		+
			-
S	<input type="checkbox"/> Standard		+
			-
H	<input type="checkbox"/> Standard		+
			-
T	<input type="checkbox"/> Standard		+
			-
K	<input type="checkbox"/> Standard		+
			-
R	<input type="checkbox"/> To Suit		+
			-
<b>Quantity:</b>			

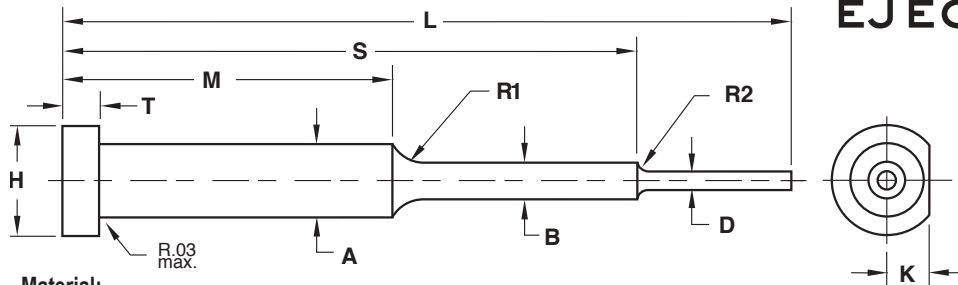
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# EJECTOR PINS

## TWO STEP



STANDARD TOLERANCES		
EJECTOR PINS		
D	-0.0004	-0.01
B	-0.0007	-0.02
CORE PINS		
D	+0.0005	+0.02
B	-0.000	-0.00
A	+0.000	+0.00
	-0.001	-0.02
L	+0.060	+1.5
	-0.000	-0.0
H	+0.000	+0.00
	-0.010	-0.2
T	+0.000	+0.00
	-0.002	-0.05
S	±0.03	±1.0
M	±0.03	±1.0
K	+0.002	+0.05
	-0.000	-0.00
	INCH	METRIC

**Material:**

- Ejector Pin**  
 Material = H-13  
 Core = 48-50 HRC  
 Surface = 65-70 HRC
- Ultra Pin**  
 Material = H-13  
 Core = 48-50 HRC  
 Surface = 65-70 HRC  
 Treatment = Chrome
- Core Pin**  
 Material = H-13  
 Hard = 50-55 HRC  
 Soft = 30-35 HRC
- Other:**  
 Final pin tolerances: -.0003/- .0006

Material	Core Hardness	Surface Hardness	Treatment

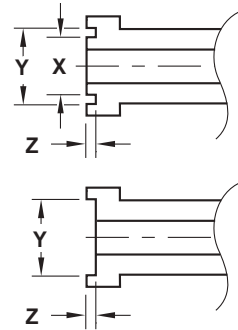
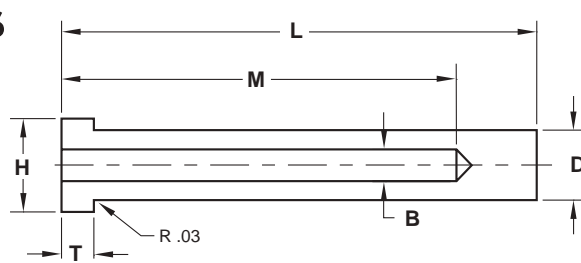
PIN #1			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
B	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
A	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
L	<input type="checkbox"/> Standard	+	
		-	
S	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
K	<input type="checkbox"/> Standard	+	
		-	
R1	<input type="checkbox"/> To Suit		
R2	<input type="checkbox"/> To Suit		
<b>Quantity:</b>			

PIN #2			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
B	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
A	<input type="checkbox"/> Standard Ejector Pin	+	
	<input type="checkbox"/> Standard Core Pin	-	
L	<input type="checkbox"/> Standard	+	
		-	
S	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
K	<input type="checkbox"/> Standard	+	
		-	
	<input type="checkbox"/> To Suit		
	<input type="checkbox"/> To Suit		
<b>Quantity:</b>			

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# EJECTOR PINS

## WATER COOLED



STANDARD TOLERANCES		
D	EJECTOR PIN	
	-0.004	-0.01
D	CORE PINS	
	+0.0010	+0.02
L	+0.0005	-0.01
	+0.030	+0.8
H	-0.000	-0.0
	+0.000	+0.0
T	-0.010	-0.2
	+0.000	+0.0
B	-0.002	-0.05
	+0.015	+0.4
M	-0.000	-0.0
	+0.000	+0.0
X	-0.060	-1.5
	+0.002	+0.05
Y	-0.002	-0.05
	+0.002	+0.05
Z	-0.002	-0.05
	+0.002	+0.05
	INCH	METRIC

**Material:**

- Ejector Pin  
Material = H-13  
Core = 48-50 HRC  
Surface = 65-70 HRC
- Core Pin  
Material = H-13  
 Hard = 50-55 HRC  
 Soft = 30-35 HRC

Other:

Material	Core Hardness	Surface Hardness	Treatment

PIN #1			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
L	<input type="checkbox"/> Standard		+
			-
H	<input type="checkbox"/> Standard		+
			-
T	<input type="checkbox"/> Standard		+
			-
B	<input type="checkbox"/> Standard		+
			-
M	<input type="checkbox"/> Standard		+
			-
X	<input type="checkbox"/> Standard		+
			-
Y	<input type="checkbox"/> Standard		+
			-
Z	<input type="checkbox"/> Standard		+
			-
<b>Quantity:</b>			

PIN #2			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard Ejector Pin		+
	<input type="checkbox"/> Standard Core Pin		-
L	<input type="checkbox"/> Standard		+
			-
H	<input type="checkbox"/> Standard		+
			-
T	<input type="checkbox"/> Standard		+
			-
B	<input type="checkbox"/> Standard		+
			-
M	<input type="checkbox"/> Standard		+
			-
X	<input type="checkbox"/> Standard		+
			-
Y	<input type="checkbox"/> Standard		+
			-
Z	<input type="checkbox"/> Standard		+
			-
<b>Quantity:</b>			

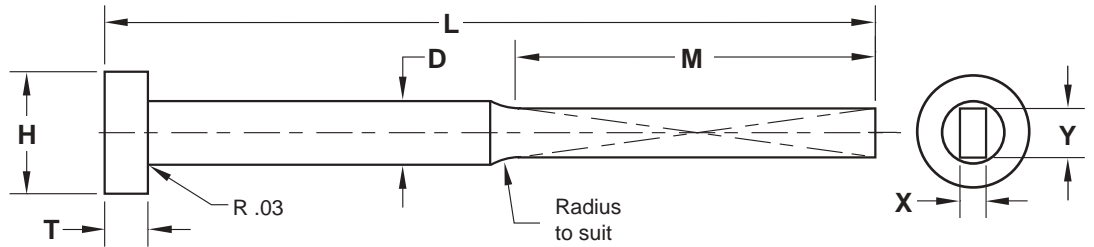
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# BLADE EJECTORS

STANDARD TOLERANCES		
X	+0.0000	+0.000
	-0.0005	-0.015
Y	+0.0000	+0.000
	-0.0005	-0.015
D	+0.000	+0.00
	-0.001	-0.02
L	+0.04	+1.0
	-0.00	-0.0
M	+0.04	+1.0
	+0.08	+2.0
H	+0.000	+0.0
	-0.010	-0.2
T	+0.000	+0.00
	-0.002	-0.05
	INCH	METRIC



