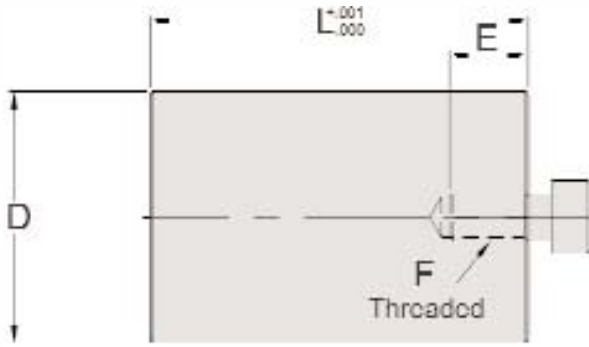


Support Pillars

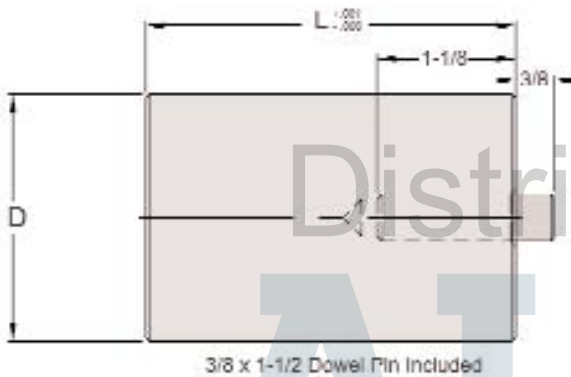
- Manufactured from SAE 1040 steel
- **Stainless Steel Available**
- Lengths are flat & parallel .0002



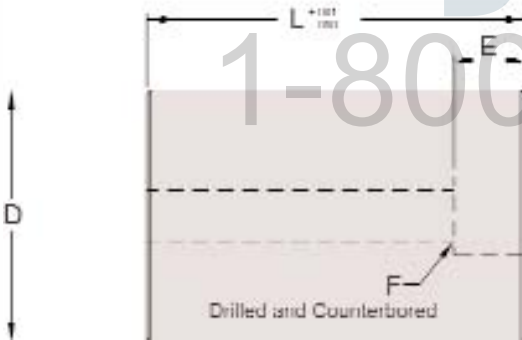
TAPPED



DRILLED AND COUNTERBORED



DOWELED



Tapped

| DIA | E | F | G |
|-------|-------|--------|-------------------------------|
| 1 | 5/8 | 3/8-16 | 3/8-16 x 1 SHCS included FREE |
| 1-1/4 | | | |
| 1-1/2 | | | |
| 1-3/4 | | | |
| 2 | | | |
| 2-1/2 | 1-1/4 | 5/8-11 | not included |
| 3 | | | |
| 4 | | | |

Drilled & Counterbored

| DIA | E | F |
|-------|------|-----|
| 1-1/4 | 9/16 | 3/8 |
| 1-1/2 | | |
| 2 | 3/4 | 5/8 |
| 3 | | |

CATALOG NUMBER

| D DIA | L LENGTH | TAPPED HOLE | DRILLED C"BORED | DOWELED |
|-------|----------|-------------|-----------------|---------|
| 1 | 2.500 | 1025 | | |
| | 3.000 | 1030 | | |
| | 3.500 | 1035 | | |
| | 4.000 | 1040 | | |
| | 4.500 | 1045 | | |
| 1-1/4 | 2.500 | 1225 | DC1225 | D1225 |
| | 3.000 | 1230 | DC1230 | D1230 |
| | 3.500 | 1235 | DC1235 | D1235 |
| | 4.000 | 1240 | DC1240 | |
| | 4.500 | 1245 | | |
| | 5.000 | 1250 | DC1250 | |
| 1-1/2 | 6.000 | 1260 | DC1260 | |
| | 2.500 | 1525 | | D1525 |
| | 3.000 | 1530 | | D1530 |
| | 3.500 | 1535 | DC1535 | D1535 |
| | 4.000 | 1540 | DC1540 | D1540 |
| | 4.500 | 1545 | | D1545 |
| | 5.000 | 1550 | DC1550 | D1550 |
| 1-3/4 | 6.000 | 1560 | DC1560 | |
| | 2.500 | 1725 | | |
| | 3.000 | 1730 | | |
| | 3.500 | 1735 | | |
| | 4.000 | 1740 | | |
| | 4.500 | 1745 | | |
| 2 | 5.000 | 1750 | | |
| | 6.000 | 1760 | | |
| | 2.500 | 2025 | | |
| | 3.000 | 2030 | | D2030 |
| | 3.500 | 2035 | | D2035 |
| | 4.000 | 2040 | | D2040 |
| | 4.500 | 2045 | | D2045 |
| 2-1/2 | 5.000 | 2050 | DC2050 | |
| | 6.000 | 2060 | DC2060 | D2060 |
| | 3.000 | 2530 | | |
| | 3.500 | 2535 | | |
| | 4.000 | 2540 | | |
| | 4.500 | 2545 | | |
| 3 | 5.000 | 2550 | | |
| | 6.000 | 2560 | | |
| | 4.000 | 3040 | | |
| | 4.500 | 3045 | | |
| | 5.000 | 3050 | DC3050 | |
| 4 | 6.000 | 3060 | DC3060 | |
| | 8.000 | 3080 | DC3080 | |
| | 5.000 | 4050 | | |
| 4 | 6.000 | 4060 | | |
| | 8.000 | 4080 | | |

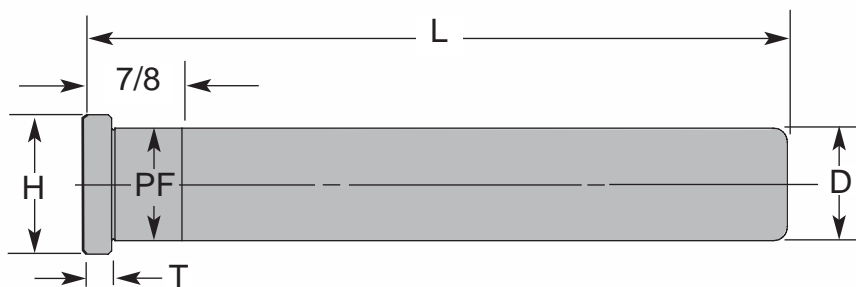
Special diameters & lengths available
STAINLESS STEEL ALSO AVAILABLE





Guided Ejector Leader Pins

7/8 Press Fit Length



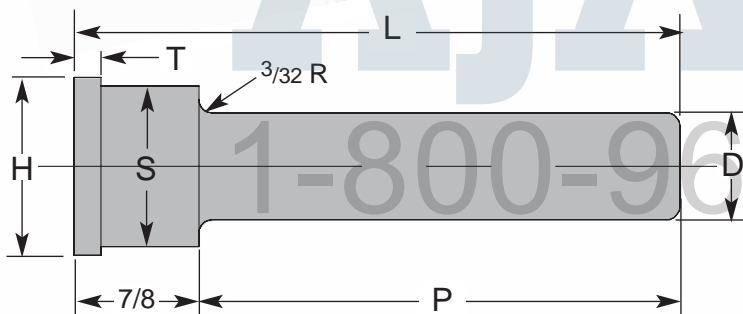
| DIA | D +.0000 -.0005 | PF +.0005 -.0000 | H | T |
|-------|-----------------------|------------------------|-------|------|
| 1/2 | .499 | .501 | .615 | 3/16 |
| 3/4 | .749 | .751 | .990 | 3/16 |
| 7/8 | .874 | .876 | 1.115 | 1/4 |
| 1 | .999 | 1.001 | 1.240 | 1/4 |
| 1 1/4 | 1.249 | 1.251 | 1.490 | 5/16 |

| L LENGTH | D = DIAMETER | | | | |
|-------------|--------------|---------|---------|---------|---------|
| | 1/2 | 3/4 | 7/8 | 1 | 1-1/4 |
| 4-1/4 | 005-GLS | 105-GLS | 205-GLS | 305-GLS | 405-GLS |
| 4-3/4 | 006-GLS | 106-GLS | 206-GLS | 306-GLS | 406-GLS |
| 5-1/4 | 007-GLS | 107-GLS | 207-GLS | 307-GLS | 407-GLS |
| 5-3/4 | 008-GLS | 108-GLS | 208-GLS | 308-GLS | 408-GLS |
| 6-1/4 | 009-GLS | 109-GLS | 209-GLS | 309-GLS | 409-GLS |



Guided Ejector Shoulder Leader Pins

7/8 Press Fit Length



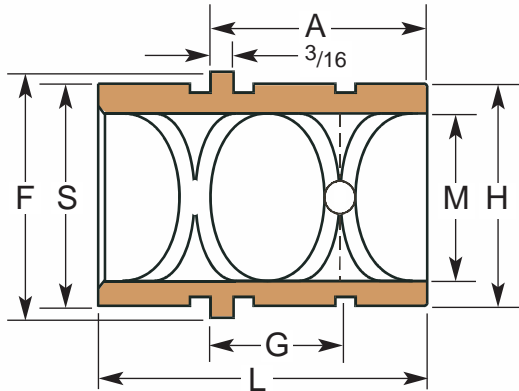
| CATALOG NUMBER | NOMINAL DIAMETER | D +.0000 -.0005 | S +.0005 -.0000 | P | L | H +.000 -.010 | T +.000 -.015 |
|----------------|------------------|-----------------------|-----------------------|-------|-------|---------------------|---------------------|
| 004-GSP | 1/2 | .499 | .751 | 2-7/8 | 3-3/4 | .853 | .187 |
| 005-GSP | 1/2 | .499 | .751 | 3-3/8 | 4-1/4 | .853 | .187 |
| 006-GSP | 1/2 | .499 | .751 | 3-7/8 | 4-3/4 | .853 | .187 |
| 007-GSP | 1/2 | .499 | .751 | 4-3/8 | 5-1/4 | .853 | .187 |
| 105-GSP | 3/4 | .749 | 1.126 | 3-3/8 | 4-1/4 | 1.250 | .312 |
| 106-GSP | 3/4 | .749 | 1.126 | 3-7/8 | 4-3/4 | 1.250 | .312 |
| 107-GSP | 3/4 | .749 | 1.126 | 4-3/8 | 5-1/4 | 1.250 | .312 |
| 108-GSP | 3/4 | .749 | 1.126 | 4-7/8 | 5-3/4 | 1.250 | .312 |
| 305-GSP | 1 | .999 | 1.376 | 3-3/8 | 4-1/4 | 1.500 | .312 |
| 306-GSP | 1 | .999 | 1.376 | 3-7/8 | 4-3/4 | 1.500 | .312 |
| 307-GSP | 1 | .999 | 1.376 | 4-3/8 | 5-1/4 | 1.500 | .312 |
| 308-GSP | 1 | .999 | 1.376 | 4-7/8 | 5-3/4 | 1.500 | .312 |



- Shoulder type leader pins allow the moldmaker to line bore both leader pin and guided ejection bushing holes
- Shoulder diameters & tolerances allow for mating with standard bushings

Guided Ejector Bushings

Solid & Bronze Plated

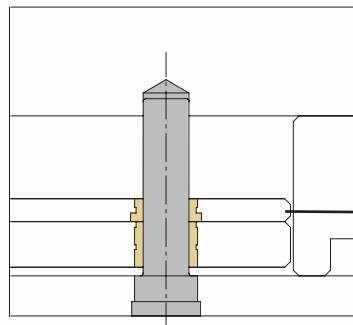
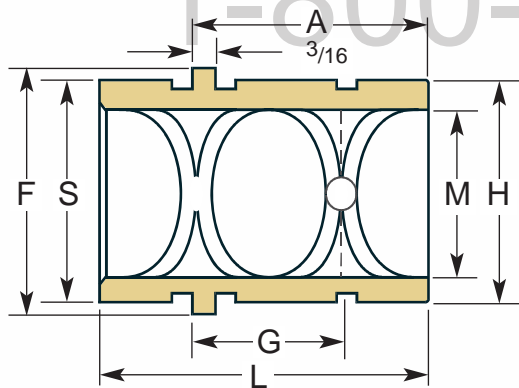


| CATALOG NUMBER | | M | H | L | F | S | A | G |
|----------------|--------------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----|
| BRONZE PLATED | SOLID BRONZE | +0.005 -0.000 | +0.005 -0.000 | +0.00 -0.062 | +0.00 -0.010 | +0.00 -0.001 | +0.00 -0.030 | |
| - | BGEB-500 | .501 | .7505 | 1.50 | .853 | .749 | 1.00 | .56 |
| GEB-750 | BGEB-750 | .751 | 1.1255 | 1.50 | 1.302 | 1.124 | 1.00 | .56 |
| GEB-875 | BGEB-875 | .876 | 1.2505 | 1.50 | 1.427 | 1.249 | 1.00 | .56 |
| GEB-100 | BGEB-100 | 1.001 | 1.3755 | 1.75 | 1.552 | 1.374 | 1.12 | .62 |
| GEB-125 | BGEB-125 | 1.251 | 1.6255 | 1.75 | 1.802 | 1.624 | 1.12 | .62 |
| GEB-150 | - | 1.501 | 2.0005 | 1.75 | 2.177 | 1.999 | 1.12 | .62 |
| GEB-200 | - | 2.001 | 2.5005 | 2.25 | 2.687 | 2.499 | 1.62 | .80 |

* Also available in hardened steel (i.e. GES-750, GES= Guided Ejector Steel)

Guided Ejector Bushings

Solid Bronze with Redesigned Rib



Saves Machining Time!

- Ampco #18
- Superior wear characteristics
- More durable than plated bushings - NO plating to wear through
- Counterbore for rib in pin retainer plate

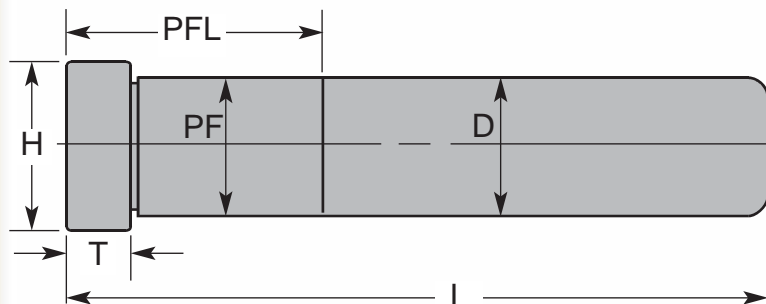
| CATALOG NUMBER | M | H | L | F | S | A | G |
|----------------|------------------|------------------|----------------|-----------------|-----------------|-----------------|------|
| | +0.005 -0.000 | +0.005 -0.000 | +0.00 -0.03 | +0.00 -0.010 | +0.00 -0.001 | +0.00 -0.030 | |
| RGEB-750 | .751 | 1.1255 | 1.50 | 1.302 | 1.124 | 1.187 | .747 |
| RGEB-875 | .876 | 1.2505 | 1.50 | 1.427 | 1.249 | 1.187 | .747 |
| RGEB-100 | 1.001 | 1.3755 | 1.75 | 1.552 | 1.374 | 1.312 | .807 |
| RGEB-125 | 1.251 | 1.6255 | 1.75 | 1.802 | 1.624 | 1.312 | .807 |





Straight Leader Pins

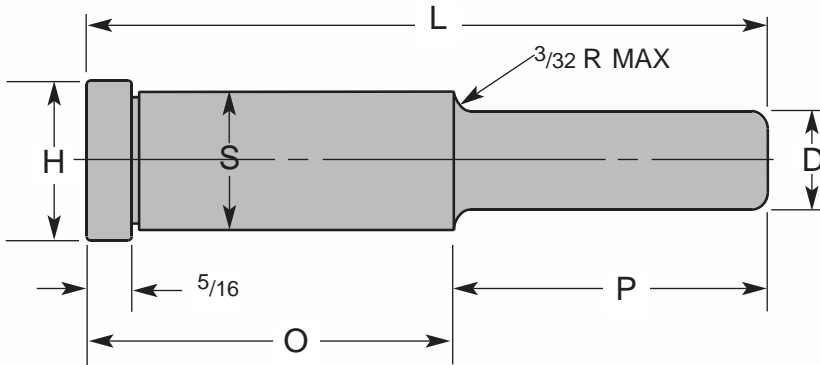
Grooveless



| General Dimensions | | | | |
|--------------------|-----------------------|------------------------|-------|------|
| NOMINAL DIA | D +.0000 -.0005 | PF +.0005 -.0000 | H | T |
| 3/4 | .749 | .751 | .990 | 3/16 |
| 7/8 | .874 | .876 | 1.115 | 1/4 |
| 1 | .999 | 1.001 | 1.240 | 1/4 |
| 1-1/4 | 1.249 | 1.251 | 1.490 | 5/16 |
| 1-1/2 | 1.499 | 1.501 | 1.740 | 5/16 |
| 2 | 1.999 | 2.001 | 2.240 | 5/16 |
| 2-1/2 | 2.499 | 2.501 | 2.740 | 5/16 |
| 3 | 2.999 | 3.001 | 3.365 | 1/2 |

| L | D = 3/4 | | D = 7/8 | | D = 1 | | D = 1-1/4 | | D = 1-1/2 | | D = 2 | | D = 2-1/2 | | D = 3 | | L |
|--------|---------|-------------|---------|-------------|-------|-------------|-----------|-------------|-----------|-------------|-------|-------------|-----------|-------------|-------|-------------|--------|
| | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | PFL | Catalog No. | |
| 1-3/4 | 7/8 | 100-GL | 7/8 | 200-GL | 7/8 | 300-GL | | | | | | | | | | | 1-3/4 |
| 2-1/4 | 7/8 | 101-GL | 7/8 | 201-GL | 7/8 | 301-GL | | | | | | | | | | | 2-1/4 |
| 2-3/4 | 7/8 | 102-GL | 7/8 | 202-GL | 7/8 | 302-GL | 7/8 | 402-GL | | | | | | | | | 2-3/4 |
| 3-1/4 | 7/8 | 103-GL | 7/8 | 203-GL | 7/8 | 303-GL | 7/8 | 403-GL | | | | | | | | | 3-1/4 |
| 3-3/4 | 7/8 | 104-GL | 7/8 | 204-GL | 7/8 | 304-GL | 7/8 | 404-GL | 1-3/8 | 504-GL | | | | | | | 3-3/4 |
| 4-1/4 | 1-3/8 | 105-GL | 1-3/8 | 205-GL | 1-3/8 | 305-GL | 7/8 | 405-GL | 1-3/8 | 505-GL | | | | | | | 4-1/4 |
| 4-3/4 | 1-3/8 | 106-GL | 1-3/8 | 206-GL | 1-3/8 | 306-GL | 1-3/8 | 406-GL | 1-3/8 | 506-GL | | | | | | | 4-3/4 |
| 5-1/4 | 1-3/8 | 107-GL | 1-3/8 | 207-GL | 1-3/8 | 307-GL | 1-3/8 | 407-GL | 1-3/8 | 507-GL | | | | | | | 5-1/4 |
| 5-3/4 | 1-7/8 | 108-GL | 1-3/8 | 208-GL | 1-3/8 | 308-GL | 1-3/8 | 408-GL | 1-3/8 | 508-GL | 1-7/8 | 608-GL | 2-3/8 | 708-GL | | | 5-3/4 |
| 6-1/4 | 1-7/8 | 109-GL | 1-7/8 | 209-GL | 1-3/8 | 309-GL | 1-3/8 | 409-GL | 1-3/8 | 509-GL | | | | | | | 6-1/4 |
| 6-3/4 | 1-7/8 | 110-GL | 1-7/8 | 210-GL | 1-7/8 | 310-GL | 1-7/8 | 410-GL | 1-3/8 | 510-GL | 1-7/8 | 610-GL | 2-3/8 | 710-GL | | | 6-3/4 |
| 7-1/4 | 1-7/8 | 111-GL | 1-7/8 | 211-GL | 1-7/8 | 311-GL | 1-7/8 | 411-GL | | | | | | | | | 7-1/4 |
| 7-3/4 | 1-7/8 | 112-GL | 1-7/8 | 212-GL | 1-7/8 | 312-GL | 1-7/8 | 412-GL | 1-7/8 | 512-GL | 1-7/8 | 612-GL | 2-3/8 | 712-GL | | | 7-3/4 |
| 8-1/4 | | 113-GL | 1-7/8 | 213-GL | 1-7/8 | 313-GL | 1-7/8 | 413-GL | | | | | | | | | 8-1/4 |
| 8-3/4 | | 114-GL | 1-7/8 | 214-GL | 1-7/8 | 314-GL | 1-7/8 | 414-GL | 1-7/8 | 514-GL | 1-7/8 | 614-GL | 2-3/8 | 714-GL | | | 8-3/4 |
| 9-1/4 | 1-7/8 | 115-GL | 1-7/8 | 215-GL | 1-7/8 | 315-GL | 1-7/8 | 415-GL | | | | | | | | | 9-1/4 |
| 9-3/4 | | 116-GL | | 216-GL | 1-7/8 | 316-GL | 1-7/8 | 416-GL | 1-7/8 | 516-GL | 1-7/8 | 616-GL | 2-3/8 | 716-GL | | | 9-3/4 |
| 10-1/4 | | 117-GL | | 217-GL | 1-7/8 | 317-GL | 1-7/8 | 417-GL | | | | | | | | | 10-1/4 |
| 10-3/4 | | 118-GL | 1-7/8 | 218-GL | 1-7/8 | 318-GL | 1-7/8 | 418-GL | 1-7/8 | 518-GL | 1-7/8 | 618-GL | 2-3/8 | 718-GL | | | 10-3/4 |
| 11-1/4 | | | | 219-GL | 1-7/8 | 319-GL | 1-7/8 | 419-GL | | | | | | | | | 11-1/4 |
| 11-3/4 | | | | 220-GL | 1-7/8 | 320-GL | 1-7/8 | 420-GL | 1-7/8 | 520-GL | 1-7/8 | 620-GL | 2-3/8 | 720-GL | | | 11-3/4 |
| 12-1/4 | | | 1-7/8 | 221-GL | 1-7/8 | 321-GL | 1-7/8 | 421-GL | | | | | | | | | 12-1/4 |
| 12-3/4 | | | | | | | 1-7/8 | 422-GL | 1-7/8 | 522-GL | 1-7/8 | 622-GL | 2-3/8 | 722-GL | 2-7/8 | 822-GL | 12-3/4 |
| 13-3/4 | | | | | | | 1-7/8 | 423-GL | 1-7/8 | 523-GL | 1-7/8 | 623-GL | 2-3/8 | 723-GL | | | 13-3/4 |
| 14-3/4 | | | | | | | 1-7/8 | 424-GL | 1-7/8 | 524-GL | 1-7/8 | 624-GL | 2-3/8 | 724-GL | 2-7/8 | 824-GL | 14-3/4 |
| 15-3/4 | | | | | | | 1-7/8 | 425-GL | 1-7/8 | 525-GL | 1-7/8 | 625-GL | 2-3/8 | 725-GL | | | 15-3/4 |
| 16-3/4 | | | | | | | | | | | 2-3/8 | 628-GL | 2-3/8 | 728-GL | 2-7/8 | 828-GL | 16-3/4 |
| 18-3/4 | | | | | | | | | | | 2-3/8 | 630-GL | 2-3/8 | 730-GL | 2-7/8 | 830-GL | 18-3/4 |

Shoulder Leader Pins



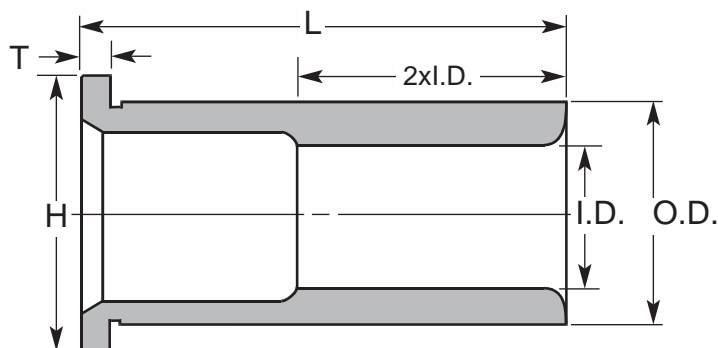
| General Dimensions | | | |
|--------------------|-----------------------|-----------------------|----------|
| NOMINAL DIA | D +.0000 -.0005 | S +.0005 -.0000 | H MAX |
| 3/4 | .749 | 1.126 | 1.250 |
| 1 | .999 | 1.376 | 1.500 |
| 1-1/4 | 1.249 | 1.626 | 1.750 |

