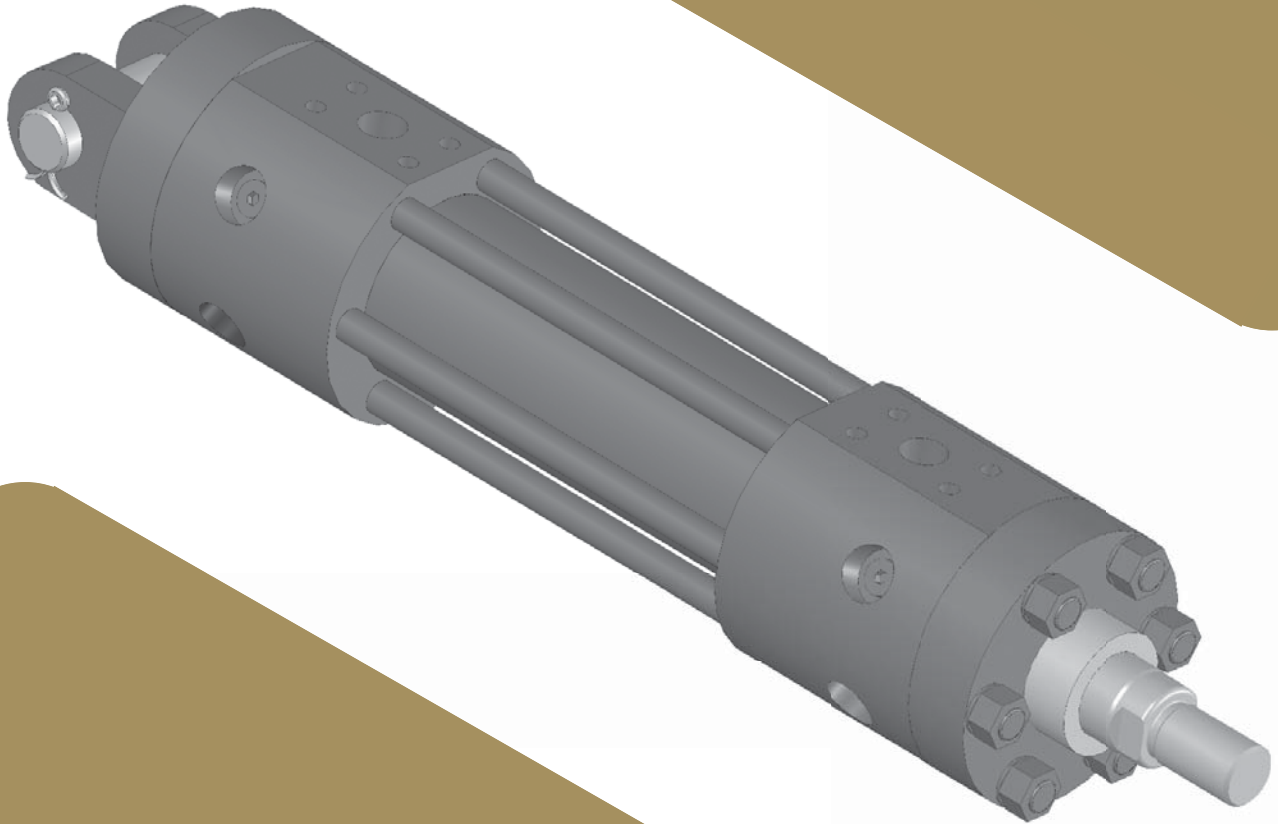




**CYLINDERS, INC**

**SERIES  
3500**

**3500 PSI**



**SUPER HEAVY DUTY  
HYDRAULIC CYLINDER**

**PURAKAL CYLINDERS, INC**

P.O. Box 22038

1017 S. Danebo Ave.

Eugene, OR 97402-0414

Phone (541) 345-4199

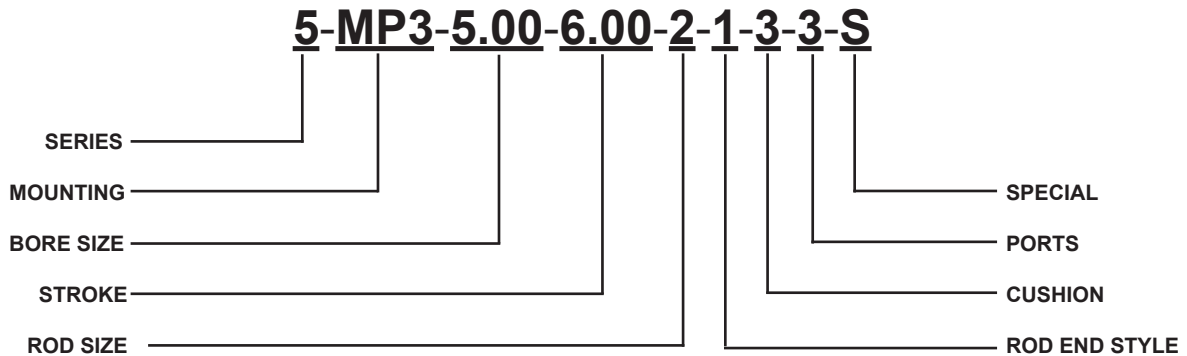
FAX (541) 345-6522

[www.purakal.com](http://www.purakal.com)

Catalog 350014

## ORDER INFORMATION

The example that follows illustrates the basic order code system. Use this code system for accurate and efficient processing of your cylinder order.



### SERIES

- 1 = 100 (Air and low pressure hydraulic)
- 2 = 2500 (Welded hydraulic)
- 3 = 3000 (Hydraulic)
- 4 = 3050 (Sensor positioning)
- 5 = 3500 (Extra heavy duty hydraulic)

### MOUNTING

- MX0 MPU3
- MX1 MT4
- MX2 MT1
- MX3 MT2
- MD MF5
- MP1 MF6
- MP3

### BORE SIZE (INCHES)

- 2.50 5.00
- 3.25 6.00
- 4.00

(Contact factory for other Bore Sizes)

### STROKE (INCHES)

XXX.XX

### ROD SIZE

- 1 = Standard #1 (smallest standard)
- 2 = Standard #2

### ROD END STYLE

- 1 = Standard male thread (KK)
- 2 = Oversized male thread (CC)
- 3 = Female thread (KK)
- 4 = Special thread size
- 5 = Safety coupler

### CUSHIONING

- 0 = Non cushioned
- 1 = Cushioned on rod end only
- 2 = Cushioned on blind end only
- 3 = Cushioned on both ends

### PORTS

- 1 = NPT
- 2 = SAE
- 3 = Standard 3000 PSI Four Bolt Flange Port
- 4 = Special

### SPECIAL

Specify any special features. A sketch may be submitted to facilitate your order.