**Material**  
O-1  
58-62 HRC Thru Hardened

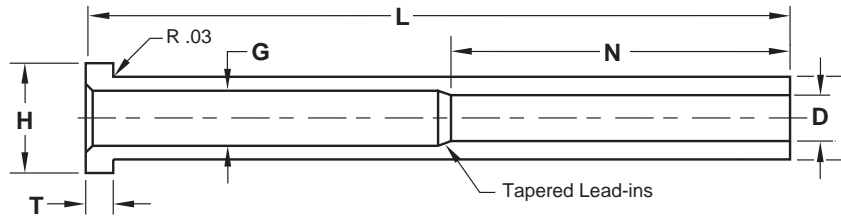
BLADE #1			
Dimension		Tolerance	
X	<input type="checkbox"/> Standard	+	
		-	
Y	<input type="checkbox"/> Standard	+	
		-	
D	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

BLADE #2			
Dimension		Tolerance	
X	<input type="checkbox"/> Standard	+	
		-	
Y	<input type="checkbox"/> Standard	+	
		-	
D	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# EJECTOR SLEEVES

## STRAIGHT



STANDARD TOLERANCES		
<b>D</b>	+0.0003 -0.0000	+0.007 -0.000
<b>B</b>	-0.0004 -0.0007	-0.01 -0.02
<b>G</b>	±0.015	±0.3
<b>L</b>	+0.030 -0.000	+1.0 -0.0
<b>N</b>	+0.20 -0.00	+5.0 -0.0
<b>H</b>	+0.000 -0.010	+0.0 -0.2
<b>T</b>	+0.000 -0.002	+0.00 -0.05
	INCH	METRIC

**Material:**

- H-13** Core = 40-45 HRC Treatment = Nitrided ID/OD  
 **A-2** Core = 58-60 HRC Treatment = Nicklon®  
 **M-2** Core = 58-62 HRC

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

SLEEVE #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>B</b>		<input type="checkbox"/> Standard	+
			-
<b>G</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>N</b>		<input type="checkbox"/> Standard	+
			-
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

SLEEVE #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>B</b>		<input type="checkbox"/> Standard	+
			-
<b>G</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>N</b>		<input type="checkbox"/> Standard	+
			-
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

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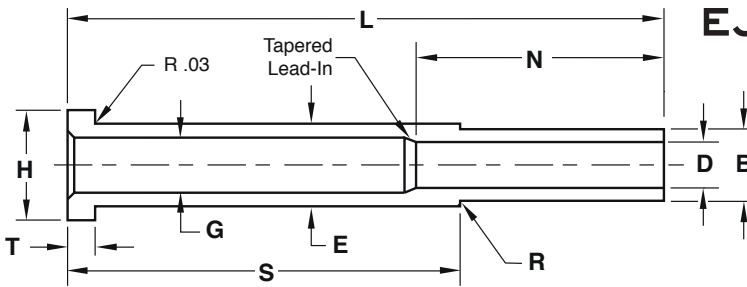
CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:





# EJECTOR SLEEVES

## STEPPED



STANDARD TOLERANCES		
D	+0.0003 -0.0000	+0.007 -0.000
B	-0.0004 -0.0007	-0.01 -0.02
E	+0.000 -0.001	+0.00 -0.02
G	±0.015	±0.4
L	+0.030 -0.000	+1.0 -0.0
N	+0.20 -0.00	+5.0 -0.0
S	±0.01	±0.2
H	+0.000 -0.010	+0.00 -0.20
T	+0.000 -0.002	+0.00 -0.05
	INCH	METRIC

**Material:**

- H-13** Core = 40-45 HRC Treatment = Nitrided ID/OD  
 **A-2** Core = 58-60 HRC Treatment = Nicklon®  
 **M-2** Core = 58-62 HRC

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

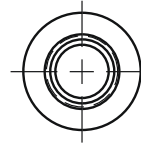
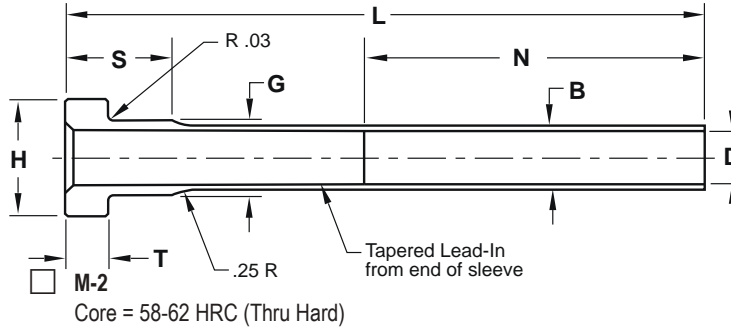
SLEEVE #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>B</b>		<input type="checkbox"/> Standard	+
			-
<b>E</b>		<input type="checkbox"/> Standard	+
			-
<b>G</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>N</b>		<input type="checkbox"/> Standard	+
			-
<b>S</b>		<input type="checkbox"/> Standard	+
			-
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>R</b>		<input type="checkbox"/> To Suit	
<b>Quantity:</b>			

SLEEVE #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>B</b>		<input type="checkbox"/> Standard	+
			-
<b>E</b>		<input type="checkbox"/> Standard	+
			-
<b>G</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>N</b>		<input type="checkbox"/> Standard	+
			-
<b>S</b>		<input type="checkbox"/> Standard	+
			-
<b>H</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>		<input type="checkbox"/> Standard	+
			-
<b>R</b>		<input type="checkbox"/> To Suit	
<b>Quantity:</b>			

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CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# EJECTOR SLEEVES

## THIN WALL



STANDARD TOLERANCES		
D	+0.0003 -0.0000	+0.007 -0.000
B	-0.0004 -0.0007	-0.01 -0.02
L	+0.030 -0.000	+1.0 -0.0
N	+0.20 -0.00	+5.0 -0.0
S	±0.01	±0.2
G	+0.000 -0.001	+0.00 -0.02
H	+0.000 -0.010	+0.0 -0.2
T	+0.000 -0.002	+0.0 -0.05
	INCH	METRIC

**Material:**

- A-2**  
Core = 58-60 HRC  
Treatment = Nicklon®

- M-2**  
Core = 58-62 HRC (Thru Hard)

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

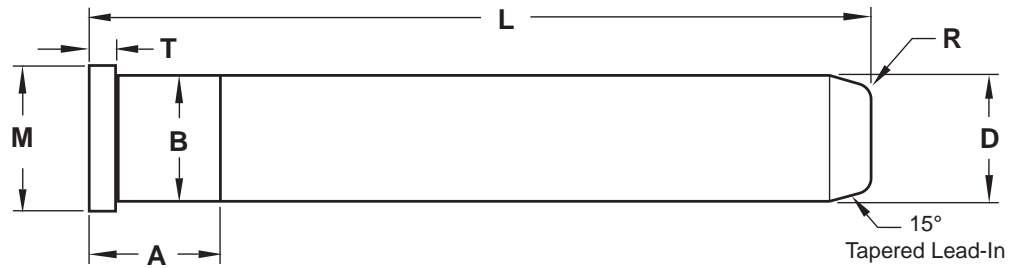
SLEEVE #1			
Dimension		Tolerance	
<b>D</b>	<input type="checkbox"/> Standard	+	
		-	
<b>B</b>	<input type="checkbox"/> Standard	+	
		-	
<b>L</b>	<input type="checkbox"/> Standard	+	
		-	
<b>N</b>	<input type="checkbox"/> Standard	+	
		-	
<b>S</b>	<input type="checkbox"/> Standard	+	
		-	
<b>G</b>	<input type="checkbox"/> Standard	+	
		-	
<b>H</b>	<input type="checkbox"/> Standard	+	
		-	
<b>T</b>	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