- Shoulder type leader pins allow the moldmaker to line bore both leader pin and bushing holes
- Shoulder diameters and tolerances allow for mating with standard bushings

| O | P | L | CATALOG NUMBER | |
|-------|-------|-------|----------------|--------|
| | | | D = 3/4 | D = 1 |
| 7/8 | 7/8 | 1-3/4 | W-0707 | |
| | 1-3/8 | 2-1/4 | W-0713 | |
| | 1-7/8 | 2-3/4 | | |
| | 2-3/8 | 3-1/4 | W-0723 | |
| | 2-7/8 | 3-3/4 | W-0727 | Y-0727 |
| 1-3/8 | 7/8 | 2-1/4 | W-1307 | Y-1307 |
| | 1-3/8 | 2-3/4 | W-1313 | Y-1313 |
| | 1-7/8 | 3-1/4 | W-1317 | Y-1317 |
| | 2-3/8 | 3-3/4 | W-1323 | |
| | 2-7/8 | 4-1/4 | W-1327 | Y-1327 |
| 1-7/8 | 3-3/8 | 4-3/4 | W-1333 | Y-1333 |
| | 7/8 | 2-3/4 | W-1707 | |
| | 1-3/8 | 3-1/4 | W-1713 | Y-1713 |
| | 1-7/8 | 3-3/4 | W-1717 | Y-1717 |
| | 2-3/8 | 4-1/4 | W-1723 | Y-1723 |
| 2-3/8 | 2-7/8 | 4-3/4 | W-1727 | Y-1727 |
| | 3-3/8 | 5-1/4 | W-1733 | Y-1733 |
| | 3-7/8 | 5-3/4 | W-1737 | Y-1737 |
| | 7/8 | 3-1/4 | W-2307 | |
| | 1-3/8 | 3-3/4 | W-2313 | Y-2313 |
| 2-3/8 | 1-7/8 | 4-1/4 | W-2317 | Y-2317 |
| | 2-3/8 | 4-3/4 | W-2323 | Y-2323 |
| | 2-7/8 | 5-1/4 | | Y-2327 |
| | 3-3/8 | 5-3/4 | | Y-2333 |
| | 3-7/8 | 6-1/4 | W-2337 | Y-2337 |

| O | P | L | CATALOG NUMBER | |
|-------|-------|--------|----------------|--------|
| | | | D = 3/4 | D = 1 |
| 2-7/8 | 1-3/8 | 4-1/4 | W-2713 | |
| | 1-7/8 | 4-3/4 | W-2717 | Y-2717 |
| | 2-3/8 | 5-1/4 | W-2723 | Y-2723 |
| | 2-7/8 | 5-3/4 | W-2727 | Y-2727 |
| | 3-3/8 | 6-1/4 | | Y-2733 |
| 3-3/8 | 3-7/8 | 6-3/4 | W-2737 | Y-2737 |
| | 4-3/8 | 7-1/4 | | Y-2743 |
| | 1-7/8 | 5-1/4 | W-3317 | Y-3317 |
| | 2-3/8 | 5-3/4 | W-3323 | Y-3323 |
| | 2-7/8 | 6-1/4 | | Y-3327 |
| 3-7/8 | 3-3/8 | 6-3/4 | W-3333 | Y-3333 |
| | 4-3/8 | 7-3/4 | | Y-3343 |
| | 2-3/8 | 6-1/4 | W-3723 | Y-3723 |
| | 2-7/8 | 6-3/4 | W-3727 | Y-3727 |
| | 3-3/8 | 7-1/4 | | |
| 4-3/8 | 3-7/8 | 7-1/4 | | |
| | 3-7/8 | 7-3/4 | | Y-3737 |
| | 4-7/8 | 8-3/4 | | Y-3747 |
| | 2-7/8 | 7-1/4 | | |
| | 3-3/8 | 7-3/4 | | |
| 4-7/8 | 3-7/8 | 8-1/4 | | Y-4337 |
| | 4-3/8 | 8-3/4 | | Y-4343 |
| | 4-7/8 | 9-1/4 | | |
| | 3-7/8 | 8-3/4 | | Y-4737 |
| | 4-3/8 | 9-1/4 | | Y-4743 |
| 5-7/8 | 4-7/8 | 9-3/4 | | Y-4747 |
| | 5-7/8 | 10-3/4 | | |
| | 3-7/8 | 9-3/4 | | Y-5737 |
| | 4-3/8 | 10-1/4 | | |
| | 4-7/8 | 10-3/4 | | |
| | 5-7/8 | 11-3/4 | | Y-5757 |





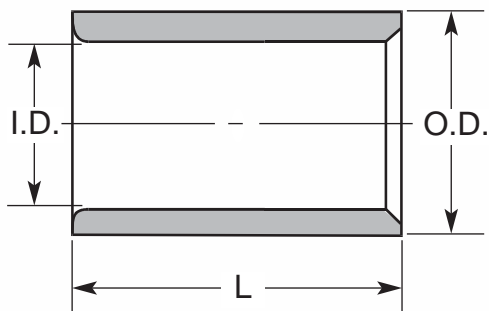
Shoulder Bushings

Hardened & Precision Ground

| General Dimensions | | | | |
|--------------------|----------------------------|----------------------------|----------|------|
| NOMINAL I.D. | I.D. +0.0005 -0.0000 | O.D. +0.0005 -0.0000 | H MAX | T |
| 3/4 | .7505 | 1.1255 | 1.250 | 3/16 |
| 7/8 | .8755 | 1.2505 | 1.375 | 3/16 |
| 1 | 1.0005 | 1.3755 | 1.500 | 3/16 |
| 1-1/4 | 1.2505 | 1.6255 | 1.750 | 3/16 |
| 1-1/2 | 1.5005 | 2.0005 | 2.125 | 3/16 |
| 2 | 2.0005 | 2.5005 | 2.625 | 3/16 |
| 2-1/2 | 2.5005 | 3.2505 | 3.375 | 3/16 |
| 3 | 3.0005 | 3.7505 | 3.937 | 1/2 |

| L LENGTH | CATALOG NUMBER | | | | | | | |
|----------|----------------|-----------|---------|------------|-------------|---------|-------------|---------|
| | I.D.= 3/4 | I.D.= 7/8 | I.D.= 1 | I.D.=1-1/4 | I.D.= 1-1/2 | I.D.= 2 | I.D.= 2-1/2 | I.D.= 3 |
| 7/8 | BU-100 | BU-200 | BU-300 | BU-400 | BU-500 | | | |
| 1-3/8 | BU-101 | BU-201 | BU-301 | BU-401 | BU-501 | BU-601 | BU-701 | |
| 1-7/8 | BU-102 | BU-202 | BU-302 | BU-402 | BU-502 | BU-602 | BU-702 | |
| 2-3/8 | BU-103 | BU-203 | BU-303 | BU-403 | BU-503 | BU-603 | BU-703 | |
| 2-7/8 | BU-104 | BU-204 | BU-304 | BU-404 | BU-504 | BU-604 | BU-704 | |
| 3-3/8 | BU-105 | BU-205 | BU-305 | BU-405 | BU-505 | BU-605 | BU-705 | |
| 3-7/8 | BU-106 | BU-206 | BU-306 | BU-406 | BU-506 | BU-606 | BU-706 | BU-806 |
| 4-3/8 | | | BU-307 | BU-407 | BU-507 | BU-607 | BU-707 | |
| 4-7/8 | | BU-208 | BU-308 | BU-408 | BU-508 | BU-608 | BU-708 | BU-808 |
| 5-7/8 | | BU-209 | BU-309 | BU-409 | BU-509 | BU-609 | BU-709 | BU-809 |
| 7-7/8 | | | | | | | | BU-811 |

1-800-968-6868



Straight Bushings

Hardened & Precision Ground

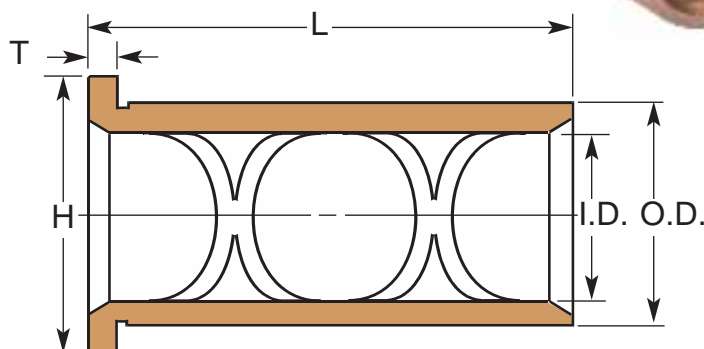
| CATALOG NUMBER | NOMINAL I.D. | I.D. +0.0005 -0.0000 | O.D. +0.0005 -0.0000 | L |
|----------------|--------------|----------------------------|----------------------------|-------|
| ST-100 | 3/4 | .7505 | 1.1255 | 7/8 |
| ST-101 | 3/4 | .7505 | 1.1255 | 1-3/8 |
| ST-200 | 7/8 | .8755 | 1.2505 | 1-3/8 |
| ST-300 | 1 | 1.0005 | 1.3755 | 1-3/8 |
| ST-400 | 1-1/4 | 1.2505 | 1.6255 | 1-3/8 |
| ST-401 | 1-1/4 | 1.2505 | 1.6255 | 1-7/8 |
| ST-500 | 1-1/2 | 1.5005 | 2.0005 | 1-3/8 |
| ST-501 | 1-1/2 | 1.5005 | 2.0005 | 1-7/8 |
| ST-600 | 2 | 2.0005 | 2.5005 | 3-7/8 |
| ST-700 | 2-1/2 | 2.5005 | 3.2505 | 4-7/8 |

Shoulder Bushings

Bronze Plated



| General Dimensions | | | | |
|--------------------|----------------------------|----------------------------|-------|------|
| NOMINAL I.D. | I.D. +0.0005 -0.0000 | O.D. +0.0005 -0.0000 | H | T |
| 3/4 | .7505 | 1.1255 | 1.302 | 3/16 |
| 7/8 | .8755 | 1.2505 | 1.427 | 3/16 |
| 1 | 1.0005 | 1.3755 | 1.552 | 3/16 |
| 1-1/4 | 1.2505 | 1.6255 | 1.802 | 3/16 |
| 1-1/2 | 1.5005 | 2.0005 | 2.177 | 3/16 |
| 2 | 2.0005 | 2.5005 | 2.677 | 3/16 |
| 2-1/2 | 2.5005 | 3.2505 | 3.427 | 3/16 |
| 3 | 3.0005 | 3.7505 | 3.990 | 1/2 |



| L LENGTH | CATALOG NUMBER | | | | | | | |
|----------|----------------|-----------|-----------|-------------|-------------|-----------|-------------|-----------|
| | I.D.= 3/4 | I.D.= 7/8 | I.D.= 1 | I.D.= 1-1/4 | I.D.= 1-1/2 | I.D.= 2 | I.D.= 2-1/2 | I.D.= 3 |
| 7/8 | LBB 06-07 | LBB 07-07 | LBB 08-07 | LBB 10-07 | LBB 12-07 | | | |
| 1-3/8 | LBB 06-13 | LBB 07-13 | LBB 08-13 | LBB 10-13 | LBB 12-13 | LBB 16-13 | LBB 20-13 | |
| 1-7/8 | LBB 06-17 | LBB 07-17 | LBB 08-17 | LBB 10-17 | LBB 12-17 | LBB 16-17 | LBB 20-17 | |
| 2-3/8 | LBB 06-23 | LBB 07-23 | LBB 08-23 | LBB 10-23 | LBB 12-23 | LBB 16-23 | LBB 20-23 | |
| 2-7/8 | LBB 06-27 | LBB 07-27 | LBB 08-27 | LBB 10-27 | LBB 12-27 | LBB 16-27 | LBB 20-27 | |
| 3-3/8 | LBB 06-33 | LBB 07-33 | LBB 08-33 | LBB 10-33 | LBB 12-33 | LBB 16-33 | LBB 20-33 | |
| 3-7/8 | LBB 06-37 | LBB 07-37 | LBB 08-37 | LBB 10-37 | LBB 12-37 | LBB 16-37 | LBB 20-37 | LBB 24-37 |
| 4-3/8 | LBB 06-43 | LBB 07-43 | LBB 08-43 | LBB 10-43 | LBB 12-43 | LBB 16-43 | LBB 20-43 | |
| 4-7/8 | LBB 06-47 | LBB 07-47 | LBB 08-47 | LBB 10-47 | LBB 12-47 | LBB 16-47 | LBB 20-47 | LBB 24-47 |
| 5-7/8 | LBB 06-57 | LBB 07-57 | LBB 08-57 | LBB 10-57 | LBB 12-57 | LBB 16-57 | LBB 20-57 | LBB 24-57 |
| 7-7/8 | | | | | | | | LBB 24-77 |

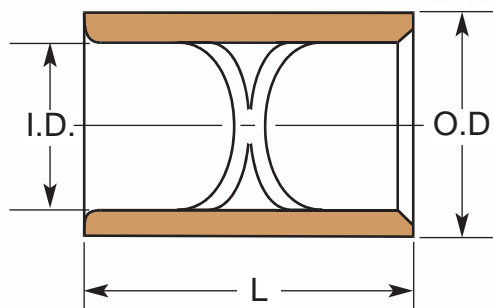
1-800-968-6868

Straight Bushings

Bronze Plated



| CATALOG NUMBER | NOMINAL I.D. | I.D. +0.0005 -0.0000 | O.D. +0.0005 -0.0000 | L |
|----------------|--------------|----------------------------|----------------------------|-------|
| STB 06-07 | 3/4 | .7505 | 1.1255 | 7/8 |
| STB 06-13 | 3/4 | .7505 | 1.1255 | 1-3/8 |
| STB 07-13 | 7/8 | .8755 | 1.2505 | 1-3/8 |
| STB 08-13 | 1 | 1.0005 | 1.3755 | 1-3/8 |
| STB 10-13 | 1-1/4 | 1.2505 | 1.6255 | 1-3/8 |
| STB 10-17 | 1-1/4 | 1.2505 | 1.6255 | 1-7/8 |
| STB 12-13 | 1-1/2 | 1.5005 | 2.0005 | 1-3/8 |
| STB 12-17 | 1-1/2 | 1.5005 | 2.0005 | 1-7/8 |
| STB 16-37 | 2 | 2.0005 | 2.5005 | 3-7/8 |
| STB 20-47 | 2-1/2 | 2.5005 | 3.2505 | 4-7/8 |

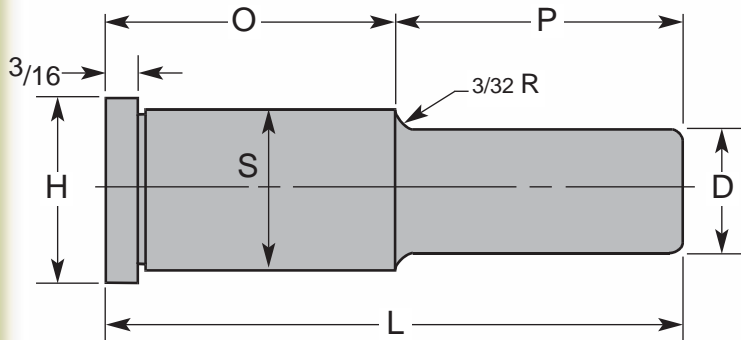


For IEM Self-Lubricating Products,
See Section F
For Additional Lamina Products,
See End of Section E



Shoulder Leader Pins For Small Mold Assemblies

FOR USE IN ARBURG, 45R, MOSLO 68SH, 56U, 58U, NEWBURY, 56N, 58N, 56U, 58U, VAN DORN 56U, 58U



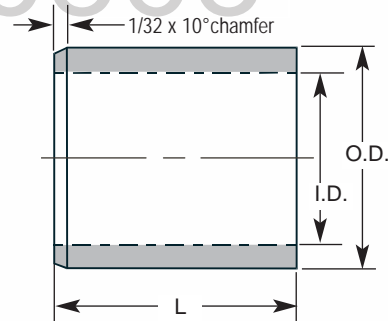
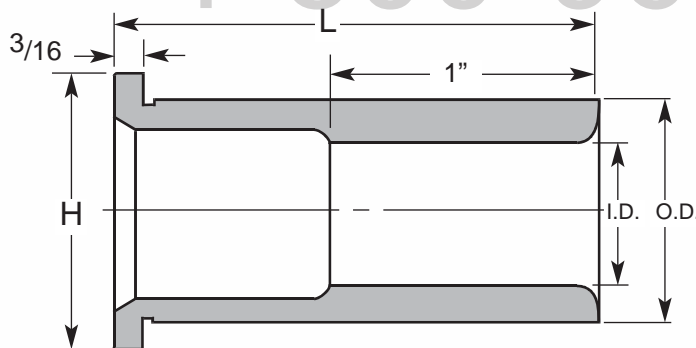
| General Dimensions | | | |
|--------------------|--------------------------|--------------------------|-------|
| NOMINAL DIA | D | S | H MAX |
| 1/2 | .499 +.0000 -.0005 | .751 +.0005 -.0000 | .853 |

See Fast Interchangeable Tooling Section for 1/2 inch Leader Pins

| O | P | L | CATALOG NUMBER |
|-------|-------|-------|----------------|
| | | | D = 1/2 |
| 7/8 | 7/8 | 1-3/4 | A-0707 |
| | 1-3/8 | 2-1/4 | A-0713 |
| | 1-7/8 | 2-3/4 | A-0717 |
| | 2-3/8 | 3-1/4 | A-0723 |
| 1-3/8 | 7/8 | 2-1/4 | A-1307 |
| | 1-3/8 | 2-3/4 | A-1313 |
| | 1-7/8 | 3-1/4 | A-1317 |
| 1-7/8 | 7/8 | 2-3/4 | A-1707 |
| | 1-3/8 | 3-1/4 | A-1713 |
| | 1-7/8 | 3-3/4 | A-1717 |
| 2-3/8 | 7/8 | 3-1/4 | A-2307 |
| 2-7/8 | 1-3/8 | 4-1/4 | A-2713 |

Shoulder Bushings For Small Mold Assemblies

Straight Bushings For Small Mold Assemblies



| L | CATALOG NUMBER |
|-----------------------|----------------|
| | I.D. = 1/2 |
| 7/8 +.000 -.060 | A-5690 |
| 1-3/8 | A-5691 |
| 1-7/8 | A-5692 |
| 2-3/8 | A-5693 |

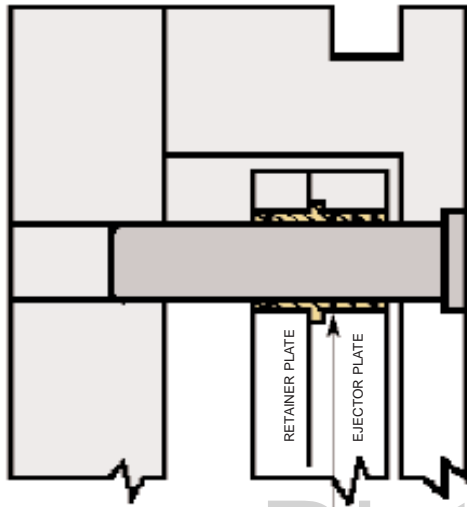
| General Dimensions | | | |
|--------------------|--------------------------|---------------------------|-------|
| NOMINAL I.D. | I.D. | O.D. | H MAX |
| 1/2 | .500 +.0005 -.0000 | .7505 +.0005 -.0000 | .853 |

General Dimensions refer to both Shoulder & Straight Bushings

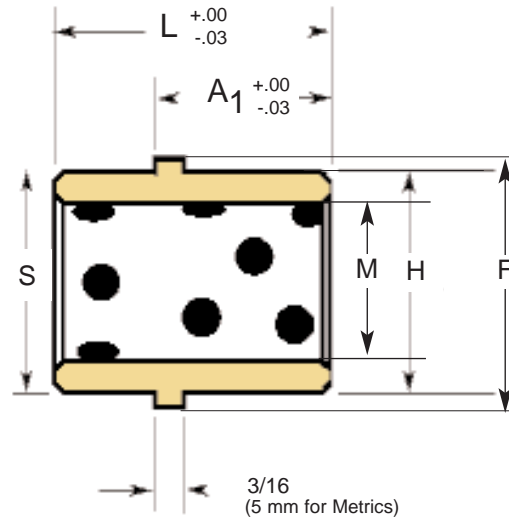
| L | CATALOG NUMBER |
|-----------------------|----------------|
| | I.D. = 1/2 |
| 7/8 +.000 -.060 | A-5498 |
| 1-3/8 | A-5499 |

Guided Ejector Bushings

Self-Lubricating



Graphite Plugs For Lubrication
(No Lube Lines Required)



- NOTE: Bushings are stocked to dimensions & tolerances shown
- Tolerances are $\pm .010$ (.25mm) unless otherwise indicated
- Material: Aluminum bronze with graphite plugs
- See pg. E-2 for guided ejector leader pins for these bushings

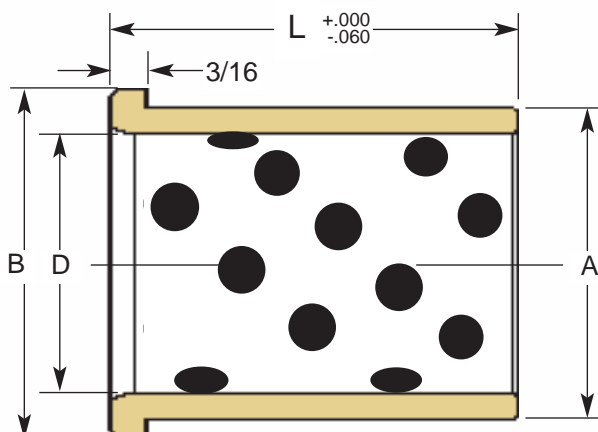
| INCH SIZES | | | | | | | |
|----------------|----------|-----------------------|-----------------------|---------------------|-------|-------|-------|
| CATALOG NUMBER | NOM I.D. | M +.0005 -.0000 | H +.0005 -.0000 | S +.000 -.001 | F | A1 | L |
| ME-750 | 3/4 | .751 | 1.1255 | 1.124 | 1.302 | 1 | 1-1/2 |
| ME-875 | 7/8 | .876 | 1.2505 | 1.249 | 1.427 | 1 | 1-1/2 |
| ME-1000 | 1 | 1.001 | 1.3755 | 1.374 | 1.552 | 1-1/8 | 1-3/4 |
| ME-1000L | 1 | 1.001 | 1.3755 | 1.374 | 1.552 | 1-5/8 | 2 |
| ME-1250 | 1-1/4 | 1.251 | 1.6255 | 1.624 | 1.802 | 1-1/8 | 1-3/4 |
| ME-1250L | 1-1/4 | 1.251 | 1.6255 | 1.624 | 1.802 | 1-7/8 | 2-1/2 |
| ME-1500 | 1-1/2 | 1.501 | 2.0005 | 1.999 | 2.177 | 1-1/8 | 1-3/4 |
| ME-1500L | 1-1/2 | 1.501 | 2.0005 | 1.999 | 2.177 | 1-7/8 | 2-1/2 |
| ME-2000 | 2 | 2.001 | 2.5005 | 2.499 | 2.687 | 1-5/8 | 2-1/4 |

| METRIC SIZES | | | | | | |
|----------------|-------------------|-------------------|---------------------|----|--------------------|-------------------|
| CATALOG NUMBER | D +.01 -.00 | A +.00 -.01 | B +.000 -.025 | C | L1 +.00 -.76 | L +.00 -.76 |
| MME-20 | 20 | 26 | 26 | 28 | 25 | 37 |
| MME-25 | 25 | 32 | 32 | 35 | 29 | 45 |
| MME-30 | 30 | 38 | 38 | 41 | 29 | 29 |



