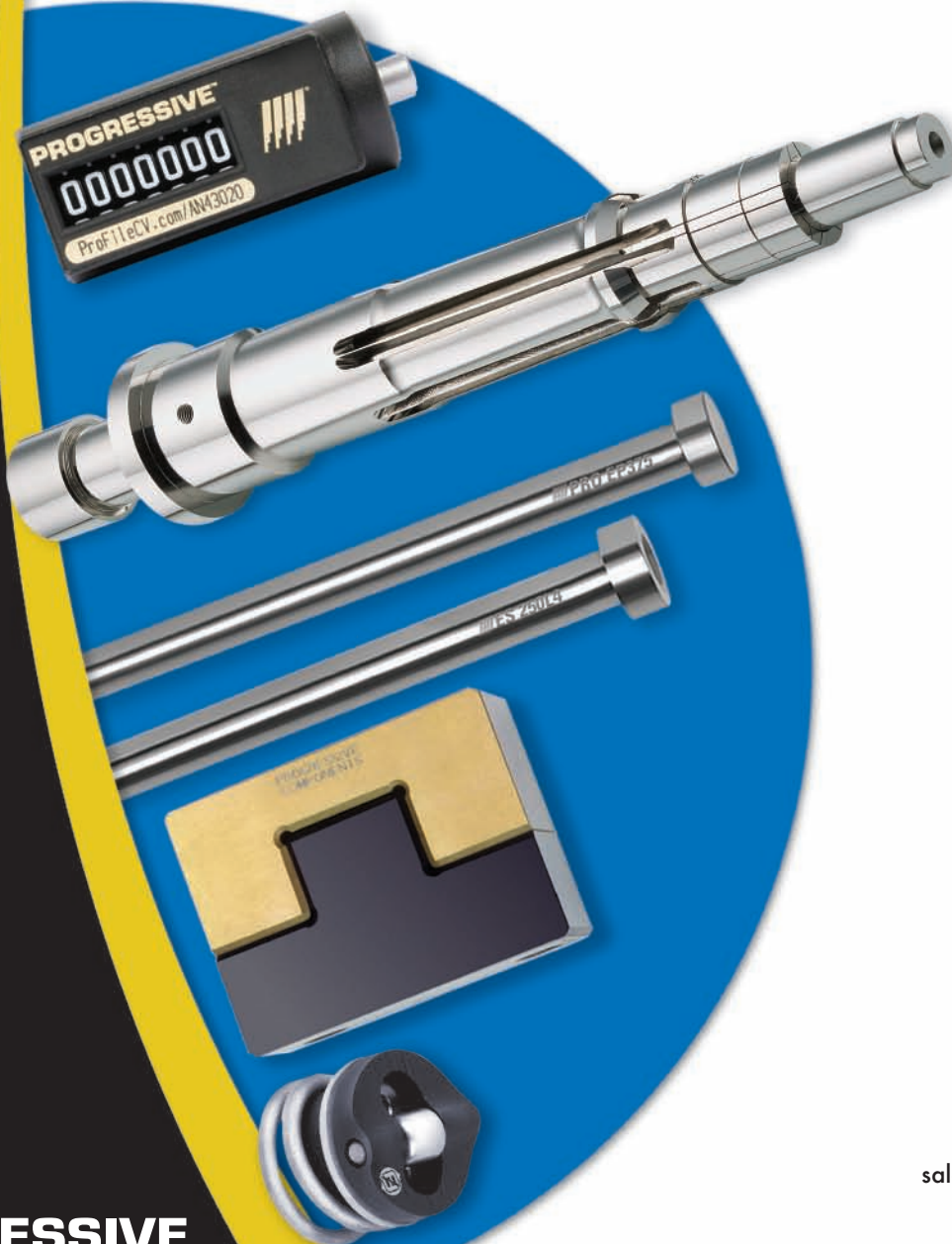




INJECTION MOLD TOOLING PROGRAM

COMPONENTS FOR PRODUCTION TOOLING



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About Progressive

The team at Progressive continuously strives to be the leader in supplying 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 problem, regardless of origin.
- 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 any member of the Progressive Team at 1-800-269-6653 or 1-847-487-1000. We appreciate the continued opportunity to serve!



*Don Starkey, Vice President
Dir. of Operations & Finance
ds@procomps.com*

*Glenn Starkey, President
Dir. of Engineering & Sales
gs@procomps.com*

About the Injection Mold Program

This program comprises competitively-priced products that will continue to lead in value throughout the life of the mold. Leading the industry with more 'firsts' has been our track record. And, we will continue to develop tooling innovations for the future.

Additional Programs

For our Regional Service Centers located on three continents, we are continuing to develop component product lines for additional tooling technologies. Focused product development benefits tool builders and processors by providing easier access to a full range of diversified products. Contact us for information on products for Die Cast Tooling, Blow Mold Tooling, and Stamping Die Tooling.

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PROGRESSIVE
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Program Overview

MOLD ACTIONS

Angle Pins
CamAction Assemblies
Collapsible Cores
Expandable Cavities
FlexiCore Assemblies
L-Gibs
UniLifters
Slide Retainers
StackIt System
Wear Plates

ELECTRICAL COMPONENTS

Cables
Cavity Pressure
Hot Sprue Bushings
Junction Box
KO Switches
Recessed Connectors
Switches
Transducers
Wire Channel Inserts

RAPID TOOLING

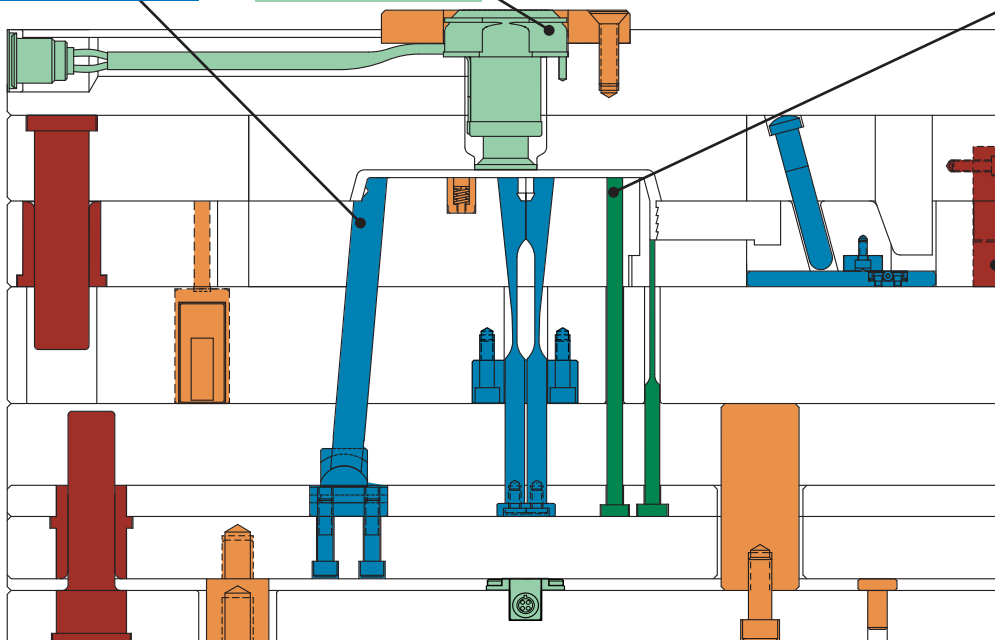
Clamps
Frames
Inserts
RTI Pins & Bushings
RTI Support Pillars
T-Handles

SOFTWARE & LITERATURE

Books
CAD Geometry
Mold Finish Guides
MoldTrax
ProFile

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Blade Ejectors
Core Pins & Retainers
Ejector Pins
Ejector Sleeves
JIS & DIN Pins
Keyed Ejector Pins
Return Pins
Sleeve Extensions
Thin Wall Sleeves
TI Pins
UltraPins



ALIGNMENT

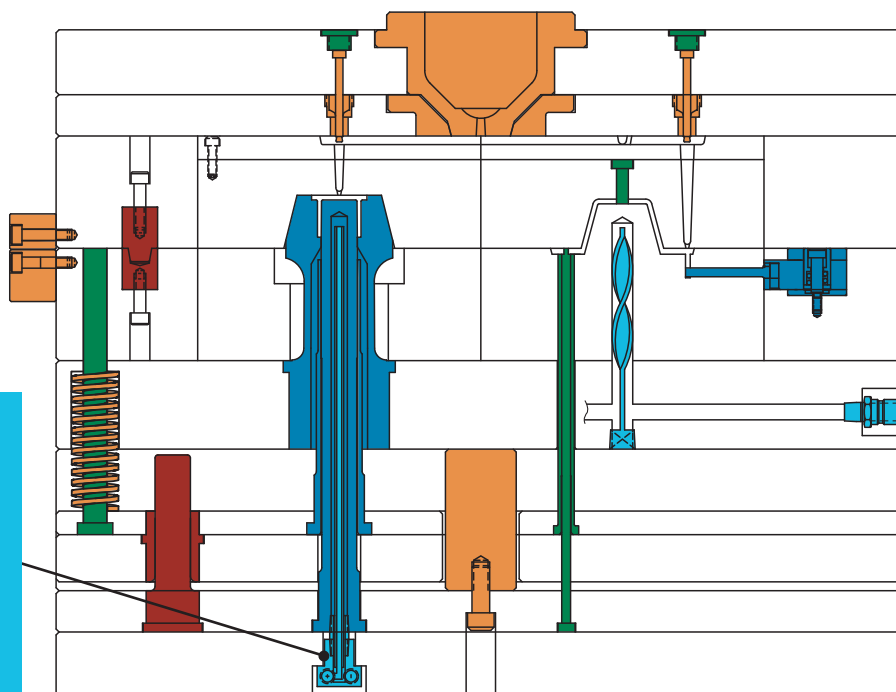
Leader Pins
Guided Ej Bushings
Guided Ejector Pins
Guide Locks
Needle Bearing Locks
QC Bushings
Shoulder Bushings
Shuttle Mold Locks
Side Locks
Straight Bushings
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Top Locks
Taper Locks

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Locating Rings
Mold Straps
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R-Series CounterView
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Roller Pullers
Springs
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Support Pillars

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Connector Plugs
Diverting Plugs
Elbows
Extension Plugs
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Pipe Plugs
Threadless Plugs
Water Blockers
Water Jumpers
Waterline Tags





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Pins	Ejector Pins: Straight Inch	Ejector Pins: Shoulder	Ejector Pins: Straight DIN	Ejector Pins: Shoulder DIN	Ejector Pins: Straight JIS
Catalog # Prefix	EP	EP	EPD	EPD	EPJ
Catalog Page	A-2	A-3	A-4	A-5	A-6
Pricing Page	Z-3	Z-4	Z-4	Z-5	Z-5



Ejector Pins: Shoulder JIS	UltraPins	Keyed Ejector Pins	Blade Ejectors: DIN	Core Pins	TI Pins
EPJ	EPL	EP	BE	CP	TI
A-7	A-8	A-10	A-11	A-12	A-13
Z-6	Z-6	Z-6	Z-6	Z-7	Z-7



Ejector Sleeves	Sleeve Extensions	Core Pin Retainers	Return Pins	Leader Pins: Straight	Leader Pins: Shoulder
ES, ESTW	SXT	CPR	RP	LP	SLP
A-14	A-16	A-17	A-18	B-1	B-2
Z-8	Z-8	Z-8	Z-8	Z-9	Z-9



Alignment	Guided Ejector Pins	Bushings: Shoulder	Bushings Straight	QC Bushings: Shoulder	Guided Ejector Bushings
Catalog # Prefix	GEP, LP	SAB, SHB, SGP, STR	STB, STGP	SQC	GEB, GGP, GQC
Catalog Page	B-3	B-4	B-5	B-6	B-8
Pricing Page	Z-10	Z-10	Z-12	Z-12	Z-12



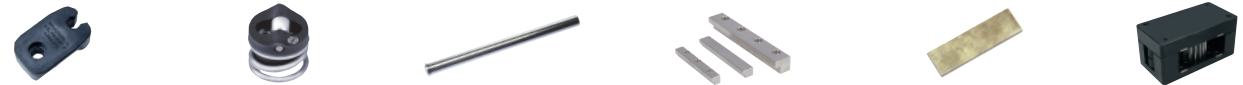
Guide Locks	Side Locks	Side Lock: Graphite	X-Series Side Lock	Needle Bearing Side Lock	Needle Bearing Top Lock
GL, GLM	SL, SLM, SLS, SLMS	SLPM	SLX	SLR, SLRM	TLR
B-9	B-10	B-12	B-13	B-14	B-15
Z-12	Z-13	Z-13	Z-13	Z-13	Z-13



Top Locks	Taper Locks & Plates	UniLifter System	FlexiCore System	C-Cores: RT Series	C-Cores: GZ Series
TL, TLM	MTL, FTL, TLP	CB, UC, TG	FCA, FCR, FCDA	CC, CCM	CC
B-16	B-17	C-1	C-4	C-10	C-14
Z-13	Z-13	Z-14	Z-15	Z-16	



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Catalog # Prefix		CA, CAMM	CA, CAMM	CA, CAMM	CA-400
Catalog Page	C-17	C-18	C-19	C-22	C-25
Pricing Page		Z-16	Z-16	Z-16	Z-16



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RET	SRT	AP	LGIB	WP	SK
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Z-16	Z-17	Z-17	Z-17	Z-17	Z-17



Program Contents



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Catalog # Prefix	SPR	LR	ESB, RX	PP, PPB	DF, DFP
Catalog Page	D-1	D-2	D-3	D-4	D-5
Pricing Page	Z-17	Z-18	Z-18	Z-19	Z-19



Multi-Daters	Daters: CH, 20-Series	Date Stamps	Replacement Plugs	Micro Daters	CounterView: 100/200
DMD	DC, DL	DH, DLB, DFD	DP, DCP, DLP, DHP	MD	CV
D-6	D-7	D-9	D-11	D-12	D-13
Z-20	Z-20	Z-20	Z-22	Z-22	Z-22



CounterView	CV Attachment Block	Recycle Inserts	Roller Pullers	Urethane Springs	Springs
CVR	CVRA	RI	RPL	US	MS, HS
D-14	D-15	D-16	D-17	D-18	D-19
Z-22	Z-22	Z-22	Z-22	Z-22	Z-22



Air Valves	Support Pillars	PKO Extensions	Baffles	Cascades: High Flow	Cascades: Hex Key
AV	SP	PH, PKP	SB, TB	HFC	HKC
D-22	D-23	D-24	E-1	E-2	E-3
Z-23	Z-23	Z-24	Z-24	Z-24	Z-24



Cooling Items	Cascades: Compact	Cascades: Nipple	Cascades: Quick Coupler	Tubes & Piston Tubes	Inlet Cascades
Catalog # Prefix	CC	NC	QC	HFT, HFTJ, T, PT	CF
Catalog Page	E-3	E-4	E-5	E-6	E-7
Pricing Page	Z-24	Z-24	Z-25	Z-25	Z-25



Extension Plugs	Connector Plugs	Pipe Plugs	Plugs: Threadless	Plugs: Water Blocker	Socket Connections
Numeral	Numeral	BR, ST, SS	TWP	WB	SC
E-8	E-11	E-12	E-13	E-14	E-15
Z-25	Z-26	Z-26	Z-27	Z-27	Z-27



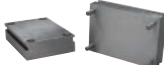
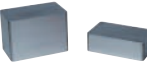
Water Jumpers	Waterline Tags	Elbows: EXT, Hex, Hex Key	Adjustable Hex Nipples	Pipe Nipples	Combination Hose Inserts
WJ	TS, TM, TH	HELB, HELS, HK	APN	BPN, GPN	Numeral
E-16	E-17	E-18	E-19	E-19	E-20
Z-27	Z-27	Z-27	Z-28	Z-28	Z-29



Hex Key Ext. Elbows	Hose Barbs & Spicers	Reducers & Couplings	Tees & Elbows	Cover Plugs, Tape, Clamps
HKEE	MB, FB, HS	RB, MR, C, HKL	T, MT, ELS, EL, ELA	CP, TT, HC
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Z-29	Z-29	Z-29	Z-29	Z-30

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Catalog Page	F-1	F-2	F-5	F-8	F-11
Pricing Page	Z-30	Z-30	Z-30	Z-30	Z-30

					
RTI: S-Series	RTI: Complete	RTI Cavity/Core Inserts	RTI Frames	RTI Pins & Bushings	Frame Sprue Bushing
RTS	RTL	RCI	RTF	RLP, RSB, RGE	RFS
F-13	F-14	F-15	F-16	F-20	F-21
Z-31	Z-31	Z-31	Z-31	Z-31	Z-31

			
Support Pillars	Straps	Frame Clamps	T-Handles
RSP	MS	RFC	T
F-21	F-22	F-22	F-22
Z-31	Z-31	Z-31	Z-31

				
Electrical Items	Junction Box	Mounting Bracket	Junction Box Cables	Patch Cables
EC	EC	ECMB	ECJBC	ECCA
G-1	G-1	G-1	G-2	G-2
Z-31	Z-31	Z-31	Z-31	Z-32

					
Recessed Connectors	Wire Channel Inserts	KO Switch	CamAction Switch	Plate Position Switch	Side Action Switch
ECRC	WC	SWKO	SWCA	SWPPS	SWSA
G-3	G-3	G-4	G-6	G-7	G-7
Z-32	Z-32	Z-32	Z-32	Z-32	Z-32

			
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SWXM	CPT	BX	TC
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Z-32	Z-32	Z-32	Z-33

				
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LIT	LIT	LIT	MT	PF
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Z-33	Z-33	Z-33	Z-33	Z-33

How To Use This Catalog

Each section of the catalog is color coded as shown in the index pages. If alternate materials or options are available for a specific product, it is noted on the individual catalog pages and pricing will be given by Customer Service per inquiry.

The icons below appear on every page (as applicable) to outline the specifications of the particular product. Technical information, including testing results, custom templates, installation instructions, and application guidelines can be found at www.procomps.com.

M Material Specification

H Material Hardness

S Surface Treatment



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Sales.asia@procomps.com

Expandable Cavity Quote Request Form

Company: _____ Date: _____

Address: _____

Contact: _____

Title: _____

E-mail: _____



Please specify type of Expandable Cavity desired:

___ "A" Side - (Gating from top only) Or

___ "B" Side - (Using conventional runner)

1) EXPANDABLE CAVITY REQUIREMENTS

POLYMER SPECIFICATIONS:

a) What is the material to be molded? _____

b) What is the process temperature? _____

___ FILLED ___ GLASS ___ MINERAL ___ UNFILLED

2) DIMENSIONS OF EXPANDABLE CAVITY: (PART PRINT IS REQUIRED)

a) Specify largest dia. to be molded: _____ c) Specify major dia. of undercut or thread: _____

b) Specify smallest dia. to be molded: _____ d) Specify minor dia. or undercut or thread: _____

3) MOLDED PART LENGTH

a) Molding length: _____ (within the Expandable Cavity)

b) Mold shut-off: **.200** (shut-off land below part)

4) EXPANSION REQUIREMENTS

a) Critical expansion per side _____

b) Loss of expansion (.050 in/in) _____
(Multiply molding length (distance from top of Expandable Cavity to bottom of last undercut) by .050)

c) Clearance (air) between plastic and steel upon expansion: **.005**

5) MOLD LAYOUT

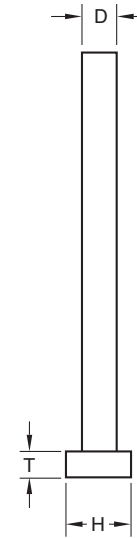
a) Number of cavities: _____ b) Distance from gate (center to center): _____

___ Retrofit or ___ New mold

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	EP036	.25	.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	EP052	.25	.125						
	(.0472)	1.2					EPD012	4	2	EPJ012	5/6	4
	(.0511)	1.3					EPD013	4	2			
	(.0551)	1.4					EPD014	4	2			
	(.0590)	1.5					EPD015	3	1.5	EPJ015	4/5/6/8	4/6
1/16	.0625	(1.6)	EP062		.25	.125						
	(.0630)	1.6					EPD016	6	3			
	(.0669)	1.7					EPD017	6	3			
	(.0675)	(1.7)	EP062		.25	.125						
	(.0708)	1.8					EPD018	6	3			
5/64	.0781	(1.9)	EP078	EP083	.25	.125						
	(.0787)	2.0					EPD02	4	2	EPJ02	5/6/8	4/6
	(.0866)	2.2					EPD022	4/6	2/3			
3/32	.0937	(2.4)	EP094	EP099	.25	.125						
	(.0984)	2.5					EPD025	5	2	EPJ025	6/8	4/6
7/64	.1094	(2.8)	EP109	EP114	.25	.125						
	(.1181)	3.0					EPD03	6	3	EPJ03	6/8/9	4/6
1/8	.1250	(3.2)	EP125	EP130	.25	.125	EPD032	6	3			
	(.1378)	3.5					EPD035	6	3	EPJ035	7	4
9/64	.1406	(3.6)	EP141		.25	.125						
5/32	.1562	(4.0)	EP156	EP161	.28	.156						
	(.1575)	4.0					EPD04	8	3	EPJ04	8	6
	(.1653)	4.2					EPD042	8	3			
11/64	.1719	(4.4)	EP172		.34	.187						
	(.1771)	4.5					EPD045	8	3	EPJ045	8	6
3/16	.1875	(4.8)	EP187	EP192	.37	.187						
	(.1968)	5.0					EPD05	10	3	EPJ05	9	6
13/64	.2031	(5.2)	EP203		.37	.187						
	(.2047)	5.2					EPD052	10	3			
	(.2165)	5.5					EPD055	10	3	EPJ055	10	6
7/32	.2187	(5.6)	EP219	EP224	.40	.187						
15/64	.2344	(6.0)	EP234		.40	.187						
	(.2362)	6.0					EPD06	12	5	EPJ06	10	
	(.2440)	6.2					EPD062	12	5			
1/4	.250	(6.4)	EP250	EP255	.43	.187						
	(.2559)	6.5					EPD065	12	5			
17/64	.2656	(6.7)	EP266		.43	.250						
	(.2756)	7.0					EPD07	14	5	EPJ07	11	6
9/32	.2812	(7.1)	EP281	EP286	.43	.250						
19/64	.2969	(7.5)	EP297		.50	.250						
5/16	.3125	(7.9)	EP312	EP317	.50	.250						
	(.3150)	8.0					EPD08	14	5	EPJ08	13	8
	(.3228)	8.2					EPD082	14	5			
21/64	.3281	(8.3)	EP328		.56	.250						
	(.3346)	8.5					EPD085	14	5			
11/32	.3437	(8.7)	EP344	EP349	.56	.250						
	(.3543)	9.0					EPD09	14	5			
23/64	.3594	(9.1)	EP359		.62	.250						
3/8	.3750	(9.5)	EP375	EP380	.62	.250						
25/64	.3900	(9.9)	EP390		.62	.250						
	(.3950)	(10.0)	EP395		.62	.250						
	(.3937)	10.0					EPD10	16	5	EPJ10	15	8
	(.4015)	10.2					EPD102	16	5			
13/32	.4062	(10.3)	EP406	EP411	.68	.250						
	(.4133)	10.5					EPD105	16	5			
27/64	.4219	(10.7)	EP422		.68	.250						
	(.4269)	(10.8)	EP427		.68	.250						
	(.4330)	11.0					EPD11	18	7			
7/16	.4375	(11.1)	EP437	EP442	.68	.250						
29/64	.4531	(11.5)	EP453		.68	.250						
	(.4581)	(11.6)	EP458		.68	.250						
15/32	.4687	(11.9)	EP469	EP474	.75	.250						
	(.4724)	12.0					EPD12	18	7	EPJ12	17	8
	(.4803)	12.2					EPD122	18	7			
31/64	.4844	(12.3)	EP484		.75	.250						
	(.4894)	(12.4)	EP489		.75	.250						
	(.4921)	12.5					EPD125	18	7			
1/2	.5000	(12.7)	EP500	EP505	.75	.250						
17/32	.5312	(13.5)	EP531		.75	.250						
	(.5362)	(13.6)	EP536		.75	.250						
	(.5512)	14.0					EPD14	22	7			
9/16	.5625	(14.3)	EP562		.81	.250						
5/8	.6250	(15.9)	EP625		.87	.250						
	(.6299)	16.0					EPD16	22	7			
11/16	.6875	(17.5)	EP687		.93	.250						
	(.7087)	18.0					EPD18	24	7			
3/4	.7500	(19.1)	EP750		1.00	.250						
	(.7874)	20.0					EPD20	26	8			
7/8	.8750	(22.2)	EP875		1.12	.250						
	(.9842)	25.0					EPD25	32	10			
1	1.000	(25.4)	EP1000		1.25	.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.





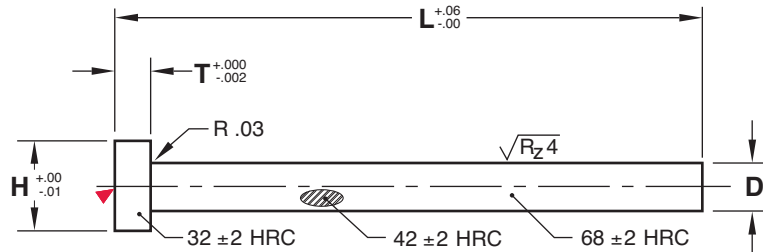
Ejector Pins

Straight Pins • Inch Standard



D Tolerances

3/64 ϕ - 7/16 ϕ	-.0004 -.0007
15/32 ϕ and Up	-.0004 -.0009



M H-13 **H** Core: 40-44 HRC, Surface: 66-70 HRC

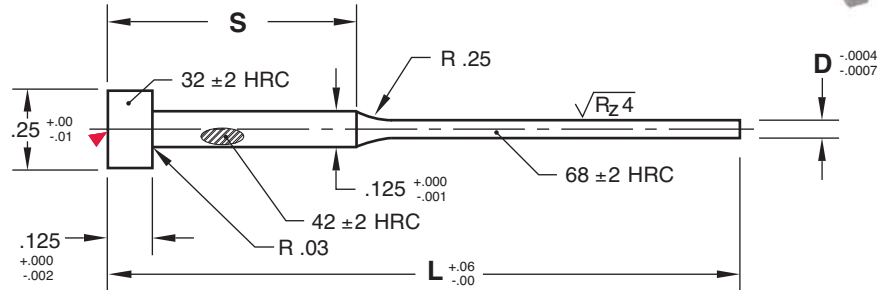
► CAD insertion point

D Nominal Pin Diam.	H Head Diam.	T Head Thick	L=6" D Standard	L=10"		L=14"		L=18"		L=25"		L=39" D Standard
				D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize	
1/32	.25	.125	EP031L6	—	—	—	—	—	—	—	—	—
3/64	.25	.125	EP047 L6	—	—	—	—	—	—	—	—	—
1/16	.25	.125	EP062 L6	EP062L10	—	—	—	—	—	—	—	—
5/64	.25	.125	EP078 L6	EP078L10	—	—	—	—	—	—	—	—
3/32	.25	.125	EP094 L6	EP094 L10	—	—	—	—	—	—	—	—
7/64	.25	.125	EP109 L6	EP109 L10	—	—	—	—	—	—	—	—
1/8	.25	.125	EP125 L6	EP125 L10	EP130 L10	EP125 L14	EP130 L14	EP125 L18	—	EP125 L25	—	—
9/64	.25	.125	—	EP141 L10	—	EP141 L14	EP146L14	—	—	—	—	—
5/32	.28	.156	EP156 L6	EP156 L10	EP161L10	EP156 L14	EP161 L14	EP156 L18	—	EP156 L25	—	—
11/64	.34	.187	—	EP172 L10	—	EP172L14	EP177L14	—	—	—	—	—
3/16	.37	.187	EP187 L6	EP187 L10	EP192L10	EP187 L14	EP192 L14	EP187 L18	—	EP187 L25	EP187 L39	—
13/64	.37	.187	—	EP203 L10	—	EP203 L14	EP208L14	—	—	—	—	—
7/32	.40	.187	EP219 L6	EP219 L10	EP224L10	EP219 L14	EP224L14	—	—	EP219 L25	—	—
15/64	.40	.187	—	EP234 L10	—	EP234 L14	EP239L14	—	—	—	—	—
1/4	.43	.187	EP250 L6	EP250 L10	EP255L10	EP250 L14	EP255 L14	EP250 L18	EP255 L18	EP250 L25	EP250L39	—
17/64	.43	.250	—	EP266 L10	—	EP266L14	EP271L14	—	—	EP266 L25	—	—
9/32	.43	.250	EP281 L6	EP281 L10	EP286 L10	EP281 L14	EP286L14	EP281 L18	—	EP281 L25	—	—
19/64	.50	.250	—	EP297 L10	—	EP297 L14	EP302L14	—	—	—	—	—
5/16	.50	.250	EP312 L6	EP312 L10	EP317 L10	EP312 L14	EP317 L14	EP312 L18	EP317 L18	EP312 L25	EP312L39	—
21/64	.56	.250	—	EP328 L10	—	EP328 L14	EP333L14	—	—	EP328 L25	—	—
11/32	.56	.250	EP344 L6	EP344 L10	EP349 L10	EP344L14	EP349L14	—	—	EP344 L25	—	—
23/64	.62	.250	—	EP359 L10	—	EP359 L14	EP364L14	—	—	—	—	—
3/8	.62	.250	EP375 L6	EP375 L10	EP380 L10	EP375 L14	EP380 L14	EP375 L18	EP380 L18	EP375 L25	EP375 L39	—
25/64	.62	.250	—	—	—	EP390L14	EP395L14	—	—	—	—	—
13/32	.68	.250	EP406 L6	EP406 L10	EP411L10	EP406L14	EP411L14	EP406 L18	—	EP406 L25	—	—
27/64	.68	.250	—	—	—	EP422L14	EP427L14	—	—	—	—	—
7/16	.68	.250	EP437 L6	EP437 L10	EP442L10	EP437 L14	EP442 L14	EP437 L18	—	EP437 L25	EP437 L39	—
29/64	.68	.250	—	—	—	EP453L14	EP458L14	—	—	—	—	—
15/32	.75	.250	—	EP469 L10	EP474 L10	—	EP474L14	EP469 L18	—	EP469 L25	—	—
31/64	.75	.250	—	—	—	EP484L14	EP489L14	—	—	—	—	—
1/2	.75	.250	EP500 L6	EP500 L10	EP505 L10	EP500 L14	EP505 L14	EP500 L18	—	EP500 L25	EP500 L39	—
17/32	.75	.250	—	—	—	EP531L14	EP536L14	—	—	—	—	—
9/16	.81	.250	EP562 L6	EP562 L10	—	EP562 L14	—	EP562 L18	—	EP562 L25	—	—
5/8	.87	.250	EP625 L6	EP625 L10	—	EP625 L14	—	EP625 L18	—	EP625 L25	EP625 L39	—
11/16	.93	.250	—	EP687 L10	—	—	—	EP687 L18	—	EP687 L25	—	—
3/4	1.00	.250	EP750 L6	EP750 L10	—	EP750 L14	—	EP750 L18	—	EP750 L25	EP750 L39	—
7/8	1.12	.250	—	EP875 L10	—	—	—	EP875 L18	—	EP875 L25	—	—
1	1.25	.250	EP1000 L6	EP1000 L10	—	EP1000 L14	—	EP1000 L18	—	EP1000 L25	EP1000 L39	—

For keyed pins, see page A-10.

Ejector Pins

Shoulder Pins • Inch Standard



M H-13 **H** Core: 40-44 HRC, Surface: 66-70 HRC

► CAD insertion point

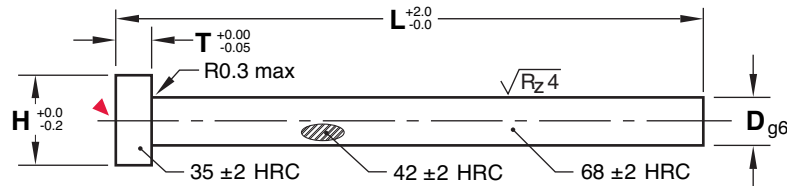
D Nominal Pin Diameter	S Shoulder Length	L = 6"		L = 10"		L = 14"	
		D Standard	D .005 Oversize	D Standard	D .005 Oversize	D Standard	D .005 Oversize
1/32	1/2	EP031L6-05	EP036L6-05	—	—	—	—
	2	EP031L6-20	—	EP031L10-20	EP036L10-20	—	—
	3	EP031L6-30	—	—	—	—	—
	4	EP031L6-40	—	—	—	—	—
3/64	1/2	EP047L6-05	—	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 pins, see page A-10.



Ejector Pins

Straight Pins • DIN Standard



M 1.2344

H Core: 40-44 HRC, Surface: 68-70 HRC

► CAD insertion point

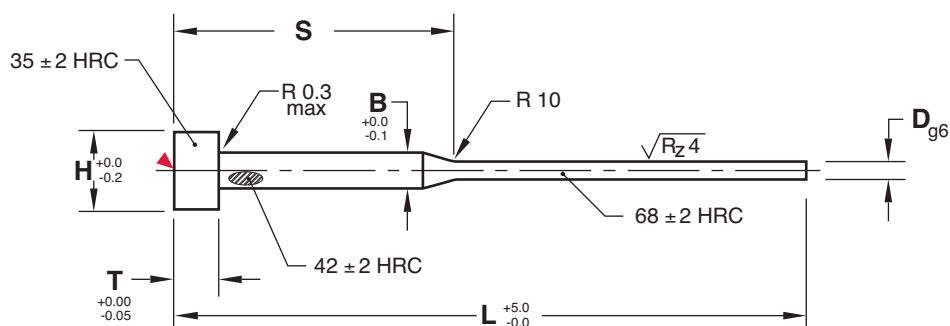
D Pin Dia.	H Head Dia.	T Head Thick.	L=125mm	L=160mm	L=200mm	L=250mm	L=400mm	L=630mm	L=1000mm
1.5	3	1.5	EPD015L125	EPD015L160	EPD015L200	EPD015L250	—	—	—
2	4	2	EPD02L125	EPD02L160	EPD02L200	EPD02L250	EPD02L400	—	—
2.2	4	2	EPD022L125	EPD022L160	EPD022L200	EPD022L250	EPD022L400	—	—
2.5	5	2	EPD025L125	EPD025L160	EPD025L200	EPD025L250	EPD025L400	—	—
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	—	—
4	8	3	EPD04L125	EPD04L160	EPD04L200	EPD04L250	EPD04L400	EPD04L630	—
4.2	8	3	EPD042L125	EPD042L160	EPD042L200	EPD042L250	EPD042L400	—	—
4.5	8	3	EPD045L125	EPD045L160	EPD045L200	EPD045L250	EPD045L400	—	—
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
6.2	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	—	—
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	—	—
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	—
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 pins, see page A-10.

Contact Customer Service for the availability of through-hardened ejector pins.

Ejector Pins

Shoulder Pins • DIN Standard



M 1.2344 **H** Core: 40-44 HRC, Surface: 68-70 HRC

► CAD insertion point

D Nominal Diameter	B	H	T	L=125mm S = 50 mm	L=160mm S = 75 mm	L=200mm S = 75 mm
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

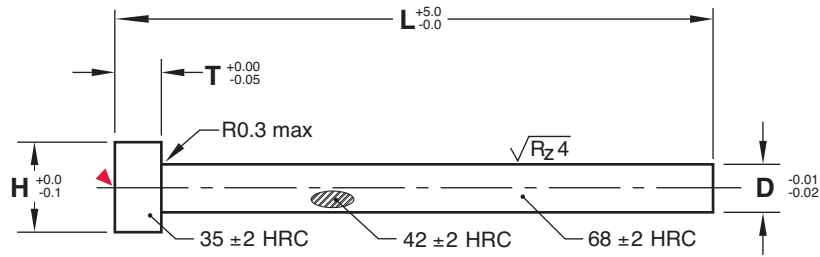
For keyed pins, see page A-10.

Contact Customer Service for the availability of through-hardened ejector pins.



Ejector Pins

Straight Pins • JIS Standard



M SKD61 **H** Core: 40-44 HRC, Surface: 66-70 HRC

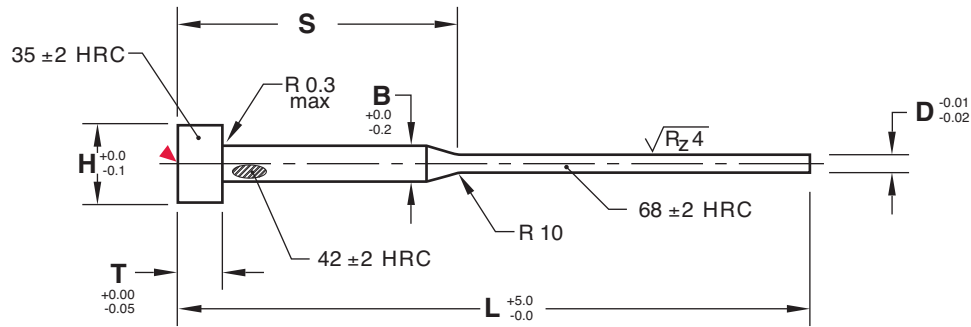
► CAD insertion point

D Pin Dia.	H Head Dia.	T Head Thick	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

For keyed pins, see page A-10.

Ejector Pins

Shoulder Pins • JIS Standard



M SKD61 **H** Core: 40-44 HRC, Surface: 66-70 HRC

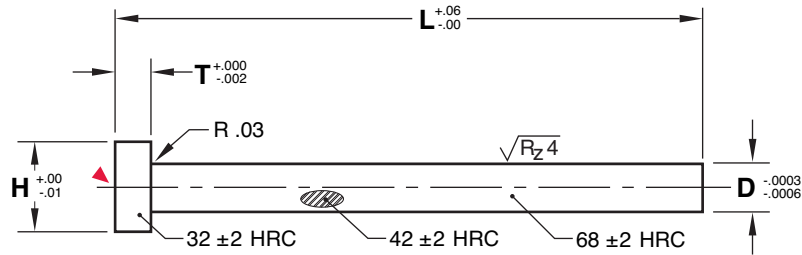
► CAD insertion point

D Nominal Diameter	B	H	T	L=150mm		L=200mm	
				S = 50 mm	S = 70 mm	S = 70 mm	S = 100 mm
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 pins, see page A-10.

UltraPins®

Treated Straight Pins



M H-13

H Core: 40-44 HRC, Surface: 66-70 HRC

S Chrome Plated .00005-.00007" Thick

► CAD insertion point

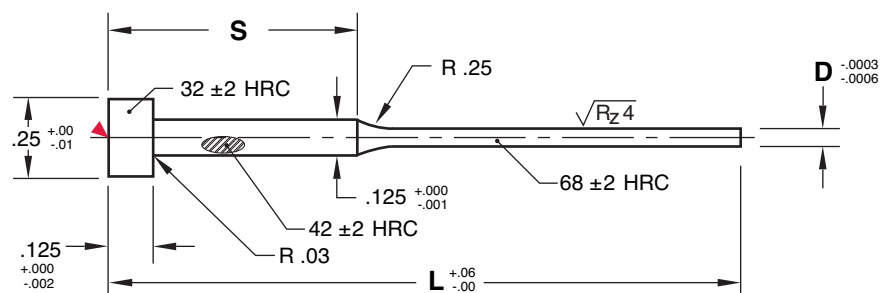
Nominal Diameter	D Actual Diameter	H Head Diameter	T Head Thickness	L=6" D Standard	L=10" D Standard	L=14" D Standard	D Actual Diameter	L=10" D .005 Oversize
1/8	$\frac{.1247}{.1244}$	.25	.125	EPL125L6	EPL125L10	—	$\frac{.1297}{.1294}$	EPL130L10
5/32	$\frac{.1560}{.1557}$	.28	.156	EPL156L6	EPL156L10	—	$\frac{.1610}{.1607}$	EPL161L10
3/16	$\frac{.1872}{.1869}$	.37	.187	EPL187L6	EPL187L10	—	$\frac{.1922}{.1919}$	EPL192L10
7/32	$\frac{.2185}{.2182}$	.40	.187	EPL219L6	EPL219L10	—	$\frac{.2235}{.2232}$	EPL224L10
1/4	$\frac{.2497}{.2494}$	.43	.187	EPL250L6	EPL250L10	EPL250 L14	$\frac{.2547}{.2544}$	EPL255L10
5/16	$\frac{.3122}{.3119}$	.50	.250	—	EPL312L10	EPL312 L14		—
3/8	$\frac{.3747}{.3744}$	.62	.250	—	EPL375L10	EPL375 L14		—
1/2	$\frac{.4997}{.4994}$	.75	.250	—	EPL500L10	EPL500 L14		—

Application Information:

- Maximum operating temperature: 1600° F (870° C)
- Not recommended for use with PVC or similarly corrosive materials.
- Contact Customer Service for availability on other diameters and lengths not shown.

UltraPins®

Treated Shoulder Pins

**M** H-13

H Core: 40-44 HRC, Surface: 66-70 HRC

S Chrome Plated .00005-.00007" Thick

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

► CAD insertion point



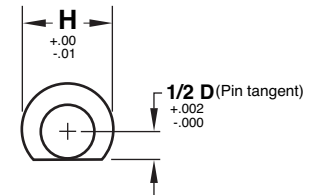
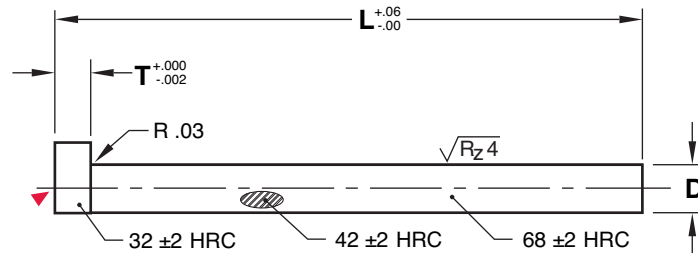
Keyed Ejector Pins

Straight Style • Inch Standard



D Tolerances

1/8 ϕ - 7/16 ϕ	-.0004 -.0007
1/2 ϕ and Up	-.0004 -.0009



M H-13 **H** Core: 40-44 HRC, Surface: 66-70 HRC

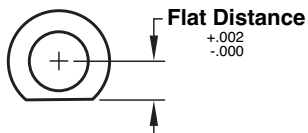
D Nominal Pin Dia.	H Head Dia.	T Head Thick.	L = 6"	L = 14"	L = 25"
3/64	.25	.125	EP047L6-K	—	—
1/16	.25	.125	EP062L6-K	—	—
3/32	.25	.125	EP094L6-K	—	—
1/8	.25	.125	EP125L6-K	EP125L14-K	—
9/64	.25	.125	—	EP141L14-K	—
5/32	.28	.156	—	EP156L14-K	—
3/16	.37	.187	EP187L6-K	EP187L14-K	—
7/32	.40	.187	—	EP219L14-K	—
1/4	.43	.187	EP250L6-K	EP250L14-K	—
5/16	.50	.250	EP312L6-K	EP312L14-K	—
3/8	.66	.250	EP375L6-K	EP375L14-K	EP375L25-K
7/16	.68	.250	—	EP437L14-K	—
1/2	.75	.250	—	EP500L14-K	—
5/8	.87	.250	—	EP625L14-K	—
3/4	1.00	.250	—	EP750L14-K	EP750L25-K
1	1.25	.250	—	EP1000L14-K	EP1000L25-K

► CAD insertion point

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. EP437L10-K or 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:

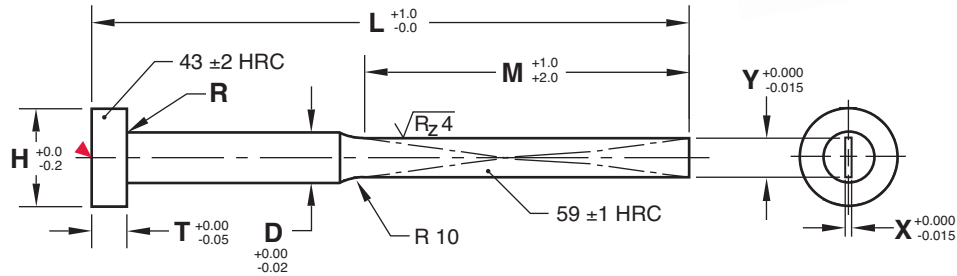
EP437L10-K250 for a 7/16 ϕ pin with a flat 1/4" from center

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

Blade Ejectors

DIN Standard



M O-1

H 58-60 HRC

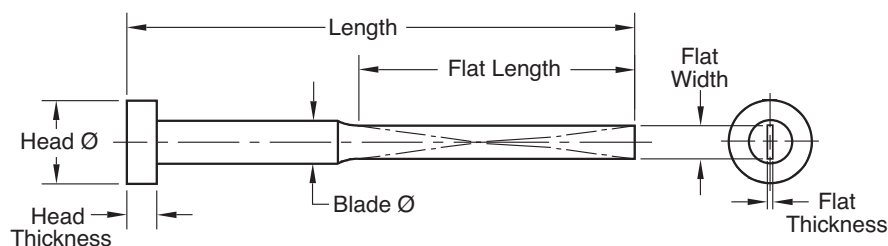
► CAD insertion point

D	H	T	R	X	Y	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
4	8	3	0.3	1.0	3.5	BE4-1.0L60	BE4-1.0L80	BE4-1.0L100	BE4-1.0L125	BE4-1.0L160	—	—	—	—
4	8	3	0.3	1.2	3.5	—	BE4-1.2L80	BE4-1.2L100	BE4-1.2L125	BE4-1.2L160	—	—	—	—
5	10	3	0.3	1.5	4.5	—	BE5-1.5L80	BE5-1.5L100	BE5-1.5L125	BE5-1.5L160	—	—	—	—
6	12	5	0.5	1.2	5.5	—	BE6-1.2L80	BE6-1.2L100	BE6-1.2L125	BE6-1.2L160	BE6-1.2L200	—	—	—
6	12	5	0.5	1.5	5.5	—	BE6-1.5L80	BE6-1.5L100	BE6-1.5L125	BE6-1.5L160	BE6-1.5L200	—	—	—
6	12	5	0.5	2.0	5.5	—	BE6-2.0L80	BE6-2.0L100	BE6-2.0L125	BE6-2.0L160	BE6-2.0L200	—	—	—
8	14	5	0.5	1.2	7.5	—	—	BE8-1.2L100	BE8-1.2L125	BE8-1.2L160	BE8-1.2L200	BE8-1.2L250	—	—
8	14	5	0.5	1.5	7.5	—	—	BE8-1.5L100	BE8-1.5L125	BE8-1.5L160	BE8-1.5L200	BE8-1.5L250	—	—
8	14	5	0.5	2.0	7.5	—	—	BE8-2.0L100	BE8-2.0L125	BE8-2.0L160	BE8-2.0L200	BE8-2.0L250	BE8-2.0L315	—
10	16	5	0.5	1.5	9.5	—	—	—	—	BE10-1.5L160	BE10-1.5L200	BE10-1.5L250	BE10-1.5L315	—
10	16	5	0.5	2.0	9.5	—	—	—	—	BE10-2.0L160	BE10-2.0L200	BE10-2.0L250	BE10-2.0L315	BE10-2.0L400
12	20	7	0.8	2.0	11.5	—	—	—	—	—	BE12-2.0L200	BE12-2.0L250	BE12-2.0L315	BE12-2.0L400
12	20	7	0.8	2.5	11.5	—	—	—	—	—	BE12-2.5L200	BE12-2.5L250	BE12-2.5L315	BE12-2.5L400
16	22	7	0.8	2.0	15.5	—	—	—	—	—	BE16-2.0L200	BE16-2.0L250	BE16-2.0L315	BE16-2.0L400
16	22	7	0.8	2.5	15.5	—	—	—	—	—	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

JIS Specification

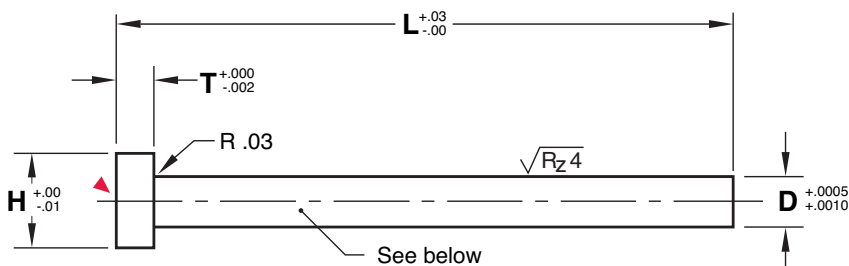
Material: SKS-21

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

► CAD insertion point

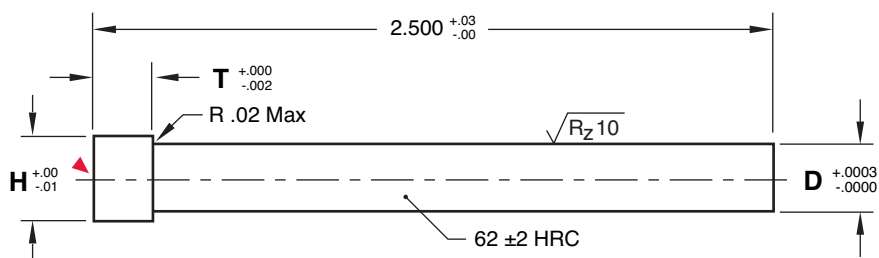
M H-13 **H** 50-55 HRC

D Nominal Pin Dia.	H Head Dia.	T Head Thick.	L=3"	L=6"	L=10"	L=14"	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	—	3/32	.25	.125	CPH094L3	CPH094L6	CPH094L10	—
7/64	.25	.125	CPS109L3	CPS109L6	CPS109L10	—	7/64	.25	.125	CPH109L3	CPH109L6	CPH109L10	—
1/8	.25	.125	CPS125L3	CPS125L6	CPS125L10	CPS125L14	1/8	.25	.125	CPH125L3	CPH125L6	CPH125L10	CPH125L14
9/64	.25	.125	CPS141L3	CPS141L6	CPS141L10	CPS141L14	9/64	.25	.125	CPH141L3	CPH141L6	CPH141L10	CPH141L14
5/32	.28	.156	CPS156L3	CPS156L6	CPS156L10	CPS156L14	5/32	.28	.156	CPH156L3	CPH156L6	CPH156L10	CPH156L14
11/64	.34	.187	CPS172L3	CPS172L6	CPS172L10	CPS172L14	11/64	.34	.187	CPH172L3	CPH172L6	CPH172L10	CPH172L14
3/16	.37	.187	CPS187L3	CPS187L6	CPS187L10	CPS187L14	3/16	.37	.187	CPH187L3	CPH187L6	CPH187L10	CPH187L14
13/64	.37	.187	CPS203L3	CPS203L6	CPS203L10	CPS203L14	13/64	.37	.187	CPH203L3	CPH203L6	CPH203L10	CPH203L14
7/32	.40	.187	CPS219L3	CPS219L6	CPS219L10	CPS219L14	7/32	.40	.187	CPH219L3	CPH219L6	CPH219L10	CPH219L14
1/4	.43	.187	CPS250L3	CPS250L6	CPS250L10	CPS250L14	1/4	.43	.187	CPH250L3	CPH250L6	CPH250L10	CPH250L14
9/32	.43	.250	CPS281L3	CPS281L6	CPS281L10	CPS281L14	9/32	.43	.250	CPH281L3	CPH281L6	CPH281L10	CPH281L14
5/16	.50	.250	CPS312L3	CPS312L6	CPS312L10	CPS312L14	5/16	.50	.250	CPH312L3	CPH312L6	CPH312L10	CPH312L14
11/32	.56	.250	CPS344L3	CPS344L6	CPS344L10	CPS344L14	11/32	.56	.250	CPH344L3	CPH344L6	CPH344L10	CPH344L14
3/8	.62	.250	CPS375L3	CPS375L6	CPS375L10	CPS375L14	3/8	.62	.250	CPH375L3	CPH375L6	CPH375L10	CPH375L14
13/32	.68	.250	CPS406L3	CPS406L6	CPS406L10	CPS406L14	13/32	.68	.250	CPH406L3	CPH406L6	CPH406L10	CPH406L14
7/16	.68	.250	CPS437L3	CPS437L6	CPS437L10	CPS437L14	7/16	.68	.250	CPH437L3	CPH437L6	CPH437L10	CPH437L14
15/32	.75	.250	CPS469L3	CPS469L6	CPS469L10	CPS469L14	15/32	.75	.250	CPH469L3	CPH469L6	CPH469L10	CPH469L14
1/2	.75	.250	CPS500L3	CPS500L6	CPS500L10	CPS500L14	1/2	.75	.250	CPH500L3	CPH500L6	CPH500L10	CPH500L14
9/16	.81	.250	—	CPS562L6	CPS562L10	CPS562L14	9/16	.81	.250	—	CPH562L6	CPH562L10	CPH562L14
5/8	.87	.250	—	CPS625L6	CPS625L10	CPS625L14	5/8	.87	.250	—	CPH625L6	CPH625L10	CPH625L14
3/4	1.00	.250	—	CPS750L6	CPS750L10	CPS750L14	3/4	1.00	.250	—	CPH750L6	CPH750L10	CPH750L14

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 Diameter	H Head Diam.	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

To order:

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

Ex: .090ø = TI-0900

or

.252ø = TI-2520

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

Ex. 5/32ø nominal = TI-1562

or

3/32ø = TI-0937

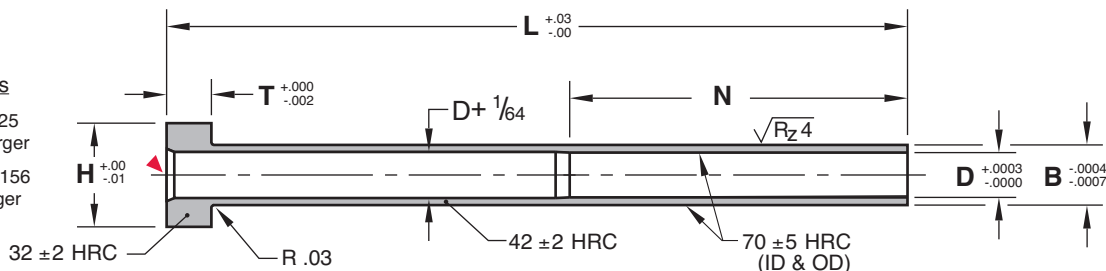
Contact Customer Service for availability of additional diameters or lengths.

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

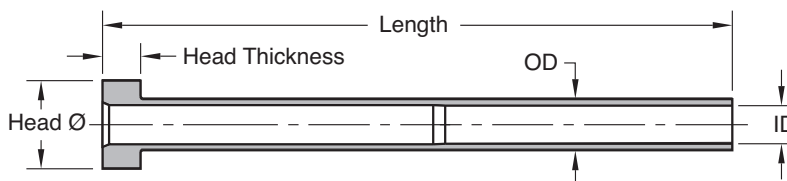
D Nominal I.D.	B O.D.	H Head Dia.	L=3"	L=4"	L=5"	L=6"	L=7"	L=8"	L=9"	L=10"	L=11"	L=12"	L=13"	L=14"
3/32	.187	.37	ES094L3	ES094L4	ES094L5	ES094L6	ES094L7	—	—	—	—	—	—	—
1/8	.219	.40	ES125L3	ES125L4	ES125L5	ES125L6	ES125L7	—	—	—	—	—	—	—
5/32	.250	.43	—	ES156L4	ES156L5	ES156L6	ES156L7	ES156L8	ES156L9	ES156L10	ES156L11	ES156L12	ES156L13	ES156L14
3/16	.312	.50	—	ES187L4	ES187L5	ES187L6	ES187L7	ES187L8	ES187L9	ES187L10	ES187L11	ES187L12	ES187L13	ES187L14
7/32	.343	.56	—	ES219L4	ES219L5	ES219L6	ES219L7	ES219L8	ES219L9	ES219L10	ES219L11	ES219L12	ES219L13	ES219L14
1/4	.375	.62	—	ES250L4	ES250L5	ES250L6	ES250L7	ES250L8	ES250L9	ES250L10	ES250L11	ES250L12	ES250L13	ES250L14
5/16	.437	.68	—	ES312L4	ES312L5	ES312L6	ES312L7	ES312L8	ES312L9	ES312L10	ES312L11	ES312L12	ES312L13	ES312L14
3/8	.500	.75	—	ES375L4	ES375L5	ES375L6	ES375L7	ES375L8	ES375L9	ES375L10	ES375L11	ES375L12	ES375L13	ES375L14
7/16	.625	.87	—	ES437L4	ES437L5	ES437L6	ES437L7	ES437L8	ES437L9	ES437L10	ES437L11	ES437L12	ES437L13	ES437L14
1/2	.687	.93	—	ES500L4	ES500L5	ES500L6	ES500L7	ES500L8	ES500L9	ES500L10	ES500L11	ES500L12	ES500L13	ES500L14
9/16	.750	1.00	—	ES562L4	ES562L5	ES562L6	ES562L7	ES562L8	ES562L9	ES562L10	ES562L11	ES562L12	ES562L13	ES562L14
5/8	.875	1.12	—	ES625L4	ES625L5	ES625L6	ES625L7	ES625L8	ES625L9	ES625L10	ES625L11	ES625L12	ES25L13	ES625L14
3/4	1.000	1.25	—	ES750L4	ES750L5	ES750L6	ES750L7	ES750L8	ES750L9	ES750L10	ES750L11	ES750L12	ES750L13	ES750L14

Contact Customer Service for the availability of sleeves with the outer diameter (B) .005" oversize (10" lengths or less)
 To achieve longer lengths, use Sleeve Extensions shown on page A-16.

JIS & DIN Specification

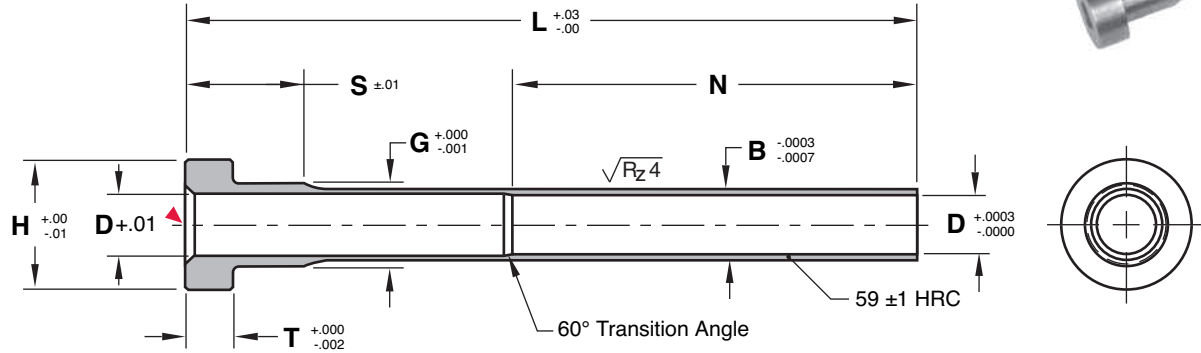
JIS Material: SKD61, 40 HRC Core, 70 HRC Surface
 DIN Material: 1.2067, 60 HRC Thru-hardened

Contact Customer Service for the availability of metric sleeves, either in the JIS or DIN standard,
 by specifying the information shown below.



Ejector Sleeves

Thin Wall Sleeves



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

► CAD insertion point

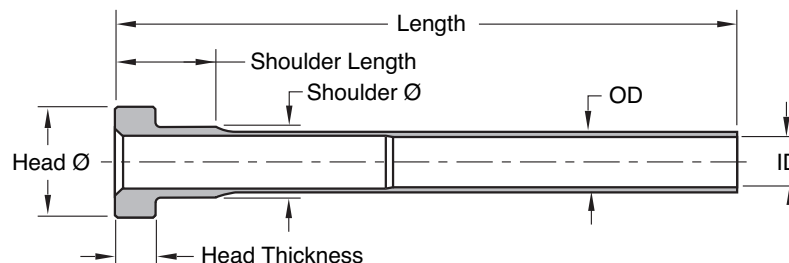
D Nominal I.D.	D Decimal I.D.	B O.D.	G Shoulder Diam.	S Shoulder Length	H Head Dia.	T Head Thick.	N Bearing Length	L = 4"	L = 6"
3/32	.0937	.1563	.188	.500	.37	.187	1.75	ESTW094L4	ESTW094L6
1/8	.1250	.1875	.219	.500	.40	.187	1.75	ESTW125L4	ESTW125L6
5/32	.1562	.2187	.250	.500	.43	.187	2.50	ESTW156L4	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-16.

Metric Specification

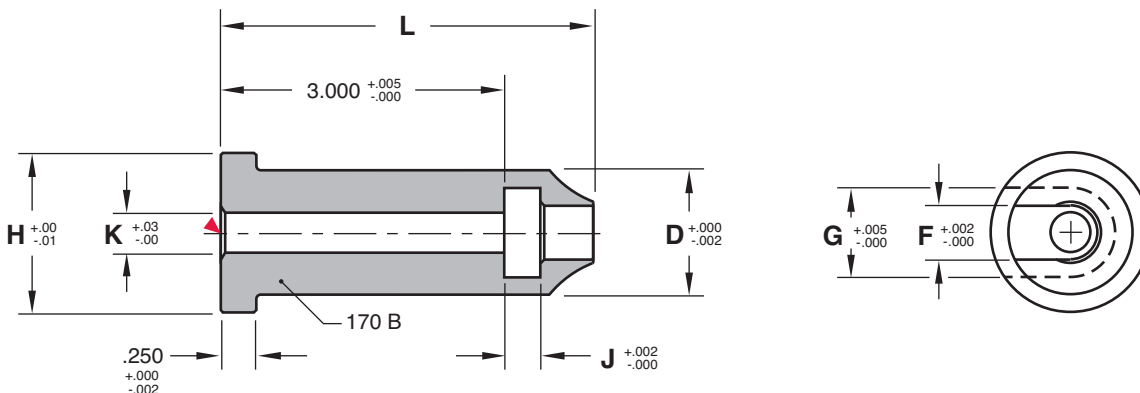
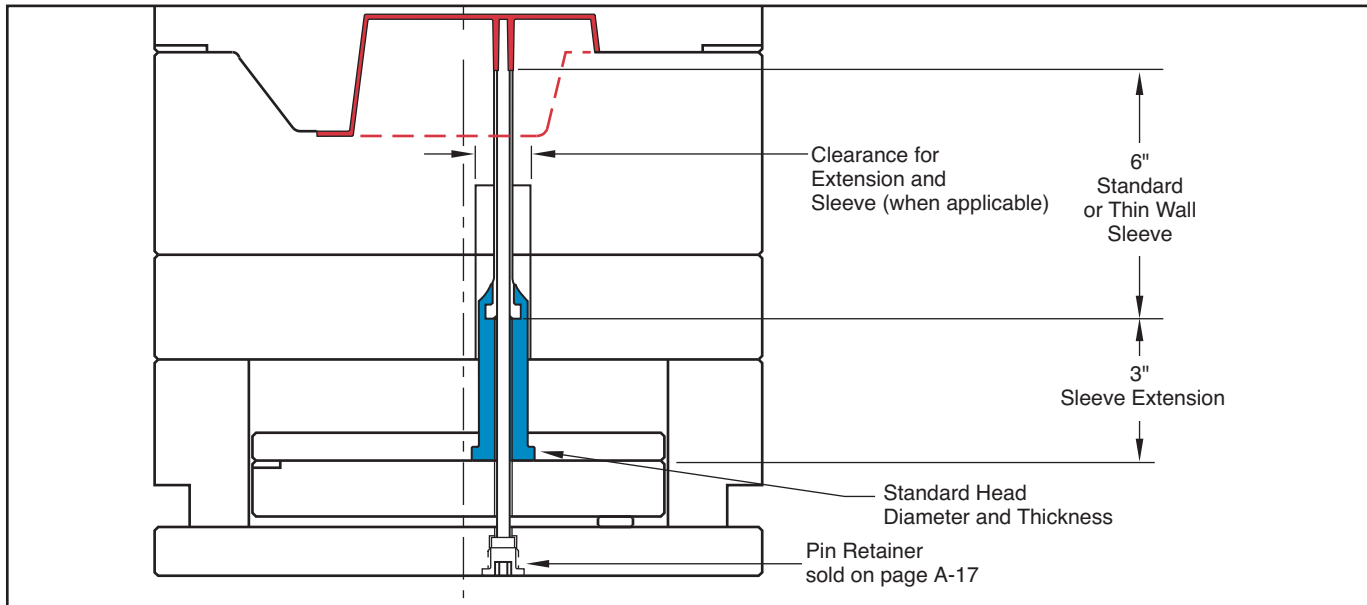
Material: A-2

Contact Customer Service for the availability of metric Thin Wall Sleeves by specifying the information shown below.





Sleeve Extensions

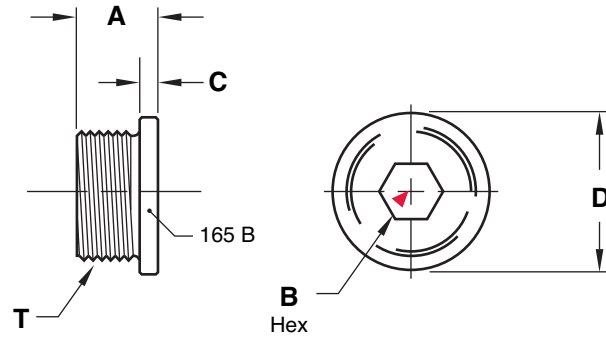


M AISI 1215 **H** 170 Brinell **S** Black Oxide

► CAD insertion point

Catalog Number	Nominal Sleeve ID	D O.D.	F	G	J	K	H Head Dia.	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	.510	.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	1.125	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
CPR-50	.437	.125	.750	.25	1/4-20
CPR-87	.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
CPRM-16	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

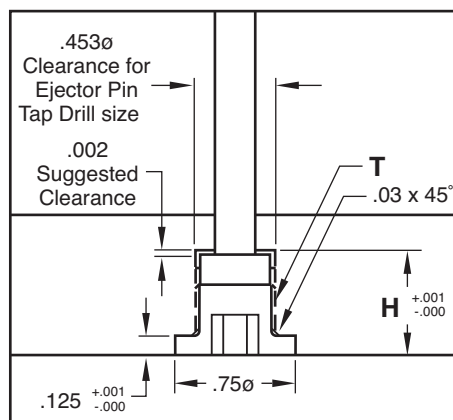
CPR-87

Core Pin Diameter	H
5/16ø - 1/2ø	.688

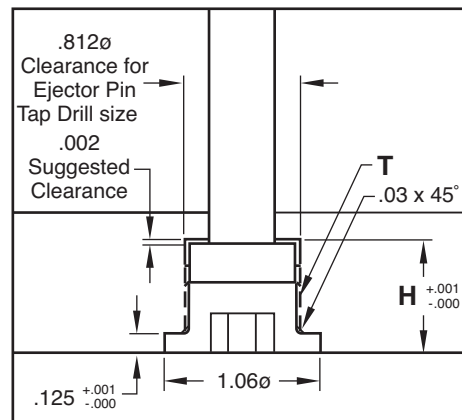
CPRM-16

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

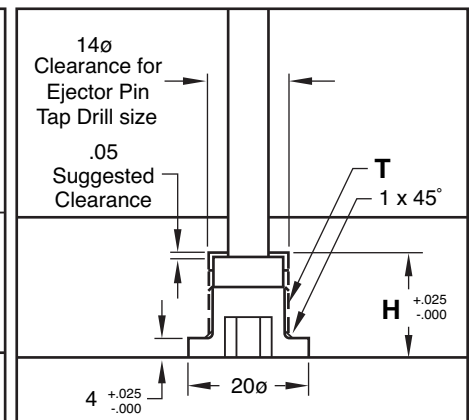
Machining Specifications: CPR-50



Machining Specifications: CPR-87

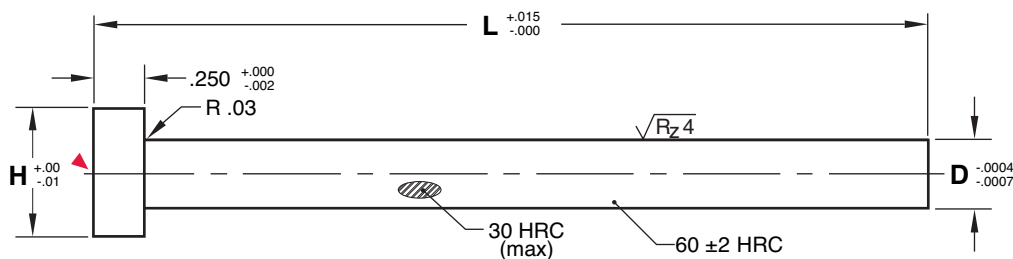


Machining Specifications: CPRM-16





Return Pins



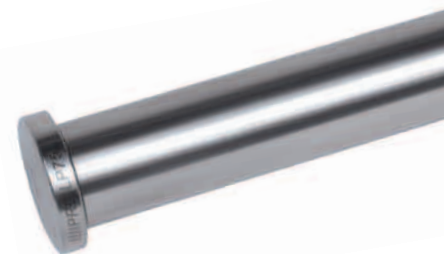
M AISI 52100 **H** Core: 30 HRC max, Surface: 58-62 HRC

► 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

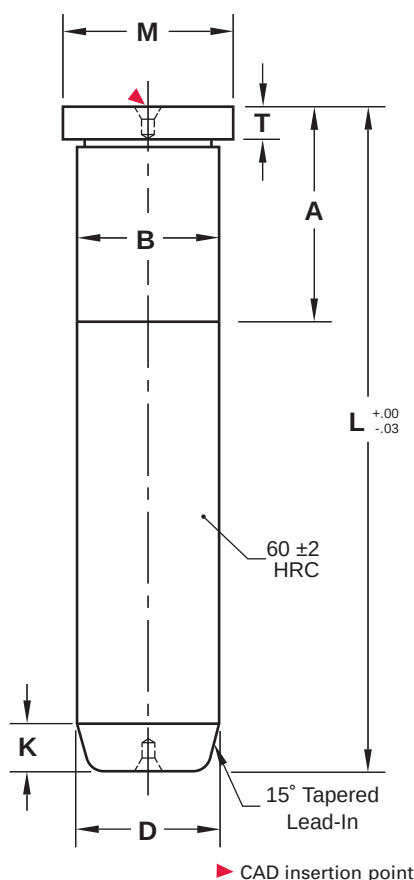
Leader Pins

Straight Style



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

For Leader Pins with a 7/8" press fit for guided ejection applications, please refer to page B-3.