SLEEVE #2			
Dimension		Tolerance	
<b>D</b>	<input type="checkbox"/> Standard	+	
		-	
<b>B</b>	<input type="checkbox"/> Standard	+	
		-	
<b>L</b>	<input type="checkbox"/> Standard	+	
		-	
<b>N</b>	<input type="checkbox"/> Standard	+	
		-	
<b>S</b>	<input type="checkbox"/> Standard	+	
		-	
<b>G</b>	<input type="checkbox"/> Standard	+	
		-	
<b>H</b>	<input type="checkbox"/> Standard	+	
		-	
<b>T</b>	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

<b>E-MAIL TECH@PROCOMPS.COM</b>		
CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:



# LEADER PINS STRAIGHT



STANDARD TOLERANCES		
D	+0.0000 -0.0005	+0.00 -0.01
B	+0.0005 -0.0000	+0.01 -0.00
A	+0.000 -0.030	+0.0 -1.0
L	+0.000 -0.030	+0.0 -1.0
M	+0.000 -0.010	+0.0 -0.2
T	+0.000 -0.002	+0.00 -0.05
	INCH	METRIC

**Material**  
AISI 1117  
Surface = 58-62 HRC  
Core = 20-22 HRC

PIN #1			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard	+	
		-	
B	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
R	<input type="checkbox"/> 1/6 for D= 1 1/4 max. <input type="checkbox"/> 3/16 for D over 1 1/4		
<b>Quantity:</b>			

PIN #2			
Dimension	Tolerance		
D	<input type="checkbox"/> Standard	+	
		-	
B	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
M	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
R	<input type="checkbox"/> 1/6 for D= 1 1/4 max. <input type="checkbox"/> 3/16 for D over 1 1/4		
<b>Quantity:</b>			

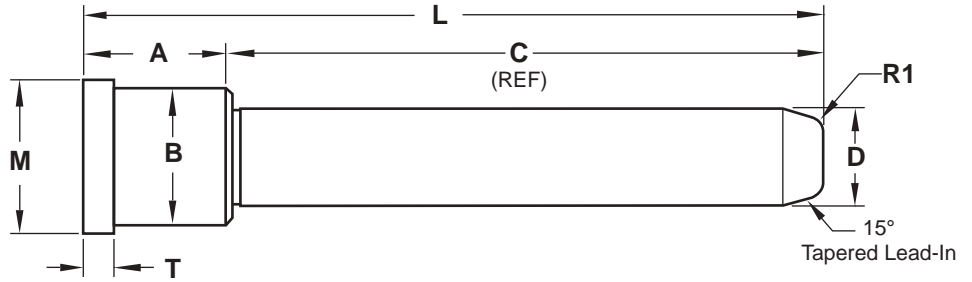
**E-MAIL TECH@PROCOMPS.COM**

CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# LEADER PINS SHOULDER

STANDARD TOLERANCES		
D	+0.0000 -0.0005	+0.00 -0.01
B	+0.0005 -0.0000	+0.01 -0.00
L	+0.000 -0.030	+0.0 -1.0
A	+0.000 -0.030	+0.0 -1.0
M	+0.000 -0.010	+0.0 -0.2
T	+0.000 -0.002	+0.00 -0.05
	INCH	METRIC

**Material**  
AISI 1117  
Surface = 58-62 HRC  
Core = 42-48 HRC



PIN #1			
Dimension		Tolerance	
D	<input type="checkbox"/> Standard	+	
		-	
B	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
C		REF	
M	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
R1		REF	
<b>Quantity:</b>			

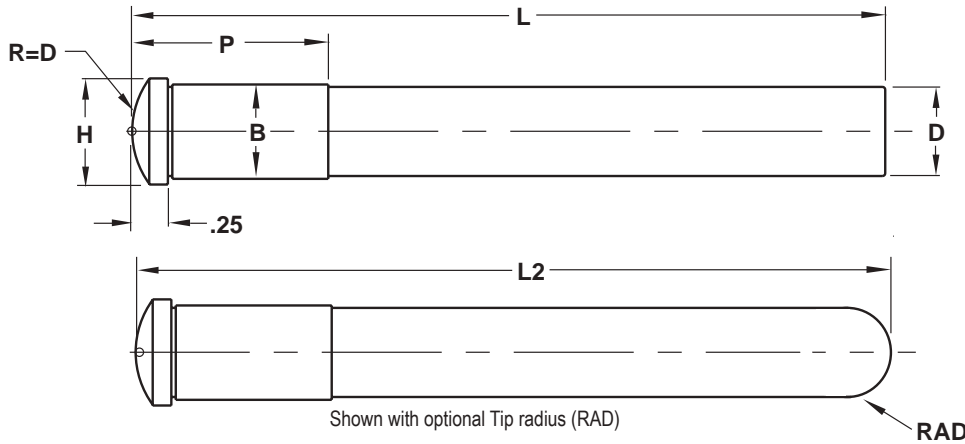
PIN #2			
Dimension		Tolerance	
D	<input type="checkbox"/> Standard	+	
		-	
B	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
C		REF	
M	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
R1		REF	
<b>Quantity:</b>			

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:



# ANGLE PINS



**Material**  
 AISI 8620  
 Surface = 50-55 HRC

STANDARD TOLERANCES		
D	+0.0000	+0.00
	-0.0005	-0.01
B	+0.0005	+0.01
	-0.0000	-0.00
H	+0.000	+0.0
	-0.010	-0.2
P	+0.00	+0.0
	-0.06	-1.5
L	+0.125	+3.0
	-0.000	-0.0
RAD	+0.000	+0.0
	-0.015	-0.4
L2	+0.005	+0.13
	-0.005	-0.13
	INCH	METRIC

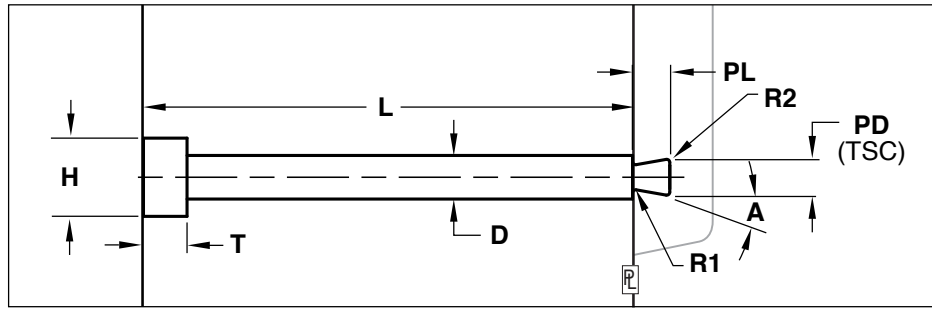
ANGLE PIN #1			
Dimension		Tolerance	
D		<input type="checkbox"/> Standard	+
			-
B		<input type="checkbox"/> Standard	+
			-
H		<input type="checkbox"/> Standard	+
			-
P		<input type="checkbox"/> Standard	+
			-
L		<input type="checkbox"/> Standard	+
			-
RAD	<input type="checkbox"/> Full <input type="checkbox"/> No	<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

ANGLE PIN #2			
Dimension		Tolerance	
D		<input type="checkbox"/> Standard	+
			-
B		<input type="checkbox"/> Standard	+
			-
H		<input type="checkbox"/> Standard	+
			-
P		<input type="checkbox"/> Standard	+
			-
L		<input type="checkbox"/> Standard	+
			-
RAD	<input type="checkbox"/> Full <input type="checkbox"/> No	<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# PULLER PINS