Shoulder Bushings Self-Lubricating

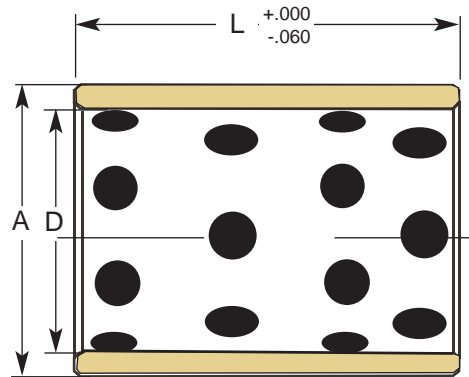
- NOTE: Bushings are stocked to dimensions & tolerances shown
- Tolerances are $\pm .010$ unless otherwise indicated
- Material: Aluminum bronze with graphite plugs



| CATALOG NUMBER | NOMINAL I.D. | D +.0005 -.0000 | A +.0005 -.0000 | B | L +.000 -.060 |
|----------------|--------------|-----------------------|-----------------------|------|---------------------|
| S750-7G | 3/4 | .7505 | 1.1255 | 1.30 | 7/8 |
| S750-11G | | | | | 1-3/8 |
| S750-15G | | | | | 1-7/8 |
| S750-19G | | | | | 2-3/8 |
| S750-23G | | | | | 2-7/8 |
| S750-27G | | | | | 3-3/8 |
| S750-31G | | | | | 3-7/8 |
| S750-35G | | | | | 4-3/8 |
| S750-39G | | | | | 4-7/8 |
| S875-7G | | | | | 7/8 |
| S875-11G | 1-3/8 | | | | |
| S875-15G | 1-7/8 | | | | |
| S875-19G | 2-3/8 | | | | |
| S875-23G | 2-7/8 | | | | |
| S875-27G | 3-3/8 | | | | |
| S875-31G | 3-7/8 | | | | |
| S875-35G | 4-3/8 | | | | |
| S1000-7G | 1 | 1.0005 | 1.3755 | 1.55 | 7/8 |
| S1000-11G | | | | | 1-3/8 |
| S1000-15G | | | | | 1-7/8 |
| S1000-19G | | | | | 2-3/8 |
| S1000-23G | | | | | 2-7/8 |
| S1000-27G | | | | | 3-3/8 |
| S1000-31G | | | | | 3-7/8 |
| S1000-35G | | | | | 4-3/8 |
| S1000-39G | | | | | 4-7/8 |
| S1000-47G | | | | | 5-7/8 |
| S1250-7G | 1-1/4 | 1.2505 | 1.6255 | 1.80 | 7/8 |
| S1250-11G | | | | | 1-3/8 |
| S1250-15G | | | | | 1-7/8 |
| S1250-19G | | | | | 2-3/8 |
| S1250-23G | | | | | 2-7/8 |
| S1250-27G | | | | | 3-3/8 |
| S1250-31G | | | | | 3-7/8 |
| S1250-35G | | | | | 4-3/8 |
| S1250-39G | | | | | 4-7/8 |
| S1250-47G | | | | | 5-7/8 |

| CATALOG NUMBER | NOMINAL I.D. | D +.0005 -.0000 | A +.0005 -.0000 | B | L +.000 -.060 |
|----------------|--------------|-----------------------|-----------------------|------|---------------------|
| S1500-7G | 1-1/2 | 1.5005 | 2.0005 | 2.18 | 7/8 |
| S1500-11G | | | | | 1-3/8 |
| S1500-15G | | | | | 1-7/8 |
| S1500-19G | | | | | 2-3/8 |
| S1500-23G | | | | | 2-7/8 |
| S1500-27G | | | | | 3-3/8 |
| S1500-31G | | | | | 3-7/8 |
| S1500-35G | | | | | 4-3/8 |
| S1500-39G | | | | | 4-7/8 |
| S1500-47G | | | | | 5-7/8 |
| S2000-11G | 2 | 2.0005 | 2.5005 | 2.68 | 1-3/8 |
| S2000-15G | | | | | 1-7/8 |
| S2000-19G | | | | | 2-3/8 |
| S2000-23G | | | | | 2-7/8 |
| S2000-27G | | | | | 3-3/8 |
| S2000-31G | | | | | 3-7/8 |
| S2000-35G | | | | | 4-3/8 |
| S2000-39G | | | | | 4-7/8 |
| S2000-47G | 5-7/8 | | | | |
| S2500-11G | 2-1/2 | 2.5005 | 3.2505 | 3.43 | 1-3/8 |
| S2500-15G | | | | | 1-7/8 |
| S2500-19G | | | | | 2-3/8 |
| S2500-23G | | | | | 2-7/8 |
| S2500-27G | | | | | 3-3/8 |
| S2500-31G | | | | | 3-7/8 |
| S2500-35G | | | | | 4-3/8 |
| S2500-39G | | | | | 4-7/8 |
| S2500-47G | | | | | 5-7/8 |
| S3000-27G | | | | | 3 |
| S3000-31G | 3-7/8 | | | | |
| S3000-39G | 4-7/8 | | | | |
| S3000-47G | 5-7/8 | | | | |

Straight Bushings Self-Lubricating



- NOTE: Bushings are stocked to dimensions & tolerances shown
- Tolerances are $\pm .010$ unless otherwise indicated
- Material: Aluminum bronze with graphite plugs

Distributed by

1-800-966-6868

| CATALOG NUMBER | NOMINAL I.D. | D | A | L |
|----------------|--------------|------------------|------------------|------------------|
| | | +0.005 -0.000 | +0.005 -0.000 | +0.000 -0.060 |
| MS750-7 | 3/4 | .7505 | 1.1255 | 7/8 |
| MS750-11 | | | | 1-3/8 |
| MS750-12 | | | | 1-1/2 |
| MS875-10 | 7/8 | .8755 | 1.2505 | 1-1/4 |
| MS875-12 | | | | 1-1/2 |
| MS100-10 | 1 | 1.0005 | 1.3755 | 1-1/4 |
| MS100-11 | | | | 1-3/8 |
| MS100-12 | | | | 1-1/2 |
| MS100-14 | | | | 1-3/4 |
| MS100-16 | | | | 2 |
| MS100-24 | | | | 3 |
| MS125-10 | | | | 1-1/4 |
| MS125-11 | 1-3/8 | | | |
| MS125-12 | 1-1/2 | | | |
| MS125-14 | 1-3/4 | | | |
| MS125-15 | 1-7/8 | | | |
| MS125-16 | 2 | | | |
| MS125-24 | 3 | | | |
| MS150-10 | 1-1/2 | 1.5005 | 2.0005 | 1-1/4 |
| MS150-11 | | | | 1-3/8 |
| MS150-12 | | | | 1-1/2 |
| MS150-14 | | | | 1-3/4 |
| MS150-15 | | | | 1-7/8 |
| MS150-16 | | | | 2 |
| MS150-24 | | | | 3 |

| CATALOG NUMBER | NOMINAL I.D. | D | A | L |
|----------------|--------------|------------------|------------------|------------------|
| | | +0.005 -0.000 | +0.005 -0.000 | +0.000 -0.060 |
| MS175-10 | 1-3/4 | 1.7505 | 2.2505 | 1-1/4 |
| MS175-12 | | | | 1-1/2 |
| MS175-14 | | | | 1-3/4 |
| MS175-16 | | | | 2 |
| MS175-20 | | | | 2-1/2 |
| MS175-24 | | | | 3 |
| MS175-28 | | | | 3-1/2 |
| MS175-32 | | | | 4 |
| MS200-10 | 2 | 2.005 | 2.5005 | 1-1/4 |
| MS200-12 | | | | 1-1/2 |
| MS200-16 | | | | 2 |
| MS200-20 | | | | 2-1/2 |
| MS200-24 | | | | 3 |
| MS200-31 | | | | 3-7/8 |
| MS225-12 | 2-1/4 | 2.2505 | 2.7505 | 1-1/2 |
| MS225-16 | | | | 2 |
| MS225-20 | | | | 2-1/2 |
| MS225-24 | | | | 3 |
| MS250-12 | 2-1/2 | 2.5005 | 3.2505 | 1-1/2 |
| MS250-16 | | | | 2 |
| MS250-24 | | | | 3 |
| MS250-39 | | | | 4-7/8 |
| MS300-16 | 3 | 3.0005 | 3.7505 | 2 |
| MS300-20 | | | | 2-1/2 |
| MS300-24 | | | | 3 |
| MS300-28 | | | | 3-1/2 |
| MS300-39 | | | | 4-7/8 |



Die Bushings

Phone 800.521.0546



Centrifugally cast (ASTM-B-148-9C)



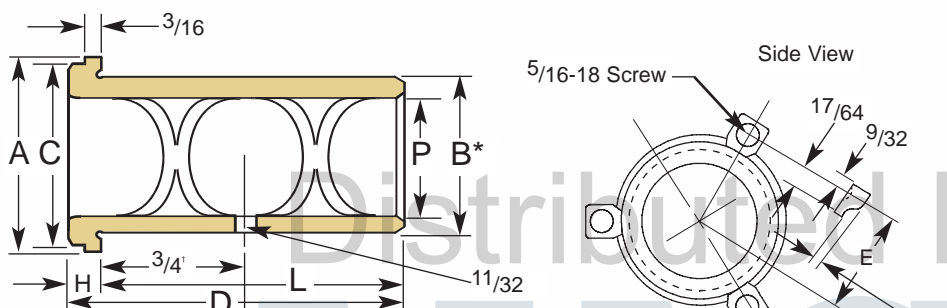
Available in Class 3 only

| I.D. Tolerances | |
|-----------------|------------------|
| 3/4 to 1-1/2 | +0.006 +0.010 |
| 1-3/4 & 2 | +0.007 +0.012 |
| 2-1/2 | +0.012 +0.018 |
| 3 | +0.014 +0.023 |
| 3-3/4 | +0.018 +0.028 |
| 4-1/2 | +0.025 +0.035 |

BRONZE PLATED

ALUMINUM BRONZE

BRONZE SELF-LUBE



† Bushings 2-1/2" dia. & larger have 1-1/4" dimension

- Also available **B (diameter)** supplied with **+0.015 grind stock**
- Specify **"Grind LDSS"** for finish ground B (diameter) **+0.000 / -0.0005**
- D-clamps & D-screws are included
- Plating Thickness **.004 - .005** per side

| P | A | C | B* | D OVERALL LENGTH | H HEAD LENGTH | L WRING FIT LENGTH | CATALOG NUMBER | | | # OF CLAMPS & SCREWS | E |
|-------|---------|---------|-------|---------------------|------------------|-----------------------|----------------|-----------------|-----------|----------------------|---------|
| | | | | | | | BRONZE PLATED | ALUMINUM BRONZE | SELF LUBE | | |
| 3/4 | 1-5/16 | 1-1/8 | 1.125 | 1-9/16 | 1/2 | 1-1/16 | SC-750-S | SC-750-SB | SCB-750-S | 2 | 55/64 |
| | | | | 2-5/16 | 1/2 | 1-13/16 | SC-750-L | SC-750-LB | SCB-750-L | | |
| 7/8 | 1-9/16 | 1-3/8 | 1.375 | 1-9/16 | 1/2 | 1-1/16 | SC-875-S | SC-875-SB | SCB-875-S | 2 | 63/64 |
| | | | | 2-5/16 | 1/2 | 1-13/16 | SC-875-L | SC-875-LB | SCB-875-L | | |
| 1 | 1-3/4 | 1-9/16 | 1.500 | 1-7/8 | 1/2 | 1-3/8 | SC-100-S | SC-100-SB | SCB-100-S | 3 | 1-5/64 |
| | | | | 2-7/8 | 1/2 | 2-3/8 | SC-100-L | SC-100-LB | SCB-100-L | | |
| 1-1/4 | 2-1/8 | 1-15/16 | 1.750 | 2-3/8 | 1/2 | 1-7/8 | SC-125-S | SC-125-SB | SCB-125-S | 3 | 1-17/64 |
| | | | | 3-3/8 | 1/2 | 2-7/8 | SC-125-L | SC-125-LB | SCB-125-L | | |
| 1-1/2 | 2-3/8 | 2-3/16 | 2.000 | 2-3/8 | 1/2 | 1-7/8 | SC-150-S | SC-150-SB | SCB-150-S | 3 | 1-25/64 |
| | | | | 3-3/8 | 1/2 | 2-7/8 | SC-150-L | SC-150-LB | SCB-150-L | | |
| 1-3/4 | 2-5/8 | 2-7/16 | 2.250 | 2-7/8 | 1/2 | 2-3/8 | SC-175-S | SC-175-SB | SCB-175-S | 3 | 1-33/64 |
| | | | | 3-7/8 | 1/2 | 3-3/8 | SC-175-L | SC-175-LB | SCB-175-L | | |
| 2 | 2-15/16 | 2-3/4 | 2.500 | 2-7/8 | 1/2 | 2-3/8 | SC-200-S | SC-200-SB | SCB-200-S | 4 | 1-43/64 |
| | | | | 3-7/8 | 1/2 | 3-3/8 | SC-200-L | SC-200-LB | SCB-200-L | | |
| 2-1/2 | 3-3/8 | 3-3/16 | 3.000 | 3 | 3/8 | 2-5/8 | SC-250-S | SC-250-SB | SCB-250-S | 4 | 1-57/64 |
| | | | | 4 | 3/8 | 3-5/8 | SC-250-M | SC-250-MB | SCB-250-M | | |
| | | | | 5 | 3/8 | 4-5/8 | SC-250-L | SC-250-LB | SCB-250-L | | |
| 3 | 3-7/8 | 3-11/16 | 3.500 | 3 | 3/8 | 2-5/8 | | | SCB-300-X | 6 | 2-9/64 |
| | | | | 4 | 3/8 | 3-5/8 | SC-300-S | SC-300-SB | SCB-300-S | | |
| | | | | 5 | 3/8 | 4-5/8 | SC-300-M | SC-300-MB | SCB-300-M | | |
| | | | | 6 | 3/8 | 5-5/8 | SC-300-L | SC-300-LB | SCB-300-L | | |
| 3-3/4 | 4-7/8 | 4-11/16 | 4.500 | 7 | 3/8 | 6-5/8 | | SC-375-B | SCB-375-S | 6 | 2-41/64 |
| 4-1/2 | 5-7/8 | 5-11/16 | 5.500 | 8 | 3/8 | 7-5/8 | | SC-450-B | | 6 | 3-9/64 |

To specify "Grind LDSS" for finish ground B(diameter) Add "G" to part number.
I.E. GSC-100

Home of the Hardened Throughout™ Pin



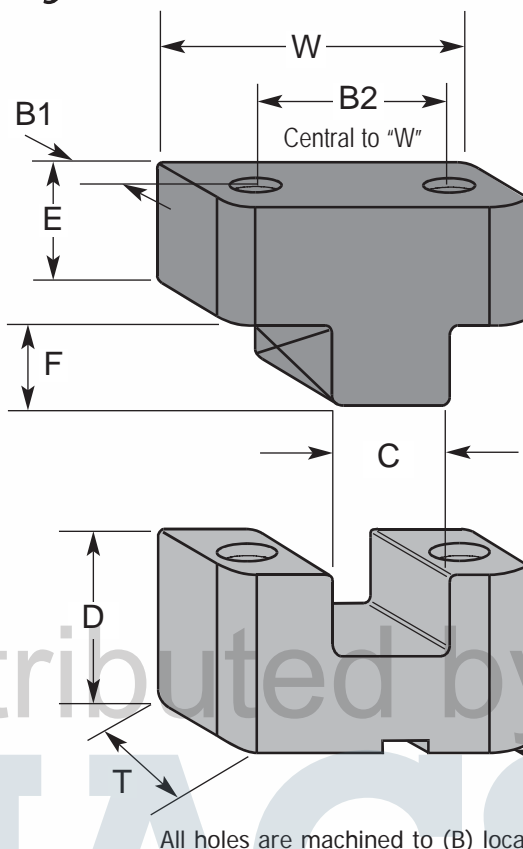
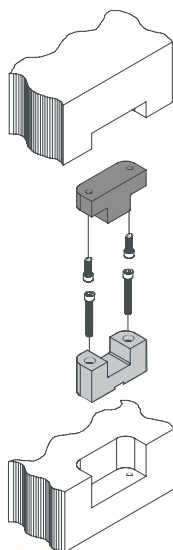
www.pcs-company.com

Fax 800.505.3299

Top Locks

Positive Alignment System

Complete Interchangeability



ALL EXPOSED EDGES ARE CHAMFERED

MALE

Graphitic O-6 Steel
Hardened 60-62 Rc

BLACK OXIDE FINISH

FEMALE

8620 Steel
Hardened 54-56 Rc

Armorclad 70-72 Rc

NOTE:
LARGER RADIUS FOR
EASY MACHINING

New!

Now with lubrication retention pockets

| CATALOG NUMBER | W +.0000 -.0004 | T +.000 -.002 | F +.000 -.010 | OVERALL HEIGHT | C .0002 TOTAL | B1 ±.010 | B2 ±.010 | D +.000 -.002 | R +.010 -.000 RADIUS | E +.000 -.002 | SHCS | |
|----------------|-----------------------|---------------------|---------------------|----------------|---------------------|-------------|-------------|---------------------|-------------------------------|---------------------|--------------|----------------|
| | | | | | | | | | | | MALE (2) | FEMALE (2) |
| TL-100 | 1.0000 | .500 | .275 | .875 | .3750 | .250 | .688 | .500 | .187 | .375 | 6-32 x 1/2 | 6-32 x 5/8 |
| TL-125 | 1.2500 | .625 | .375 | 1.125 | .4380 | .312 | .875 | .625 | .250 | .500 | 6-32 x 1/2 | 6-32 x 5/8 |
| TL-150 | 1.5000 | .875 | .500 | 1.625 | .5000 | .437 | 1.000 | .875 | .250 | .750 | 8-32 x 3/4 | 8-32 x 3/4 |
| TL-200 | 2.0000 | 1.000 | .625 | 1.875 | .7500 | .500 | 1.375 | 1.125 | .375 | .750 | 10-32 x 3/4 | 10-32 x 1 |
| TL-300 | 3.0000 | 1.125 | .750 | 2.250 | 1.1250 | .562 | 2.250 | 1.500 | .500 | .750 | 1/4-20 x 3/4 | 1/4-20 x 1-1/2 |

*Add "S" to beginning of catalog number (i.e. STL-125) for Shuttle Mold Base Top Lock Set

Self-locking screws INCLUDED



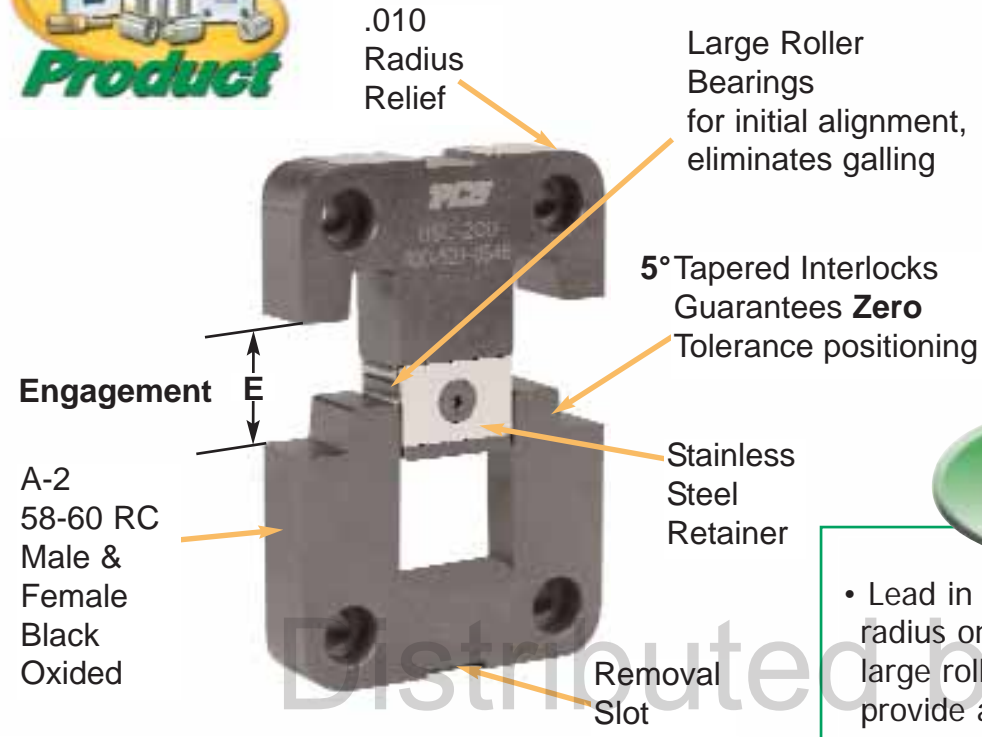
- Special Available Upon Request
- .0002 Total Clearance between Male & Female
NOTE (F) DIMENSION
- Machining is done from the face of the parting line
- Top Lock parts are interchangeable so they can be used in shuttle molds
- Female insert is notched for easy removal
- Provides positive, accurate alignment for molds with interlocking cavities
- The lubricious properties of the Armorclad treatment combined with the qualities of graphitic tool steel (O-6) provide a dependable, smooth acting, long lasting locking system
- Will not bind under conditions of unequal mold half thermal expansion



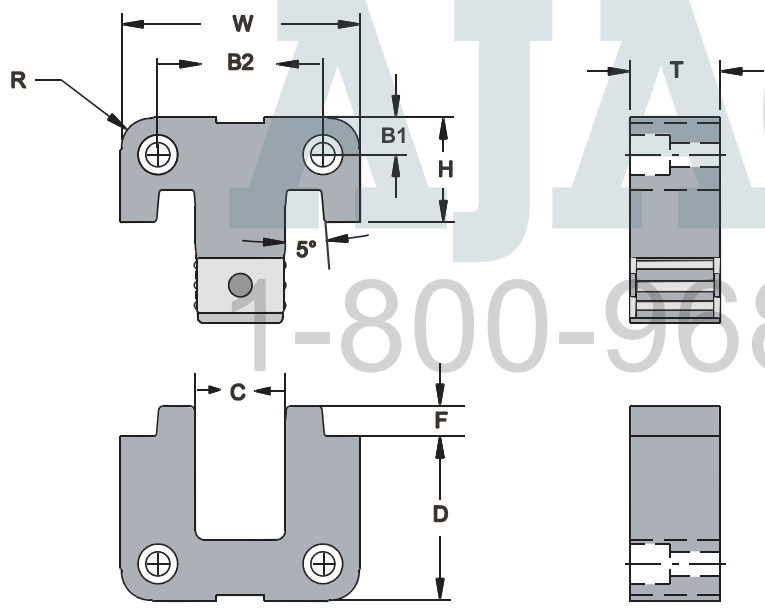


Tri-Side Lock

Combining Roller, Straight & Taper Lock Technologies



- Lead in taper with lift radius on the Female and the large rollers on the Male provide a smooth low friction engagement eliminating galling and premature failure
- Straight walls with final triple taper lockup provides **Zero** clearance with up to 3 times more locking contact surface than standard industry locks



Side Lock parts are interchangeable so they can be used in shuttle molds.

| CATALOG NUMBER | W +.0000 -.0004 | T ±.0001 | C ±.0002 | H +.0000 -.0002 | F ±.010 | OVER-ALL HEIGHT | B1 ±.010 | B2 ±.010 | D +.0000 -.0002 | R | E Engagement | SHCS |
|----------------|-----------------------|-------------|-------------|-----------------------|------------|-----------------|-------------|-------------|-----------------------|------|--------------|-----------|
| KSL-150 | 1.500 | .500 | .563 | .875 | .300 | 1.750 | .250 | 1.000 | .875 | .187 | .450 | 8/32X5/8 |
| KSL-200 | 2.000 | .500 | .750 | .875 | .250 | 2.240 | .312 | 1.375 | 1.375 | .250 | .625 | 10-32X5/8 |
| KSL-300 | 3.000 | .750 | 1.000 | .875 | .480 | 2.750 | .375 | 2.250 | 1.875 | .250 | .675 | 1/4-20X1 |

For Shuttle Locks add an S to the end of the Part # i.e. KSL-150S

US Patent No. 6558,145, 6981858 and others pending.

Home of the Hardened Throughout™ Pin



Tri-Lock Top Lock

Combining Roller, Straight & Taper Lock Technologies



.010
Radius
Relief

Large Roller
Bearings
for initial alignment,
eliminates galling

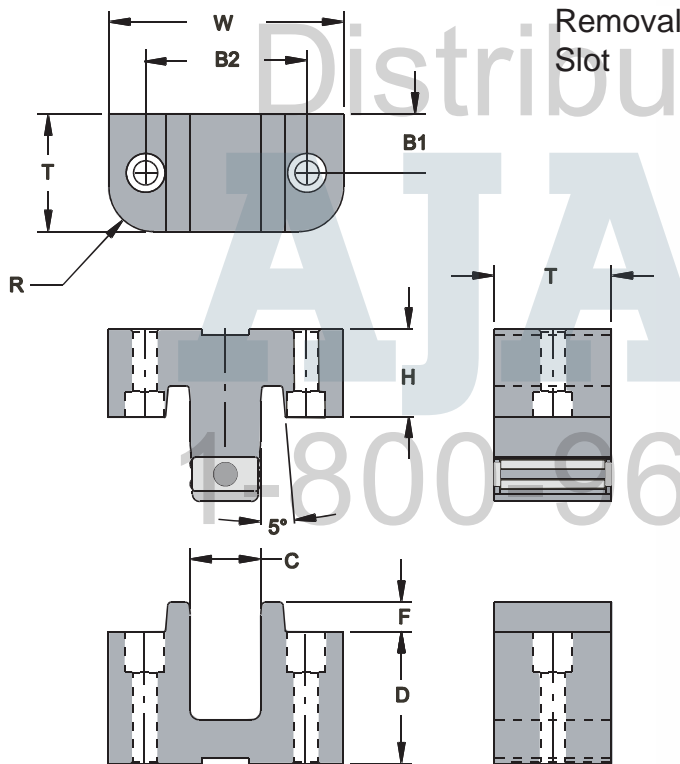
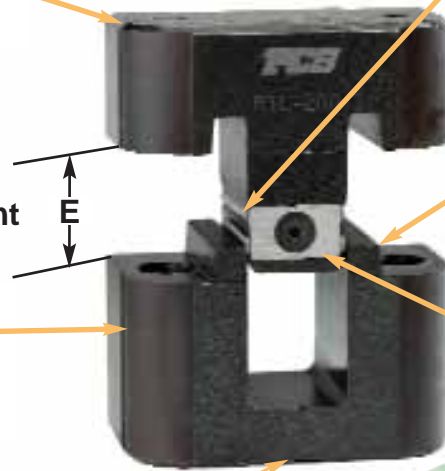
Engagement



5° Tapered Interlocks
Guarantees **Zero**
Tolerance positioning

A-2
58-60 RC
Male & Female
Black Oxided

Stainless
Steel
Retainer



- Lead in taper with lift radius on the Female and the large rollers on the Male provide a smooth low friction engagement eliminating galling and premature failure
- Straight walls with final triple taper lockup provides **Zero** clearance with up to 3 times more locking contact surface than standard industry locks

Top Lock parts are interchangeable so they can be used in shuttle molds.

| CATALOG NUMBER | W +.0000 -.0004 | T ±.0001 | C ±.0002 | H +.0000 -.0002 | F ±.010 | OVERALL HEIGHT | B1 ±.010 | B2 ±.010 | D +.0000 -.0002 | R | E Engagement | SHCS MALE | SHCS FEMALE |
|----------------|-----------------------|-------------|-------------|-----------------------|------------|----------------|-------------|-------------|-----------------------|------|-----------------|------------|--------------|
| KTL-200 | 2.000 | 1.000 | .600 | .750 | .250 | 1.875 | .312 | 1.375 | 1.125 | .375 | .525 | 10-32x3/4 | 10-32x1-1/4 |
| KTL-300 | 3.000 | 1.125 | 1.000 | .750 | .380 | 2.250 | .375 | 2.250 | 1.500 | .500 | .675 | 1/4-20x3/4 | 1/4-20x1-1/2 |

For Shuttle Locks add an S to the end of the Part # i.e. KTL-200S

US Patent No. 6558,145, 6981858 and others pending.