General Dimensions

Nom. Diam.	D +.0000 -.0005	M +.00 -.01	T +.000 -.002	B +.0005 -.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

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



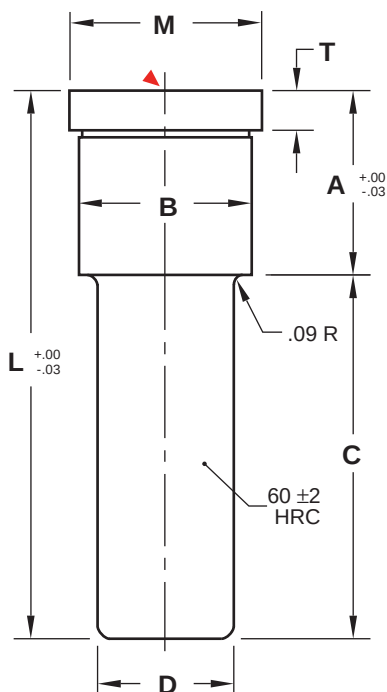
Leader Pins

Shoulder Style

M AISI 4320

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

► CAD insertion point



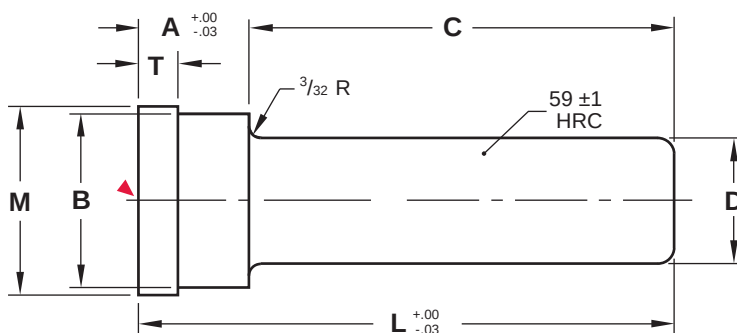
General Dimensions

Nominal Diameter	D +.0000 -.0005	B +.0005 -.0000	M +.000 -.010	T +.000 -.002
1/2	.499	.751	.853	.187
3/4	.749	1.126	1.250	.312
1	.999	1.376	1.500	.312
1-1/4	1.249	1.626	1.750	.312

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	—
1-7/8	3-3/8	4-3/4	—	SLP75X137L475	SLP100X137L475	SLP125X137L475
	7/8	2-3/4	SLP50X187L275	SLP75X187L275	—	—
	1-3/8	3-1/4	SLP50X187L325	SLP75X187L325	SLP100X187L325	—
	1-7/8	3-3/4	SLP50X187L375	SLP75X187L375	SLP100X187L375	—
	2-3/8	4-1/4	—	SLP75X187L425	SLP100X187L425	SLP125X187L425
2-3/8	2-7/8	4-3/4	—	SLP75X187L475	SLP100X187L475	SLP125X187L475
	3-3/8	5-1/4	—	SLP75X187L525	SLP100X187L525	—
	3-7/8	5-3/4	—	SLP75X187L575	SLP100X187L575	SLP125X187L575
	7/8	3-1/4	SLP50X237L325	—	—	—
	1-3/8	3-3/4	—	SLP75X237L375	SLP100X237L375	—
2-7/8	1-7/8	4-1/4	—	SLP75X237L425	SLP100X237L425	—
	2-3/8	4-3/4	—	SLP75X237L475	SLP100X237L475	—
	2-7/8	5-1/4	—	SLP75X237L525	SLP100X237L525	SLP125X237L525
	3-3/8	5-3/4	—	—	SLP100X237L575	—
	3-7/8	6-1/4	—	SLP75X237L625	SLP100X237L625	SLP125X237L625
3-3/8	1-3/8	4-1/4	—	SLP75X287L425	—	—
	1-7/8	4-3/4	—	SLP75X287L475	SLP100X287L475	SLP125X287L475
	2-3/8	5-1/4	—	SLP75X287L525	SLP100X287L525	SLP125X287L525
	2-7/8	5-3/4	—	SLP75X287L575	SLP100X287L575	SLP125X287L575
	3-3/8	6-1/4	—	—	SLP100X287L625	—
3-7/8	3-7/8	6-3/4	—	SLP75X287L675	SLP100X287L675	—
	4-3/8	7-1/4	—	—	SLP100X287L725	SLP125X287L725
	1-7/8	5-1/4	—	SLP75X337L525	SLP100X337L525	—
	2-3/8	5-3/4	—	SLP75X337L575	SLP100X337L575	SLP125X337L575
	2-7/8	6-1/4	—	—	SLP100X337L625	—
4-3/8	3-3/8	6-3/4	—	SLP75X337L675	SLP100X337L675	SLP125X337L675
	4-3/8	7-3/4	—	—	SLP100X337L775	SLP125X337L775
	2-3/8	6-1/4	—	SLP75X387L625	SLP100X387L625	SLP125X387L625
	2-7/8	6-3/4	—	SLP75X387L675	SLP100X387L675	SLP125X387L675
	3-3/8	7-1/4	—	—	—	SLP125X387L725
4-7/8	3-7/8	7-3/4	—	—	SLP100X387L775	SLP125X387L775
	4-7/8	8-3/4	—	—	SLP100X387L875	SLP125X387L875
	2-7/8	7-1/4	—	—	SLP100X437L725	—
	3-3/8	7-3/4	—	—	—	SLP125X437L775
	3-7/8	8-1/4	—	—	SLP100X437L825	—
5-7/8	4-3/8	8-3/4	—	—	SLP100X437L875	—
	4-7/8	9-1/4	—	—	—	SLP125X437L925
	3-7/8	8-3/4	—	—	SLP100X487L875	SLP125X487L875
	4-3/8	9-1/4	—	—	SLP100X487L925	—
	4-7/8	9-3/4	—	—	SLP100X487L975	SLP125X487L975
5-7/8	5-7/8	10-3/4	—	—	—	SLP125X487L1075
	3-7/8	9-3/4	—	—	SLP100X587L975	SLP125X587L975
	4-3/8	10-1/4	—	—	—	SLP125X587L1025
	5-7/8	11-3/4	—	—	SLP100X587L1175	SLP125X587L1175

Guided Ejector Pins

Shoulder Style



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

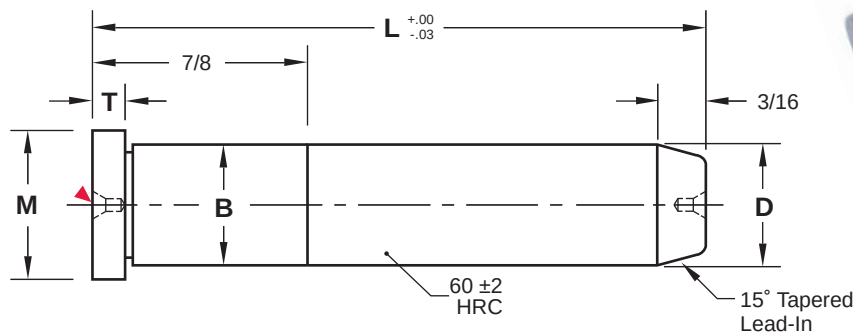
General Dimensions

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

▶ CAD insertion point

Straight Style



General Dimensions

Nominal Diameter	D +.0000 -.0005	B +.0005 -.0000	M +.00 -.01	T +.000 -.015
3/4	.749	.751	.990	.187
7/8	.874	.876	1.115	.250
1	.999	1.001	1.240	.250

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

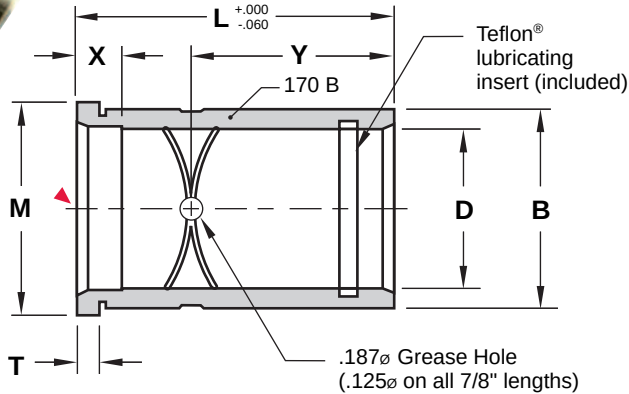
L	D = 3/4" Catalog Number	D = 7/8" Catalog Number	D = 1" Catalog Number
4-1/4	LP75L4.25-P	LP87L4.25-P	LP100L4.25-P
4-3/4	LP75L4.75-P	LP87L4.75-P	LP100L4.75-P
5-1/4	LP75L5.25-P	LP87L5.25-P	LP100L5.25-P
5-3/4	LP75L5.75-P	LP87L5.75-P	LP100L5.75-P
6-1/4	LP75L6.25-P	LP87L6.25-P	LP100L6.25-P

▶ 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

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

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.
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.
Not available in 1/2" diameter.

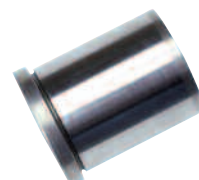


Steel Shoulder Bushings

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.

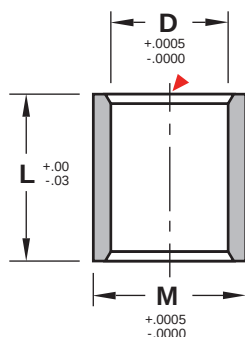


Straight Bushings

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

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

► CAD insertion point



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

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



QC™ Bushings

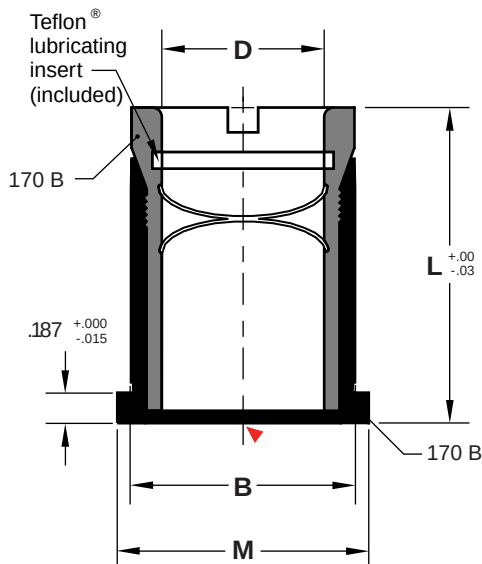
Shoulder Style



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

QC™ Bushings

Replacement Liners



M CA954 Solid Bronze **H** 170 Brinell

I.D.	LINER #	FITS 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
1-1/4"	BL125L1.37	SQC125L1.37
	BL125L1.75	GQC125
		SQC125L1.87
	BL125L2.37	SQC125L2.37
		SQC125L2.87
		SQC125L3.37
		SQC125L3.87

I.D.	LINER #	FITS BUSHINGS
1-1/2"	BL150L1.37	SQC150L1.37
	BL150L1.75	GQC150
		SQC150L1.87
	BL150L2.37	SQC150L2.37
2"	BL150L2.87	SQC150L2.87
		SQC150L3.37
		SQC150L3.87
	BL200L1.37	SQC200L1.37
	BL200L1.87	SQC200L1.87
	BL200L2.25	GQC200
		SQC200L2.37
	BL200L2.87	SQC200L2.87
	BL200L3.37	SQC200L3.37
	BL200L3.87	SQC200L3.87
		SQC200L4.37
		SQC200L4.87
		SQC200L5.87

Spanner Wrench

M Hardened Steel

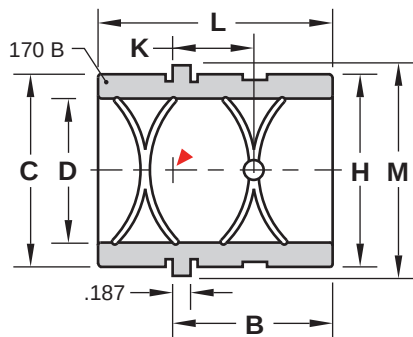
Catalog Number	Description
SW-100	Adjustable Spanner Wrench





Guided Ejector Bushings

Solid Bronze



M CA954 Solid Bronze **H** 170 Brinell

► CAD insertion point

Catalog Number	Nominal Diameter	D +.0005 -.0000	H +.0005 -.0000	C +.000 -.001	M +.00 -.01	B	K	L +.00 -.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

Graphite Plugged

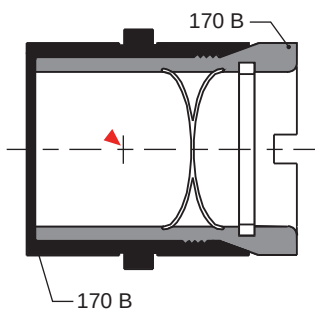


Using grease will inhibit the function of the graphite plugs. Instead, use a light 20 weight oil at startup to begin lubrication.

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

Catalog Number	Nominal Diameter	D +.0005 -.0000	H +.0005 -.0000	C +.000 -.001	M +.00 -.01	B	L +.00 -.03
GGP75	3/4	.751	1.1255	1.124	1.302	1.00	1.50
GGP87	7/8	.876	1.2505	1.249	1.427	1.00	1.50
GGP100	1	1.001	1.3755	1.374	1.552	1.12	1.75
GGP125	1-1/4	1.251	1.6255	1.624	1.802	1.12	1.75
GGP150	1-1/2	1.501	2.0005	1.999	2.177	1.12	1.75
GGP200	2	2.001	2.5005	2.499	2.687	1.62	2.25

QC™ Bushings

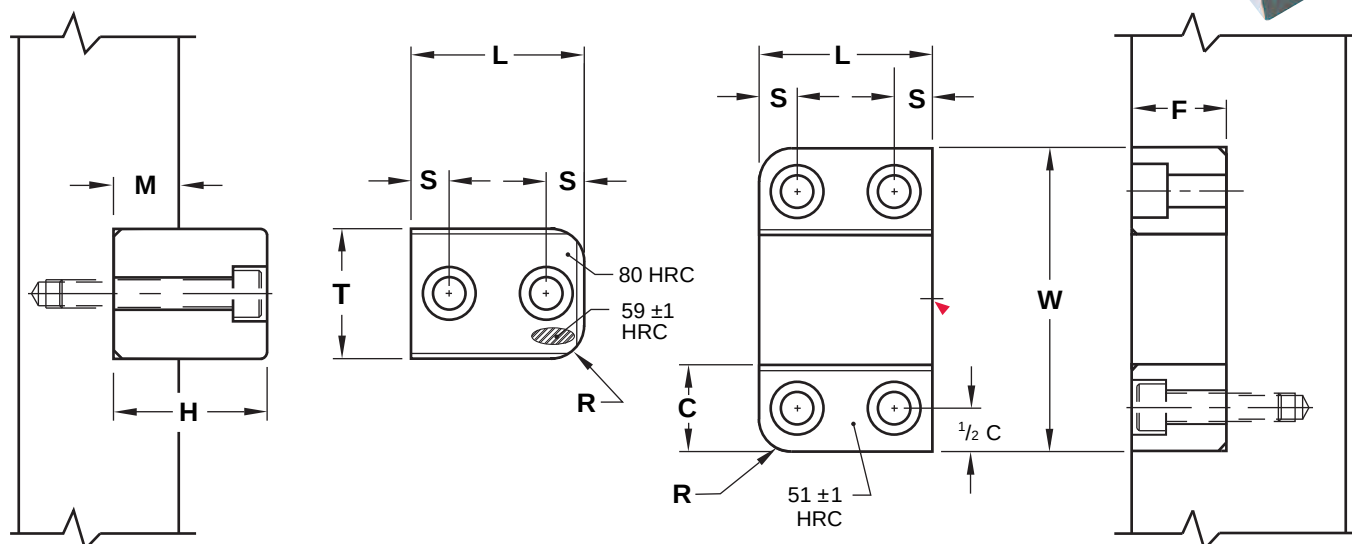


Liner: **M** CA954 **H** 170 Brinell

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

Catalog Number	Nominal Diameter	D +.0005 -.0000	H +.0005 -.0000	C +.000 -.001	M +.00 -.01	B	L +.000 -.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

Guide Locks



Inch Standard

Male: **M** A-2 **H** Core: 58-60 HRC, Surface: 80 HRC **S** Titanium Nitride Coated

Females (2): **M** O-2 **H** 50-52 HRC **S** Black Oxide

► CAD insertion point

Catalog Number	L +.000 -.010	W	C +.0000 -.0003	F +.000 -.005	T +.0000 -.0003	M	H +.00 -.01	S ±.01	R Pocket Radius	SHCS
GL100X150	1.000	1.500	.500	.500	.500	.375	.85	.25	.187	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	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	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	M: 1/2-13 x 2-1/4" F: 1/2-13 x 1-1/2"

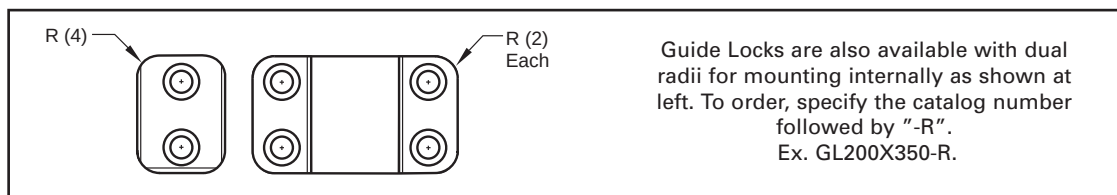
Screws included.

Metric Standard

Note: All dimensions and tolerances are in millimeters.

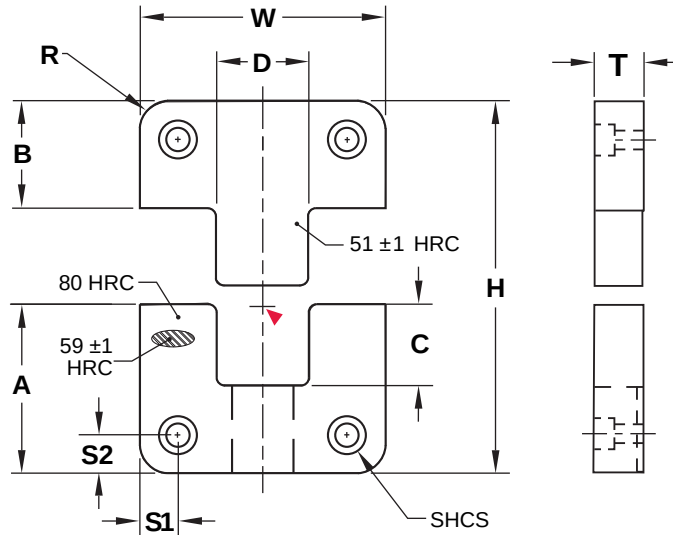
Catalog Number	L +.00 -.25	W	C +.00 -.01	F +.00 -.12	T +.00 -.01	M	H +.0 -.2	S ±.2	R Pocket Radius	SHCS
GLM25X45	25	45	15	15	15	10	24	7	4	M: M4 x 25 F: M4 x 14
GLM40X65	40	65	20	20	25	15	34	10	9	M: M5 x 35 F: M5 x 22
GLM50X90	50	90	25	25	40	20	44	10	9	M: M6 x 45 F: M6 x 30
GLM65X160	65	160	55	30	50	25	54	15	14	M: M8 x 60 F: M8 x 35

Additional Option:



Side Locks

Inch Standard-Treated



Female: **M** A-2 **H** Core: 58-60 HRC, Surface: 80 HRC **S** Titanium Nitride

Male: **M** O-2 **H** 50-52 HRC **S** Black Oxide

► CAD insertion point

Catalog Number	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D .0001/.0002 Clearance per side	H +.000 -.004	R Pocket Radius	S1/S2 ±.01	SHCS
SL37X100	.375	1.000	1.125	.875	.53	.500	2.000	.187	.250	#10-32 x 1/2"
SL50X125	.490	1.250	1.125	.875	.66	.500	2.000	.187	.250	#8-32 x 5/8"
SL50X150	.500	1.500	.875	.875	.56	.563	1.750	.187	.250	#8-32 x 5/8"
SL50X200	.500	2.000	1.375	.875	.66	.750	2.250	.187	.312	#10-32 x 5/8"
SL75X300	.750	3.000	1.875	.875	1.13	1.250	2.750	.250	.375	1/4-20 x 3/4"
SL100X400	1.000	4.000	2.375	1.375	1.25	1.500	3.750	.500	.500	3/8-16 x 1"
SL125X500	1.250	5.000	2.875	1.375	1.63	2.000	4.250	.500	.625	1/2-13 x 1-1/4"
SL150X600	1.500	6.000	2.875	1.375	1.75	2.500	4.250	.500	.625	1/2-13 x 1-1/2"

Screws included.

Metric Standard-Treated

Female: **M** A-2 **H** Core: 58-60 HRC, Surface: 80 HRC **S** Titanium Nitride

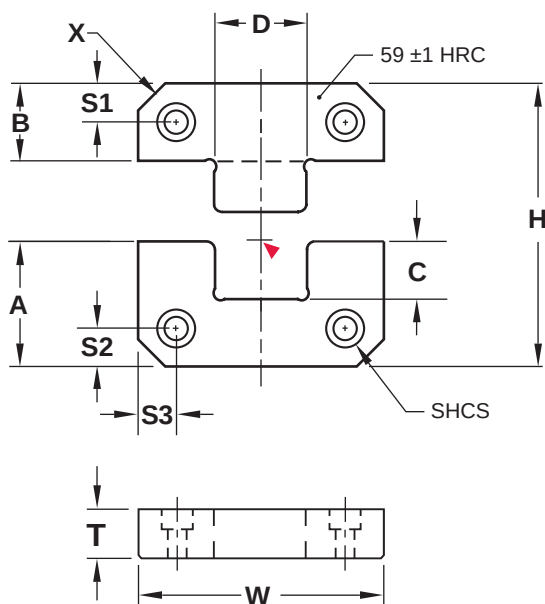
Male: **M** O-2 **H** 50-52 HRC **S** Black Oxide

Catalog Number	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D .002/.005 Clearance per side	H +0.0 - 0.1	R Pocket Radius	S1 ±.25	S2 ±.25	SHCS
SLM16X50	16	50	21.5	21.5	12	17	43	5	8	11	M6-1.0 x 18
SLM19X75	19	75	36	36	17	25	72	5	12.5	18	M10-1.5 x 20
SLM19X100	19	100	45	45	23	35	90	5	15	22	M10-1.5 x 20
SLM25X125	25	125	45	45	23	35	90	5	20.5	22	M10-1.5 x 25

Screws included.

Side Locks

Inch Standard



M O-2 **H** 58-60 HRC

► CAD insertion point

Catalog Number	T +.000 -.002	W +.0000 -.0004	A +.0000 -.0008	B +.0000 -.0008	C	D .0001/.0002 Clearance per side	H +.000 -.002	X Corner Chamfer	S1 ±.01	S2 ±.01	S3 ±.01	SHCS
SLS62X150	.620	1.500	.870	.870	.33	.500	1.74	.19	.437	.281	.281	1/4-20 x 3/4"
SLS62X200	.620	2.000	.870	.870	.33	.680	1.74	.19	.437	.375	.375	1/4-20 x 3/4"
SLS75X300	.745	3.000	1.370	1.360	.57	1.000	2.73	.38	.688	.688	.375	3/8-16 x 1"
SLS75X400	.745	4.000	1.870	1.870	.79	1.375	3.74	.50	.875	.875	.625	3/8-16 x 1"
SLS112X500	1.120	5.000	1.870	1.870	.79	1.750	3.74	.50	.875	.875	.750	1/2-13 x 1-1/4"

Screws included.

Metric Standard

M O-2 **H** 58-60 HRC

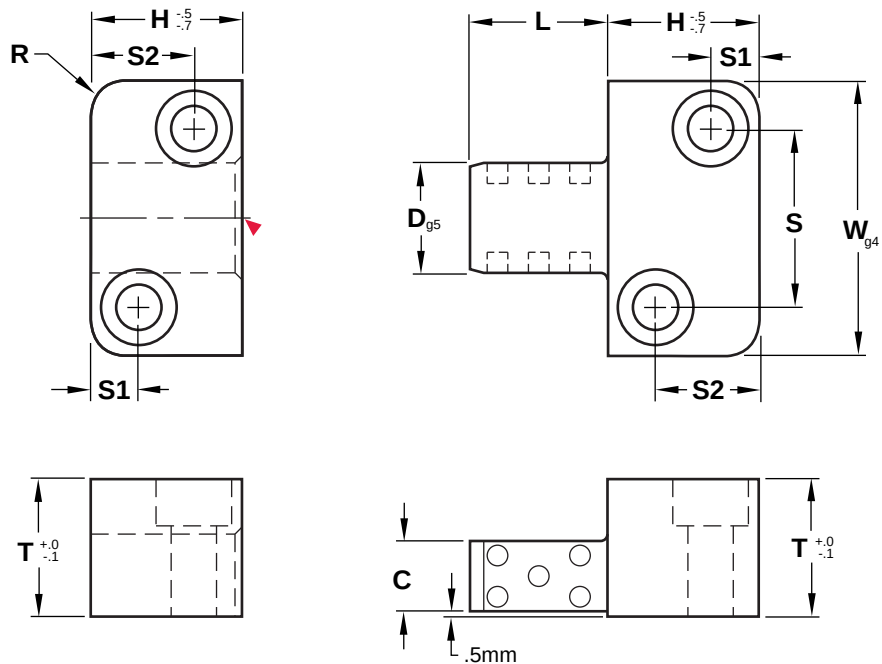
Catalog Number	T +.00 -.05	W +.00 -.01	A +.00 -.02	B +.00 -.02	C	D .002/.005 Clearance per side	H +.00 -.04	X Corner Chamfer	S1/S2 ±.2	S3 ±.2	SHCS
SLMS13X38	13	38	22	22	8.5	12	44	5	7	8	M5-.8 x 15
SLMS16X50	16	50	21.5	21.5	9.5	17	43	5	11	8	M6-1.0 x 18
SLMS19X75	19	75	36	36	15	25	72	8	18	12.5	M10-1.5 x 20
SLMS19X100	19	100	45	45	21	35	90	10	22	15	M10-1.5 x 20
SLMS25X125	25	125	45	45	21	45	90	10	22	20.5	M10-1.5 x 25

Screws included.



Side Locks

Graphite Plugged



M YK30 **H** 56-60 HRC

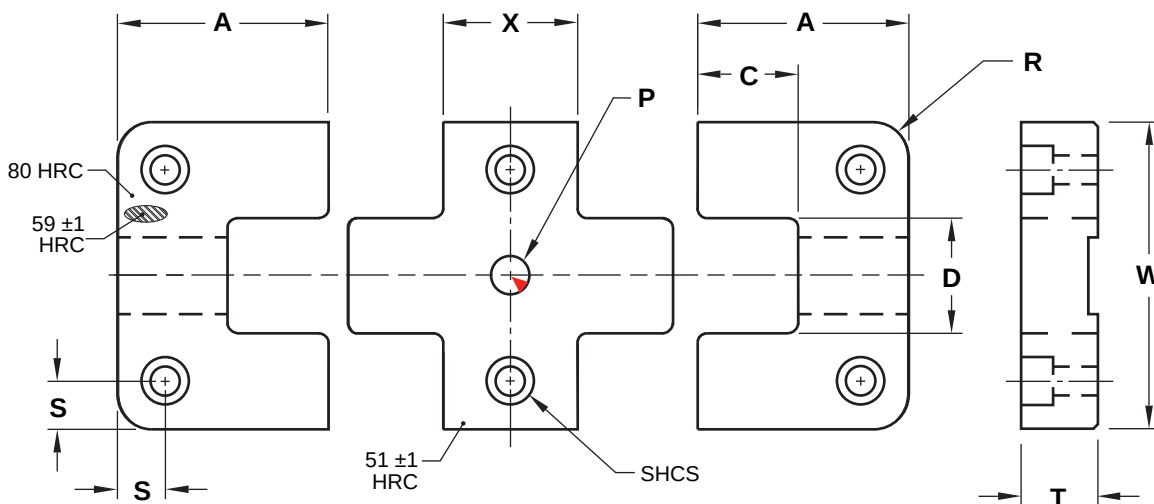
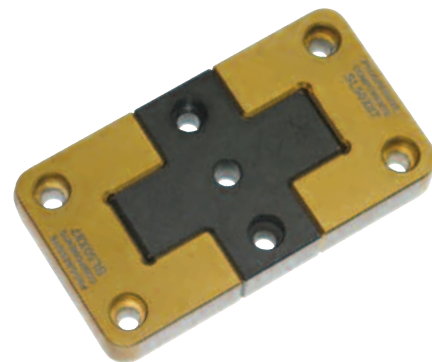
► CAD insertion point

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

Note: All dimensions and tolerances are in millimeters.

Screws included.

X-Series Locks



Male: **M** O-2 **H** 50-52 HRC **S** Black Oxide

Females (2): **M** A-2 **H** Core: 58-60 HRC, Surface: 80 HRC **S** Titanium Nitride Coated

► CAD insertion point

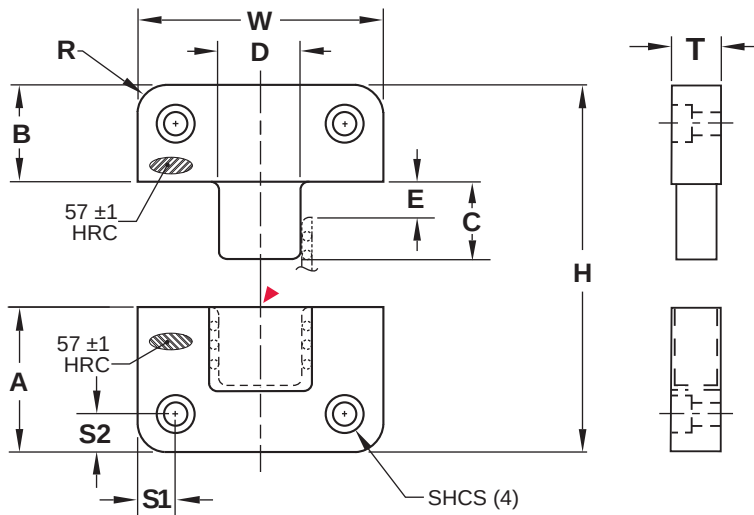
Catalog Number	T +.000 -.002	W +.0000 -.0004	X +.000 -.005	A +.000 -.002	C ±.01	D .0001/.0002 Clearance per side	R Pocket Radius	S ±.01	P +.001 -.000	SHCS
SLX50X87	.500	2.000	.875	1.375	.65	.750	.187	.312	.250	#10-32 x 5/8"
SLX75X137	.750	3.000	1.375	1.875	1.12	1.250	.250	.375	.313	1/4-20 x 3/4"
SLX75X187	.750	3.000	1.875	1.875	1.12	1.250	.250	.375	.313	1/4-20 x 3/4"
SLX100X137	1.000	4.000	1.375	2.375	1.12	1.500	.500	.500	.375	3/8-16 x 1"

Screws included.

Side Locks



Needle Bearing - Inch Standard



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

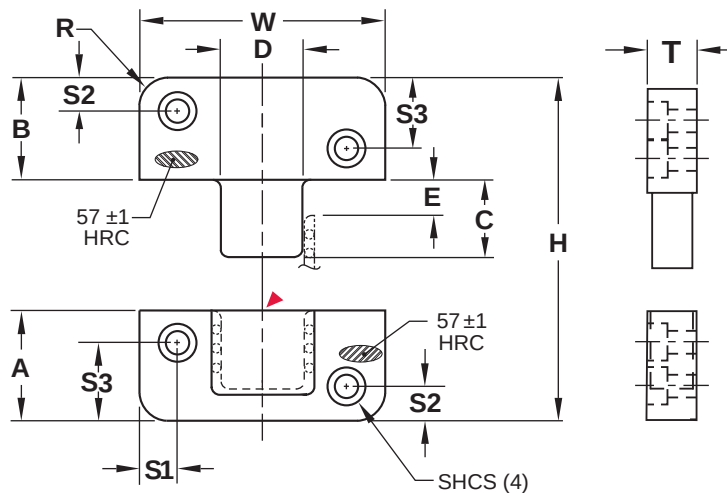
► CAD insertion point

Catalog Number	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D	E	H +.000 -.004	R Pocket Radius	S1/S2 ±.01	SHCS
SLR50X150	.500	1.500	.875	.875	.40	.500	.210	1.750	.187	.250	#8-32 x 5/8"
SLR50X200	.500	2.000	1.375	.875	.66	.750	.325	2.250	.187	.312	#10-32 x 5/8"
SLR75X300	.750	3.000	1.875	.875	.95	1.188	.575	2.750	.250	.375	1/4-20 x 3/4"

For technical information, refer to page B-15.

Screws included.

Needle Bearing - Metric Standard



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

Note: All dimensions and tolerances are in millimeters.
For technical information, refer to page B-15.

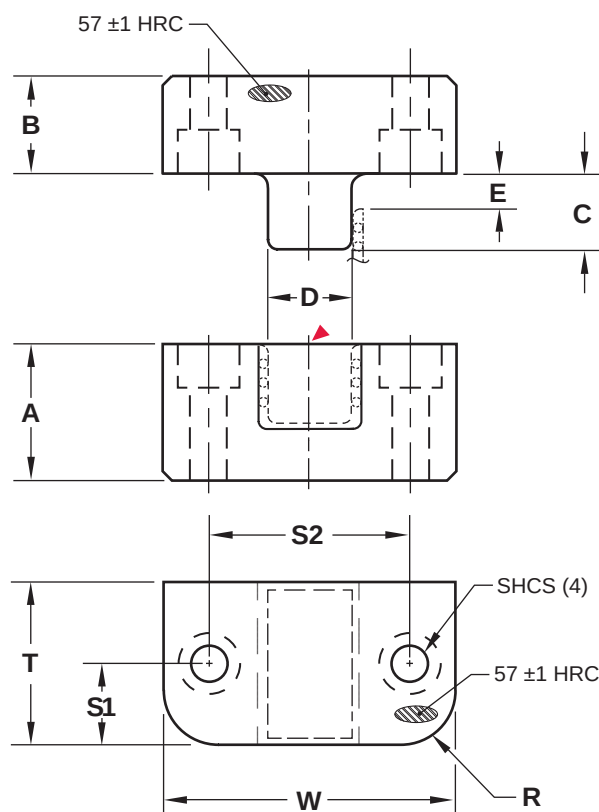
Catalog Number	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D	E	H +.0.0 -.0.1	R Pocket Radius	S1 ±.25	S2 ±.25	S3 ±.25	SHCS
SLRM32X63	32	63	46	46	27	21	12.1	92	8	9	11	35	M8-1.25 x 35
SLRM40X100	40	100	66	66	36	33	19.5	132	10	13	18	48	M12-1.75 x 45

Screws included.



Top Locks

Needle Bearing - Inch Standard



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

► CAD insertion point

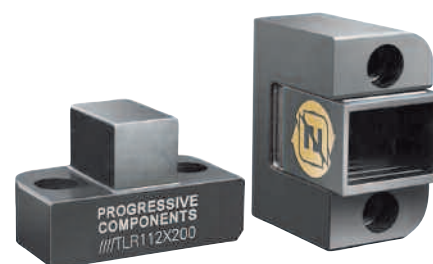
Catalog Number	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D	E	S1 ±.01	S2 ±.01	R Pocket Radius	SHCS
TLR112X200	1.125	2.000	1.375	.625	.62	.660	.425	.563	1.375	.375	M: 1/4-20 x 3/4" F: 1/4-20 x 1-1/2"
TLR150X250	1.500	2.500	1.375	.625	.62	.900	.400	.750	1.750	.375	M: 1/4-20 x 3/4" F: 1/4-20 x 1-1/2"

Screws included.

Technical Information:

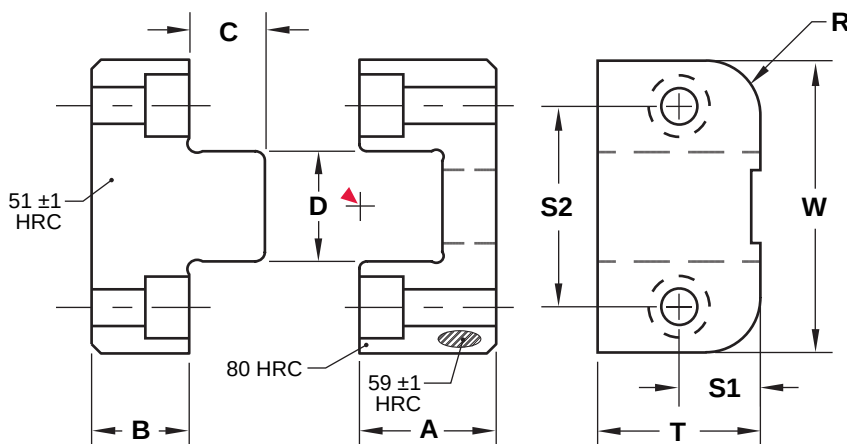
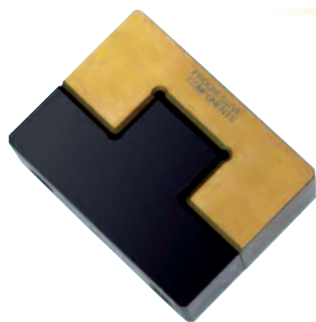
- Bearing Cage Material: Chemical resistant, high impact, glass-filled Nylon
- Bearings: 64 HRC
- Maximum Mold Temperature: 300° F (150° C)
- Engagement occurs at E dimension shown.
- Locks are to be mounted in the mold base and not in the core or cavity inserts.
- For optimal performance, pockets are to be machined to nominal "W" dimensions above. 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.

Shuttle Lock sets and special configurations are also available. Contact Customer Service for more information.





Top Locks



Inch Standard

Female: **M** A-2 **H** Core: 58-60 HRC, Surface: 80 HRC **S** Titanium Nitride Coated

Male: **M** O-2 **H** 50-52 HRC **S** Black Oxide

► CAD insertion point

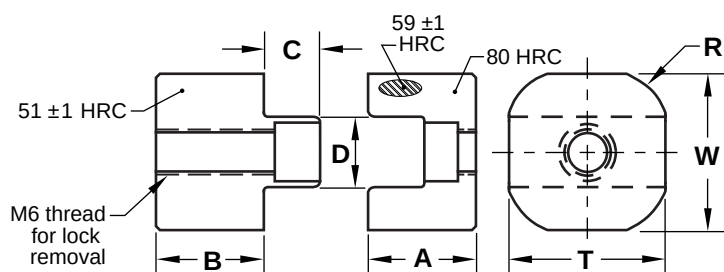
Catalog Number	T +.000 -.002	W +.0000 -.0004	A +.000 -.002	B +.000 -.002	C	D .0001/.0002 Clearance per side	S1 ±.01	S2 ±.01	R Pocket Radius	SHCS
TL62X125	.625	1.250	.625	.500	.41	.438	.312	.875	.250	M: #6-32 x 5/8" F: #6-32 x 3/4"
TL75X125	.750	1.250	.625	.500	.38	.438	.375	.875	.250	M: #8-32 x 5/8" F: #8-32 x 3/4"
TL87X150	.875	1.500	.875	.750	.53	.500	.437	1.000	.250	M: #8-32 x 7/8" F: #8-32 x 1"
TL100X150	1.000	1.500	.875	.375	.50	.500	.500	1.000	.250	M: #10-32 x 1/2" F: #10-32 x 1"
TL100X200	1.000	2.000	1.125	.750	.66	.750	.500	1.375	.375	M: #10-32 x 1" F: #10-32 x 1-1/8"
TL112X200	1.125	2.000	.875	.625	.50	.750	.563	1.375	.375	M: 1/4-20 x 3/4" F: 1/4-20 x 1"
TL112X300	1.125	3.000	1.500	.750	.78	1.125	.562	2.250	.500	M: 1/4-20 x 7/8" F: 1/4-20 x 1-5/8"
TL150X250	1.500	2.500	1.375	.625	.75	1.000	.750	1.750	.375	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	M: 5/16-18 x 1" F: 5/16-18 x 1-1/4"
TL200X350	2.000	3.500	1.750	.750	1.00	1.500	1.000	2.500	.500	M: 3/8-16 x 7/8" F: 3/8-16 x 2"

Metric Standard

Note: All dimensions and tolerances are in millimeters.

Catalog Number	T +.00 -.05	W +.00 -.01	A +.00 -.05	B +.00 -.05	C	D .002/.005 Clearance per side	S1 ±.25	S2 ±.25	R Pocket Radius	SHCS
TLM20X20	20	20	14	14	7	9	Center	Center	5	M: M4 x 25 F: M4 x 10
TLM26X35	26	35	25	15	16	11	13	23	8	M: M5 x 16 F: M5 x 25
TLM30X45	30	45	25	15	16	15	15	30	8	M: M6 x 18 F: M6 x 25
TLM36X55	36	55	30	20	20	20	18	37.5	8	M: M8 x 22 F: M8 x 35
TLM36X75	36	75	35	20	26	30	18	52	8	M: M10 x 25 F: M10 x 35
TLM45X100	45	100	60	20	41	40	22.5	70	8	M: M10 x 25 F: M10 x 65

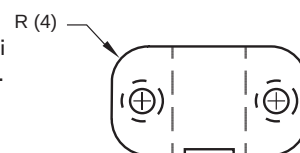
TLM20X20 Specifications:



Additional Option:

Screws included.

Top Locks (except TLM20X20) are also available with dual radii for mounting internally. To order, specify the catalog number followed by "-R". Ex. TL112X200-R.



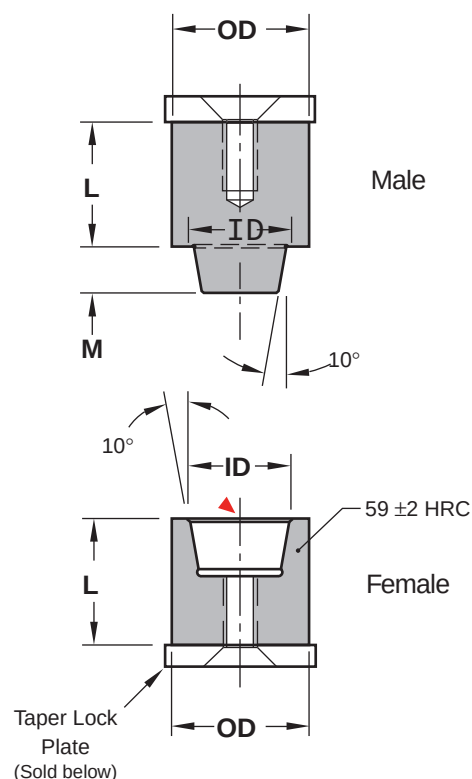
Taper Locks



M AISI 52100 **H** 57-61 HRC

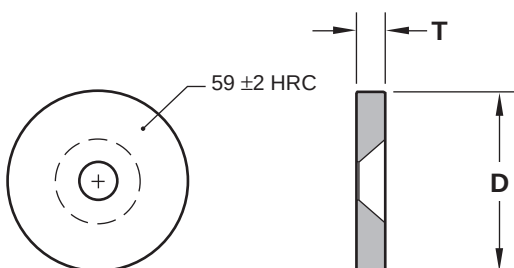
► CAD insertion point

O.D. +.0000 -.0003	I.D.	M	Tap Size	L +.004 +.008	Male Catalog No.	Female Catalog No.
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
				1-1/8	MTL200L1.12	FTL200L1.12
2	1.500	.500	5/16-18	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	FHCS C'BORE
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.

Shuttle Lock Sets



Shuttle Mold lock sets are available for Side Locks, Top Locks, and Guide Locks. The shuttle sets are dimensionally verified to be interchangeable within the set and numbered and packaged accordingly.

Two configurations of shuttle sets are available:

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

Custom lock configurations are available.

Contact our Customer Service Department for more information.

Lock Selection Guide

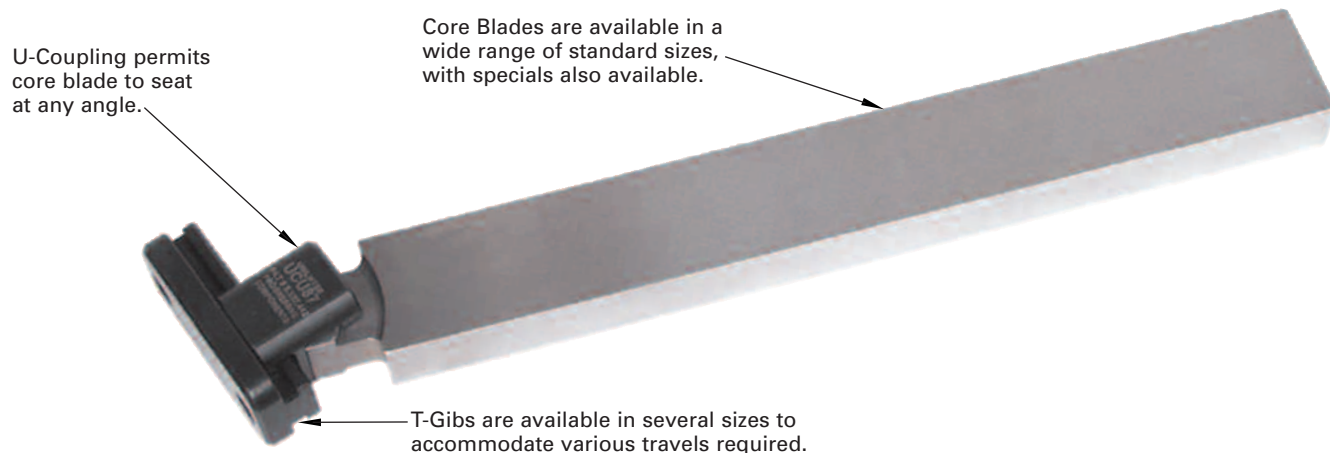
MOLD BASE SIZE	SUGGESTED LOCKS			
Length x Width	Side Locks	Metric Side Locks	Guide Locks	Top Locks
Less than 8 x 8	SL37X100	SLM16X50, SLMS16X38 SLPM16X20, SLPM16X40 SLPM20X25, SLPM20X50	GL100X150	TL62X125, TL75X125, TLM20X20
8 x 8 to 8 x 12	SL50X125, SL50X150 SLS62X150, SLS62X200 SLR50X150	SLM16X50, SLMS16X50 SLPM25X32, SLPM25X63	GL100X150, GL150X250	TL75X125, TL87X150, TL100X150, TLM20X20 TLM26X35
8 x 12 to 11 x 14	SL50X200 SLS62X150, SLS62X200 SLR50X200	SLM19X75, SLMS19X75 SLPM32X40, SLPM32X80	GL150X250	TL100X150, TL100X200, TL112X200, TLR112X200 TLM26X35, TLM30X45
11 x 14 to 14 x 18	SL75X300 SLS75X300, SLS75X400 SLR75X300	SLM19X75, SLMS19X75 SLPM40X50, SLPM40X100	GL200X350	TL112X200/300, TL150X250 TLR112X200, TLR150X250 TLM30X45, TLM36X55
14 x 18 to 16 x 26	SL100X400, SLS112X500	SLM19X100, SLMS19X100 SLPM50X56, SLPM 50X112	GL200X350	TL150X250, TL175X300 TLR150X250, TLM36X55 TLM36X75
16 x 26 to 18 x 36	SL125X500, SLS112X500	SLM25X125, SLMS25X125	GL250X450	TL175X300, TL200X300 TLM36X75
18 x 36 or larger	SL150X600	SLM25X125, SLMS25X125	GL250X450	TL175X300, TL200X300 TLM36X75, TLM45X100

Use this guide for quoting purposes and preliminary layout of locks.

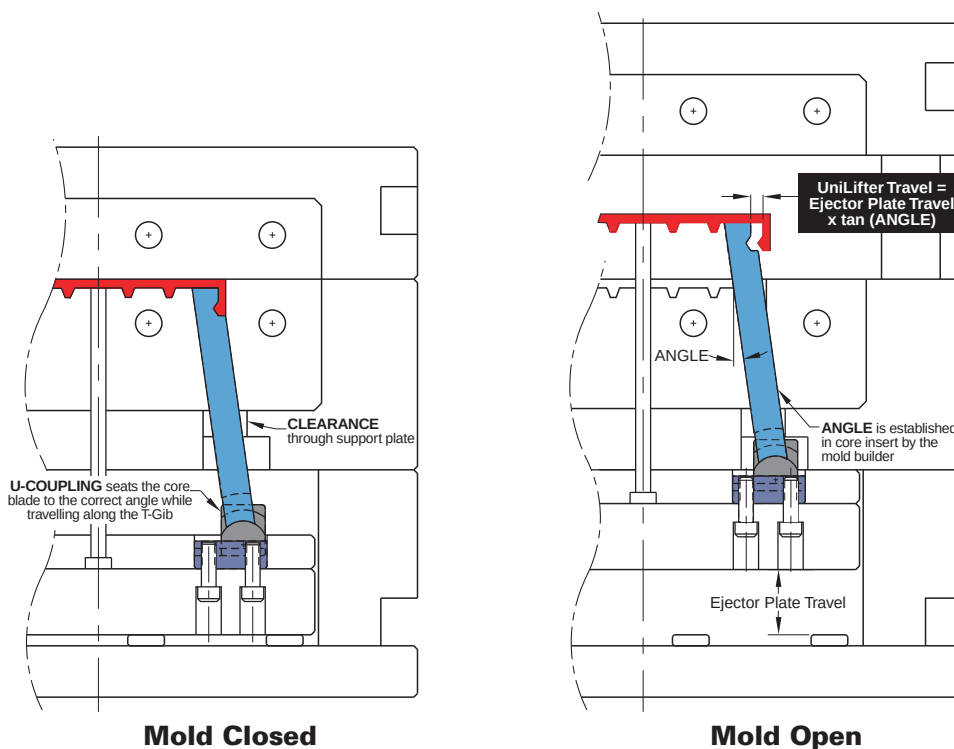
Actual lock sizes used may vary due to waterline locations, insert pocket sizes, and A & B plate thicknesses.

UniLifter®

Undercut Release System



The UniLifter undercut release system incorporates a three piece set: Core Blade, U-Coupling, and T-Gib.



Application Guidelines:

1. Typical angle is 5-10°, though users report success at greater angles with guides installed. Contact Engineering for application review.
2. 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.
3. Recommended clearance is .001"-.0015" (.025-.038mm) where permissible.
4. Verify that the core insert material is at least 10 HRC different than standard standard Core Blades, and for additional performance, consider coatings or treatments for increased hardness or lubricity.
5. 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/customs.



UniLifter®

Core Blades

Flat Core Blades - Metric Standard

Note: All dimensions and tolerances are in millimeters.

MW	R	HT	Catalog Number	T +.000 -.025	W +.000 -.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

Flat Core Blades - Inch Standard

MW	R	HT	Catalog Number	T +.000 -.001	W +.000 -.001	L +.06 -.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

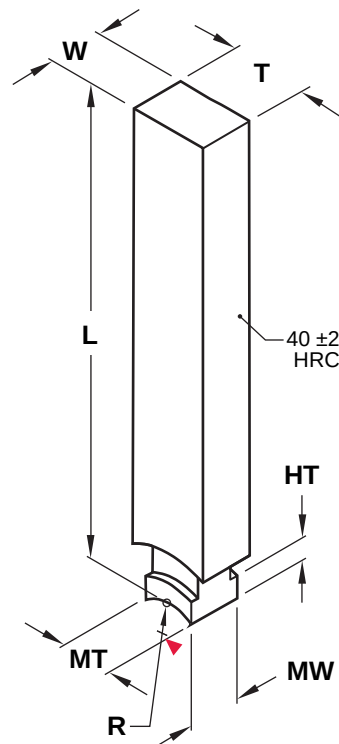
Round Core Blades - Metric Standard

Note: All dimensions and tolerances are in millimeters.

MW	R	HT	Catalog Number	D +.000 -.025	L +2 -0	MT MIN. THK.
10	10	5	CBMM10DL250	10.00	250	10.0
			CBMM15DL250	15.00	250	10.0

Round Core Blades - Inch Standard

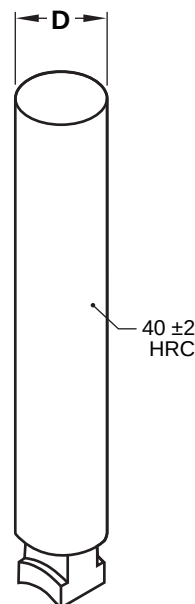
MW	R	HT	Catalog Number	D +.000 -.001	L +.06 -.00	MT MIN. THK.
MiniLifter .250	.250	.156	CBS43DL8	.437	8	.31
UniLifter .500	.406	.187	CBS75DL8	.750	8	.62
			CBS75DL14	.750	14	.62
			CBS75DL18	.750	18	.62
XL 1.000	.875	.375	CBS125DL10	1.250	10	1.00
			CBS125DL18	1.250	18	1.00



M H-13 **H** 38-42 HRC

▶ CAD insertion point

The UniLifter Series (MW=.500) is also available in aluminum bronze. To order, replace "CBS" with "CBA" in the catalog number as shown: CBA50X50L14.



US Patent No. 5,137,442, and No. 5,316,467
Canadian Patent No. 2,048,218
European Patent No. EP498102
Mexican Patent No. 175084

UniLifter®

U-Couplings

Metric Standard

Note: All dimensions and tolerances are in millimeters.

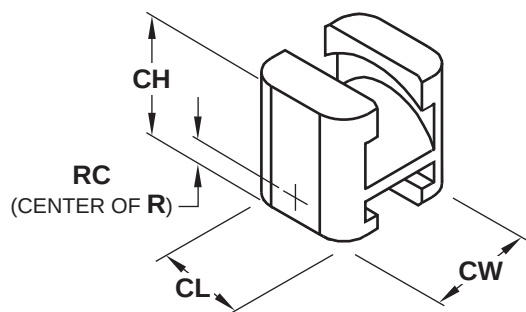
M H-13 **S** Blackened

Series	R	RC	Catalog Number	CW	CL	CH
Metric	10	6	UCMM22	22	18	25

Inch Standard

M H-13 **S** Blackened

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



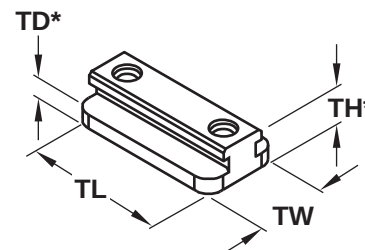
T-Gibs

Metric Standard

Note: All dimensions and tolerances are in millimeters.

M H-13 **H** 40-44 HRC **S** Black Oxide

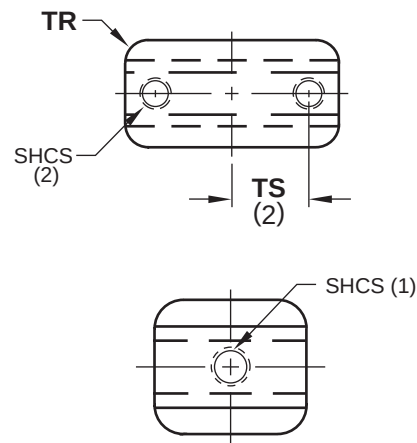
Series	TW	TH	TD*	TR	SHCS (INCLUDED)	CATALOG NUMBER	TS	TL	TRAVEL ALLOWED
Metric	22 +.000 -.025	13 +.25 -.00	6 +.25 -.00	5	M-5x20	TGMM10 TGMM30	10 15	33 52	10 30



Inch Standard

M H-13 **H** 40-44 HRC **S** Black Oxide

Series	TW	TH	TD*	TR	SHCS (INCLUDED)	CATALOG NUMBER	TS	TL	TRAVEL ALLOWED
MiniLifter	.500 +.000 -.001	.500 +.010 -.000	.344 +.010 -.000	.093	#10-32x1	TGM31 TGM100	- .500	.750 1.50	.312 1.000
UniLifter	.875	.468	.219	.187	1/4-20x3/4	TGU25 TGU50 TGU100 TGU150	- .375 .625 .750	1.00 1.25 1.75 2.25	.250 .500 1.000 1.500
XL	1.750	.625	.250	.312	3/8-16x1-1/4	TGX50 TGX100 TGX250	.625 .875 1.375	2.00 2.50 4.00	.500 1.000 2.500



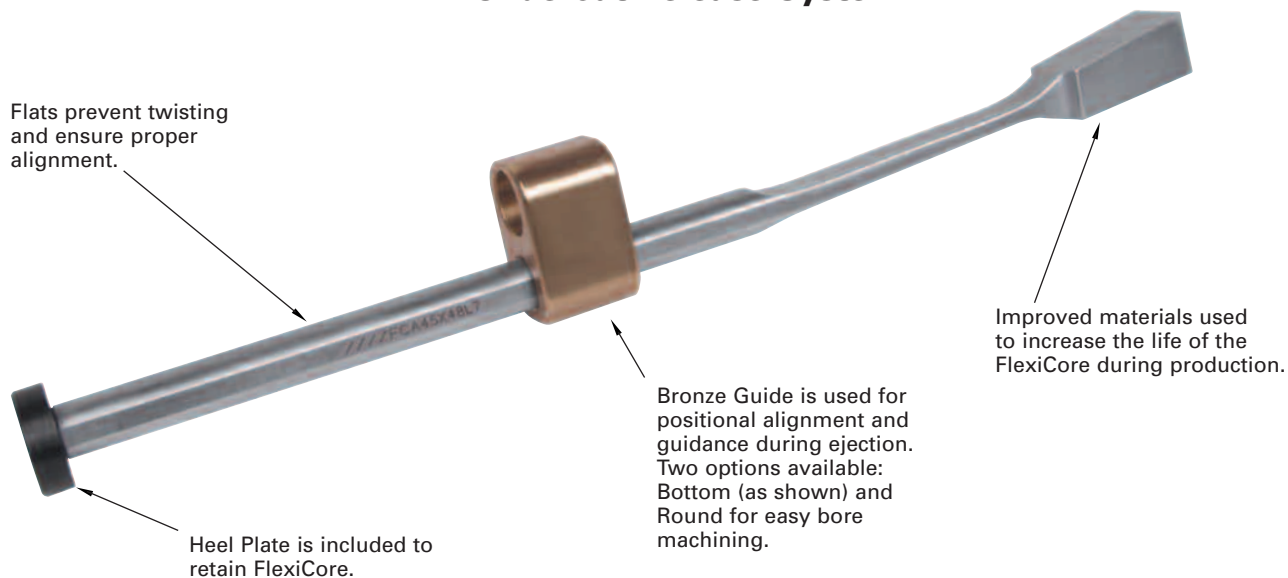
*TD Includes fitting stock for final adjustments.

Plan view for TGM100 and TGU25.

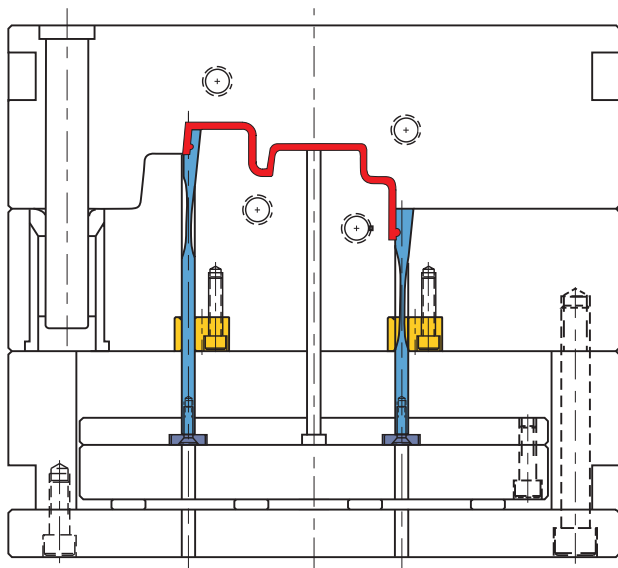


FlexiCore®

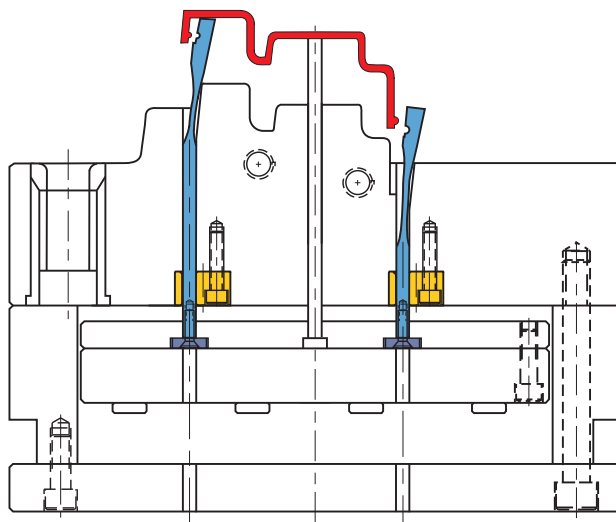
Undercut Release System



FlexiCore Assembly includes: FlexiCore, Bronze Guide (Bottom or Round), Heel Plate, and Flat Head Cap Screw.



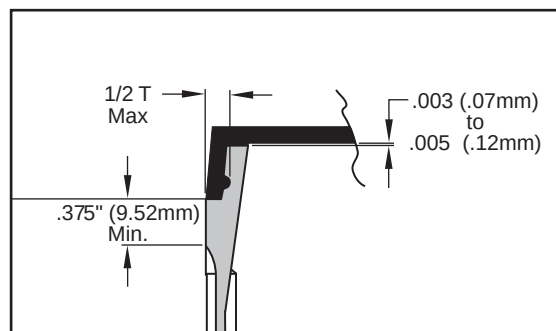
Mold Closed



Mold Open

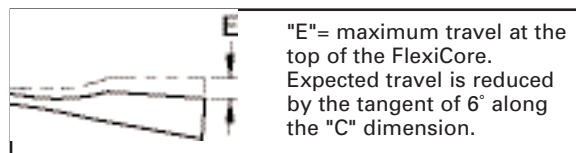
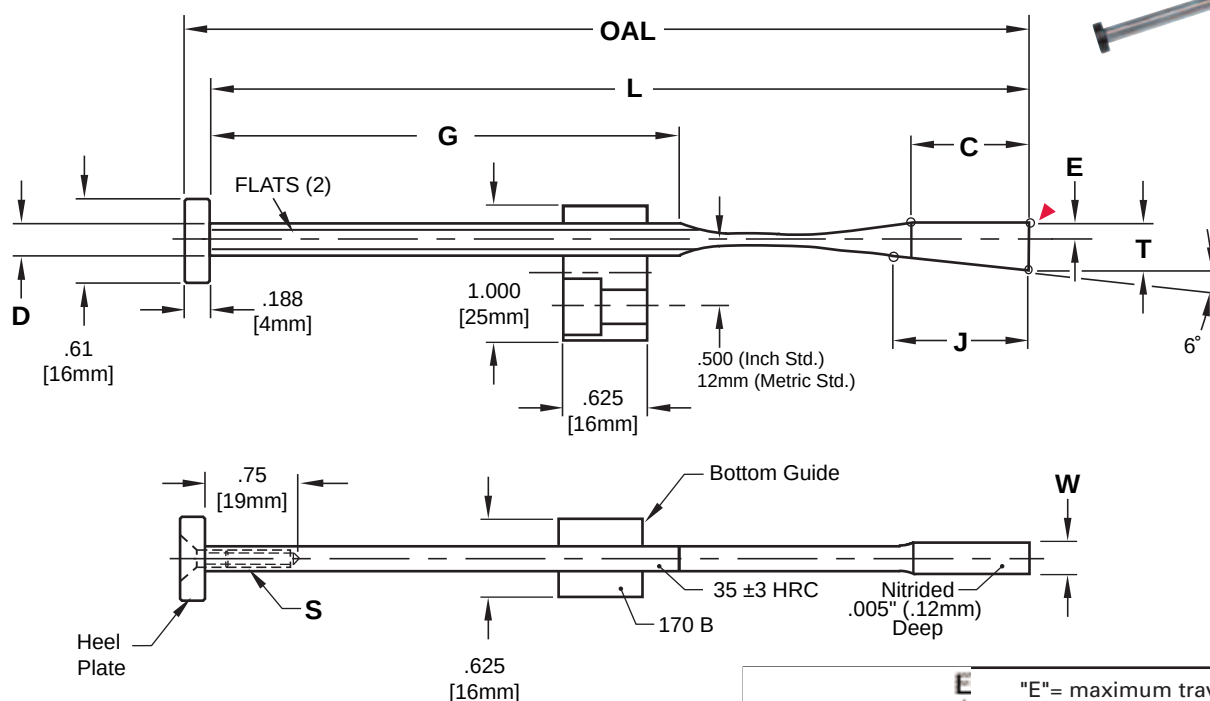
Application Guidelines:

1. The FlexiCore diameter (D) must be within the Guide prior to ejection as shown above.
2. Only surface treatments applied at low temperatures such as Electroless Nickel-based or chromium deposition treatments are permitted.
3. Maximum temperature is 250° F (125° C).
4. 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

Catalog Number	T +.002 -.000	W +.002 -.000	L +.010 -.000	OAL REF	D +.000 -.001	C ±.015	E	G +.01 -.00	J	S
FCA35X24L6	.354	.244	6.400	6.588	.234	.875	.137	3.49	.957	#8-32
FCA35X32L6	.354	.322	6.400	6.588	.250	.875	.137	3.48	.957	#8-32
FCA45X40L7	.453	.401	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24
FCA45X48L7	.453	.480	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24

► CAD insertion point

Metric Standard

Note: All dimensions and tolerances are in millimeters.

M FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

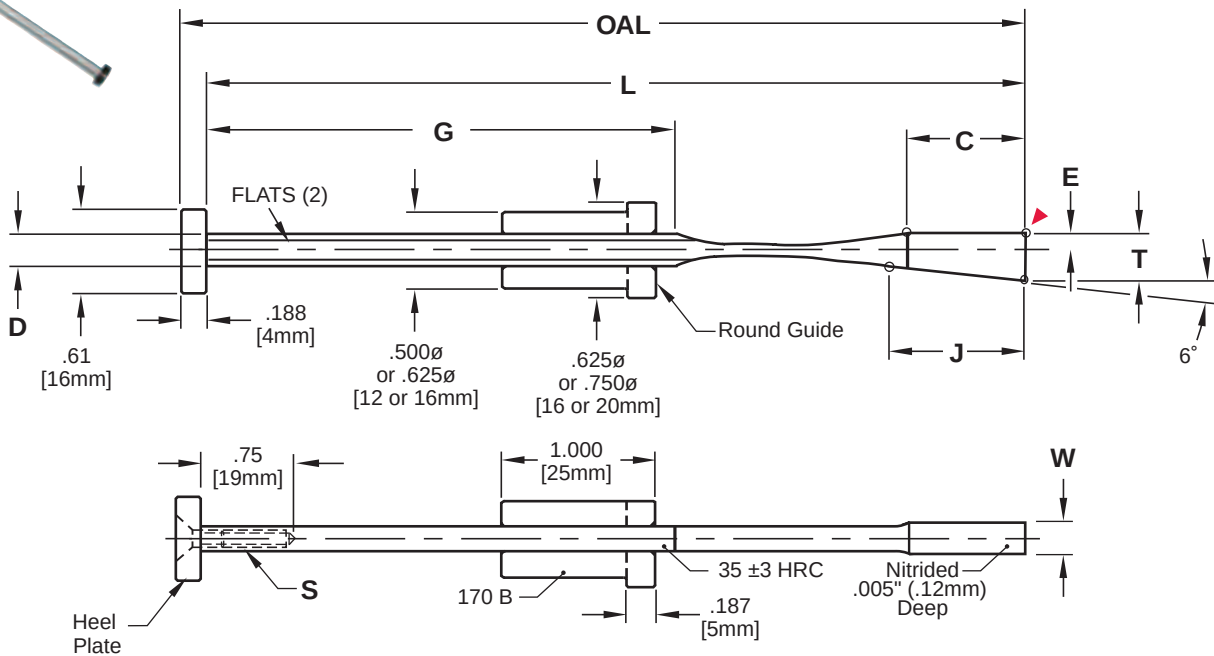
Catalog Number	T +.05 -.00	W +.05 -.00	L +.25 -.00	OAL REF	D +.000 -.025	C ±.35	E	G +.25 -.00	J	S
FCA9X6L160	9	6.2	162.5	166.5	5.94	22	3.5	88.6	24.3	M4-.7 x 20
FCA9X8L160	9	8.2	162.5	166.5	6.35	22	3.5	88.4	24.3	M4-.7 x 20
FCA11X10L200	11.5	10.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20
FCA11X12L200	11.5	12.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20

Assemblies include: FlexiCore, Bottom Guide, Heel Plate, and Flat Head Cap Screw.
Assembly components also sold individually on page C-9.



FlexiCore®

Round Guide Assembly



"E"= maximum travel at the top of the FlexiCore. Expected travel is reduced by the tangent of 6° along the "C" dimension.

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
FCR35X24L6	.354	.244	6.400	6.588	.234	.875	.137	3.49	.957	#8-32	.625	.500
FCR35X32L6	.354	.322	6.400	6.588	.250	.875	.137	3.48	.957	#8-32	.625	.500
FCR45X40L7	.453	.401	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	.750	.625
FCR45X48L7	.453	.480	7.875	8.062	.312	1.000	.177	4.38	1.025	#10-24	.750	.625

► CAD insertion point

Metric Standard

Note: All dimensions and tolerances are in millimeters.

M FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

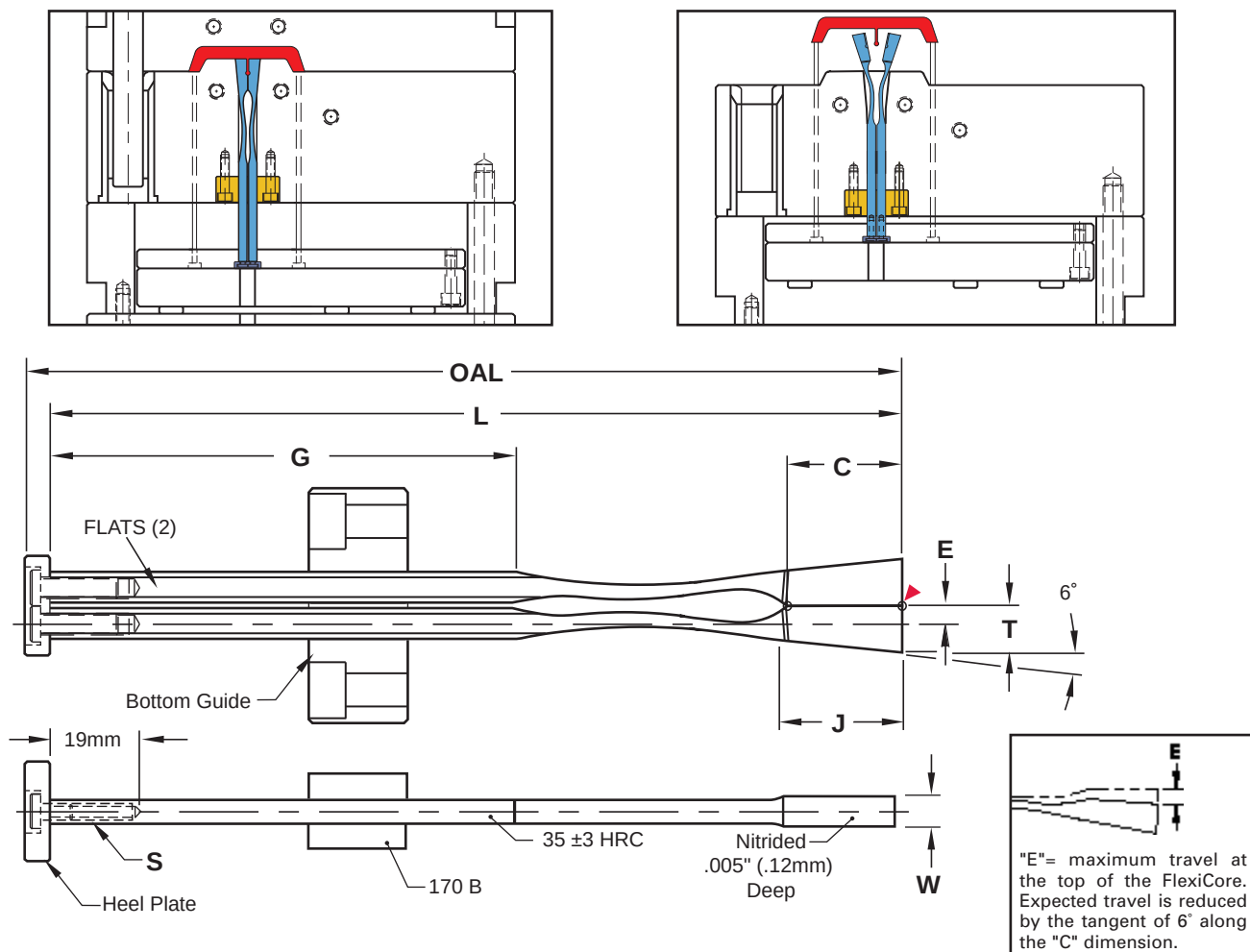
Catalog Number	T +.05 -.00	W +.05 -.00	L +.25 -.00	OAL REF	D +.000 -.025	C ±.35	E	G +.25 -.00	J	S	A	B
FCR9X6L160	9	6.2	162.5	166.5	5.94	22	3.5	88.6	24.3	M4-.7 x 20	16	12
FCR9X8L160	9	8.2	162.5	166.5	6.35	22	3.5	88.4	24.3	M4-.7 x 20	16	12
FCR11X10L200	11.5	10.2	200.0	204.0	7.92	26	4.5	111.2	26.0	M5-.8 x 20	20	16
FCR11X12L200	11.5	12.2	200.0	204.0	7.92	26	4.5	111.2	26.0	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 C-9 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	W	L	OAL	D	C	E	G	J	S
	+ .002 - .000	+ .002 - .000	+ .01 - .00	REF	+ .000 - .001	± .015		+ .01 - .00		
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

► CAD insertion point

Metric Standard

Note: All dimensions and tolerances are in millimeters.

M FlexiCore: AISI 4340 with thin, dense Chromium treatment, Guide: CA954 Solid Bronze, Heel Plate: AISI 1018

Catalog Number	T	W	L	OAL	D	C	E	G	J	S
	+ .05 - .00	+ .05 - .00	+ .25 - .00	REF	+ .000 - .025	± .35		+ .25 - .00		
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



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	T Thread
FCWB-24	.244	.250	.626	.533	#10-24
FCWB-32	.322	.250	.626	.533	1/4-20
FCWB-40	.401	.250	.567	.474	1/4-20
FCWB-48	.480	.250	.567	.474	1/4-20

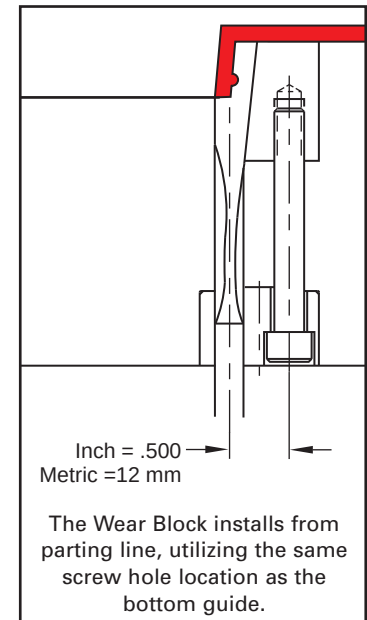
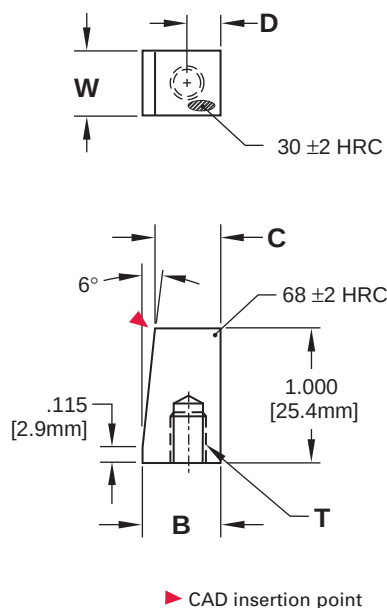
Note: FCWB-24 is designed for use with a 1/4" shoulder bolt.

Metric Standard

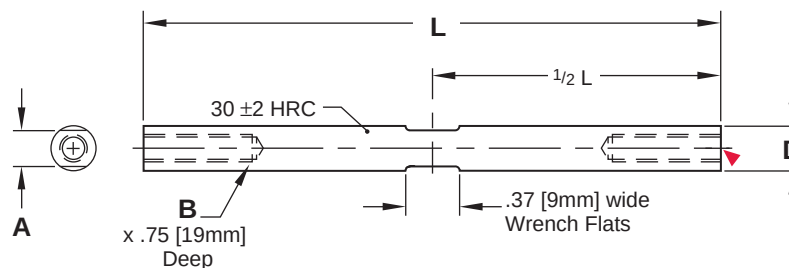
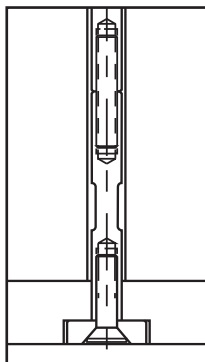
All dimensions are in millimeters.

M P-20 Pre-Hard **H** Nitrided 12mm Deep

Catalog Number	W +.05 -.00	D ±.25	B +.025 -.000	C +.025 -.000	T Thread
FCWBM-6	6.2	7.2	15.9	13.55	M5-8
FCWBM-8	8.2	7.2	15.9	13.55	M6-1
FCWBM-10	10.2	7.2	14.4	12.05	M6-1
FCWBM-12	12.2	7.2	14.4	12.05	M6-1



Extensions



Inch Standard

M 4140 Pre-Hard

► CAD insertion point

D +.000 -.002	B	A	L +.01 -.00
			2"
.232	#8-32	.187	FCX8L2
.310	#10-24	.250	FCX10L2
			4"
			FCX8L4
			FCX10L4

Includes threaded stud for attachment to FlexiCore.

Metric Standard

All dimensions are in millimeters.

M 4140 Pre-Hard

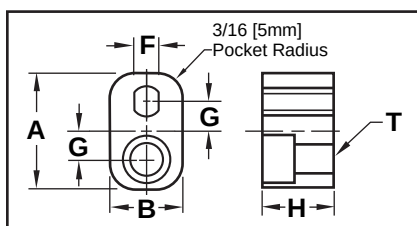
D +.00 -.05	B	A	L +.25 -.00
			50mm
6	M4-7	4.8	FCXM4L50
8	M5-8	6.3	FCXM5L50
			100mm
			FCXM4L100
			FCXM5L100

FlexiCore® Accessories

Replacement Bottom Guides & Round Guides

Inch Standard

M CA954 Solid Bronze

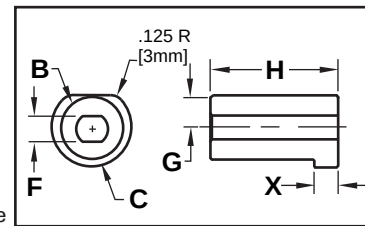


Catalog Number	A	B	H	F	G	T
FCBG-24	1.000	.625	.625	.190	.250	1/4 SBLT
FCBG-32	1.000	.625	.625	.200	.250	1/4-20
FCBG-40	1.000	.625	.625	.290	.250	1/4-20
FCBG-6	25	16	16	4.8	6	M-5 SBLT
FCBG-8	25	16	16	5.0	6	M6-1
FCBG-10	25	16	16	7.3	6	M6-1

Metric Standard

Inch Standard

M CA954 Solid Bronze



Catalog Number	B	C	H	F	X	G
FCRG-24	.5000	.625	1.000	.190	.187	.250
FCRG-32	.5000	.625	1.000	.200	.187	.250
FCRG-40	.6250	.750	1.000	.290	.187	.312
FCRG-6	12	16	25	4.8	5	6
FCRG-8	12	16	25	5.0	5	6
FCRG-10	16	20	25	7.3	5	8

Metric Standard

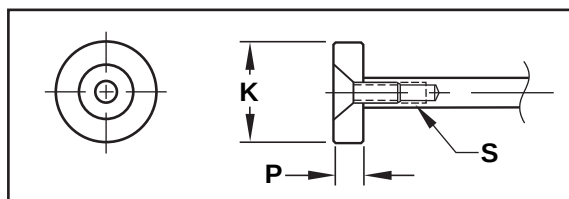
Replacement Heel Plates

Inch Standard

M AISI 1018 Black Oxided

Catalog Number	K	P	S
FCHP-8	.61	.188	#8-32
FCHP-10	.61	.188	#10-24
FCHP-4	16	4	M4 -.7
FCHP-5	16	4	M5 -.8

Metric Standard



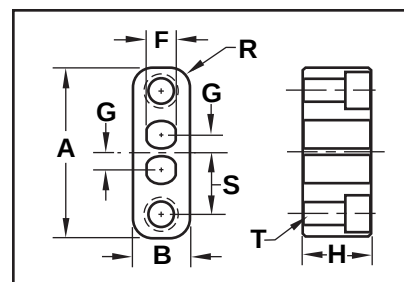
Replacement Bottom Guides: Double Actuation

Inch Standard

M CA954 Solid Bronze

Catalog Number	A	B	H	F	G	R	S	T
FCDBG-24	1.750	.625	.750	.190	.136	.218	.636	1/4-20
FCDBG-48	1.875	.625	.750	.290	.176	.218	.676	1/4-20
FCDBG-6	45	16	20	4.8	3.45	5	16.2	M6-1
FCDBG-12	48	16	20	7.3	4.47	5	17.2	M6-1

Metric Standard



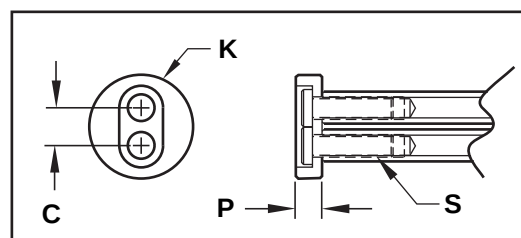
Replacement Heel Plates: Double Actuation

Inch Standard

M 1018 Black Oxided

Catalog Number	C	K	P	S
FCDHP-8	.272	.750	.188	#8-32
FCDHP-10	.352	.875	.188	#10-24
FCDHP-4	7	20	6	M4-.7
FCDHP-5	9	22	6	M5-.8

Metric Standard

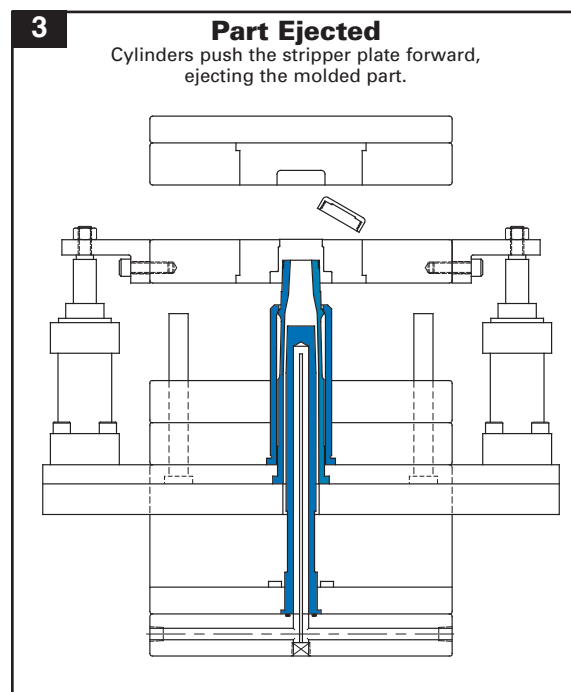
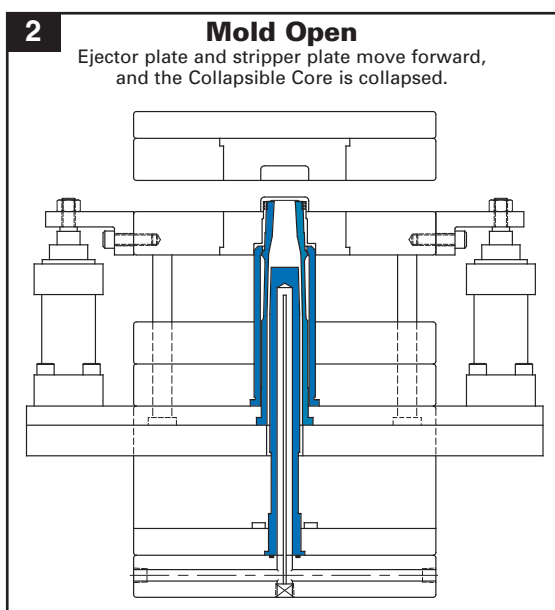
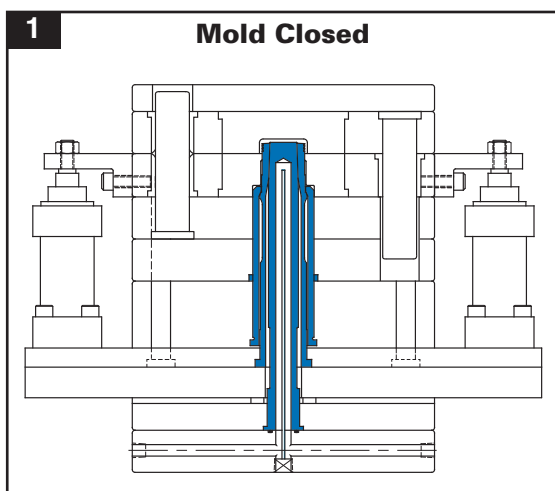
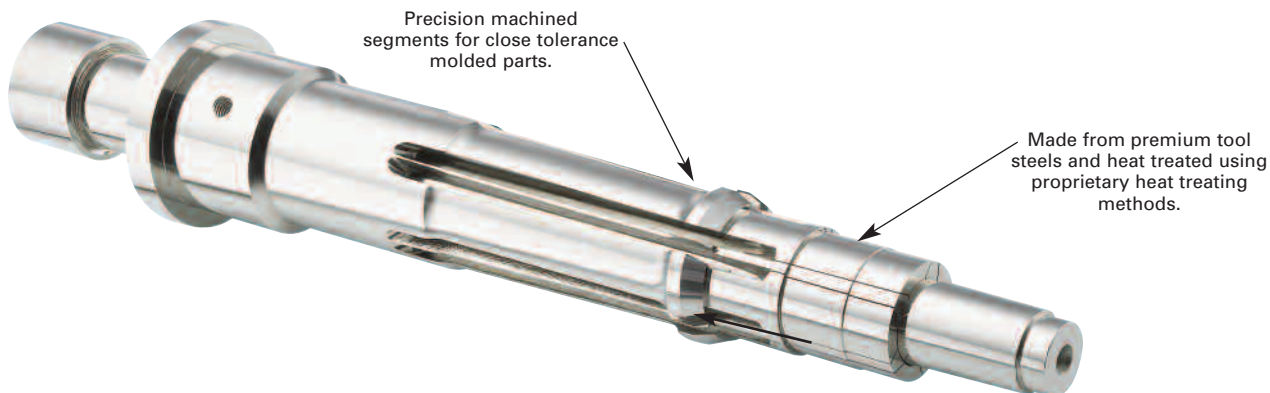




Collapsible Cores & MiniCores®

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.



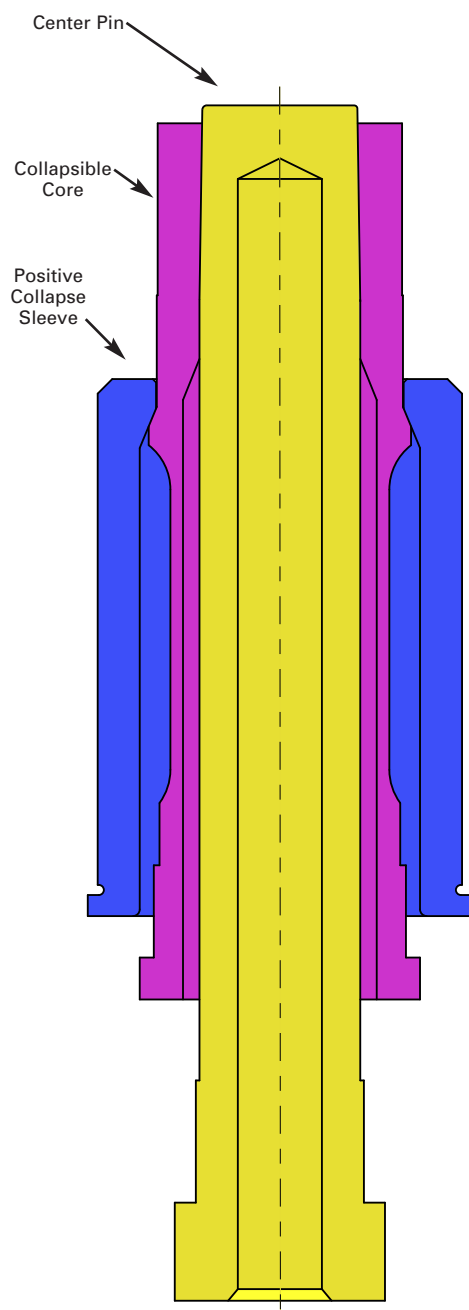
Progressive can provide Collapsible Cores with details machined complete. Contact Engineering via tech@procomps.com for an application review and quotation.

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-6 **H** 60-65 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.

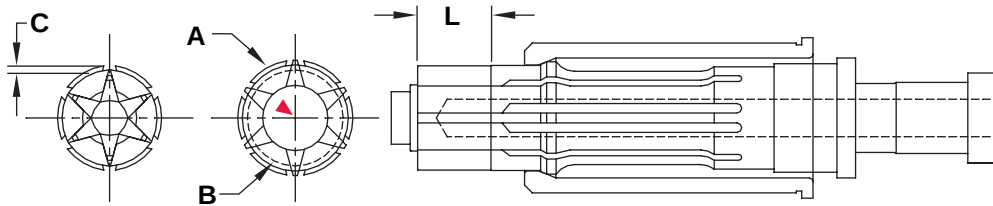
Application Guidelines

1. 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.
2. 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.)
3. Molded parts need not be closed at one end. They may be partially open or even completely sleeve shaped. Undercuts need not be continuous.
4. 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.
5. 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 Engineering for an application review and quotation.



Collapsible Cores & MiniCores®

RT Series

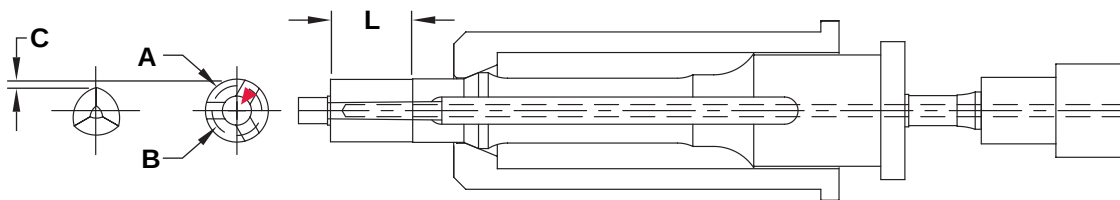


► CAD insertion point

CATALOG NUMBER	A Maximum Outer Diameter		B Minimum Inner Diameter		Center Pin Dia. (At top of Collapsible Core)		L Max. Molded Length (Including Mold Shut-Off)		C Collapse per Side at Top of Core** (Range Shown)				O.A.L. Overall Length of Collapsible Core (Only)	
	inch	mm	inch	mm	inch	mm	*inch	*mm	inch	mm	inch	mm	inch	mm
CC-125-PC	.720	18.29	.620	15.75	.490	12.45	.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	15.24	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	1.480	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	2.875	73.02	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)		L Max. Molded Length (Incl. Mold Shut-Off)		C Collapse per Side at Top of Core**	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
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

Design Guidelines: RT & GZ Series

Collapsible Core Selection

To determine if a standard collapsible core can be used in your application, follow these steps using all dimensions in inches, referring to the charts on page C-12 and C-16:

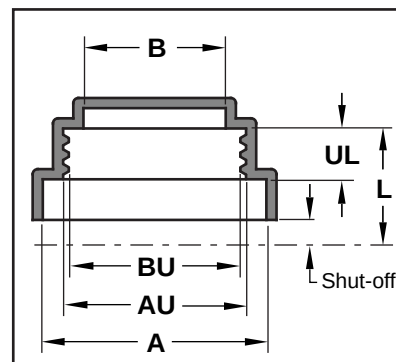
1. Determine the Part Major Diameter (A) and find the closest number in the chart column "A" on the following page that is larger than this diameter. Note the Core size(s) referenced.
2. Determine the Part Minor Diameter (B) and find the closest number in the chart column "B" that is smaller than the diameter. If both variables are listed in the same line, this is the Collapsible Core size(s) that can be further analyzed by determining the total collapse in steps 3-6 below.
3. To determine the Part Undercut (UC), subtract BU (Undercut Minor Diameter) from AU (Undercut Major Diameter) and divide that by 2:
 $(AU - BU) / 2 = UC$

4. Multiply the Molding Length of the Undercut (UL) by .020" to yield the Loss of Collapse (LC): **$UL \times .020 = LC$**

5. Multiply the Undercut Minor Diameter (BU) x the material shrink to calculate the diametrical shrink (S). (Use .010 if not available.)

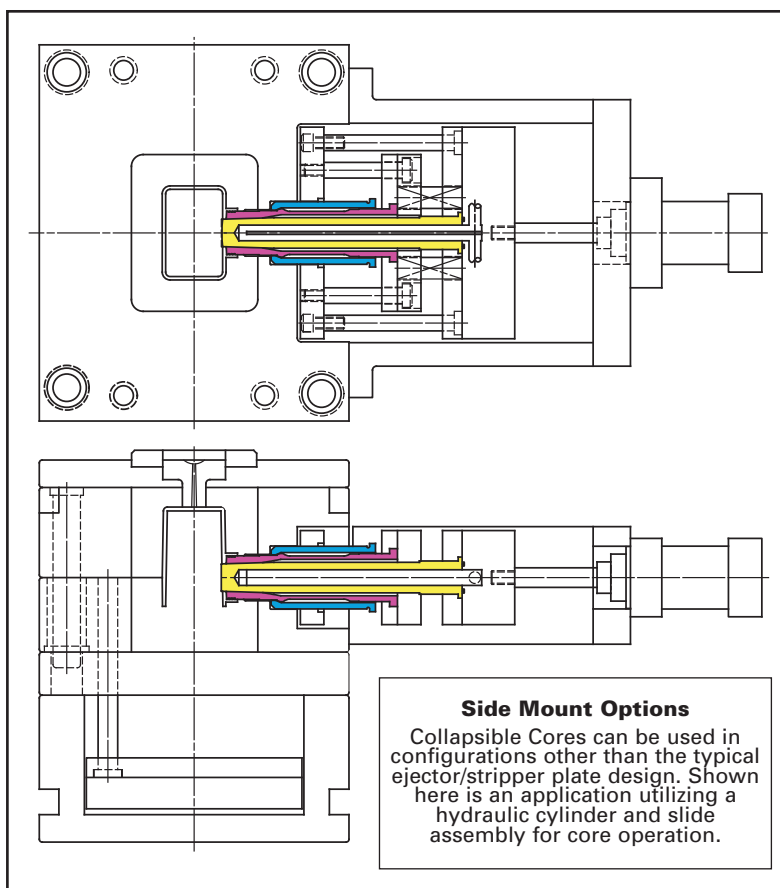
BU x Shrink = S

6. Total Collapse (C) is then: **$UC + LC + S + .005$** " (for clearance). This number cannot exceed the Collapse per Side (C) dimension in the table for the core size(s) that were targeted in step 1 & 2 above. If the number is outside of this range, a custom core may be required.



Mold and Part Design Considerations

1. The first break needs to occur at the main parting line.
2. Return pins are to be located under, not through, the stripper plate. Guided ejector plates are strongly recommended.
3. Good venting is essential, preferably to the outside of mold at parting line.
4. For proper Collapsible Core functionality, the face of the core segments must be free of undercuts.
5. Any detail machined into the top of the Center Pin (inside the top surface of molded part) must not interfere with the full radial inward movement of the Collapsible Core.
6. All undercuts should be drafted a minimum of 5°. Interrupted undercuts also require a 5° side draft.
7. As in conventional practices, sharp interior corners must be avoided to prevent stress concentration in the steel.
8. Consult Progressive's Engineering Department with any questions or visit www.procomps.com for complete technical information and to download CAD Data files including the Collapsible Core Technical Data Book.



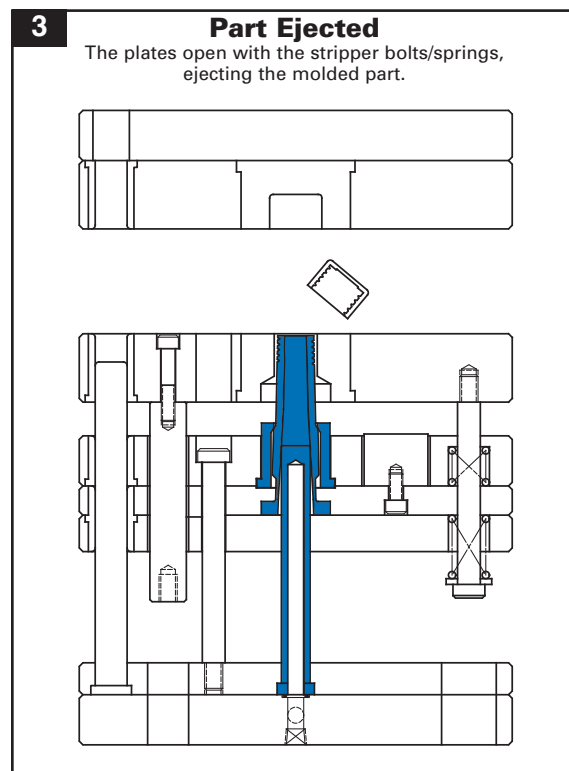
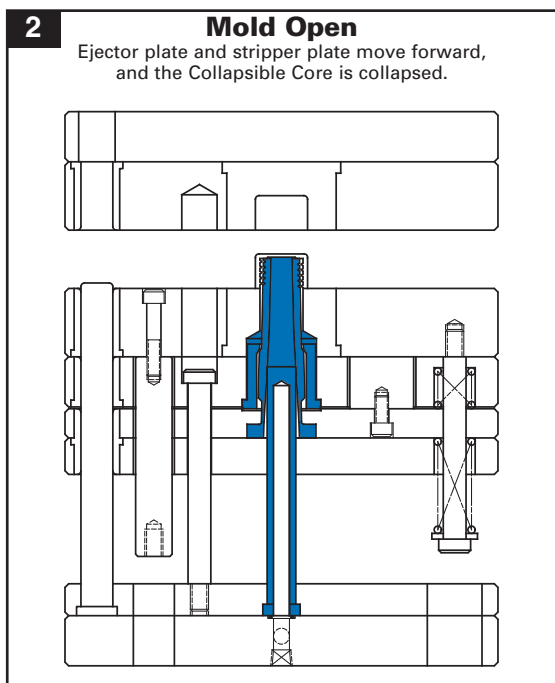
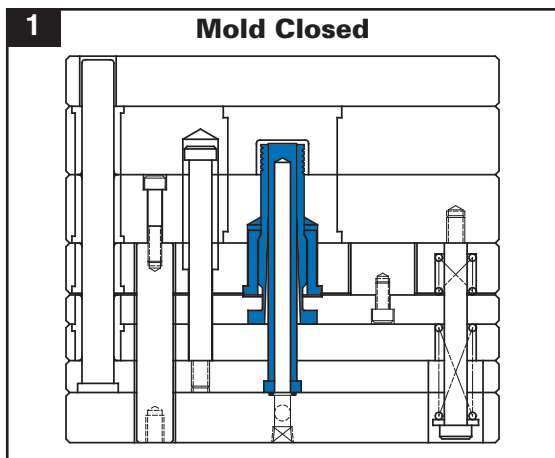
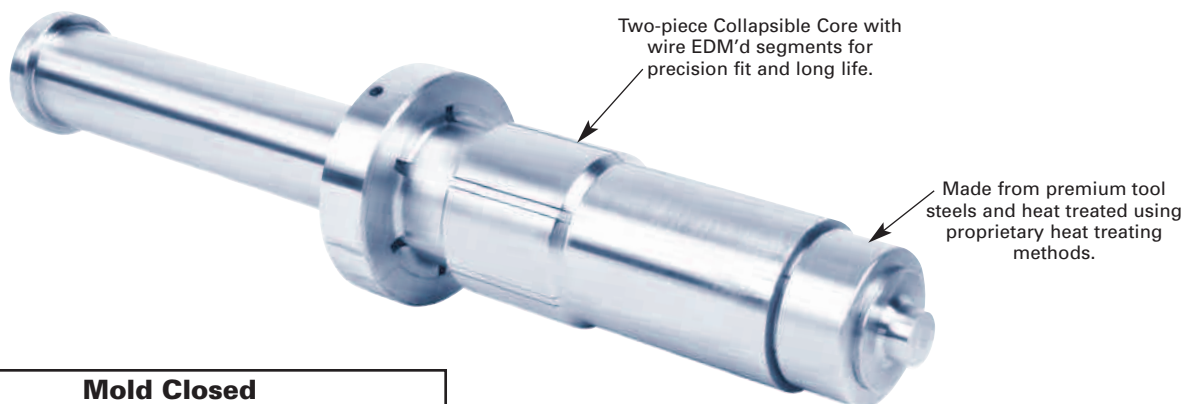
Side Mount Options

Collapsible Cores can be used in configurations other than the typical ejector/stripper plate design. Shown here is an application utilizing a hydraulic cylinder and slide assembly for core operation.

Collapsible Cores

GZ Series

The GZ Series Collapsible Cores are designed for molded parts that require consistent wall stock on the top of the part as well as internal threads and/or undercuts. This patented system was developed to provide molders with a long-lasting alternative to complex unscrewing mechanisms, while giving the designer the shortest stack height possible.



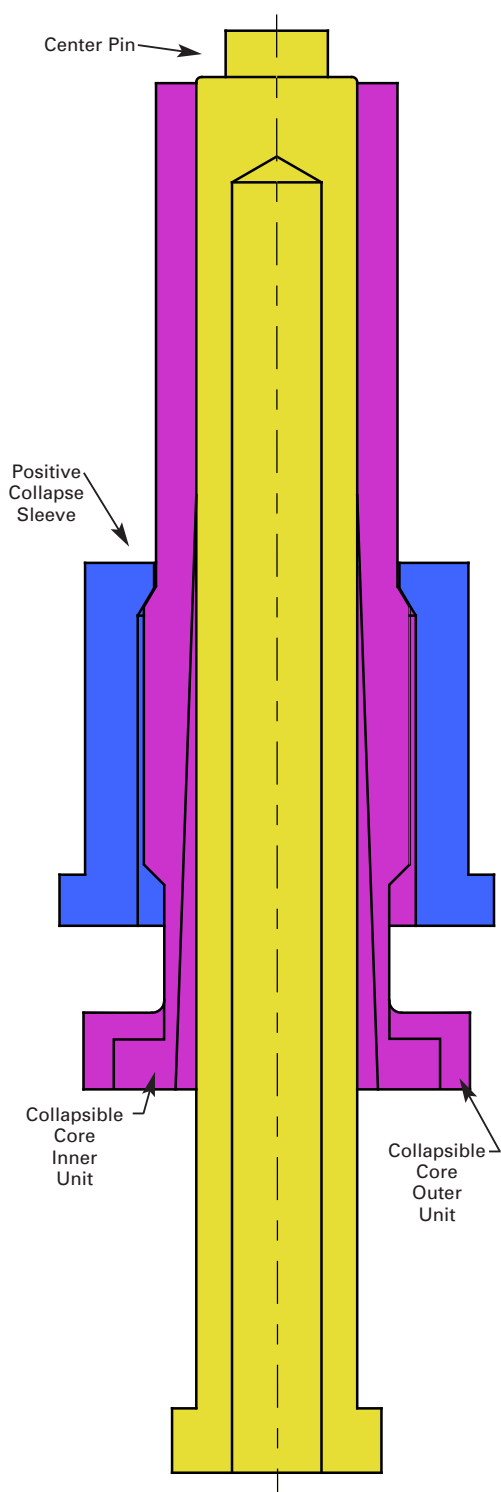
Progressive can provide Collapsible Cores with details machined complete. Contact Engineering via tech@procomps.com for an application review and quotation.

Collapsible Cores

GZ Series

Description of Components and Basic Operation

The GZ Series Collapsible Cores are comprised of a four-piece assembly, designed for simplicity of installation, reliability in operation, and long life. The four parts include the Collapsible Core Inner Unit, a Core Outer Unit, a Positive Collapse Sleeve, and a Center Pin.



Collapsible Core (Inner/Outer Units) **M** A-2 **H** 48-52 HRC

- Two separate units allow for more collapse.
- Patented compact design brings collapsible core technology to smaller tools.
- Designed to operate with high volume production and with minimum lubrication.
- All Outer Core Units are individually fitted to a matching Inner Core and Center Pin for precision molding production.

Positive Collapse Sleeve **M** A-2 **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.
- With an uncomplicated operation, an angular surface on the inside front edge of the PC Sleeve will engage a matching angular surface on the outside of the Collapsible Core should the un-collapsed core be moved forward in the PC Sleeve. By restricting the travel of the PC Sleeve to an amount less than the forward travel of the Collapsible Core, this interference action is achieved.

Center Pin **M** M-2 **H** 60-62 HRC

- Serves to expand the segments of the Collapsible Core to their molding position.
- Made from hardened M-2 for long life, all Center Pins are provided with a cooling hole.
- The pin can be engineered to protrude into the piece part or stop flush with no protrusion for thin-wall applications.
- For optimal performance, the Center Pin must be installed to self-center itself.

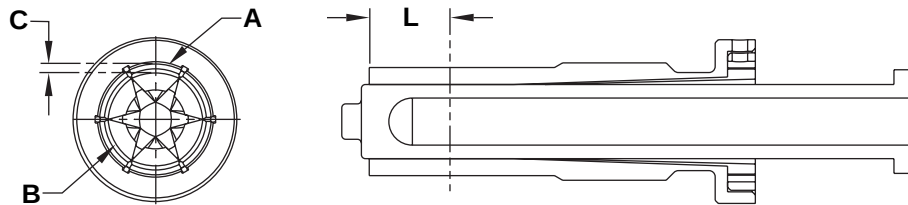
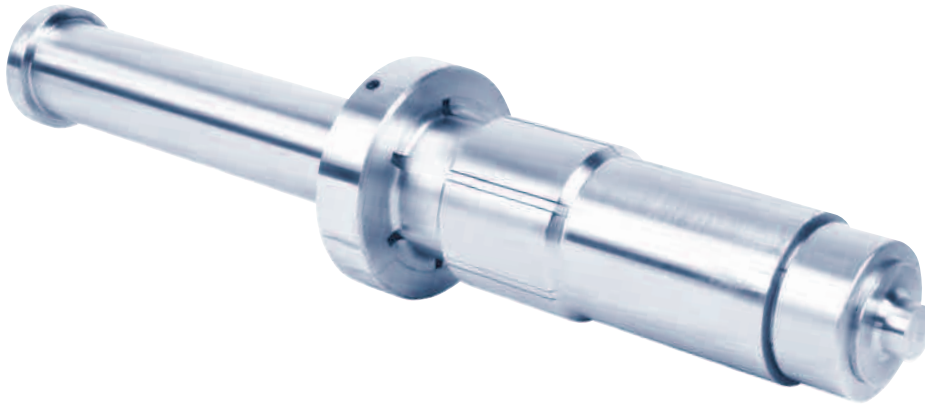
Application Guidelines

1. Standard Collapsible Cores have a Max. OD ("A") of thread or configuration ranging from .511" (13mm) - 3.937" (100mm) and offer complete 360° thread or undercut geometry.
2. Molded parts need not be closed at one end. They may be partially open or even completely sleeve shaped. Undercuts need not be continuous. Can also be used in side action applications.
3. Cores are capable of operating without benefit of lubrication, allowing for self cleaning, longer production runs, and less mold maintenance.
4. Custom cores with size requirements that fall outside of the standard Collapsible Core ranges are available. In addition, finished cores with machined, EDM'd, or ground details can be supplied. Contact Engineering for an application review and quotation.



Collapsible Cores

GZ Series



M A-2 **H** 50-52 HRC

PART DESIGNATION	L Max. Molded Length (Incl. Mold Shut-Off)	A Maximum Outer Diameter		B Minimum Inner Diameter		Center Pin Dia. (At top of Collapsible Core)		Overall Length		C Collapse per Side at Top of Core	
		mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
CC-13	22	13	.511	11.35	.447	9	.354	100	3.937	.81	.0319
CC-16	22	16	.629	14.0	.551	11	.433	100	3.937	.99	.0389
CC-19	22	19	.748	16.6	.656	13	.511	100	3.937	1.16	.0460
CC-22	28	22	.866	19.3	.760	15	.590	100	3.937	1.34	.0530
CC-25	28	25	.984	22.0	.867	17	.669	125	4.921	1.49	.0586
CC-30	28	30	1.181	26.5	1.043	20	.787	125	4.921	1.75	.0689
CC-35	28	35	1.377	30.6	1.205	24	.944	125	4.921	2.18	.0859
CC-40	28	40	1.574	35.1	1.384	27	1.062	125	4.921	2.41	.0950
CC-45	28	45	1.771	39.7	1.563	30	1.181	125	4.921	2.64	.1040
CC-50	31	50	1.968	44.2	1.742	33	1.299	150	5.905	2.87	.1130
CC-55	31	55	2.165	48.4	1.905	37	1.456	150	5.905	3.30	.1300
CC-60	31	60	2.362	53.0	2.086	40	1.574	150	5.905	3.50	.1378
CC-65	31	65	2.559	57.4	2.260	43	1.692	150	5.905	3.80	.1495
CC-70	31	70	2.755	61.5	2.422	47	1.850	150	5.905	4.23	.1667
CC-80	38	80	3.149	70.1	2.760	54	2.125	150	5.905	4.93	.1943
CC-90	38	90	3.543	79.2	3.119	60	2.362	150	5.905	5.38	.2120
CC-100	38	100	3.937	87.9	3.461	67	2.637	150	5.905	6.05	.2380

The above guideline is to be used for initial selection. Finished heights will be determined per application.
Contact Engineering when quoting your next tool for a design review.

Expandable Cavities

X-Cav™ System

The Expandable Cavity was developed for molding undercuts such as threads, dimples, and protrusions on the outside of the piece part.

The patented X-Cav design eliminates the engineering, maintenance, and machining required for side action mechanisms which allows for smaller molds or higher mold cavitation.

"A" Series:

- Forms all of the molded detail
- Requires striker insert in "A" side of mold
- Gating position must be from top

"B" Series:

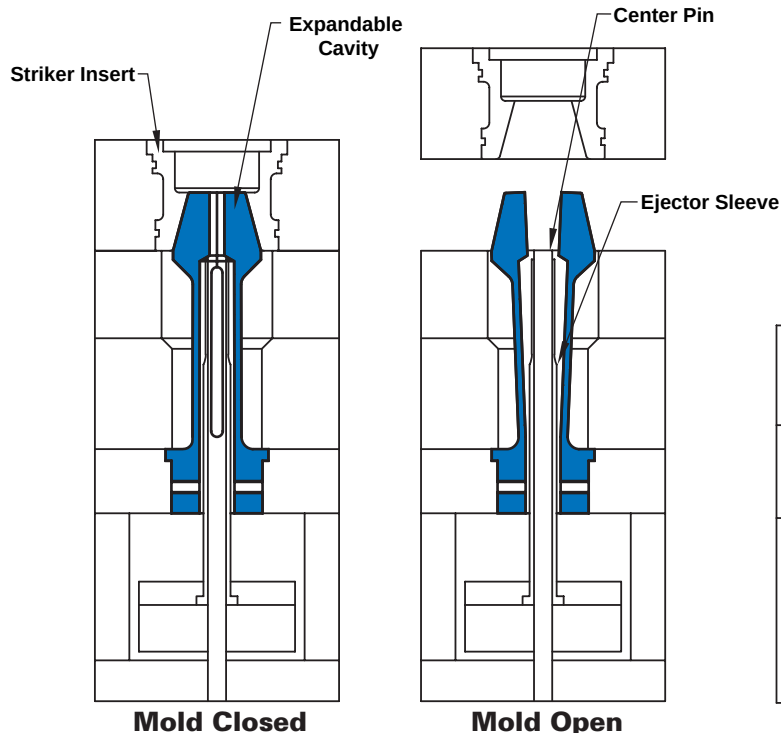
- Forms details such as bosses and posts with barbs
- Allows all motion to be in the "B" side of mold
- Gating position allows for a conventional runner

Contact Engineering for a full design review and quote.

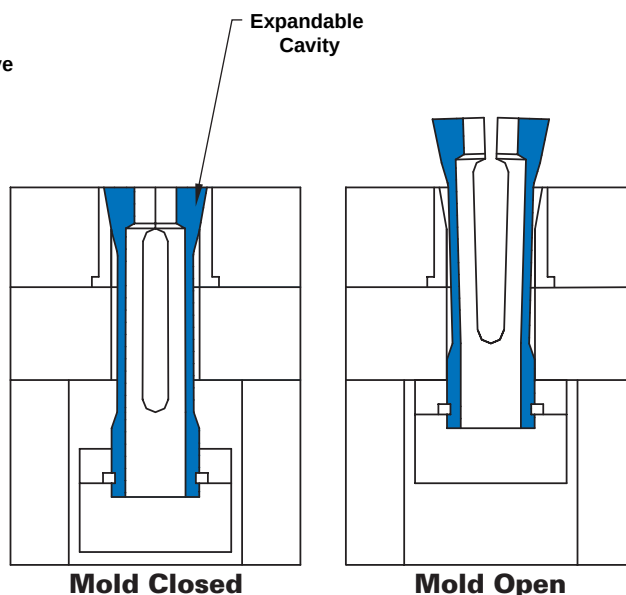
EXPANDABLE CAVITY SYSTEMS	
Expandable Cavity Quote Request Form	
Company: _____	Date: _____
Address: _____	
Contact: _____	
Title: _____	
E-mail: _____	
Please specify type of Expandable Cavity desired: ☐ "A" Side - (Gating from top only) Or ☐ "B" Side - (Using conventional runner)	
1) EXPANDABLE CAVITY REQUIREMENTS	
POLYMER SPECIFICATIONS:	
a) What is the material to be molded? _____	
b) What is the process temperature? _____	
☐ FILLED ☐ GLASS ☐ MINERAL ☐ UNFILLED	
2) DIMENSIONS OF EXPANDABLE CAVITY: (PART PRINT IS REQUIRED)	
a) Specify largest dia. to be molded: _____ c) Specify major dia. of undercut or thread: _____	
b) Specify smallest dia. to be molded: _____ d) Specify minor dia. or undercut or thread: _____	
3) MOLDED PART LENGTH	
a) Molding length: _____ (within the Expandable Cavity)	
b) Mold shut-off: .200 (shut-off land below part)	
4) EXPANSION REQUIREMENTS	
a) Critical expansion per side: _____	
b) Loss of expansion (.050 in/in) _____ (Multiply molding length (distance from top of Expandable Cavity to bottom of last undercut) by .050)	
c) Clearance (air) between plastic and steel upon expansion: .005	
5) MOLD LAYOUT	
a) Number of cavities: _____ b) Distance from gate (center to center): _____	
☐ Retrofit or ☐ New mold	

Evaluation template available at
www.procomps.com/x-cav.

"A" Style Operation



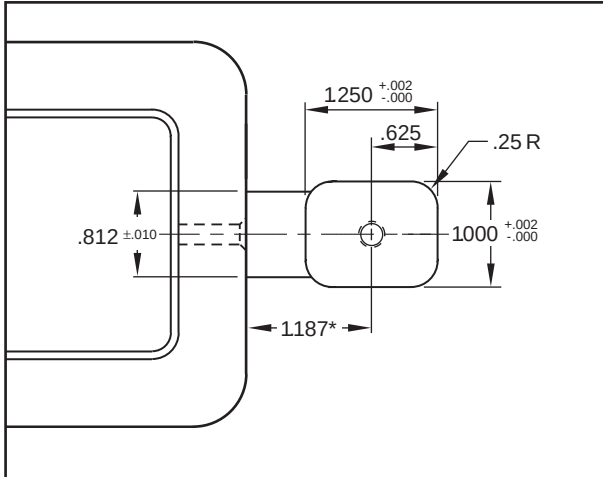
"B" Style Operation



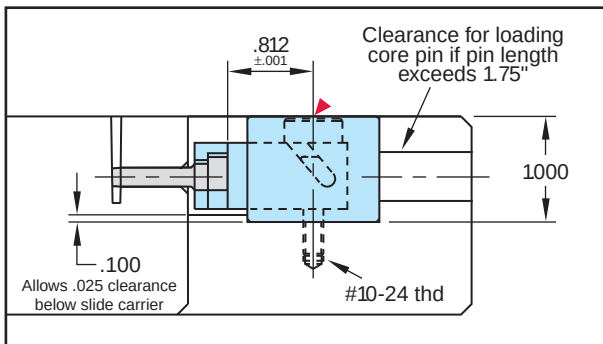
CamAction®

100 Series

Inch Standard



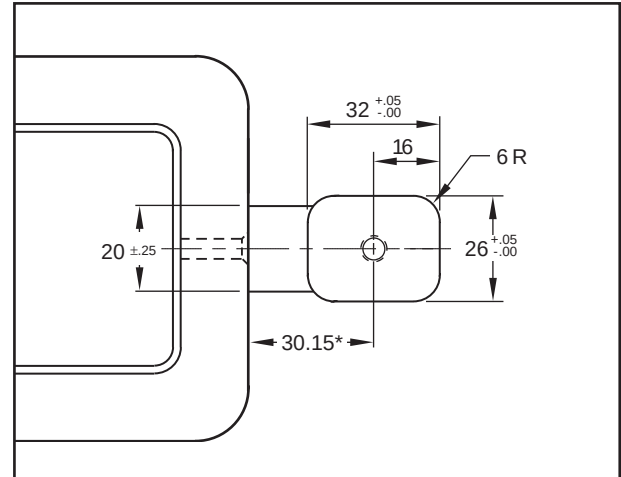
Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 1.125 for the slide carrier to shut off against the core insert.



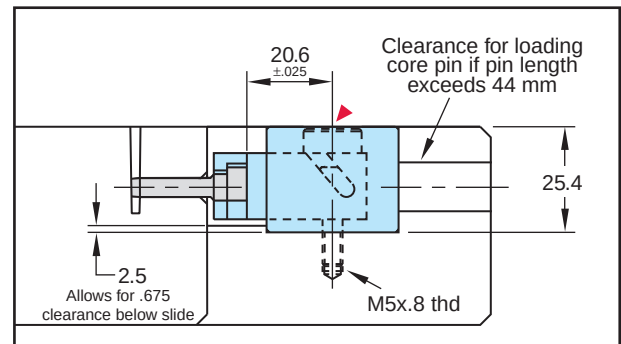
Note: .812 dimension must be maintained to avoid improper spring pre-load or damage to internal components.

Metric Standard

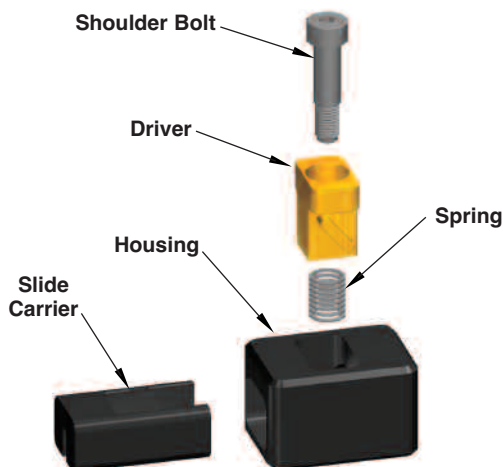
Note: All dimensions and tolerances are in millimeters.



Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 28.57 for the slide carrier to shut off against the core insert.



Note: 20.6 dimension must be maintained to avoid improper spring pre-load or damage to internal components.



Travel = .160" (4mm)

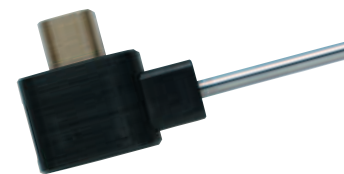
► CAD insertion point

Catalog Number	Description
CA-100	CamAction Unit
CAMM-100	Metric CamAction Unit

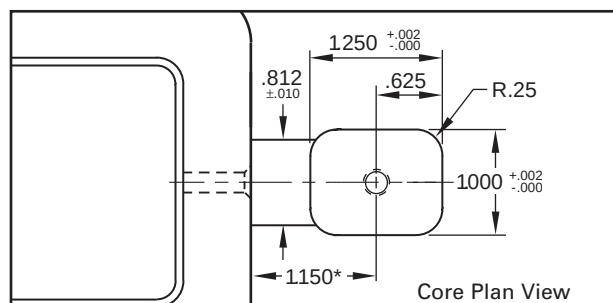
Replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.

CamAction®

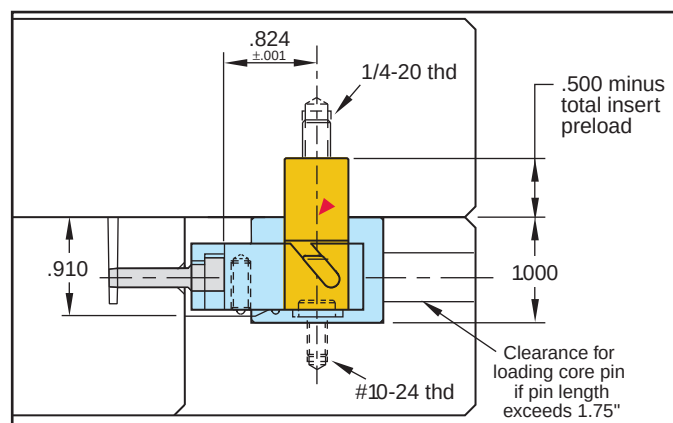
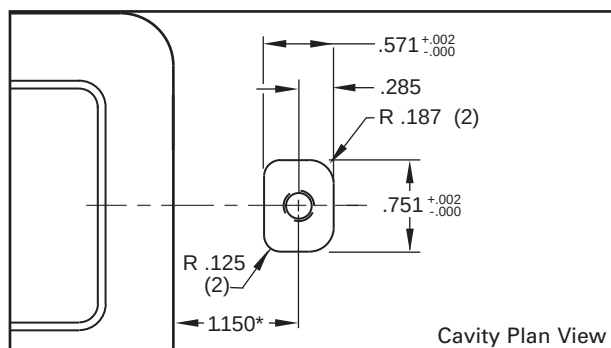
200 Series



Inch Standard



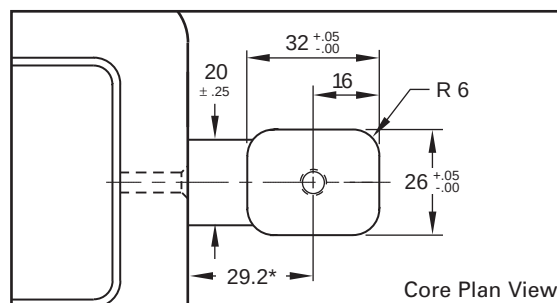
Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 1.135 for the slide carrier to shut off against the core insert.



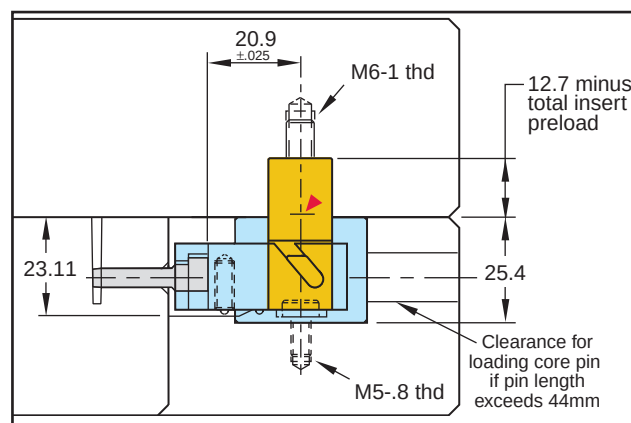
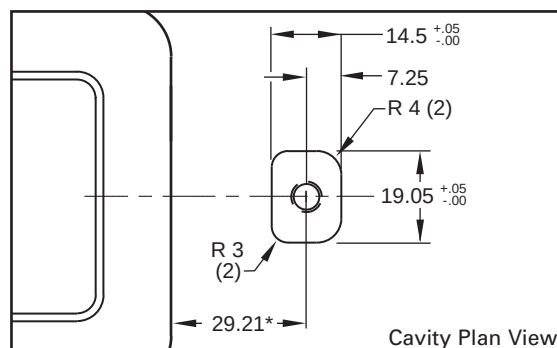
Note: .824 dimension must be maintained to ensure proper shut-off.

Metric Standard

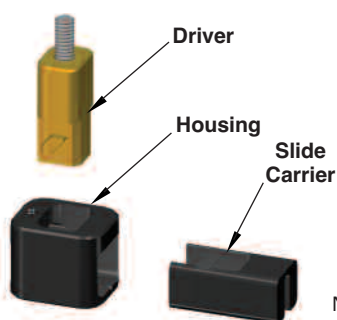
Note: All dimensions and tolerances are in millimeters.



Note: When the core pin is not shutting off on the inner core wall, the distance from the edge of the insert should be 28.83 for the slide carrier to shut off against the core insert.



Note: 20.9 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).

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

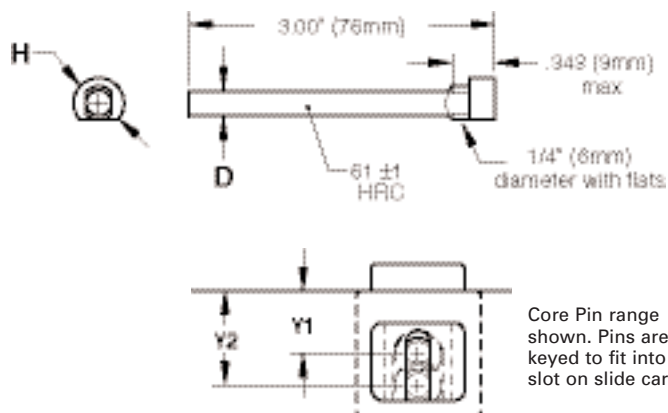


CamAction® Accessories

100/200 Series Core Pins

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

Catalog Number	D	H	Y1	Y2
CAP1-187	.1872 .1869	.37	.500	.750
CAP1-375	.3747 .3744	.37	.500	.688
CAPMM-5	4.994 mm 5.006 mm	9.5mm	12.7mm	19.05mm
CAPMM-10	9.984 mm 9.992 mm	9.5mm	12.7mm	17.40mm



Core Pin range shown. Pins are keyed to fit into slot on slide carrier.

C www.procomps.com/customs

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.

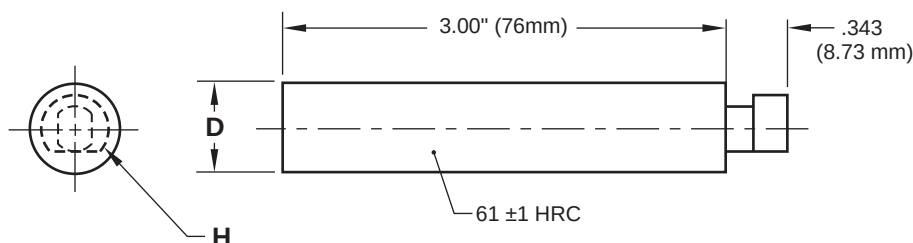
200 Series Core Pins

M M-2 **H** 60-62 HRC

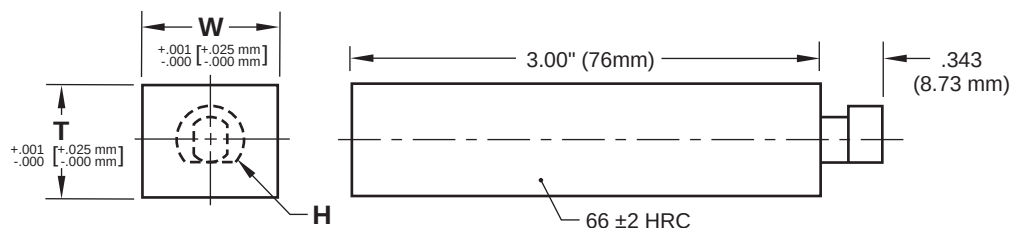
S Chrome Plated

Catalog Number	D	H
CAP2-500	.5001 .5003	.37
CAP2MM-13	13.002mm 13.007mm	9.5mm

For use with 200 Series CamActions only.



200 Series Inserts



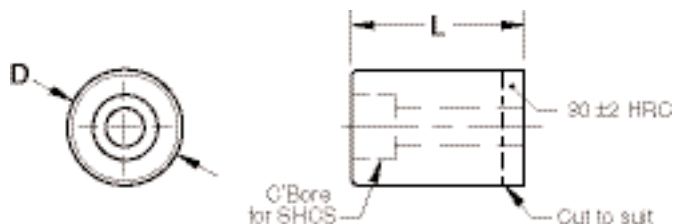
M P-20 Pre-Hard **S** Salt Bath Nitride (SBN)

Catalog Number	T	W	H
CSE2-62X75	.625	.750	.37
CSE2MM-16X19	16mm	19mm	9.5mm

For use with 200 Series CamActions only.

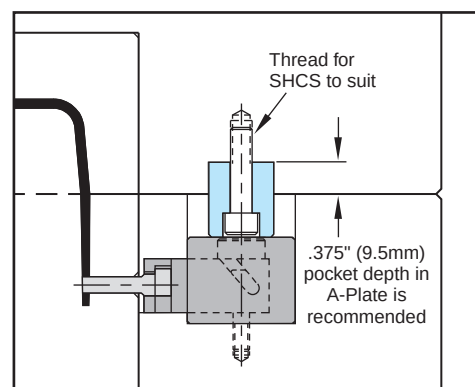
CamAction® Accessories

"A" Extension

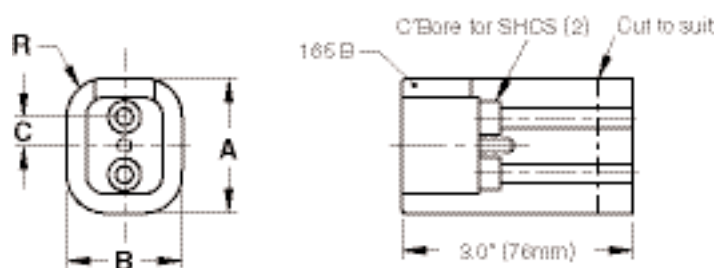


M 4140 Pre-Hard **H** 28-32 HRC **S** Black Oxide

Catalog Number	D	L	SHCS
CAE-100	.750	1.125	1/4-20
CAEMM-100	19mm	28mm	M6-1

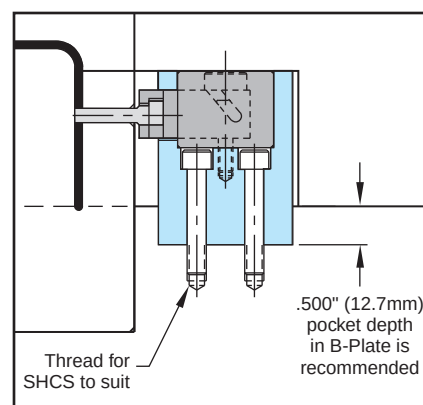


"B" Riser



M AISI 12L17 **H** 165 Brinell **S** Black Oxide

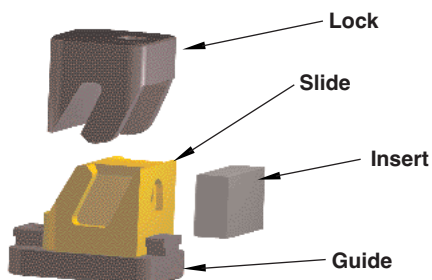
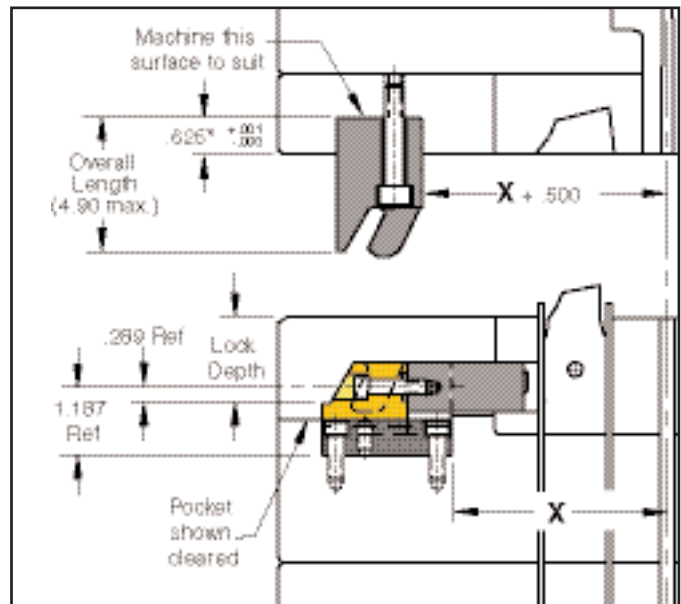
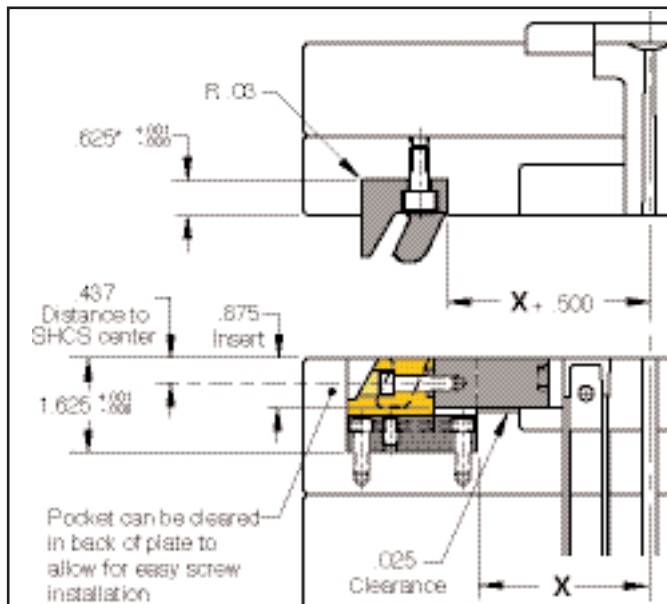
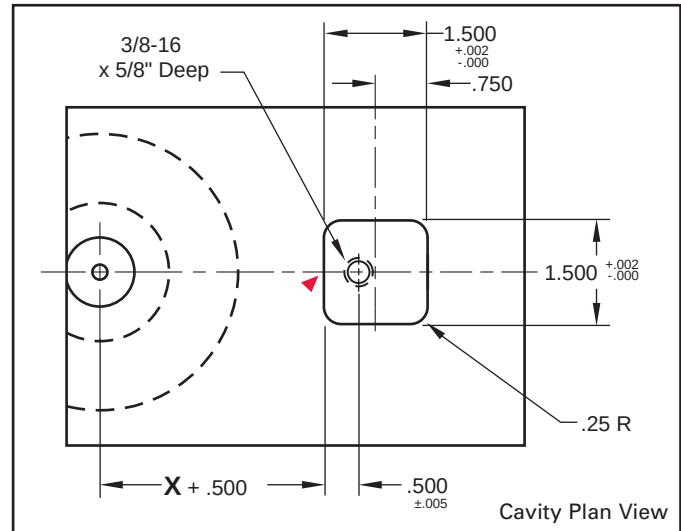
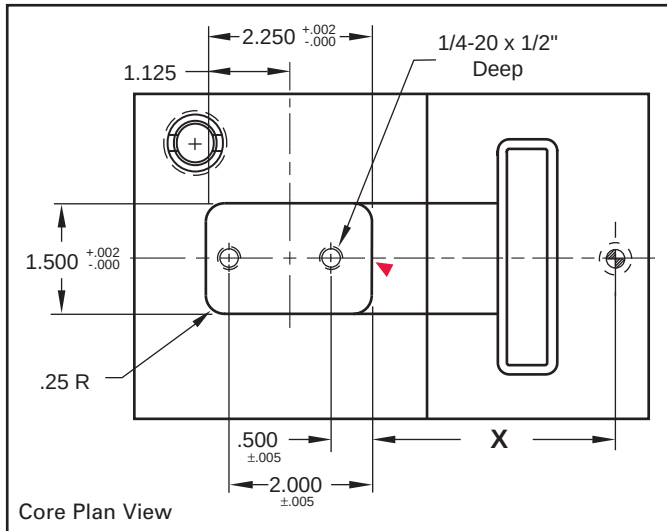
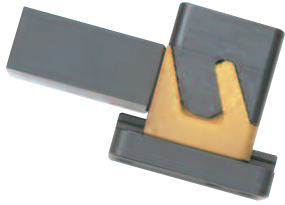
Catalog Number	A	B	C	R	SHCS
CBR-100	1.750	1.500	.375	.50	1/4-20
CBRMM-100	44mm	38mm	10mm	12.7mm	M6-1





CamAction®

300 Series: Inch Standard



Travel=.250"

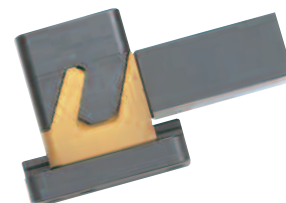
► CAD insertion point

Catalog Number	Description
CA-300	CamAction Unit-Standard Lock
CA-300L	CamAction Unit-Longer Lock

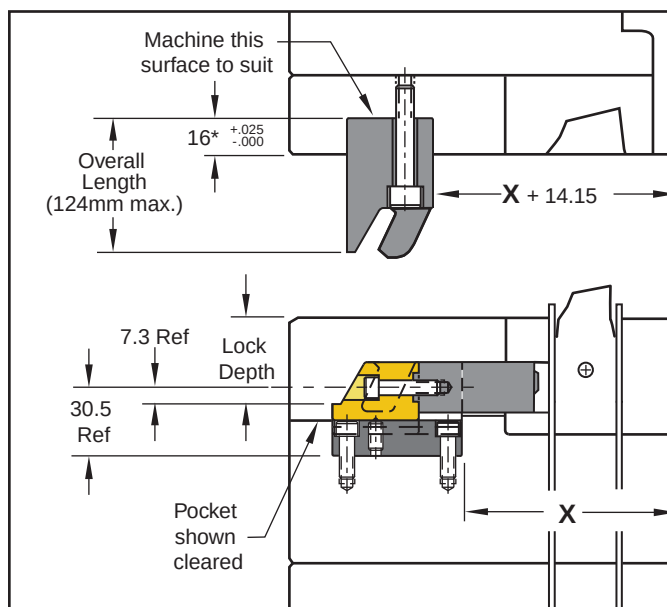
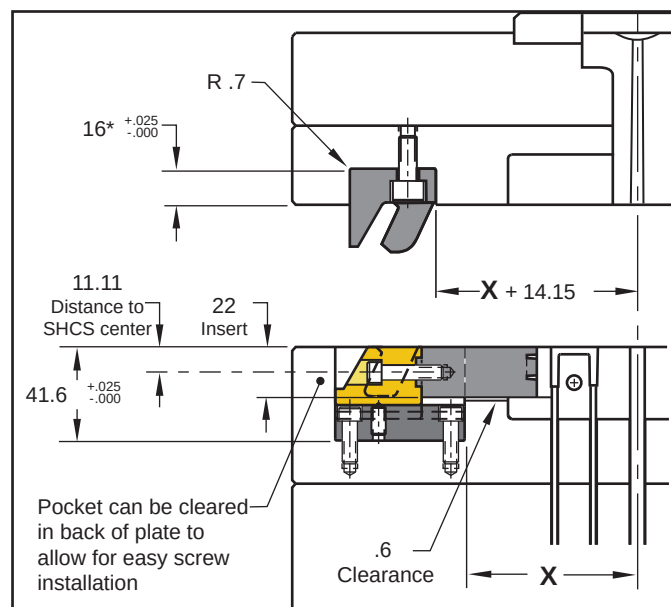
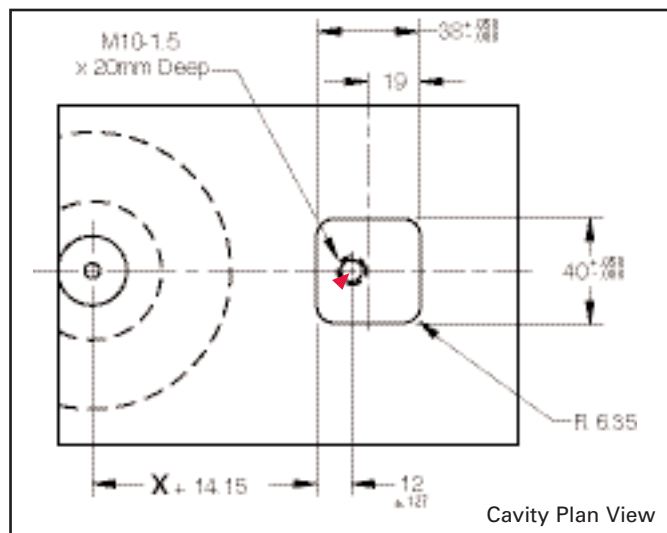
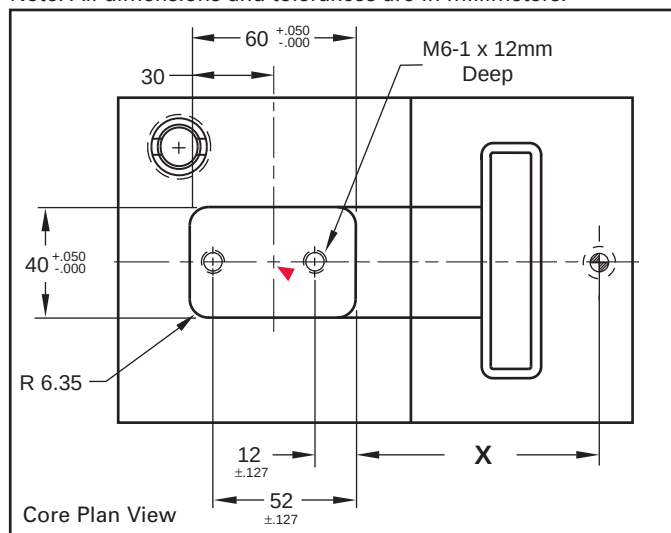
Replacement parts are available. Refer to the price list for catalog numbers and pricing, and contact Customer Service for availability.