Material:  
 H-13  
 Core = 40-45 HRC  
 Surface = 60-70 HRC

Other:

Material	Core Hardness	Surface Hardness	Treatment

STANDARD TOLERANCES		
D	-0.0004 -0.0007	-0.01 -0.02
L	±0.003	±0.07
PD	±0.003	±0.07
PL	±0.003	±0.07
	INCH	METRIC

PULLER PIN #1			
Dimension		Tolerance	
D	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
PL	<input type="checkbox"/> Standard	+	
		-	
PD	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

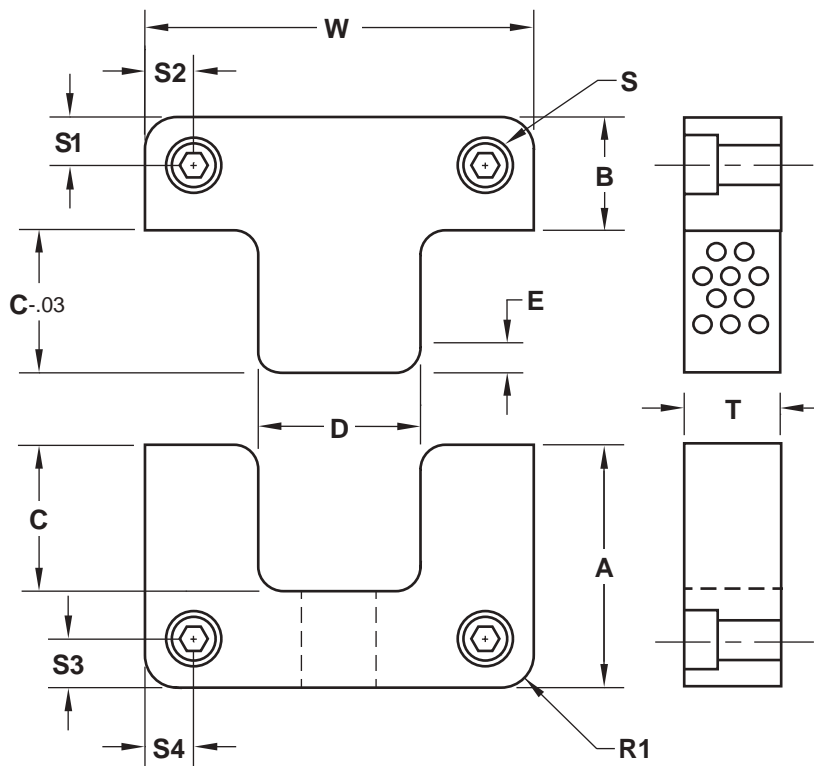
PULLER PIN #2			
Dimension		Tolerance	
D	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
PL	<input type="checkbox"/> Standard	+	
		-	
PD	<input type="checkbox"/> Standard	+	
		-	
H	<input type="checkbox"/> Standard	+	
		-	
T	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

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CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:



# SIDE LOCKS

## Z-SERIES™



### Male Insert

Material = H-13  
 Core = 42-48 HRC  
 Surface = 70 HRC  
 Treatment = Salt Bath Nitride

### Female Insert

Material = D-2  
 Core = 58-62 HRC  
 Surface = 80 HRC  
 Treatment = Titanium Nitride Coated

STANDARD TOLERANCES		
A	+0.000 -0.002	+0.00 -0.05
B	+0.000 -0.002	+0.00 -0.05
C	±0.01	±0.2
T	+0.000 -0.002	+0.00 -0.05
W	+0.0000 -0.0004	+0.00 -0.01
S1-4	±0.01	±0.25
	INCH	METRIC

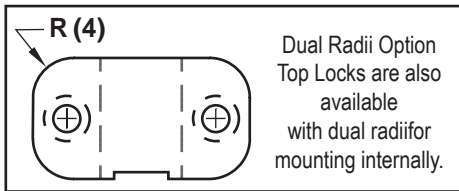
SIDE LOCK				R1	<input type="checkbox"/> To Suit	Pocket Radius (Lock machined to suit)
Dimension	Tolerance					
A	<input type="checkbox"/> Standard	+ -	E	<input type="checkbox"/> To Suit	Engagement Radius	
B	<input type="checkbox"/> Standard	+ -	S	SHCS SIZE		
C	<input type="checkbox"/> Standard	+ -	S1			
D	<input type="checkbox"/> Standard	.0001 - .0002 (.002 - .005 mm) Clearance per side	S2			
T	<input type="checkbox"/> Standard	+ -	S3			
W	<input type="checkbox"/> Standard	+ -	S4			
<b>Quantity:</b>						

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CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# TOP LOCKS

## Z-SERIES™

STANDARD TOLERANCES		
<b>A</b>	+0.000 -0.002	+0.00 -0.05
<b>B</b>	+0.000 -0.002	+0.00 -0.05
<b>C</b>	±0.01	±0.2
<b>T</b>	+0.000 -0.002	+0.00 -0.05
<b>W</b>	+0.0000 -0.0004	+0.00 -0.01
<b>S1-2</b>	±0.01	±0.2
	INCH	METRIC

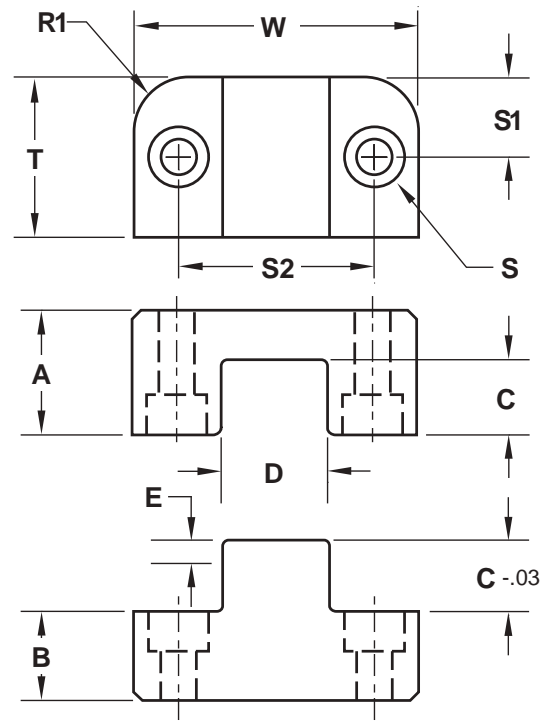


**Male Insert**

Material = H-13  
 Core = 42-48 HRC  
 Surface = 70 HRC  
 Treatment = Salt Bath Nitride

**Female Insert**

Material = D-2  
 Core = 58-62 HRC  
 Surface = 80 HRC  
 Treatment = Titanium Nitride Coated



TOP LOCK			W	<input type="checkbox"/> Standard	+
Dimension	Tolerance				-
<b>A</b>	<input type="checkbox"/> Standard	+ -	<b>R1</b>	<input type="checkbox"/> To Suit	Pocket Radius (Lock machined to suit)
<b>B</b>	<input type="checkbox"/> Standard	+ -	<b>E</b>	<input type="checkbox"/> To Suit	Engagement Radius
<b>C</b>	<input type="checkbox"/> Standard	+ -	<b>S</b>	SHCS SIZE	
<b>D</b>	<input type="checkbox"/> Standard	.0001 - .0002 (.002 - .005 mm) Clearance per side			
<b>T</b>	<input type="checkbox"/> Standard	+ -			
<b>Quantity:</b>					