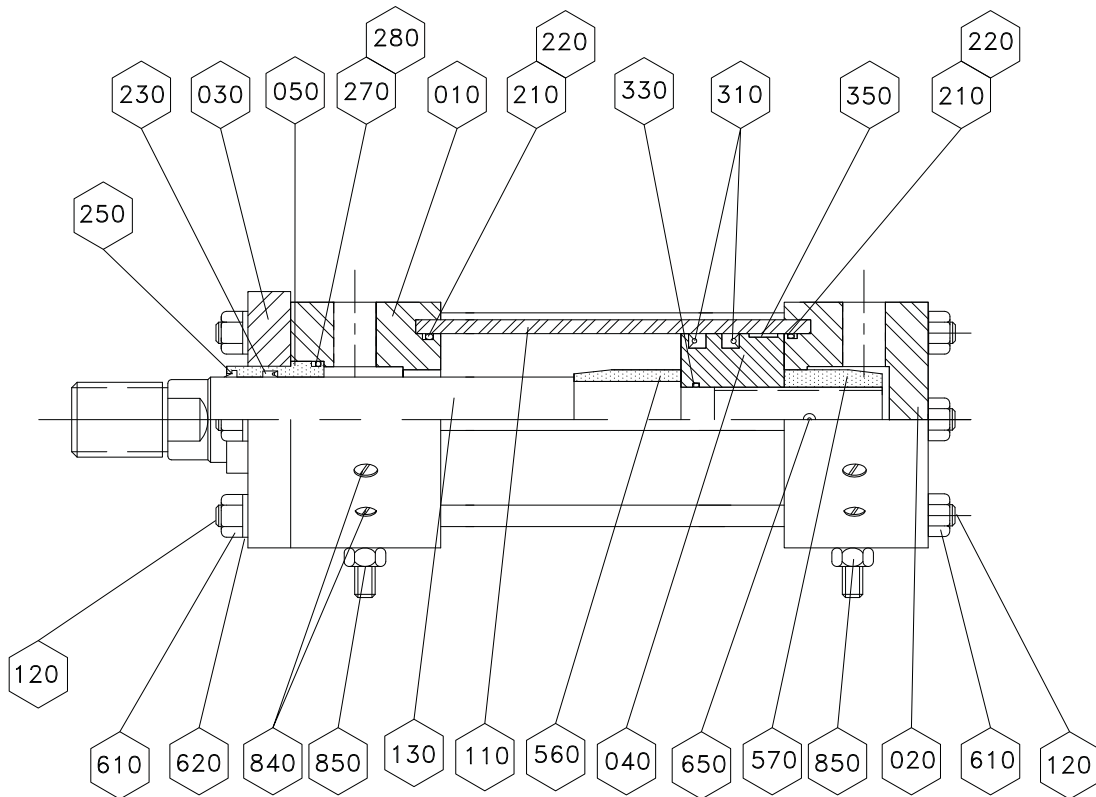
# PURAKAL SERIES 3500

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**WARRANTY:** Our products are warranted for one year to be free from defects in workmanship and material. We will replace or repair at our election, including lowest transportation costs, any product that our inspection shows to be defective. Any claim under this warranty must be made within ten days after Buyer's receipt of the product shipped or, in the event the defect is incapable of discovery until in use or in processing in the manufacture of other products, within ten days after buyer learns of the alleged defect giving rise to the claim. In any event, any such claim must be made within the one year period covered by this warranty. We assume no liability for consequential damages of any kind, or for damages arising from a claim of negligence. Our liability is limited to the replacement or repair of the defective part.

## PURAKAL SERIES 3500 PARTS LIST



**REPAIR KIT CONTENTS:**  
**ITEMS 050 210 220 230 250 270 280 310 330 350**

**SEAL KIT CONTENTS:**  
**ITEMS 210 220 230 250 270 280 310 330 350**

To insure the proper components and to speed your order please specify:

1. Serial number of cylinder.
2. Part number or drawing number of cylinder (if applicable).
3. Model (series and mounting style).
4. Bore of cylinder.
5. Stroke of cylinder.
6. Piston rod diameter.
7. Operating medium.

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>010 Rod Head</li> <li>020 Blind Head</li> <li>030 Retainer Plate</li> <li>040 Piston</li> <li>050 Rod Bearing</li> <li>110 Barrel</li> <li>120 Tie Rod</li> <li>130 Piston Rod</li> </ul>                                       | <ul style="list-style-type: none"> <li>310 Piston O.D. Seal</li> <li>330 Piston I.D Seal</li> <li>350 Piston Wear Ring</li> <li>560 Rod End Cushion Sleeve</li> <li>570 Blind End Cushion Sleeve</li> <li>610 Tie Rod Nut</li> <li>620 Hardened Washer</li> <li>650 Piston Lock</li> <li>840 Self Regulating Cushion Assembly</li> <li>850 Cushion Adjusting Valve Assembly With Jam Nut</li> </ul> |
| <ul style="list-style-type: none"> <li>210 Barrel Seal ('O' Ring)</li> <li>220 Barrel Seal Back-up (Back-up Ring)</li> <li>230 Rod Seal (Deep Cup)</li> <li>250 Rod Wiper</li> <li>270 Bearing O.D. Seal ('O' Ring)</li> <li>280 Bearing O.D. Seal (Backup)</li> </ul> | <ul style="list-style-type: none"> <li>860 Seal Kit</li> <li>870 Repair Kit</li> <li>862 Rod Bearing With Seals</li> <li>864 Rod Seal Kit</li> <li>866 Piston Seal Kit</li> </ul>   |