CamAction®

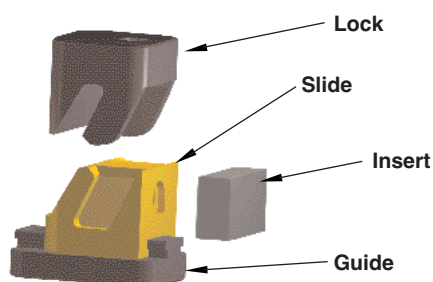
300 Series: Metric Standard



Note: All dimensions and tolerances are in millimeters.



*Minus pre-load.



Travel=6.35mm

► CAD insertion point

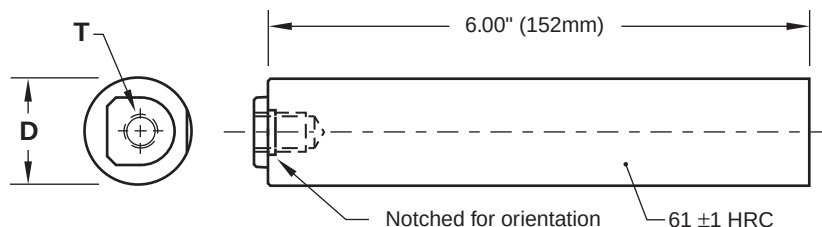
Catalog Number	Description
CAMM-300	Metric CamAction Unit-Standard Lock
CAMM-300L	Metric CamAction Unit-Longer Lock

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



CamAction® Accessories

300 Series Core Pins

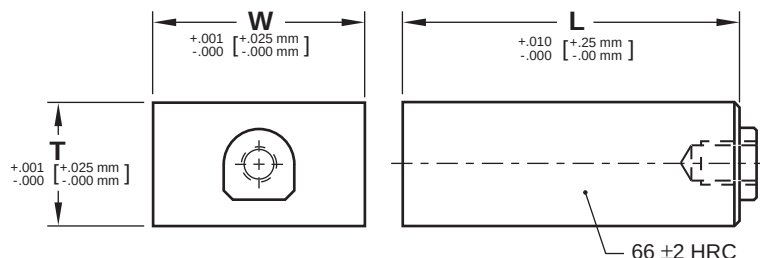


M M-2 **H** 60-62 HRC **S** Chrome Plated

Catalog Number	D	T
CAP3-750	.7504 .7508	1/4-20
CAP3MM-19	19.009mm 19.019mm	M6-1

Socket head cap screw included.

300 Series Inserts

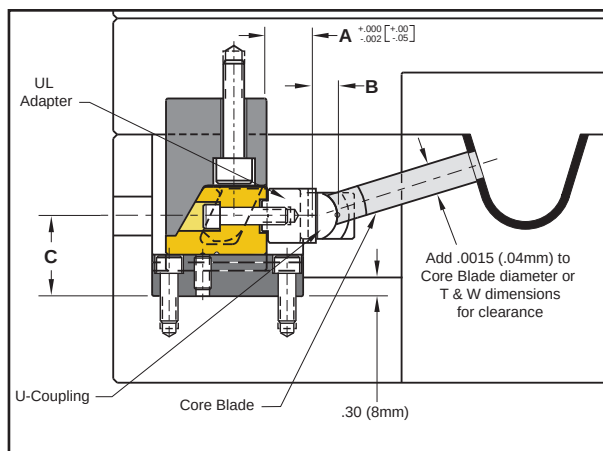


M P-20 Pre-Hard **S** Melonite (SBN)

Catalog Number	T	W	L
CSE3-50	.875	1.500	.50
CSE3-200	.875	1.500	2.00
CSE3MM-12	22mm	38mm	12mm
CSE3MM-50	22mm	38mm	50mm

Socket head cap screw included.

300 Series UL Adapters



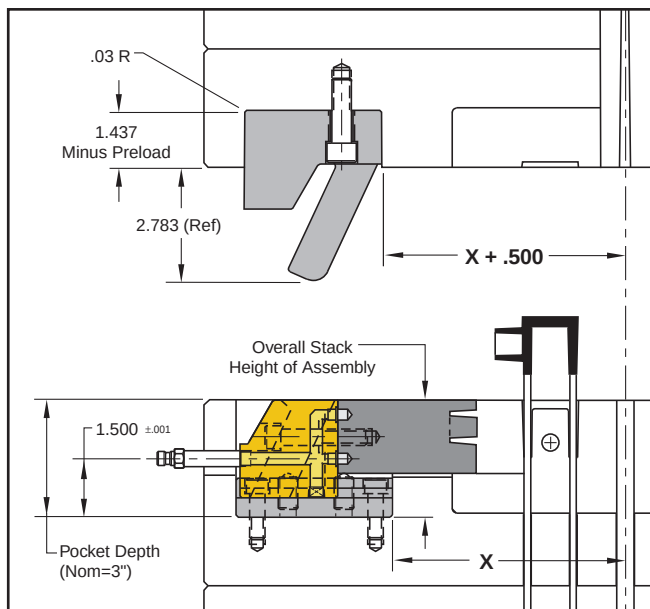
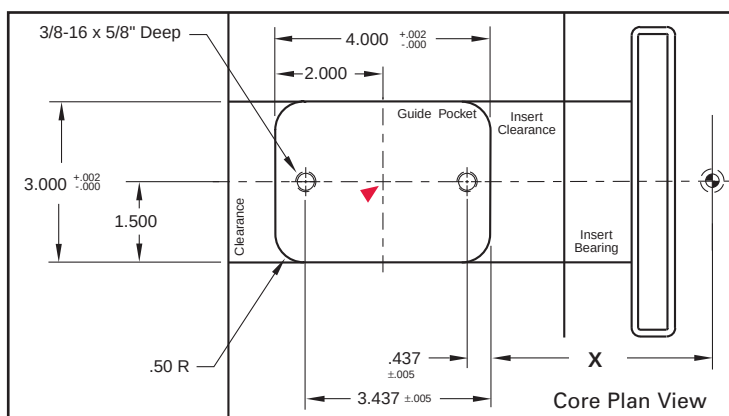
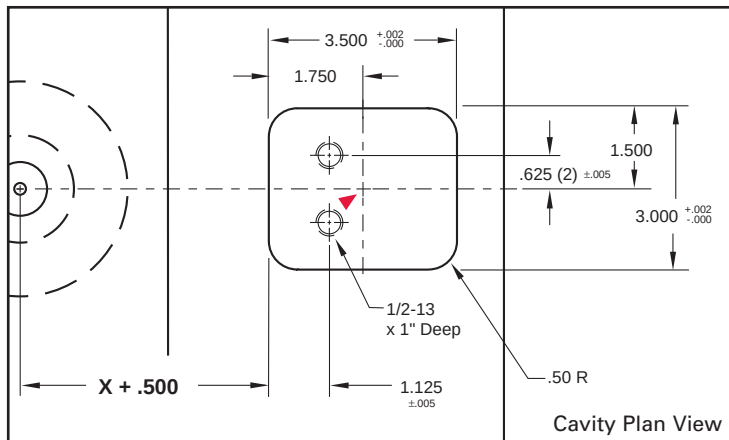
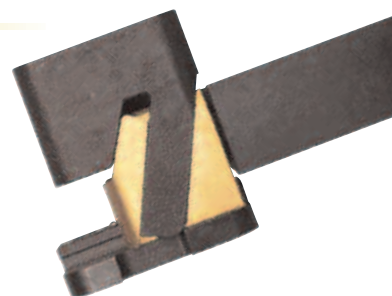
M 4140 **H** 64-68 HRC **S** Melonite (SBN)

Catalog Number	T	W	H	D	THD	A	B	C	Compatible U-Coupling
CTG-300	.875	.875	.563	.098	1/4-20	.75	.406	1.187	UCU87
CTGMM-300	23mm	23mm	6mm	2.5mm	M6-1	12mm	10mm	30.15mm	UCMM22

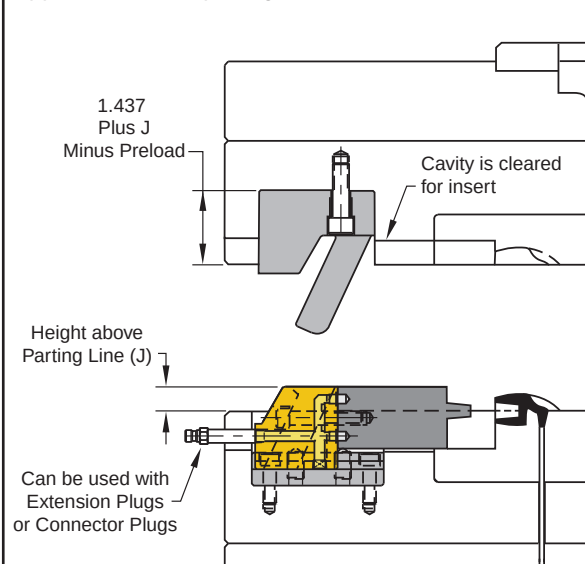
Socket head cap screw included.

CamAction®

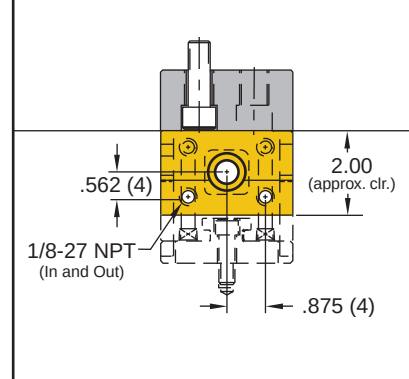
400 Series



Application above parting line



Front View



Each assembly includes all screws, Threadless Waterline Plugs (2), and O-rings (2).

Travel = 1.00"

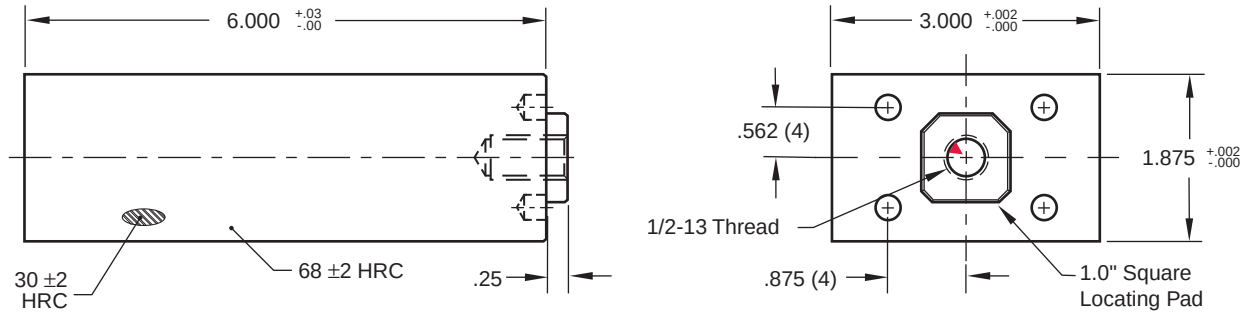
► CAD insertion point

Catalog Number	Description
CA-400	CamAction Unit with 1" travel



CamAction® Accessories

400 Series Inserts

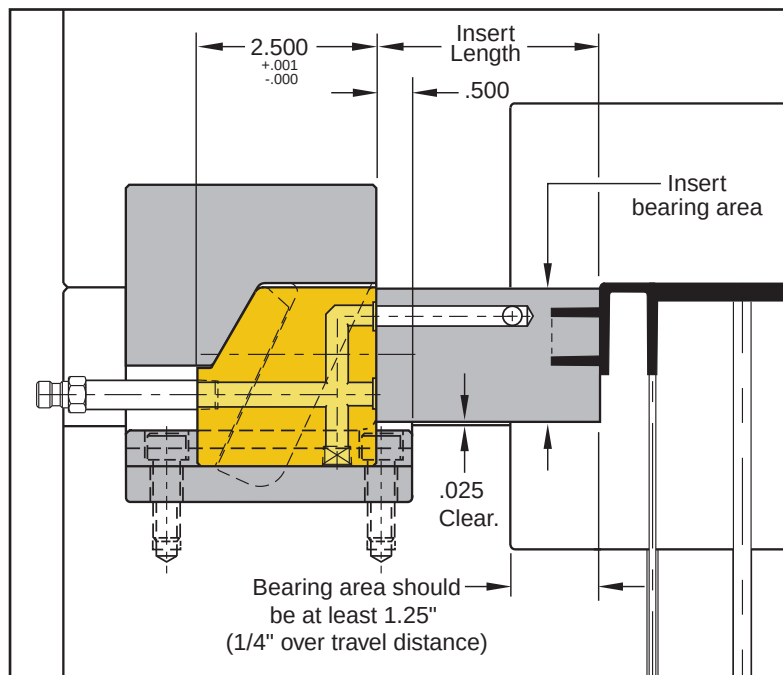


► CAD insertion point

M P-20 Pre-Hard **S** Salt Bath Nitride (SBN)

Catalog Number	Description
CSE4-18X30	CA-400 Insert

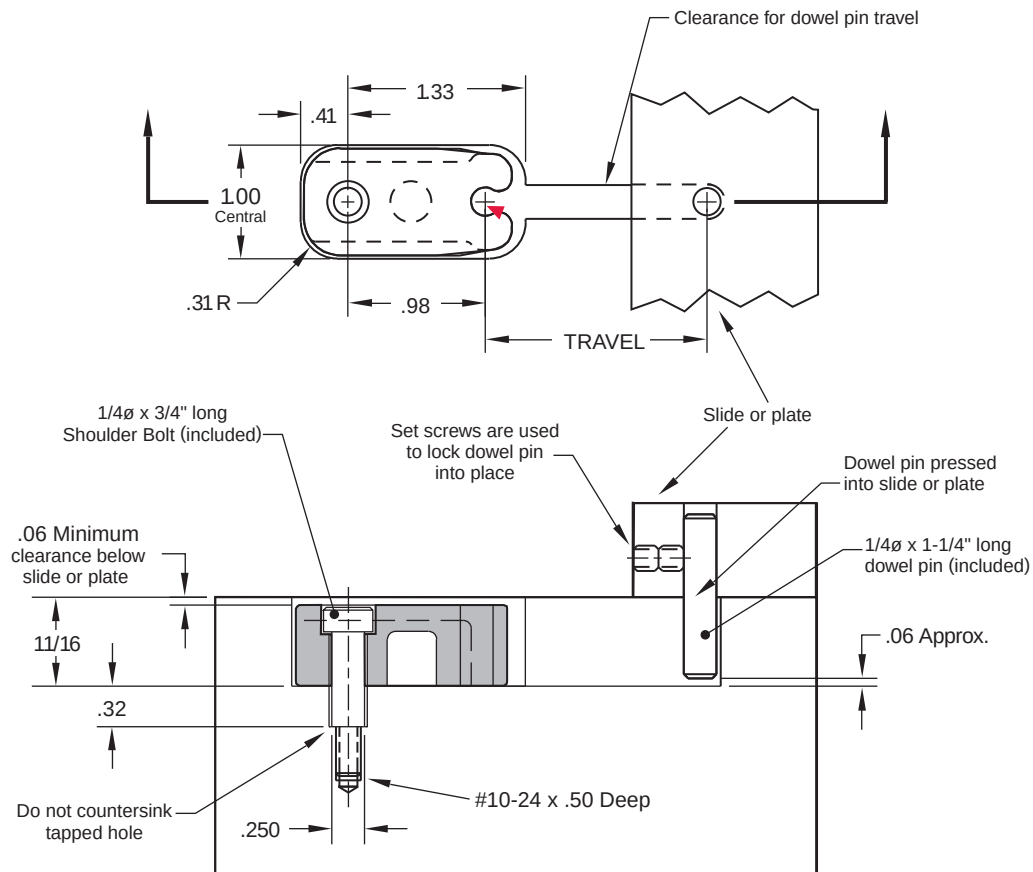
Socket head cap screws included.



Urethane Retainers

Specifications:

Maximum operating temperature is 150° F (65° C).
Stripper bolt and dowel included.



M Urethane

Catalog Number	Description
RET-1	Retainer, Stripper Bolt, & Dowel

► CAD insertion point



Slide Retainers



Progressive's new SRT Series Slide Retainers reliably hold side actions from 10 to 80 pounds (4 to 36 kgs). The new slide retention design features Friction Free™ technology for smooth operation, especially in clean room or greaseless environments. The compact design allows for installation in the mold base or wear plates.

Inch Standard

M 4140 **H** 28-32 HRC **S** Black Oxide

► CAD insertion point

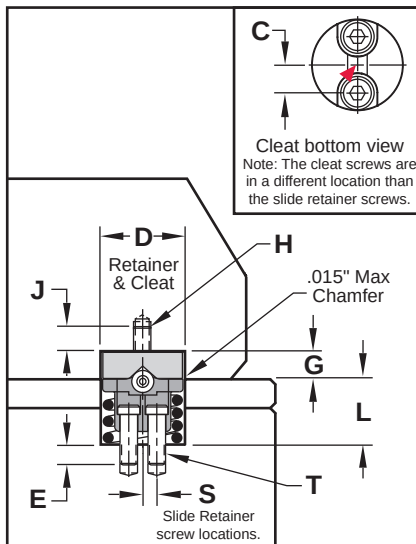
Retainer Catalog Number	D +.005 -.000	L ±.001	S ±.002	T Screws (2)	E Minimum Thread Depth	Max Slide Weight (lbs)	Cleat Catalog Number	G ±.001	C ±.002	H Screws (2)	J Minimum Thread Depth
SRT-10	.625	.160	.155	#4-48	.075	10	SRTC-10	.250	.190	#6-32	.250
SRT-30	.750	.500	.150	#8-32	.190	30	SRTC-30	.250	.250	#6-32	.250
SRT-80	.875	.750	.150	#8-32	.245	80	SRTC-80	.250	.300	#6-32	.250

Metric Standard

M 4140 **H** 28-32 HRC **S** Black Oxide

Note: All dimensions and tolerances are in millimeters.

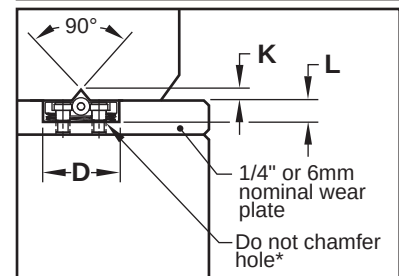
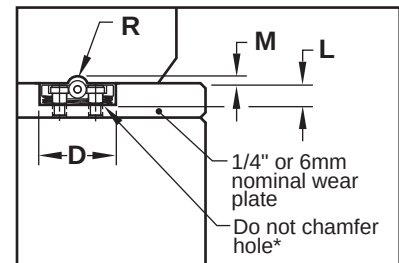
Retainer Catalog Number	D +.1 -.0	L ±.025	S ±.05	T Screws (2)	E Minimum Thread Depth	Max Slide Weight (kgs)	Cleat Catalog Number	G ±.025	C ±.05	H Screws (2)	J Minimum Thread Depth
SRTM-04	15.9	4.06	3.95	M3	1.9	4.5	SRTMC-04	6.35	4.85	M3.5	6.35
SRTM-13	19.1	12.70	3.80	M4	4.8	13.5	SRTMC-13	6.35	6.35	M3.5	6.35
SRTM-36	22.3	19.05	3.80	M4	6.2	36.0	SRTMC-36	6.35	7.60	M3.5	6.35



The installation shown at left is typical for all Retainers and Cleats. However, if not utilizing the optional cleat, a V-groove or ball cut can be machined as shown in the graphics at right.

On the slot width, the cutter clearance must exceed the "D" dimension.

Retainer Catalog Number	V-Groove	Ball Cut	
	K	R	M
SRT-10	.041	.078	.009
SRT-30	.078	.125	.030
SRT-80	.078	.125	.030
SRTM-04	1mm	2mm	.23mm
SRTM-13	2mm	3mm	.75mm
SRTM-36	2mm	3mm	.75mm



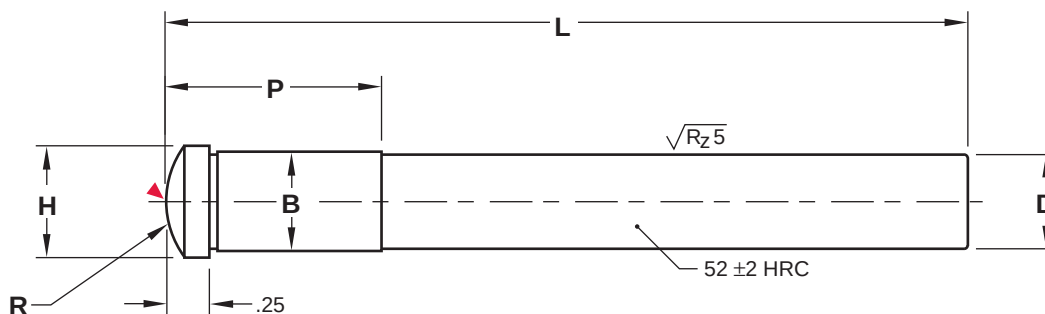
* Chamfers machined will not allow the stripper bolt in the assembly to seat properly.

Technical Information:

- Maximum operating temperature is 425° F (218° C).
- The roller is through hardened stainless steel and the axle is nitrided stainless steel.
- For P-20 slides, a Cleat is suggested versus adding a detent in the slide.
- Retainers and Cleats are sold separately and include all required screws.
- Replacement items are available. Refer to price list for catalog numbers and pricing, and contact Customer Service for availability.



Angle Pins



M 8620 **H** 50-54 HRC

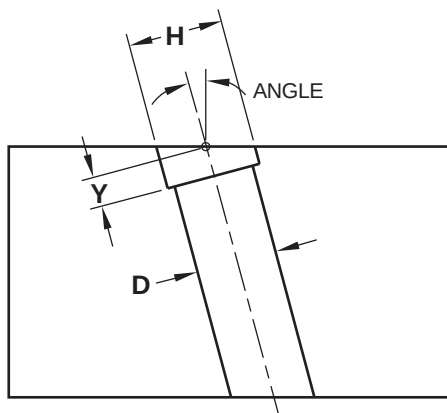
► CAD insertion point

Nominal Diameter	D +.0000 -.0005	B +.0005 -.0000	H +.000 -.010	R Head Radius	P P.F. Length	L +.125 -.000	Catalog Number
3/8	.374	.376	.500	.375	.87	6	AP375L6
					1.37	10	AP375L10
1/2	.499	.501	.625	.500	.87	6	AP500L6
					1.37	10	AP500L10
5/8	.624	.626	.750	.625	.87	6	AP625L6
					1.37	10	AP625L10
3/4	.749	.751	.875	.750	1.37	10	AP750L10
						14	AP750L14

Installation Instructions:

The spherical radius included on the Angle Pins saves grinding after installation.

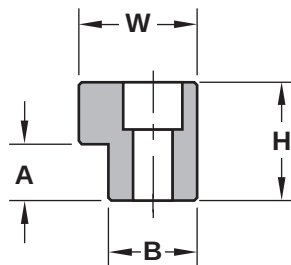
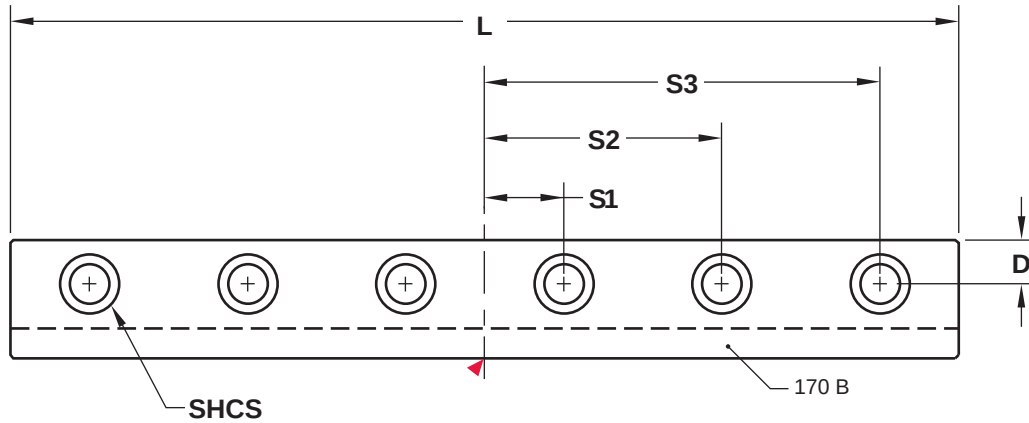
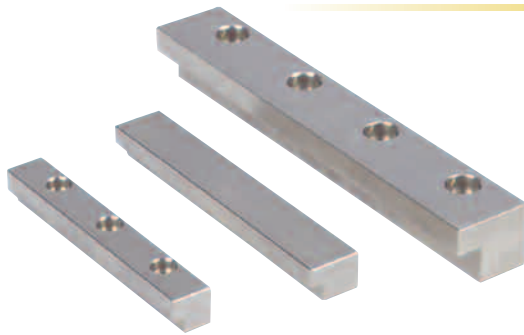
To install on a specific angle, use the chart at right to determine the correct counterbore depth.



Angle Pin Diam. (D)	Angle	Y Depth
.375	10°	.258
	15°	.265
	20°	.276
	25°	.291
	10°	.260
.500	15°	.270
	20°	.284
	25°	.304
.625	10°	.262
	15°	.274
	20°	.292
	25°	.316
.750	10°	.264
	15°	.278
	20°	.300
	25°	.329



L-Gibs



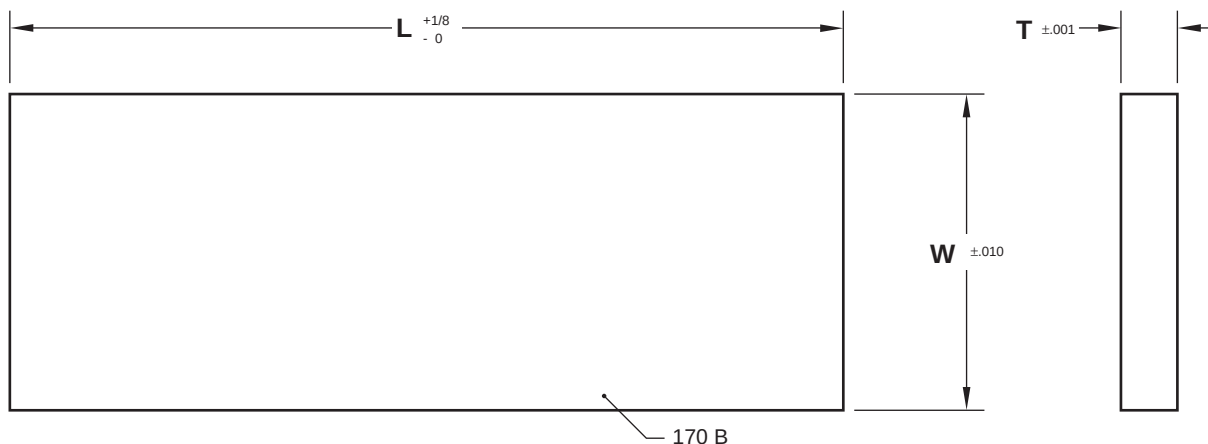
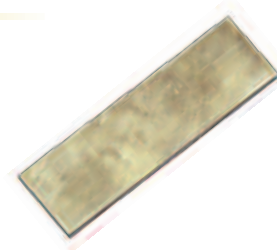
M CA954 Solid Bronze **H** 170 Brinell

► 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.

Wear Plates



M CA954 Solid Bronze **H** 170 Brinell

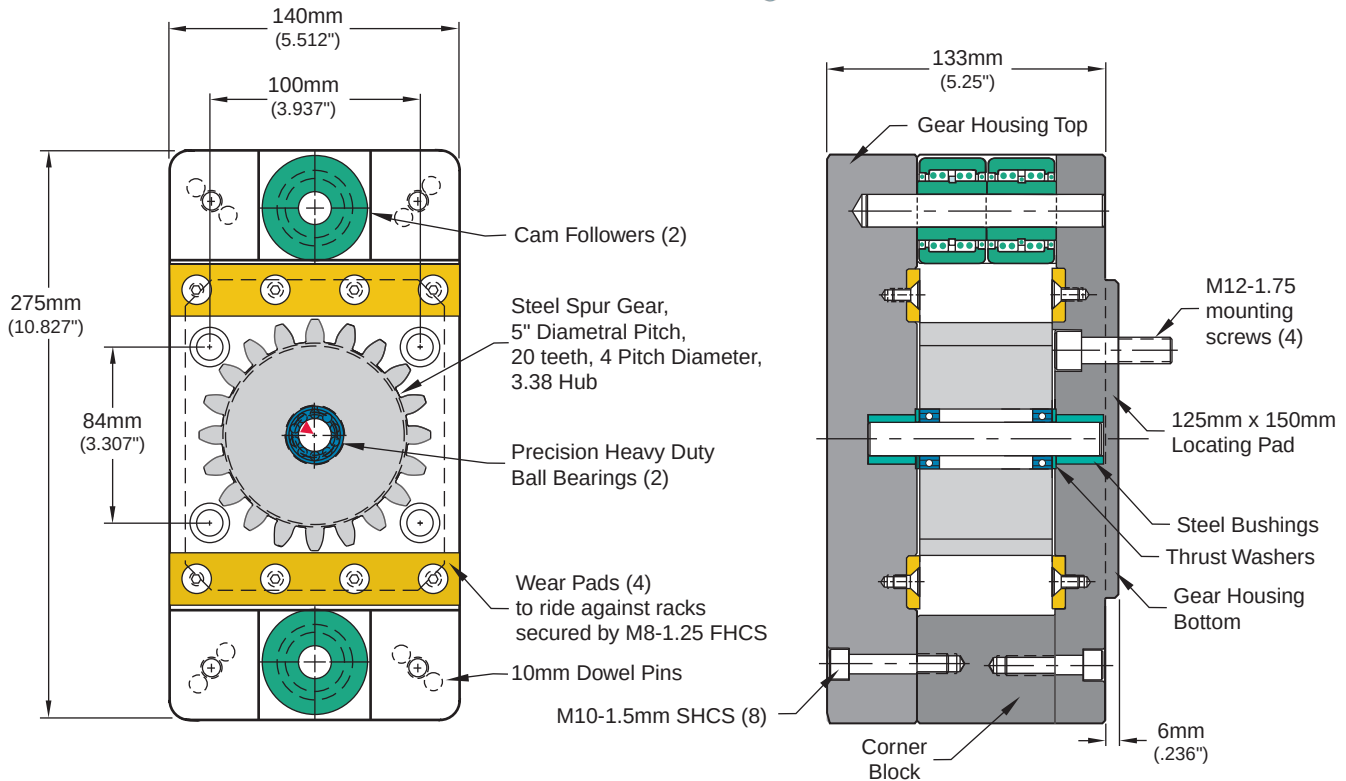
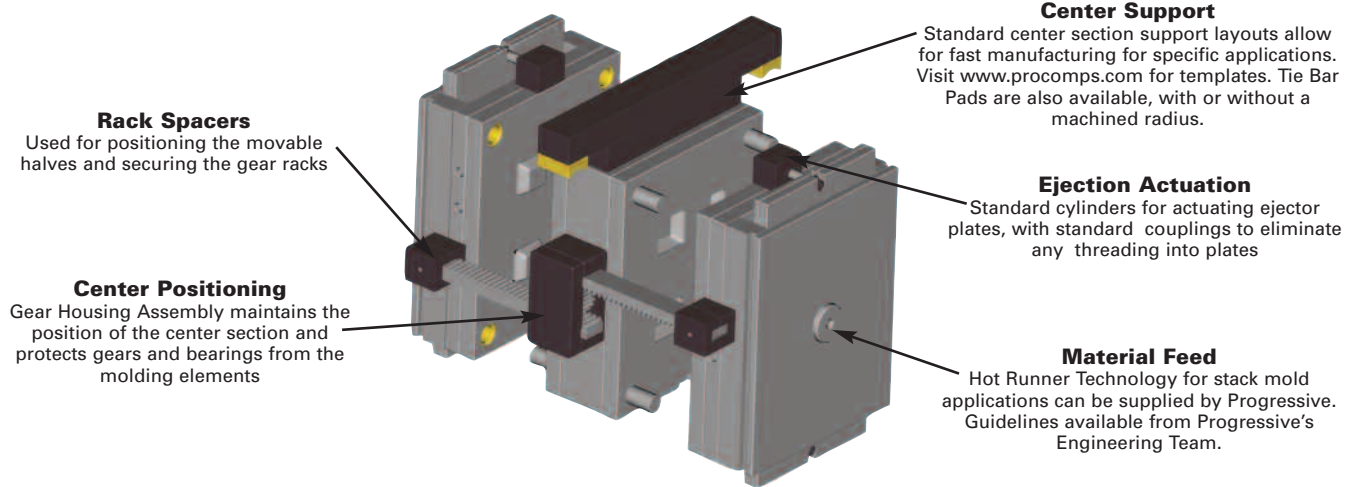
T	W	L = 4"	L = 5"	L = 6"	L = 8"	L = 10"	L = 12"
1/4	1.000	WP25X1X4	WP25X1X5	WP25X1X6	WP25X1X8	WP25X1X10	WP25X1X12
	1.500	WP25X1.5X4	WP25X1.5X5	WP25X1.5X6	WP25X1.5X8	WP25X1.5X10	WP25X1.5X12
	2.000	WP25X2X4	WP25X2X5	WP25X2X6	WP25X2X8	WP25X2X10	WP25X2X12
	2.500	WP25X2.5X4	WP25X2.5X5	WP25X2.5X6	WP25X2.5X8	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.



STACKIT®

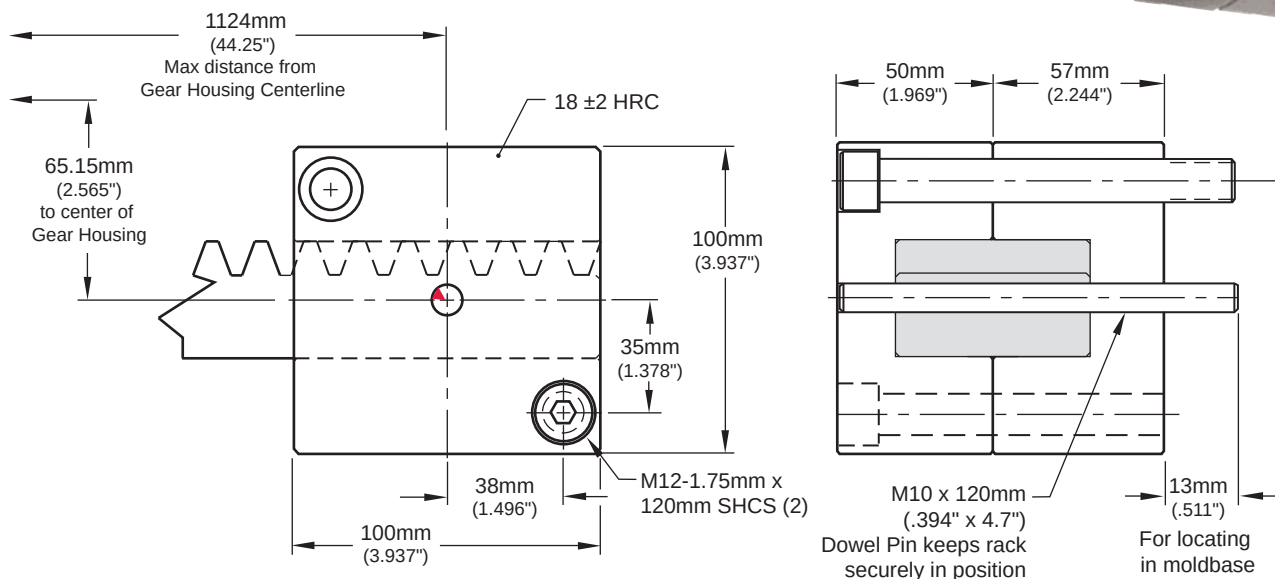
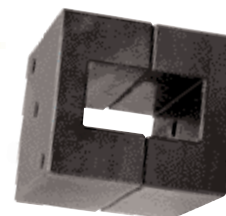
Introducing a system for efficiently designing, building, and maintaining stack molds. The product range addresses Center Section Positioning, Center Section Support, Ejector Actuation, and Material Feed. Available as standard components with center support systems made to order.



Catalog Number	Description
SK-GHA-250	Gear Housing Assembly

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

STACKIT® Rack Spacer

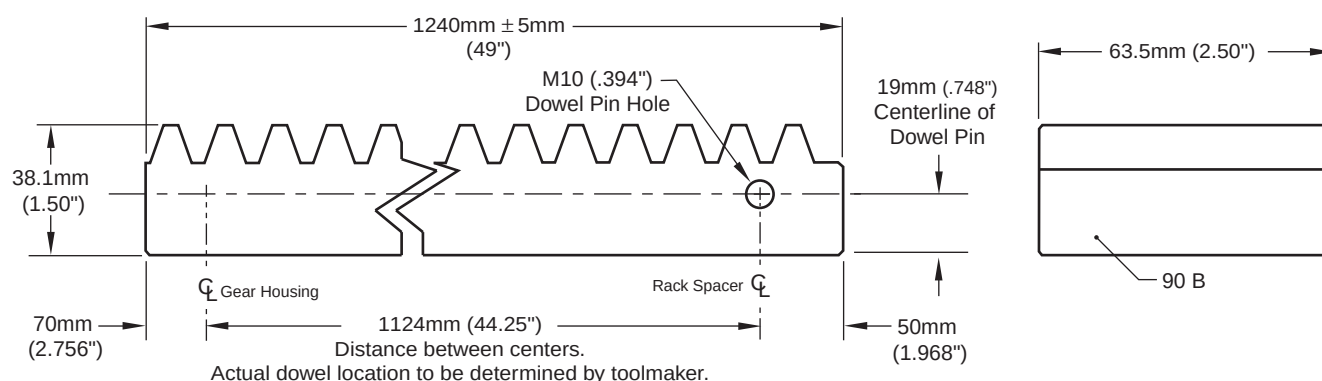


M AISI 1215 **S** Black Oxide ▶ CAD insertion point

Catalog Number	Description
SK-RSA-250	Rack Spacer Assembly

Screws and locating dowel included.

STACKIT® Rack



M AISI 1018

Catalog Number	Description
SK-RC-250	Rack (Sold individually)



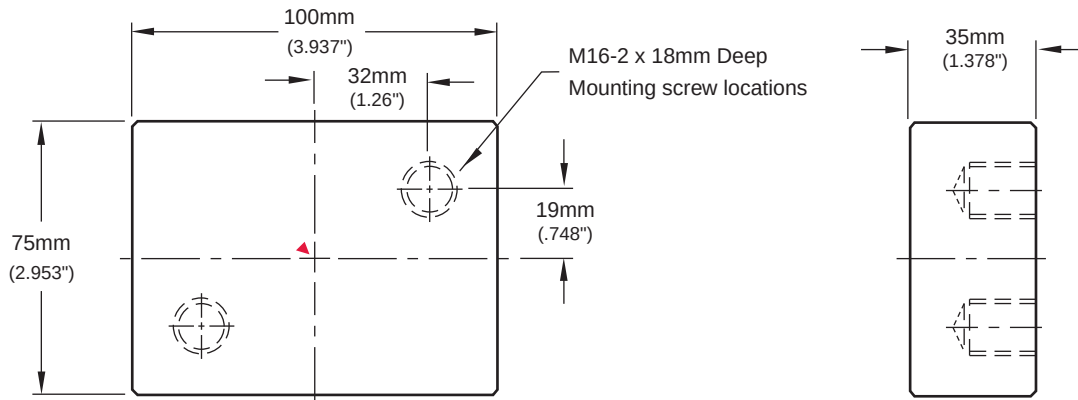
STACKIT®

Tie Bar Pads



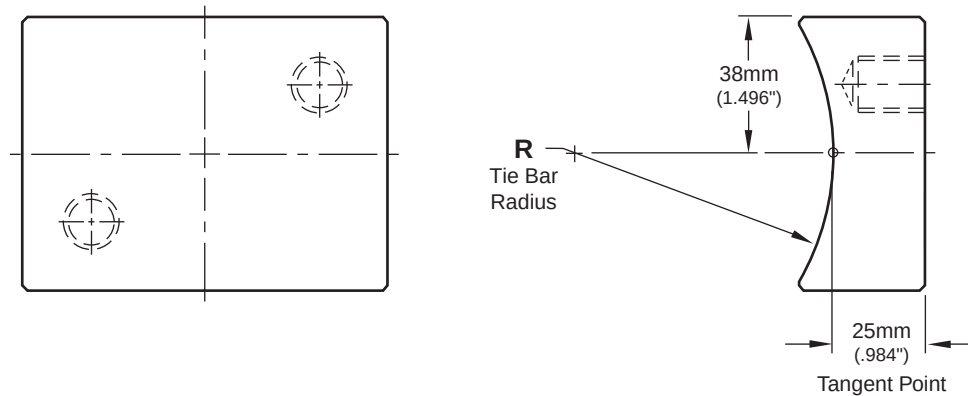
SK-TBP-35

Tie Bar Pad
Blanks



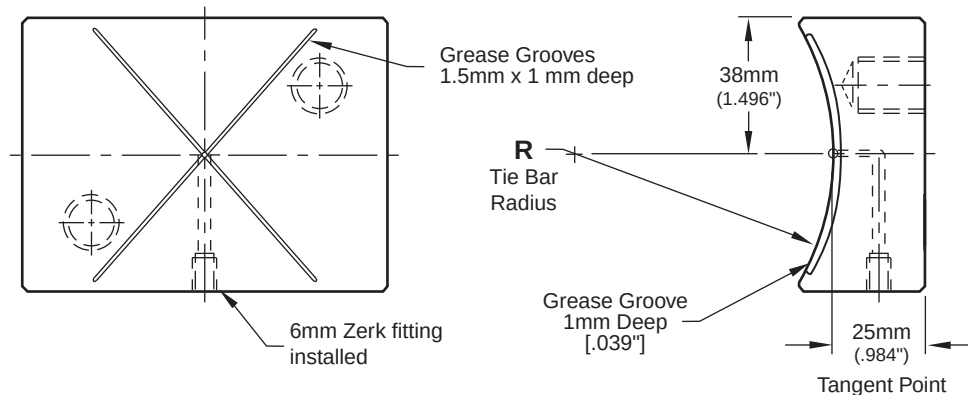
SK-TBP-R

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 "R"
when ordering



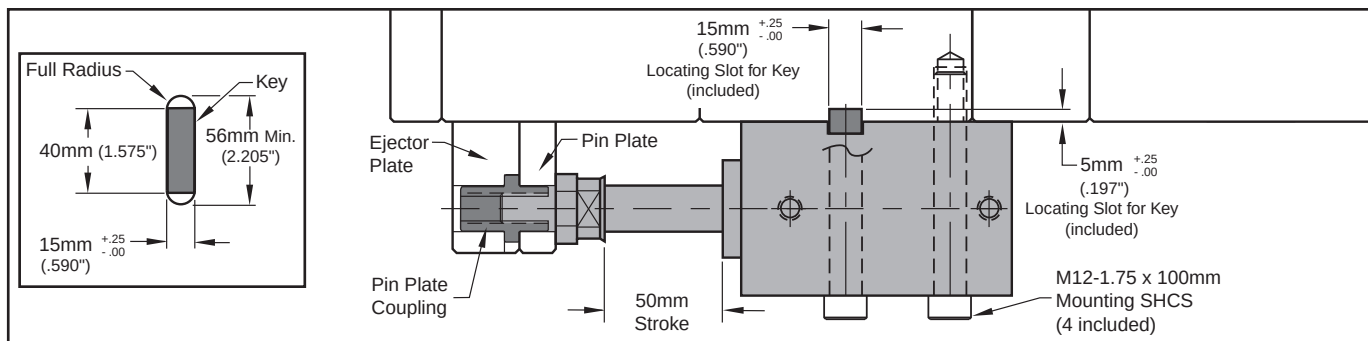
M CA954 Solid Bronze

► CAD insertion point

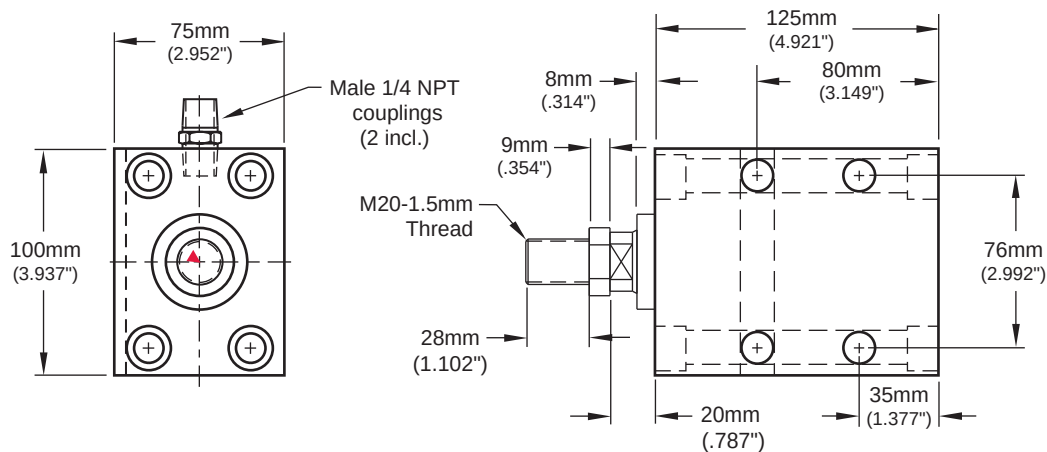
Catalog Number	Description
SK-TBP-35	Tie Bar Pad Blanks (No Radius)
SK-TBP-R	Tie Bar Pads with machined radius
SK-TBP-RG	Tie Bar Pads with machined radius, grease grooves and zerk fitting

Sold individually.

STACKIT® Ejection Actuation



Cylinders



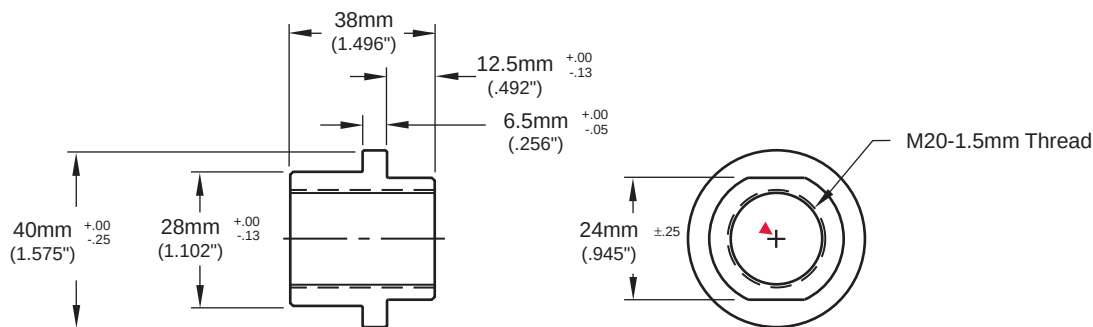
Specifications:

- 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
SK-CYL-50	50 mm Block Cylinder

Pin Plate Couplings



M AISI 4140 **S** Black Oxide

► CAD insertion point

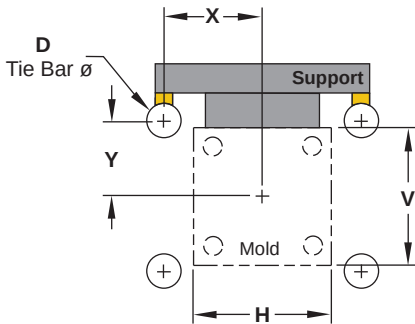
Catalog Number	Description
SK-PPC-20	M20-1.5mm Pin Plate Coupling

STACKIT®

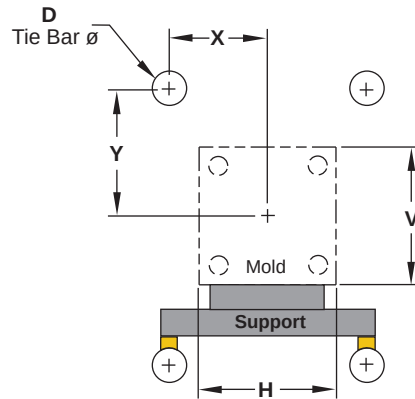
Center Support Systems

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.

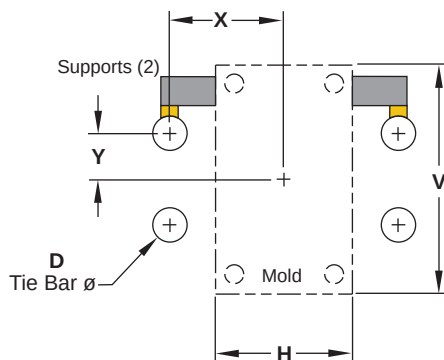
Style 1
Top Reach Support



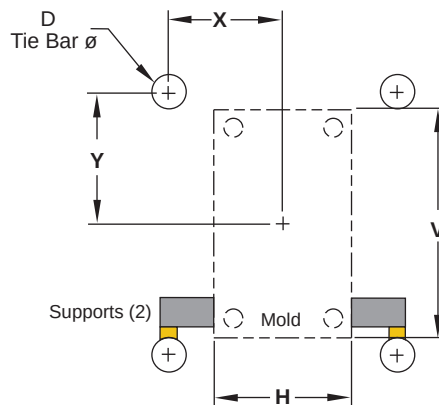
Style 2
Bottom Reach Support



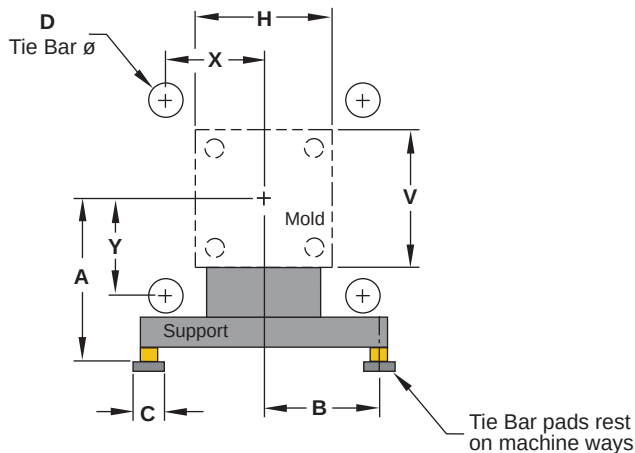
Style 3
Side Support (Top)



Style 4
Side Support (Bottom)



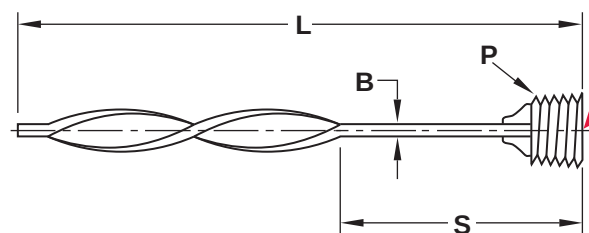
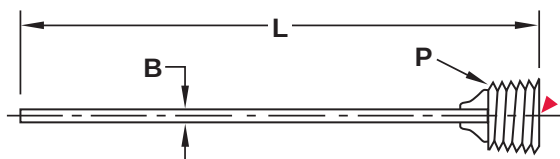
Style 5
Way Support



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 and an Applications Engineer will provide pricing and turnaround for the quantity required.

Baffles



Straight

M Brass

Catalog Number	P Plug Size	L Overall Length	B Blade Thickness	Blade Width -.005 -.015
SB06L4	1/16	4	.05	.250
SB06L8	1/16	8	.05	.250
SB06L12	1/16	12	.05	.250
SB12L4	1/8	4	.05	.312
SB12L8	1/8	8	.05	.312
SB12L12	1/8	12	.05	.312
SB25L5	1/4	5	.08	.437
SB25L10	1/4	10	.08	.437
SB25L15	1/4	15	.08	.437
SB37L6	3/8	6	.09	.562
SB37L12	3/8	12	.09	.562
SB37L18	3/8	18	.09	.562
SB50L8	1/2	8	.09	.687
SB50L16	1/2	16	.09	.687
SB75L12	3/4	12	.09	.937
SB75L20	3/4	20	.09	.937
SB100L16	1	16	.105	1.115
SB100L24	1	24	.105	1.115

Turbo

M Brass

► CAD insertion point

Catalog Number	P Plug Size	L Overall Length	S Straight Length	B Blade Thickness	Blade Width -.005 -.015
TB06L4	1/16	4	2	.05	.250
TB06L8	1/16	8	4	.05	.250
TB06L12	1/16	12	6	.05	.250
TB12L4	1/8	4	2	.05	.312
TB12L8	1/8	8	4	.05	.312
TB12L12	1/8	12	6	.05	.312
TB25L5	1/4	5	2	.09	.437
TB25L10	1/4	10	4	.09	.437
TB25L15	1/4	15	6	.09	.437
TB37L6	3/8	6	2	.09	.562
TB37L12	3/8	12	4	.09	.562
TB37L18	3/8	18	6	.09	.562
TB50L8	1/2	8	3	.09	.687
TB50L16	1/2	16	5	.09	.687
TB75L12	3/4	12	4	.09	.937
TB75L20	3/4	20	6	.09	.937
TB100L16	1	16	5	.105	1.115
TB100L24	1	24	8	.105	1.115

Alternative materials and configurations available:

For Baffles with brass blades and stainless steel pipe plugs, add an "S" to the end of the catalog number.

Ex. SB25L5S or TB75L12S

Baffles can be ordered cut to any length, in an 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 TB37L5.75S (with a 2" "S" dimension)

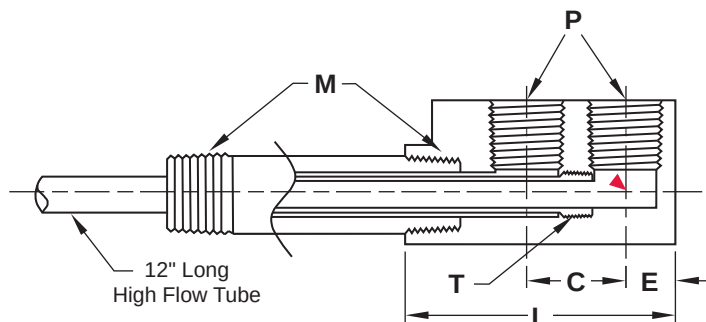
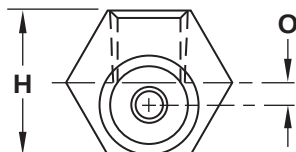
Straight Baffle Material available. To order, specify "BM" and the referenced plug size from the charts above. Material is sold in 36" lengths, but other lengths provided upon request.

Ex. BM25 for a .437 wide x .08 thick blade material



Cascades

High Flow



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

► CAD insertion point

Catalog Number	M Pipe NPT	P In/Out NPT	High Flow Tube O.D.	T Tube Thread	H Hex Size	O Offset	E	C	L	% Actual Flow Increase over Standard Cascades	Head Only Catalog Number
HFC1616	1/16	1/16	.125	#10-32	.62	.094	.25	.50	1.25	—	HFH1616
HFC1818	1/8	1/8	.187	1/4-28	.75	.094	.31	.68	1.62	64%	HFH1818
HFC18181	1/8	1/8	.187	1/4-28	.75	.094	.31	1.00	1.93	64%	HFH18181
HFC1414	1/4	1/4	.250	5/16-24	1.00	.156	.34	.68	1.87	48%	HFH1414
HFC14141	1/4	1/4	.250	5/16-24	1.00	.156	.34	1.00	2.18	48%	HFH14141
HFC3814	3/8	1/4	.375	7/16-20	1.12	.125	.34	1.00	2.25	38%	HFH3814

Alternative materials and configurations available:

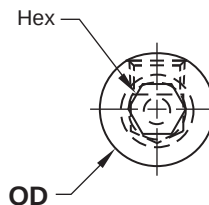
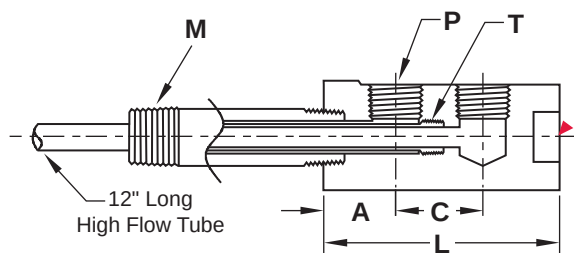
For High Flow Cascade assemblies with a steel head, add an "S" to the end of the catalog number.
Ex. HFC1616S or HFC3814S

For High Flow Cascade Heads manufactured out of steel, add an "S" to the end of the head catalog number.
Ex. HFH1414S or HFH1616S

For High Flow Cascade assemblies with a hex nipple instead of a galvanized pipe nipple, add "H" to the end of the original catalog number or the steel version catalog number.
Ex. HFC1414H or HFC1616SH

Cascades

Hex Key

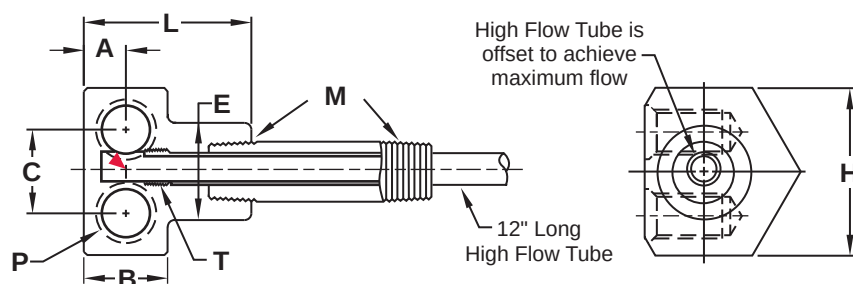


M Head: Brass, Tube: Stainless Steel, 2" Long Pipe Nipple: Galvanized Steel

► CAD insertion point

Catalog Number	M Pipe NPT	P In/Out NPT	High Flow Tube O.D.	T Tube Thread	L	C	A	Hex Key Size	OD	Nominal Clearance	Head Only Catalog Number
HKC1616	1/16	1/16	.125	#10-32	1.625	.56	.50	5/16	.610	5/8	HKCH1616
HKC1816	1/8	1/16	.187	1/4-28	1.687	.56	.56	3/8	.735	3/4	HKCH1816
HKC1818	1/8	1/8	.187	1/4-28	1.875	.68	.56	3/8	.860	7/8	HKCH1818
HKC18181	1/8	1/8	.187	1/4-28	2.187	1.00	.56	3/8	.860	7/8	HKCH18181
HKC1418	1/4	1/8	.250	5/16-24	2.187	.68	.81	1/2	.985	1	HKCH1418
HKC14181	1/4	1/8	.250	5/16-24	2.500	1.00	.81	1/2	.985	1	HKCH14181
HKC1414	1/4	1/4	.250	5/16-24	2.312	.68	.87	1/2	.985	1	HKCH1414
HKC14141	1/4	1/4	.250	5/16-24	2.625	1.00	.87	1/2	.985	1	HKCH14141
HKC3814	3/8	1/4	.312	3/8-24	2.625	1.00	.87	1/2	.985	1	HKCH3814
HKC1214	1/2	1/4	.375	7/16-20	2.812	1.00	1.00	1/2	1.235	1-1/4	HKCH1214

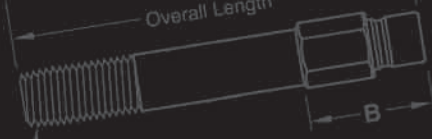
Compact



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

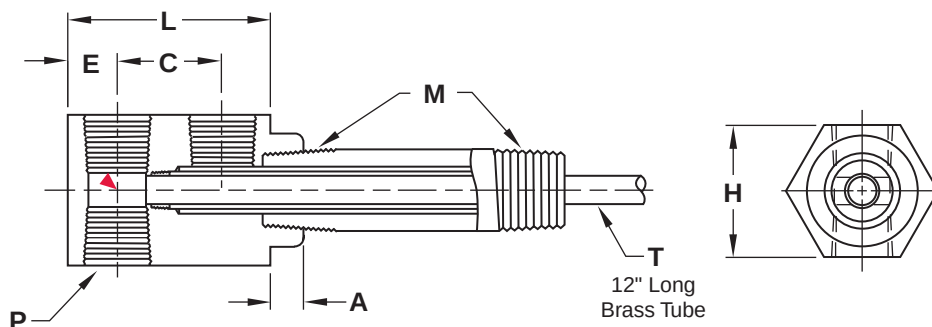
► CAD insertion point

Catalog Number	M Pipe NPT	P In/Out NPT	High Flow Tube O.D.	T Tube Thread	H Hex Size	A	B	C	L	E	Head Only Catalog Number
CC1816	1/8	1/16	.187	1/4-28	.93	.21	.437	.50	1.00	.625	CCH1816
CC1418	1/4	1/8	.250	5/16-24	1.25	.31	.625	.68	1.25	.750	CCH1418
CC1414	1/4	1/4	.250	5/16-24	1.50	.37	.750	.75	1.50	.875	CCH1414
CC3814	3/8	1/4	.312	3/8-24	1.50	.37	.750	.75	1.50	1.000	CCH3814
CC1214	1/2	1/4	.375	7/16-20	1.75	.37	.750	1.0	1.75	1.187	CCH1214



Cascades

Nipple Type



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

► CAD insertion point

Catalog Number	M Pipe NPT	P In/Out NPT	T Tube O.D.	H Hex Size	E	C	A	L	Head Only Catalog Number
NC1816	1/8	1/16	.187	.75	.21	.50	.28	.937	NCH1816
NC1818	1/8	1/8	.187	.87	.32	.68	.28	1.343	NCH1818
NC18181	1/8	1/8	.187	.87	.32	1.00	.28	1.656	NCH18181
NC1418	1/4	1/8	.250	1.00	.32	.68	.21	1.343	NCH1418
NC1414	1/4	1/4	.250	1.00	.32	.68	.21	1.343	NCH1414
NC14181	1/4	1/8	.250	1.00	.32	1.00	.43	1.656	NCH14181
NC14141	1/4	1/4	.250	1.00	.32	1.00	.43	1.656	NCH14141
NC3818	3/8	1/8	.312	1.00	.34	1.00	.40	1.687	NCH3818
NC3814	3/8	1/4	.312	1.00	.34	1.00	.40	1.687	NCH3814
NC1214	1/2	1/4	.437	1.25	.40	1.00	.56	1.812	NCH1214
NC3438	3/4	3/8	.625	1.50	.50	1.25	.75	2.250	NCH3438

Brass pipe plug included.

Alternative materials and configurations 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.

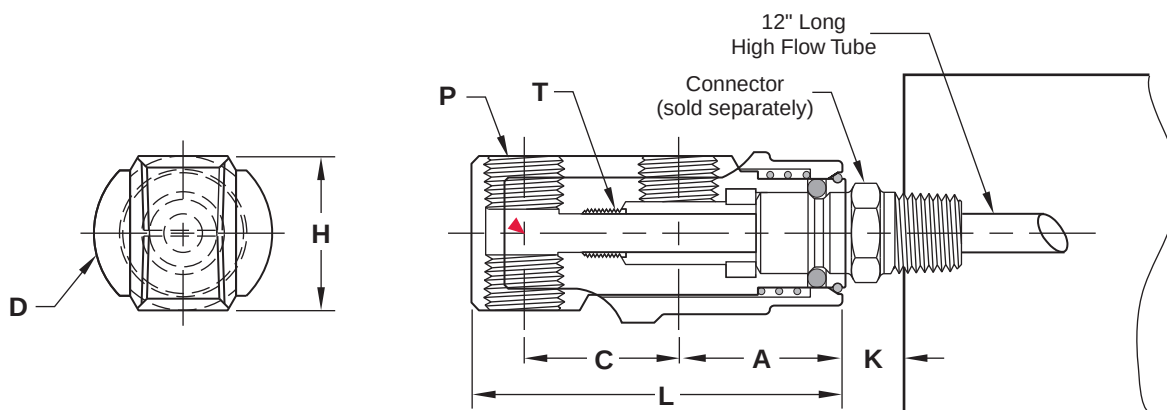
Ex. NCH1414S or NCH1616S

For Cascade assemblies with a hex nipple instead of a galvanized pipe nipple, add "H" to the end of the original catalog number or the steel version catalog number.

Ex. NC1414H or NC1616SH

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 O.D.	T Tube Thread	C	A	H	D	L	Head Only Catalog Number
QC1819	200	1/8	.187	1/4-28	.687	.968	.812	.875	1.937	QCH1819
QC1822	200	1/8	.187	1/4-28	1.000	.968	.812	.875	2.250	QCH1822
QC1421	300	1/4	.250	5/16-24	.687	1.156	1.000	1.125	2.187	QCH1421
QC1425	300	1/4	.250	5/16-24	1.000	1.156	1.000	1.125	2.500	QCH1425
QC1431	500	1/4	.437	1/2-20	1.250	1.375	1.250	1.375	3.125	QCH1431
QC3831	500	3/8	.437	1/2-20	1.250	1.375	1.250	1.375	3.125	QCH3831

Alternative materials and configurations available:

Longer High Flow Tubes are available on page E-6.

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

* Uses High Flow Tube HFTJ187.

** Uses High Flow Tube HFTJ375.



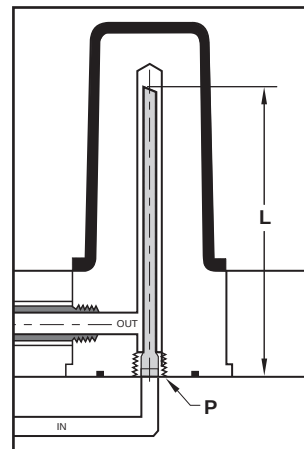
Tubes

Piston Tubes

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

P (NPT)	Tube I.D.	Tube O.D.	12" Length	24" Length	36" Length	48" Length
1/16	.109	.125	PT06L12S	PT06L24S	PT06L36S	PT06L48S
1/8	.167	.187	PT12L12S	PT12L24S	PT12L36S	PT12L48S
1/4	.230	.250	PT25L12S	PT25L24S	PT25L36S	PT25L48S
3/8	.340	.365	PT37L12S	PT37L24S	PT37L36S	PT37L48S
1/2	.340	.365	PT50L12S	PT50L24S	PT50L36S	PT50L48S

Brass plug Piston Tubes also available. Contact Customer Service for information.



High Flow Tubes

M Stainless Steel

Longer length tubes available.

Nominal Tube O.D.	Tube I.D.	Thread Size	Thread Length	12" Length	18" Length	24" Length	36" Length
.094	.077	#5-44	.125	HFT094L12	HFT094L18	HFT094L24	HFT094L36
.094	.077	#10-32	.187	HFTJ094L12	HFTJ094L18	HFTJ094L24	HFTJ094L36
.125	.109	#10-32	.187	HFT125L12	HFT125L18	HFT125L24	HFT125L36
.125	.109	1/4-28	.125	HFTJ125L12	HFTJ125L18	HFTJ125L24	HFTJ125L36
.187	.167	1/4-28	.250	HFT187L12	HFT187L18	HFT187L24	HFT187L36
.187	.167	5/16-24	.312	HFTJ187L12	HFTJ187L18	HFTJ187L24	HFTJ187L36
.250	.230	5/16-24	.312	HFT250L12	HFT250L18	HFT250L24	HFT250L36
.250	.230	3/8-24	.375	HFTJ250L12	HFTJ250L18	HFTJ250L24	HFTJ250L36
.312	.285	3/8-24	.375	HFT312L12	HFT312L18	HFT312L24	HFT312L36
.312	.285	7/16-20	.437	HFTJ312L12	HFTJ312L18	HFTJ312L24	HFTJ312L36
.375	.340	7/16-20	.437	HFT375L12	HFT375L18	HFT375L24	HFT375L36
.375	.340	1/2-20	.500	HFTJ375L12	HFTJ375L18	HFTJ375L24	HFTJ375L36
.437	.397	1/2-20	.500	HFT437L12	HFT437L18	HFT437L24	HFT437L36

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

Brass Tubes

M Half-Hard Tempered Brass

Nominal Tube O.D.	Tube I.D.	Thread Size	Thread Length	12" Length	18" Length	24" Length	36" Length
.125	.062	#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

Tubes can be ordered in stainless steel. Add an "S" to the end of the catalog number. Ex. T125L12S

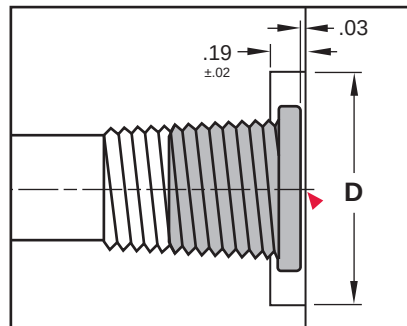
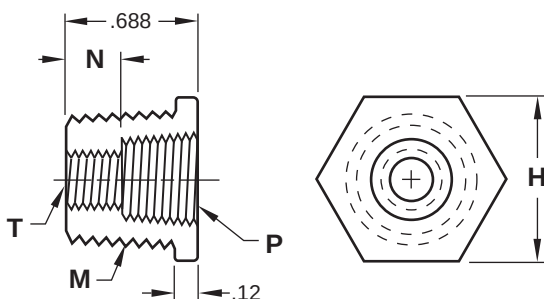
Longer length tubes or tubes cut to length are available.