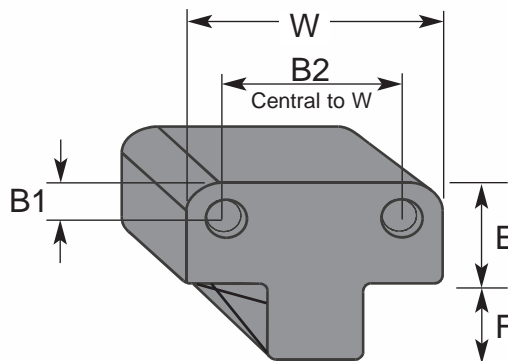
Side Locks

Positive Alignment System

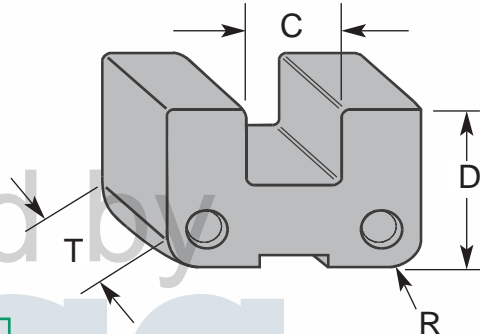
New!

Now with lubrication retention pockets

MALE
Graphitic O-6 Steel
Hardened 60-62 Rc
BLACK OXIDE FINISH



FEMALE
8620 Steel
Hardened 54-56 Rc
Armorclad 70-72 Rc



Distributed by
ATA
1-800-968-6868

What's Important

All holes are machined to (B) location

ALL EXPOSED EDGES ARE CHAMFERED
GREASED GROOVES ON MALE INSERT

- Provides positive, accurate alignment of mold halves from 1/2" to 1-5/8" prior to mold closing
- The lubricious properties of the armorclad treatment combined with the qualities of graphitic tool steel (O-6) provide a dependable, smooth acting, long lasting locking system
- Thickness (T) is relieved on male insert past the parting line
- Female insert is notched for easy removal
- Will not bind under conditions of unequal mold half thermal expansion
- *Special Available Upon Request*

| MOLD SIZE | SUGGESTED SIDE LOCK |
|-----------------------|---------------------|
| 8" X 8" - 8" X 12" | PA-100 |
| 8" X 12" - 11" X 14" | PA-125 to 200 |
| 11" X 14" - 14" X 18" | PA-300 |
| 14" X 18" - 16" X 26" | PA-400 |
| 16" X 26" - 18" X 36" | PA-500 |
| 18" X 36" or LARGER | PA-600 |

| zCATALOG NUMBER | W +.0000 -.0004 | T +.000 -.002 | C | E +.000 -.002 | F +.000 -.010 | OVERALL HEIGHT | B1 ±.010 | B2 ±.010 | D +.000 -.002 | R ^{+.010} -.000 Radius | SHCS (4) |
|-----------------|-----------------------|---------------------|-------|---------------------|---------------------|----------------|-------------|-------------|---------------------|---------------------------------------|----------------|
| PA-100 | 1.0000 | .375 | .500 | .875 | .530 | 2.000 | .250 | .500 | 1.125 | .187 | 10-32 x 1/2 |
| PA-125 | 1.2500 | .500 | .500 | .875 | .660 | 2.000 | .250 | .750 | 1.125 | .187 | 8-32 x 5/8 |
| PA-150 | 1.5000 | .500 | .563 | .875 | .560 | 1.750 | .250 | 1.000 | .875 | .187 | 8-32 x 5/8 |
| PA-200 | 2.0000 | .500 | .750 | .875 | .660 | 2.250 | .312 | 1.375 | 1.375 | .250 | 10-32 x 5/8 |
| PA-300 | 3.0000 | .750 | 1.250 | .875 | 1.130 | 2.750 | .375 | 2.250 | 1.875 | .250 | 1/4-20 x 1 |
| PA-400 | 4.0000 | 1.000 | 1.500 | 1.375 | 1.130 | 3.750 | .500 | 3.000 | 2.375 | .500 | 3/8-16 x 1-1/4 |
| PA-500 | 5.0000 | 1.250 | 2.000 | 1.375 | 1.630 | 4.250 | .625 | 3.750 | 2.875 | .500 | 1/2-13 x 1-1/2 |
| PA-600 | 6.0000 | 1.500 | 2.500 | 1.375 | 1.630 | 4.250 | .625 | 4.750 | 2.875 | .500 | 1/2-13 x 1-3/4 |

Self-locking screws Included

Shuttle Mold Locks

Positive Alignment System

New!

Now with lubrication retention pockets

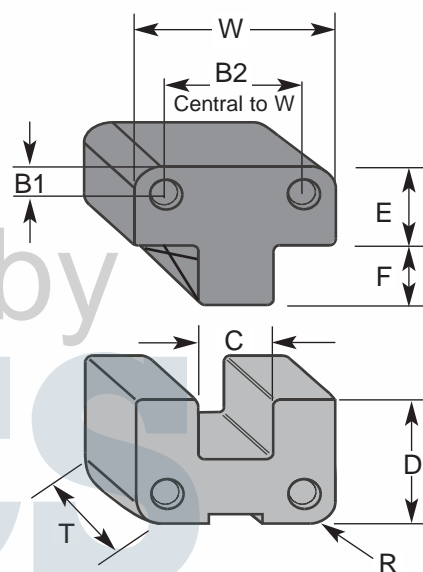


What's Important

- Dimensionally checked and packaged as a precision matched set
- Thickness (T) is relieved on male insert past the parting line
- The lubricious properties of the armorclad treatment combined with the qualities of graphitic tool steel (0-6) provide a dependable, smooth acting, long lasting locking system
- Female inserts are notched for easy removal
- *Special Available Upon Request*

MALE
Graphitic O-6 STEEL
Hardened 60-62 Rc
BLACK OXIDE FINISH

FEMALE
8620 STEEL
Hardened 54-56 Rc
ARMORCLAD 70-72 Rc



**ALL EXPOSED EDGES ARE CHAMFERED
GREASED GROOVES ON MALE INSERT**

All holes are machined to (B) location

1-800-968-6868



| CATALOG NUMBER | W +.0000 -.0004 | T +.000 -.002 | C | E +.000 -.002 | F +.000 -.010 | OVERALL HEIGHT | B1 ±.010 | B2 ±.010 | D +.000 -.002 | R +.010 -.000 RADIUS | SHCS (6) |
|----------------|-----------------------|---------------------|--------|---------------------|---------------------|----------------|-------------|-------------|---------------------|-------------------------------|----------------|
| SPA-100 | 1.0000 | .375 | .5000 | .875 | .530 | 2.000 | .250 | .500 | 1.125 | .187 | 10-32 x 1/2 |
| SPA-125 | 1.2500 | .500 | .5000 | .875 | .660 | 2.000 | .250 | .750 | 1.125 | .187 | 8-32 x 5/8 |
| SPA-150 | 1.5000 | .500 | .5630 | .875 | .560 | 1.750 | .250 | 1.000 | .875 | .187 | 8-32 x 5/8 |
| SPA-200 | 2.0000 | .500 | .7500 | .875 | .660 | 2.250 | .312 | 1.375 | 1.375 | .250 | 10-32 x 5/8 |
| SPA-300 | 3.0000 | .750 | 1.2500 | .875 | 1.130 | 2.750 | .375 | 2.250 | 1.875 | .250 | 1/4-20 x 1 |
| SPA-400 | 4.0000 | 1.000 | 1.5000 | 1.375 | 1.130 | 3.750 | .500 | 3.000 | 2.375 | .500 | 3/8-16 x 1-1/4 |
| SPA-500 | 5.0000 | 1.250 | 2.0000 | 1.375 | 1.630 | 4.250 | .625 | 3.750 | 2.875 | .500 | 1/2-13 x 1-1/2 |

Self-locking screws INCLUDED



Multi-Plate Locks Positive Alignment System



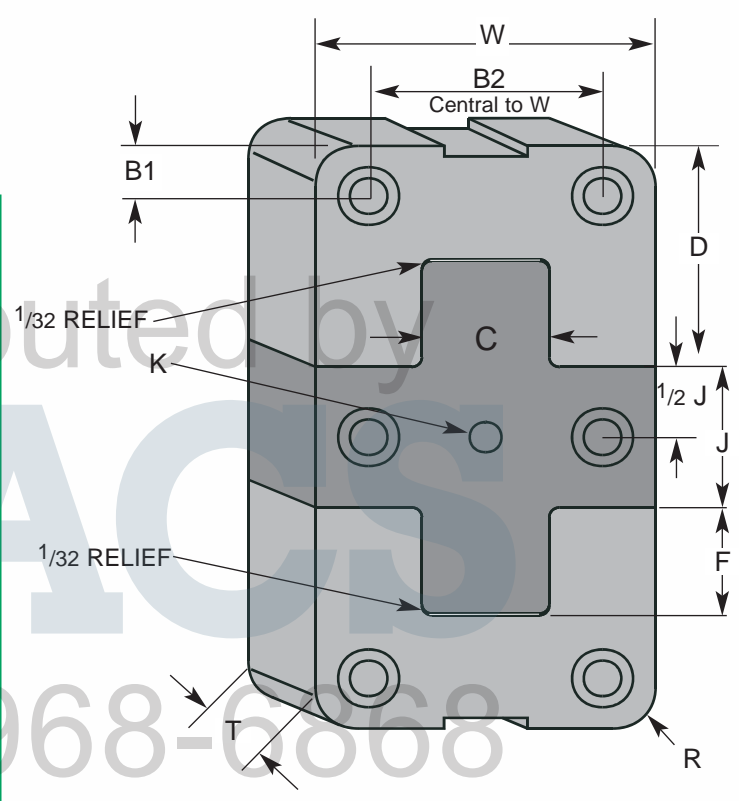
FEMALE
8620 STEEL
HARDENED 54-56 Rc
ARMORCLAD 70-72 Rc

MALE
O-6 Graphitic Steel
Hardened 60-62 Rc
BLACK OXIDE FINISH

New!
Now with lubrication retention pockets

What's Important

- Different steel types on male and female halves protect against galling
- Provides positive, accurate alignment of mold halves from 1/2" to 1 5/8" prior to mold closing
- Thickness (T) is relieved on male insert past the parting line
- The lubricious properties of the armorclad treatment combined with the qualities of graphitic tool steel (O-6) provide a dependable, smooth acting, long lasting locking system
- Female inserts are notched for easy removal
- Will not bind under conditions of unequal mold half thermal expansion
- *Special Available Upon Request*



All holes are machined to (B) location
ALL EXPOSED EDGES ARE CHAMFERED

| CATALOG NUMBER | W +.0000 -.0004 | T +.000 -.002 | C | F +.000 -.010 | K SLIP FIT for DOWEL | B1 ±.010 | B2 ±.010 | J +.000 -.004 | D +.000 -.002 | R +.010 -.000 RADIUS | SHCS (6) |
|----------------|-----------------------|---------------------|-------|---------------------|-------------------------|-------------|-------------|---------------------|---------------------|-------------------------------|-------------|
| MPA-287 | 2.0000 | .500 | .750 | .660 | .188 | .312 | 1.375 | .875 | 1.375 | .250 | 10-32 x 5/8 |
| MPA-2137 | 2.0000 | .500 | .750 | .660 | .188 | .312 | 1.375 | 1.375 | 1.375 | .250 | 10-32 x 5/8 |
| MPA-387 | 3.0000 | .750 | 1.250 | 1.130 | .251 | .375 | 2.250 | .875 | 1.875 | .250 | 1/4-20 x 1 |
| MPA-3137 | 3.0000 | .750 | 1.250 | 1.130 | .251 | .375 | 2.250 | 1.375 | 1.875 | .375 | 1/4-20 x 1 |

Self-locking screws INCLUDED

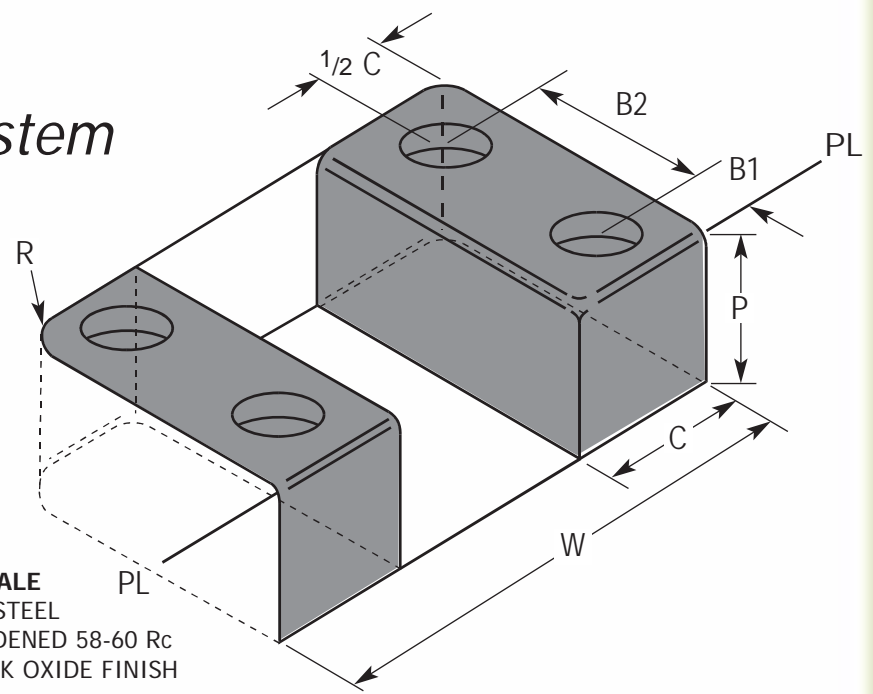
Guide Locks

Positive Alignment System

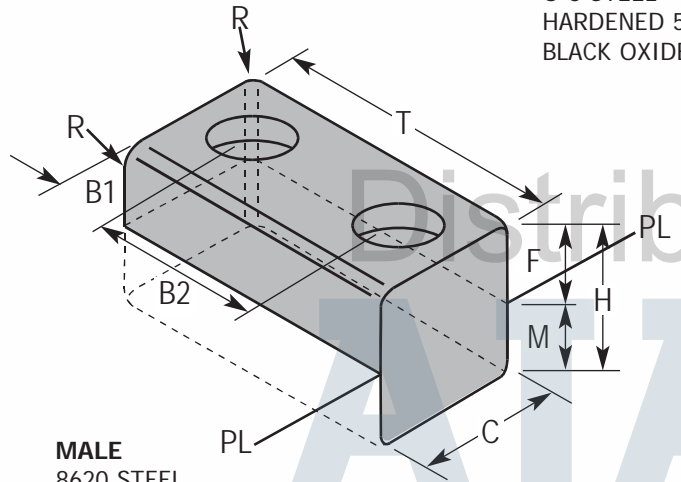


New!

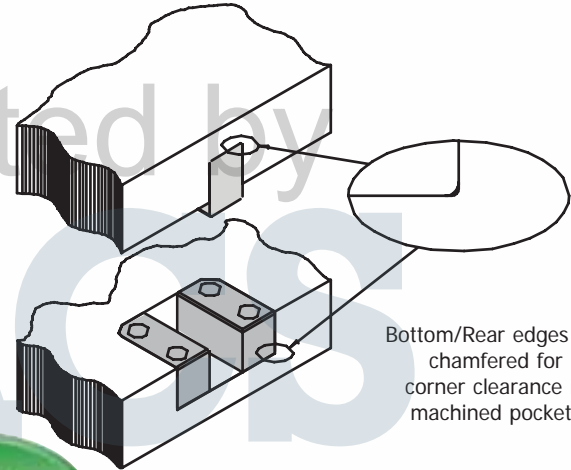
Now with lubrication retention pockets



FEMALE
O-6 STEEL
HARDENED 58-60 Rc
BLACK OXIDE FINISH



MALE
8620 STEEL
HARDENED 54-56 Rc
ARMORCLAD 70-72 Rc



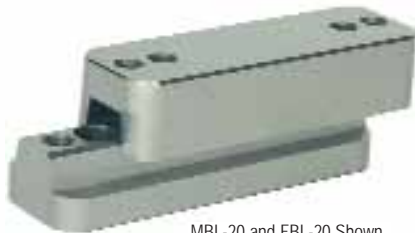
Bottom/Rear edges are chamfered for corner clearance in machined pockets



- Point of Engagement EXTRA LONG
Note (F) Dimension
- Provides positive, accurate alignment for molds with interlocking cavities and cores
- Chamfered edges to match typical mold base
- Will not bind under conditions of unequal mold half thermal expansion
- *Special Available Upon Request*
- The lubricious properties of the armorclad treatment combined with the qualities of graphitic tool steel (O-6) provide a dependable, smooth acting, long lasting locking system
- Guide locks available for shuttle mold bases*

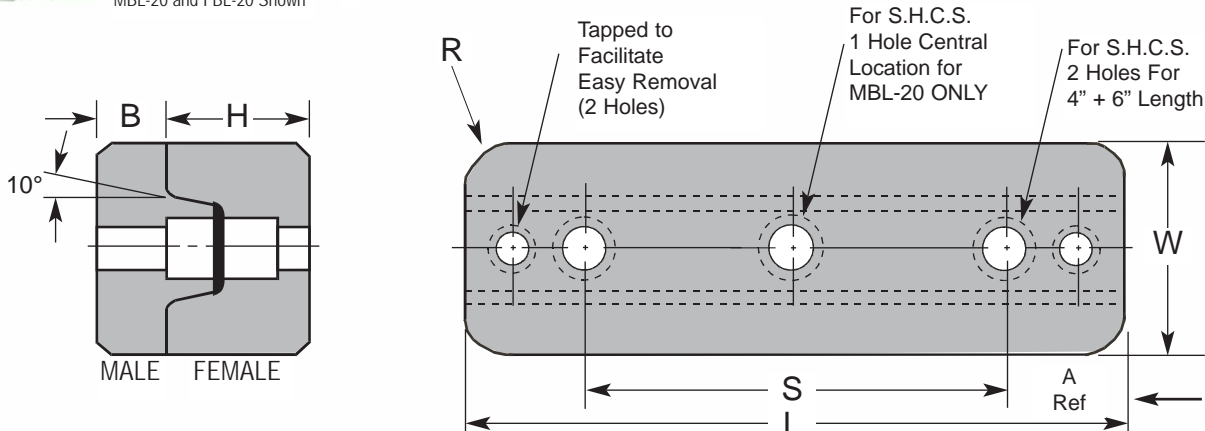
| CATALOG NUMBER | W | T +.000 -.010 | H +.000 -.010 | F | M | C +.0000 -.0005 | B1 ±.010 | B2 ±.010 | R +.010 -.000 RADIUS | P +.000 -.002 | C'BORE FOR SHCS | |
|----------------|-------|---------------------|---------------------|-------|------|-----------------------|-------------|-------------|-------------------------------|---------------------|-----------------|----------------|
| | | | | | | | | | | | MALE (2) | FEMALE (4) |
| GL-112 | 1.125 | .750 | .668 | .480 | .188 | .3750 | .200 | .350 | .125 | .500 | 6-32 x 5/8 | 6-32 x 1/2 |
| GL-150 | 1.500 | 1.000 | .855 | .605 | .250 | .5000 | .270 | .460 | .218 | .625 | 10-32 x 3/4 | 10-32 x 5/8 |
| GL-225 | 2.250 | 1.500 | 1.230 | .855 | .375 | .7500 | .344 | .812 | .250 | .875 | 1/4-20 x 1-1/4 | 1/4-20 x 7/8 |
| GL-300 | 3.000 | 2.000 | 1.605 | 1.105 | .500 | 1.0000 | .500 | 1.000 | .375 | 1.125 | 3/8-16 x 1-1/2 | 3/8-16 x 1 |
| GL-375 | 3.750 | 2.500 | 1.855 | 1.355 | .500 | 1.2500 | .500 | 1.500 | .375 | 1.375 | 3/8-16 x 1-3/4 | 3/8-16 x 1-1/4 |





MBL-20 and FBL-20 Shown

Tapered Bar Locks Rectangular



- Provides positive alignment between mold halves
- Maintains alignment while allowing for thermal expansion
- Shock resistant S-7 tool steel
- Hardened and precision ground to assure interchangeability

| MALE TAPERED BAR LOCK | | | | | | | | |
|-----------------------|------------------|------------------|------------------|------------------|------------------|-----------|--------------------|--------|
| CATALOG NUMBER | L | W | B | S | R | S.H.C.S | TAPPED FOR REMOVAL | A REF. |
| MBL-20 | + .010 - .010 | + .000 - .001 | + .001 - .001 | + .005 - .005 | + .010 - .000 | #10 - 24 | 1/4 - 20 | CTR |
| MBL-40 | 3.980 | 1.249 | .375 | 2.500 | .312 | 1/4 - 20 | 1/4 - 20 | .74 |
| MBL-60 | 5.980 | 1.499 | .500 | 4.000 | .375 | 5/16 - 18 | 5/16 - 18 | .99 |

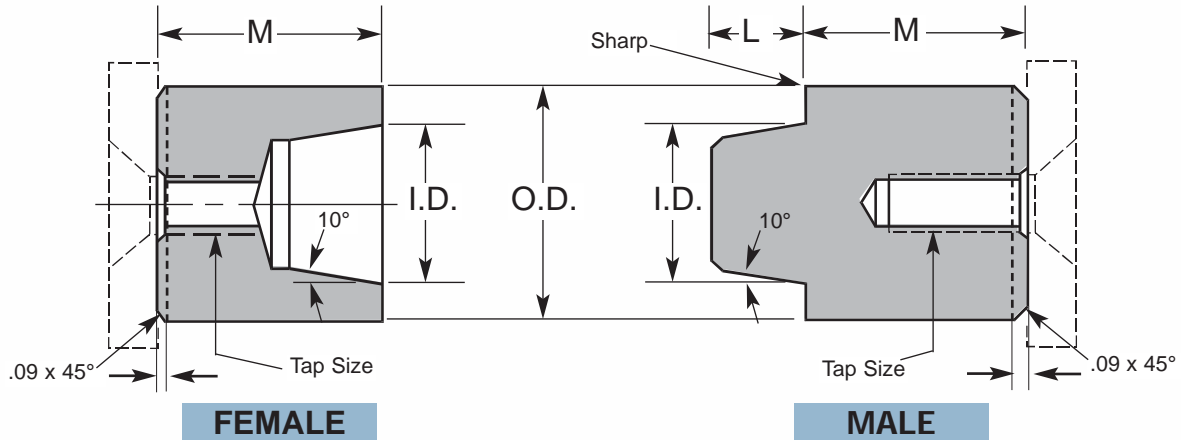
| FEMALE TAPERED BAR LOCK | | | | | | | |
|-------------------------|------------------|------------------|------------------|------------------|------------------|-----------|--------------------|
| CATALOG NUMBER | L | W | H | S | R | S.H.C.S | TAPPED FOR REMOVAL |
| FBL-20 | + .010 - .010 | + .000 - .001 | + .001 - .001 | + .005 - .005 | + .010 - .000 | #10 - 24 | 1/4 - 20 |
| FBL-40 | 3.980 | 1.249 | .87 | 2.500 | .312 | 1/4 - 20 | 1/4 - 20 |
| FBL-60 | 5.980 | 1.499 | 1.00 | 4.000 | .375 | 5/16 - 18 | 5/16 - 18 |

INSTALLATION INSTRUCTIONS

The mounting pocket in the "A" half of the mold should be accurately aligned with the mounting pocket in the "B" half of the mold. The width of each pocket serves as a precision keyway to maintain the steadfast position of each bar lock. Each pocket must be flat and parallel to the parting line. The mating bar lock should be fit with a slight preload to assure metal to metal contact. The pocket lengths should be long enough to provide clearance.