## **PURAKAL SERIES 3500**

### **DESCRIPTION AND FEATURES**

<b>PISTON ROD:</b>	Standard supplied piston rods are induction hardened chrome plated for extended life. Special material or strength requirements can be obtained upon request.
<b>PISTON:</b>	The one piece design with wear rings give longer piston life. For strength, the piston is threaded and is mechanically locked to the piston rod through the the blind end cushion sleeve.
<b>BARREL:</b>	The steel barrel is precision honed and chrome plated for longer life.
<b>CUSHIONS:</b>	All cylinders are supplied with extra long stepped aluminum-bronze cushions both ends. Finite adjustment is obtained with a Cushion Adjust Valve with Jam Nut.
<b>BALL CHECK ASSEMBLY:</b>	Multiple self regulating cushion assemblies are supplied as standard items.
<b>ROD BEARING:</b>	Extra long bronze bearing assures extended life.
<b>ROD WIPER:</b>	Standard wipers are urethane. Brass wipers are available at extra cost.
<b>SEALS:</b>	Polyurethane deep cups are used for the Piston OD and Rod seals. O'rings and backups are used for the static seals.
<b>MOUNTINGS:</b>	Standard mountings are shown in the catalog. Contact the factory with your <b>SPECIAL REQUIREMENTS</b> .
<b>PORTS:</b>	Cylinders supplied with 3,000 PSI four bolt flange ports. NPT or SAE ports of appropriate size is an option.
<b>LUBRICATION:</b>	Series 3500 cylinders are designed for operation with mineral or petroleum based oils. Specify any special fluids or lubricants if required.
<b>TEMPERATURES:</b>	Series 3500 cylinders operate continuously at -10 degrees F to 165 degrees F. For special temperature or medium, contact our engineering department.
<b>TOLERANCES:</b>	All dimensions are in inches with tolerances of $\pm 1/32"$ . There will be an additional cost for closer tolerances

## PURAKAL SERIES 3500 CYLINDER INSTALLATION

**WARNING:** Hydraulic systems may contain large levels of stored energy. Do not attempt to connect, disconnect, test, or repair a hydraulic device unless properly trained. Always exhaust the pressure from a system before performing any service work. Make certain all ports are properly connected or vented before pressurizing a cylinder. Disregarding this warning could result in serious, possibly fatal, injury.

### General Recommendations

Before plumbing the cylinder, all lines in the system should be flushed to remove any contamination. The shipping plugs on the cylinder should not be removed until immediately before the lines are connected. Clean fluid is essential for long life and satisfactory operation of not only cylinders but pumps and valves as well. Keep oil tanks covered and provide proper filtration.

The most important consideration in mounting your cylinder is proper alignment that does not induce excessive side loads. Side loads or off-center thrust will result in accelerated wear of the rod bearing and seals and can cause chatter and binding. Forcing the mounting bolts or clevis pins into position indicates improper alignment.

The piston should not be allowed to bottom out against the cylinder head at the end of stroke. Either provide external stops or use a cushioned cylinder which will stop the piston just before it reaches the end of its stroke. (Cushions are not a substitute for speed controls or deceleration valves. Standard cushions will not handle large inertial loads.)

### Flange Mounts (MF-5, MF-6)

The rod bearing can be used for precise alignment of the cylinder. After centering, the flange should be pinned to the mounting surface to prevent shifting under load.

### Trunnion Mounts (MT-1, MT-2, MT-4)

Trunnion mounted cylinders swivel in one direction only with trunnion pins designed to carry shear loads only. The pins must fit the pillow block bearings closely and pillow blocks must be rigid and accurately aligned.

### Clevis/Pivot Mounts (MP-1, MP-3, MPU-3)

The pin and/or clevis centerlines of the cylinder and the attached linkage must all be held parallel to each other. Use an MPU-3 universal clevis mount if this alignment cannot be guaranteed. An MPU-3 automatically compensates for 5 to 10 degrees of misalignment in any direction.

### Cushion Adjustment

A noncushioned cylinder requires no further adjustment after it has been installed and properly aligned. A cushioned cylinder, after installation and alignment, must be adjusted to obtain the degree of cushioning required. An adjustment is provided by a screw-type needle valve in either or both ends of the cylinder. This valve controls the rate at which trapped fluid is allowed to meter from the end of the cylinder when the piston is near the end of its stroke. Turn the needle valve clockwise to increase the amount of cushioning and counter-clockwise to decrease cushioning. The recommended starting point is with the adjuster backed off 1/4 turn from the fully closed position. The normal operating range is from zero to 1/2 turn. Under no circumstances should the valve be adjusted more than 1 1/2 turns from the fully closed position. To obtain the most effective cushioning, final adjustments must be made while the cylinder is operating under normal conditions at normal operating pressure.

# PURAKAL SERIES 3500 CYLINDER MAINTENANCE

## General Recommendations

Cylinders should be visually inspected at frequent intervals for damage, wear and leakage, and if problems are observed the cylinder must be removed for repair. Fluid leakage due to seal wear is the most common problem, however seal life depends on many factors and is difficult to predict. As a guideline, two years or one million cycles of operation should be considered the maximum interval between overhauls.

## Disassembly and Repair

Obtain the appropriate Purakal seal kit before beginning the job. Refer to page 2 for ordering information.