Inlet Cascade™

Cascade Tube Fitting



Installation Guidelines:

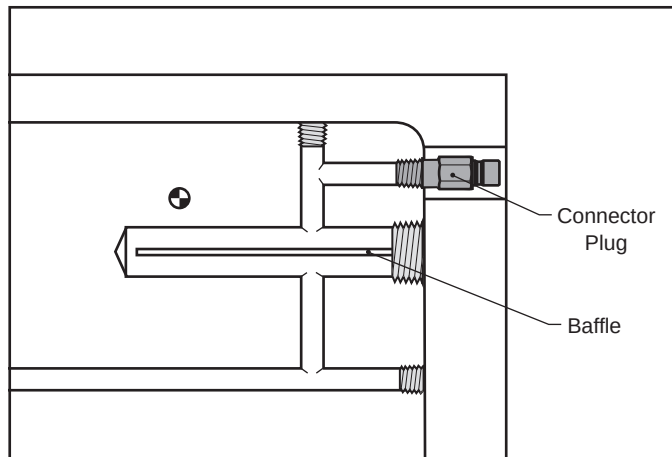


M 303 Stainless Steel **H** 18-22 HRC

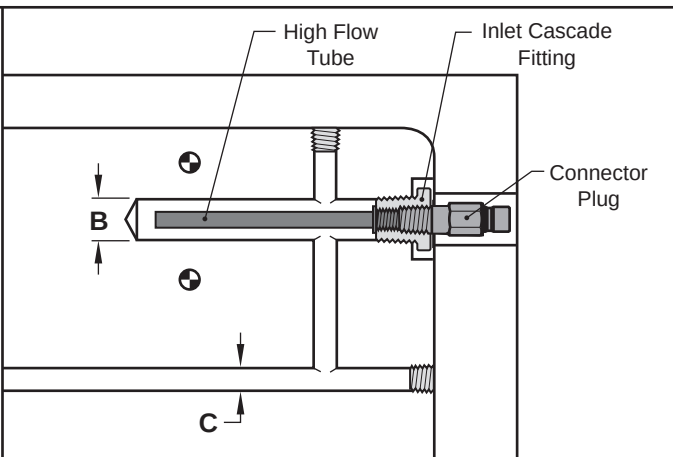
► CAD insertion point

Catalog Number	M Waterline NPT	P NPT	T Tube Thread	N	H Hex	D Hex Clearance	Compatible High Flow Tube	B Diam.	C Diam.	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

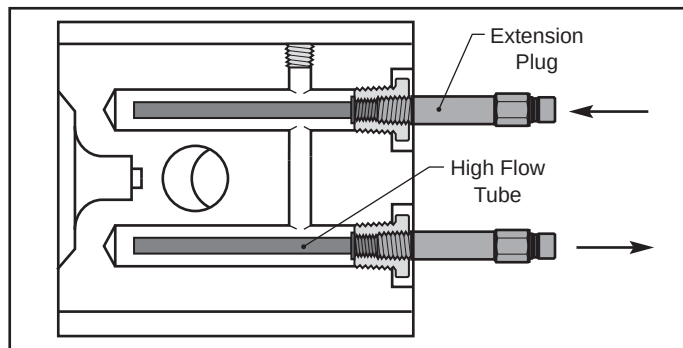
Previous Method:



Inlet Cascade Method:



Slide Application:

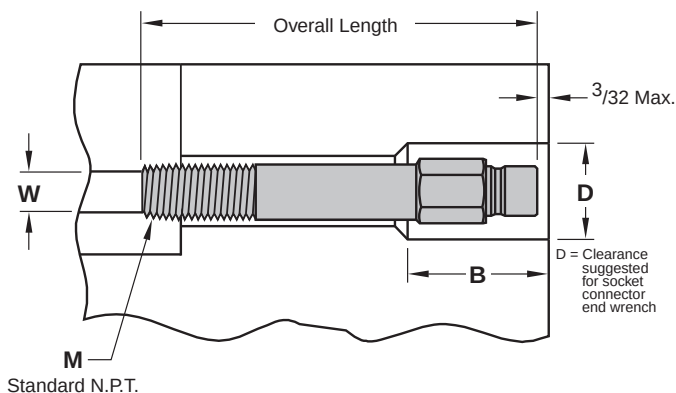
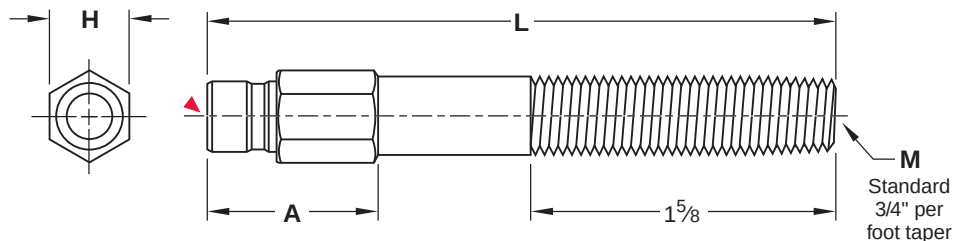


The Inlet Cascade Fitting can be used when waterline space is limited, such as under a runner and between ejector pins or to provide a water circuit in a slide.

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.



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

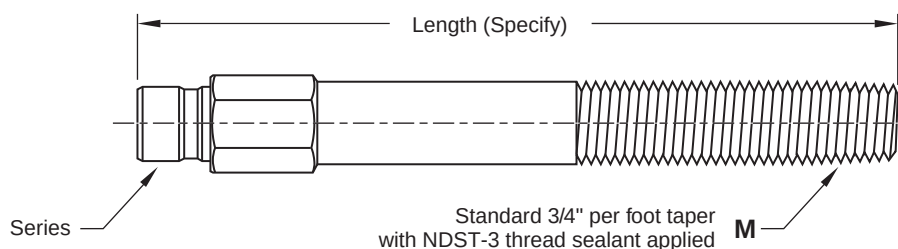
Alternative materials and configurations available:

Stainless Steel Extension Plugs are also available. Specify "S" at the end of the catalog number.
Ex. 252L5.5S or 353L4S

Metric standard Extension Plugs can be obtained with BSP threads. To order, specify "-BSP" at the end of the catalog number. Ex. 252L5.5-BSP
(The threads are BSPT, but all other dimensions are inch nominal. Please call if metric nominals are required.)

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

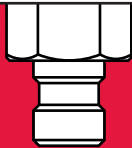
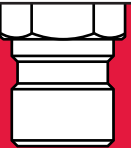
Pre-Cut Extension Plugs



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 (from page E-9) with required length. Ex. 352L6.5 or 250L9.25.

Extension Plugs

200 Series 1/4" Flow 					300 Series 3/8" Flow 					500 Series 1/2" Flow 				
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
1/16" PIPE EXTENSIONS														
250L2.5	2.5	1/16	.37	.68	350L2.5	2.5	1/16	.56	.87	AVAILABLE ON REQUEST				
250L4	4.0	1/16	.37	.81	350L4	4.0	1/16	.56	1.00					
250L5.5	5.5	1/16	.37	.81	350L5.5	5.5	1/16	.56	1.00					
250L7	7.0	1/16	.37	.81	350L7	7.0	1/16	.56	1.00					
1/8" PIPE EXTENSIONS														
251L2.5	2.5	1/8	.43	.68	351L2.5	2.5	1/8	.56	.87	AVAILABLE ON REQUEST				
251L4	4.0	1/8	.43	1.00	351L4	4.0	1/8	.56	1.00					
251L5.5	5.5	1/8	.43	1.00	351L5.5	5.5	1/8	.56	1.00					
251L7	7.0	1/8	.43	1.00	351L7	7.0	1/8	.56	1.00					
251L8.5	8.5	1/8	.43	1.00	351L8.5	8.5	1/8	.56	1.00					
251L10	10.0	1/8	.43	1.00	351L10	10.0	1/8	.56	1.00					
251L11.5	11.5	1/8	.43	1.00	351L11.5	11.5	1/8	.56	1.00					
251L13	13.0	1/8	.43	1.00	351L13	13.0	1/8	.56	1.00					
1/4" PIPE EXTENSIONS														
252L2.5	2.5	1/4	.56	.87	352L2.5	2.5	1/4	.56	.87	AVAILABLE ON REQUEST				
252L4	4.0	1/4	.56	1.25	352L4	4.0	1/4	.56	1.25					
252L5.5	5.5	1/4	.56	1.25	352L5.5	5.5	1/4	.56	1.25					
252L7	7.0	1/4	.56	1.25	352L7	7.0	1/4	.56	1.25					
252L8.5	8.5	1/4	.56	1.25	352L8.5	8.5	1/4	.56	1.25					
252L10	10.0	1/4	.56	1.25	352L10	10.0	1/4	.56	1.25					
252L11.5	11.5	1/4	.56	1.25	352L11.5	11.5	1/4	.56	1.25					
252L13	13.0	1/4	.56	1.25	352L13	13.0	1/4	.56	1.25					
3/8" PIPE EXTENSIONS														
253L2.5	2.5	3/8	.68	1.00	353L2.5	2.5	3/8	.68	1.00	553L2.5	2.5	3/8	.81	1.12
253L4	4.0	3/8	.68	1.25	353L4	4.0	3/8	.68	1.25	553L4	4.0	3/8	.81	1.37
253L5.5	5.5	3/8	.68	1.25	353L5.5	5.5	3/8	.68	1.25	553L5.5	5.5	3/8	.81	1.37
253L7	7.0	3/8	.68	1.25	353L7	7.0	3/8	.68	1.25	553L7	7.0	3/8	.81	1.37
253L8.5	8.5	3/8	.68	1.25	353L8.5	8.5	3/8	.68	1.25	553L8.5	8.5	3/8	.81	1.37
253L10	10.0	3/8	.68	1.25	353L10	10.0	3/8	.68	1.25	553L10	10.0	3/8	.81	1.37
253L11.5	11.5	3/8	.68	1.25	353L11.5	11.5	3/8	.68	1.25	553L11.5	11.5	3/8	.81	1.37
253L13	13.0	3/8	.68	1.25	353L13	13.0	3/8	.68	1.25	553L13	13.0	3/8	.81	1.37
1/2" PIPE EXTENSIONS														
AVAILABLE ON REQUEST					354L2.5	2.5	1/2	.87	1.12	554L2.5	2.5	1/2	.87	1.12
					354L4	4.0	1/2	.87	1.50	554L4	4.0	1/2	.87	1.50
					354L5.5	5.5	1/2	.87	1.50	554L5.5	5.5	1/2	.87	1.50
					354L7	7.0	1/2	.87	1.50	554L7	7.0	1/2	.87	1.50
					354L8.5	8.5	1/2	.87	1.50	554L8.5	8.5	1/2	.87	1.50
					354L10	10.0	1/2	.87	1.50	554L10	10.0	1/2	.87	1.50
					354L11.5	11.5	1/2	.87	1.50	554L11.5	11.5	1/2	.87	1.50
					354L13	13.0	1/2	.87	1.50	554L13	13.0	1/2	.87	1.50

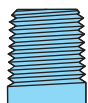


Pipe Thread Data

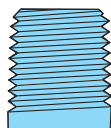
The table below lists standard pipe sizes along with the actual O.D. and I.D. for each size. The nominal size of any pipe does not in fact refer to either the outside diameter (O.D.) or the inside diameter (I.D.) of the pipe. Actual size drawings of pipes from 1/16" to 3/4" are shown below. Note: Nominal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



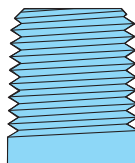
1/16 NPT



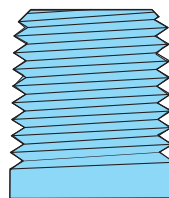
1/8 NPT



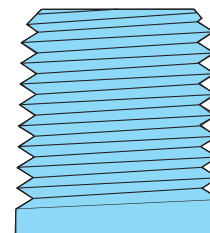
1/4 NPT



3/8 NPT



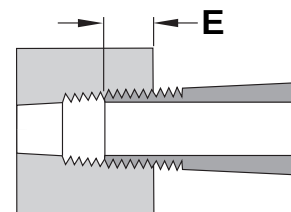
1/2 NPT



3/4 NPT

Pipe Size	Threads Per Inch	Outside Diameter of Pipe	Inside Diameter of Pipe	Minimum Length of Thread	Tap Drill Size	E Thread Engagement
1/16	27	.312	.209	1/4	15/64	.271
1/8	27	.405	.269	11/32	21/64	.273
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	.553
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 to the right illustrates this measurement.



Pipe Check



M Aluminum frame.

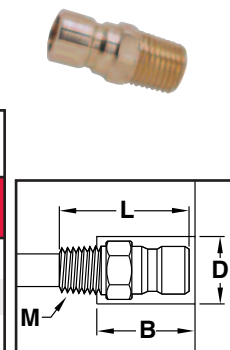
Catalog Number	Description
PC-100	Pipe Thread Check

Connector Plugs

Male Type: Inch Standard

M Brass

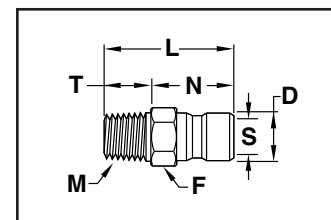
200 SERIES (1/4" Flow)						300 SERIES (3/8" Flow)						500 SERIES (1/2" Flow)					
Catalog Number	M NPT	Inner Diam.	D	B	L	Catalog Number	M NPT	Inner Diam.	D	B	L	Catalog Number	M NPT	Inner Diam.	D	B	L
250	1/16	3/16	.75	.69	.94	351	1/8	1/4	1.00	.95	1.20	552	1/4	3/8	1.37	1.16	1.62
251	1/8	1/4	.87	.69	.94	352	1/4	3/8	1.00	1.09	1.34	553	3/8	1/2	1.37	1.17	1.62
252	1/4	1/4	1.00	.94	1.13	353	3/8	3/8	1.12	1.13	1.38	554	1/2	5/8	1.50	1.50	1.75
253	3/8	1/4	1.12	.94	1.19	354	1/2	3/8	1.50	1.25	1.59	556	3/4	5/8	1.75	1.56	1.90



Male Type: European Standard

M Nickel Plated Brass

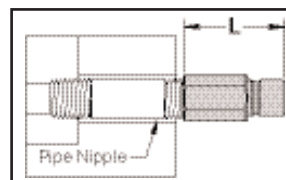
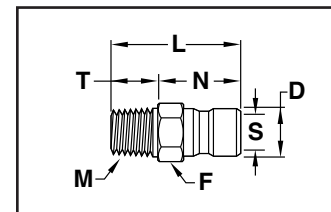
BSPT								Metric							
Catalog Number	M	D	L	N	S	T	F	Catalog Number	M	D	L	N	S	T	F
912	1/8	9	26	17	6	8	11	910	M10	9	26	17	6	8	11
925	1/4	9	26	17	6	8	14	914	M14	13	27	17	9	8	15
1325	1/4	13	27	17	9	8	14								
1337	3/8	13	27	17	9	10	17								



Male Type: International Standard

M Brass

BSPT								Metric							
Catalog Number	M	D	L	N	S	T	F	Catalog Number	M	D	L	N	S	T	F
251-BSPT	1/8	9	26	16	6	12	13	252-M10	M10	9	26	17	6	8	11
252-BSPT	1/4	9	26	16	6	12	16								
352-BSPT	1/4	13	32	20	9	12	16								
353-BSPT	3/8	13	32	20	9	12	19								



Female Type: Inch Standard

M Brass

200 SERIES (1/4" Flow)				300 SERIES (3/8" Flow)				500 SERIES (1/2" Flow)			
Catalog Number	M NPT	Inner Diam.	L	Catalog Number	M NPT	Inner Diam.	L	Catalog Number	M NPT	Inner Diam.	L
250F	1/16	1/4	1.00	351F	1/8	11/32	1.00	551F	1/8	11/32	1.25
251F	1/8	1/4	1.00	352F	1/4	3/8	1.00	552F	1/4	7/16	1.75
252F	1/4	1/4	1.25	353F	3/8	3/8	1.62	553F	3/8	9/16	1.75
253F	3/8	1/4	1.38	354F	1/2	3/8	1.75	554F	1/2	5/8	1.87

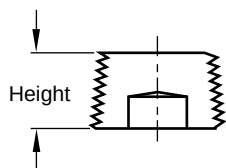
Alternative materials and configurations available:

For Connector Plugs manufactured from steel, add an "S" to the end of the catalog number. Ex. 250S or 351S
Note: The 250F and the 351F are available in brass only.

Contact Customer Service for additional Metric or BSPT options.



Pipe Plugs



Standard Plugs are flush type, 7/8" taper per foot.

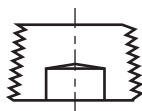
Overize Plugs available with 3/4" taper per foot.

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

M Brass, Alloy Steel, and Stainless Steel

Pipe Thread Size	Brass Cat. #	Steel Cat. #	Stainless Cat. #	Flush Height	Overize 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	-	.65	-
1 1/2	BR150	ST150	-	.65	-
2	BR200	ST200	-	.65	-

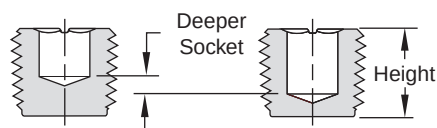
Metric Standard



M Brass and Alloy Steel

Pipe Thread Size	Brass Cat. #	Steel Cat. #
1/8 BSPT	BR12-BSP	ST12-BSP
1/4 BSPT	BR25-BSP	ST25-BSP
3/8 BSPT	BR37-BSP	ST37-BSP
1/2 BSPT	BR50-BSP	ST50-BSP
3/4 BSPT	BR75-BSP	ST75-BSP

Heavy Duty Pipe Plugs



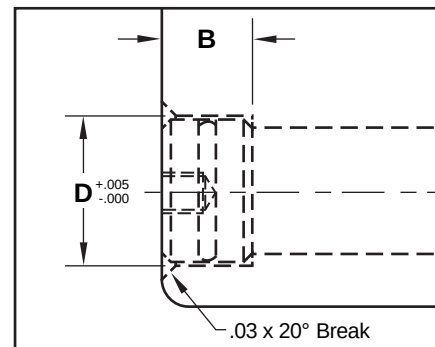
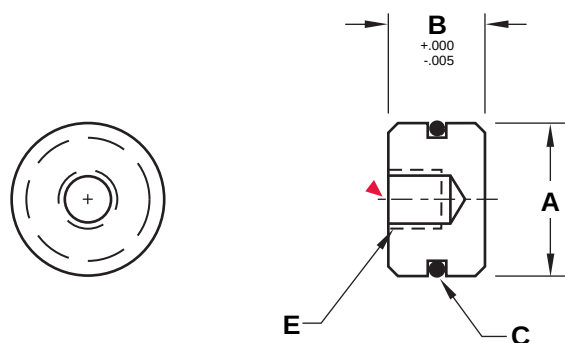
The extra deep socket is stronger, and will not strip out.

M Brass

Pipe Thread Size	Brass Cat. #	Height
1/16	BRHD06	.31
1/8	BRHD12	.31
1/4	BRHD25	.43
3/8	BRHD37	.50
1/2	BRHD50	.62
3/4	BRHD75	.62

Threadless Plugs

O-Ring Plugs



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

M Brass, with Buna O-Rings Maximum temp: 250° F (120° C)

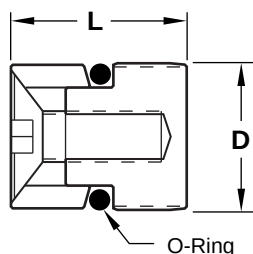
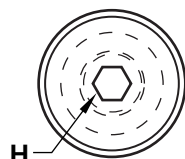
Catalog Number	A	B	C O-Ring	D Ream Size	E
TWP281	.273	.250	1/16	.281	#6-32
TWP375	.366	.312	1/16	.375	#10-32
TWP500	.494	.312	1/16	.500	#10-32
TWP625	.618	.437	3/32	.625	1/4-20
TWP750	.743	.500	3/32	.750	1/4-20
TWP1000	.990	.625	1/8	1.000	3/8-16
TWP1187	1.177	.625	1/8	1.187	3/8-16

► CAD insertion point

Alternative materials and configurations 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.

Diverting Plugs



M Brass, with Buna O-Rings Max 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

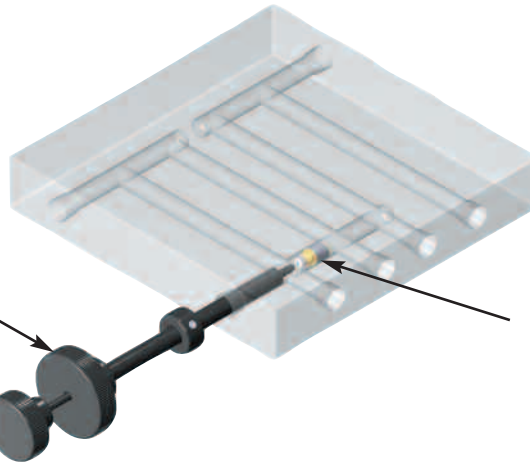
Alternative materials and configurations available:

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



Water Blocker®

Plugs

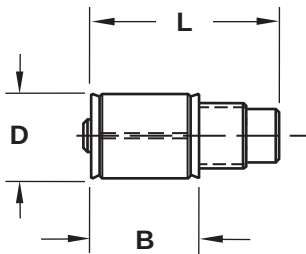


Wrench is available in two different lengths.

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

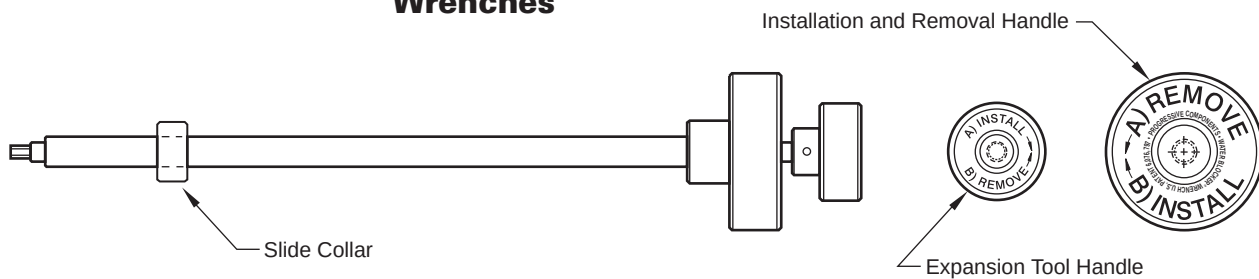
M Brass

Max Pressure: 175 PSI



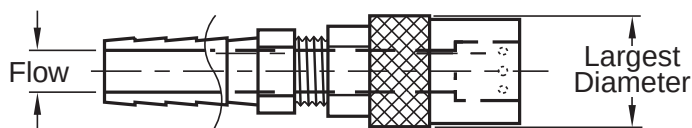
Catalog Number	D ±.005	B	L	Waterline Nominal	Waterline Diameter
WB344	.334	.41	.71	1/8 NPT	.344
WB375	.365	.41	.71	1/4 NPT	.375
WB437	.428	.43	.78	1/4 NPT	.437
WB562	.552	.57	.92	3/8 NPT	.562
WB688	.678	.64	1.06	1/2 NPT	.688

Wrenches



Catalog Number	Water Blocker Sizes	Overall Length
WBS12	WB344, WB375	12"
WBS24	WB344, WB375	24"
WBL12	WB437-WB688	12"
WBL24	WB437-WB688	24"

Socket Connectors



M Brass with Stainless Steel Bearings and Silicone Seals

		200 SERIES (1/4" FLOW)			300 SERIES (3/8" FLOW)			500 SERIES (1/2" FLOW)		
		Catalog Number	Hose ID	Largest Diam.	Catalog Number	Hose ID	Largest Diam.	Catalog Number	Hose ID	Largest Diam.
STRAIGHT		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° STEM		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° STEM		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					SC200B			SC500B		
Replacement Seals: Silicone					SC200S			SC500S		
Replacement Seals: Viton					SC200S-V					
					SC300B					
					SC300S					
					SC300S-V					

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

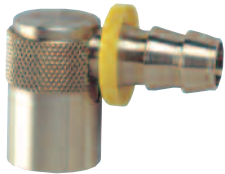
Alternative materials and configurations available:

To order valved style Socket Connectors, add a "-V" to the end of the catalog number (sockets or bodies, not available in the 500 series). Ex. SC316-V

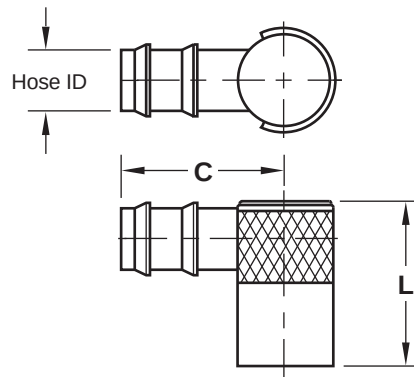
To order Socket Connectors with barbs for Push-Lok® hose, specify "-PL" at the end of the catalog number (sockets or bodies). Ex. SC326-PL or SC300-V-PL.



Water Jumpers



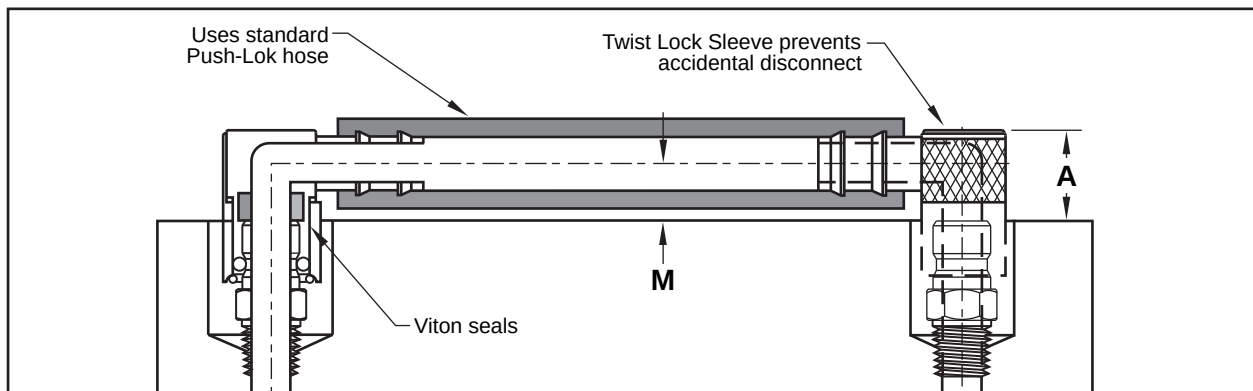
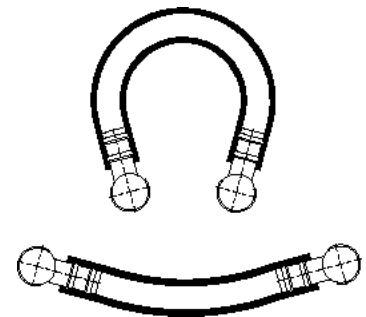
Push-Lok® Series



M Brass and Stainless Steel

Maximum temp: 400° F (200° C)

Catalog Number	Fits Plug Series No.	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

Catalog Number	Hose ID	Hose OD
WJH25-	1/4	.50
WJH37-	3/8	.63
WJH50-	1/2	.78
WJH62-	5/8	.91
WJH75-	3/4	1.03

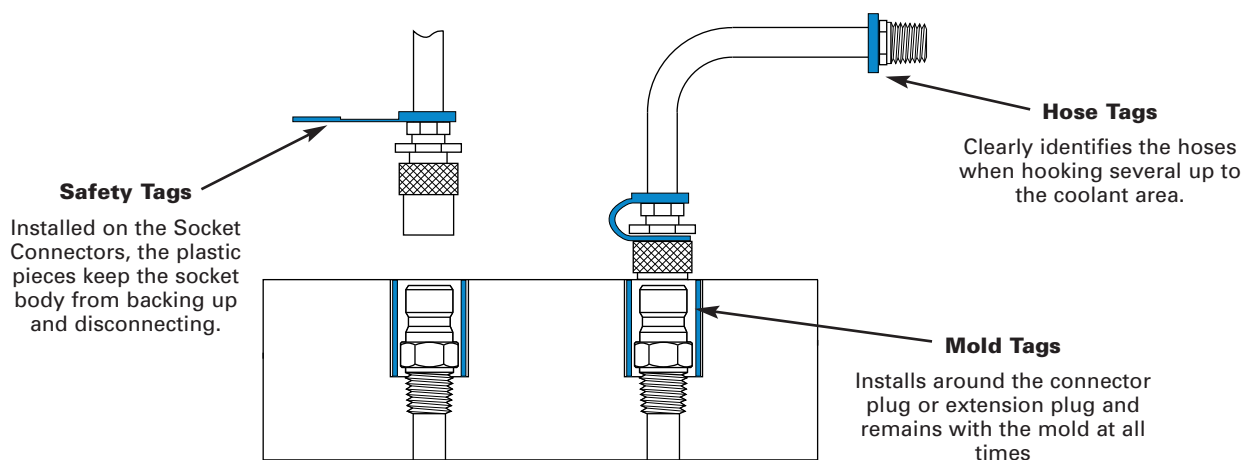
Sold in 24" lengths.

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

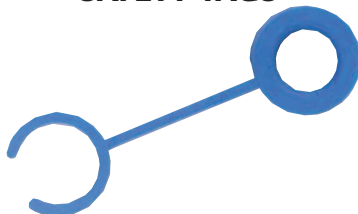
Waterline Tags



M Nylon

Maximum temperature: 220° F (100° C)

SAFETY TAGS



Catalog Number	Series	Hose I.D.
TS-204-	200	1/4
TS-206-	200	3/8
TS-306-	300	3/8
TS-308-	300	1/2

MOLD TAGS



Catalog Number	Series	Hose I.D.
TM-204-	200	1/4
TM-304-	300	1/4
TM-306-	300	3/8

HOSE TAGS



Catalog Number	Hose I.D.
TH-25-	1/4
TH-37-	3/8

Colors Available:

Primary Colors

Red (RE)

Blue (BE)

Secondary Colors

Orange (OR)

Purple (PL)

To order:

Select the tag and catalog number above and add the color of the tag to the suffix. Ex. TS-306-BE

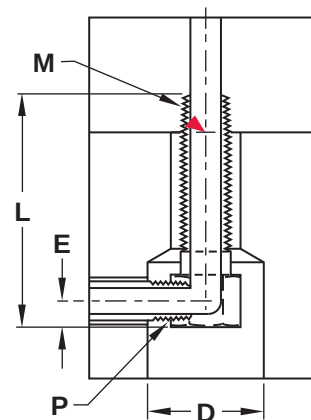
Extension Elbows



M Brass

► CAD insertion point

M PIPE NPT	P IN/OUT NPT	Hex Size	D	E	L = 2.5"	L = 5.5"	L = 10"
1/8	1/8	.75	1.25	.28	HELB1818L2.5	HELB1818L5.5	HELB1818L10
1/4	1/4	.87	1.37	.34	HELB1414L2.5	HELB1414L5.5	HELB1414L10
3/8	3/8	1.00	1.50	.50	HELB3838L2.5	HELB3838L5.5	HELB3838L10
1/2	1/2	1.25	1.75	.62	HELB1212L2.5	HELB1212L5.5	HELB1212L10



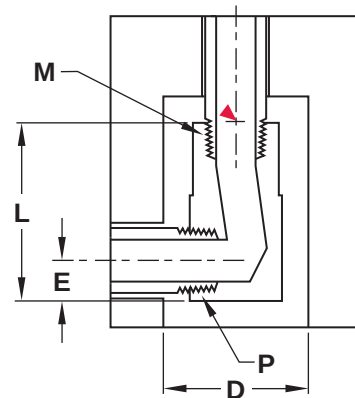
Hex Elbows

M Alloy Steel

S Zinc Plated

► CAD insertion point

Catalog Number	M NPT	P NPT	Hex Size	L	D	E
HELS1616	1/16	1/16	9/16	.81	1.00	.218
HELS1818	1/8	1/8	3/4	1.00	1.25	.281
HELS1414	1/4	1/4	7/8	1.37	1.37	.343
HELS3838	3/8	3/8	1	1.62	1.5	.500
HELS1212	1/2	1/2	1-1/4	1.87	1.87	.562
HELS3434	3/4	3/4	1-1/2	2.25	2.25	.625

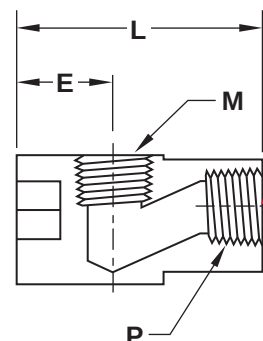
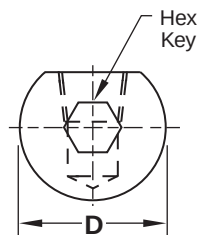


Hex Key Elbows

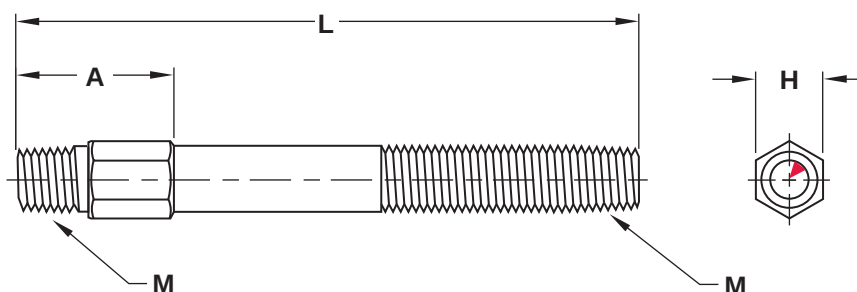
M Brass

► CAD insertion point

Catalog Number	M In NPT	P Out 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
HK1414	1/4	1/4	3/8	1.50	.860	.660
HK3838	3/8	3/8	1/2	1.75	.985	.780
HK1212	1/2	1/2	1/2	2.12	1.235	.940



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 materials and configurations available:

For Hex Nipples manufactured from stainless steel, add an "S" to the end of the catalog number.
Ex. APN25L7S or APN50L4S

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 APN37L5.75S

Pipe Nipples



M Brass or Galvanized Steel

Brass Cat. #	Steel Cat. #	Pipe Size	Available Overall Lengths															
			Close*	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	7	8	9	10
BPN06	GPN06	1/16	•	†	•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN12	GPN12	1/8	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN25	GPN25	1/4	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN37	GPN37	3/8	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•
BPN50	GPN50	1/2	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•

*Close is the shortest available nipple length.

†Available in BPN only.

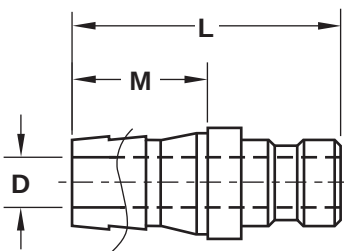
Note: GPN06 is stainless steel.

To Order - Specify Prefix and length.
Ex. BPN37CLOSE or BPN12L35

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



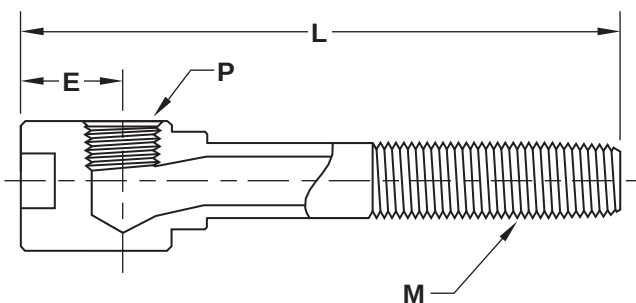
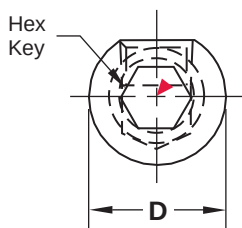
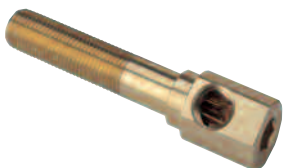
Combination Hose Inserts



M Brass

200 SERIES (1/4" Flow)					300 SERIES (3/8" Flow)					500 SERIES (1/2" Flow)				
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					

Hex Key Extension Elbows



M Brass

► CAD insertion point

M Pipe NPT	P In/Out NPT	Hex Key Size	D	E	L = 2.5"	L = 5.5"	L = 10"	L = 13"
1/16	1/16	1/4	.552	.531	HKEE1616L2.5	HKEE1616L5.5	HKEE1616L10	HKEE1616L13
1/8	1/8	5/16	.615	.580	HKEE1818L2.5	HKEE1818L5.5	HKEE1818L10	HKEE1818L13
1/4	1/4	3/8	.860	.660	HKEE1414L2.5	HKEE1414L5.5	HKEE1414L10	HKEE1414L13
3/8	3/8	1/2	.985	.780	HKEE3838L2.5	HKEE3838L5.5	HKEE3838L10	HKEE3838L13
1/2	1/2	1/2	1.235	.940	HKEE1212L2.5	HKEE1212L5.5	HKEE1212L10	HKEE1212L13

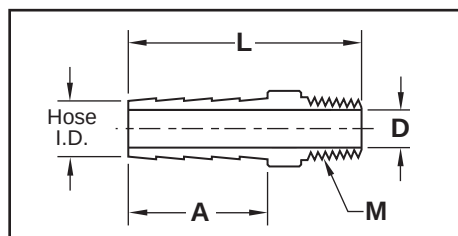
Hex Key Extension Elbows can be ordered cut to length, and in any quantity.

To order, specify prefix (HKEE####) with the required length. Ex. HKEE1414L3.75

Fittings

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



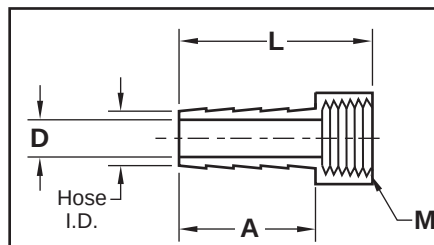
Note: MB16 and MB18 includes Buna O-ring and clamp.

Male Hose Barbs



M Brass

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

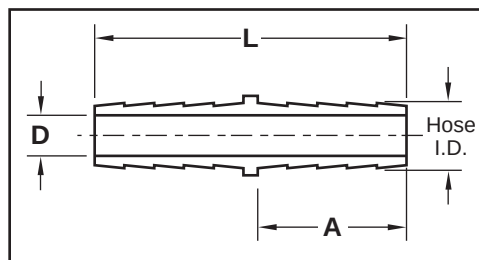


Female Hose Barbs



M Brass

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



Hose Splicers



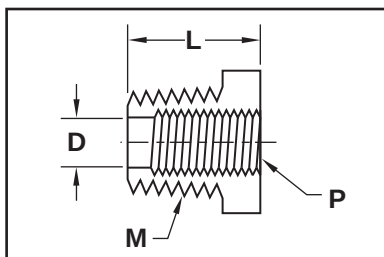
Alternate materials and configurations available:

To order barbs and splicers for use with Push-Lok® hose, specify "-PL" at the end of the catalog number.
Ex. HS14-PL or MB14-2-PL



Fittings

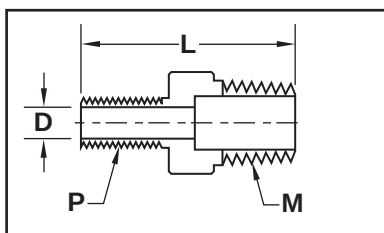
Reducing Bushings



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

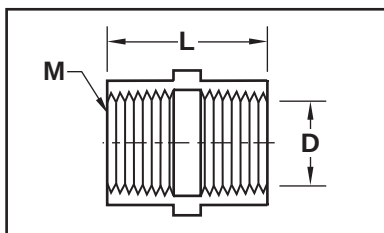
Male Reducers



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

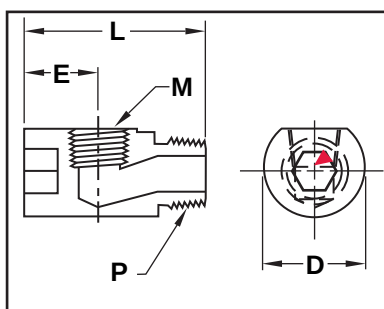
Couplings



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 Key Street Els



M Brass

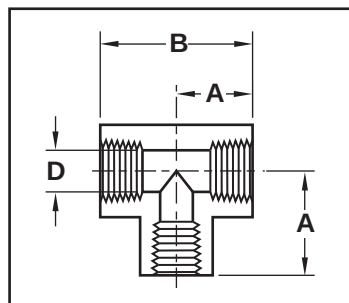
► CAD insertion point

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

Fittings

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

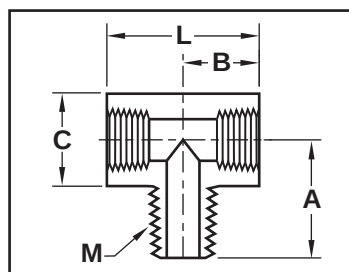


Tees



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



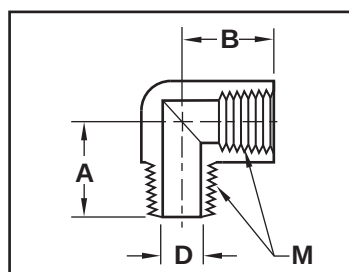
Male Tees



Note: MT10 includes O-ring.

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



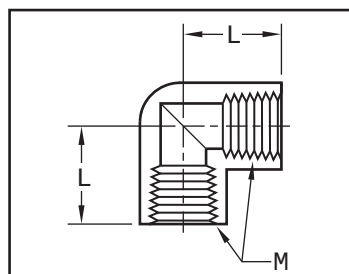
90° Street Elbows



Note: ELS10 includes O-ring.

M Brass

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

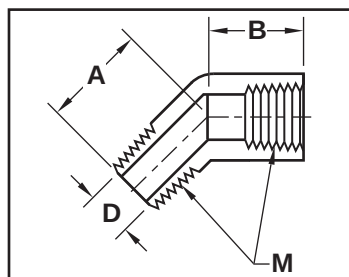


90° Elbows

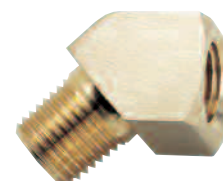


M Brass

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



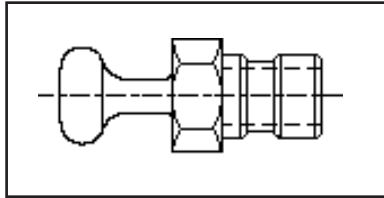
45° Street Elbows





Cover Plugs

Cover Plugs



M Brass

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

Clamps and Tape



Catalog Number	Hose O.D.
HC58	5/8
HC78	7/8
HC118	1-1/8

Catalog Number	Description
TT250	1/4" x 520"
TT500	1/2" x 520"

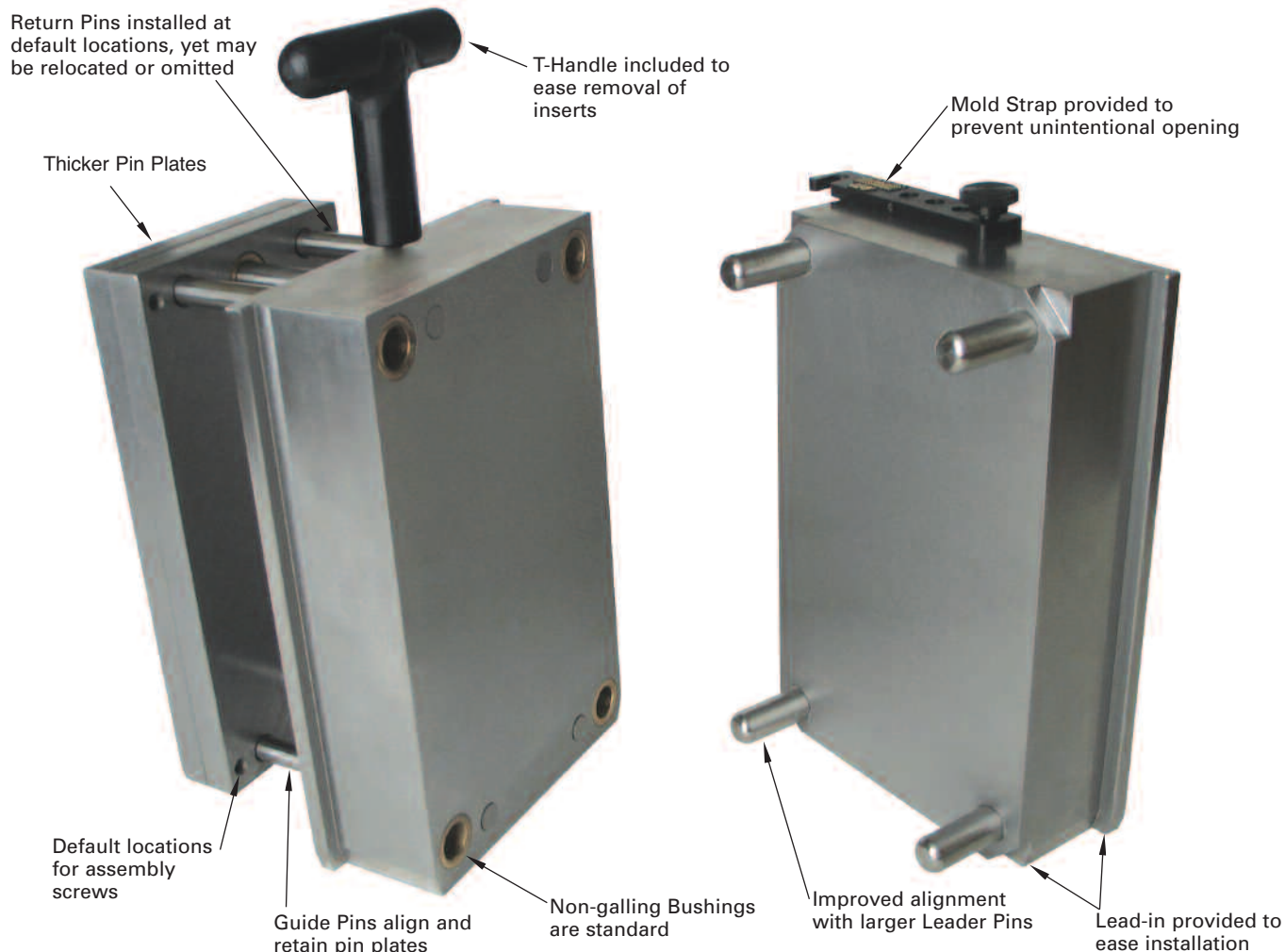


Special Cooling Needs



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 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.

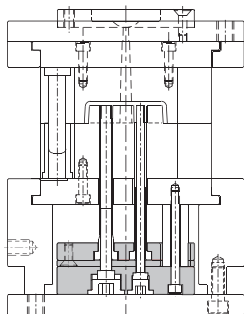
Rapid Tooling Inserts®



Special design configurations and accessories available:

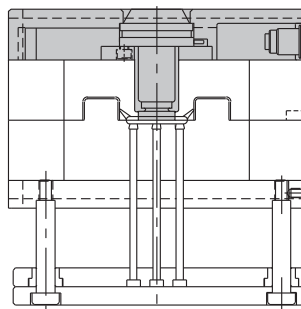
Sleeve Ejector Plate Systems:

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.



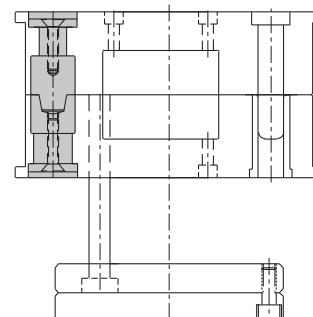
Install Hot Sprue Bushings:

Rapid Tooling Inserts can accommodate standard Hot Sprues with some minor modifications. Contact Engineering for an application drawing and details on how to order.



Custom Machining:

Special machining for both inserts and frames is available from Progressive. Shown below is an example of Taper Locks used at two Leader Pin Locations. Call Customer Service for a quote.

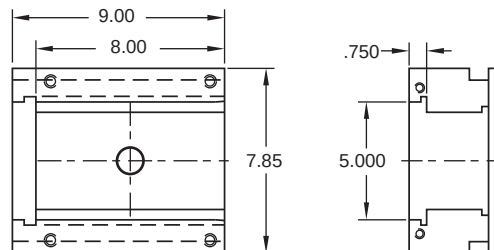




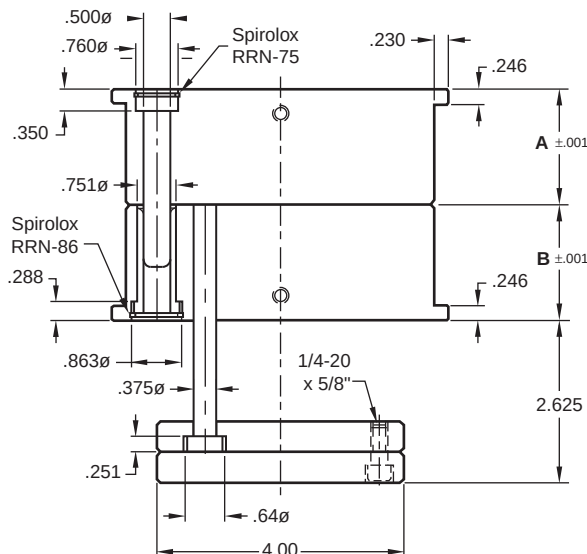
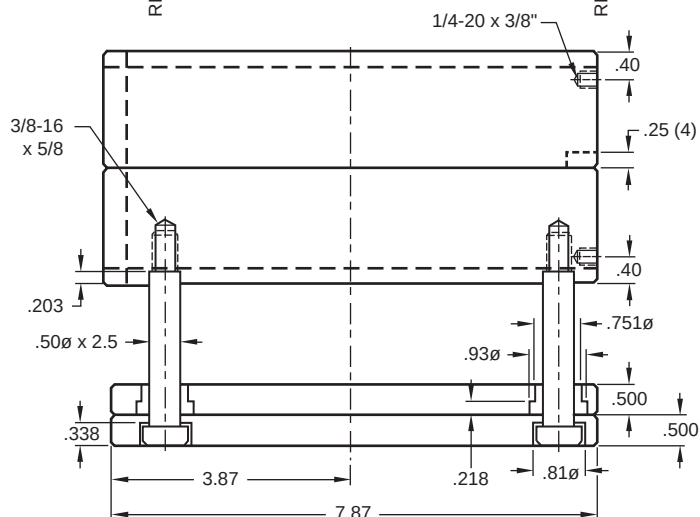
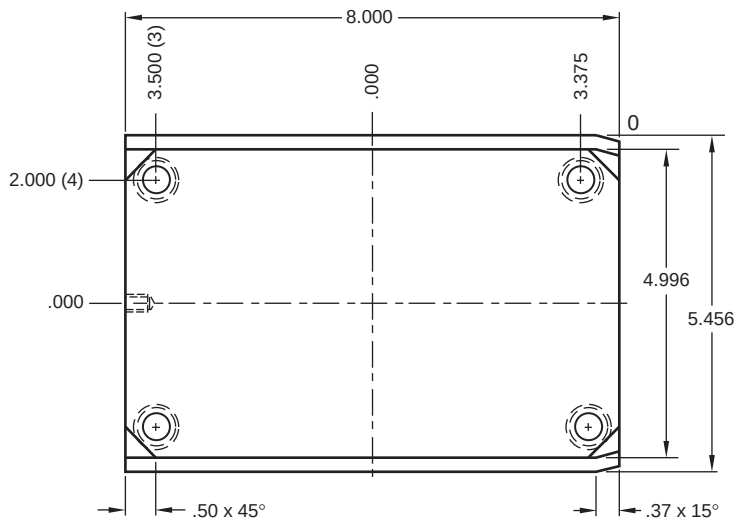
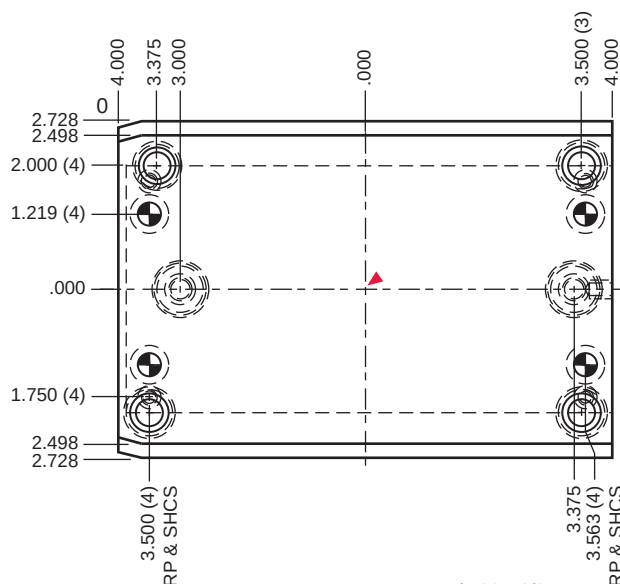
RTI® 08/09 Series

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



M A & B Plates: P-20 Pre-Hard, Pin Plates: AISI 1018

To order inserts with a Sleeve Ejector Plate, specify " - SEP" at the end of the catalog number instead of the "-P".

Ex: RTS-0809-1313-SEP.

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.

► CAD insertion point

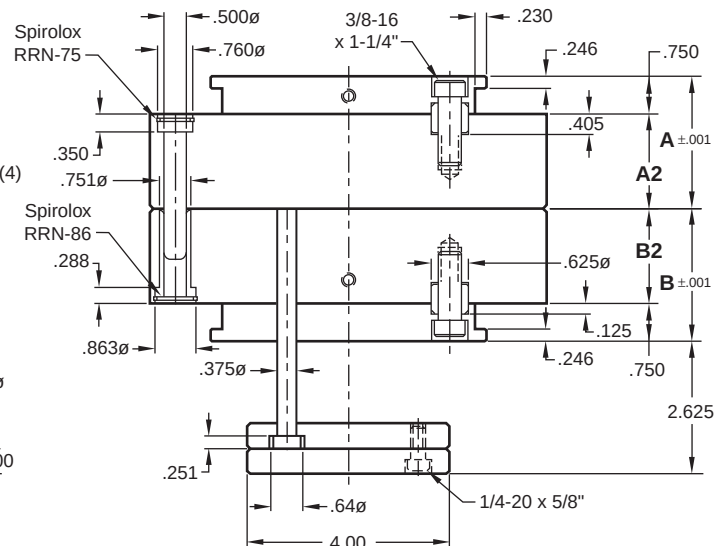
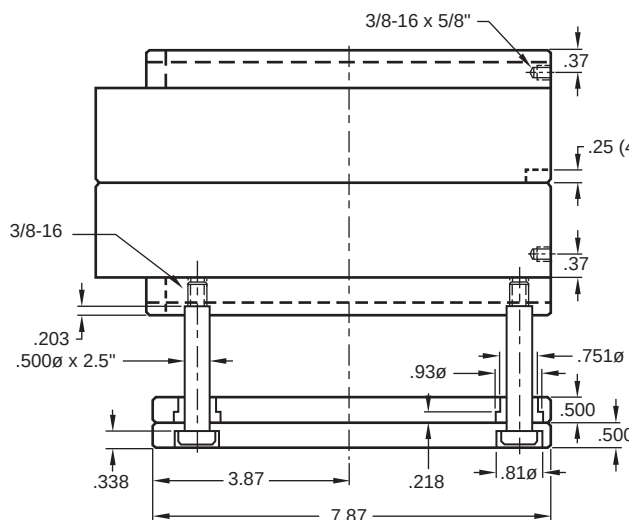
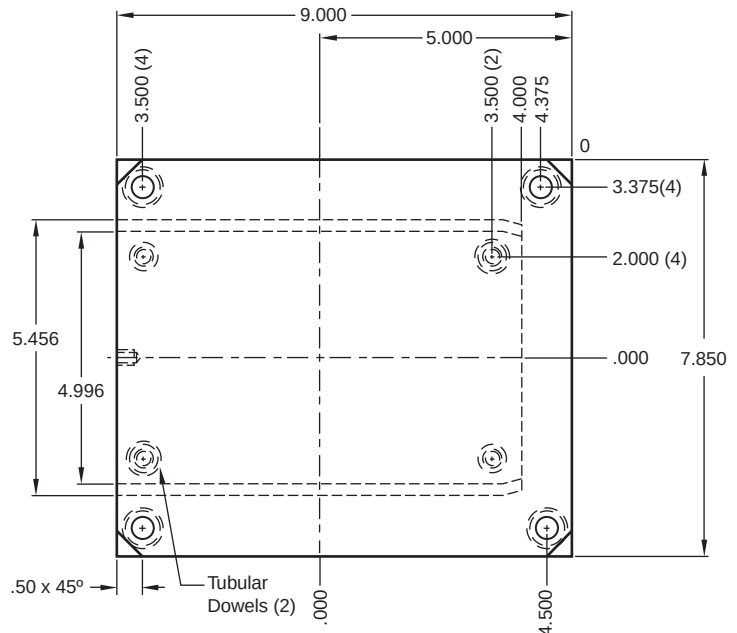
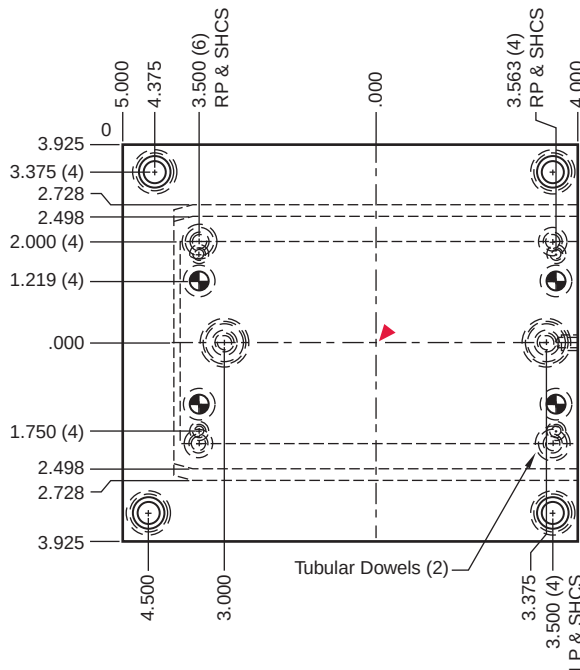
Catalog Number	A	B
RTS-0809-1313-P	1.376	1.376
RTS-0809-1318-P	1.376	1.876
RTS-0809-1813-P	1.876	1.376
RTS-0809-1818-P	1.876	1.876
RTS-0809-1823-P	1.876	2.376
RTS-0809-2318-P	2.376	1.876
RTS-0809-2323-P	2.376	2.376



RTI® 08/09 Series

7.85 x 9 T-Style

Note: Offset zero location.



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

All T-Series inserts include an MS65 mold strap and (2) 3/8-16 SHCS instead of the T100 T-Handle.

To order inserts with a Sleeve Ejector Plate, specify " - SEP" at the end of the catalog number instead of the "-P".

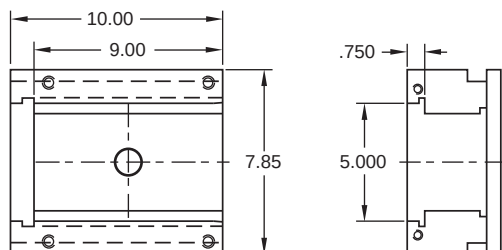
Ex: RTT-0809-1717-SEP.

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.

► CAD insertion point

Catalog Number	A	A2	B	B2
RTT-0809-1717-P	1.751	1.001	1.751	1.001
RTT-0809-1722-P	1.751	1.001	2.251	1.501
RTT-0809-2222-P	2.251	1.501	2.251	1.501
RTT-0809-2626-P	2.626	1.876	2.626	1.876

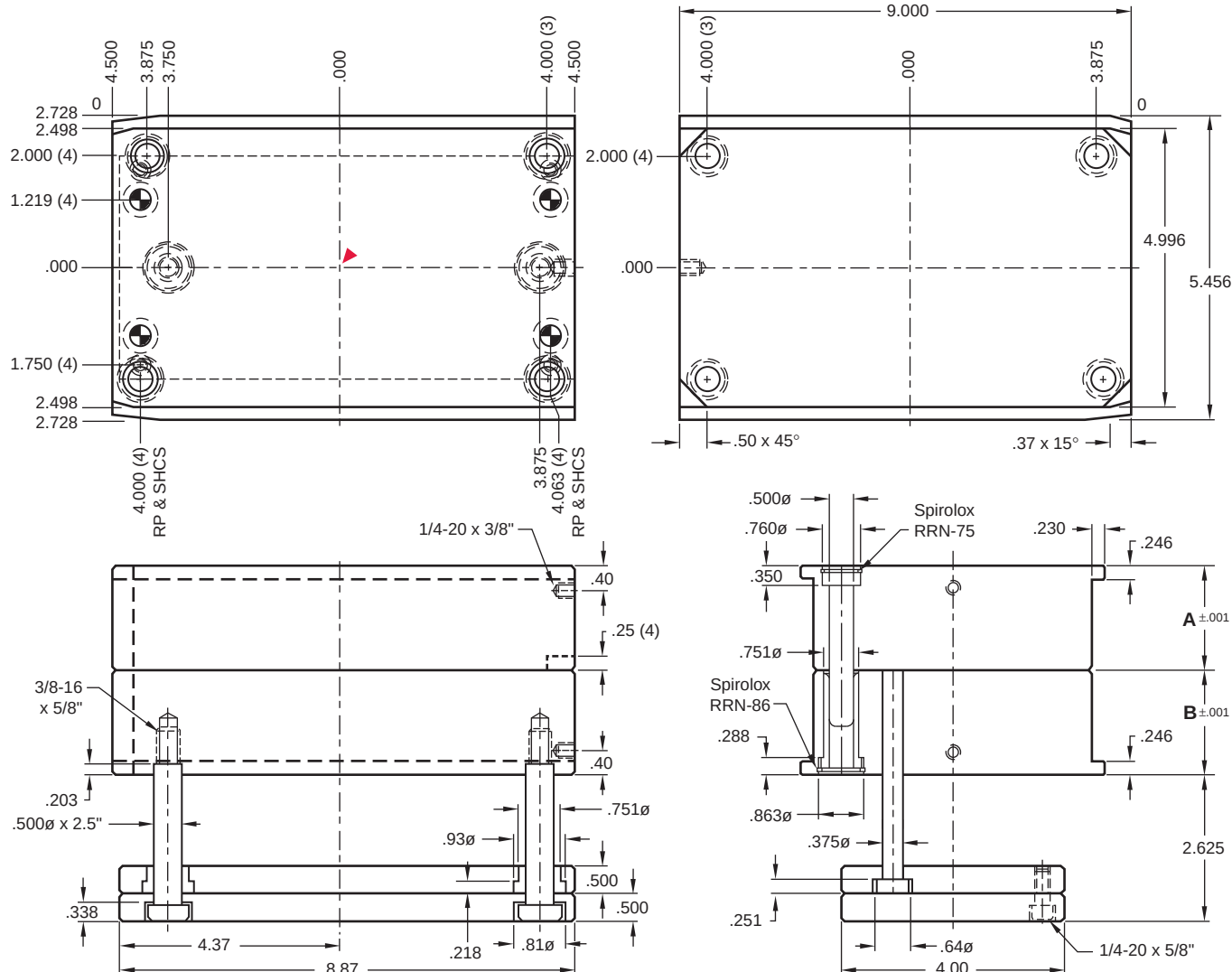
RTI® 08/10 Series



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



M A & B Plates: P-20 Pre-Hard, Pin Plates: AISI 1018

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTS-0810-1313-SEP.

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.

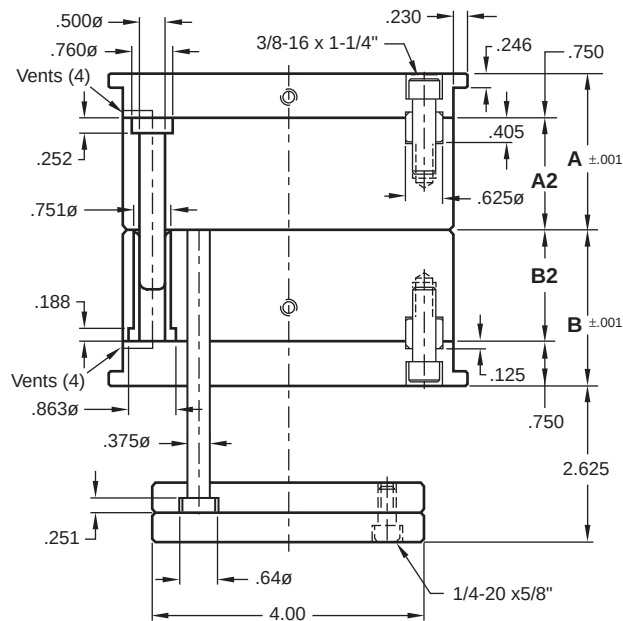
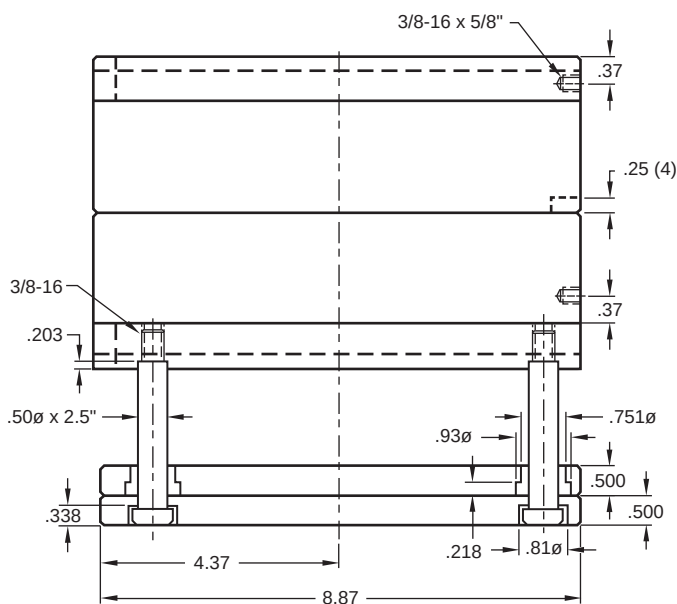
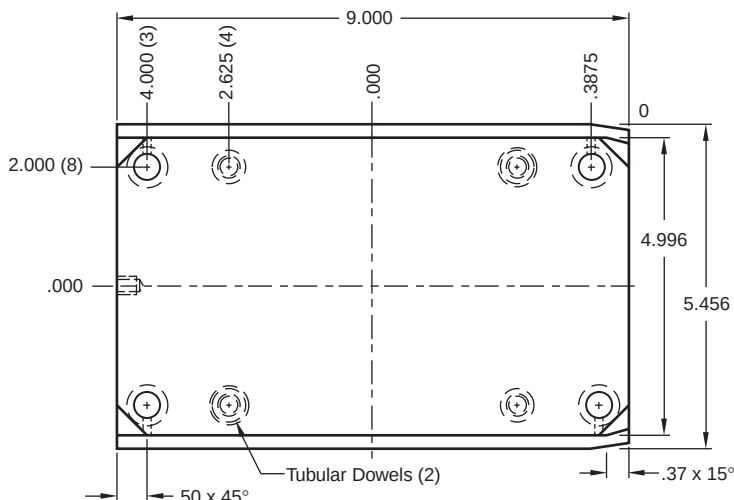
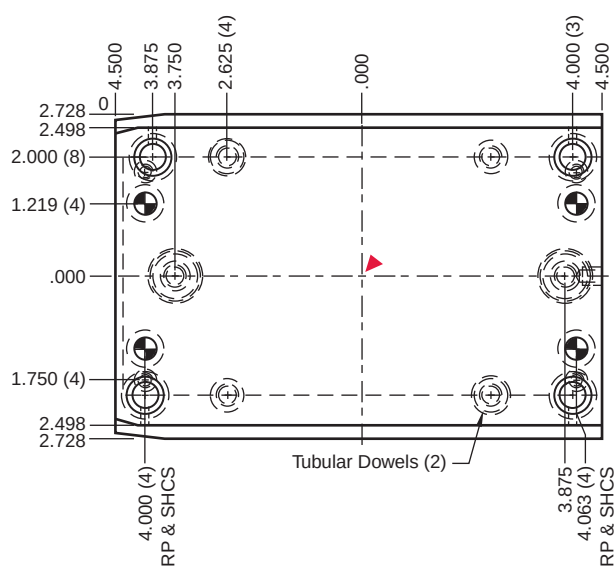
► CAD insertion point

Catalog Number	A	B
RTS-0810-1313-P	1.376	1.376
RTS-0810-1318-P	1.376	1.876
RTS-0810-1813-P	1.876	1.376
RTS-0810-1818-P	1.876	1.876
RTS-0810-1823-P	1.876	2.376
RTS-0810-2318-P	2.376	1.876
RTS-0810-2323-P	2.376	2.376



RTI® 08/10 Series

5 x 9 Laminated



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTL-0810-1313-SEP.

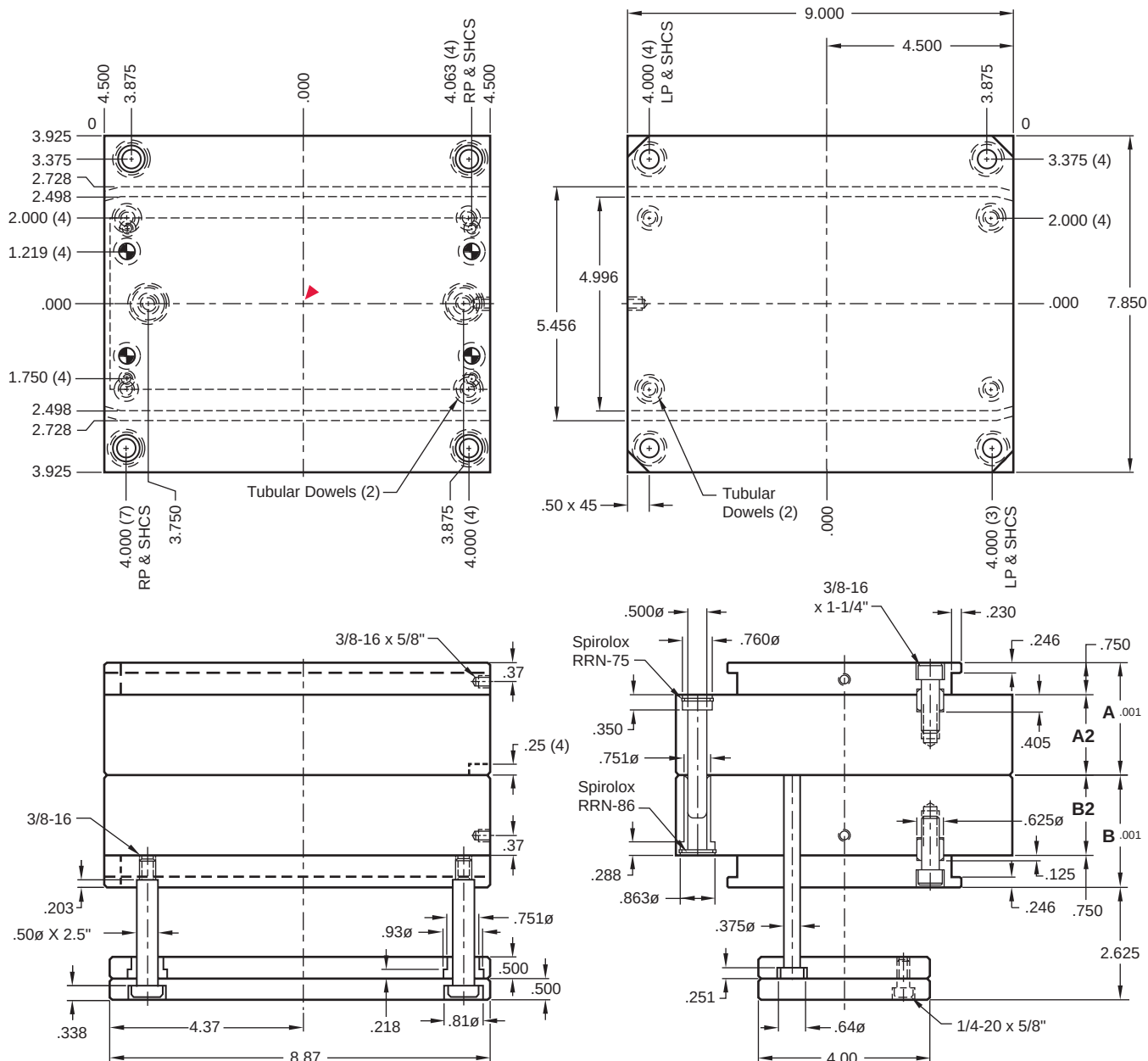
Call for other materials, sizes, or component omissions. For ejector plates, pin plates, or full ejector assembly sets, refer to the price list for specific catalog numbers and pricing.