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

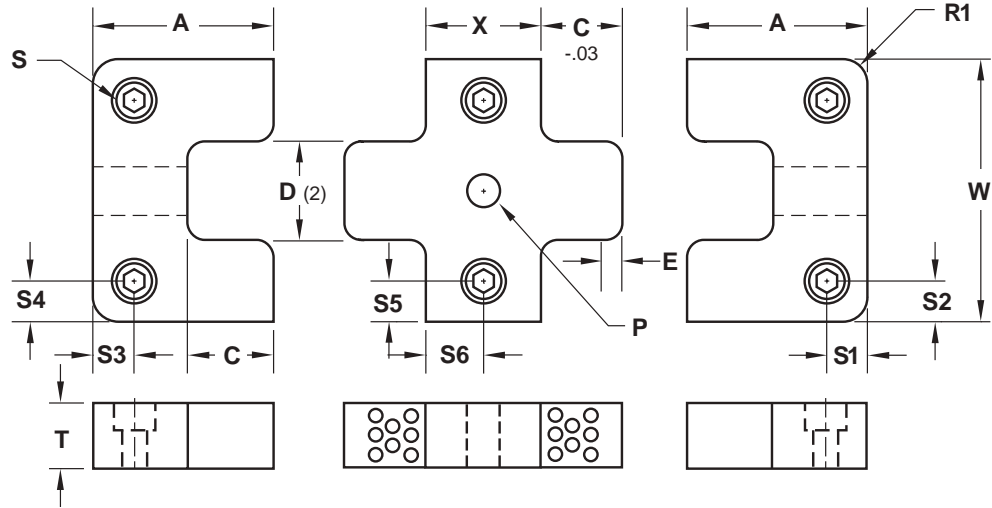




# X-STYLE SIDE LOCKS

## Z-SERIES™

STANDARD TOLERANCES		
A	+0.000 -0.002	+0.00 -0.05
X	+0.000 -0.002	+0.00 -0.05
C	±0.01	±0.2
T	+0.000 -0.002	+0.00 -0.05
W	+0.0000 -0.0004	+0.00 -0.01
S1-6	±0.01	±0.2
P	+0.001 -0.000	+0.03 -0.00
	INCH	METRIC



### Male Insert

Material = H-13  
 Core = 42-48 HRC  
 Surface = 70 HRC  
 Treatment = Salt Bath Nitride

### Female Insert

Material = D-2  
 Core = 58-62 HRC  
 Surface = 80 HRC  
 Treatment = Titanium Nitride Coated

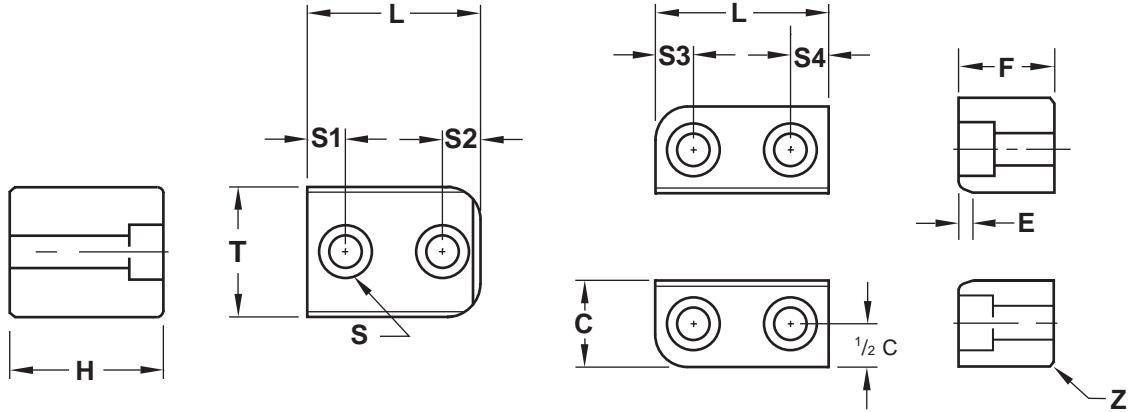
X-STYLE LOCK			W	<input type="checkbox"/> Standard <input type="checkbox"/> To Suit	+ -	S3
Dimension	Tolerance					
A	<input type="checkbox"/> Standard	+ -	R1	<input type="checkbox"/> To Suit	Pocket Radius (Lock machined to suit)	S4
X	<input type="checkbox"/> Standard	+ -	E	<input type="checkbox"/> To Suit	Engagement Radius	S5
C	<input type="checkbox"/> Standard	+ -	S		SHCS SIZE	S6
D	<input type="checkbox"/> Standard	.0001 - .0002 (.002 - .005 mm) Clearance per side	S1			P
T	<input type="checkbox"/> Standard	+ -	S2			<b>Quantity:</b>

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# GUIDE LOCKS

## Z-SERIES™



**R1 (4)** **R1 (4) Each**

**Dual Radii Option**  
Guide Locks are also available with dual radii for mounting internally as shown at left.

**Male Insert**  
Material = H-13  
Core = 42-48 HRC  
Surface = 70 HRC  
Treatment = Salt Bath Nitride

**Female Insert**  
Material = D-2  
Core = 58-62 HRC  
Surface = 80 HRC  
Treatment = Titanium Nitride Coated

STANDARD TOLERANCES		
L	+0.000 -0.010	+0.00 -0.25
H	+0.00 -0.01	+0.0 -0.2
T	+0.0000 -0.0003	+0.00 -0.01
C	+0.0000 -0.0003	+0.00 -0.01
F	+0.000 -0.005	+0.00 -0.12
S1-4	±0.01	±0.2
	INCH	METRIC

GUIDE LOCK				E	<input type="checkbox"/> To Suit	Engagement Radius	S	SHCS		
Dimension	Tolerance									
L	<input type="checkbox"/> Standard	+	-	R1	<input type="checkbox"/> To Suit	Pocket Radius (Lock machined to suit)	Z	<input type="checkbox"/> Standard	+	-
H	<input type="checkbox"/> Standard	+	-	S1	<input type="checkbox"/> Standard		DUAL RADII <input type="checkbox"/> Yes <input type="checkbox"/> No			
T	<input type="checkbox"/> Standard	+	-	S2	<input type="checkbox"/> Standard		MALE QTY			
C	<input type="checkbox"/> Standard	+	-	S3	<input type="checkbox"/> Standard			FEMALE QTY		
F	<input type="checkbox"/> Standard	+	-	S4	<input type="checkbox"/> Standard					

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# BAR LOCKS

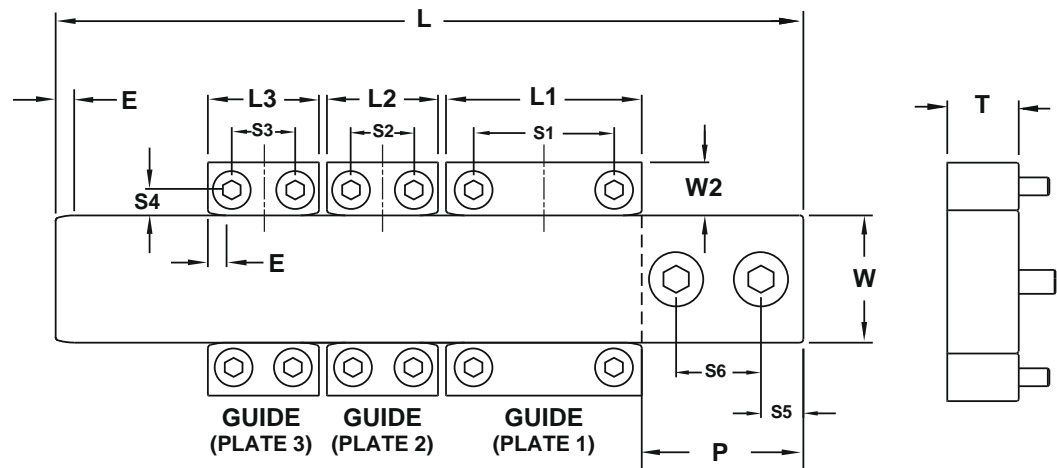
## Z-SERIES™

### Male Insert

Material = H-13  
 Core = 42-48 HRC  
 Surface = 70 HRC  
 Treatment = Salt Bath Nitride