Always exhaust the pressure from a system before performing any service work. Disconnect the lines from both ports of the cylinder. Disassemble the cylinder using the assembly view on page 2 as a guide. The rod assembly normally does not require disassembly. No special tools are required.

Clean the metal parts with an appropriate solvent and blow dry with low pressure air. Examine each part carefully for signs of wear or damage. Look for score marks on the rod, piston, rod bearing, and barrel and replace any component with a sharp edge that would damage seals. Minor scratches or superficial roughness may be smoothed with 400 grit emory cloth and/or "ScotchBright" pads. Take care not to rub through the chrome plating on the piston rod. Particular attention should be given to the rod bearing since cylinder leakage can result from a worn bearing. A scored or rough rod bearing must be replaced before it damages the piston rod and, subsequently, the rod seal.

## Reassembly

1. Use new seals, freely lubricated with system hydraulic fluid. Install in the grooves, using extreme caution to avoid damaging a seal. Even a tiny nick can cause leakage.
2. Install the barrel on the base end head, taking care not to damage the barrel seal.
3. Lubricate the piston and cylinder bore with system hydraulic fluid. Carefully insert the piston in the cylinder barrel, then install the rod end head.

4. Install the rod bearing and retainer plate. Use caution not to nick the rod seal as you slide the bearing over the rod end thread.

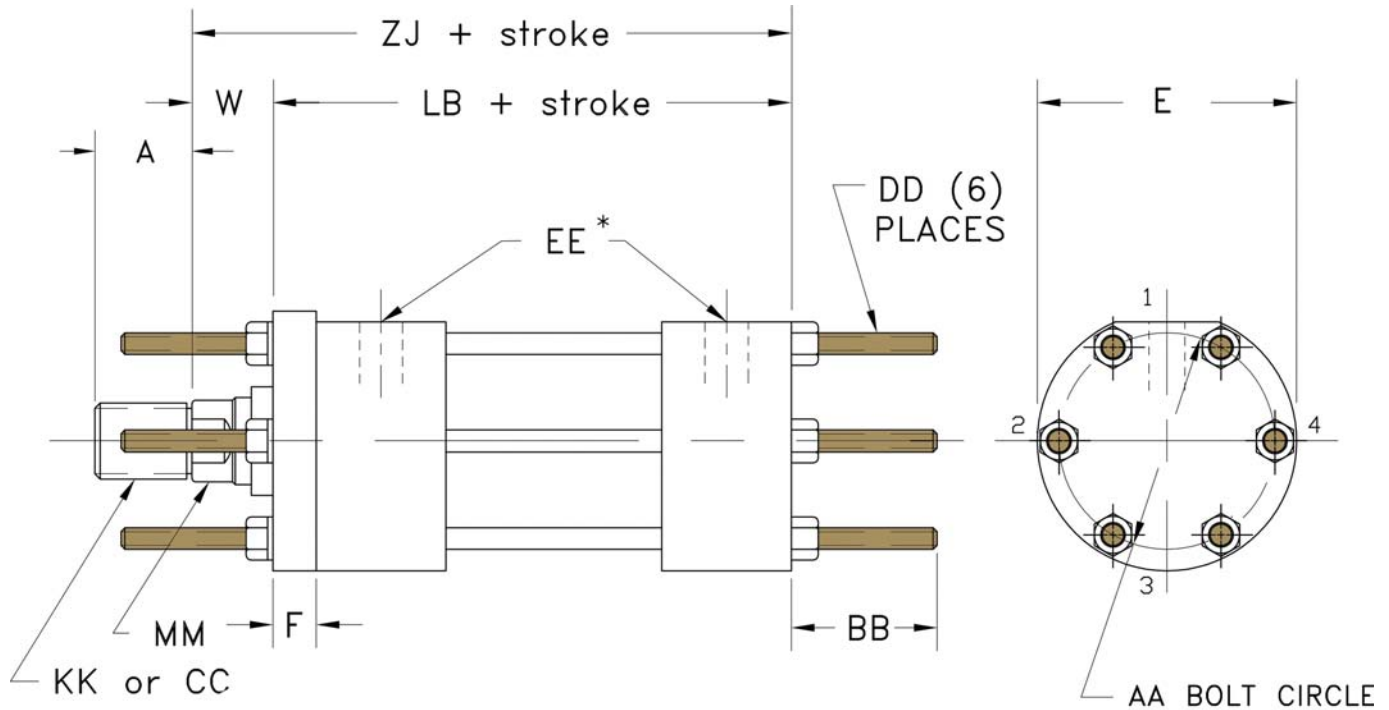
5. Install the tie rods and torque to the appropriate value in the table on page 25. Tie rod nuts should be lubricated in order to produce the expected preload at the specified torque. Tighten the nuts in a crossing pattern, using locking pliers to prevent the tie rods from twisting.