► CAD insertion point

Catalog Number	A	A2	B	B2
RTL-0810-1313-P	1.376	.626	1.376	.626
RTL-0810-1318-P	1.376	.626	1.876	1.126
RTL-0810-1813-P	1.876	1.126	1.376	.626
RTL-0810-1818-P	1.876	1.126	1.876	1.126
RTL-0810-1823-P	1.876	1.126	2.376	1.626
RTL-0810-2323-P	2.376	1.626	2.376	1.626

RTI® 08/10 Series

7.85 x 9 T-Style



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

All T-Series inserts include an MS65 mold strap and (2) 3/8-16 SHCS instead of the T100 T-Handle.

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTT-0810-1717-SEP.

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.

► CAD insertion point

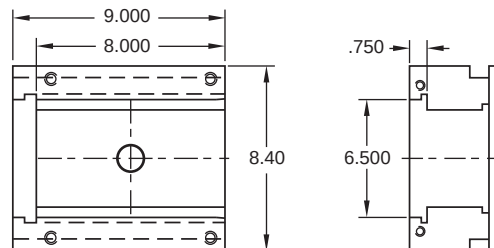
Catalog Number	A	A2	B	B2
RTT-0810-1717-P	1.751	1.001	1.751	1.001
RTT-0810-1722-P	1.751	1.001	2.251	1.501
RTT-0810-2626-P	2.626	1.876	2.626	1.876



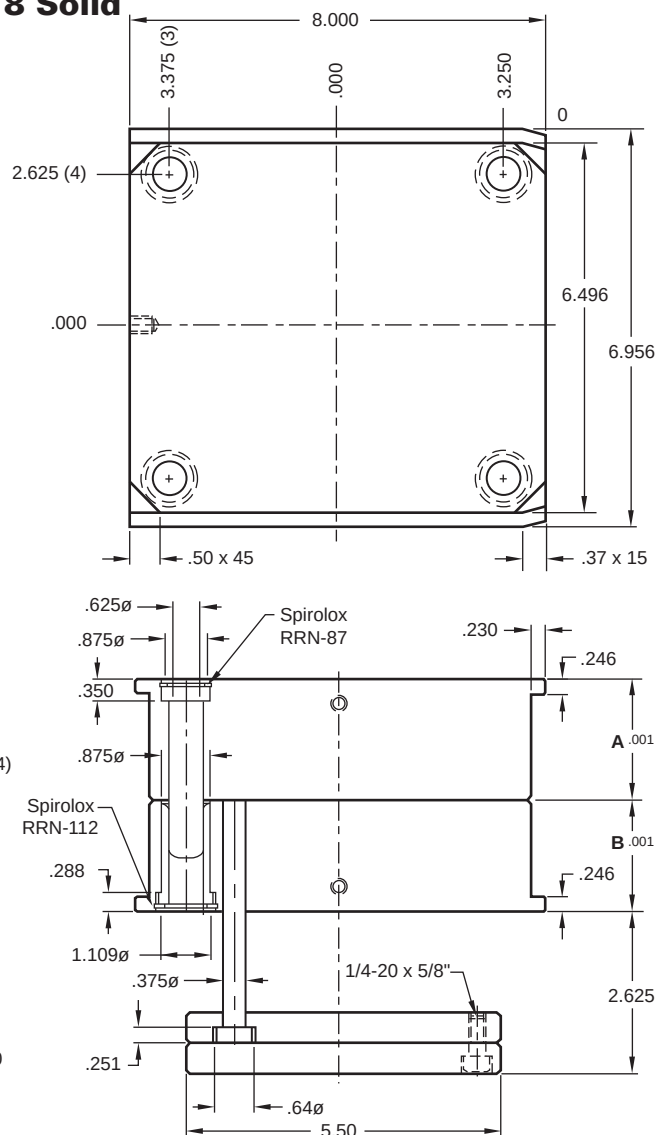
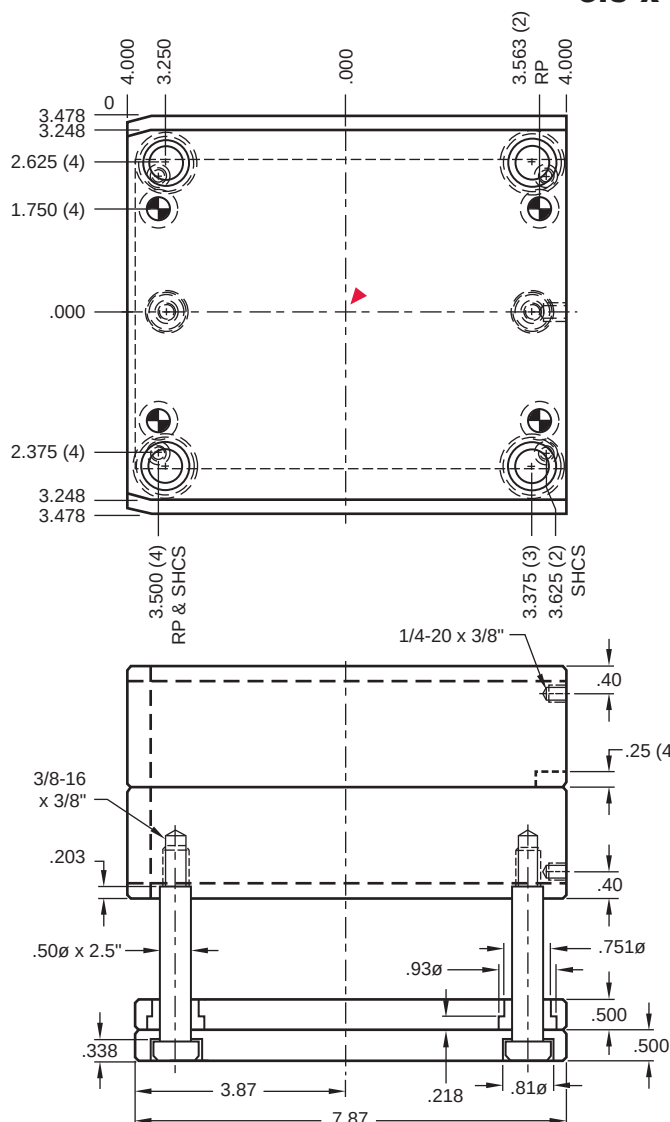
RTI® 84/90 Series

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



M A & B Plates: P-20 Pre-Hard, Pin Plates: AISI 1018

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTS-8490-1313-SEP.

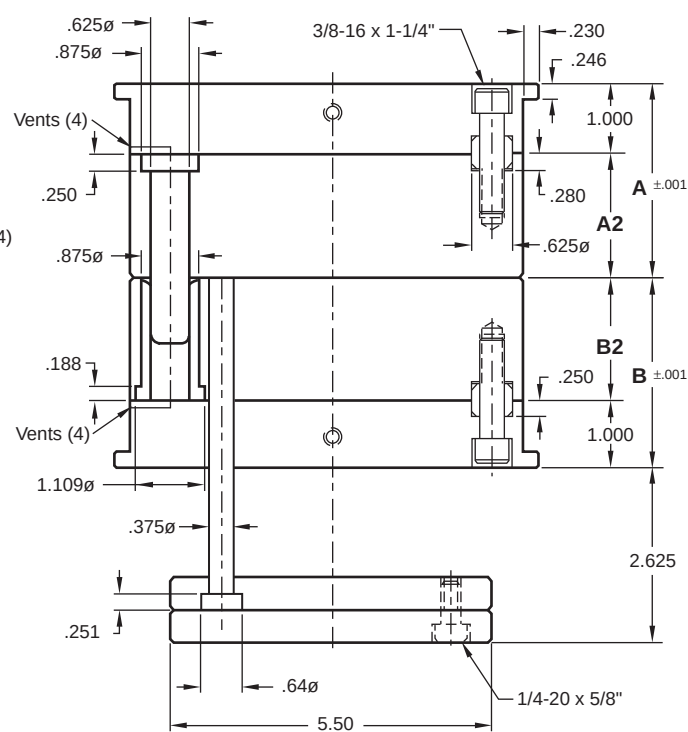
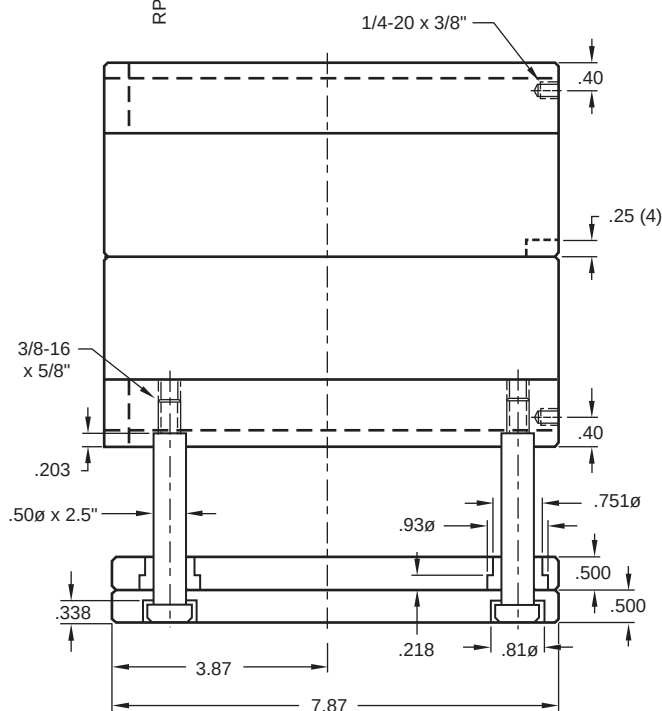
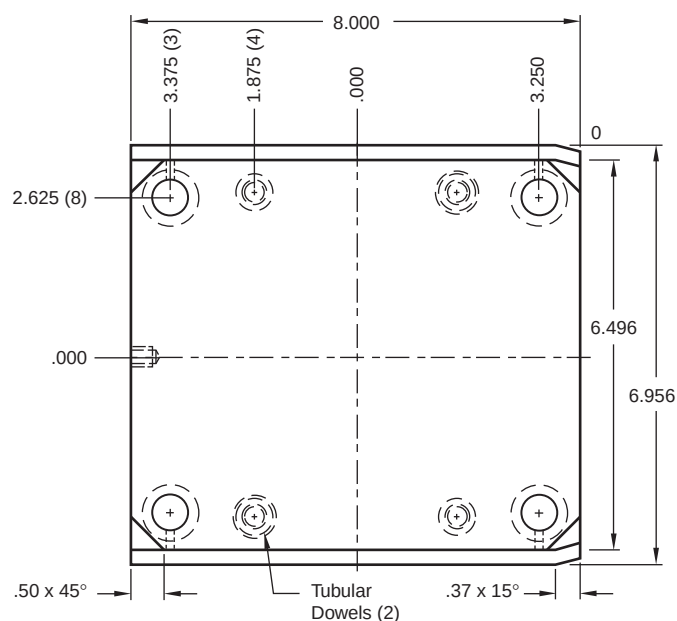
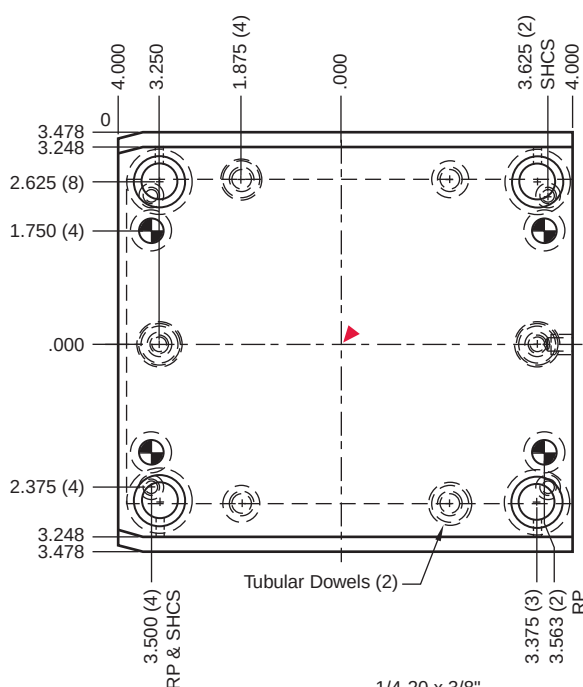
Call for other materials, sizes, or component omissions. For ejector plates, pin plates, or full ejector assembly sets, refer to the price list for specific catalog numbers and pricing.

► CAD insertion point

Catalog Number	A	B
RTS-8490-1313-P	1.376	1.376
RTS-8490-1318-P	1.376	1.876
RTS-8490-1813-P	1.876	1.376
RTS-8490-1818-P	1.876	1.876
RTS-8490-1823-P	1.876	2.376
RTS-8490-2318-P	2.376	1.876
RTS-8490-2323-P	2.376	2.376

RTI® 84/90 Series

6.5 x 8 Laminated



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTL-8490-1818-SEP.

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.

► CAD insertion point

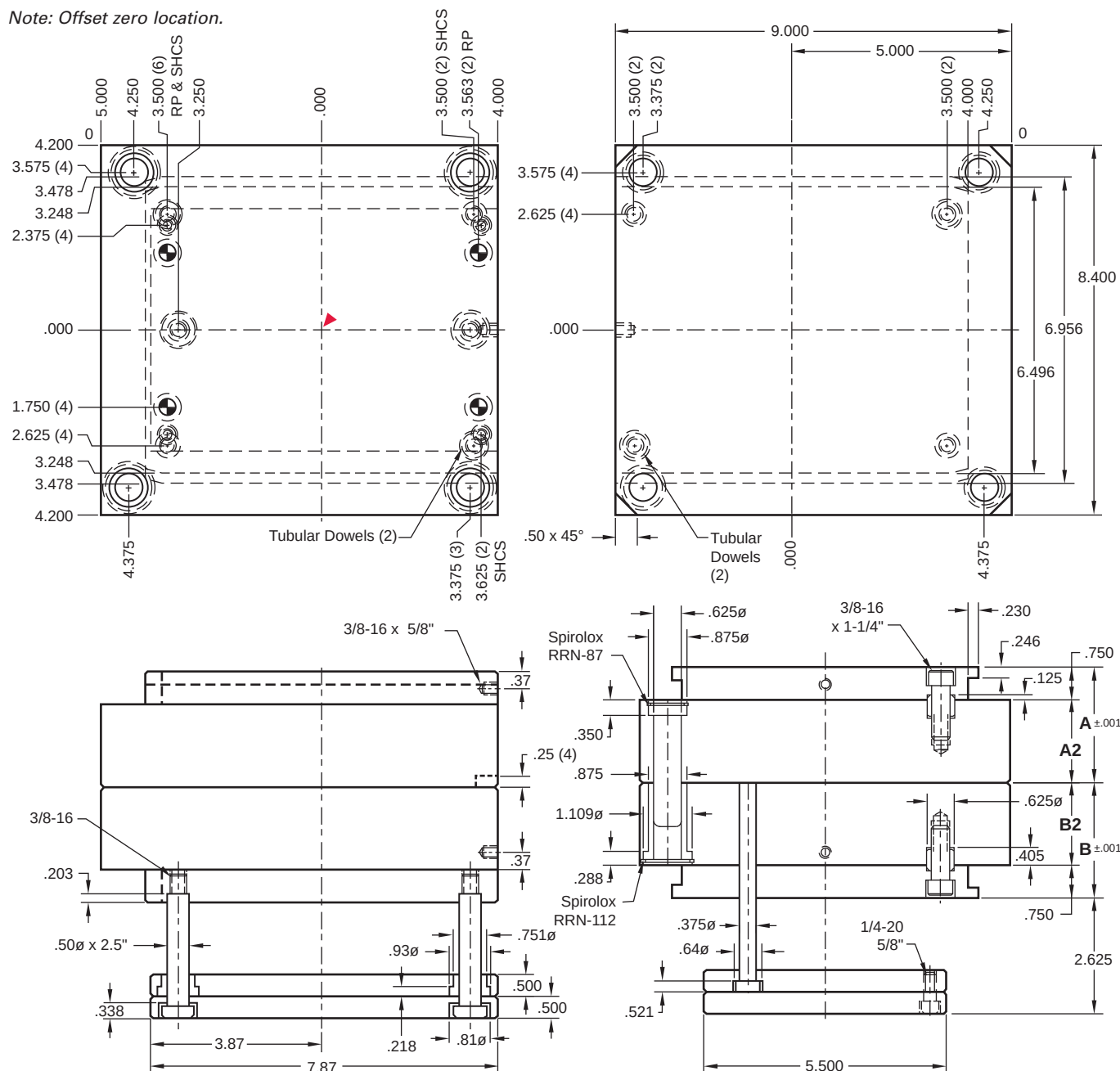
Catalog Number	A	A2	B	B2
RTL-8490-1818-P	1.876	.876	1.876	.876
RTL-8490-1823-P	1.876	.876	2.376	1.376
RTL-8490-2318-P	2.376	1.376	1.876	.876
RTL-8490-2323-P	2.376	1.376	2.376	1.376



RTI® 84/90 Series

8.4 x 9 T-Style

Note: Offset zero location.



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

All T-Series inserts include an MS65 mold strap and (2) 3/8-16 SHCS instead of the T100 T-Handle.

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTT-8490-2020-SEP.

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.

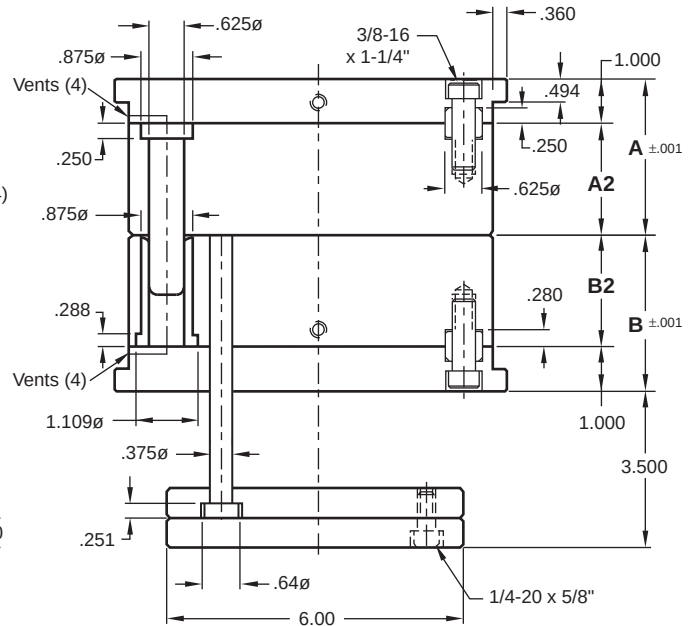
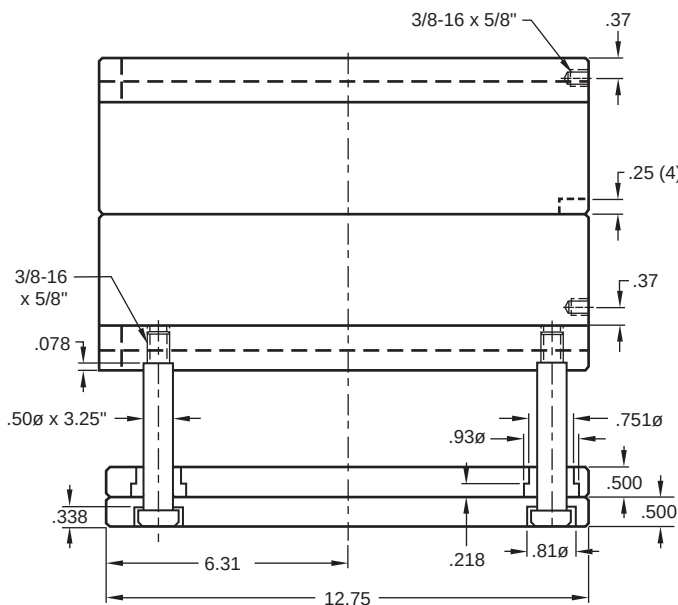
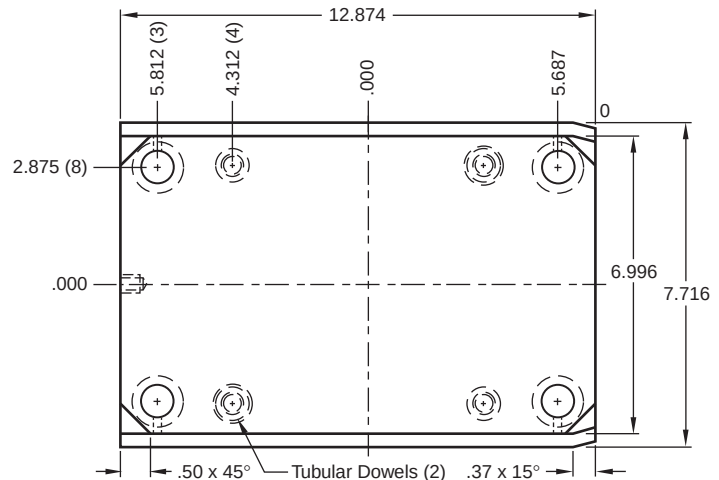
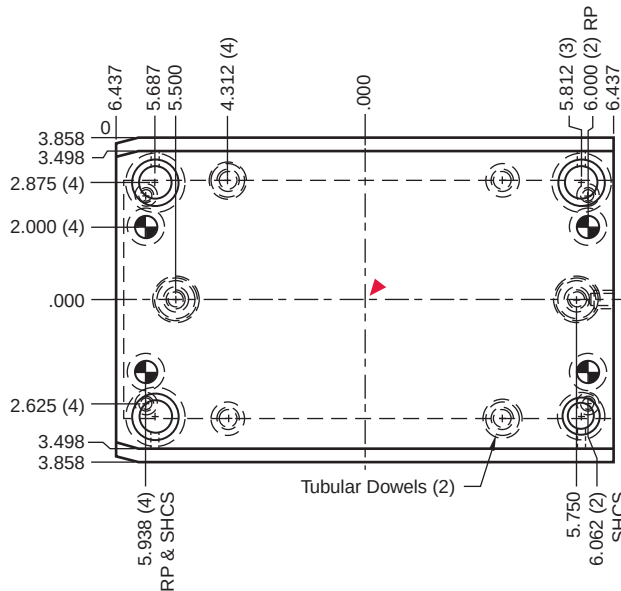
► CAD insertion point

Catalog Number	A	A2	B	B2
RTT-8490-2020-P	2.001	1.251	2.001	1.251
RTT-8490-2222-P	2.251	1.501	2.251	1.501
RTT-8490-2626-P	2.626	1.876	2.626	1.876



RTI® 10/14 Series

7 x 12.9 Laminated



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

All 10/14 Series inserts include an MS65 mold strap and (2) 3/8-16 SHCS instead of the T100 T-Handle.

To order inserts with a Sleeve Ejector Plate, specify "- SEP" at the end of the catalog number instead of the "-P".

Ex: RTL-1014-2323-SEP.

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.

► CAD insertion point

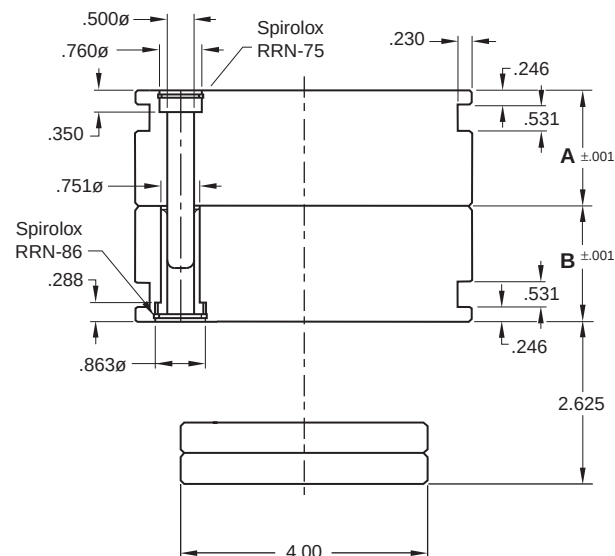
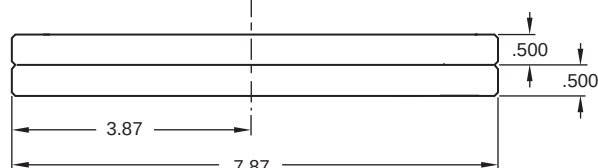
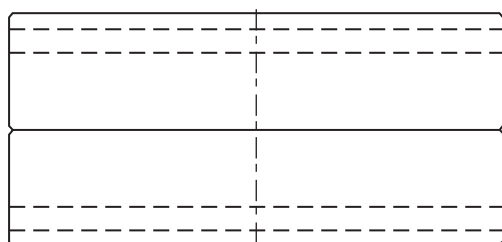
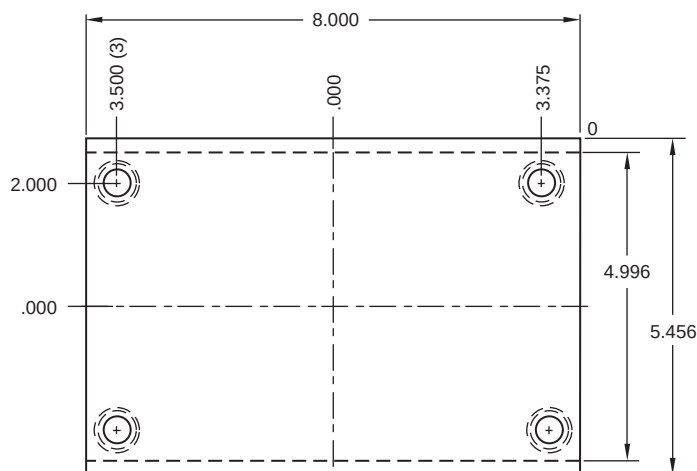
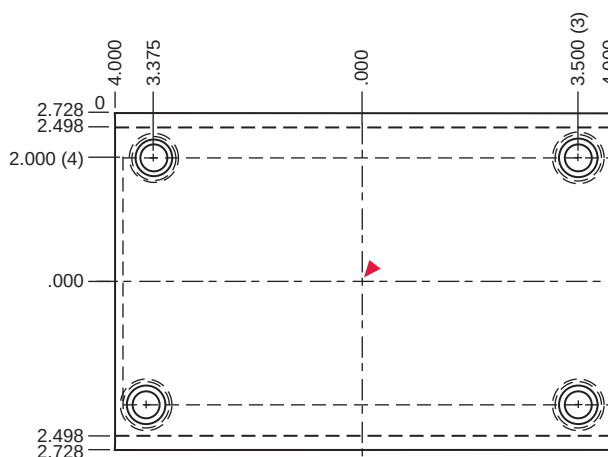
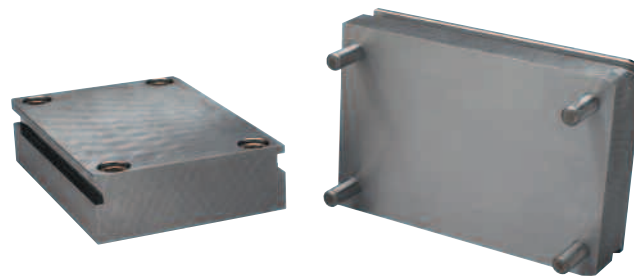
Catalog Number	A	A2	B	B2
RTL-1014-2323-P	2.376	1.376	2.376	1.376
RTL-1014-2328-P	2.376	1.376	2.876	1.876
RTL-1014-2823-P	2.876	1.876	2.376	1.376
RTL-1014-2828-P	2.876	1.876	2.876	1.876

RTI® S-Series

Description:

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



▶ CAD insertion point

M All Plates are FM-15 (#1 Steel)

Catalog Number	A	B
RTS-0809-1818-S	1.876	1.876

Call for other materials, or sizes.



RTI® Complete

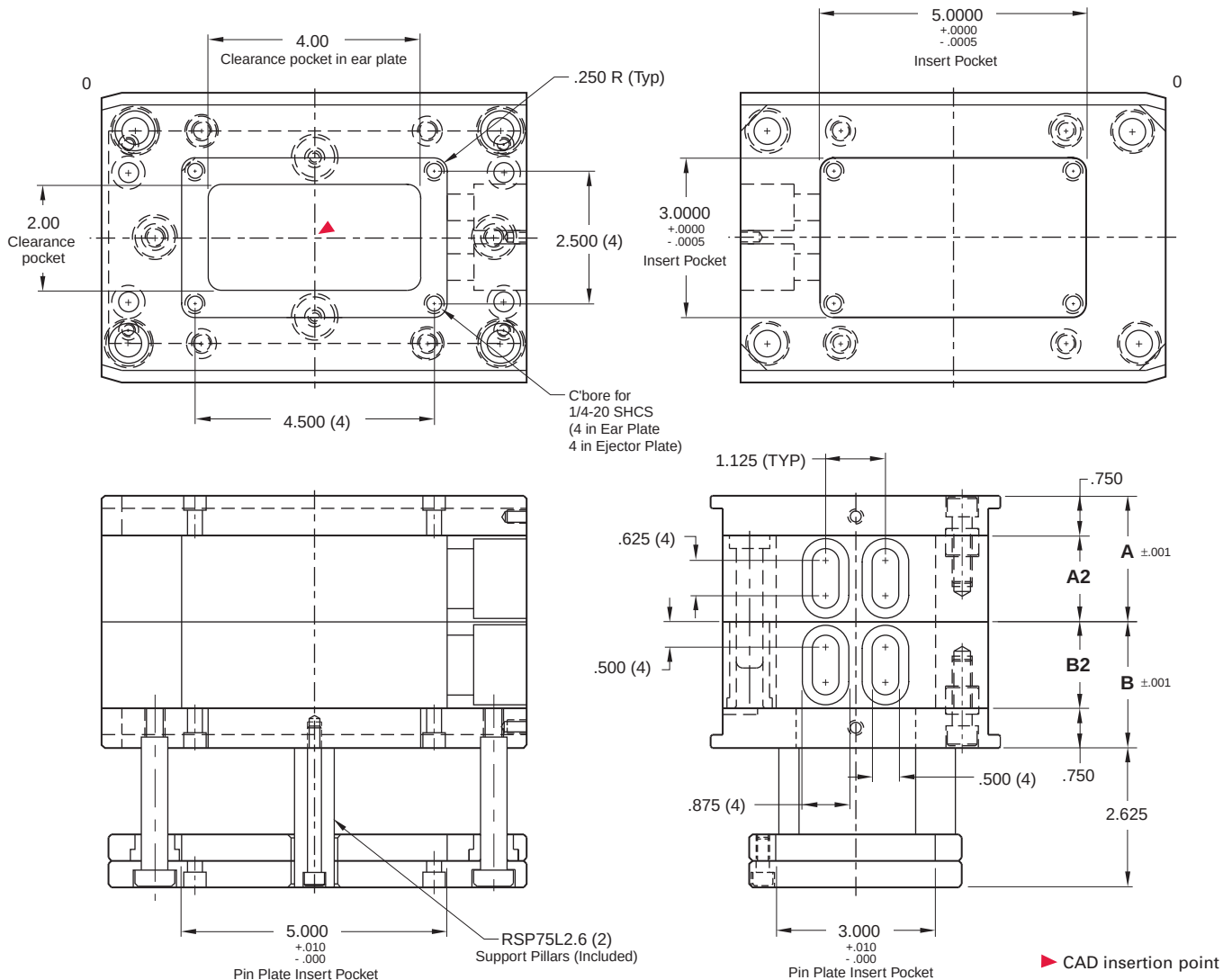


Description:

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 available on page F-3.

Cavity, core, and pin plate inserts are available on page F-15.



M A & B Plates: P-20 Pre-Hard, Ear Plates: AISI 4130, Pin Plates: AISI 1018

Catalog Number	A	A2	B	B2
RTLP-0809-2323-P	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® Complete

Core and Cavity Inserts

Material Options:

DH2F, Modified H-13

40-42 HRC

From International Mold Steels, 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

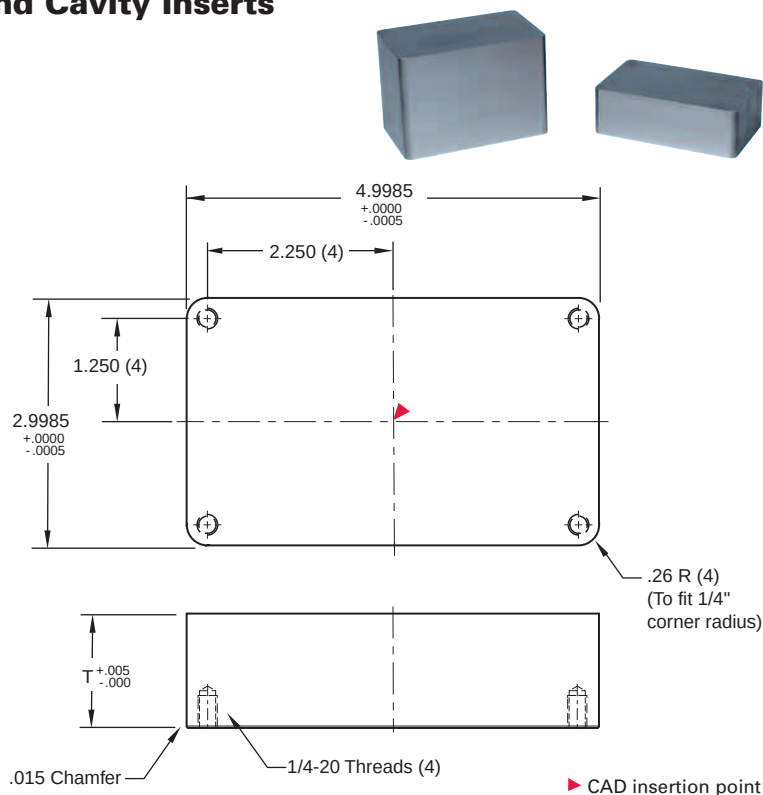
Alumec 89, Aluminum Alloy

164-168 Brinell

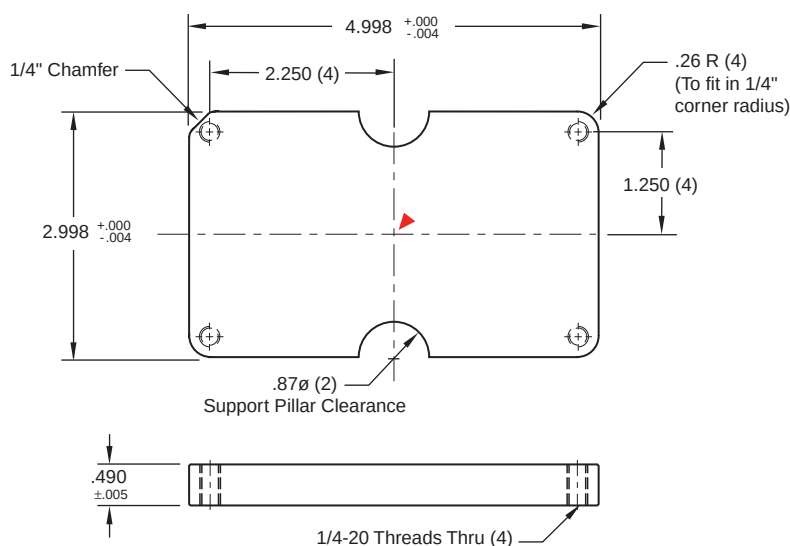
From Uddeholm, this aluminum material has excellent machinability, allowing faster cutting speeds for prototype tools which are not subjected to abrasive plastics.

Catalog Number	T
RCIA-0809-16	1.630
RCIA-0809-35	3.500

Screws included.



Pin Plate Inserts



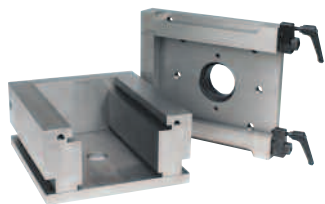
M AISI 1018

▶ CAD insertion point

Catalog Number	Description
RPI-0809-5	Pin Plate Insert



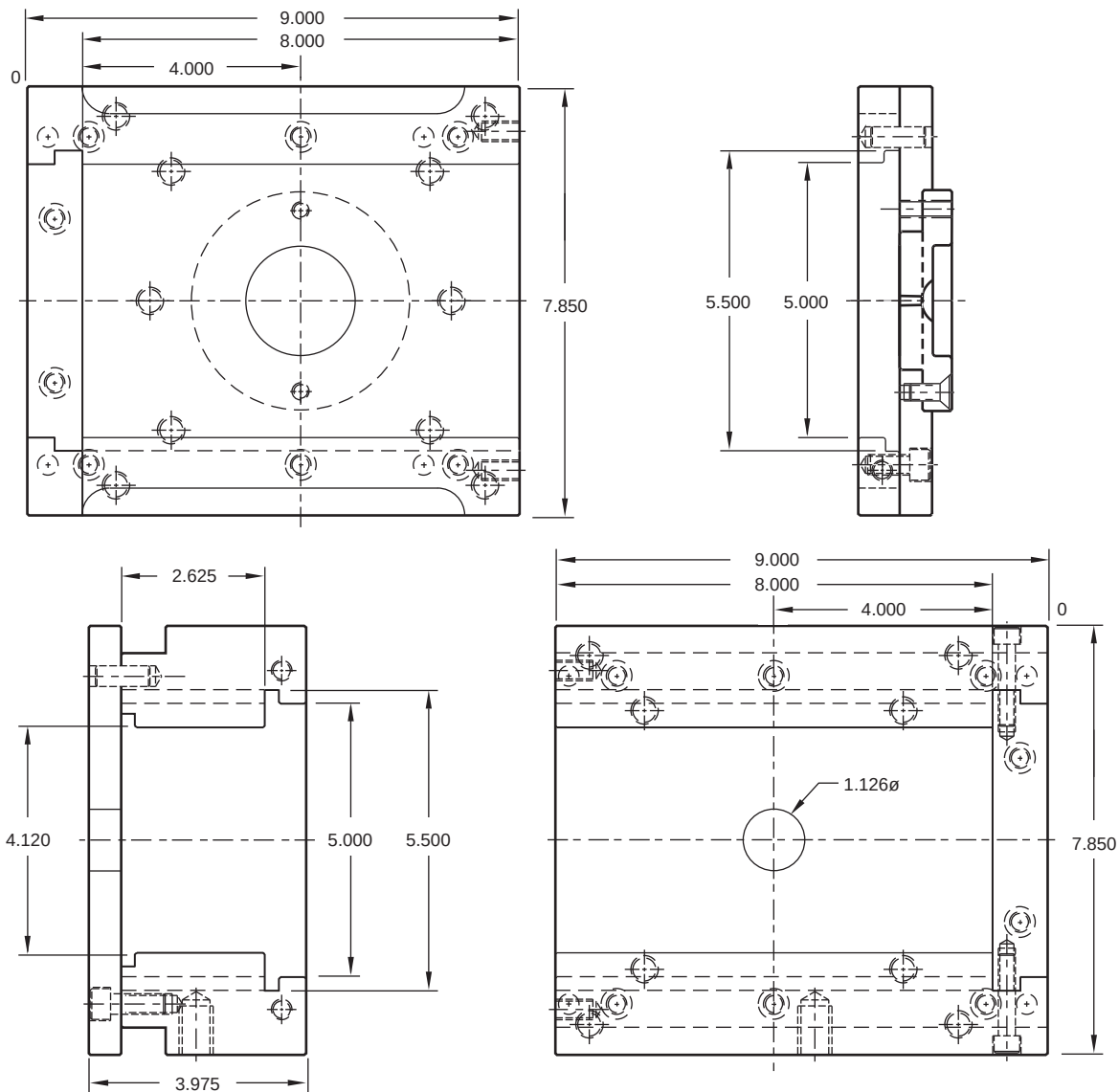
RTI® 08/09 Frame



Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

Accepts:

- 5 x 8 Solid Units, RTS-0809 on Page F-2
- 5 x 8 Laminated Units, RTL-0809 on Page F-3
- 7.85 x 9 T-Style Units, RTT-0809 on Page F-4



M Pre-Hardened Stainless Steel, 32-36 HRC

Includes:

- Frame
- RTI Frame Sprue Bushing
- Quick Change Clamps (4)

To Order:

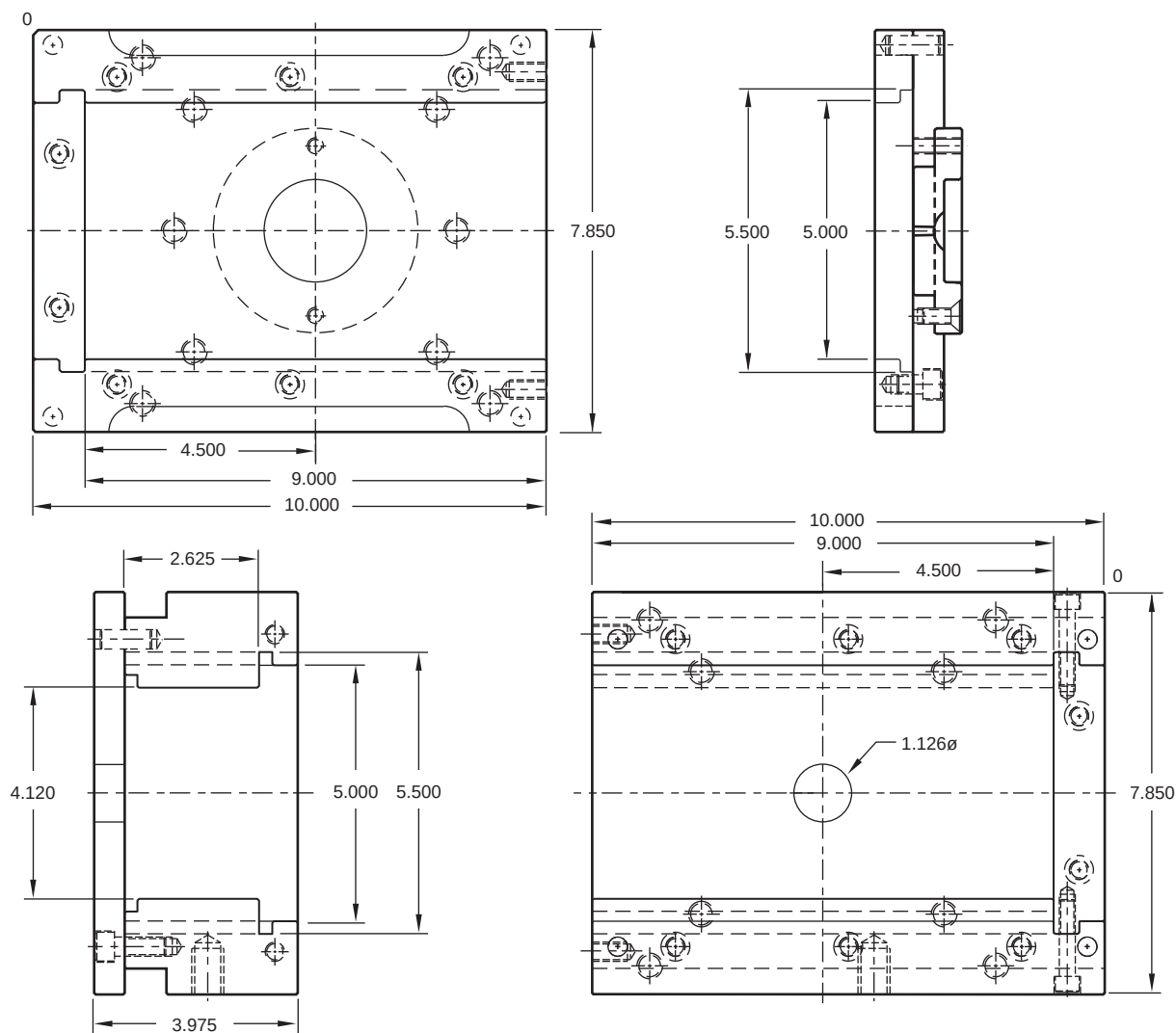
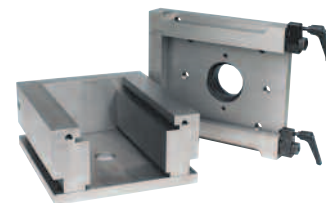
1. Specify Catalog Number: RTF-0809
2. Sprue Bushing Orifice: 5/32, 7/32, 9/32
3. Sprue Bushing Radius: 1/2 or 3/4

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 F-5
- 5 x 9 Laminated Units, RTL-0810 on Page F-6
- 7.85 x 9 T-Style Units, RTT-0810 on Page F-7



M Pre-Hardened Stainless Steel, 32-36 HRC

Includes:

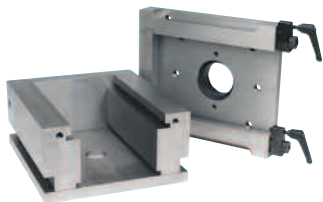
- Frame
- RTI Frame Sprue Bushing
- Quick Change Clamps (4)

To Order:

1. Specify Catalog Number: RTF-0810
2. Sprue Bushing Orifice: 5/32, 7/32, 9/32
3. Sprue Bushing Radius: 1/2 or 3/4



RTI® 84/90 Frame



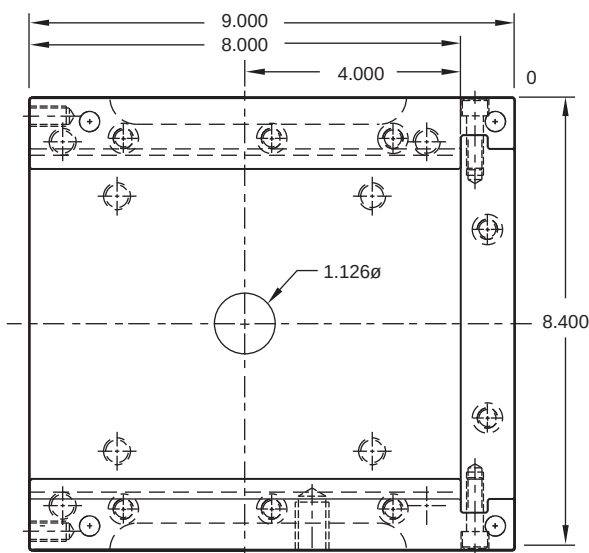
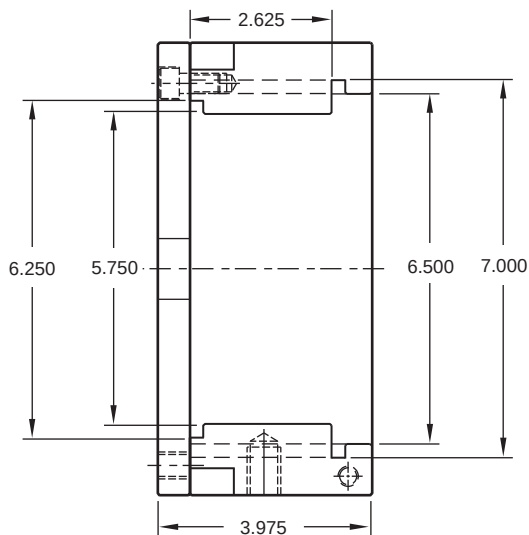
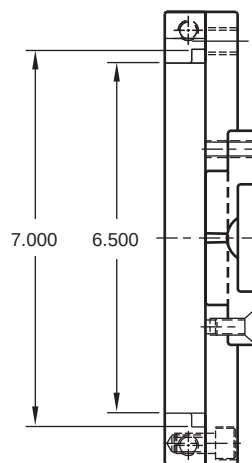
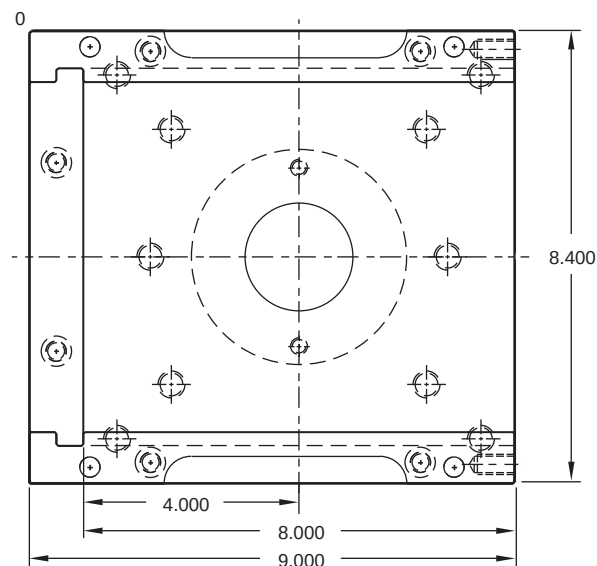
Standard RTI ejection, knockout holes, mounting holes, and clamp slots used.

Accepts:

6.5 x 8 Solid Units, RTS-8490 on Page F-8

6.5 x 8 Laminated Units, RTL-8490 on Page F-9

8.4 x 9 T-Style Units, RTT-8490 on Page F-10



M Pre-Hardened Stainless Steel, 32-36 HRC

Includes:

Frame
RTI Frame Sprue Bushing
Quick Change Clamps (4)

To Order:

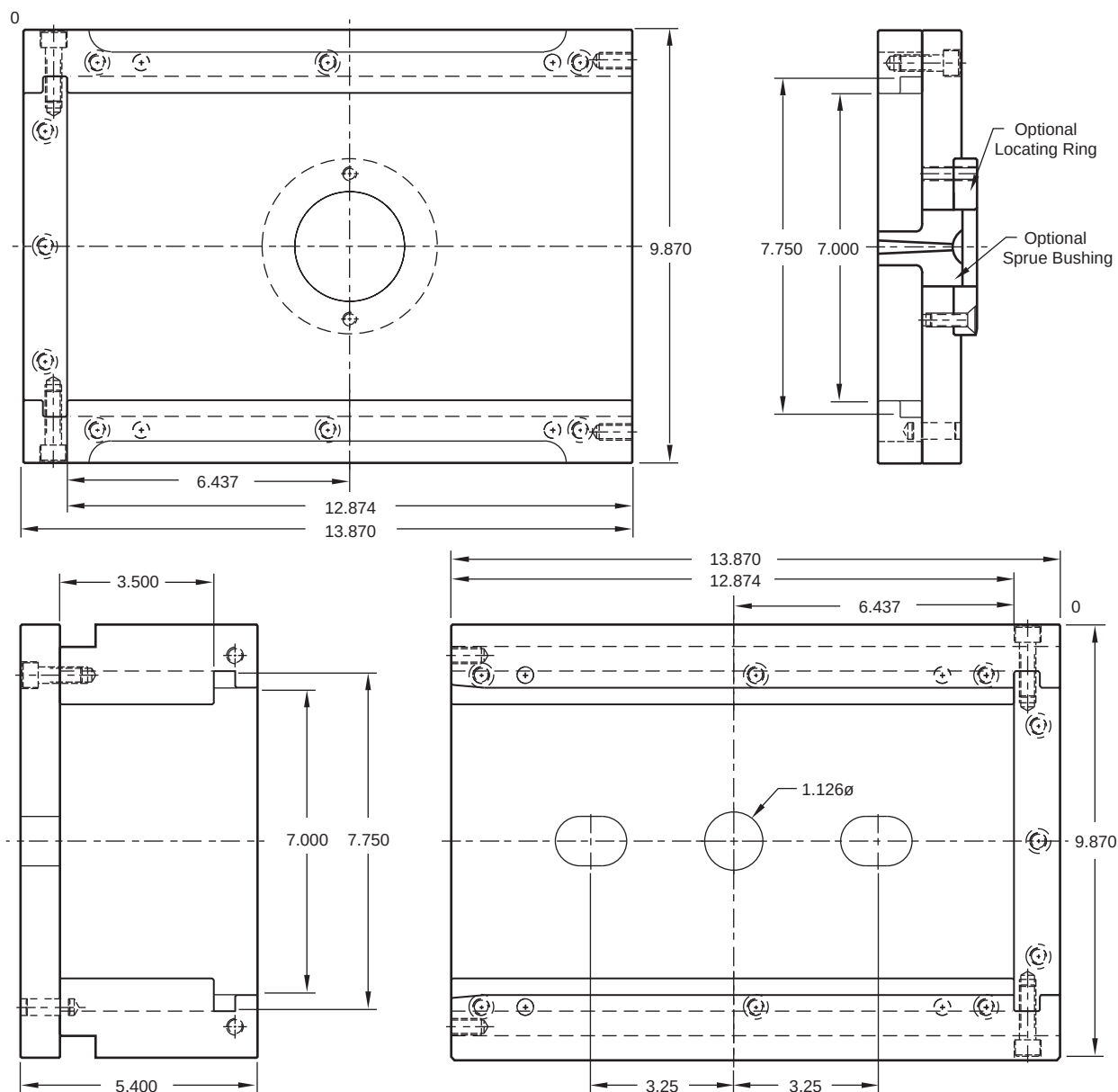
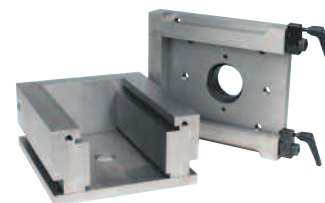
1. Specify Catalog Number: RTF-8490
2. Sprue Bushing Orifice: 5/32, 7/32, 9/32
3. Sprue Bushing Radius: 1/2 or 3/4

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 F-11
- 7 x 12.9 Laminated Units, RTL-1014 on Page F-12



M Pre-Hardened Stainless Steel, 32-36 HRC

Includes:

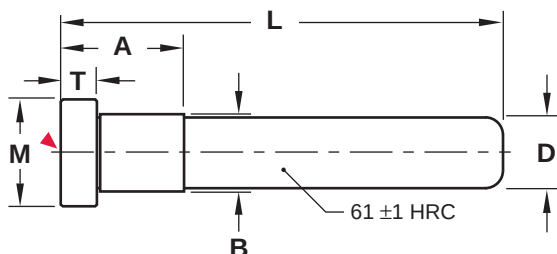
- Frame
- Quick Change Clamps (4)

To Order:

1. Specify Catalog Number: RTF-1014
2. Sprue Catalog Number, if required (see page D-1)
3. Locating Ring, if required (see page D-2)

RTI® Accessories

Leader Pins



Nom. Dia.	D	A	B	M	T
	$+0.0000$ -0.0005	$+0.00$ -0.03	$+0.0005$ -0.0000	$+0.00$ -0.01	$+0.000$ -0.002
1/2	.499	.87 *	.500	.750	.250
5/8	.624	.87	.625	.865	.250

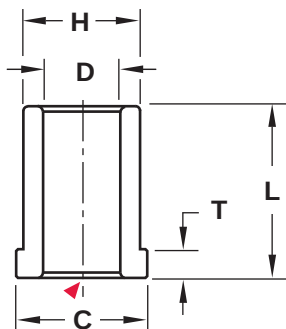
*Note: The RLP50L1.25 has an "A" dimension of .62".

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



Nom. Dia.	D	H	C	T
	$+0.0008$ -0.0000	$+0.0005$ -0.0000	$+0.000$ -0.005	$+0.000$ -0.005
1/2	.5000	.7505	.863	.188
5/8	.6250	.8755	1.100	.188

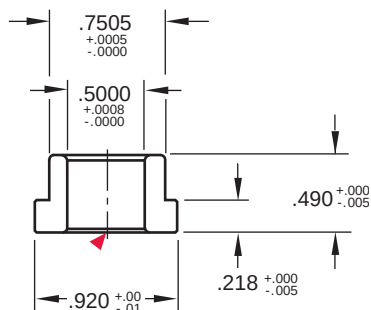
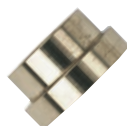
M CA954 Solid Bronze

► 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



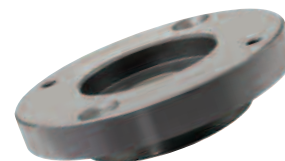
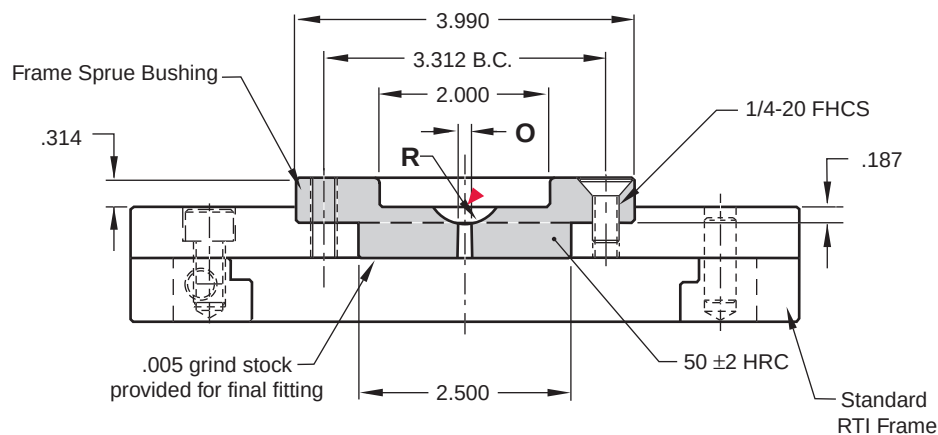
M CA954 Solid Bronze

► CAD insertion point

Catalog Number	Description
RGEB50	1/2" ID Guided Ejector Bushing

RTI® Accessories

Frame Sprue Bushings

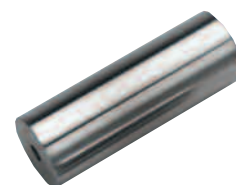
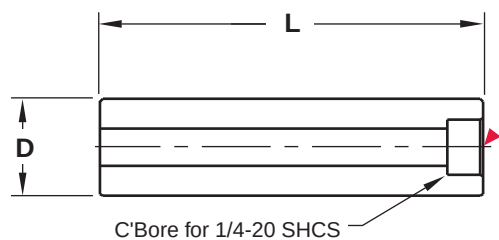


M H-13 **S** Melonite (SBN)

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

D	Catalog Number	L +.002 +.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

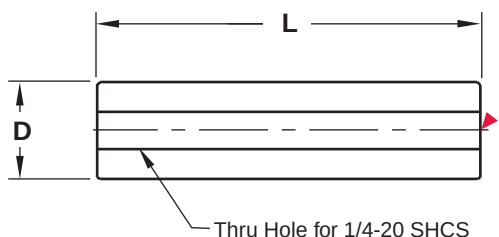
Screw included.

Clearance Hole

M AISI 1117

▶ CAD insertion point

D	Catalog Number	L +.001 +.000	Screw Length (1/4-20 SHCS)
3/4	RSP75L1.8	1.813	2.75
	RSP75L2.7	2.688	3.75

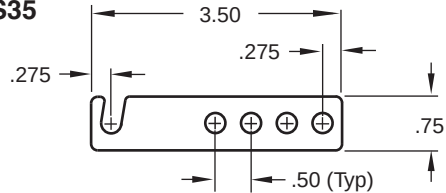


RTI® Accessories

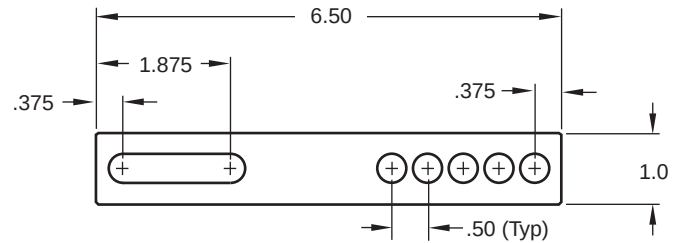
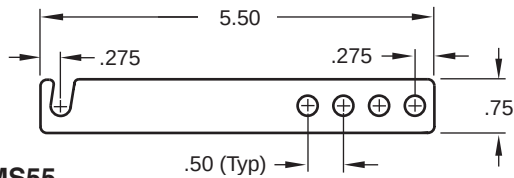
Straps



MS35



MS55



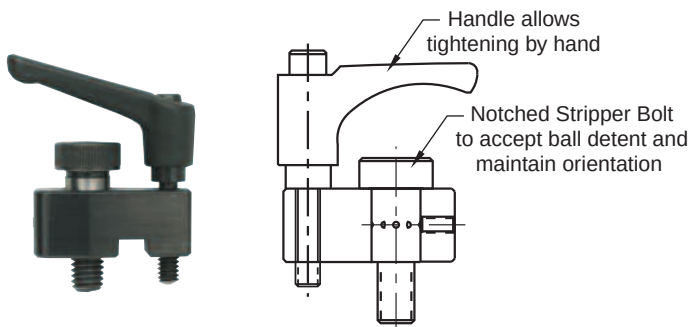
MS65

M MS35 & MS55: Polycarbonate, MS65: AISI 1018

Catalog Number	Description
MS35	3.5 " Long RTI Strap
MS55	5.5" Long RTI Strap
MS65	6.5" Long Heavy Duty Strap

MS35 & MS65 includes 1/4-20 thumb screw.
MS65 includes (2) 3/8-16 SHCS.

Frame Clamps



Catalog Number	Description
RFC-100	RTI Frame/Insert Clamp (Sold Individually)

T-Handles

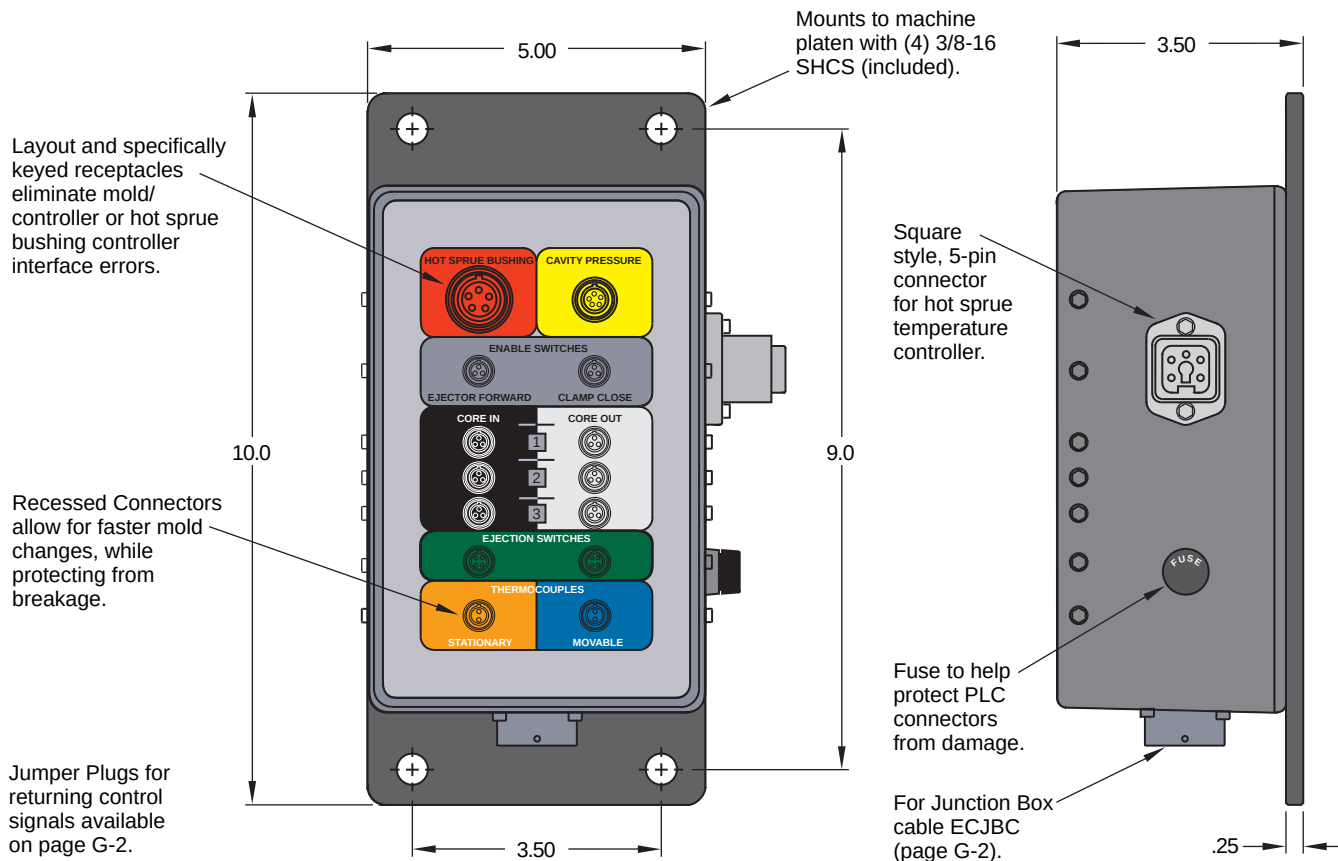


Catalog Number	Description
T100	RTI T-Handle

Designed for inserts less than 75 pounds.

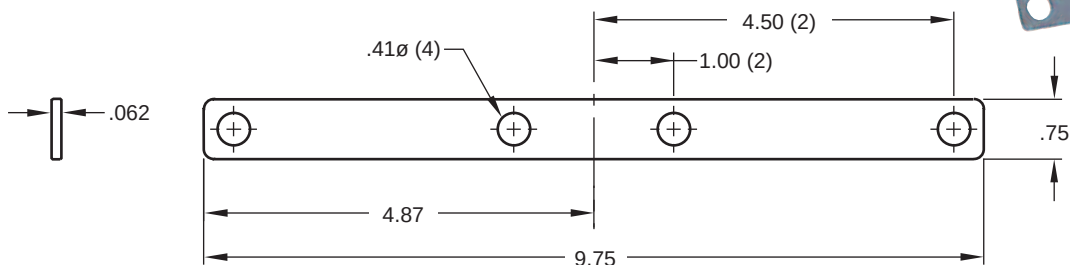
Junction Box

The Progressive EC Junction Box design interfaces with SPI Class C 24 VDC PLCs and eliminates loose wire connections to the press. The fused power circuit protects the programmable logic controller from damage, while using common signal names. All connectors are housed in a rugged aluminum die cast box which mounts to the platen.



Catalog Number	Description
EC-100	Junction Box

Mounting Brackets



M Aluminum

Catalog Number	Description
ECMB-100	Mounting Bracket Kit

Kit includes: (2) Brackets
(4) 3/8-16 x 3/4" SHCS & Nuts



Cables

Junction Box Cables

Catalog Number	Description
ECJBC-25	25' Assembly
ECJBC-50	50' Assembly

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.

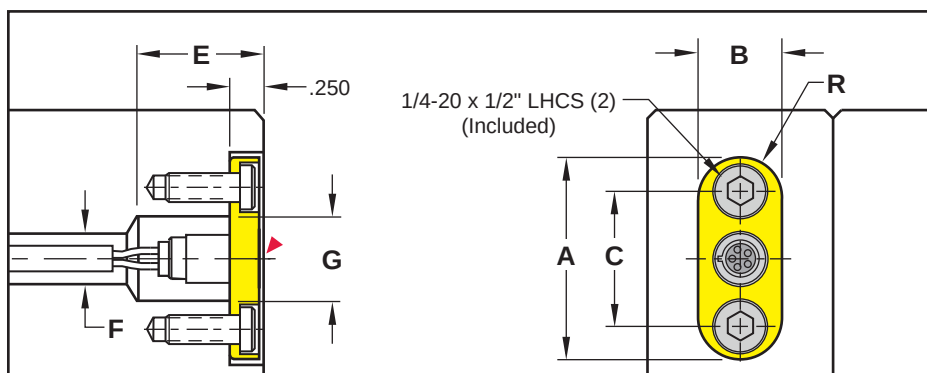
D www.procomps.com/design

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
ECRC-1	Red	Hot Sprue	5	2.000	1.00	1.500	.375	1.312	.500	1.00
ECRC-2	Yellow	Cav. Press	5	2.000	.875	1.500	.375	1.187	.375	.875
ECRC-3	Gray	Enable Switch	3	1.500	.625	1.000	.312	.937	.375	.625
ECRC-4	Black	Core In	3	1.500	.625	1.000	.312	.937	.375	.625
ECRC-5	White	Core Out	3	1.500	.625	1.000	.312	.937	.375	.625
ECRC-6	Green	Ejector Switch	4	1.500	.625	1.000	.312	.937	.375	.625
ECRC-7	Orange	Stationary T/C	2	1.500	.625	1.000	.312	.937	.375	.625
ECRC-8	Blue	Movable T/C	2	1.500	.625	1.000	.312	.937	.375	.625

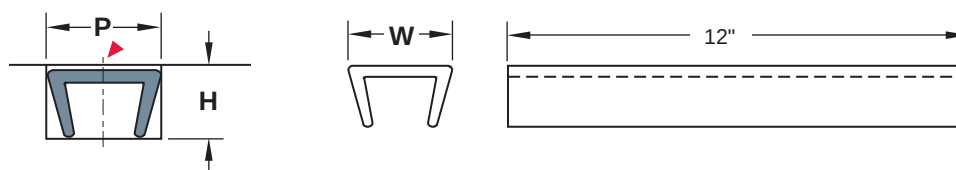
Crimp-style bullet snap connectors included.

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 G-12.