### Female Insert

Material = D-2  
 Core = 58-62 HRC  
 Surface = 80 HRC  
 Treatment = Titanium Nitride Coated



### Quantity

BAR						
L	T	W	S5	S6	E REF	P
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

STANDARD TOLERANCES		
L-L3	+0.000 -0.005	+0.00 -0.15
T	+0.000 -0.005	+0.00 -0.15
W-W2	+0.0000 -0.0003	+0.000 -0.007
S1-S6	±0.005	±0.1
	INCH	METRIC

GUIDE 1				
L1	T	W2	S1	S4
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

GUIDE 2				
L2	T	W2	S2	S4
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

GUIDE 3				
L3	T	W2	S3	S4
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Note: The "T" dimension will be equal for male and all guides.

Progressive will determine the lead-in radius, SHCS size, and center spacing.

Bars sold individually. Guides sold in pairs.

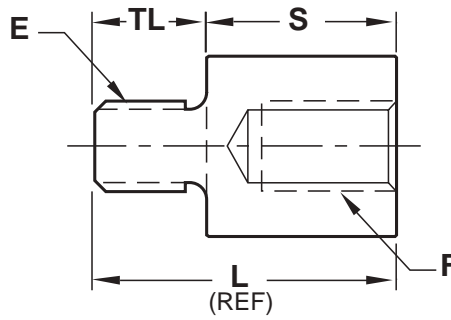
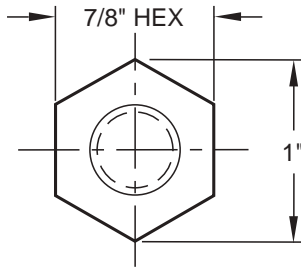
SHCS not included for non-standard T Dimensions.

T	SHCS	SHCS
	GUIDES	BAR
1.000	#10 - 32 X 1.25	5/16 - 18 X 1.25
1.250	1/4 - 20 X 1.50	3/8 - 16 X 1.50
1.370	5/16 - 18 X 1.50	3/8 - 16 X 1.50
1.500	3/8 - 16 X 1.75	1/2 - 13 X 1.75

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# PRESS KNOCK OUT: HEX SERIES



**Material:**

**AISI 4140 PH**  
Treatment = Black Oxide

**Other:**

Material	Core Hardness	Surface Hardness	Treatment

STANDARD TOLERANCES		
TL	±0.015	+0.25
S	+0.000	+0.00
	-0.002	-0.05
	INCH	METRIC

Note: Hex sizes other than 7/8" are also available.

PKO #1			
Dimension		Tolerance	
TL		<input type="checkbox"/> Standard	+
			-
S		<input type="checkbox"/> Standard	+
			-
L		REF	
E		Ext. Thread	
F		Int. Thread	
<b>Quantity:</b>			

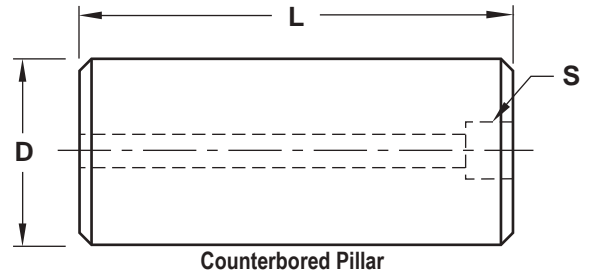
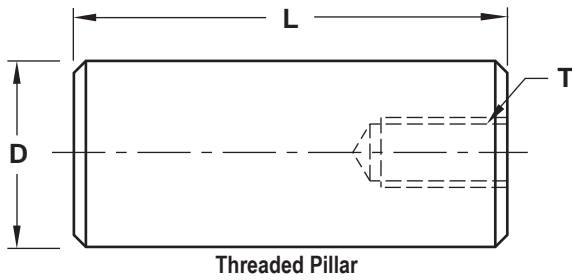
PKO #2			
Dimension		Tolerance	
TL		<input type="checkbox"/> Standard	+
			-
S		<input type="checkbox"/> Standard	+
			-
L		REF	
E		Ext. Thread	
F		Int. Thread	
<b>Quantity:</b>			

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REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:



# SUPPORT PILLARS



STANDARD TOLERANCES		
D	+0.005	+0.12
	-0.015	-0.25
L	+0.001	+0.01
	+0.002	+0.02
	INCH	METRIC

Thread	
D	Thread
Up to 2"	3/8-16
3+ up	5/8-11

**Material**  
AISI-1018  
Approx. 20 HRC

THREADED PILLAR #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>			Thread
<b>Quantity:</b>			

COUNTERBORED PILLAR #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>			Clearance for SHCS
<b>Quantity:</b>			

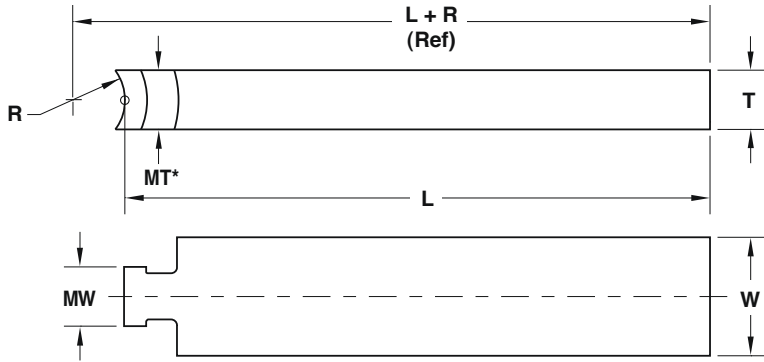
THREADED PILLAR #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>			Thread
<b>Quantity:</b>			

COUNTERBORED PILLAR #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>T</b>			Clearance for SHCS
<b>Quantity:</b>			

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CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# UNILIFTER™ CORE BLADES



Series	R	MT*	MW
MiniLifter	.250	.31	.24
UniLifter	.406	.49	.49
XL Series	.875	1.00	1.00
Metric	10mm	15mm	10mm

STANDARD TOLERANCES		
T	+0.000	+0.0
	-0.001	-0.025
W	+0.000	+0.0
	-0.001	-0.025
L	+0.06	+2.0
	-0.00	-0.0
	INCH	METRIC

\*Note: MT may increase for strength.  
 Note: Altering the MT & MW dimensions (Minimum Thickness and Width of heel area) is not recommended.