## Test Procedure

The refurbished cylinder should be tested for leakage and cycled to check for smooth operation and to assure proper operation of cushions, if applicable.

1. For cushioned cylinders, turn the adjusting screw(s) clockwise until seated, then back off 1/4 turn.
2. Remove the line from the rod end port and cap the open line from the valve. Apply supply pressure to the blind head port. The rod should extend smoothly without chatter or binding. For cushioned cylinders, there should be a noticeable deceleration at the end of stroke. To obtain the most effective cushioning, final adjustments must be made while the cylinder is operating under normal conditions at normal operating pressure.
3. Leave the rod stalled in the extended position while maintaining pressure on the base end. Make certain no fluid is leaking by the piston (as evidenced by fluid escaping the open rod port).
4. Measure the extended length to verify that the cylinder has reached full stroke + .03".
5. Reconnect the supply line to the rod end port and connect the base end port to the tank. Apply supply pressure to the rod end port. The rod should retract smoothly, and for cushioned cylinders there should be noticeable deceleration near the end of stroke.
6. Maintain pressure long enough to verify no leakage at the rod seal or piston seal.

**PURAKAL SERIES 3500  
MX TIE ROD MOUNTINGS**



\* SEE PORT CHART FOR DETAILS

- MX-0 TIE RODS NOT EXTENDED
- MX-1 TIE RODS EXTENDED BOTH ENDS
- MX-2 TIE RODS EXTENDED BLIND END
- MX-3 TIE RODS EXTENDED ROD END

**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

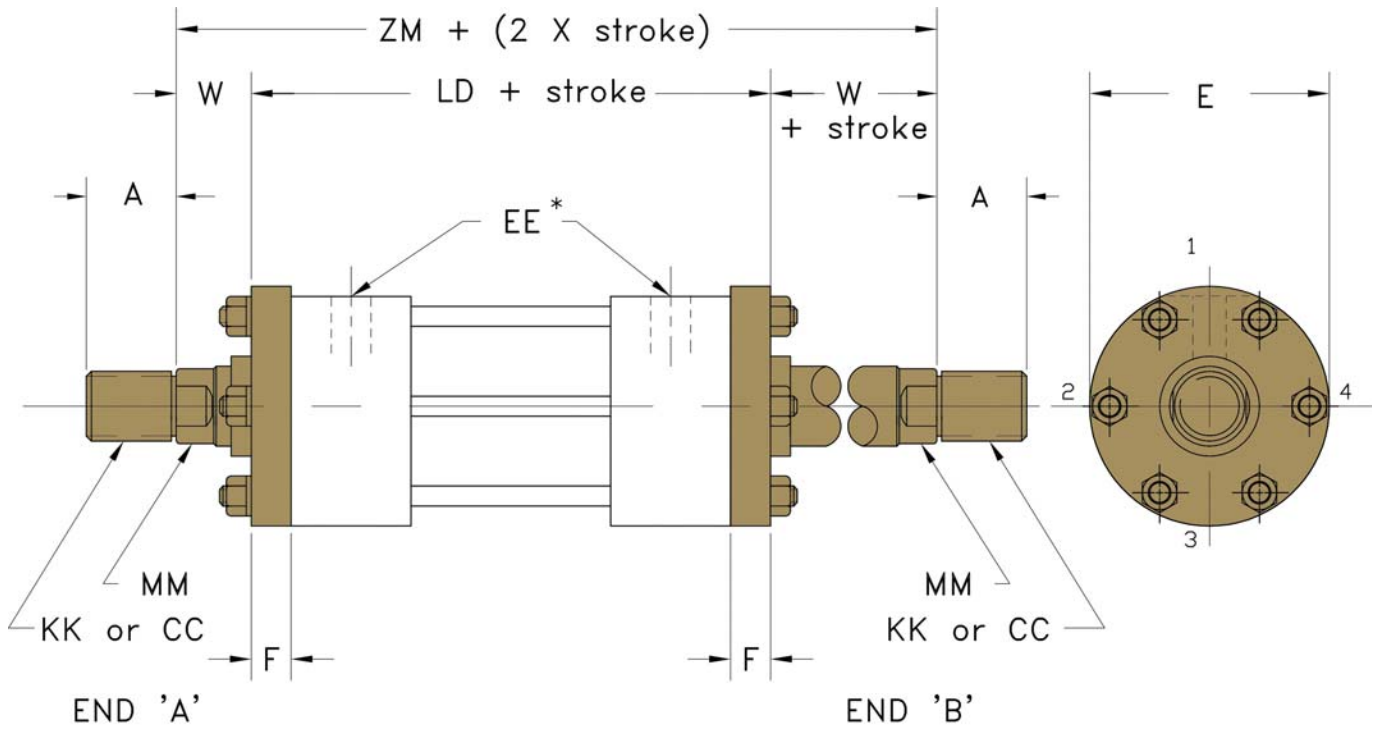
BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	3 1/2
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
ZJ	13 1/2		13 1/2		13 1/2		14 5/8		14 5/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
AA	3.62	4.50	5.25	6.90	8.00
BB	2	2 1/2	2 1/2	3 1/2	3 3/4
DD	1/2"-20	5/8"-18	5/8"-18	7/8"-14	1"-14
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8