Wire Channel Inserts

Maximum Mold Temperature: 200° F (93° C)



M Nylon

► CAD insertion point

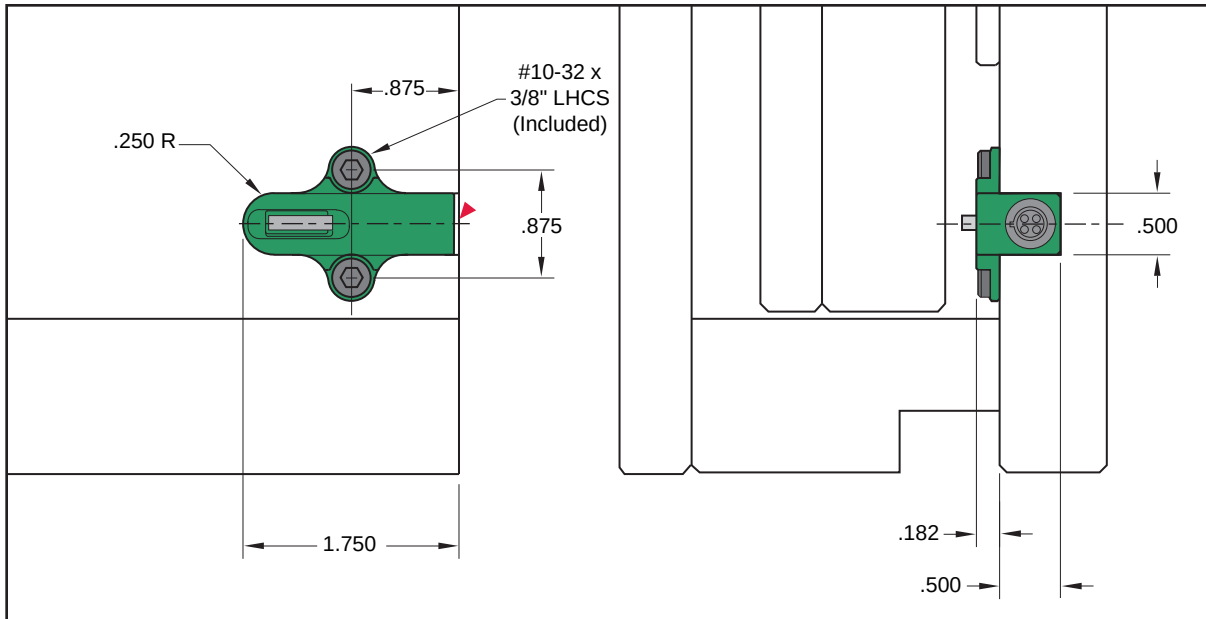
Catalog Number	P Pocket Width	H Pocket Depth	W Wire Chan. Width
WC-50	.550	.500	.564 ±.01
WC-100	1.000	.688	1.021 ±.02



Switches



KO™ Switch: BCP Mount



► CAD insertion point

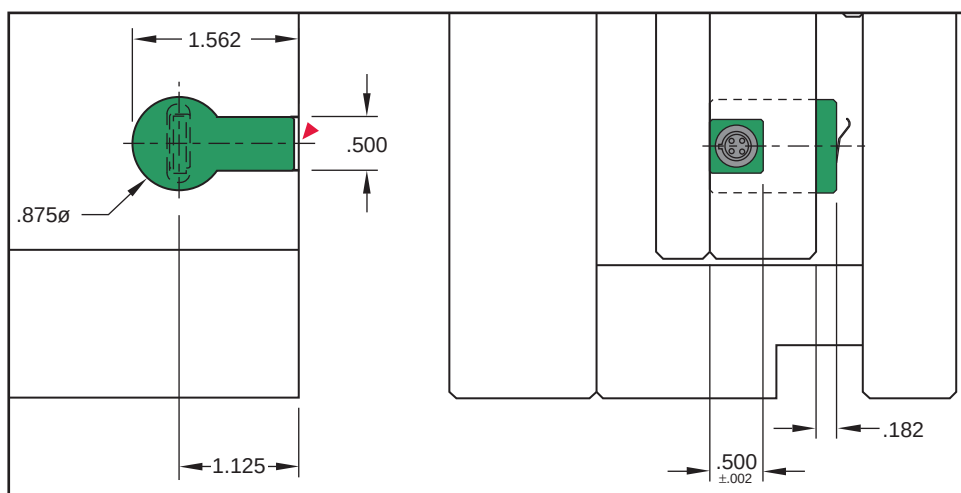
Catalog Number	Color	Function
SWKO-187	Green	Ejection

GENERAL SPECIFICATIONS FOR SWITCHES

	VOLTAGE	
	28 vdc	115 vac 60Hz
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	

Switches

KO™ Switch: Single Ejector

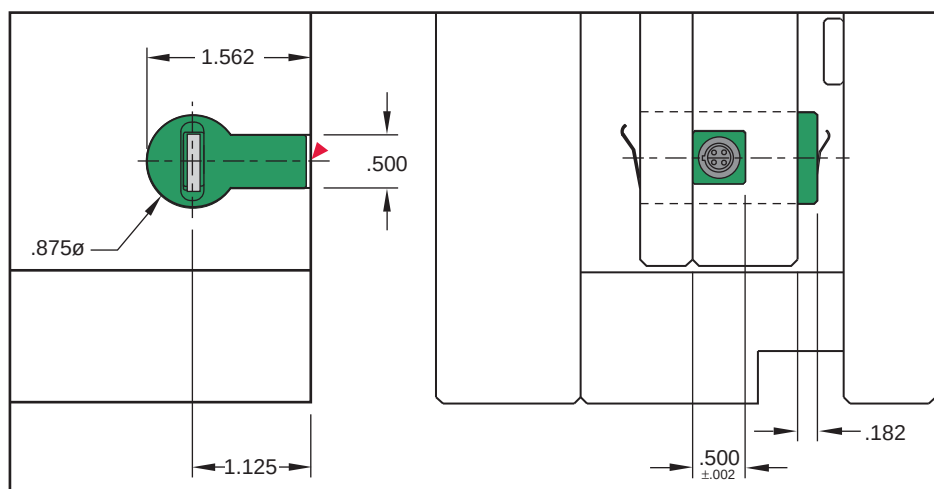


► CAD insertion point

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

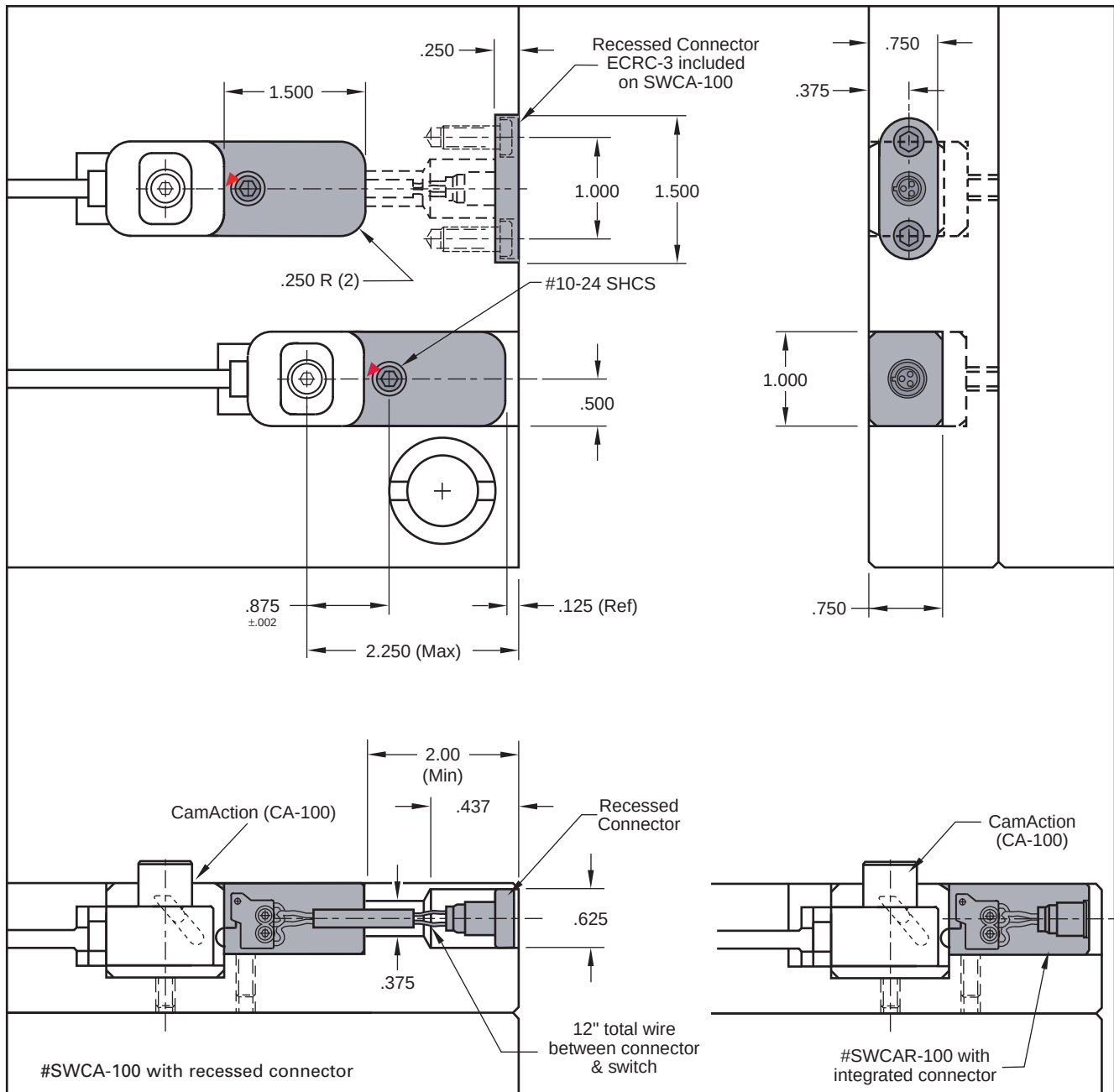




Switches

CamAction® Switch

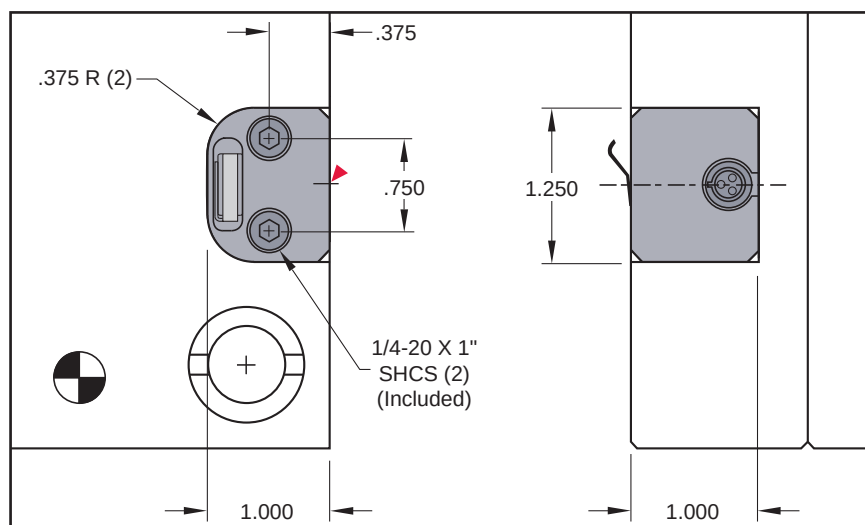
Progressive CamAction Switches verify that the slide carrier is fully retracted before the next controller sequence. Available with or without receptacle, depending on the position of the CamAction within the mold. Refer to page C-18 for CamAction data.



Catalog Number	Description	Color	Function
SWCA-100	Recessed Connector	Gray	Enable
SWCAR-100	Integrated Connector	Gray	Enable

Switches

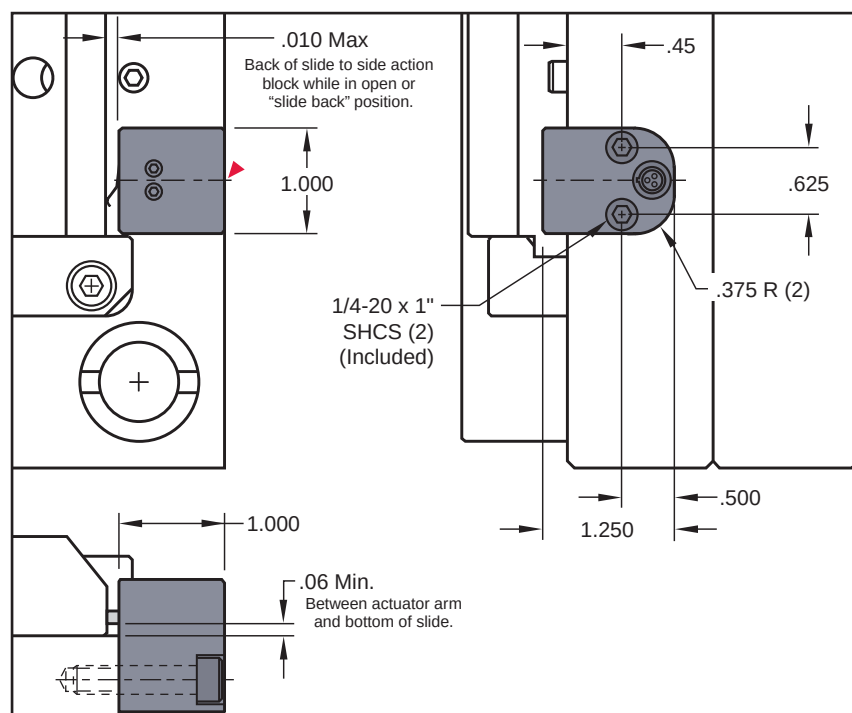
Plate Position Switch



► CAD insertion point

Catalog Number	Color	Function
SWPPS-100	Gray	Enable

Side Action Switch



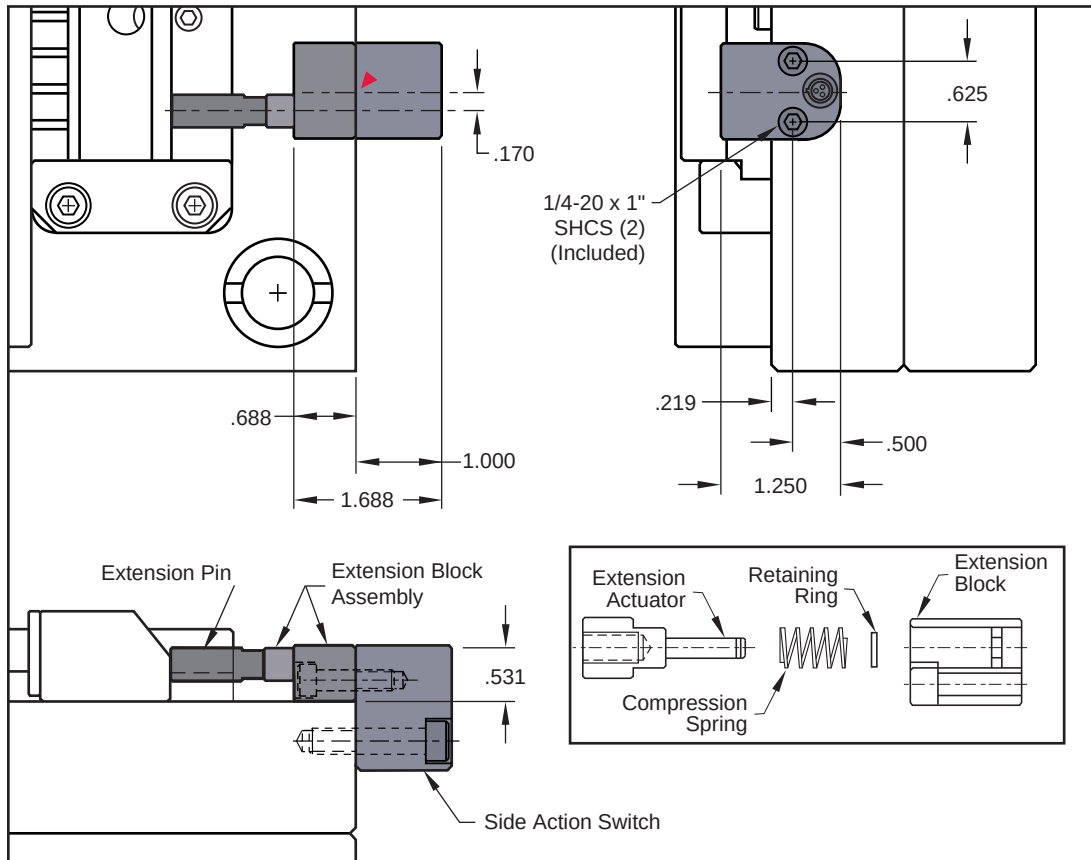
► CAD insertion point

Catalog Number	Color	Function
SWSA-100	Gray	Enable



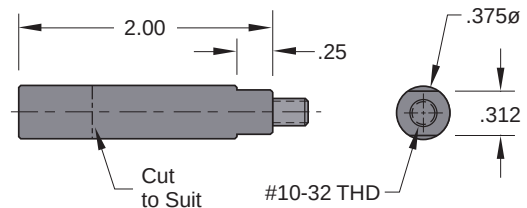
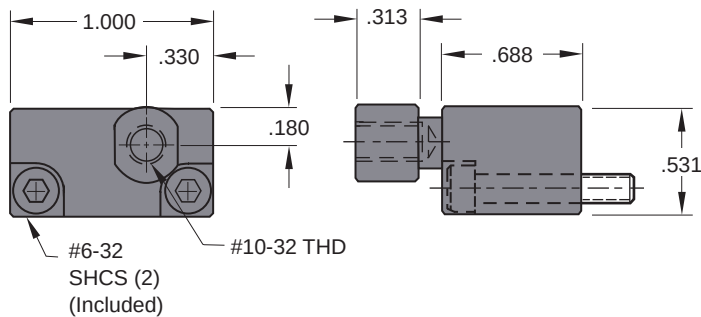
Switches

Extension Block Assembly



Extension Block Assembly

Extension Pin

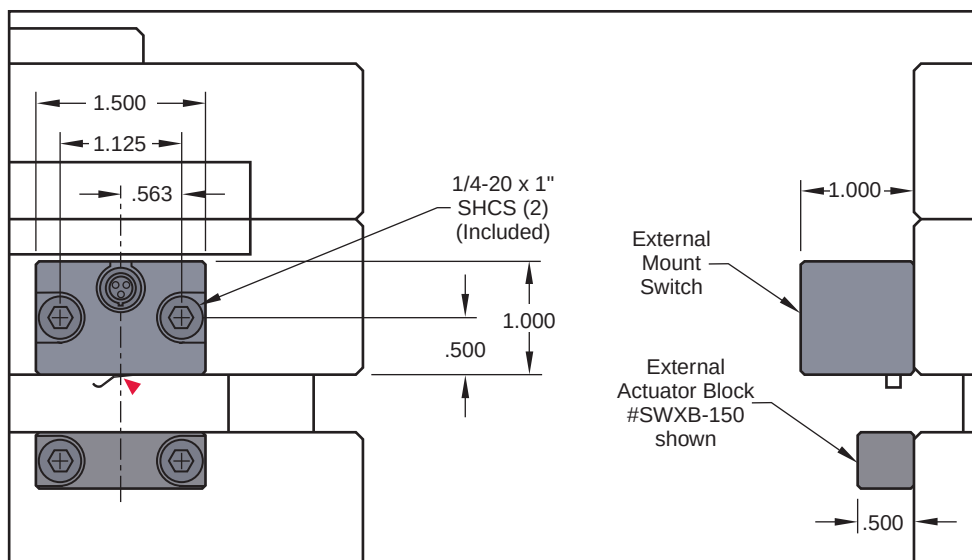


► CAD insertion point

Catalog Number	Description
SWXB-100	Extension Block Assembly
SWEP-100	Extension Pin

Switches

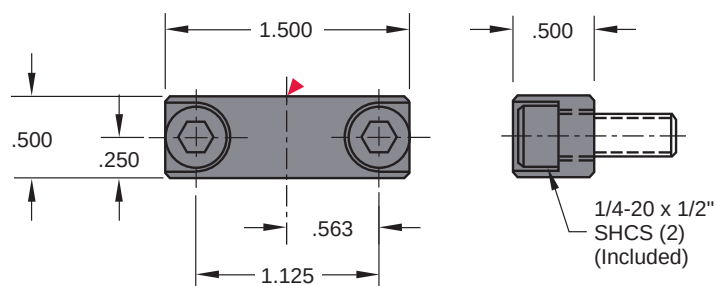
External Mount Switches



► CAD insertion point

Catalog Number	Color	Function
SWXM-3	Gray	Enable
SWXM-4	Black	Core In
SWXM-5	White	Core Out

External Actuator Block



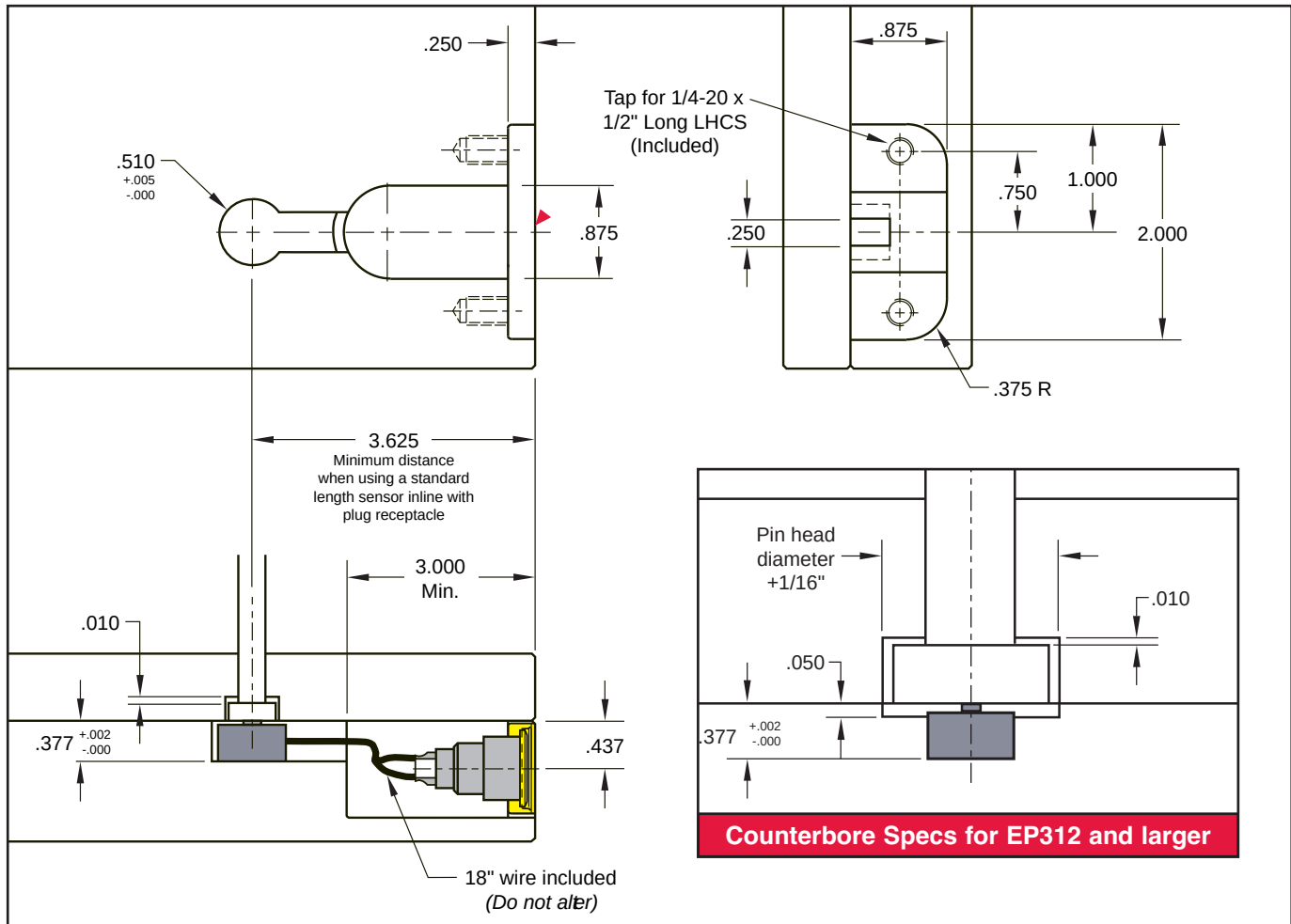
► CAD insertion point

Catalog Number	Description
SWXB-150	External Actuator Block



Cavity Pressure Transducers

Button Style



► CAD insertion point

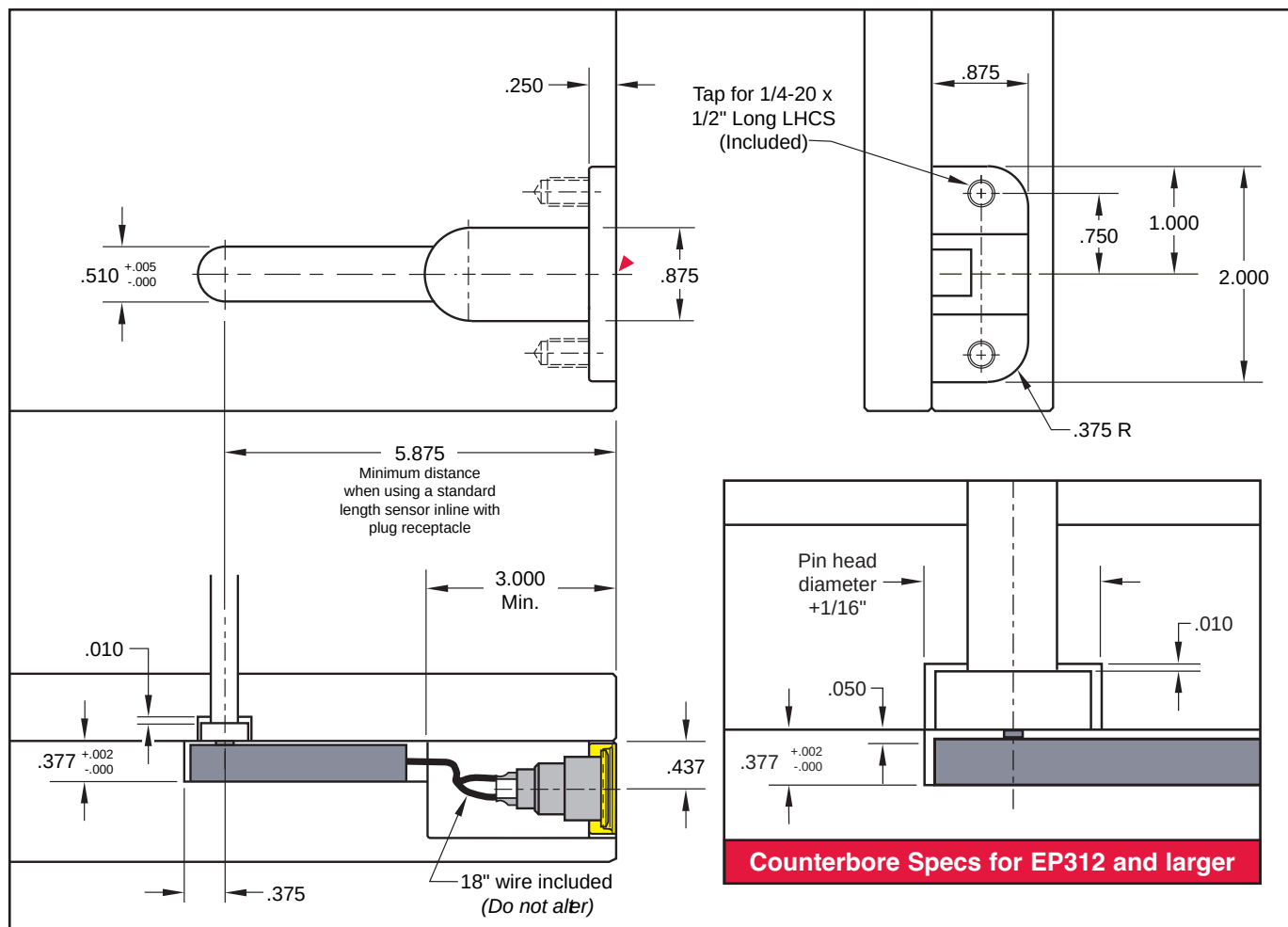
Catalog Number	Ejector Pin Size
CPT-412C	1/16ø to 3/16ø
CPT-413C	3/16ø to 1/2ø

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° - 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

Cavity Pressure Transducers

Flat Style



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

► CAD insertion point

Catalog Number	Ejector Pin Size
CPT-405C	1/16ø to 3/16ø
CPT-406C	3/16ø to 1/2ø



Hot Sprue Bushings

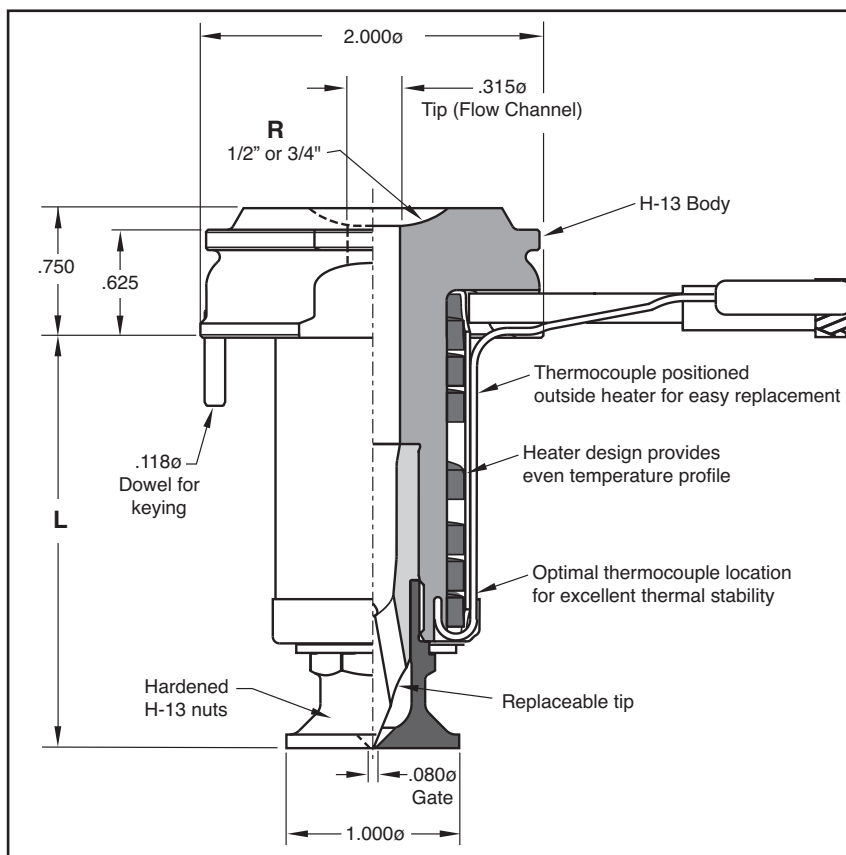
Inch Series



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:

Tip Options:

Nickel-Plated Be/Cu Tip: Used for unfilled commodity and engineering grade 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

Radius Options:

1/2" Specify **-50**

3/4" Specify **-75**

Nut Options:

Standard Length (.080)

Extra Stock (+.250)

Sprue Picker (+1.250)

Specify **-SL**

Specify **-XS**

Specify **-SP**

Prefix/ Length	L	Watts
BX25137	1.375	295
BX25187	1.875	350
BX25237	2.375	455
BX25287	2.875	490
BX25337	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:

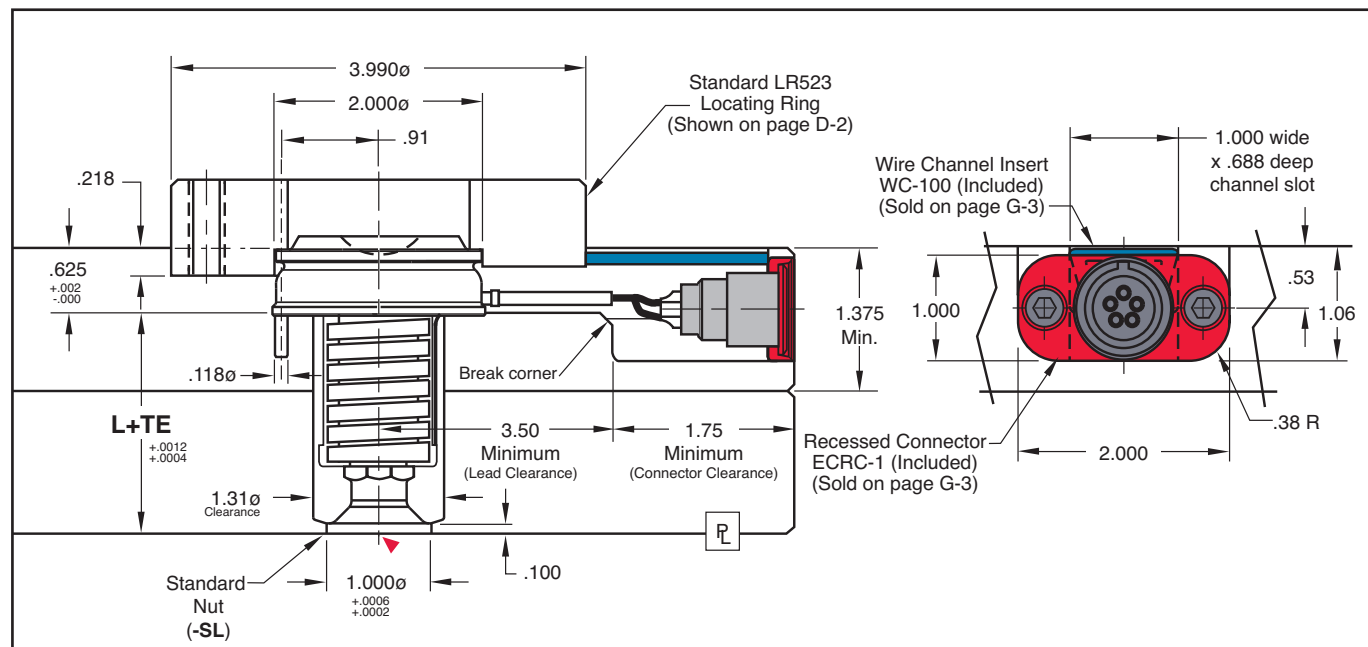
Body, Tip, Nut, Thermocouple and Wiring, Recessed Connector (ECRC-1), and Wire Channel Insert (WC-100).

Replacement parts are available. Refer to the price list for catalog numbers.

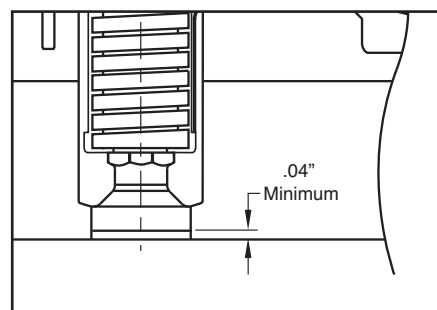
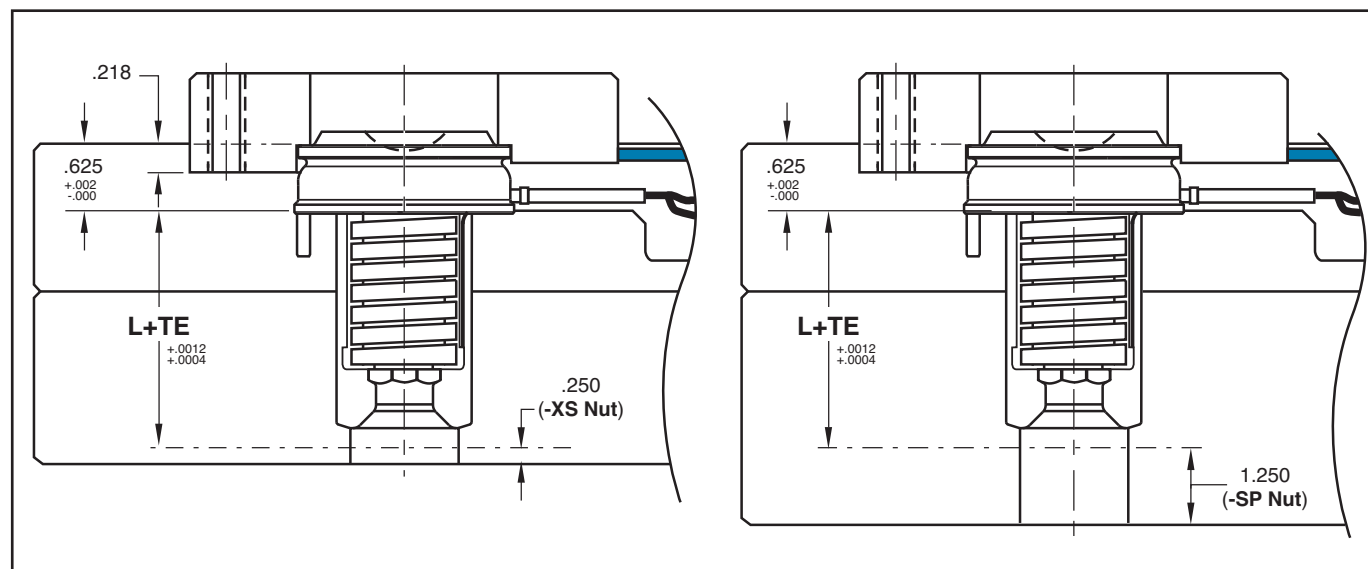
Hot Sprue Bushings

Installation

Typical installation instructions:



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 system.

General specifications:

- Expansion formula (TE):
.0000073 x (Processing Temp °F-Mold Temp °F) x L
- 230 volt-15 amps
- "J" type thermocouple

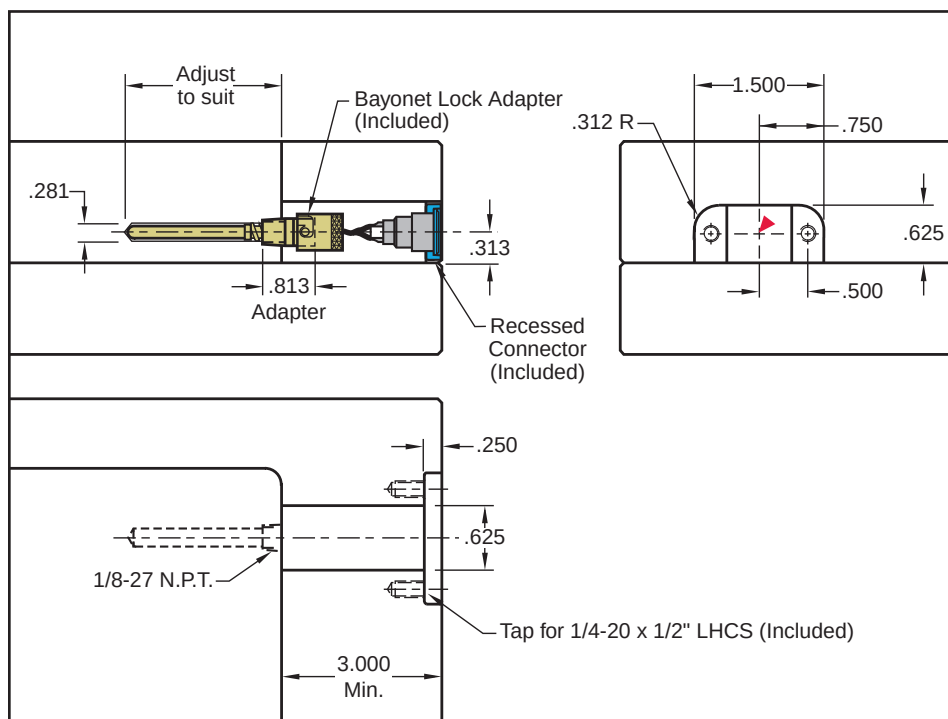


Thermocouples



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)



► CAD insertion point

Catalog Number	Color	Function
TC-7	Orange	Stationary Side T/C
TC-8	Blue	Movable Side T/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.

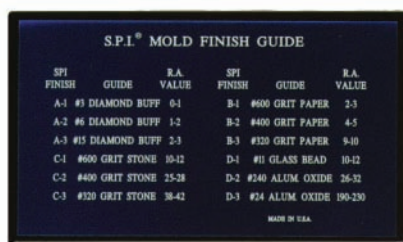
Replacement Recessed Connectors sold on page G-3.

Mold Finish Guides

Steel Insert Examples



Front



Back

Mold finish guide designed and developed by:



Catalog Number

LIT-BMG

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.

Molded Plastic Examples



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

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



MoldTrax™

Mold Maintenance Software

A performance and maintenance tracking program designed for injection, rubber, blow, and die cast molds, MoldTrax creates all required worksheets for a manual or an electronic data management system. Repair technicians and managers alike will appreciate the custom-designed formats with drop-down boxes under specific column headings to utilize their own shop terminology to gain efficiencies and improve accuracy.

A Users can store and track tooling components by mold number or description, category, part or detail number, vendor, or costs. Enter detailed notes in the tooling text fields about alterations, locations, and other concerns.

B The Cavity Layout section provides a means to track specific tooling cavity identification numbers to the position in which it resides in the mold. This function also allows you to track specific heaters, probes, cams, quadrants, or anything that resides in a home position on the mold.

C The Tech Tips section allows for critical mold maintenance information to be collected and shared by all tool room employees to keep repairs consistent and safe. For easy organization, the sections are broken down into Disassembly, Assembly, Polishing, Final Check, and Tool Kit areas.

MoldTrax™

Mold Maintenance Software

Product Description:

Mold Data: MoldTrax serves as a file cabinet for all important mold information from the mold number to the cavitation and includes such details as designer contact information, mold cost, runner, resin, and part information. In addition, the CounterView® serial number provides instant access to the ProV™ website for sharing of tool information globally. (For more information on CounterViews and ProV products, refer to page D-13.)

Scheduling: The user can schedule activities, such as mold pulls for detail changes or preventative maintenance. A Master Schedule list may be printed out daily for shop use.

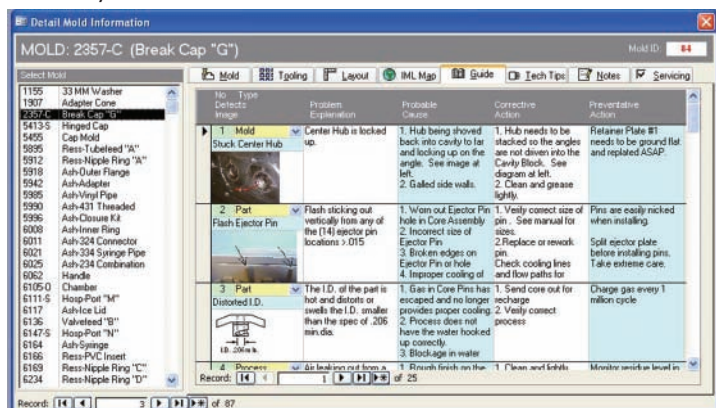
Troubleshooting: MoldTrax incorporates several sections dedicated to the analysis and corrective measures incorporated for any defects found in the parts during production. Photos and detailed text can be entered into the program to ensure repair consistency if similar problems occur in the future.

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.

Additional MoldTrax Features Include:

- Contact database allows for entries of customers, vendors, and employees for easy accessibility.
- Tracking all costs associated with individual or grouped molds, products, or mold frame styles.

E The Troubleshooting Guide provides an area to store a digital image or drawing and information concerning the type of problem, probable cause, and corrective/preventive actions of any defect discovered.



System requirements:

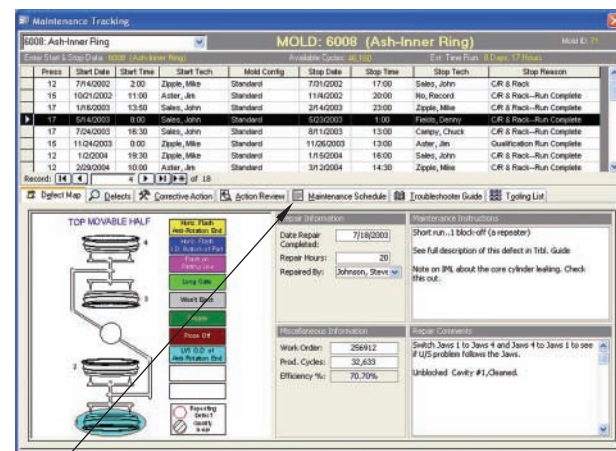
- Pentium III 1.2Ghz microprocessor or higher
- 512 MB RAM
- Microsoft® Windows XP Professional, Windows 2000 (Previous versions of Windows are not supported.)
- 100 MB free disk space

Package Includes:

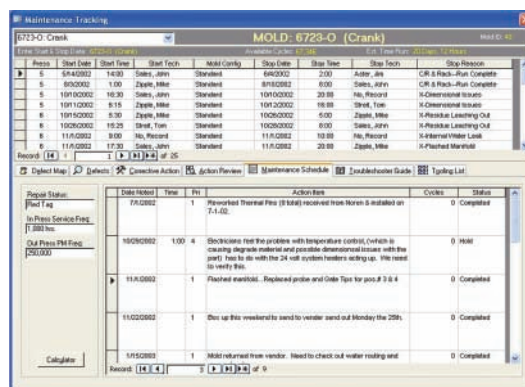
- MoldTrax on CD including full installation instructions.
- License for the site, with up to 5 users able to work in MoldTrax simultaneously on a network.



D The Maintenance Tracking Section displays mold production run dates and times, press number, and stop reason along with mold configuration changeovers. Cycles and hours are automatically calculated and displayed. By simply scrolling through the different run dates, the user can quickly view actions and notes on the tool, easily spotting defect trends.



F The Maintenance Schedule section provides an area to list "to-dos" and other important mold events, sortable by cycle, date, and priority.



Catalog Number	Description
MOLDTRAX	MoldTrax 4.0 Software
MT-UPG	MoldTrax 4.0 Upgrade*

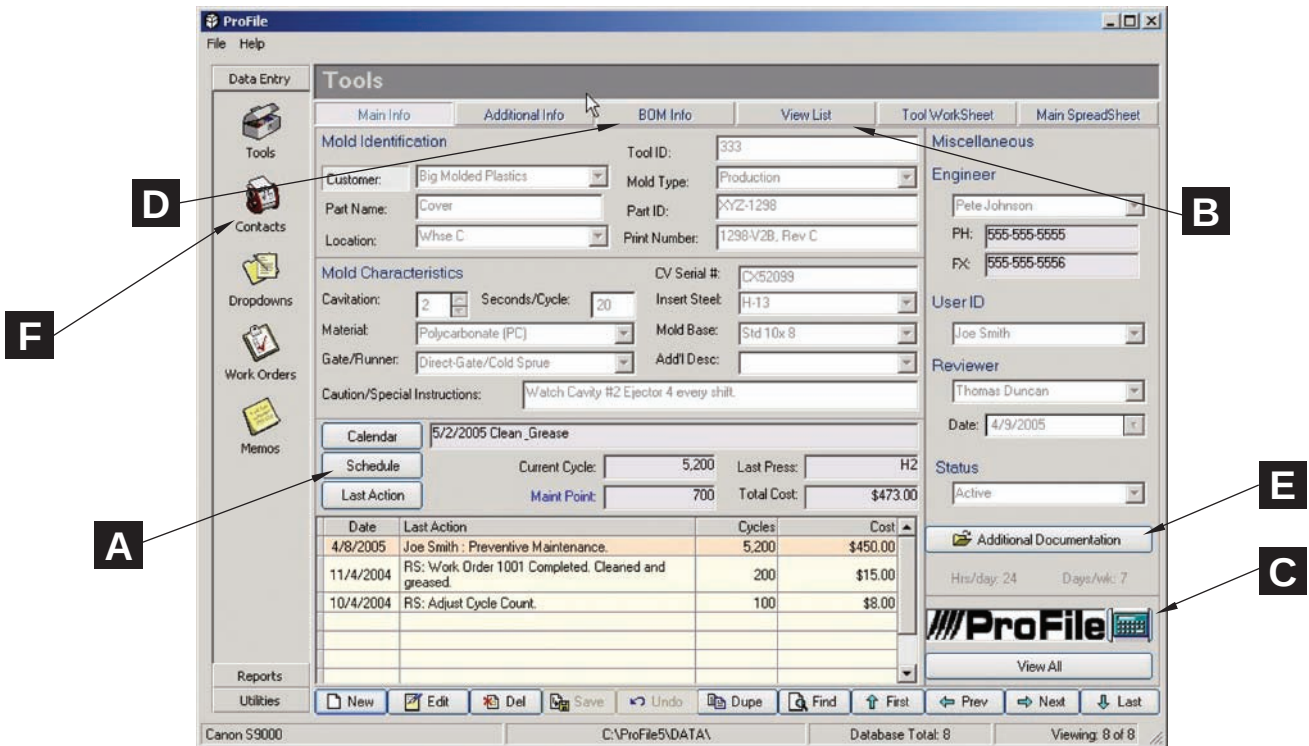
* Proof of purchase of previous version required. One upgrade required for each version of MoldTrax purchased.



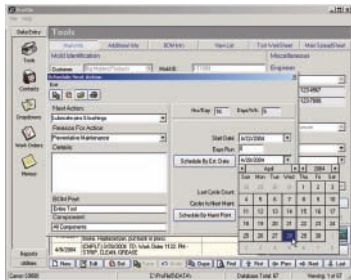
ProFile®

Mold Management Software

A mold management program for Tooling Engineers and Tool Room Managers, ProFile maintains all mold data and customer information within a single database. Users can document actions and schedule future To-Dos based upon target dates or cycle counts for preventative maintenance. ProFile will remind the manager of tasks and actions upon opening the program, and reports may be run to present customer or mold data to team members.



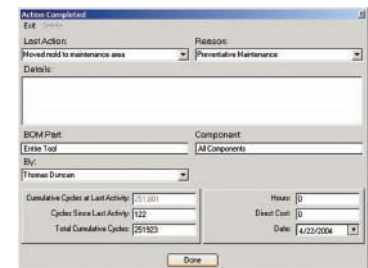
A Users can schedule upcoming actions or requirements by date or by expected cycles.



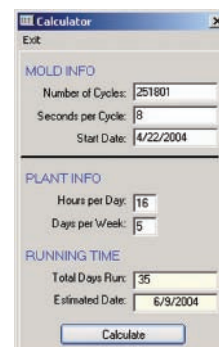
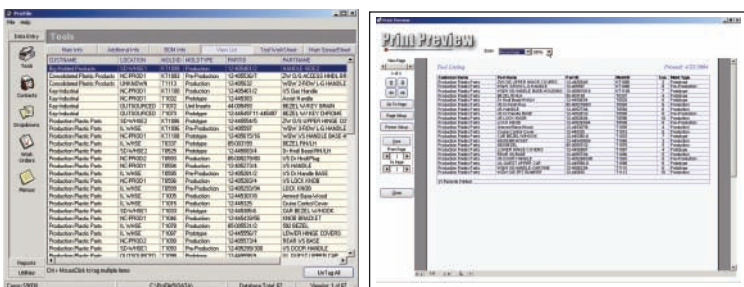
When entering ProFile, users are prompted for the activities due. Plus the upcoming actions for a specific tool can be viewed at any time.



Actions, including those scheduled proactively, can be entered in the "Last Results" area, keeping track of cycles and costs, plus all detail surrounding the activity.



B The View List command allows users to view certain tools at once. Canned reporting shares the data with others.



C The calculator feature enables the user to estimate mold cycles by entering known factors.

ProFile®

Mold Management Software

Product Description:

Mold Data: All pertinent mold information, including part name, number, material, and style of mold is entered at the main screen. Ten user-defined fields, unlimited notes field, and history fields provide complete information to the tooling manager. The Bill of Materials feature allows for cost tracking and usage of mold parts and components. Documents may be attached to the tool record, avoiding the potential of losing hard copies.

Contact Management: A fully integrated database contains information on customers and vendors, including phone, fax, addresses, emails, etc... for separate locations or offices.

Scheduling: The user can schedule activities, such as mold pulls for detail changes or preventative maintenance. Scheduled To-Dos can be tracked by date or by cycle count.

History: Automatically generated when an action is completed. Actions are trackable down to cycle counts and users, including details about shop hours and direct costs.

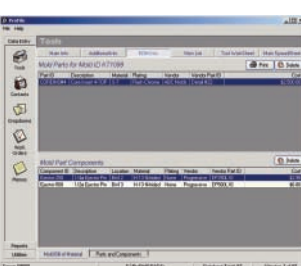
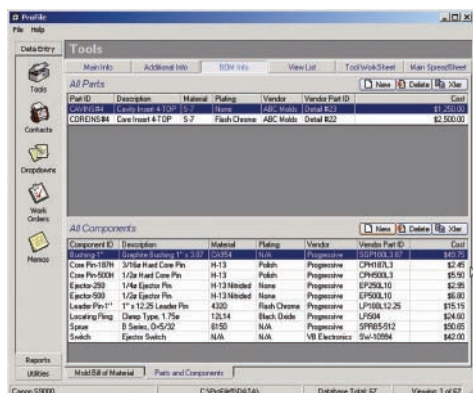
Reporting: ProFile includes several reports including Scheduled To-Dos, Tool ProFile, and ISO-compliant reports. Work orders and memos generated within ProFile are also listed in history and listed in the reports.

Additional ProFile Features Include:

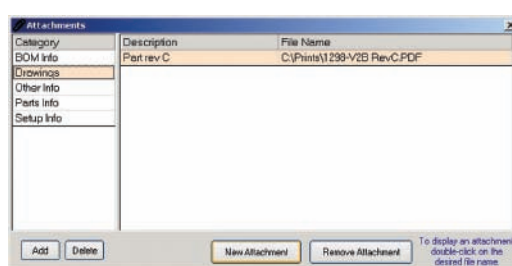
- Calendar feature to instantly view Scheduled To-Dos upon opening ProFile
- Drop-down calendars
- User defined tool worksheet and main spreadsheet for manager to record important mold information
- Microsoft® Access provides the database engine
- Automatic backup routines to maintain data integrity

D The Bill of Materials section keeps a database of all parts and components used in the company, allowing the user to "transfer" the item to the specific tool record.

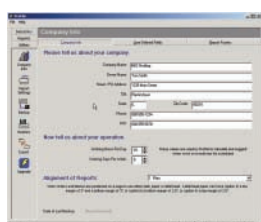
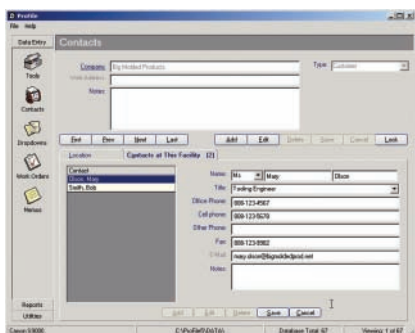
E Documents can be attached to the specific tool record in several file formats including .dwg, .jpg, and .doc.



The Bill of Materials lists the part/component numbers and vendor catalog numbers for easy reordering.



F The contact management section keeps information on all customers and vendors.



Work hours are entered at the main company info screen to aid in cycle time calculations.

System requirements:

- 80486 DX 75 Mhz microprocessor or higher
- 16 MB RAM; 32 MB or more recommended
- Microsoft® Windows 9x, Windows XP, Windows 2000, or Windows NT 4.0. It is suggested that all versions utilize the latest service pack levels from Microsoft®.
- 15 MB free disk space
- Can be used in single-user or multi-user environments.

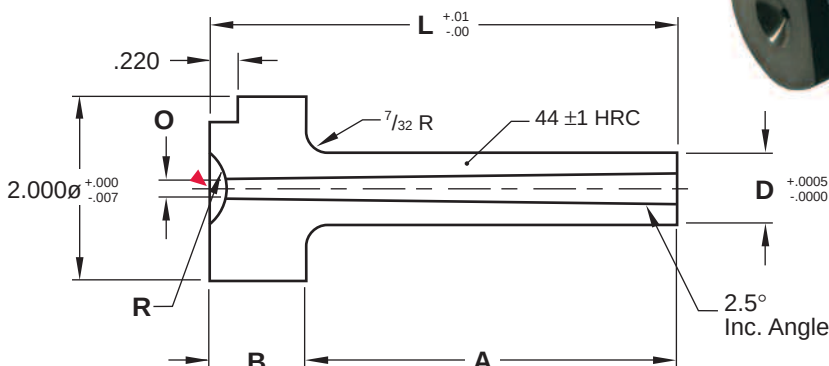
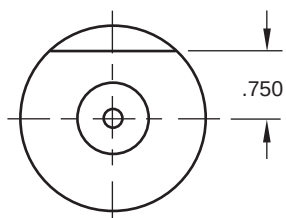
Package Includes:

ProFile on CD, installation instructions, plus a binder for Work Orders and Memos.

Catalog Number	Description
PROFILE	ProFile 5.0 Software
PF-UPG	ProFile 5.0 Upgrade*

* Proof of purchase of previous version required. One upgrade required for each version of ProFile purchased.

Sprue Bushings



B Series **D=1.000ø** **B=.875**

M AISI 6150 **H** 43-45 HRC

► CAD insertion point

A	L	O=5/32		O=7/32		O=9/32		O=11/32	
		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
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
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

A Series **D=1.000ø** **B=.625**

M AISI 6150 **H** 43-45 HRC

A	L	O=5/32		O=7/32		O=9/32		O=11/32	
		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
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

U Series **D=.750ø** **B=.875**

M AISI 6150 **H** 43-45 HRC

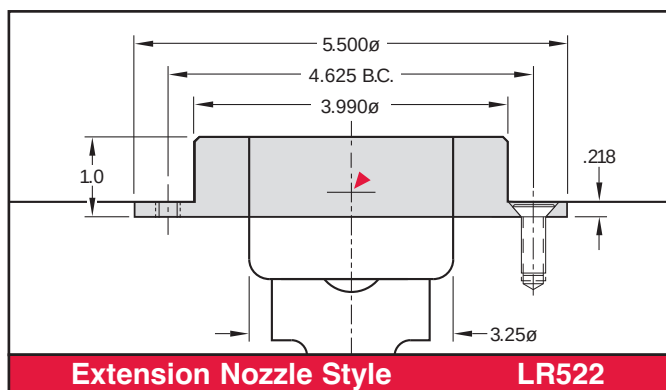
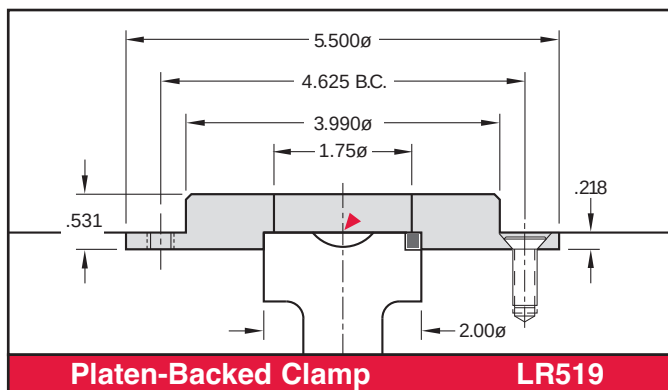
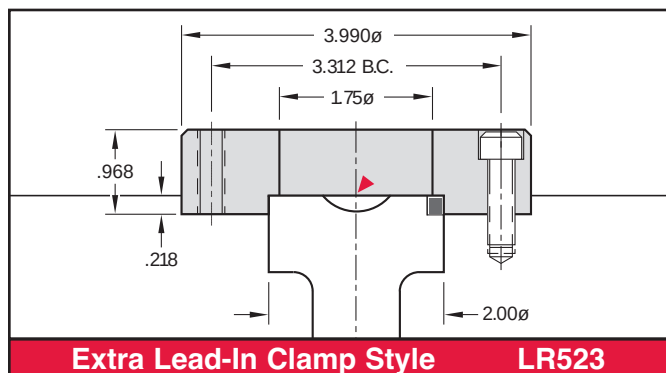
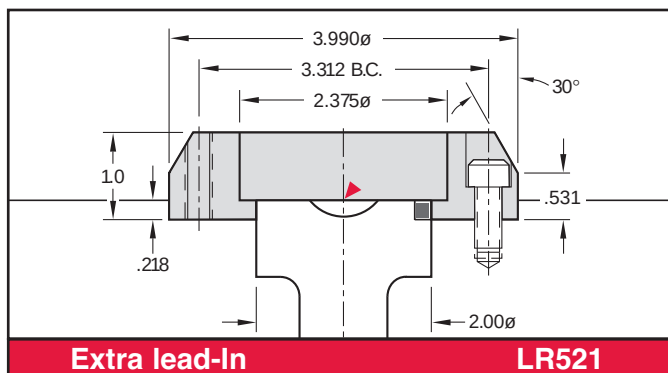
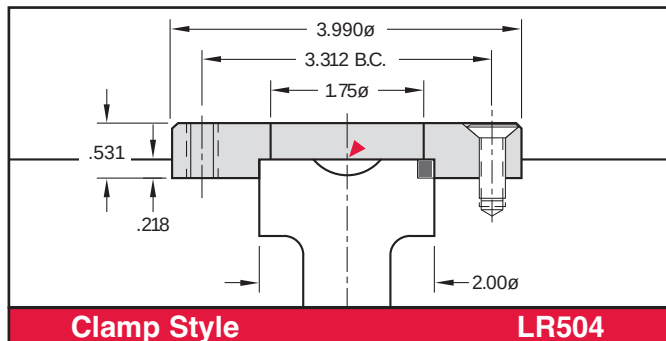
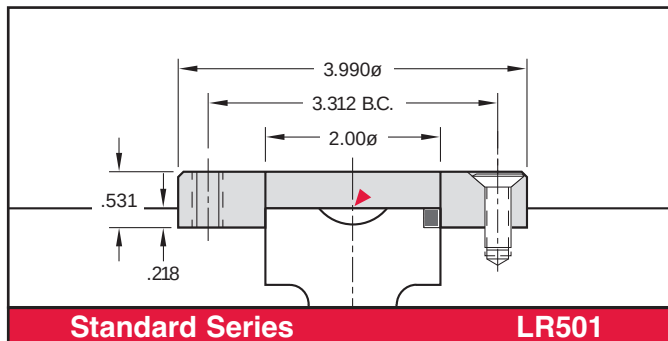
A	L	O=5/32		O=7/32		O=9/32	
		R=1/2	R=3/4	R=1/2	R=3/4	R=1/2	R=3/4
29/32	1-25/32	SPRU1-512	SPRU1-534	SPRU1-712	SPRU1-734	SPRU1-912	SPRU1-934
1-13/32	2-9/32	SPRU2-512	SPRU2-534	SPRU2-712	SPRU2-734	SPRU2-912	SPRU2-934
1-29/32	2-25/32	SPRU3-512	SPRU3-534	SPRU3-712	SPRU3-734	SPRU3-912	SPRU3-934
2-13/32	3-9/32	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



Locating Rings

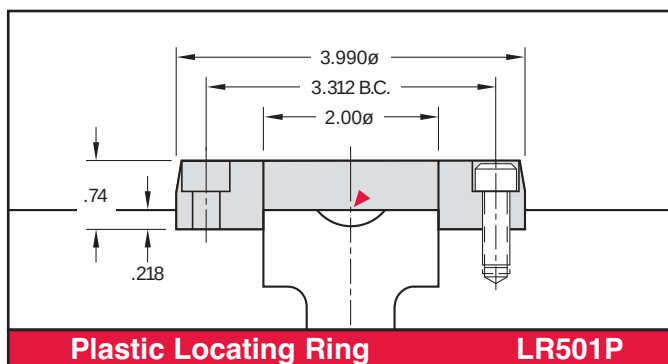
M AISI 12L14 **H** 170 Brinell **S** Black Oxide

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



M Nylon

Plastic Locating Ring



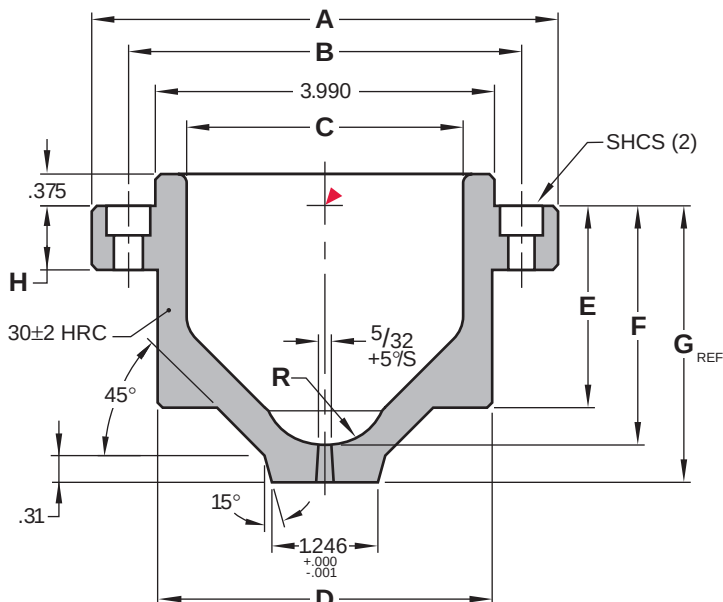
► CAD insertion point

Maximum temperature: 380°F (190° C)
Compatible with LR501.
5/16-18 screws included.

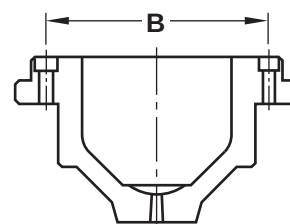
Patented design by
G.A.I.M. Engineering.



Extended Sprues



Screw reference for ESB-401 & ESB-402.



M AISI 4140 Pre-Hard

H 28-32 HRC

▶ CAD insertion point

Catalog Number	A	B	C	D	E	F	G _{REF}	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

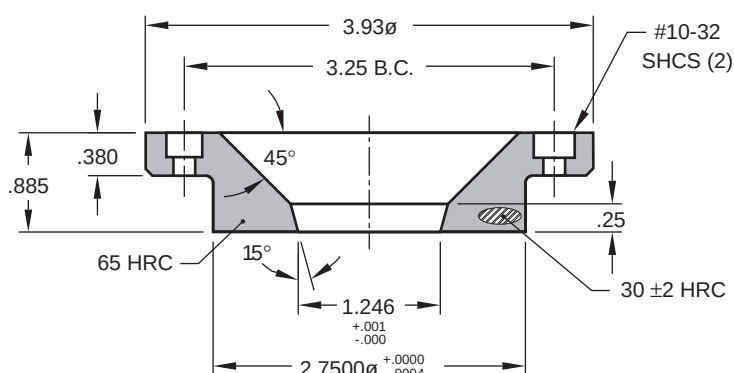


H Core: 28-32 HRC, Surface: 65 HRC

M AISI 4140 Pre-Hard **S** Melonite (SBN)

Catalog Number	Description
RX-40	Runner Stripper Plate Bushing

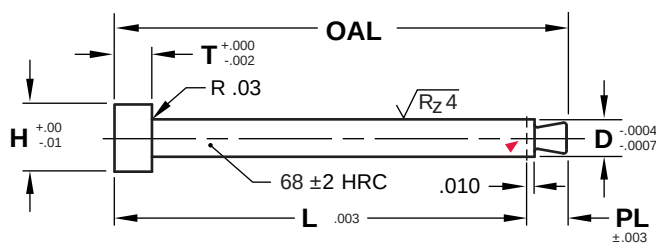
Screws included.





Puller Pins™

For 3-Plate Runners



Pin Length Selection Chart

A Plate Thickness	L for 7/8 Plate	L for 1-3/8 Plate
1-3/8	1.823	2.323
1-7/8	2.323	2.823
2-3/8	2.823	3.323

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

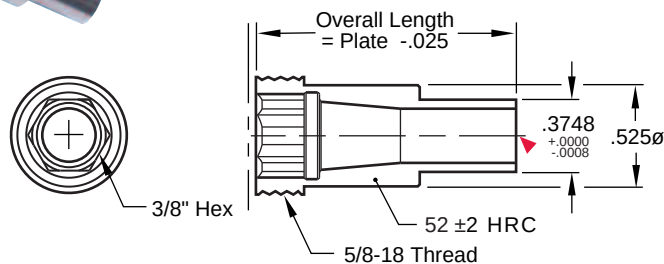
M H-13 **H** Core: 40-44 HRC, Surface & Undercut: 66-70 HRC

Nom. Dia.	D	H	T	PL	L = 1.823		L = 2.323		L = 2.823		L = 3.323	
					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

Please contact Customer Service for special diameters, lengths, or details.



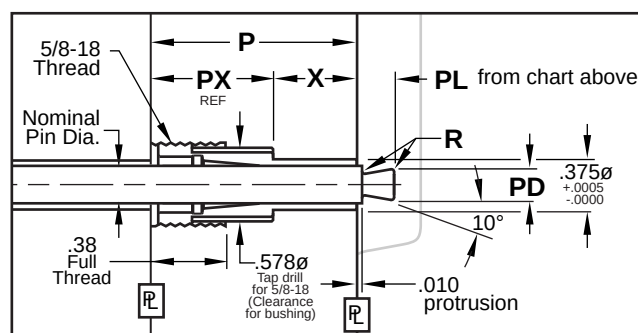
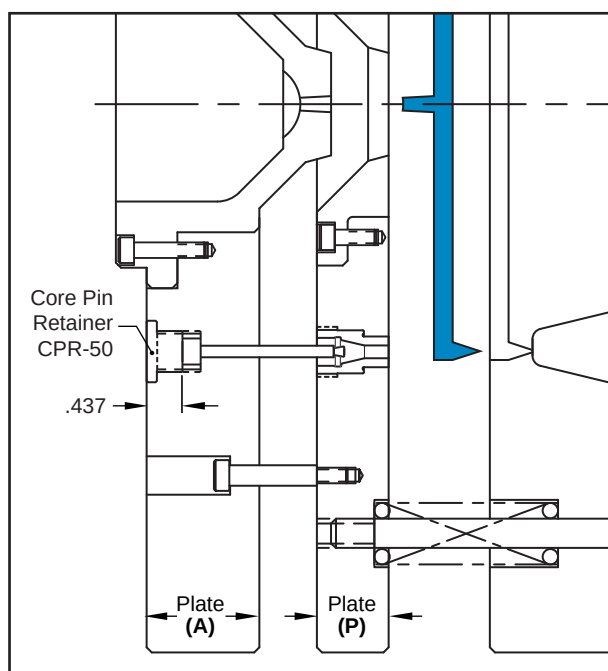
Puller Pin™ Bushing



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

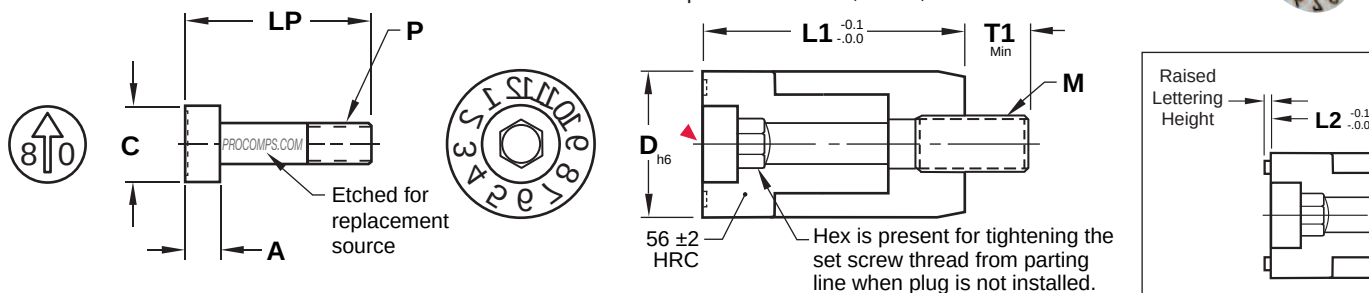


P Plate Thickness	PX REF	X +.002 -.000	Nominal Pin Diameter	PD T.S.C.	R
7/8	1/2	.377	5/32	.145	.020
			7/32	.200	.025
			9/32	.265	.030
1-3/8	7/8	.502	5/32	.145	.020
			7/32	.200	.025
			9/32	.265	.030

Date Stamps

RF-Series: Remains Flush

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



M 1.4034 **H** 54-58 HRC

Note: All dimensions are in millimeters.