**Series:**

- MiniLifter**  
U-Coupling = UCM50
- UniLifter**  
U-Coupling = UCU87
- XL Series**  
U-Coupling = UCX175
- Metric**  
U-Coupling = UCMM22

**Material:**

- H-13**  
Hardness = 38-42 HRC
- Aluminum Bronze**  
Hardness = 30 HRC

CORE BLADE #1			
Dimension	Tolerance		
T	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

CORE BLADE #2			
Dimension	Tolerance		
T	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

CORE BLADE #3			
Dimension	Tolerance		
T	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

CORE BLADE #4			
Dimension	Tolerance		
T	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

**E-MAIL TECH@PROCOMPS.COM**

CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:



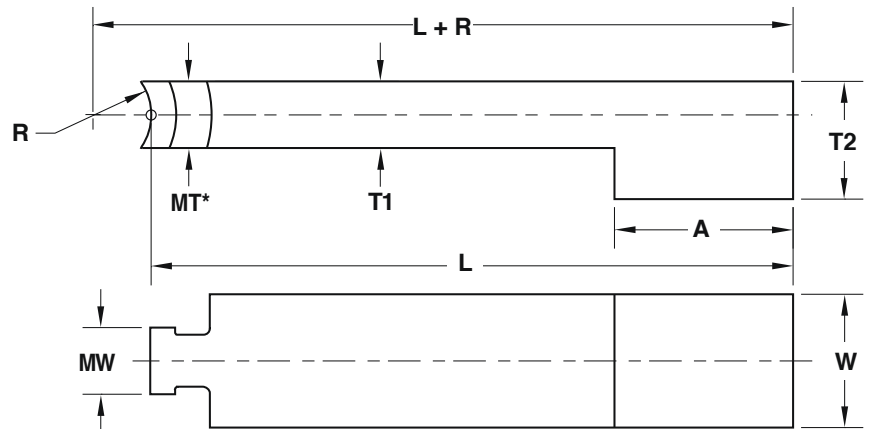
# UNILIFTER CORE BLADES: L-SHAPED

STANDARD TOLERANCES		
T1	+0.000 -0.001	+0.0 -0.025
T2	+0.020 -0.000	+0.5 -0.0
W	+0.000 -0.001	+0.0 -0.025
A	+0.020 -0.000	+0.5 -0.0
L	+0.020 -0.000	+0.5 -0.0
	INCH	METRIC

Series	R	MT*	MW
MiniLifter	.250	.31	.24
UniLifter	.406	.49	.49
XL Series	.875	1.00	1.00
Metric	10mm	15mm	10mm

\*Note: MT may increase for strength.

Note: Altering the MT & MW dimensions (Minimum Thickness and Width of heel area) is not recommended.



### Series:

- MiniLifter**  
U-Coupling = UCM50
- XL Series**  
U-Coupling = UCX175

### Material:

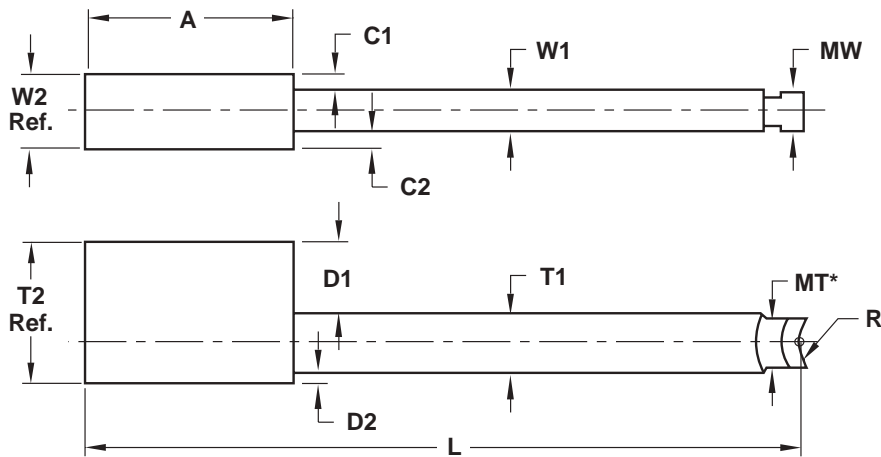
- UniLifter**  
U-Coupling = UCU87
- H-13**  
Hardness = 38-42 HRC
- Metric**  
U-Coupling = UCMM22
- Aluminum Bronze**  
Hardness = 30 HRC

CORE BLADE #1			
Dimension		Tolerance	
T1	<input type="checkbox"/> Standard	+	
		-	
T2	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

CORE BLADE #2			
Dimension		Tolerance	
T1	<input type="checkbox"/> Standard	+	
		-	
T2	<input type="checkbox"/> Standard	+	
		-	
W	<input type="checkbox"/> Standard	+	
		-	
A	<input type="checkbox"/> Standard	+	
		-	
L	<input type="checkbox"/> Standard	+	
		-	
<b>Quantity:</b>			

E-MAIL TECH@PROCOMPS.COM		
CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:

# UNILIFTER CORE BLADES: T-SHAPED



STANDARD TOLERANCES		
T1	+0.000 -0.001	+0.0 -0.025
W1	+0.000 -0.001	+0.0 -0.025
A	+0.020 -0.000	+0.5 -0.0
L	+0.020 -0.000	+0.5 -0.0
	INCH	METRIC

Series	R	MT*	MW
MiniLifter	.250	.31	.24
UniLifter	.406	.49	.49
XL Series	.875	1.00	1.00
Metric	10mm	15mm	10mm

\*Note: MT may increase for strength.  
 Note: Altering the MT & MW dimensions (Minimum Thickness and Width of heel area) is not recommended.

**Series:**

- MiniLifter**  
U-Coupling = UCM50
- XL Series**  
U-Coupling = UCX175

**Material:**

- UniLifter**  
U-Coupling = UCU87
- Metric**  
U-Coupling = UCMM22
- H-13**  
Hardness = 38-42 HRC
- Aluminum Bronze**  
Hardness = 30 HRC

## CORE BLADES

Dimension		Tolerance		REF		
<b>T1</b>	<input type="checkbox"/> Standard	+		<b>W2</b>	REF	
		-				<b>C1</b>
<b>T2</b>	REF				-	
<b>D1</b>		+		<b>C2</b>		+
		-				-
<b>D2</b>		+		<b>A</b>	<input type="checkbox"/> Standard	+
		-				-
<b>W1</b>	<input type="checkbox"/> Standard	+		<b>L</b>	<input type="checkbox"/> Standard	+
		-				-
				<b>Quantity:</b>		

E-MAIL TECH@PROCOMPS.COM

CONTACT:	COMPANY NAME:	PHONE #:
REFERENCE #:	ACCOUNT #:	E-MAIL ADDRESS:





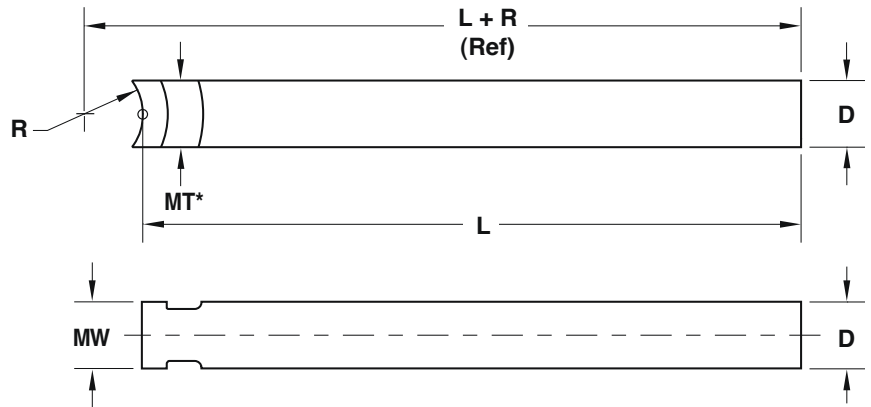
# UNILIFTER CORE BLADE: ROUND

STANDARD TOLERANCES		
D	+0.000 -0.001	+0.000 -0.025
L	+0.06 -0.00	+2.0 -0.0
	INCH	METRIC

Series	R	MT*	MW
MiniLifter	.250	.31	.24
UniLifter	.406	.49	.49
XL Series	.875	1.00	1.00
Metric	10mm	15mm	10mm

\*Note: MT may increase for strength.