**PURAKAL SERIES 3500**  
**MD DOUBLE ROD END MOUNTING**



\* SEE PORT CHART FOR DETAILS

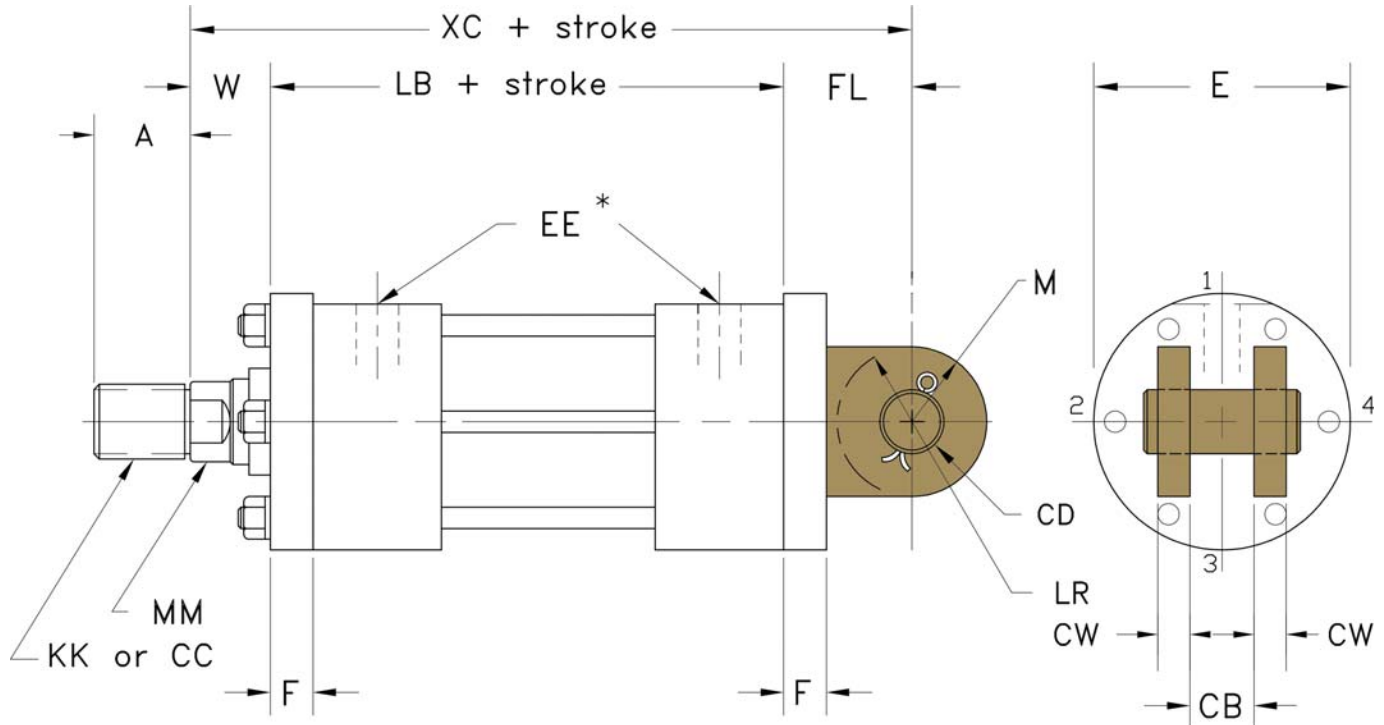
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
ZM	16 5/8		16 5/8		16 5/8		18 3/8		18 3/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LD	12 5/8	12 5/8	12 5/8	13 3/8	13 3/8