Tapered Interlocks

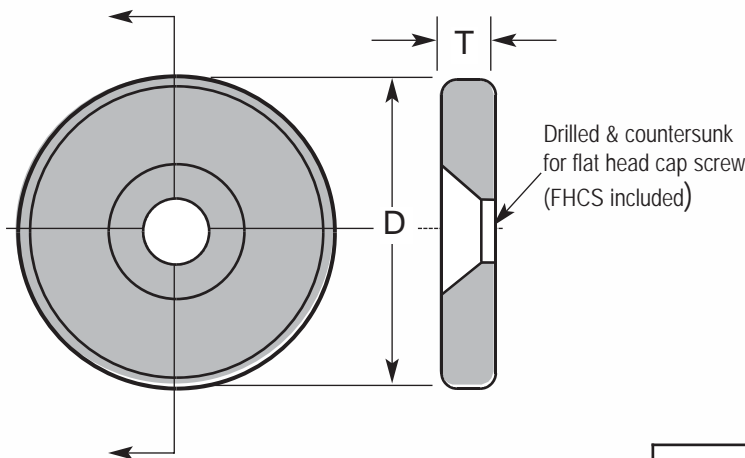
Round



Made from shock resistant S-7 steel, hardened and precision ground

| FEMALE | | | | |
|----------------|--------------------------|-------|---------------------|----------|
| CATALOG NUMBER | O.D. +.0000 -.0005 | I.D. | M +.015 +.020 | TAP SIZE |
| FR-051 | .5000 | .312 | .875 | 10-24 |
| FR-052 | | | 1.187 | |
| FR-053 | | | 1.375 | |
| FR-071 | .7500 | .500 | .875 | 1/4-20 |
| FR-072 | | | 1.187 | |
| FR-073 | | | 1.375 | |
| FR-101 | 1.0000 | .625 | .875 | 1/4-20 |
| FR-102 | | | 1.187 | |
| FR-103 | | | 1.375 | |
| FR-150 | 1.5000 | 1.000 | 1.125 | 5/16-18 |
| FR-151 | | | 1.375 | |
| FR-152 | | | 1.625 | |

| MALE | | | | | |
|----------------|--------------------------|-------|------|---------------------|----------|
| CATALOG NUMBER | O.D. +.0000 -.0005 | I.D. | L | M +.015 +.020 | TAP SIZE |
| MR-051 | .5000 | .312 | .312 | .875 | 10-24 |
| MR-052 | | | | 1.187 | |
| MR-053 | | | | 1.375 | |
| MR-071 | .7500 | .500 | .281 | .875 | 1/4-20 |
| MR-072 | | | | 1.187 | |
| MR-073 | | | | 1.375 | |
| MR-101 | 1.0000 | .625 | .343 | .875 | 1/4-20 |
| MR-102 | | | | 1.187 | |
| MR-103 | | | | 1.375 | |
| MR-150 | 1.5000 | 1.000 | .500 | 1.125 | 5/16-18 |
| MR-151 | | | | 1.375 | |
| MR-152 | | | | 1.625 | |



NOTE:

Grind stock is provided on the FEMALE interlock surface. To register the interlock on the tapered surfaces, stock must be ground from the front face of the female until there is a slight clearance between the faces of the male and female when assembled. PRECISION FITTING of interlocks requires grinding the necessary amount of stock from the female face to obtain contact on tapered surfaces AND male and female faces simultaneously.

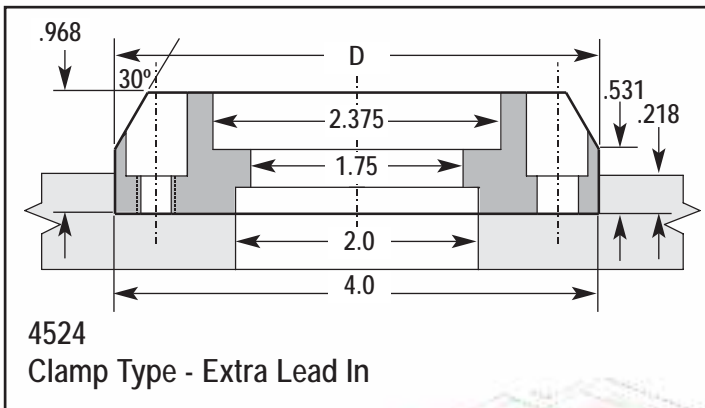
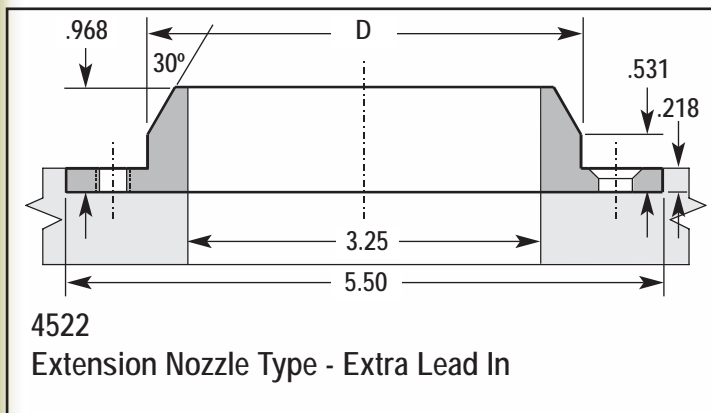
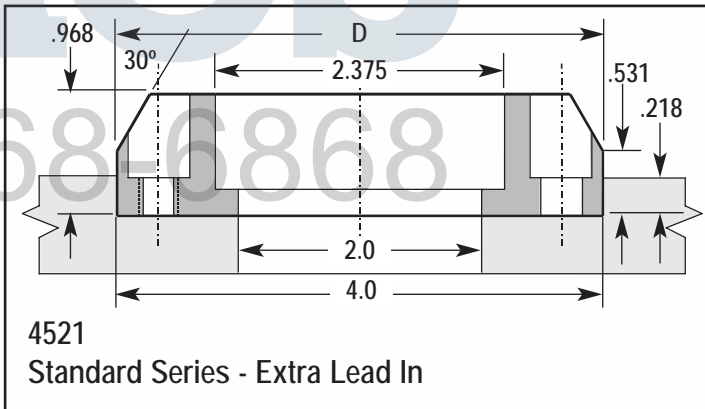
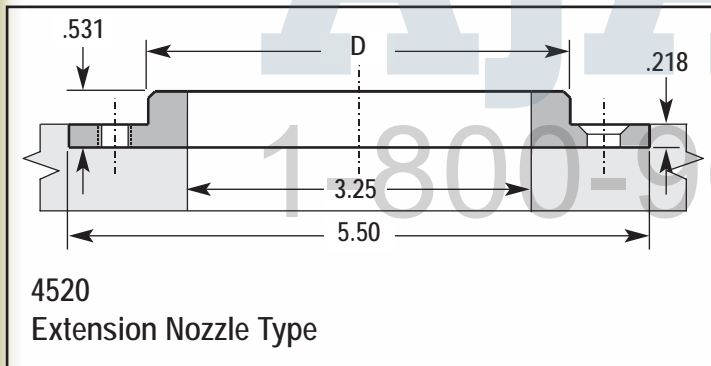
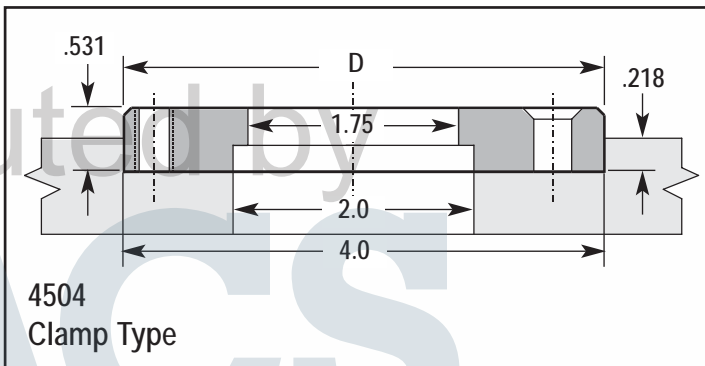
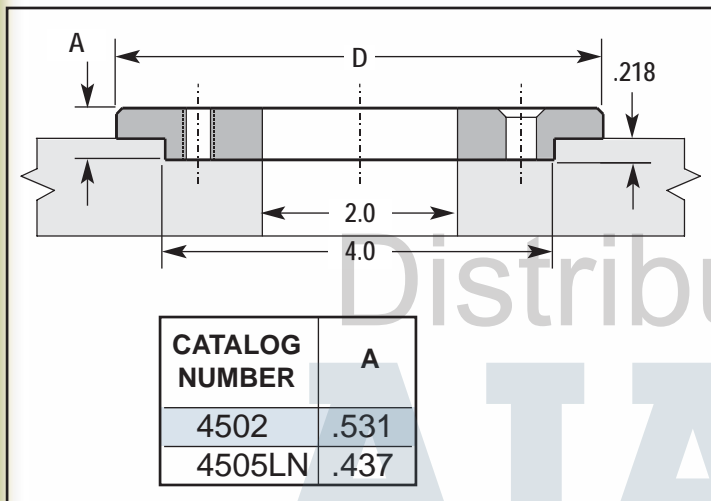
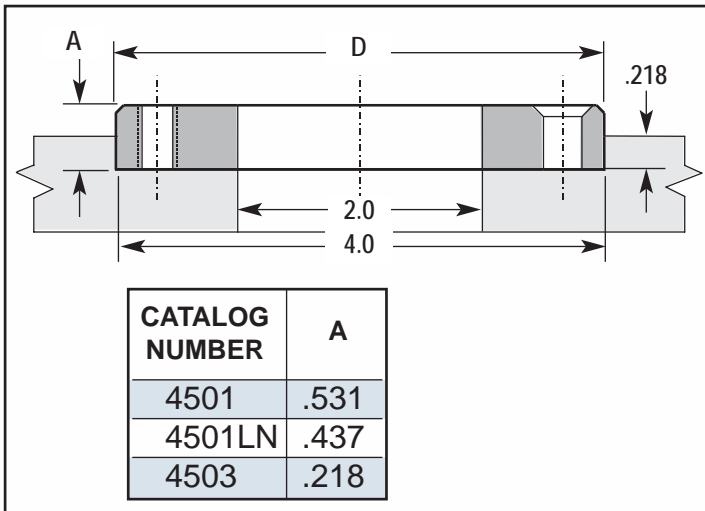
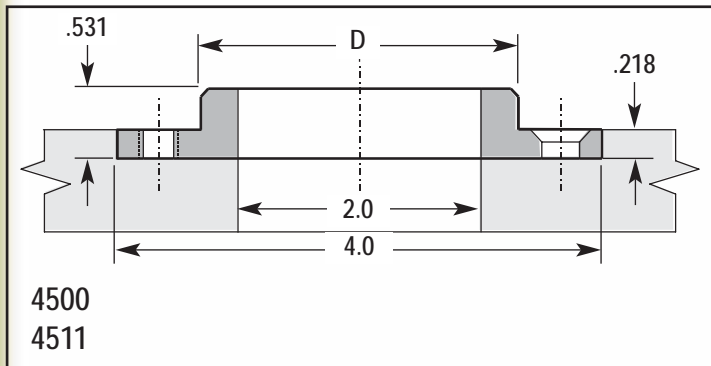
There is a grind stock on the back of both male and female interlocks. After fitting the front taper the backs of the interlocks are ground to match mold plate thickness or to meet design requirement.

Shoulder Plates for Tapered Interlocks

| CATALOG NUMBER | FEMALE or MALE O.D. | D | T +.000 -.002 | THREAD SIZE |
|----------------|---------------------|---------|---------------------|-------------|
| SP-05 | 1/2 | 11/16 | 3/16 | 10-24 |
| SP-07 | 3/4 | 1 | 3/16 | 1/4-20 |
| SP-10 | 1 | 1-3/16 | 3/16 | 1/4-20 |
| SP-15 | 1-1/2 | 1-11/16 | 1/4 | 5/16-18 |

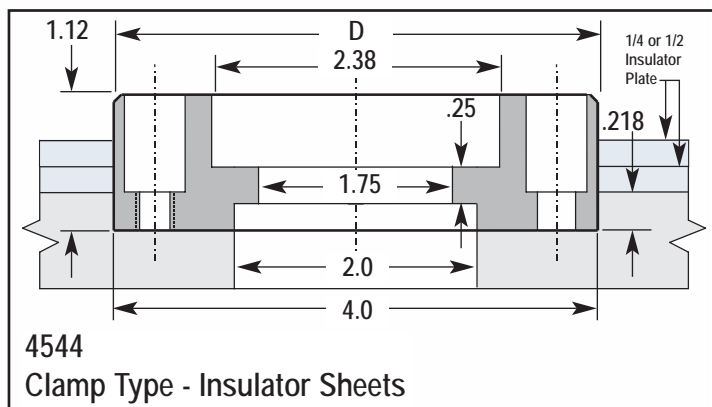
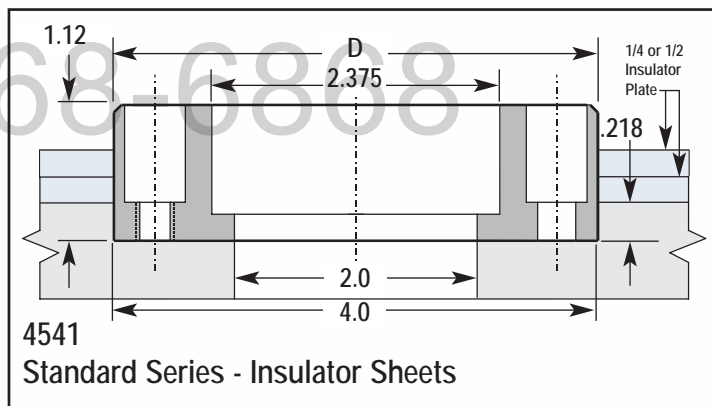
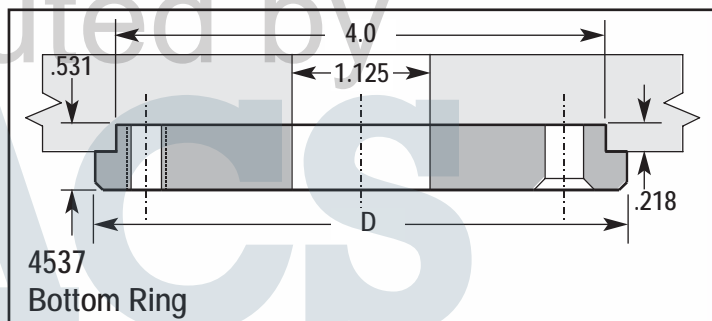
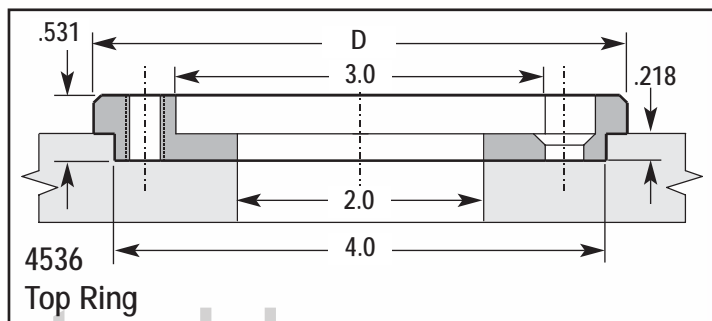
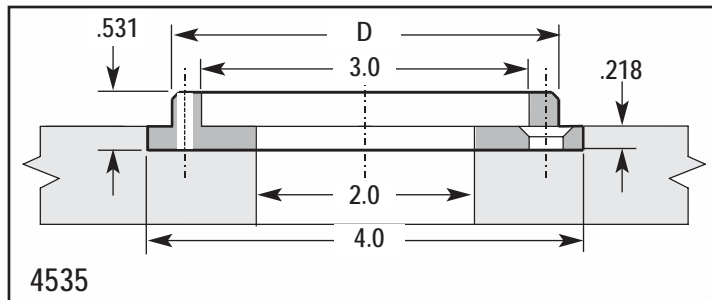


Locating Rings



• Special available upon request

Locating Rings



All rings have 3.312 B.C. Except:
4520, 4522 = 4.625 B.C.
4536, 4537 = 3.312 B.C. Screw hole 3.500 B.C. Tapped Hole

| CATALOG NUMBER | D | DESCRIPTION |
|----------------|-------|---------------------------------------|
| 4500 | 2.651 | |
| 4501 | 3.990 | Standard Series |
| 4501 LN | 3.990 | LN Series |
| 4502 | 4.990 | |
| 4503 | 3.990 | |
| 4504 | 3.990 | Clamp Type |
| 4505 LN | 5.990 | LN Series |
| 4511 | 2.990 | |
| 4520 | 3.990 | Extension Nozzle Type |
| 4521 | 3.990 | Standard Series - Extra Lead In |
| 4522 | 3.990 | Extension Nozzle Type - Extra Lead In |
| 4524 | 3.990 | Clamp Type - Extra Lead In |
| 4535 | 3.541 | |
| 4536 | 4.331 | Top Ring |
| 4537 | 4.331 | Bottom Ring |

Locating Rings for use with Insulator Sheets

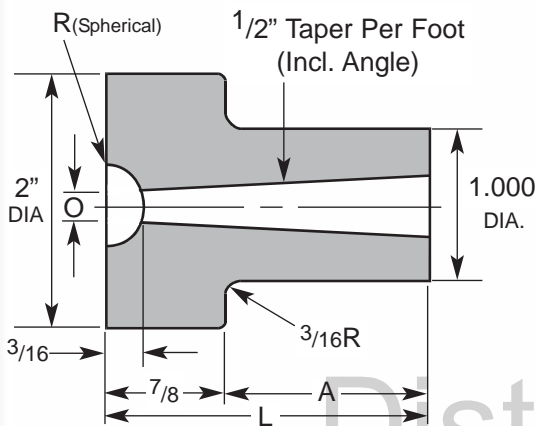
| CATALOG NUMBER | D | DESCRIPTION |
|----------------|-------|------------------------------------|
| 4541 | 3.990 | Standard Series - Insulator Sheets |
| 4544 | 3.990 | Clamp Type - Insulator Sheets |



Sprue Bushings

B-Series

- SAE 6145 Steel
- Hardened and polished



| CATALOG NUMBER | A | L LENGTH | O | | | |
|----------------|---------|----------|------|------|------|-------|
| | | | 5/32 | 7/32 | 9/32 | 11/32 |
| B-600 | 29/32 | 1-25/32 | • | • | • | * |
| B-601 | 1-13/32 | 2-9/32 | • | • | • | * |
| B-602 | 1-29/32 | 2-25/32 | • | • | • | * |
| B-603 | 2-13/32 | 3-9/32 | • | • | • | * |
| B-604 | 2-29/32 | 3-25/32 | • | • | • | * |
| B-605 | 3-13/32 | 4-9/32 | • | • | • | * |
| B-606 | 3-29/32 | 4-25/32 | • | • | • | * |
| B-607 | 4-13/32 | 5-9/32 | • | • | • | * |
| B-608 | 4-29/32 | 5-25/32 | • | • | • | * |
| B-609 | 5-29/32 | 6-25/32 | • | • | • | * |
| B-610 | 6-29/32 | 7-25/32 | • | • | • | * |

Add orifice and radius to catalog number (i.e. B-600 O=7/32 and R=1/2 is B-600-71)

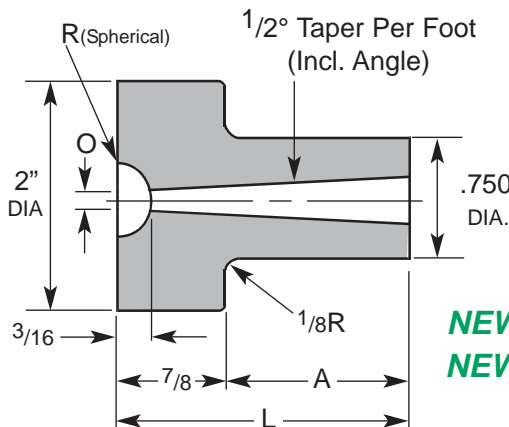
*11/32 is available upon request



Sprue Bushings

U-Series Newbury & Standard

- SAE 6145 Steel
- Hardened and polished



| CATALOG NUMBER | A | L LENGTH | O | | |
|----------------|---------|----------|------|------|------|
| | | | 5/32 | 7/32 | 9/32 |
| U-600 | 29/32 | 1-25/32 | • | • | • |
| U-601 | 1-13/32 | 2-9/32 | • | • | • |
| U-602 | 1-29/32 | 2-25/32 | • | • | • |
| U-603 | 2-13/32 | 3-9/32 | • | • | • |
| U-604 | 2-29/32 | 3-25/32 | • | • | • |
| U-605 | 3-13/32 | 4-9/32 | • | • | • |
| U-606 | 3-29/32 | 4-25/32 | • | • | • |

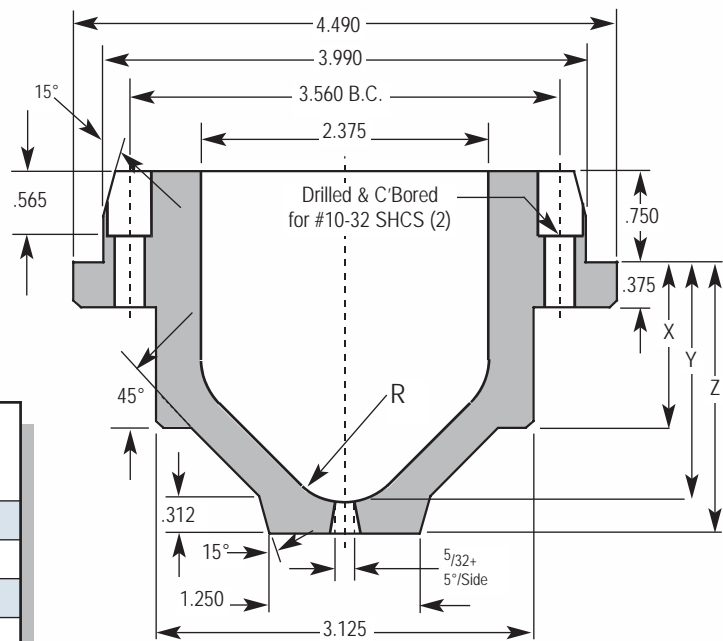
Add orifice and radius to catalog number (i.e. U-600 O=7/32 and R=1/2 is U-600-71)

A SERIES SPRUE BUSHINGS AVAILABLE UPON REQUEST

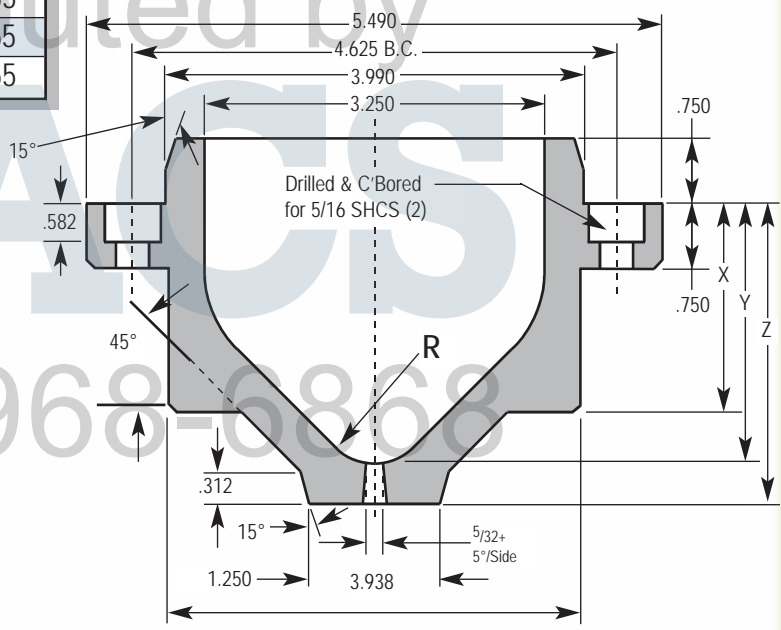
Sprue Bushing Extensions Small & Large



| CATALOG NUMBER | R RADIUS | X +.002 -.000 | Y +.002 -.002 | Z +.005 -.000 |
|----------------|----------|---------------------|---------------------|---------------------|
| SBES-30-5 | 1/2 | 1.375 | 2.000 | 2.265 |
| SBES-35-5 | | 1.875 | 2.500 | 2.765 |
| SBES-30-7 | 3/4 | 1.375 | 2.000 | 2.265 |
| SBES-35-7 | | 1.875 | 2.500 | 2.765 |
| SBEL-35-5 | 1/2 | 1.875 | 2.375 | 2.765 |
| SBEL-40-5 | | 2.375 | 2.875 | 3.265 |
| SBEL-35-7 | 3/4 | 1.875 | 2.312 | 2.765 |
| SBEL-40-7 | | 2.375 | 2.812 | 3.265 |