Note: Altering the MT & MW dimensions (Minimum Thickness and Width of heel area) is not recommended.



### Series:

- MiniLifter**  
U-Coupling = UCM50
- XL Series**  
U-Coupling = UCX175

### Material:

- UniLifter**  
U-Coupling = UCU87
- Metric**  
U-Coupling = UCMM22
- H-13**  
Hardness = 38-42 HRC
- Aluminum Bronze**  
Hardness = 30 HRC

CORE BLADE #1			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

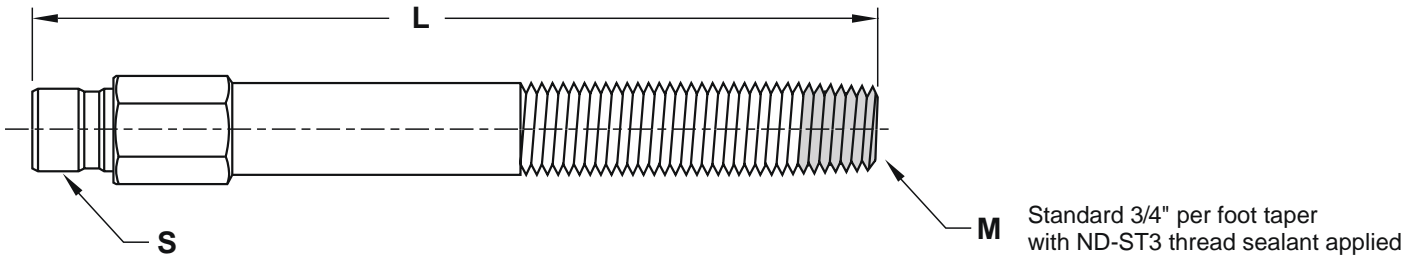
CORE BLADE #2			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

CORE BLADE #3			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

CORE BLADE #4			
Dimension		Tolerance	
<b>D</b>		<input type="checkbox"/> Standard	+
			-
<b>L</b>		<input type="checkbox"/> Standard	+
			-
<b>Quantity:</b>			

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# EXTENSION PLUGS: FINISHED LENGTH



EXT. PLUG #1	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

EXT. PLUG #2	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

EXT. PLUG #3	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

EXT. PLUG #4	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

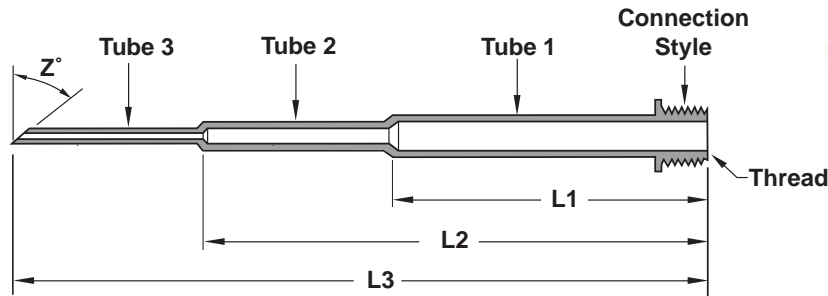
EXT. PLUG #5	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

EXT. PLUG #6	
Variable	Dimensions
<b>Series (S)</b>	<input type="checkbox"/> 200 (1/4" Flow) <input type="checkbox"/> 300 (3/8" Flow) <input type="checkbox"/> 500 (1/2" Flow) <input type="checkbox"/> Keyed Connect
<b>Thread (M)</b>	<input type="checkbox"/> 1/16-27 NPT (50) <input type="checkbox"/> 1/8-27 NPT (51) <input type="checkbox"/> 1/4-18 NPT (52) <input type="checkbox"/> 3/8-18 NPT (53) <input type="checkbox"/> 1/2-14 NPT (54) <input type="checkbox"/> BSPT Thd: _____
<b>Length (L)</b>	±.015
<b>Quantity:</b>	

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# SPECIAL TUBES



## Special High Flow (Stainless Steel) Specification Template

Quantity Required:		Z=
Tube 1	Tube Gage Size=	L1=
Tube 2	Tube Gage Size=	L2=
Tube 3	Tube Gage Size=	L3=

**Connection Style:** For the specific style of connection, document the thread size needed or select the box with a straight tube.

<p>High Flow Tube Style</p> <p>Thread Size=_____</p>	<p>Hex Series Tube Style</p> <p>Thread Size=_____</p>	<p>Pipe Plug Style</p> <p>Thread Size=_____</p>	<p>Set Screw</p> <p>Thread Size=_____</p>	<p><input type="checkbox"/> None</p>
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Progressive Components' standard tube sizes shown in red. All others are standard gage sizes.

Gage Size	OD	ID	Gage Size	OD	ID	Gage Size	OD	ID	Gage Size	OD	ID	Gage Size	OD	ID
<b>HF437T</b>	<b>.421</b>	<b>.500</b>	7TW	.180	.160	13RW	.095	.071	18XT	.050	.042	24XX	.022	.016
<b>HF375T</b>	<b>.365</b>	<b>.340</b>	7X	.180	.166	13TW	.095	.077	19RW	.042	.027	25RW	.020	.010
<b>HF312T</b>	<b>.312</b>	<b>.288</b>	8RW	.165	.135	13X	.095	.085	19TW	.042	.032	25TW	.020	.012
3RW	.259	.219	8TW	.165	.145	<b>HF093T</b>	<b>.090</b>	<b>.076</b>	19XT	.042	.035	25XX	.020	.016
3TW	.259	.229	8XX	.165	.150	14RW	.083	.063	20RW	.0355	.0235	26RW	.018	.010
3XT	.259	.239	9RW	.148	.118	14TW	.083	.067	20TW	.0355	.0255	26TW	.018	.012
<b>HF250T</b>	<b>.250</b>	<b>.230</b>	9TW	.148	.128	14XT	.083	.072	20XT	.0355	.0275	26XV	.018	.0135
4RW	.238	.198	9XX	.148	.135	15RW	.072	.054	21RW	.032	.020	27RW	.016	.008
4TW	.238	.208	10RW	.134	.106	<b>15TW</b>	<b>.072</b>	<b>.060</b>	21TW	.032	.023	27TW	.016	.010
4XT	.238	.218	10TW	.134	.114	15XTS	.072	.063	21XT	.032	.025	27XV	.016	.0115
5RW	.219	.189	10XT	.134	.118	16RW	.065	.047	22RW	.028	.016	28RW	.014	.007
5TW	.219	.199	<b>HF125T</b>	<b>.125</b>	<b>.109</b>	16TW	.065	.053	22TW	.028	.020	28TW	.014	.009
5XT	.219	.205	11RW	.120	.094	16TXT	.065	.055	22XTS	.028	.021	28XV	.014	.0105
6RW	.203	.173	11TW	.120	.100	17RW	.058	.042	23RW	.025	.013	29RW	.013	.007
6TW	.203	.183	11X	.120	.106	17TW	.058	.048	23TW	.025	.017	30RW	.012	.006
6X	.203	.189	12RW	.109	.085	17XT	.058	.050	23XX	.025	.020	31RW	.010	.005
<b>HF187T</b>	<b>.187</b>	<b>.167</b>	12TW	.109	.091	18RW	.050	.033	24RW	.022	.012	32RW	.009	.004
7RW	.180	.150	12XT	.109	.095	18TW	.050	.038	24TW	.022	.014	33RW	.008	.004

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