Nominal Ring Diam. D	L1 Recessed	L2 Raised	M	T1	T2	Recessed Engraving Depth	Raised Lettering Height	C	A	LP	Arrow Etching Depth	Raised Slot Depth	P
3	14	N/A†	M2 x 0.4	4	N/A†	.15	N/A†	1.6	2.0	9.0	.30	N/A†	M1 x 0.25
4	14	13.80	M2 x 0.4	4	3	.20	.20	2.5	2.3	10.5	.30	.25	M1.4 x 0.2
5	17	16.75	M3 x 0.5	4	3	.20	.25	3.1	2.8	13.0	.40	.30	M1.6 x 0.2
6	17	16.75	M3 x 0.5	4	3	.20	.25	3.1	2.8	13.0	.40	.30	M1.6 x 0.2
8	20	19.70	M4 x 0.7	4	4	.20	.30	4.6	4.0	14.0	.40	.35	M2.5 x 0.35
10	20	19.70	M5 x 0.8	4	4	.20	.30	4.6	4.0	14.0	.40	.35	M2.5 x 0.35
12	25	24.70	M6 x 1.0	6	6	.25	.30	6.4	4.0	17.0	.60	.40	M3 x 0.5
16	33	32.70	M8 x 1.25	8	8	.25	.30	8.4	5.0	23.0	.60	.40	M3.5 x 0.6

† 3mm size not available with raised lettering.

► CAD insertion point

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

Ring Styles: Recessed Lettering



Months
Cat #: DF-Diam
Ex.: DF05



A - M
Cat #: DFA-Diam
Ex.: DFA05



0 - 9
Cat #: DFN-Diam
Ex.: DFN05



N - Z
Cat #: DFZ-Diam
Ex.: DFZ05



Days
Cat #: DFL-Diam
Ex.: DFL05



Blank
Cat #: DF-Diam - B
Ex.: DF05-B



Years
Cat #: DFY-Diam - Starting Year*
Ex.: DFY05-08

Plug Styles: Recessed Lettering



Year
Cat #: DFP-Diam - Year*
Ex.: DFP05-08



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.: DFRP05-08



Arrow Only
Cat #: DFRP-Diam - AO
Ex.: DFRP05-AO



C
Cat #: DFRP-Diam - C
Ex.: DFRP05-C

Ring Styles: Raised Lettering



Months
Cat #: DFR-Diam
Ex.: DFR05



0 - 9
Cat #: DFRN-Diam
Ex.: DFRN05



Years
Cat #: DFRY-Diam - Starting Year*
Ex.: DFRY05-08



A - M
Cat #: DFRA-Diam
Ex.: DFRA05



Days
Cat #: DFRL-Diam
Ex.: DFRL05



N - Z
Cat #: DFRZ-Diam
Ex.: DFRZ05

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

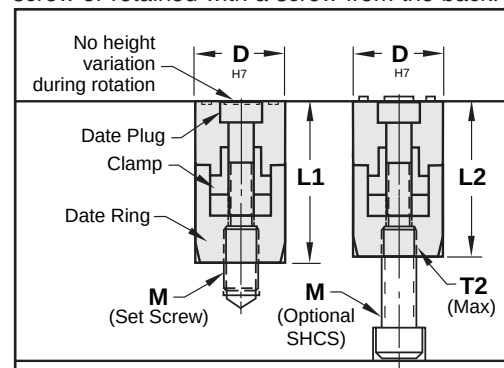
* Where years are specified, any year can be ordered by changing the suffix.

Example DFP05-09 or DFY05-10.

European date delivery in 2 weeks maximum,
with shorter deliveries subject to availability.

Installation Guidelines:

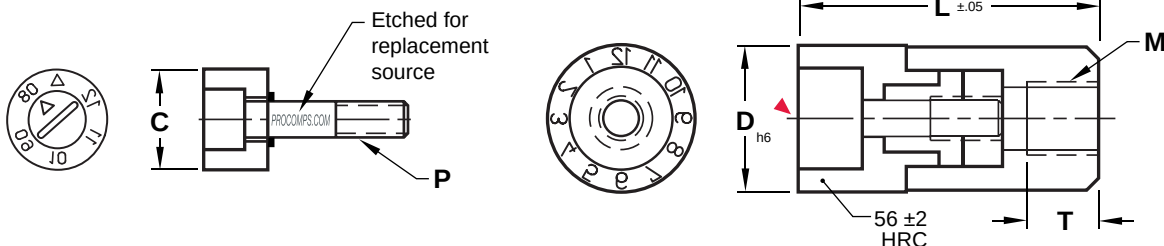
Ring can be installed using the included set screw or retained with a screw from the back.





Date Stamps

Multi-Daters



M 1.4034 **H** 54-58 HRC

Note: All dimensions are in millimeters.

Nominal Ring Diam. D	L	M	T	C	S Slot Depth	P	Etching Depth	
							Ring	Plugs
6	17	M3 x 0.5	3	4.2	0.4	M1.6x0.2	0.10	0.10
8	20	M4 x 0.7	4	5.8	0.4	M2.5x0.35	0.12	0.10
10	20	M5 x 0.8	4	7.0	0.4	M2.5x0.35	0.13	0.10
12	25	M6 x 1.0	6	8.5	0.6	M3.0x0.5	0.20	0.20
16	33	M8 x 1.25	8	11.5	0.6	M3.0x0.6	0.25	0.25

► CAD insertion point

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

Ring Styles: Recessed Lettering



Months

Cat #: DMD-Diam
Ex.: DMD06



Days

Cat #: DMDL-Diam
Ex.: DMDL06



Weeks

Cat #: DMDW-Diam
Ex.: DMDW06

Plug Styles: Recessed Lettering



Year & Months

Cat #: DMDP-Diam — Starting Year*
Ex.: DMDP06-08



Arrow & 5 years

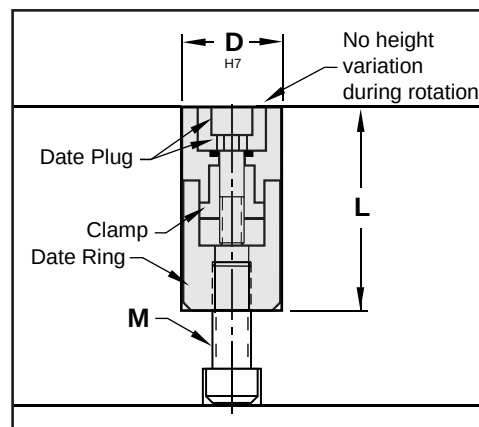
Cat #: DMDP-Diam — Starting Year* - 5
Ex.: DMDP06-085



Arrow & 11 years

Cat #: DMDP-Diam — Starting Year* - 11
Ex.: DMDP06-0811

Installation Guidelines:



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

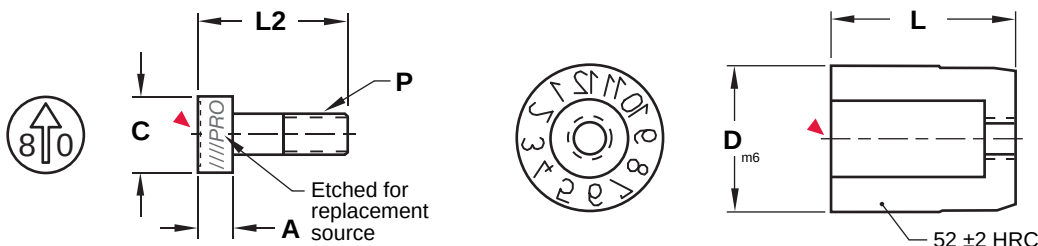
* Where years are specified, any year can be ordered by changing the suffix. Example DMDP10-09 or DMDP06-105.

European dater delivery in 2 weeks maximum, with shorter deliveries subject to availability.

Date Stamps

CH Series: Compact Height

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



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

Note: All dimensions are in millimeters.

Nominal Ring Diam. D	L	C	A	L2	P
4	8	2.2	2.0	8	M1x0.25
5	8	3.1	2.0	8	M1.6x0.20
6	8	3.1	2.0	8	M1.6x0.20
8	10	4.4	2.5	10	M2.3x0.25
10	12	5.2	3.0	12	M2.5x0.35
12	14	6.2	3.0	14	M3x0.35
16	14	8.2	3.5	14	M4x0.35
20	16	11.0	4.5	16	M4x0.35

Engraving Depth:

Numbers: .2mm (.007")

Arrows: .4mm (.015")

► CAD insertion point

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

Ring Styles: Recessed Lettering



Months

Cat #: DC-Diam
Ex.: DC05



A - M

Cat #: DCA-Diam
Ex.: DCA05



Years

Cat #: DCY-Diam — Starting Year
Ex.: DCY05-08



N - Z

Cat #: DCZ-Diam
Ex.: DCZ05



Days

Cat #: DCL-Diam
Ex.: DCL05
Note: The DCL04 does not have tick marks.



0 - 9

Cat #: DCN-Diam
Ex.: DCN05



Blank

Cat #: DC-Diam — B
Ex.: DC05-B

Plug Styles: Recessed Lettering



Year

Cat #: DCP-Diam — Year
Ex.: DCP05-08



Arrow Only

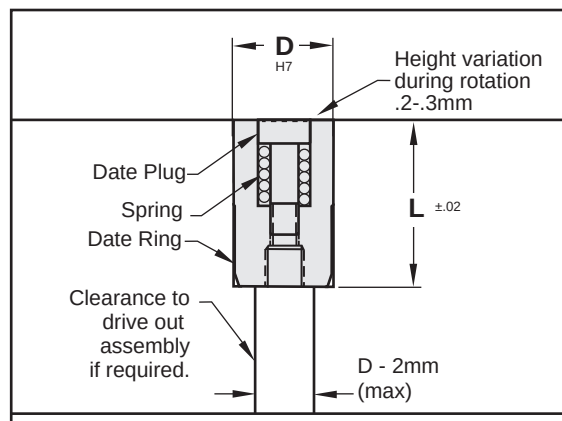
Cat #: DCP-Diam — AO
Ex.: DCP05-AO



C

Cat #: DCP-Diam — C
Ex.: DCP05-C

Installation Guidelines:



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

* Where years are specified, any year can be ordered by changing the suffix.

Example DCP05-09 or DCY05-10.

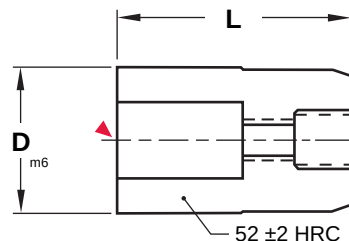
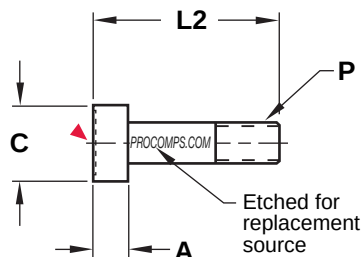
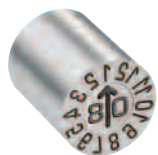
European dater delivery in 2 weeks maximum, with shorter deliveries subject to availability.



Date Stamps

20 Series: 20mm Length

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



Date Rings

Note: All dimensions are in millimeters.

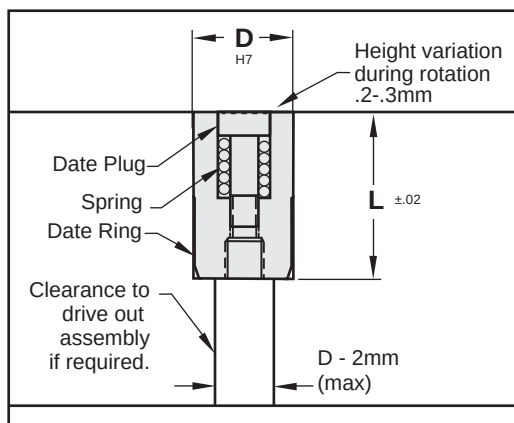
Catalog Number	D	L
DL06	6	20
DL08	8	
DL10	10	
DL16	16	

Engraving Depth:

Numbers: .2mm (.007")

Arrows: .4mm (.015")

Installation Guidelines:



Date Plugs

M 420 Stainless Steel

H 50-54 HRC

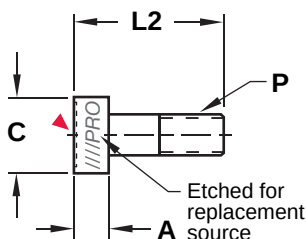
Catalog Number	D	C	A	L2	P	ARROW ONLY
DLP06-08	6	3.1	3.0	13	M1.6x0.20	DLP06-AO
DLP08-08	8	4.6	4.0	14	M2.5x0.35	DLP08-AO
DLP10-08	10	4.6	4.0	14	M2.5x0.35	DLP10-AO
DLP16-08	16	8.2	3.5	14	M3.5x0.60	DLP16-AO

For other date plugs, modify catalog number for the year required.

Example: DLP06-09. Plugs include springs and replacements are available.

D-Series: Deep Engraving

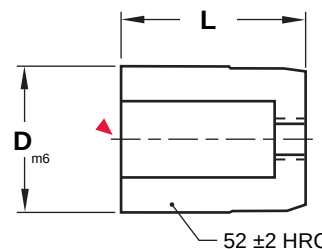
Maximum mold temperature: 450° F (230° C)



Engraving Depth:

Numbers: .5mm (.020")

Arrows: .4mm (.015")



Date Plugs

Note: All dimensions are in millimeters.

► CAD insertion point

Catalog Number	D	C	A	L2	P	ARROW ONLY
DCP10D-08	10	5.2	3.0	12	M2.5x0.35	DCP10-AO
DCP12D-08	12	6.2	3.0	14	M3x0.35	DCP12-AO
DCP16D-08	16	8.2	3.5	14	M4x0.35	DCP16-AO
DCP20D-08	20	11.0	4.5	16	M4x0.35	DCP20-AO

For other date plugs, modify catalog number for the year required.

Example: DCP16D-09. Plugs include springs and replacements are available.

Date Rings

Catalog Number	Ring Diameter D	L
DC10-D	10	12
DC12-D	12	14
DC16-D	16	14
DC20-D	20	16

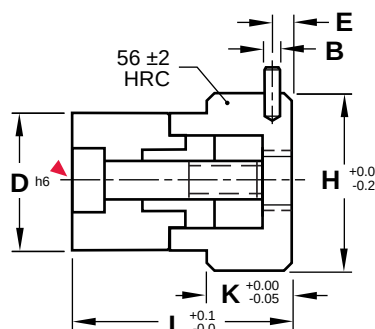
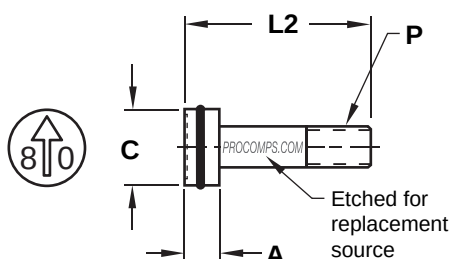
M 420 Stainless Steel

H 50-54 HRC

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

Date Stamps

H-Series: Fixed Height



M 1.4034 **H** 54-58 HRC

Note: All dimensions are in millimeters.

Nominal Ring Diam. D	L	H	K	B	E	C	A	L2	P
6	14	10	5	1.5	1.5	3.1	2.8	13	M1.6x0.2
8	17	12	6	1.5	1.5	4.6	4.0	14	M2.5x0.35

► CAD insertion point

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

Ring Styles: Recessed Lettering (Side Pin Version)



Months
Cat #: DHP-Diam
Ex.: DHP08



Years
Cat #: DHY-Diam — Starting Year*
Ex.: DHY08-08



Days
Cat #: DHL-Diam
Ex.: DHL08



Blank
Cat #: DH-Diam — B
Ex.: DH08-B

Plug Styles: Recessed Lettering



Year
Cat #: DHP-Diam — Year*
Ex.: DHP08-08



Arrow Only
Cat #: DHP-Diam — AO
Ex.: DHP08-AO



C
Cat #: DHP-Diam — C
Ex.: DHP08-C

Ring Styles: Recessed Lettering (Bottom Pin Version)



Months
Cat #: DHB-Diam
Ex.: DHB06

Engraving Depth:
Numbers: .2mm (.007")
Arrows: .4mm (.016")

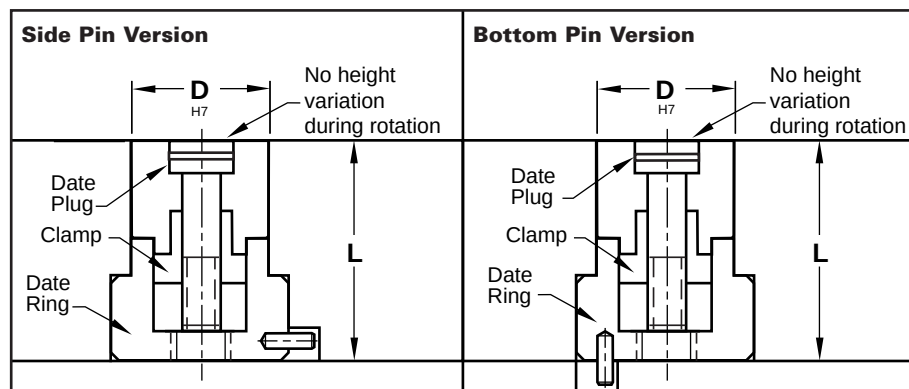
Special configurations are available. Contact Customer Service for more information.

* Where years are specified, any year can be ordered by changing the suffix.

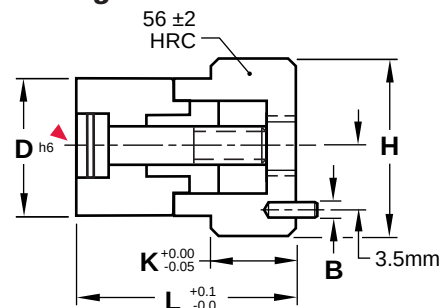
Example DHP05-09 or DHY05-10.

European dater delivery in 2 weeks maximum, with shorter deliveries subject to availability.

Installation Guidelines:



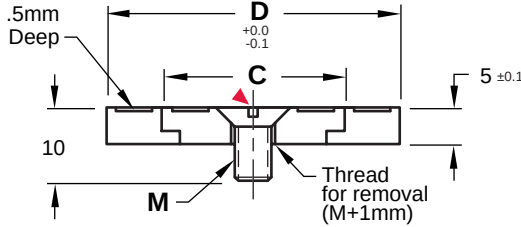
Bottom Pin Version: Catalog Number DHB06



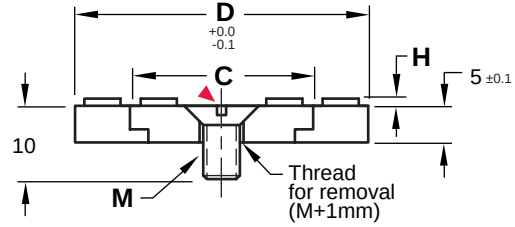
Available in 6mm diameter, month version only.

Date Stamps

LG-Series: Large Molds, Structural Foam/Blow Molds



Recessed Lettering



Raised Lettering

Brass: **M** Ms 58

Steel: **M** 1.2510 **H** 52-56 HRC ▶ CAD insertion point

Nominal Ring Diam. D	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

Note: All dimensions are in millimeters.

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.: DLBY40-08, DLSY40-08

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.: DLBRY40-08, DLSRY40-08

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.: DLBP40-08, DLSP40-08

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.: DLBRP40-08, DLSRP40-08

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

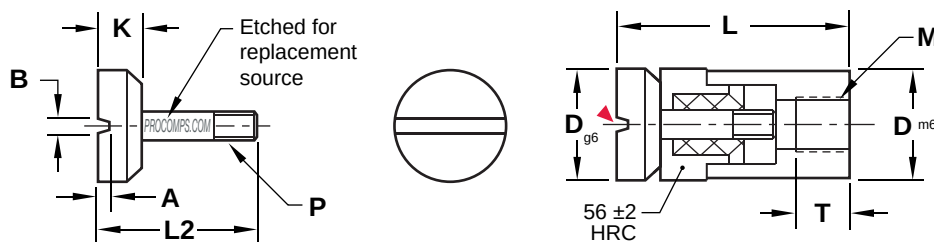
* Where years are specified, any year can be ordered by changing the suffix.

Example DLBP15-09 or DLSP15-10.

European dater delivery in 2 weeks maximum, with shorter deliveries subject to availability.

Date Stamps

FD-Series: Full Diameter Plug



M 1.4034 **H** 54-58 HRC

► CAD insertion point

Nominal Ring Diameter	L	T	M	A	B	K	L2	P
3	14	3	M2 x 0.4	.3	.3	2.0	9.0	M1x0.25
4	14	3	M2 x 0.4	.3	.3	2.3	10.5	M1.4x0.2

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.: DFDPY03-08



Months

Cat #: DFDP-Diam
Ex.: DFDP03

To Order Shell: Specify catalog number as shown below for the shell.

Cat #: DFD-Diam — S
Ex.: DFD03-S

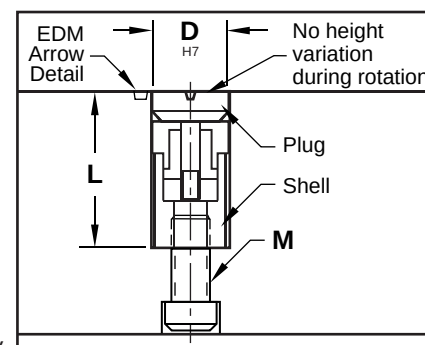
Special configurations are available. Contact Customer Service for more information.

* Where years are specified, any year can be ordered by changing the suffix.

Example DFDPY03-09 or DFDPY03-10.

European dater delivery in 2 weeks maximum, with shorter deliveries subject to availability.

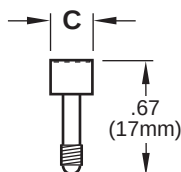
Installation Guidelines:



Replacement Plugs

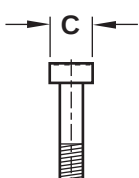
Retro Plugs

To replace plugs previously purchased from Progressive or the PCS®/Cumsa® style plugs.



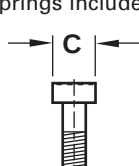
20 Series Plugs

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



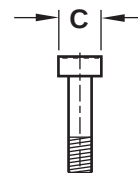
CH- & D-Series Plugs

To replace Progressive's Compact Series plugs or DME® style plugs. Springs included.



RF- & H-Series Plugs

To replace Progressive's RF-Series plugs.



Catalog Number	Corresponding Date Ring (Catalog Number)	C mm
DP32-08	DS06	3.2
DP47-08	DS08	4.7
DP57-08	DS10	5.7
DP67-08	DS12	6.7
DP87-08	DS16	8.7

For Retro Plugs outside of North America, call for availability from local distributors.

Additional plugs are available for different rings, plus some versions are available with raised lettering. Contact Customer Service for pricing and availability.

Catalog Number	Corresponding Date Ring (Month Version)	C mm
DLP06-08	DL06	3.1
DLP08-08	DL08	4.6
DLP10-08	DL10	4.6
DLP16-08	DL16	8.2

Catalog Number	Corresponding Date Ring (Month Version)	C mm
DCP04-08	DC04	2.2
DCP05-08	DC05	3.1
DCP06-08	DC06	3.1
DCP08-08	DC08	4.4
DCP10-08	DC10	5.2
DCP12-08	DC12	6.2
DCP16-08	DC16	8.2
DCP20-08	DC20	11.0

For D-Series replacements, add "D" to the catalog number.
Ex. DCP16D-09.

Catalog Number	Corresponding Date Ring (Month Version)	C mm
DFP03-08	DF03	1.6
DFP04-08	DF04	2.5
DFP05-08	DF05	3.1
DFP06-08	DF06	3.1
DFP08-08	DF08	4.6
DFP10-08	DF10	4.6
DFP12-08	DF12	6.4
DFP16-08	DF16	8.4

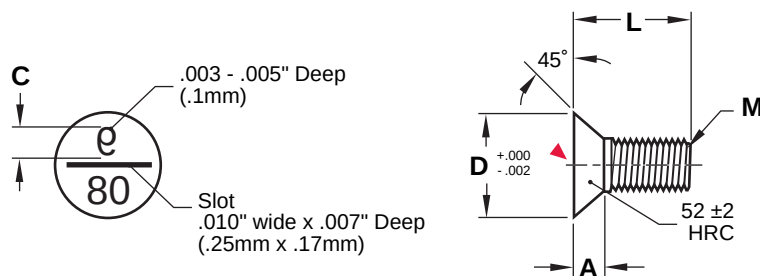
For H-Series plugs (6mm/8mm rings only), specify DHP as the prefix.
Ex. DHP06-09.



Date Stamps



MicroDaters®



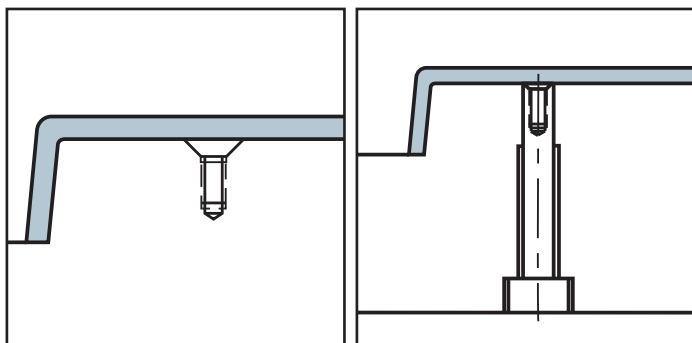
M 420 Stainless Steel **H** 50-54 HRC

Note: All dimensions are in millimeters.

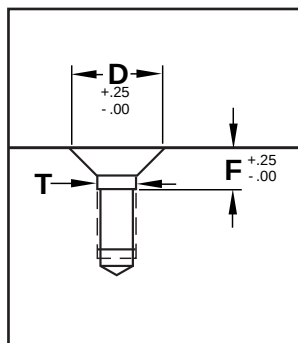
► CAD insertion point

Catalog Number	D	L	A	M	C	F	T	Blank
MD02	2	5	.45	M1.4x0.3	.38	1.14	1.4	MD02-B
MD03	3	5	.76	M1.8x0.35	.63	1.52	1.8	MD03-B
MD04	4	6	.89	M2.5x0.45	.76	1.65	2.7	MD04-B

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 datar as shown at left and to the dimensions in the chart above.

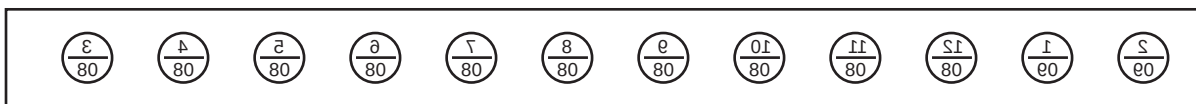
To Order:

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. MD04-03-08 for a 4mm screw for March 2008.

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-03-08 would yield (12) 3mm screws starting with March 2008, ending with February 2009. Shown below at 2:1 scale.



CounterView®

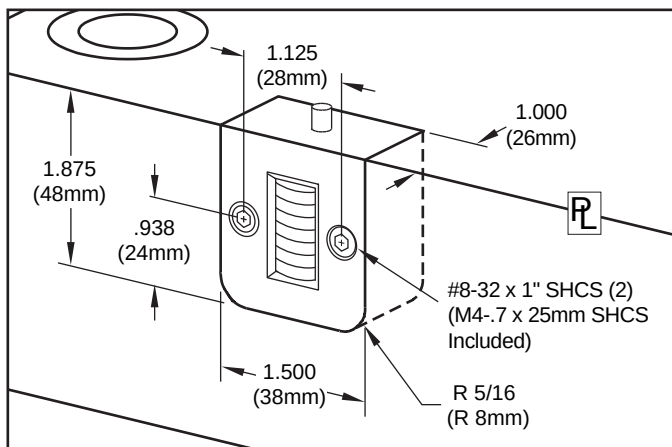
100/200 Series

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



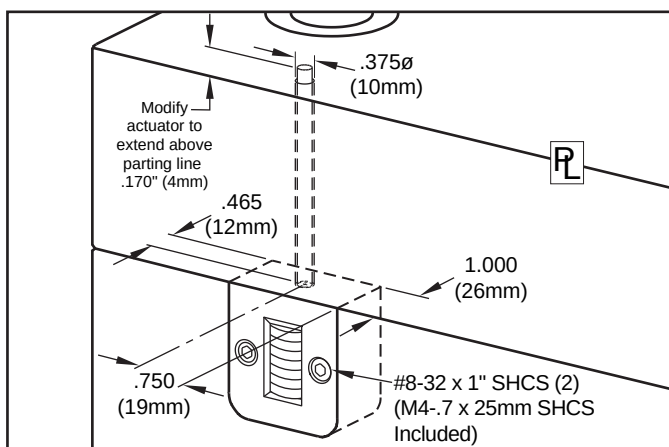
M Glass-filled Nylon housing



Parting Line Mount

Parting line mount makes unit easily visible to operator.

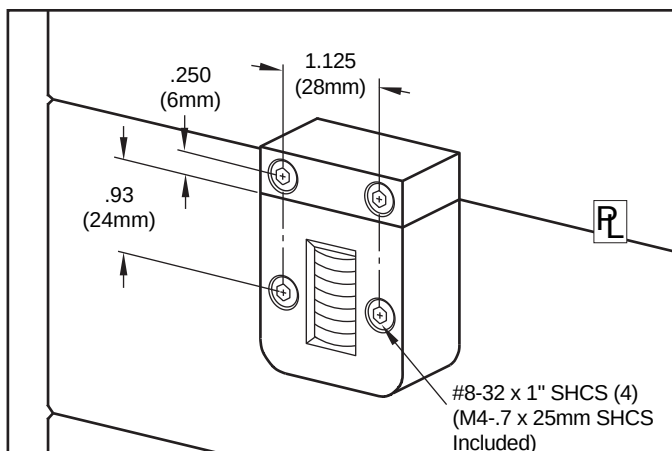
CVPL-100	Inch Standard
CVPL-200	Metric Standard



Internal Extension Mount

Machinable 8" (200mm) extension allows installation in sup. plate or rail.

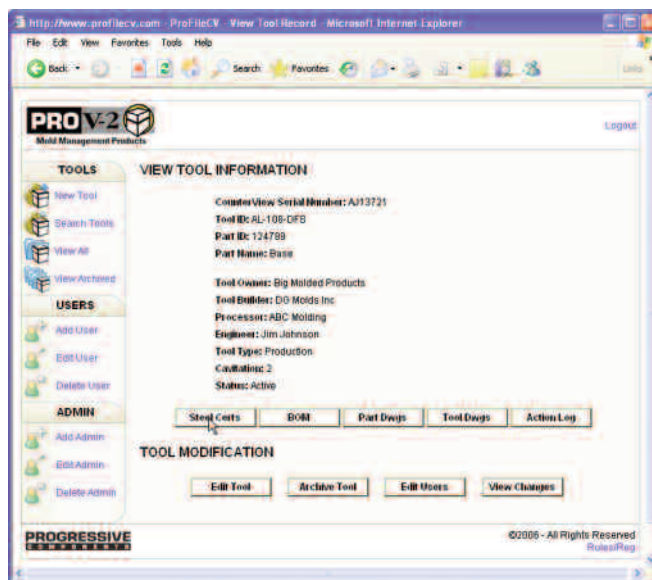
CVIN-100	Inch Standard
CVIN-200	Metric Standard



External Mount

No pocket machining necessary; Designed specifically for retrofit applications.

CVEX-100	Inch Standard
CVEX-200	Metric Standard



All CounterViews (100/200 Series and R-Series shown on the next page) have a unique serial number that allows users to view mold information online at profilecv.com.

ID Plates for tool identification sold separately. Contact Customer Service for special ID Plates with your company's logo.



Catalog Number	Description
CVID	ID Plate for tool identification (Shown)

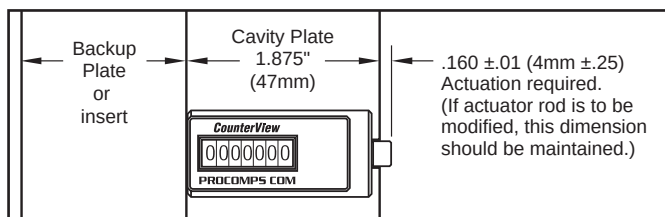
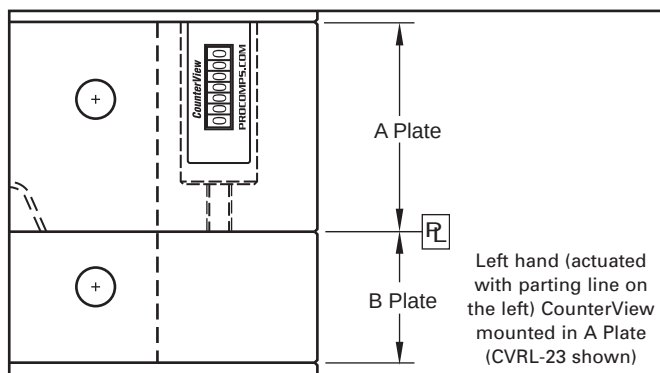
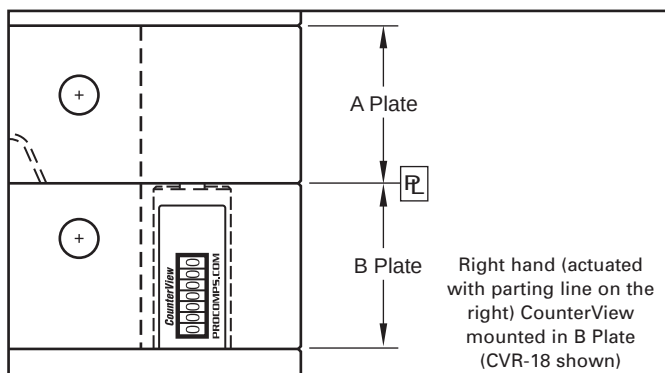
CounterView®

R-Series

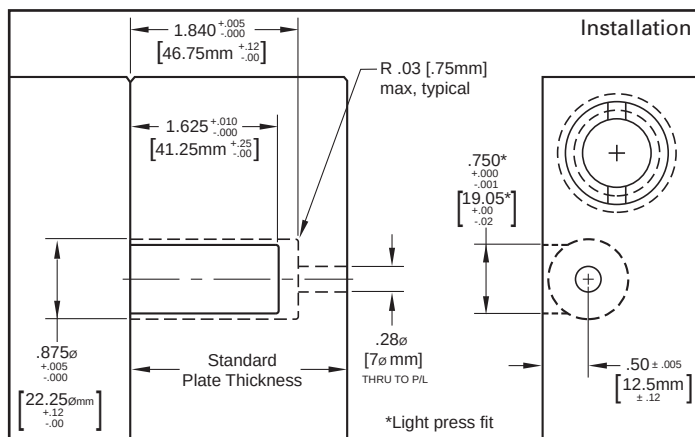
Progressive's CounterView positively monitors mold activity, validates process monitoring data, and assists mold maintenance procedures.

- 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.



Parting Line at Left



Parting Line at Right



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

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

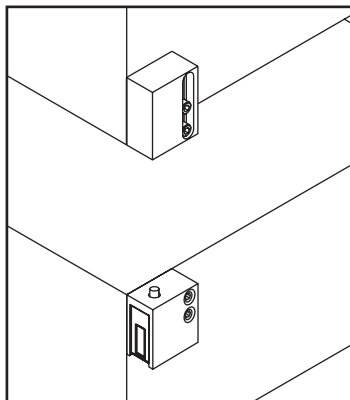
Each R-Series CounterView includes the actuator. All except CVR-18 and CVRL-18 require attachment of the actuator rod to the threaded CounterView unit.

US Patent No. 5,571,539
Canadian Patent No. 2,166,237
European Patent No. EP726129
S.African Patent No. 2005/5337
Asia and others pending

PROGRESSIVE
COMPONENTS

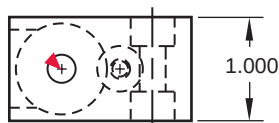
CV Attachment Block

For R-Series CounterViews

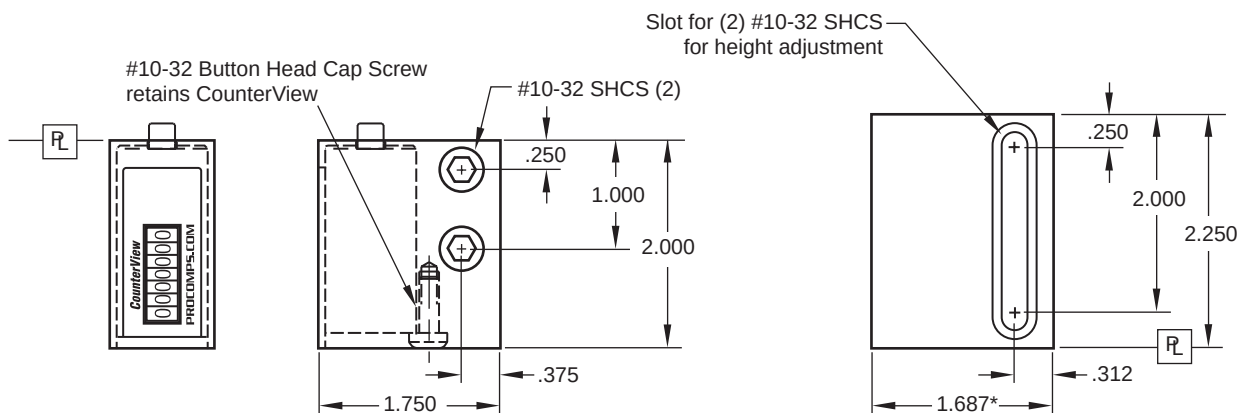
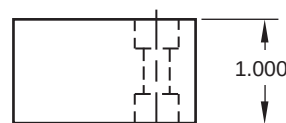


The CV Attachment Block allows for external mounting of the R-Series CounterView while offering protection from shop floor damage. The block can be adjusted to accommodate changeovers of different insert heights.

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 AISI 1018 **S** Black Oxide ▶ CAD insertion point

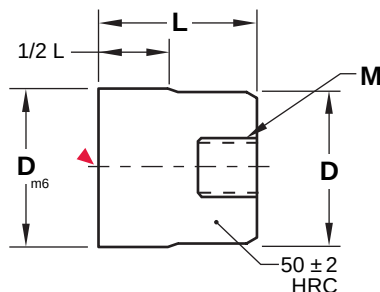
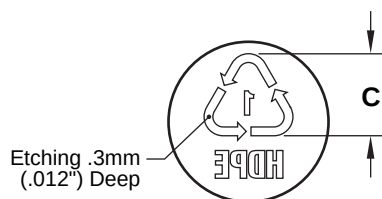
Catalog Number	Description
CVRA-100	CounterView Attachment Block Set

The CV Attachment Block set includes both blocks and mounting screws. R-Series CounterViews are sold separately on page D-14.



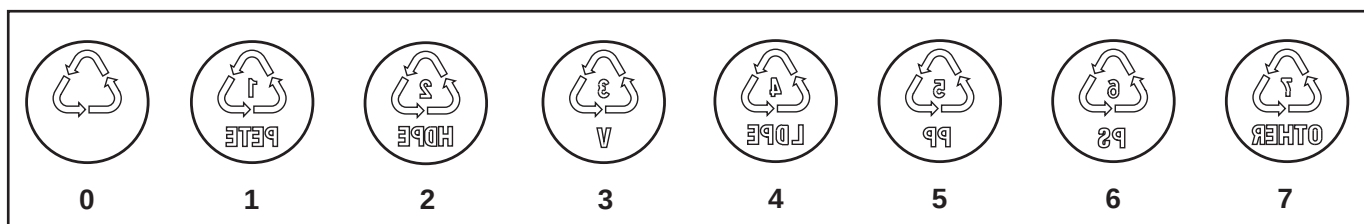
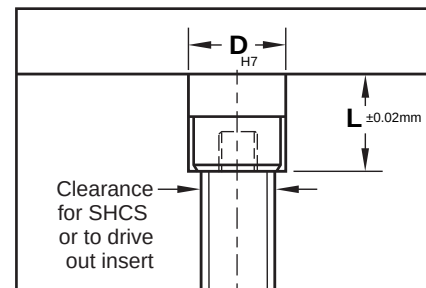
Recycle Inserts

SPI Standard



Installation Guidelines:

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



M 420 Stainless Steel

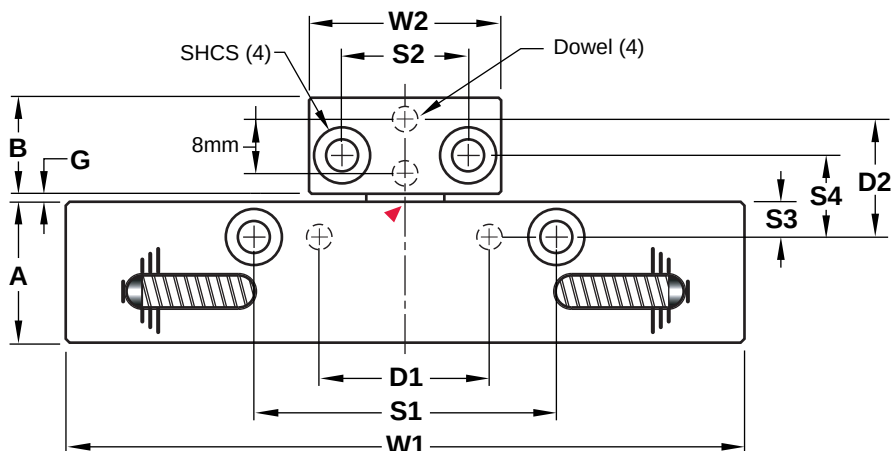
H 48-52 HRC

► 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 0.8
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-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			

Roller Pullers™

Parting Line Sequence Control



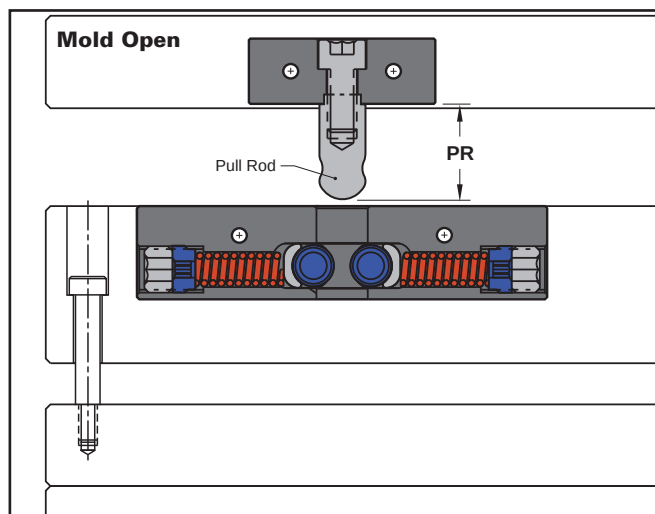
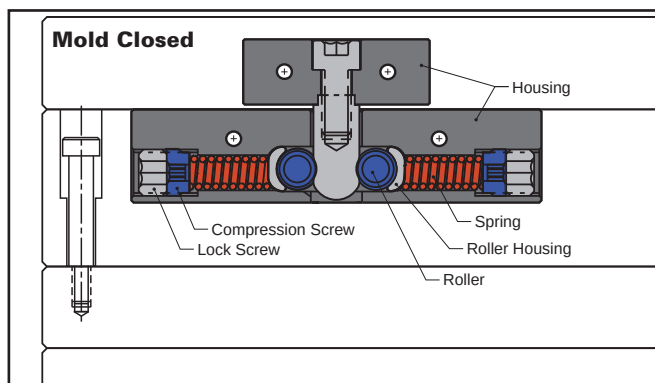
Housing: **M** 4140 **H** 27-33 HRC **S** Black Oxide
 Roller: **M** M-2 **H** 62-64 HRC, Nitrided
 Pull Rod: **M** M-2 **H** 62-64 HRC, Nitrided

Note: All dimensions are in millimeters.

► 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	15.0	30.0	21.5	5ø	M6 x 25	28
RPL-135-40	135	25	38	25	28	19	40	60.0	25.0	7.0	55.5	30.0	62.0	5ø	M6 x 25	68
RPL-140	140	32	64	25	32	22	2	70.0	35.0	10.0	22.5	100.0	19.5	6ø	M10 x 35	32

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)	80 Kg (180 lbs)	120 Kg (260 lbs)
RPL-135-40	45 Kg (100 lbs)	80 Kg (180 lbs)	120 Kg (260 lbs)
RPL-140	90 Kg (200 lbs)	135 Kg (300 lbs)	180 Kg (400 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.

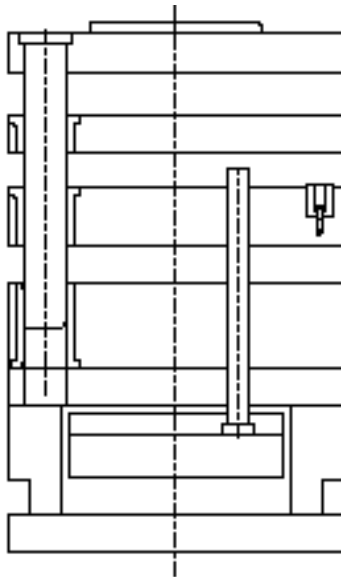


Springs

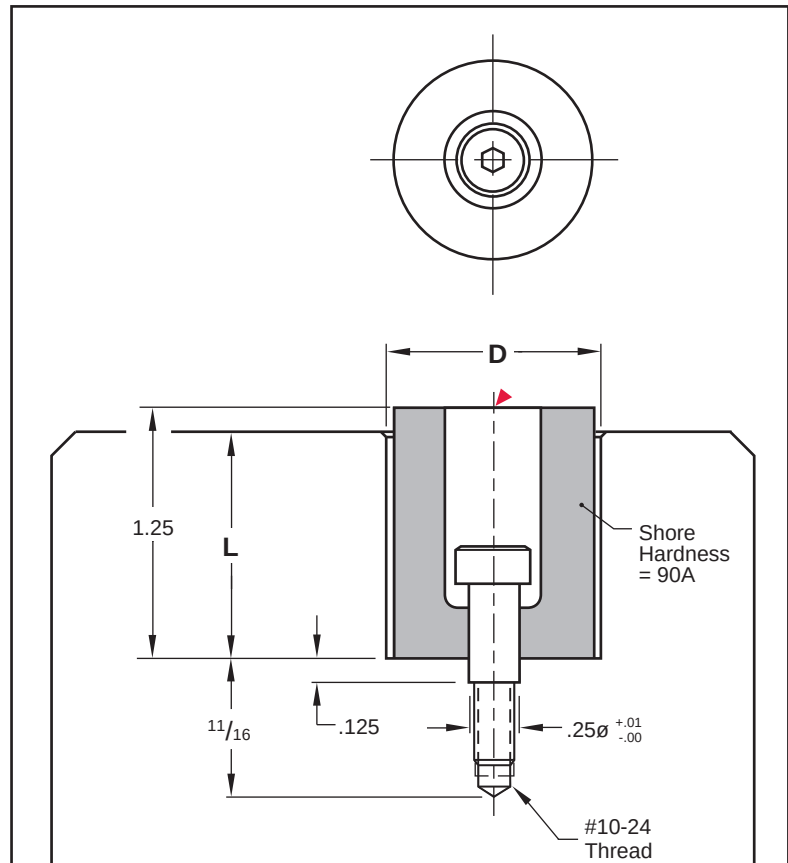
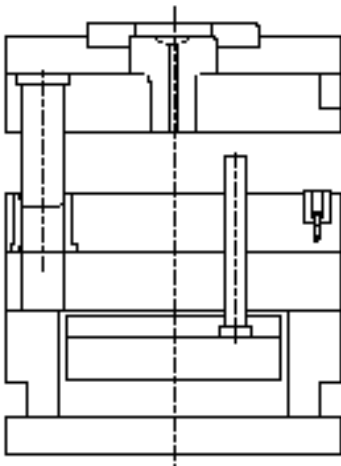
Urethane Springs



Separate Parting
lines in sequence



Cushion Parting lines



Maximum operating temperature: 150° F (65° C)
Stripper bolt included.

M Solid Urethane

► CAD insertion point

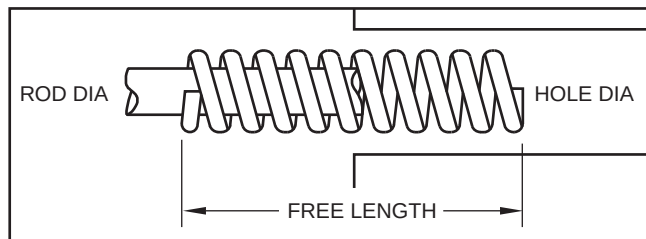
Deflection	D	L	Approximate Spring Pressure
1/8"	1.06	1.12	520 lbs.
1/4"	1.12	1.00	790 lbs.

Catalog Number	Description
US-100	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.

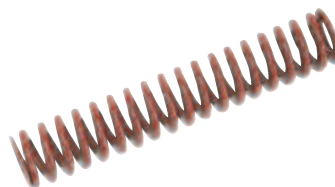
Blue

Inch Standard: Medium Duty,
Full specifications are on page D-20.
ISO Standard: Medium Duty
JIS Standard: Light Duty



Red

Inch Standard: Medium-Heavy Duty,
Full specifications are on page D-21.
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

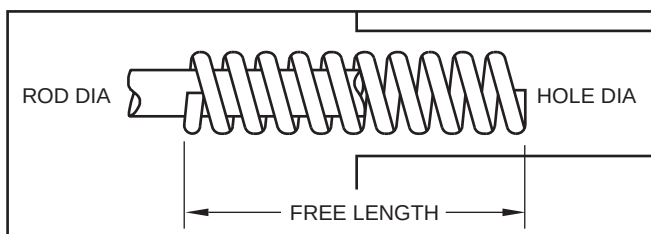
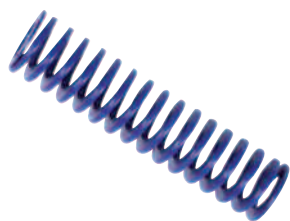
JIS Standard: Extra Heavy Duty





Springs

Medium Duty: Inch Standard



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

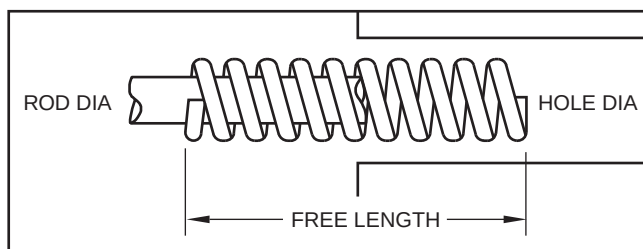
Hole Dia.	Rod Dia.	Free Length	Catalog Number	Approx. Load at 1/10" Deflec. (lbs.)	Load at 25% Deflec. (lbs.)	Load at 40% Deflec. (lbs.)
3/8	3/16	1.00	MS37L1	6.0	14.0	22.4
		1.25	MS37L1.25	5.4	15.0	24.0
		1.50	MS37L1.5	4.0	14.3	22.8
		1.75	MS37L1.75	3.4	14.9	23.8
		2.00	MS37L2	2.8	14.0	22.4
		2.50	MS37L2.5	2.4	15.0	24.0
		3.00	MS37L3	2.1	13.5	21.6
		12.00	MS37L12	.6	18.0	28.8
1/2	9/32	1.00	MS50L1	11.0	25.0	40.0
		1.25	MS50L1.25	8.2	28.8	46.0
		1.50	MS50L1.5	6.8	28.5	45.6
		1.75	MS50L1.75	6.0	29.8	47.6
		2.00	MS50L2	5.5	32.0	51.2
		2.50	MS50L2.5	4.5	32.5	52.0
		3.00	MS50L3	3.5	30.0	48.0
		3.50	MS50L3.5	3.0	26.3	42.0
5/8	11/32	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	26.0	41.6
		7.50	MS50L7.5	1.2	20.6	33.0
		12.00	MS50L12	.7	24.0	38.4
		1.00	MS62L1	16.4	32.8	52.4
		1.25	MS62L1.25	12.8	40.0	64.0
		1.50	MS62L1.5	10.8	40.5	64.8
3/4	3/8	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	42.0	67.2
		1.00	MS75L1	31.2	78.0	124.8
1	1/2	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
1	1/2	4.50	MS75L4.5	6.4	72.0	115.2
		5.00	MS75L5	6.0	70.0	112.0
		5.50	MS75L5.5	5.5	66.0	105.6
		6.00	MS75L6	5.0	60.0	96.0
		6.50	MS75L6.5	4.5	63.4	101.4
		7.50	MS75L7.5	3.8	61.9	99.0
		12.00	MS75L12	2.4	72.0	115.2
		1.00	MS100L1	55.0	134.0	214.4
1	1/2	1.25	MS100L1.25	45.0	136.3	218.0
		1.50	MS100L1.5	35.0	126.0	201.6
		1.75	MS100L1.75	30.0	126.0	201.6
		2.00	MS100L2	26.0	116.0	185.6
		2.50	MS100L2.5	20.0	125.0	200.0

Hole Dia.	Rod Dia.	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	114.0	182.4
		3.50	MS100L3.5	15.0	112.0	179.2
		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
1-1/4	5/8	8.00	MS100L8	6.0	112.0	179.2
		12.00	MS100L12	4.0	120.0	192.0
		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
1-1/2	3/4	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
2	1	12.00	MS125L12	6.0	168.0	268.8
		2.00	MS150L2	53.0	224.0	358.4
		2.50	MS150L2.5	45.0	230.0	368.0
		3.00	MS150L3	36.0	252.0	403.2
		3.50	MS150L3.5	30.0	231.0	369.6
		4.00	MS150L4	27.0	216.0	345.6
		4.50	MS150L4.5	23.0	234.0	374.4
		5.00	MS150L5	21.0	250.0	400.0
2	1	5.50	MS150L5.5	18.5	231.0	369.6
		6.00	MS150L6	17.0	216.0	345.6
		7.00	MS150L7	14.5	238.0	380.8
		8.00	MS150L8	12.8	256.0	409.6
		10.00	MS150L10	10.0	220.0	352.0
		12.00	MS150L12	8.0	240.0	384.0
		2.50	MS200L2.5	100.0	560.0	896.0
		3.00	MS200L3	83.0	576.0	921.6
2	1	3.50	MS200L3.5	64.8	567.0	907.2
		4.00	MS200L4	60.0	552.0	883.2
		4.50	MS200L4.5	53.0	531.0	849.6
		5.00	MS200L5	47.0	520.0	832.0
		5.50	MS200L5.5	39.2	539.0	862.4
		6.00	MS200L6	39.0	528.0	844.8
		7.00	MS200L7	31.2	546.0	873.6
		8.00	MS200L8	28.5	512.0	819.2
2	1	10.00	MS200L10	20.8	520.0	832.0
		12.00	MS200L12	17.5	504.0	806.4

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

Springs

Medium-Heavy Duty: Inch Standard

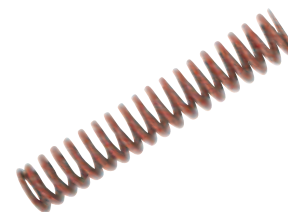


Recommended Deflection:

20% = Long Life

25% = Average Life

30% = Maximum Operating Deflection

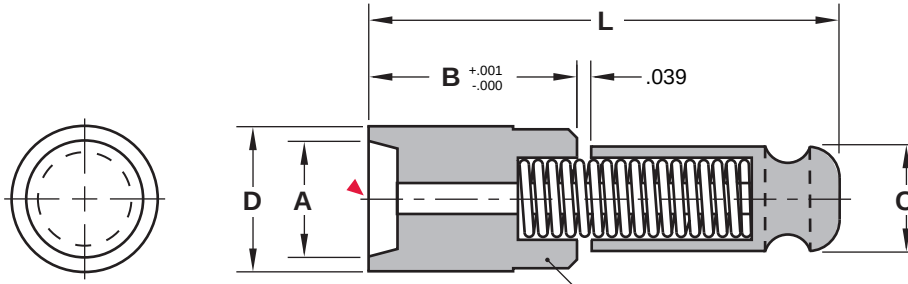


Hole Dia.	Rod Dia.	Free Length	Catalog Number	Approx. Load at 1/10" Deflec. (lbs.)	Load at 20% Deflec. (lbs.)	Load at 30% Deflec. (lbs.)
3/8	3/16	1.00	HS37L1	9.0	18.0	27.0
		1.25	HS37L1.25	7.3	18.3	27.4
		1.50	HS37L1.5	6.7	20.1	30.2
		1.75	HS37L1.75	5.8	20.3	30.5
		2.00	HS37L2	5.0	20.0	30.0
		2.50	HS37L2.5	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	34.8	52.1
		1.50	HS50L1.5	9.5	36.0	54.0
		1.75	HS50L1.75	8.5	36.4	54.6
		2.00	HS50L2	7.5	34.8	52.2
		2.50	HS50L2.5	6.0	34.0	51.0
		3.00	HS50L3	5.7	34.2	51.3
		3.50	HS50L3.5	4.0	32.9	49.4
5/8	11/32	12.00	HS50L12	1.2	28.8	43.2
		1.00	HS62L1	30.0	55.4	83.1
		1.25	HS62L1.25	21.5	52.0	78.0
		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
3/4	3/8	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
		1.00	HS75L1	50.0	115.2	172.8
		1.25	HS75L1.25	38.0	110.0	165.0
		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
1	1/2	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	104.0	156.0
		5.50	HS75L5.5	8.0	105.6	158.4
		6.00	HS75L6	7.5	96.0	144.0
1	1/2	12.00	HS75L12	3.6	86.4	129.6
		1.00	HS100L1	76.0	144.0	216.0
		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	147.2	220.8
		2.50	HS100L2.5	31.0	144.0	216.0

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

Hole Dia.	Rod Dia.	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	139.2	208.8
		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	136.8	205.2
		5.00	HS100L5	14.4	144.0	216.0
		5.50	HS100L5.5	12.8	140.8	211.2
		6.00	HS100L6	12.0	134.4	201.6
		7.00	HS100L7	10.0	134.4	201.6
1-1/4	5/8	8.00	HS100L8	8.8	140.8	211.2
		12.00	HS100L12	6.2	134.4	201.6
		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
1-1/2	3/4	4.00	HS125L4	36.8	294.4	441.6
		4.50	HS125L4.5	32.0	288.0	432.0
		5.00	HS125L5	29.0	272.0	408.0
		5.50	HS125L5.5	26.4	290.4	435.6
		6.00	HS125L6	25.0	278.4	417.6
		7.00	HS125L7	20.0	280.0	420.0
		8.00	HS125L8	18.4	294.4	441.6
		10.00	HS125L10	14.5	256.0	384.0
1-1/2	3/4	12.00	HS125L12	12.4	268.8	403.2
		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
2	1	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	332.8	499.2
		10.00	HS150L10	17.6	352.0	528.0
		12.00	HS150L12	14.4	345.6	518.4
		2.50	HS200L2.5	118.4	592.0	888.0
		3.00	HS200L3	96.0	576.0	864.0
2	1	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
2	1	10.00	HS200L10	26.0	480.0	720.0
		12.00	HS200L12	22.4	537.6	806.4

Air Valves



M 420 Stainless Steel, with Titanium Nitride coated plunger

H 52-56 HRC

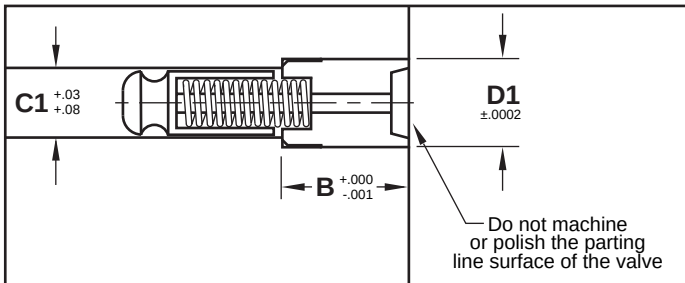
► CAD insertion point

Catalog Number	mm	D Inch	mm	A Inch	mm	B Inch	mm	C Inch	mm	L Inch
AV-08	8	.3149 $+0.0006/+0.0002$	6.6	.260	11	.433	6	.236	24.0	.945
AV-12	12	.4724 $+0.0007/+0.0003$	9.7	.382	18	.708	8	.315	34.0	1.339
AV-18	18	.7086 $+0.0007/+0.0003$	14.8	.583	22	.866	12	.472	45.5	1.791

Specifications:

Pressure Required: 29-140 psi

Maximum Mold Temperature: 450°F (230° C)



Suggested Machining Diameters:

Catalog Number	D1 Steel	D1 Aluminum	C1
AV-08	.3147	.3145	.265
AV-12	.4722	.4718	.354
AV-18	.7084	.7077	.551

Stop Pins

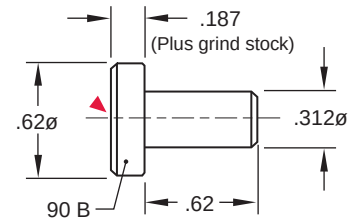


Dowel Type

M AISI 1018

H 80/90 Brinell

Catalog Number	Description
STP-1	Stop Pins



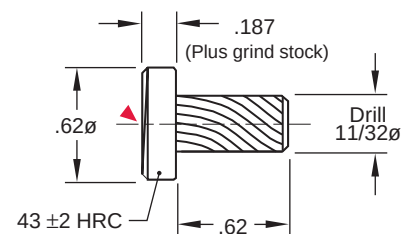
Self-Tapping

M AISI 8640

H 41-45 HRC

S Black Oxide

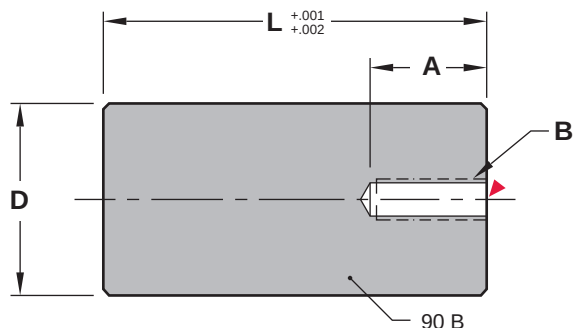
Catalog Number	Description
STP-2	Self-Tapping Stop Pins



Support Pillars

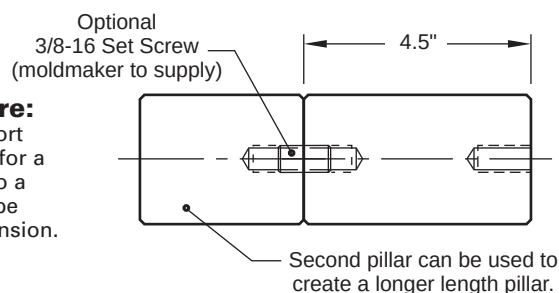
M AISI 1018 **H** 90 Brinell ▶ CAD insertion point

D	Catalog Number	L +.001 +.002	A	B
1	SP100L2.5	2.5	.62	3/8-16
	SP100L3	3	.62	3/8-16
	SP100L3.5	3.5	.62	3/8-16
	SP100L4	4	.62	3/8-16
	SP100L4.5	4.5	.62	3/8-16
1.25	SP125L2.5	2.5	.62	3/8-16
	SP125L3	3	.62	3/8-16
	SP125L3.5	3.5	.62	3/8-16
	SP125L4	4	.62	3/8-16
	SP125L4.5	4.5	.62	3/8-16
	SP125L5	5	.62	3/8-16
	SP125L6	6	.62	3/8-16
1.5	SP150L2.5	2.5	.62	3/8-16
	SP150L3	3	.62	3/8-16
	SP150L3.5	3.5	.62	3/8-16
	SP150L4	4	.62	3/8-16
	SP150L4.5	4.5	.62	3/8-16
	SP150L5	5	.62	3/8-16
	SP150L6	6	.62	3/8-16
2	SP200L2.5	2.5	.62	3/8-16
	SP200L3	3	.62	3/8-16
	SP200L3.5	3.5	.62	3/8-16
	SP200L4	4	.62	3/8-16
	SP200L4.5	4.5	.62	3/8-16
	SP200L5	5	.62	3/8-16
	SP200L6	6	.62	3/8-16
3	SP300L5	5	1.25	5/8-11
	SP300L6	6	1.25	5/8-11
	SP300L8	8	1.25	5/8-11

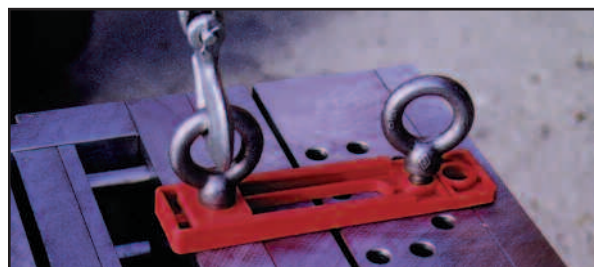


Socket Head Cap Screw included.
Smaller diameter Support Pillars available on page F-21.

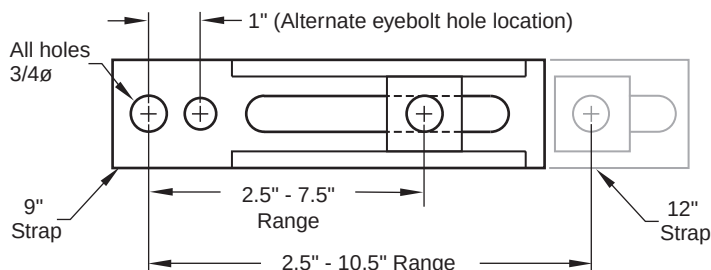
Added Feature:
All 4.5" long support pillars are tapped for a 3/8-16 set screw so a second pillar can be utilized as an extension.



Mold Straps



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



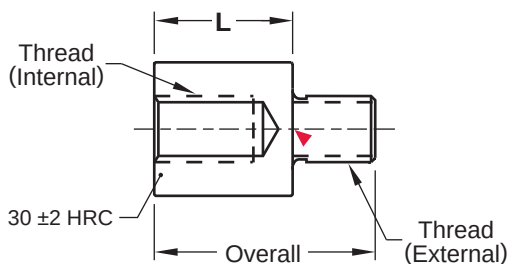
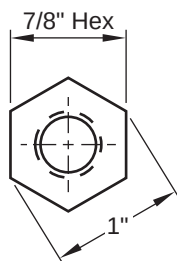
M 100% recycled reinforced Nylon

Catalog Number	Description
MSTRP-9	Plastic Mold Strap, 9" Long
MSTRP-12	Plastic Mold Strap, 12" Long



PKO™ Extensions

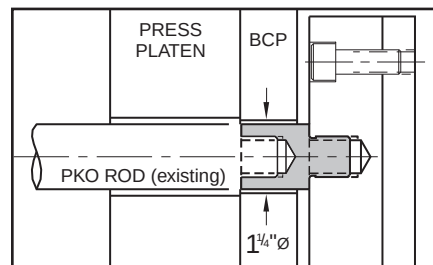
Hex Series



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

► CAD insertion point

Catalog Number	Thread Internal & External	Overall	L
PH37L10	3/8-16	1.672	1.052
PH50L10	1/2-13		
PH62L10	5/8-11		
PH75L10	3/4-10	1.922	
PH75L10-NT	3/4-10*		
PH37L15	3/8-16	2.172	1.552
PH50L15	1/2-13		
PH62L15	5/8-11		
PH75L15	3/4-10	2.422	
PH75L15-NT	3/4-10*		



"L" DIMENSIONS:

1.052 = .875 (BCP) + .187 (Stop Pins) - .010
1.552 = 1.375 (BCP) + .187 (Stop Pins) - .010

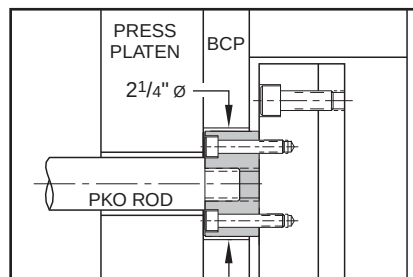
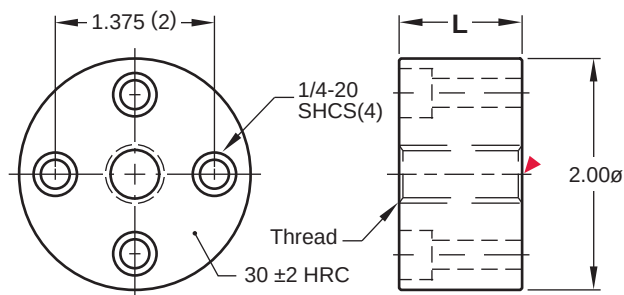
*External thread only. Mold maker machines internal thread on "NT" style to suit non-standard applications.

Puck Series



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

Catalog Number	Thread	L
PKP37L10	3/8-16	1.052
PKP50L10	1/2-13	
PKP62L10	5/8-11	
PKP75L10	3/4-10	
PKPL10-NT	No Thread*	
PKP37L15	3/8-16	1.552
PKP50L15	1/2-13	
PKP62L15	5/8-11	
PKP75L15	3/4-10	
PKPL15-NT	No Thread*	



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