SMALL



LARGE

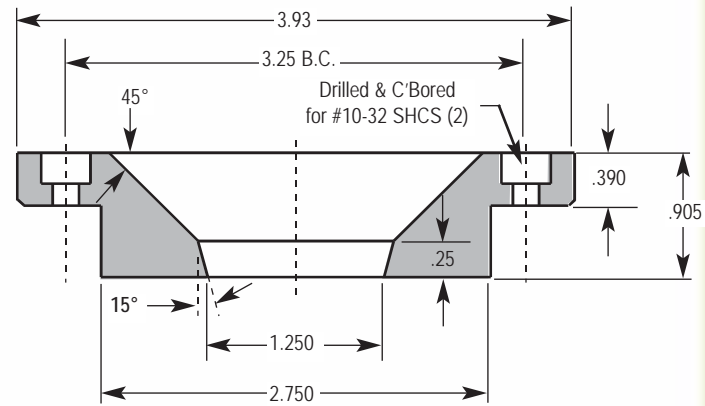


- New Design allows for use with 1-3/8" and 1-7/8" top clamp plate
- New Tapered Lead allows for easier installation in the molding machine platen
- Sprue bushing extension available in 1/2" and 3/4" radius with a 5/32" diameter hole (5° taper per side)
- Extra grind stock is provided for fitting at assembly
- Interchangeable with other systems, 28-32 Rc
- May be used in three plate molds

Stripper Plate Bushing

- Can accommodate both the large and small sprue bushing extensions
- Extra grind stock is provided for fitting at assembly
- Pre-hardened steel 300 Bhn

CATALOG NUMBER **SPB-40**



Sprue Bushing Reamers



HAND REAMER FOR FINISHING



MACHINE REAMER FOR ROUGHING

What's Important

- High speed steel
- Left hand spiral, right hand cut
- 2°13'13" included angle
- 1/2" taper per foot

HAND REAMERS

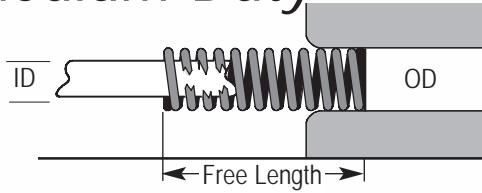
| CATALOG NUMBER | NO. FLUTES | TAPER PER FT | SMALL END DIA | LARGE END DIA | SHANK DIA | FLUTE LENGTH | OVERALL LENGTH |
|----------------|------------|--------------|---------------|---------------|-----------|--------------|----------------|
| HR-1 | 4 | 1/2 | 7/64 | 3/8 | 5/16 | 6 | 8 |
| HR-2 | 6 | 1/2 | 13/64 | 5/8 | 1/2 | 10-1/2 | 12-5/8 |

MACHINE REAMERS

| CATALOG NUMBER | NO. FLUTES | TAPER PER FT | SMALL END DIA | LARGE END DIA | SHANK DIA | FLUTE LENGTH | OVERALL LENGTH |
|----------------|------------|--------------|---------------|---------------|-----------|--------------|----------------|
| MR-1 | 3 | 1/2 | 7/64 | 3/8 | 5/16 | 6 | 8 |
| MR-2 | 3 | 1/2 | 13/64 | 5/8 | 1/2 | 10-1/2 | 12-5/8 |

Springs

Medium Duty



Raymond High Tensile
Chromium Alloy Steel

Deflection of Free Length
Maximum 50%
Average Life 40%
Long Life 25%



| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) | | |
|---------------|-----------------|-------------|----------------|-----------------------------------|---------|------|
| 3/8 9.5mm | 3/16 4.76mm | 1 | 04 M 10 | 6.0 | | |
| | | 1-1/4 | 04 M 12 | 5.4 | | |
| | | 1-1/2 | 04 M 15 | 4.0 | | |
| | | 1-3/4 | 04 M 17 | 3.4 | | |
| | | 2 | 04 M 20 | 2.8 | | |
| | | 2-1/2 | 04 M 25 | 2.4 | | |
| | | 3 | 04 M 30 | 2.1 | | |
| 1/2 12.7mm | 9/32 7.1mm | 12 | 04 M 120 | 0.6 | | |
| | | 1 | 05 M 10 | 11.0 | | |
| | | 1-1/4 | 05 M 12 | 8.2 | | |
| | | 1-1/2 | 05 M 15 | 6.8 | | |
| | | 1-3/4 | 05 M 17 | 6.0 | | |
| | | 2 | 05 M 20 | 5.5 | | |
| | | 2-1/2 | 05 M 25 | 4.5 | | |
| | | 3 | 05 M 30 | 3.5 | | |
| | | 3-1/2 | 05 M 35 | 3.0 | | |
| | | 4-1/2 | 05 M 45 | 2.5 | | |
| | | 5-1/2 | 05 M 55 | 2.1 | | |
| | | 6-1/2 | 05 M 65 | 1.4 | | |
| 7-1/2 | 05 M 75 | 1.2 | | | | |
| 12 | 05 M 120 | 0.7 | | | | |
| 5/8 15.9mm | 11/32 8.73mm | 1 | 06 M 10 | 16.4 | | |
| | | 1-1/4 | 06 M 12 | 12.8 | | |
| | | 1-1/2 | 06 M 15 | 10.8 | | |
| | | 1-3/4 | 06 M 17 | 9.6 | | |
| | | 2 | 06 M 20 | 8.8 | | |
| | | 2-1/2 | 06 M 25 | 6.0 | | |
| | | 3 | 06 M 30 | 5.6 | | |
| | | 3-1/2 | 06 M 35 | 4.8 | | |
| | | 4 | 06 M 40 | 4.4 | | |
| | | 12 | 06 M 120 | 1.6 | | |
| | | 3/4 19mm | 3/8 9.5mm | 1 | 07 M 10 | 31.2 |
| | | | | 1-1/4 | 07 M 12 | 25.6 |
| 1-1/2 | 07 M 15 | | | 20.0 | | |
| 1-3/4 | 07 M 17 | | | 17.6 | | |
| 2 | 07 M 20 | | | 14.4 | | |
| 2-1/2 | 07 M 25 | | | 12.0 | | |
| 3 | 07 M 30 | | | 9.6 | | |
| 3-1/2 | 07 M 35 | | | 8.0 | | |
| 4 | 07 M 40 | | | 7.2 | | |
| 4-1/2 | 07 M 45 | | | 6.4 | | |
| 5 | 07 M 50 | | | 6.0 | | |
| 5-1/2 | 07 M 55 | | | 5.5 | | |
| 6 | 07 M 60 | 5.0 | | | | |
| 6-1/2 | 07 M 65 | 4.5 | | | | |
| 7-1/2 | 07 M 75 | 3.8 | | | | |
| 12 | 07 M 120 | 2.4 | | | | |
| 1 25.4mm | 1/2 12.7mm | 1 | 10 M 10 | 55.0 | | |
| | | 1-1/4 | 10 M 12 | 45.0 | | |
| | | 1-1/2 | 10 M 15 | 35.0 | | |
| | | 1-3/4 | 10 M 17 | 30.0 | | |
| | | 2 | 10 M 20 | 26.0 | | |

| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) |
|-----------------|---------------|-----------------|----------------|-----------------------------------|
| 1 25.4mm | 1/2 12.7mm | 2-1/2 | 10 M 25 | 20.0 |
| | | 3 | 10 M 30 | 16.5 |
| | | 3-1/2 | 10 M 35 | 15.0 |
| | | 4 | 10 M 40 | 12.0 |
| | | 4-1/2 | 10 M 45 | 10.4 |
| | | 5 | 10 M 50 | 9.6 |
| | | 5-1/2 | 10 M 55 | 8.8 |
| | | 6 | 10 M 60 | 8.0 |
| | | 7 | 10 M 70 | 7.2 |
| | | 8 | 10 M 80 | 6.0 |
| | | 12 | 10 M 120 | 4.0 |
| | | 1-1/4 31.7mm | 5/8 15.9mm | 1-1/2 |
| 1-3/4 | 12 M 17 | | | 42.4 |
| 2 | 12 M 20 | | | 35.2 |
| 2-1/2 | 12 M 25 | | | 28.8 |
| 3 | 12 M 30 | | | 24.0 |
| 3-1/2 | 12 M 35 | | | 20.0 |
| 4 | 12 M 40 | | | 17.6 |
| 4-1/2 | 12 M 45 | | | 16.0 |
| 5 | 12 M 50 | | | 13.6 |
| 5-1/2 | 12 M 55 | | | 12.8 |
| 6 | 12 M 60 | | | 12.0 |
| 7 | 12 M 70 | | | 10.4 |
| 8 | 12 M 80 | 8.8 | | |
| 10 | 12 M 100 | 7.2 | | |
| 12 | 12 M 120 | 6.0 | | |
| 1-1/2 38.1mm | 3/4 19mm | 2 | 15 M 20 | 53.0 |
| | | 2-1/2 | 15 M 25 | 45.0 |
| | | 3 | 15 M 30 | 36.0 |
| | | 3-1/2 | 15 M 35 | 30.0 |
| | | 4 | 15 M 40 | 27.0 |
| | | 4-1/2 | 15 M 45 | 23.0 |
| | | 5 | 15 M 50 | 21.0 |
| | | 5-1/2 | 15 M 55 | 18.5 |
| | | 6 | 15 M 60 | 17.0 |
| | | 7 | 15 M 70 | 14.5 |
| | | 8 | 15 M 80 | 12.8 |
| | | 10 | 15 M 100 | 10.0 |
| 12 | 15 M 120 | 8.0 | | |
| 2 50.8mm | 1 25.4mm | 2-1/2 | 20 M 25 | 100.0 |
| | | 3 | 20 M 30 | 83.0 |
| | | 3-1/2 | 20 M 35 | 64.8 |
| | | 4 | 20 M 40 | 60.0 |
| | | 4-1/2 | 20 M 45 | 53.0 |
| | | 5 | 20 M 50 | 47.0 |
| | | 5-1/2 | 20 M 55 | 39.2 |
| | | 6 | 20 M 60 | 39.0 |
| | | 7 | 20 M 70 | 31.2 |
| | | 8 | 20 M 80 | 28.0 |
| | | 10 | 20 M 100 | 20.8 |
| | | 12 | 20 M 120 | 17.5 |

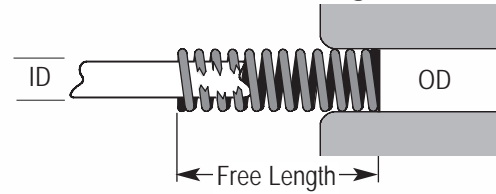


Raymond High Tensile
Chromium Alloy Steel

Deflection of Free Length
Maximum 37%
Average Life 25%
Long Life 20%

Springs

Medium Heavy Duty

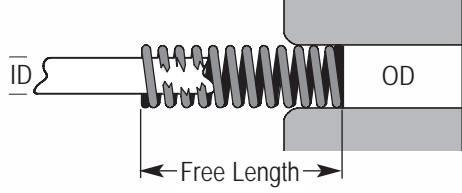


| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) |
|----------------------|------------------------|-------------|----------------|-----------------------------------|
| 3/8 9.5mm | 3/16 4.76mm | 1 | 04 MH 10 | 9.0 |
| | | 1-1/4 | 04 MH 12 | 7.3 |
| | | 1-1/2 | 04 MH 15 | 6.7 |
| | | 1-3/4 | 04 MH 17 | 5.8 |
| | | 2 | 04 MH 20 | 5.0 |
| | | 2-1/2 | 04 MH 25 | 4.2 |
| | | 3 | 04 MH 30 | 3.0 |
| | | 12 | 04 MH 120 | 0.9 |
| WIRE .046 X .067 | | | | |
| 1/2 12.7mm | 9/32 7.1mm | 1 | 05 MH 10 | 16.8 |
| | | 1-1/4 | 05 MH 12 | 13.0 |
| | | 1-1/2 | 05 MH 15 | 9.5 |
| | | 1-3/4 | 05 MH 17 | 8.5 |
| | | 2 | 05 MH 20 | 7.5 |
| | | 2-1/2 | 05 MH 25 | 6.0 |
| | | 3 | 05 MH 30 | 5.7 |
| | | 3-1/2 | 05 MH 35 | 4.0 |
| 12 | 05 MH 120 | 1.2 | | |
| WIRE .061 X .093 | | | | |
| 5/8 15.9mm | 11/32 8.73mm | 1 | 06 MH 10 | 30.0 |
| | | 1-1/4 | 06 MH 12 | 21.5 |
| | | 1-1/2 | 06 MH 15 | 19.0 |
| | | 1-3/4 | 06 MH 17 | 16.8 |
| | | 2 | 06 MH 20 | 14.8 |
| | | 2-1/2 | 06 MH 25 | 11.5 |
| | | 3 | 06 MH 30 | 10.0 |
| | | 3-1/2 | 06 MH 35 | 8.5 |
| 4 | 06 MH 40 | 7.6 | | |
| 12 | 06 MH 120 | 2.7 | | |
| WIRE .081 X .117 | | | | |
| 3/4 19mm | 3/8 9.5mm | 1 | 07 MH 10 | 50.0 |
| | | 1-1/4 | 07 MH 12 | 38.0 |
| | | 1-1/2 | 07 MH 15 | 32.0 |
| | | 1-3/4 | 07 MH 17 | 28.0 |
| | | 2 | 07 MH 20 | 24.8 |
| | | 2-1/2 | 07 MH 25 | 19.2 |
| | | 3 | 07 MH 30 | 14.4 |
| | | 3-1/2 | 07 MH 35 | 12.8 |
| | | 4 | 07 MH 40 | 12.0 |
| | | 4-1/2 | 07 MH 45 | 11.2 |
| | | 5 | 07 MH 50 | 9.0 |
| | | 5-1/2 | 07 MH 55 | 8.0 |
| 6 | 07 MH 60 | 7.5 | | |
| 12 | 07 MH 120 | 3.6 | | |
| WIRE .093 X .156 | | | | |
| 1 25.4mm | 1/2 12.7mm | 1 | 10 MH 10 | 76.0 |
| | | 1-1/4 | 10 MH 12 | 62.4 |
| | | 1-1/2 | 10 MH 15 | 49.6 |
| | | 1-3/4 | 10 MH 17 | 44.0 |
| | | 2 | 10 MH 20 | 40.0 |
| | | 2-1/2 | 10 MH 25 | 31.0 |
| | | 3 | 10 MH 30 | 25.0 |
| | | 3-1/2 | 10 MH 35 | 21.6 |
| WIRE .115 X .218 | | | | |

| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) |
|------------------------|----------------------|-------------|----------------|-----------------------------------|
| 1 25.4mm | 1/2 12.7mm | 4 | 10 MH 40 | 18.4 |
| | | 4-1/2 | 10 MH 45 | 17.0 |
| | | 5 | 10 MH 50 | 14.4 |
| | | 5-1/2 | 10 MH 55 | 12.8 |
| | | 6 | 10 MH 60 | 12.0 |
| | | 7 | 10 MH 70 | 10.0 |
| | | 8 | 10 MH 80 | 8.8 |
| | | 12 | 10 MH 120 | 6.2 |
| WIRE .115 X .218 | | | | |
| 1-1/4 31.7mm | 5/8 15.9mm | 1-1/2 | 12 MH 15 | 114.4 |
| | | 1-3/4 | 12 MH 17 | 100.8 |
| | | 2 | 12 MH 20 | 86.4 |
| | | 2-1/2 | 12 MH 25 | 62.4 |
| | | 3 | 12 MH 30 | 51.2 |
| | | 3-1/2 | 12 MH 35 | 44.0 |
| | | 4 | 12 MH 40 | 36.8 |
| | | 4-1/2 | 12 MH 45 | 32.0 |
| | | 5 | 12 MH 50 | 29.0 |
| | | 5-1/2 | 12 MH 55 | 26.4 |
| | | 6 | 12 MH 60 | 25.0 |
| | | 7 | 12 MH 70 | 20.0 |
| 8 | 12 MH 80 | 18.4 | | |
| 10 | 12 MH 100 | 14.5 | | |
| 12 | 12 MH 120 | 12.4 | | |
| WIRE .156 X .281 | | | | |
| 1-1/2 38.1mm | 3/4 19mm | 2 | 15 MH 20 | 108.0 |
| | | 2-1/2 | 15 MH 25 | 85.6 |
| | | 3 | 15 MH 30 | 62.4 |
| | | 3-1/2 | 15 MH 35 | 52.8 |
| | | 4 | 15 MH 40 | 48.0 |
| | | 4-1/2 | 15 MH 45 | 43.2 |
| | | 5 | 15 MH 50 | 36.8 |
| | | 5-1/2 | 15 MH 55 | 34.4 |
| | | 6 | 15 MH 60 | 30.4 |
| | | 7 | 15 MH 70 | 26.4 |
| | | 8 | 15 MH 80 | 22.0 |
| | | 10 | 15 MH 100 | 17.6 |
| 12 | 15 MH 120 | 14.4 | | |
| WIRE .187 X .312 | | | | |
| 2 50.8mm | 1 25.4mm | 2-1/2 | 20 MH 25 | 118.4 |
| | | 3 | 20 MH 30 | 96.0 |
| | | 3-1/2 | 20 MH 35 | 80.0 |
| | | 4 | 20 MH 40 | 66.4 |
| | | 4-1/2 | 20 MH 45 | 60.0 |
| | | 5 | 20 MH 50 | 56.0 |
| | | 5-1/2 | 20 MH 55 | 50.4 |
| | | 6 | 20 MH 60 | 47.2 |
| 7 | 20 MH 70 | 40.0 | | |
| 8 | 20 MH 80 | 35.2 | | |
| 10 | 20 MH 100 | 26.0 | | |
| 12 | 20 MH 120 | 22.4 | | |
| WIRE .225 X .437 | | | | |

Springs

Heavy Duty



Raymond High Tensile
Chromium Alloy Steel

Deflection of Free Length
Maximum 30%
Average Life 20%
Long Life 15%



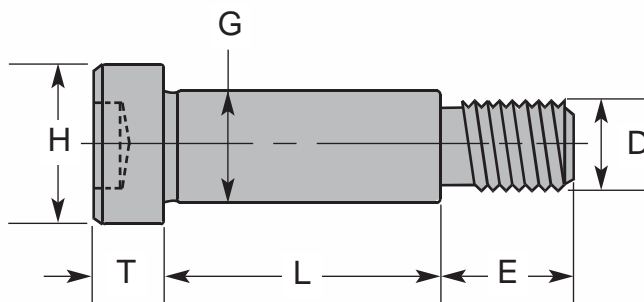
| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) |
|---------------|-----------------|-------------|----------------|-----------------------------------|
| 3/8 9.5mm | 3/16 4.76mm | 1 | 04 H 10 | 11.0 |
| | | 1-1/4 | 04 H 12 | 9.8 |
| | | 1-1/2 | 04 H 15 | 8.0 |
| | | 1-3/4 | 04 H 17 | 8.4 |
| | | 2 | 04 H 20 | 7.2 |
| | | 2-1/2 | 04 H 25 | 5.5 |
| | | 3 | 04 H 30 | 4.2 |
| | | 12 | 04 H 120 | 1.2 |
| 1/2 12.7mm | 9/32 7.1mm | 1 | 05 H 10 | 23.6 |
| | | 1-1/4 | 05 H 12 | 18.6 |
| | | 1-1/2 | 05 H 15 | 15.5 |
| | | 1-3/4 | 05 H 17 | 13.8 |
| | | 2 | 05 H 20 | 11.0 |
| | | 2-1/2 | 05 H 25 | 8.4 |
| | | 3 | 05 H 30 | 7.4 |
| | | 12 | 05 H 120 | 1.6 |
| 5/8 15.9mm | 11/32 8.73mm | 1 | 06 H 10 | 42.4 |
| | | 1-1/4 | 06 H 12 | 29.6 |
| | | 1-1/2 | 06 H 15 | 27.2 |
| | | 1-3/4 | 06 H 17 | 24.0 |
| | | 2 | 06 H 20 | 20.8 |
| | | 2-1/2 | 06 H 25 | 17.0 |
| | | 3 | 06 H 30 | 14.4 |
| | | 12 | 06 H 120 | 3.0 |
| 3/4 19mm | 3/8 9.5mm | 1 | 07 H 10 | 108.0 |
| | | 1-1/4 | 07 H 12 | 88.0 |
| | | 1-1/2 | 07 H 15 | 65.6 |
| | | 1-3/4 | 07 H 17 | 60.0 |
| | | 2 | 07 H 20 | 49.6 |
| | | 2-1/2 | 07 H 25 | 40.0 |
| | | 3 | 07 H 30 | 34.0 |
| | | 3-1/2 | 07 H 35 | 28.0 |
| | | 4 | 07 H 40 | 25.0 |
| | | 4-1/2 | 07 H 45 | 22.0 |
| | | 5 | 07 H 50 | 19.5 |
| | | 12 | 07 H 120 | 8.0 |
| 1 25.4mm | 1/2 12.7mm | 1 | 10 H 10 | 208.0 |
| | | 1-1/4 | 10 H 12 | 171.2 |
| | | 1-1/2 | 10 H 15 | 118.4 |
| | | 1-3/4 | 10 H 17 | 104.0 |
| | | 2 | 10 H 20 | 90.0 |
| | | 2-1/2 | 10 H 25 | 68.0 |
| | | 3 | 10 H 30 | 54.4 |
| | 3-1/2 | 10 H 35 | 45.6 | |

| OD | ID | FREE LENGTH | CATALOG NUMBER | LOAD AT 1/10 IN. DEFLECTION (LBS) |
|-----------------|---------------|-------------|----------------|-----------------------------------|
| 1 25.4mm | 1/2 12.7mm | 4 | 10 H 40 | 40.0 |
| | | 4-1/2 | 10 H 45 | 35.2 |
| | | 5 | 10 H 50 | 31.2 |
| | | 5-1/2 | 10 H 55 | 28.8 |
| | | 6 | 10 H 60 | 25.6 |
| | | 7 | 10 H 70 | 22.4 |
| | | 8 | 10 H 80 | 19.2 |
| | | 12 | 10 H 120 | 12.0 |
| 1-1/4 31.7mm | 5/8 15.9mm | 1-1/2 | 12 H 15 | 212.0 |
| | | 1-3/4 | 12 H 17 | 181.6 |
| | | 2 | 12 H 20 | 149.6 |
| | | 2-1/2 | 12 H 25 | 117.6 |
| | | 3 | 12 H 30 | 95.2 |
| | | 3-1/2 | 12 H 35 | 75.2 |
| | | 4 | 12 H 40 | 66.4 |
| | | 4-1/2 | 12 H 45 | 58.4 |
| | | 5 | 12 H 50 | 53.0 |
| | | 5-1/2 | 12 H 55 | 47.2 |
| | | 6 | 12 H 60 | 42.4 |
| | | 7 | 12 H 70 | 36.8 |
| 1-1/2 38.1mm | 3/4 19mm | 8 | 12 H 80 | 32.8 |
| | | 10 | 12 H 100 | 25.6 |
| | | 12 | 12 H 120 | 20.8 |
| | | 2 | 15 H 20 | 190.4 |
| | | 2-1/2 | 15 H 25 | 155.0 |
| | | 3 | 15 H 30 | 130.0 |
| | | 3-1/2 | 15 H 35 | 106.4 |
| | | 4 | 15 H 40 | 91.2 |
| | | 4-1/2 | 15 H 45 | 78.4 |
| | | 5 | 15 H 50 | 71.2 |
| | | 5-1/2 | 15 H 55 | 64.0 |
| | | 6 | 15 H 60 | 58.4 |
| 7 | 15 H 70 | 49.6 | | |
| 8 | 15 H 80 | 43.2 | | |
| 10 | 15 H 100 | 34.4 | | |
| 12 | 15 H 120 | 28.8 | | |
| 2 50.8mm | 1 25.4mm | 2-1/2 | 20 H 25 | 260.0 |
| | | 3 | 20 H 30 | 200.0 |
| | | 3-1/2 | 20 H 35 | 170.0 |
| | | 4 | 20 H 40 | 150.0 |
| | | 4-1/2 | 20 H 45 | 120.0 |
| | | 5 | 20 H 50 | 110.0 |
| | | 5-1/2 | 20 H 55 | 100.0 |
| | | 6 | 20 H 60 | 94.0 |
| | | 7 | 20 H 70 | 82.0 |
| | | 8 | 20 H 80 | 73.0 |
| | | 10 | 20 H 100 | 55.0 |
| | | 12 | 20 H 120 | 42.0 |



Socket Head Shoulder Screws

Stripper Bolt



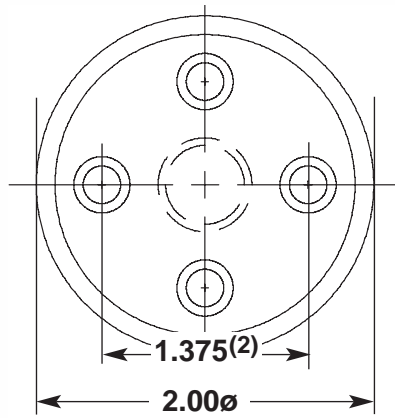
| General Dimensions | | | | | | |
|-----------------------|--------|--------|---------|--------|--------|--------|
| Shoulder Diameter (G) | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 |
| Thread (D) | #10-24 | 1/4-20 | 5/16-18 | 3/8-16 | 1/2-13 | 5/8-11 |
| Thread Length (E) | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 7/8 |
| Head Diameter (H) | 3/8 | 7/16 | 9/16 | 3/4 | 7/8 | 1 |
| Head Height (T) | 3/16 | 7/32 | 1/4 | 5/16 | 3/8 | 1/2 |
| Size of Hex Key | 1/8 | 5/32 | 3/16 | 1/4 | 5/16 | 3/8 |

- Material: High quality alloy steel
- Heat Treatment: 36 - 43 Rc
- Tensile Strength: 160,000 psi
- Thread Class: 3A

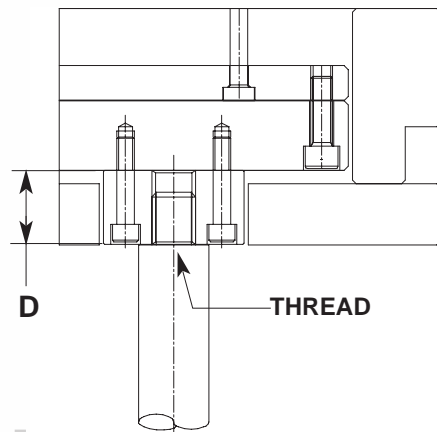
| L SHOULDER LENGTH | G SHOULDER DIAMETER | | | | | |
|-------------------------|------------------------|-----------|-----------|-----------|-----------|-----------|
| | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 |
| 1 | SB17-1000 | SB21-1000 | SB25-1000 | SB33-1000 | | |
| 1-1/4 | SB17-1250 | SB21-1250 | SB25-1250 | SB33-1250 | SB37-1250 | |
| 1-1/2 | SB17-1500 | SB21-1500 | SB25-1500 | SB33-1500 | SB37-1500 | SB41-1500 |
| 1-3/4 | | SB21-1750 | SB25-1750 | SB33-1750 | SB37-1750 | SB41-1750 |
| 2 | | SB21-2000 | SB25-2000 | SB33-2000 | SB37-2000 | SB41-2000 |
| 2-1/4 | | | SB25-2250 | SB33-2250 | SB37-2250 | SB41-2250 |
| 2-1/2 | | | SB25-2500 | SB33-2500 | SB37-2500 | SB41-2500 |
| 2-3/4 | | | SB25-2750 | SB33-2750 | SB37-2750 | SB41-2750 |
| 3 | | | SB25-3000 | SB33-3000 | SB37-3000 | SB41-3000 |
| 3-1/4 | | | SB25-3250 | SB33-3250 | SB37-3250 | SB41-3250 |
| 3-1/2 | | | SB25-3500 | SB33-3500 | SB37-3500 | SB41-3500 |
| 3-3/4 | | | SB25-3750 | SB33-3750 | SB37-3750 | SB41-3750 |
| 4 | | | SB25-4000 | SB33-4000 | SB37-4000 | SB41-4000 |
| 4-1/4 | | | | SB33-4250 | SB37-4250 | SB41-4250 |
| 4-1/2 | | | | SB33-4500 | SB37-4500 | SB41-4500 |
| 4-3/4 | | | | SB33-4750 | SB37-4750 | SB41-4750 |
| 5 | | | | SB33-5000 | SB37-5000 | SB41-5000 |
| 5-1/2 | | | | SB33-5500 | SB37-5500 | SB41-5500 |
| 6 | | | | SB33-6000 | SB37-6000 | SB41-6000 |
| 7 | | | | | | SB41-7000 |

Knockout Rod Extensions

Round Series



| CATALOG NUMBER | D | THREAD (T) |
|----------------|-------|------------|
| KR37-10 | 1.052 | 3/8-16 |
| KR37-15 | 1.552 | 3/8-16 |
| KR50-10 | 1.052 | 1/2-13 |
| KR50-15 | 1.552 | 1/2-13 |
| KR62-10 | 1.052 | 5/8-11 |
| KR62-15 | 1.552 | 5/8-11 |
| KR75-10 | 1.052 | 3/4-10 |
| KR75-15 | 1.552 | 3/4-10 |
| KR75-10NT* | 1.052 | NO THREAD |
| KR75-15NT* | 1.552 | NO THREAD |

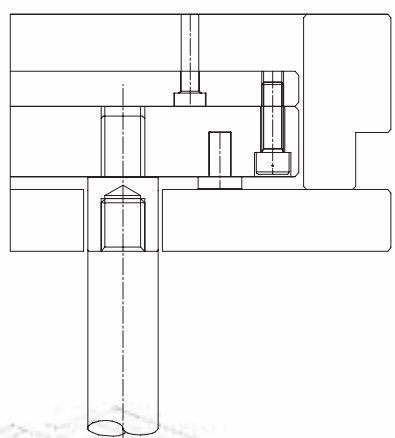
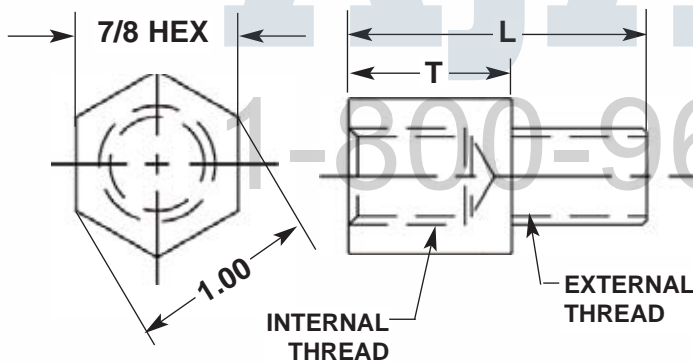


1/4 -20 SCHS Included
* Female Thread omitted.

Distributed by

Knockout Rod Extensions

Hex Series



| CATALOG NUMBER | T | L LENGTH | THREAD internal & external |
|----------------|-------|----------|----------------------------|
| KRE37-10 | 1.052 | 1.672 | 3/8-16 |
| KRE37-15 | 1.552 | 2.172 | 3/8-16 |
| KRE50-10 | 1.052 | 1.672 | 1/2-13 |
| KRE50-15 | 1.552 | 2.175 | 1/2-13 |
| KRE62-10 | 1.052 | 1.922 | 5/8-11 |
| KRE62-15 | 1.552 | 2.422 | 5/8-11 |
| KRE75-10 | 1.052 | 1.672 | 3/4-10 |
| KRE75-15 | 1.552 | 2.422 | 3/4-10 |
| KRE75-10NT* | 1.052 | 1.922 | 3/4-10 |
| KRE75-15NT* | 1.552 | 2.422 | 3/4-10 |

* Female Thread omitted.





US Patents: 5,446,252
6,982,392

The Liquid Resistant Limit Switch

Designed to verify ejector plate return in areas where occasional water or oil spray are present. The liquid resistant switch uses the same mounting hole locations as the original Thinswitch.

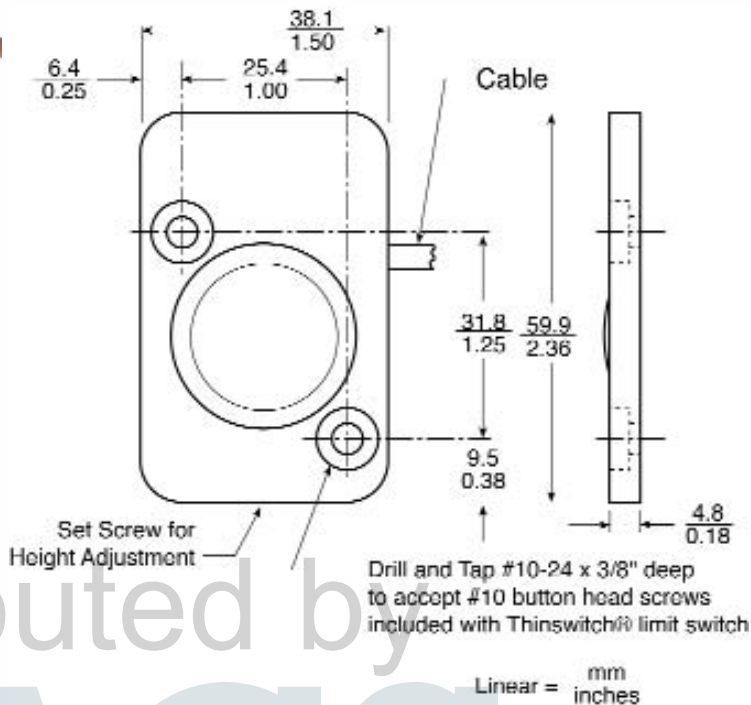
Materials:

Body is Fiberglass-reinforced nylon

Dome is Polyurethane

Back cover is Polyester Film

Wire Leads 22ga stranded, 3 conductor, shielded cable, 6ft. long ends stripped and thinned.



Distributed by
ATA
1-800-688-6868



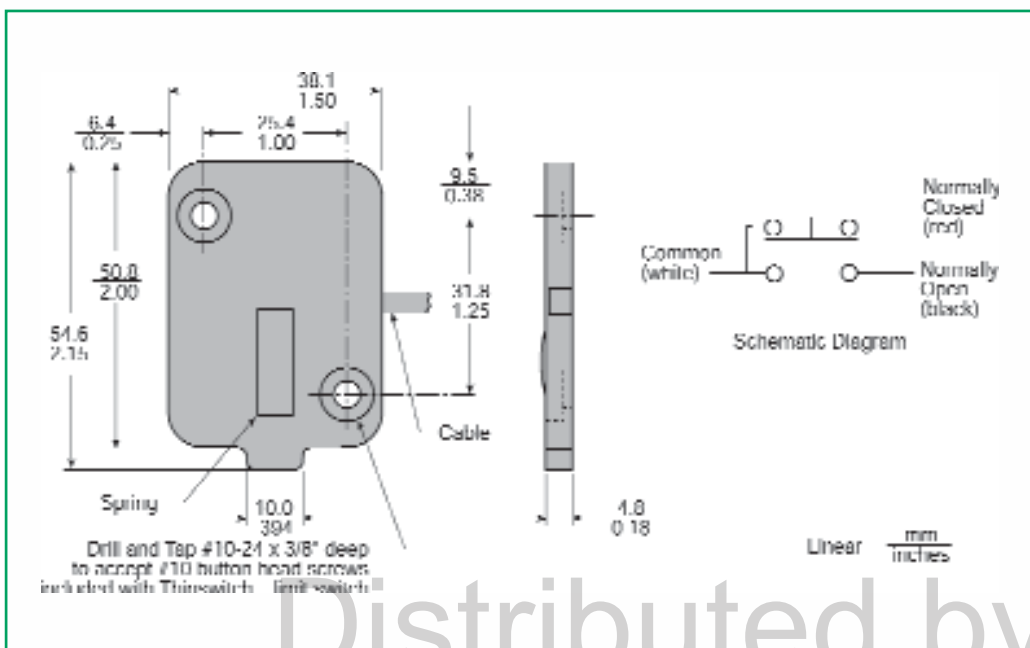
Liquid Resistant Limit Switch

- Over 10 million cycle life
- 175° F (79.4°C) standard temp rating
- 250° (121°C) high temperature unit for higher temp needs
- Adjustable actuation between .187" and .250" from the mold base
- 3/16" thick design fits snugly behind the ejector plate between the rest buttons
- Stripped and tinned 6ft. wire leads
- Mounting screws and wire clips included

| Rated Current vs. Steel Temperature | | | | | |
|-------------------------------------|-----|------|------|-----|-------|
| Amps | °F | °C | Amps | °F | °C |
| 5.0 | 85 | 29.4 | 5.0 | 100 | 37.7 |
| 4.0 | 120 | 49.0 | 4.5 | 155 | 68.3 |
| 3.0 | 155 | 68.3 | 4.0 | 210 | 98.8 |
| 2.0 | 175 | 79.4 | 3.5 | 250 | 121.1 |

| Part Number | Operating Temp |
|-------------|------------------------|
| T-222-LR | 175° Operating Temp |
| HT-291-LR | 250° Operating Temp |

Thinswitch™ Limit Switch



What's Important

- Over 10 million cycle life provides long dependable service
- 175°F (79.4°C) standard temperature rating allows installation into most molding applications*
- 250°F (121.1°C) high temperature unit is available for higher temperature applications*
- Adjustable operating point allows actuation between .187" and .250" from the base
- 3/16" thick design fits snugly behind the ejector plate in the space provided by the rest buttons
- Mounting hardware is included
- 250VAC/28VDC (sea level): 5 Amps resistive, 4 Amps inductive*
- SPDT switching
- Fiberglass-reinforced nylon body
- Stainless Steel spring
- Polyester film back cover label
- 6 ft (1.8m) 22 gage stranded wire leads

Thinswitch™ Limit Switch verifies ejector plate return before permitting the mold to close in an injection molding press. It fits inside the ejector housing in the space provided by the rest buttons. The Thinswitch can also be used for core slides.

Thinswitch™ is designed for use in very low power mold protection control circuits. It is not intended to switch heavy loads in power applications.

Manufactured by Burger Engineering Inc.

| RATED CURRENTS vs. STEEL TEMPERATURE | | | | | |
|--------------------------------------|-----|------|--------|-----|-------|
| T-222 | | | HT-291 | | |
| AMPS | °F | °C | AMPS | °F | °C |
| 5.0 | 85 | 29.4 | 5.0 | 100 | 37.7 |
| 4.0 | 120 | 49.0 | 4.5 | 155 | 68.3 |
| 3.0 | 155 | 68.3 | 4.0 | 210 | 98.3 |
| 2.0 | 175 | 79.4 | 3.5 | 250 | 121.1 |

| CATALOG NUMBER | TEMPERATURE RATING | |
|----------------|--------------------|--------|
| | °F max | °C max |
| T-222 | 175° | 79.4° |
| HT-291 | 250° | 121.1° |

*See Rated Currents vs. Temperature Chart at right

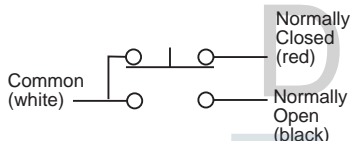
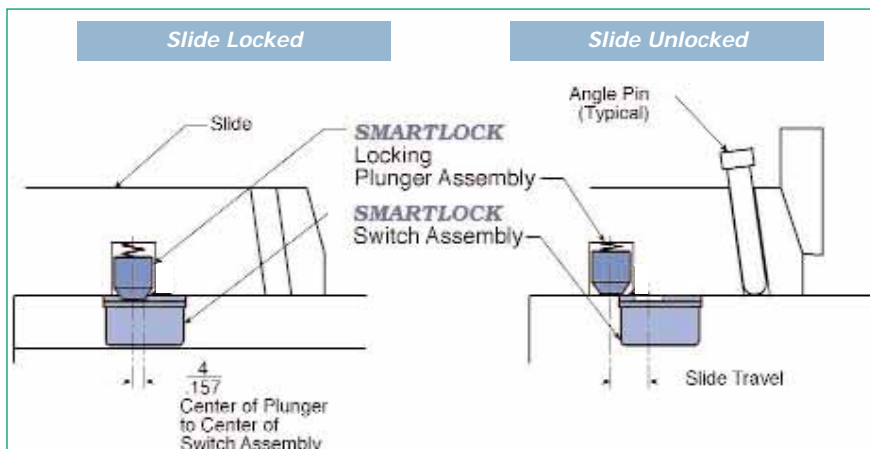


SmartLock®

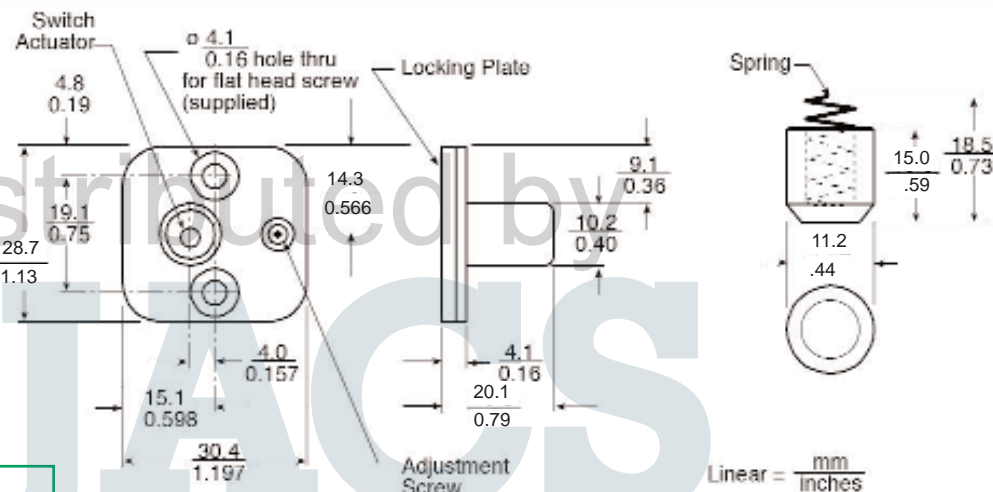
Slide Retainer & Limit Switch



SmartLock® is a slide retainer and limit switch in a single unique package. The plunger and detent mechanically hold a slide in the retracted position while the SPDT switch verifies the slide position to the mold close circuit.



- Over 10 million cycle life provides long dependable service
- 175°F (79.4°C) standard temperature rating allows installation into most mold in applications*
- 250°F (121.1°C) high temperature unit is available for higher temperature applications*
- 17 to 27 pounds holding force is adjustable
- Switch is shielded from damage by mounting inside a milled pocket
- Stripped and tinned 6ft. wire leads
- 250VAC/28VDC (sea level):
5 Amps resistive, 4 Amps inductive*
- SPDT switching
- Fiberglass-reinforced nylon body
- 6 ft (1.8m) 22 gage stranded wire leads
- Hardened steel locking plate and plunger assembly



Switch Assembly

Locking Plunger Assembly

| RATED CURRENTS VS. STEEL TEMPERATURE | | | | | |
|--------------------------------------|-----|------|--------|-----|-------|
| SL-222 | | | SL-291 | | |
| AMPS | °F | °C | AMPS | °F | °C |
| 5.0 | 85 | 29.4 | 5.0 | 100 | 37.7 |
| 4.0 | 120 | 49.0 | 4.5 | 155 | 68.3 |
| 3.0 | 155 | 68.3 | 4.0 | 210 | 98.3 |
| 2.0 | 175 | 79.4 | 3.5 | 250 | 121.1 |

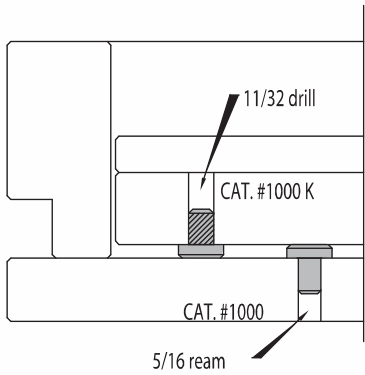
| CATALOG NUMBER | TEMPERATURE RATING | |
|----------------|--------------------|--------|
| | °F max | °C max |
| SL-222 | 175° | 79.4° |
| SL-291 | 250° | 121.1° |

Manufactured by Burger & Brown Engineering Inc.

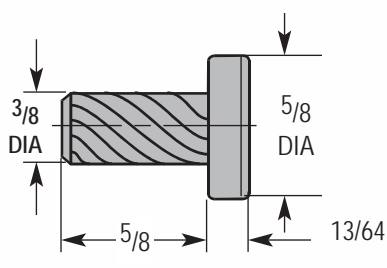
The SmartLock® Slide Retainer and Limit Switch is designed for use in very low power mold protection control circuits. It is not intended to switch heavy loads in power applications.

Stop Pins

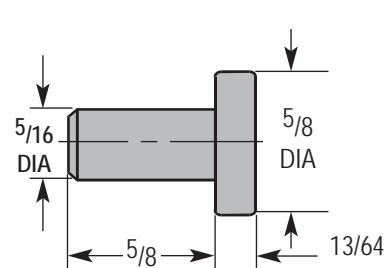
Standard & Self Tapping



SPIRAL SHANK



STANDARD



5/16 diameter is held within .001 for press fit

- Quantity discounts available

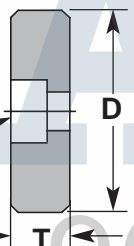
| CATALOG NUMBER |
|----------------|
| 1000-K |

| CATALOG NUMBER |
|----------------|
| 1000 |

Stop Spacers



Drilled and counterbored for Socket Head Cap Screw (SHCS included)



| CATALOG NUMBER | D | T <small>+0 -.002</small> | SHCS |
|----------------|---------|----------------------------------|---------|
| SS-05 | 1 | 1/2 | 1/4-20 |
| SS-15 | 1-3/16 | 1/2 | 1/4-20 |
| SS-20 | 1-11/16 | 1/2 | 5/16-18 |
| SS-25 | 1-11/16 | 1 | 5/16-18 |

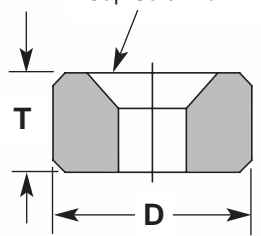
- Hardened

1-800-968-6808

Stop Buttons

| CATALOG NUMBER | T |
|----------------|------|
| SB-03 | 3/16 |
| SB-04 | 1/4 |
| SB-06 | 3/8 |
| SB-08 | 1/2 |
| SB-10 | 5/8 |
| SB-12 | 3/4 |
| SB-16 | 1 |

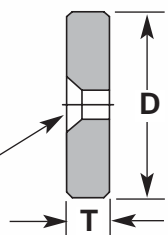
Drilled and countersunk for Flat Head Cap Screw 1/4 - 20



- Hardened
- .010-.020 grindstock

Stop Discs Shoulder Plates

Drilled and countersunk for Flat Head Cap Screw (FHCS included)



- Hardened

| CATALOG NUMBER | D | T <small>+0 -.002</small> | FHCS |
|----------------|---------|----------------------------------|---------|
| SP-05 | 11/16 | 3/16 | #10-24 |
| SP-07 | 1 | 3/16 | #10-24 |
| SP-10 | 1-3/16 | 3/16 | #10-24 |
| SP-15 | 1-11/16 | 1/4 | 5/16-18 |

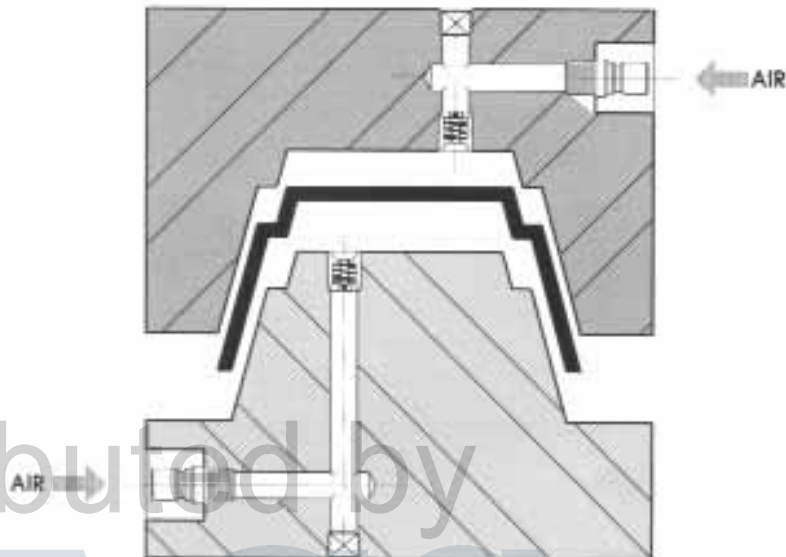




Air Poppet Valves for Plastic Molds

- Designed to break the vacuum created when molding deep drawn and / or thin walled parts such as flower pots, trays and containers
- Precision ground to prevent flash from entering assembly during injection
- Manufactured from Stainless Steel, 50 - 55 Rc
- Multiple units can be used for large or heavy slides

Typical Standard Mold Base Application



Installation Guidelines

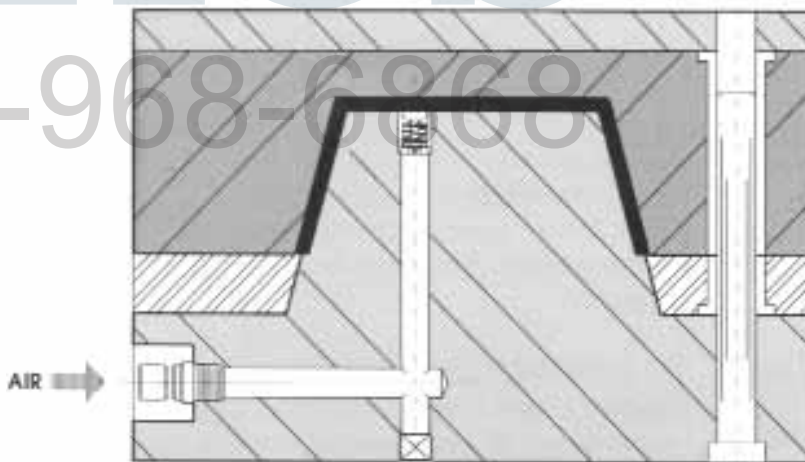
Tolerances indicate suggested clearance and press-fit for proper installation. Individual valve sizes vary within their tolerance range. Use brass piece (or similar material) to gently press the valve into cavity area. To remove simply use a soft punch from the clearance hole side.

Note:

Air line must be cleared of all debris prior to valve installation

The air flow to the Air Poppet Valve must be fully relieved to the atmosphere after each cycle to ensure the valve closes before the next injection cycle.

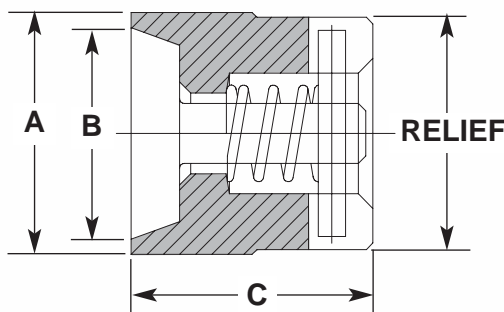
Typical Stripper Mold Base Application



Inch Air Poppet Valves For Plastic Molds



Max. operating 80psi
Manufactured from Stainless Steel 50-55 Rc



| CATALOG NUMBER | NOMINAL DIA | A +0.0003 -0.0000 | B +0.005 -0.005 | C +0.002 -0.000 |
|----------------|-------------|-------------------------|-----------------------|-----------------------|
| PV-025 | 1/4 | .2504 | .215 | .375 |
| PV-037 | 3/8 | .3754 | .325 | .375 |
| PV-050 | 1/2 | .5005 | .437 | .500 |
| PV-075 | 3/4 | .7505 | .656 | .750 |
| PV-100 | 1 | 1.0006 | .875 | 1.000 |
| PV-150 | 1-1/2 | 1.5006 | 1.312 | 1.500 |



- Center spool keyed to prevent rotation

Distributed by
ATAACS
1-800-968-6868

Metric Air Poppet Valves For Plastic Molds

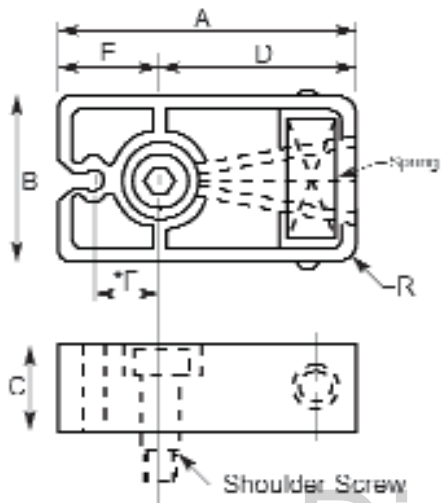


Max. operating 90psi
Manufactured from Stainless Steel 50-55 Rc

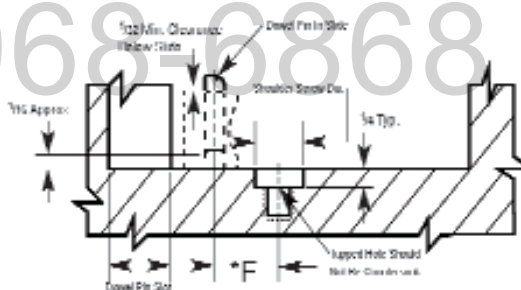
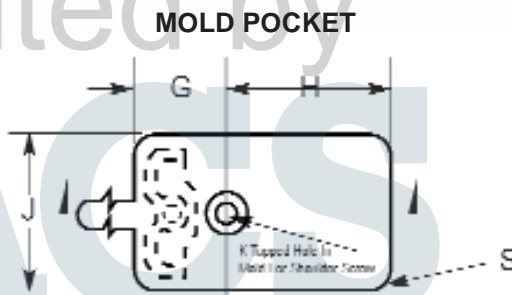
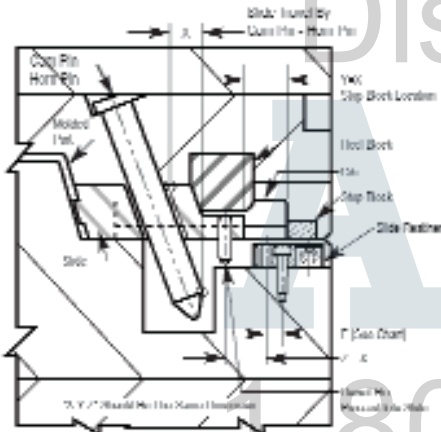
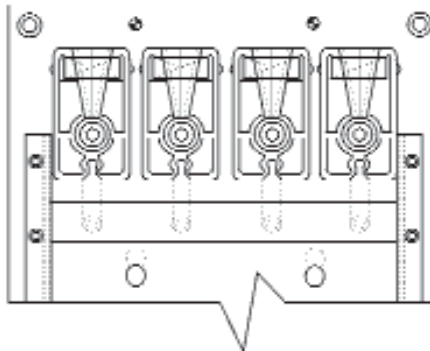
| CATALOG NUMBER | A | B | C |
|----------------|----|-----|----|
| PV 065212 | 6 | 5.2 | 12 |
| PV 086512 | 8 | 6.5 | 12 |
| PV 100812 | 10 | 8 | 12 |
| PV 121012 | 12 | 10 | 12 |
| PV 161320 | 16 | 13 | 20 |
| PV 201720 | 20 | 17 | 20 |



The Original Slide Retainers



- Compact, economical and positive acting slide retention
- Can be installed in new molds or retrofitted to existing molds
- Installed behind or below slide eliminating interference with machine tie bars or safety gates
- Multiple units can be used for large or heavy slides



*** Important:** The "F" dimension is the distance from the center line of the dowel pin to the center line of the shoulder screw

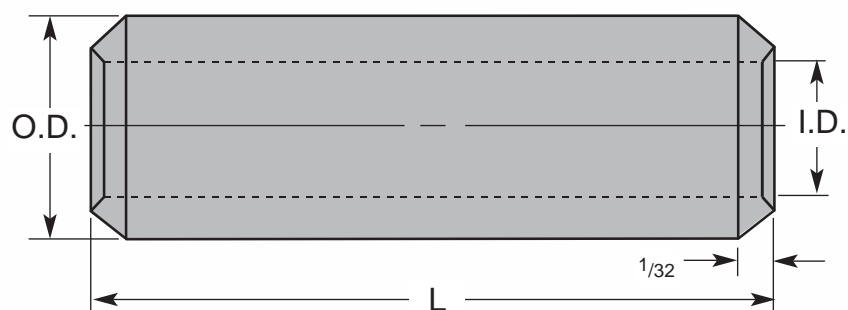
| QTY | SLIDE RETAINER | SLIDE WEIGHT |
|-----|----------------|--------------|
| 1 | SRP-22 | 22 LBS |
| 2 | SRP-22 | 44 LBS |
| 1 | SRP-44 | 44 LBS |
| 2 | SRP-44 | 88 LBS |
| 1 | SRP-88 | 88 LBS |
| 2 | SRP-88 | 176 LBS |
| 4 | SRP-88 | 352 LBS |

U.S. Patents 3,811,645

| SLIDE RETAINER | | | | | | | | | MOLD POCKET | | | | | | |
|----------------|----------|---------|----------|------|------|------|----------|--------------|-------------|------|------|---------------|----------------|----------|--------------|
| CATALOG NUMBER | A LENGTH | B WIDTH | C HEIGHT | D | E | *F | R RADIUS | DOWEL PIN | G | H | J | K TAPPED HOLE | SHOULDER SCREW | S RADIUS | MAX SLIDE WT |
| SRP-22 | 1-1/2 | 3/4 | .63 | .89 | .61 | .360 | .19 | 1/4 X 1-1/4 | .73 | 1.01 | 1.00 | 10-24 X 1/2 | 1/4 X 5/8 | .31 | 22 LBS |
| SRP-44 | 2-1/8 | 1-1/4 | .79 | 1.31 | .81 | .500 | .25 | 5/16 X 1-1/2 | .93 | 1.50 | 1.50 | 1/4-20 X 1/2 | 5/16 X 3/4 | .37 | 44 LBS |
| SRP-88 | 3-3/8 | 1-3/4 | 1.18 | 2.08 | 1.30 | .800 | .38 | 3/8 X 2-1/4 | 1.42 | 2.20 | 2.00 | 5/16-18 X 5/8 | 3/8 X 1 | .50 | 88 LBS |

Tubular Dowels

Hardened & Precision Ground



- Aligns the "B" plate, support plate and ejector housing
- Allows more room for waterlines by superimposing the dowel pin & cap screw

| NOMINAL DIA | O.D. | I.D. | LENGTH | | | | | | | |
|-------------|-------|------|---------|---------|---------|---------|----------|----------|----------|----------|
| | | | 3/8 | 7/16 | 1/2 | 7/8 | 1-3/8 | 1-7/8 | 2-3/8 | 2-7/8 |
| 3/8 | .3752 | .260 | TD3-375 | | | TD3-875 | | | | |
| 1/2 | .5002 | .325 | | TD5-437 | | | | | | |
| 5/8 | .6252 | .385 | | | TD6-500 | | TD6-1375 | TD6-1875 | TD6-2375 | |
| 3/4 | .7502 | .510 | TD7-375 | | TD7-500 | | TD7-1375 | TD7-1875 | TD7-2375 | TD7-2875 |
| 7/8 | .8752 | .635 | | | TD8-500 | | | | TD8-2375 | TD8-2875 |

Dowel Pins

Precision Ground .0002 Oversize



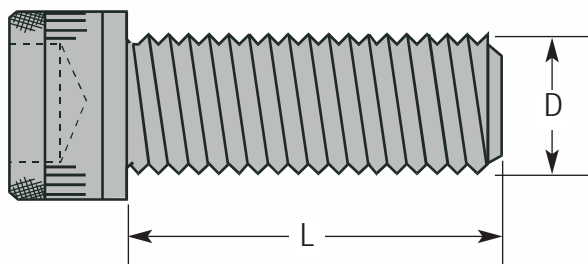
- Precision grain flow resists chipping
- Precision heat treated for greater strength and surface hardness
- Chamfered end provides easier insertion
- Surface finish to 6 micro inch maximum

| LENGTH | DIAMETER | | | | | | | | |
|--------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 1/8 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| 3/8 | DP9-375 | | | | | | | | |
| 1/2 | DP9-500 | DP13-500 | DP17-500 | | | | | | |
| 3/4 | DP9-750 | DP13-750 | DP17-750 | | DP25-750 | | | | |
| 1 | DP9-1000 | DP13-1000 | DP17-1000 | DP21-1000 | DP25-1000 | DP33-1000 | | | |
| 1-1/4 | | | DP17-1250 | DP21-1250 | DP25-1250 | DP33-1250 | | | |
| 1-1/2 | | DP13-1500 | DP17-1500 | DP21-1500 | DP25-1500 | DP33-1500 | DP37-1500 | | |
| 2 | DP9-2000 | DP13-2000 | DP17-2000 | DP21-2000 | DP25-2000 | DP33-2000 | DP37-2000 | DP41-2000 | DP47-2000 |
| 2-1/2 | | | DP17-2500 | | DP25-2500 | DP33-2500 | DP37-2500 | DP41-2500 | |
| 3 | | | | | DP25-3000 | DP33-3000 | DP37-3000 | DP41-3000 | DP47-3000 |
| 4 | | | | | | DP33-4000 | DP37-4000 | DP41-4000 | DP47-4000 |
| 5 | | | | | | | DP37-5000 | DP41-5000 | DP47-5000 |



Socket Head Cap Screws

- High grade alloy steel heat treated to 38 - 43 Rc
- Highest tensile strength 180,000 psi minimum
- Class 3A coarse threads



| LEGEND | |
|-------------|--|
| 100 per BOX | |
| 50 per BOX | |
| 25 per BOX | |
| 10 per BOX | |

| D = DIAMETER | | | | | | | | | | | | |
|----------------------------------|-------|-------|--------|------|-------|------|------|-------|-------|-------|----------------------------------|-------|
| Nominal Thread Size | no. 6 | no. 8 | no. 10 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | Nominal Thread Size | |
| Decimal Equivalent | .138 | .164 | .190 | .250 | .3125 | .375 | .500 | .625 | .750 | 1.000 | Decimal Equivalent | |
| Threads per inch National Course | 32 | 32 | 24 | 20 | 18 | 16 | 13 | 11 | 10 | 8 | Threads per inch National Course | |
| L LENGTH UNDER THE HEAD | 1/4 | • | • | | | | | | | | 1/4 | |
| | 3/8 | • | • | • | • | • | | | | | 3/8 | |
| | 1/2 | • | • | • | • | • | • | | | | 1/2 | |
| | 5/8 | • | • | • | • | • | • | • | | | 5/8 | |
| | 3/4 | • | • | • | • | • | • | • | • | | 3/4 | |
| | 7/8 | • | • | • | • | • | • | • | • | • | 7/8 | |
| | 1 | • | • | • | • | • | • | • | • | • | 1 | |
| | 1-1/4 | | • | • | • | • | • | • | • | • | | 1-1/4 |
| | 1-1/2 | | | • | • | • | • | • | • | • | | 1-1/2 |
| | 1-3/4 | | | • | • | • | • | • | • | • | | 1-3/4 |
| | 2 | | | • | • | • | • | • | • | • | • | 2 |
| | 2-1/4 | | | | • | • | • | • | • | • | | 2-1/4 |
| | 2-1/2 | | | | • | • | • | • | • | • | | 2-1/2 |
| | 2-3/4 | | | | • | • | • | • | • | • | | 2-3/4 |
| | 3 | | | | • | • | • | • | • | • | • | 3 |
| | 3-1/4 | | | | | • | • | • | • | • | | 3-1/4 |
| | 3-1/2 | | | | | • | • | • | • | • | | 3-1/2 |
| | 4 | | | | | | • | • | • | • | • | 4 |
| | 4-1/2 | | | | | | • | • | • | • | | 4-1/2 |
| | 5 | | | | | | • | • | • | • | • | 5 |
| 5-1/2 | | | | | | | • | • | • | • | 5-1/2 | |
| 6 | | | | | | | • | • | • | • | 6 | |
| 6-1/2 | | | | | | | | • | • | • | 6-1/2 | |
| 7 | | | | | | | | • | • | • | 7 | |
| 7-1/2 | | | | | | | | • | • | | 7-1/2 | |
| 8 | | | | | | | | • | • | • | 8 | |
| 9 | | | | | | | | • | | | 9 | |
| 10 | | | | | | | | • | • | • | 10 | |
| 12 | | | | | | | | • | • | • | 12 | |
| Maximum Head Diameter | .226 | .270 | 5/16 | 3/8 | 15/32 | 9/16 | 3/4 | 15/16 | 1-1/8 | 1-1/2 | Maximum Head Diameter | |
| Maximum Head Height | .138 | .164 | .190 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 | Maximum Head Height | |
| Size of Hex Key | 7/64 | 9/64 | 5/32 | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | Size of Hex Key | |

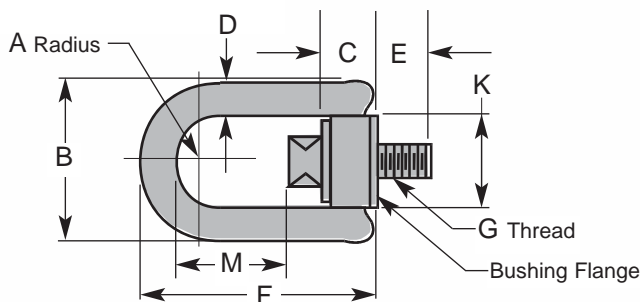
To get the shoulder length of a SHCS above, take the diameter of the screw, multiply the dia by 2 and add 1/2" up to 6" overall. For shoulder of length's above 6", do the same equation and add 1" instead of 1/2".

Safety Hoist Rings

Heavy Duty



- Range of movement Pivot 180° Swivel 360°
- Minimum safety factor = 5:1
- Meets military specification number MIL-STD 1365(11) or MIL-STD 209C
- 100% magnetic particle inspected
- Meets OSHA requirements



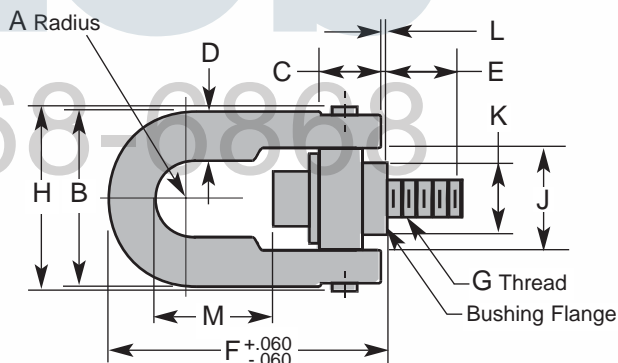
Patent Number 4,570,987 & 4,641,986

| CATALOG NUMBER | RATED LOAD | A | B | C | D | E | F | G | K | TL * ft/lb | M | WT lbs |
|----------------|------------|------|------|------|------|------|------|---------|------|---------------|------|-----------|
| 33212 | 800 | .65 | 2.29 | .96 | .44 | .56 | 3.23 | 5/16-18 | 1.25 | 7 | 1.51 | .52 |
| 33312 | 1,000 | .65 | 2.29 | .96 | .44 | .56 | 3.23 | 3/8-16 | 1.25 | 12 | 1.45 | .56 |
| 33515 | 2,500 | 1.00 | 3.50 | 1.50 | .75 | 1.00 | 5.31 | 1/2-13 | 1.89 | 28 | 2.56 | 1.72 |
| 33614 | 4,000 | 1.00 | 3.50 | 1.50 | .75 | 1.00 | 5.31 | 5/8-11 | 1.89 | 60 | 2.44 | 1.78 |
| 33714 | 5,000 | 1.00 | 3.50 | 1.50 | .75 | 1.00 | 5.31 | 3/4-10 | 1.89 | 100 | 2.31 | 1.89 |
| 33101 | 8,000 | 1.40 | 5.10 | 2.05 | 1.00 | 1.20 | 7.00 | 7/8-9 | 2.81 | 160 | 3.07 | 7.33 |
| 33105 | 10,000 | 1.40 | 5.10 | 2.05 | 1.00 | 1.45 | 7.00 | 1-8 | 2.81 | 230 | 2.95 | 7.57 |
| 33401 | 15,000 | 2.00 | 6.75 | 2.87 | 1.25 | 2.63 | 9.22 | 1 1/4-7 | 3.88 | 470 | 3.74 | 16.00 |
| 33420 | 20,000 | 2.00 | 6.75 | 2.87 | 1.25 | 2.63 | 9.22 | 1 3/8-6 | 3.88 | 670 | 3.62 | 17.20 |
| 33424 | 24,000 | 2.00 | 6.75 | 2.87 | 1.25 | 2.63 | 9.22 | 1 1/2-6 | 3.88 | 800 | 3.49 | 18.10 |

* Recommended Torque Load

Metric hoist rings available

Safety Engineered Hoist Rings



Patent # 3,297,293

| CATALOG NUMBER | RATED LOAD | A | B | C | D | E | F | G | H | J | K | L | M | TL * ft/lb | WT lbs |
|----------------|------------|------|-------|------|-------|------|-------|---------|-------|------|------|------|------|---------------|-------------|
| 23200 | 30,000 | 2.25 | 8.00 | 2.81 | 1-3/4 | 2.96 | 12.47 | 2-4 1/2 | 8.55 | 4.87 | 4.20 | .47 | 5.41 | 800 | 36 lbs |
| 23503 | 50,000 | 3.00 | 10.50 | 4.09 | 2-1/4 | 4.00 | 16.87 | 2 1/2-4 | 11.67 | 6.52 | 5.75 | 1.12 | 8.03 | 2100 | 87 lbs 8 oz |
| 23600 | 75,000 | 3.75 | 13.00 | 5.27 | 2-3/4 | 5.20 | 19.50 | 3-4 | 14.15 | 8.10 | 7.25 | 1.00 | 8.48 | 4300 | 166 lbs |
| 23701 | 100,000 | 4.00 | 14.50 | 6.06 | 3-1/4 | 7.00 | 22.09 | 3 1/2-4 | 15.90 | 8.60 | 7.25 | 1.09 | 9.28 | 6600 | 240 lbs |

* Recommended Torque Load

Metric hoist rings available

INSTALLATION and SAFETY INSTRUCTIONS

Tap workpiece with axis vertical to mounting surface. Work surface should be flat & smooth to provide full 360° flush seating for the bushing flange. SAFETY NOTE: Loosening may occur after prolonged service in a permanent installation. It is advisable to periodically re-tighten the mounting screw to maintain the specified torque value. The use of free fit spacers between the bushing flange & mounting surface is not recommended as this will reduce the safe load rating on angularly applied loads. Hoist ring must be free to swivel 360° & pivot 180° at all times.



Blow Guns & Accessories



Star Tip BlowGun Meets OSHA Requirements

| CATALOG NUMBER | NOZZLE LENGTH (IN) |
|----------------|--------------------|
| 11-208-8000 | 4 |

What's Important

- Safety "Star Tip" is Powerful and Quiet
- Unique valve design allows a fully variable flow
- Comfortable handling latest ergonomic design
- High tensile materials for tough handling
- Integrated silencer



Standard Blow Guns

| CATALOG NUMBER | NOZZLE LENGTH (IN) |
|----------------|--------------------|
| 11-208-0150 | 4 |
| 11-208-0380 | 13 |
| 11-208-0550 | 20 |



Super Stones

1-800-968-6868

What's Important

Super Stone, a flexible very fast cutting ceramic fiber polishing stone that works extremely well EDM surfaces (or other steel surfaces) when polishing small details and narrow slots where other stones would break.

| CATALOG NUMBER | DIMENSIONS | GRIT SIZE | COLOR CODE |
|----------------|------------------------|-----------|------------|
| 8-4-100-22 | 0.8 mm x 4 mm x 100 mm | 220 | BROWN |
| 8-4-100-4 | 0.8 mm x 4 mm x 100 mm | 400 | BLUE |
| 8-4-100-8 | 0.8 mm x 4 mm x 100 mm | 800 | WHITE |
| 1-4-100-4 | 1 mm x 4 mm x 100 mm | 400 | BLUE |
| 1-4-100-8 | 1 mm x 4 mm x 100 mm | 800 | WHITE |
| 1-4-100-10 | 1 mm x 4 mm x 100 mm | 1000 | RED |
| 1-6-100-22 | 1 mm x 6 mm x 100 mm | 220 | BROWN |
| 1-6-100-4 | 1 mm x 6 mm x 100 mm | 400 | BLUE |
| 1-6-100-8 | 1 mm x 6 mm x 100 mm | 800 | WHITE |
| 1-6-100-10 | 1 mm x 6 mm x 100 mm | 1000 | RED |
| 1-10-100-22 | 1 mm x 10 mm x 100 mm | 220 | BROWN |
| 1-10-100-4 | 1 mm x 10 mm x 100 mm | 400 | BLUE |
| 3R-50-22 | 3 mm dia. x 50 mm | 220 | BROWN |
| 3R-50-4 | 3 mm dia. x 50 mm | 400 | BLUE |
| 3R-50-8 | 3 mm dia. x 50 mm | 800 | WHITE |

Home of the Hardened Throughout the Pin