**PURAKAL SERIES 3500  
MP-1 CLEVIS MOUNTING**



\* SEE PORT CHART FOR DETAILS

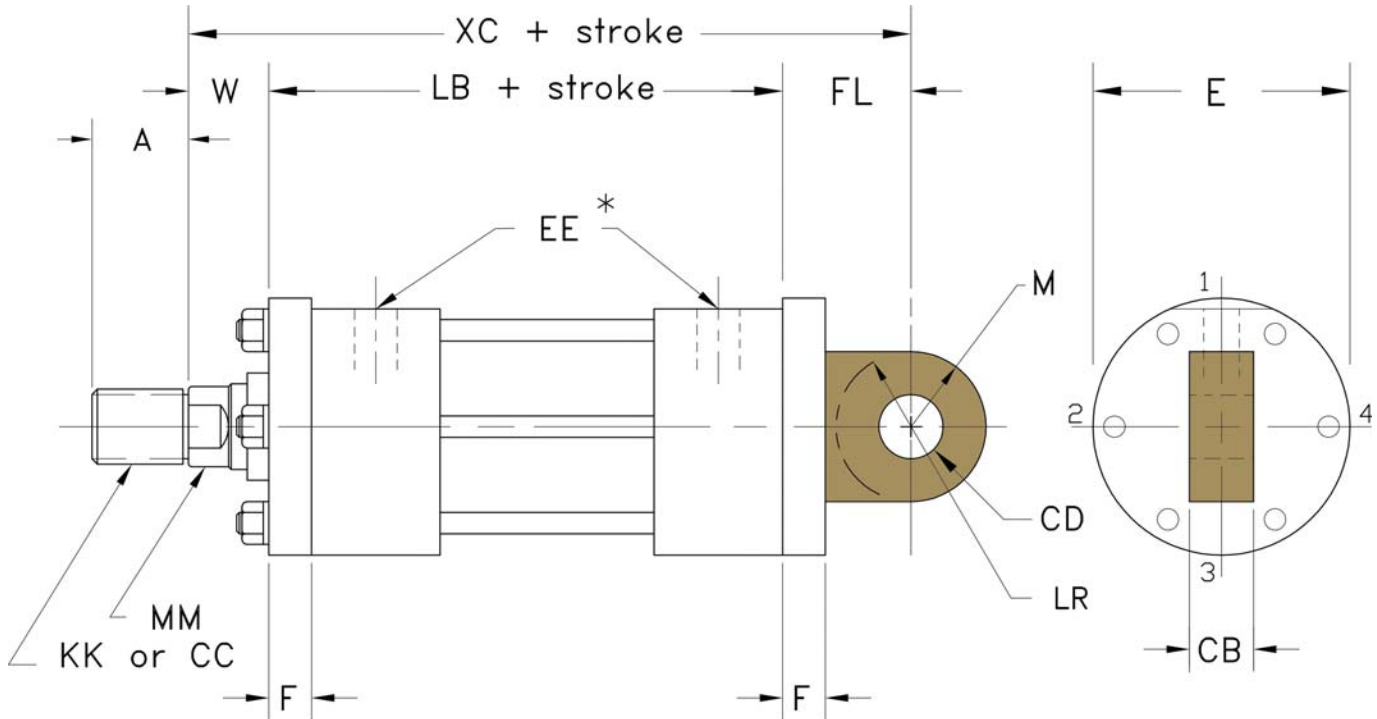
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XC	16 1/8		16 3/4		16 7/8		18 3/8		18 7/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
CB	1 1/2	2	2 1/2	2 1/2	3
CD	1	1 3/8	1 3/4	2	2 1/2
CW	3/4	1	1 1/4	1 1/4	1 1/2
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
FL	2 5/8	3 1/4	3 3/8	3 3/4	4 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
LR	1 3/16	1 3/4	1 13/16	2 1/16	2 9/16
M	1	1 3/8	1 3/4	2	2 1/2

**PURAKAL SERIES 3500  
MP-3 EYE MOUNTING**



\* SEE PORT CHART FOR DETAILS

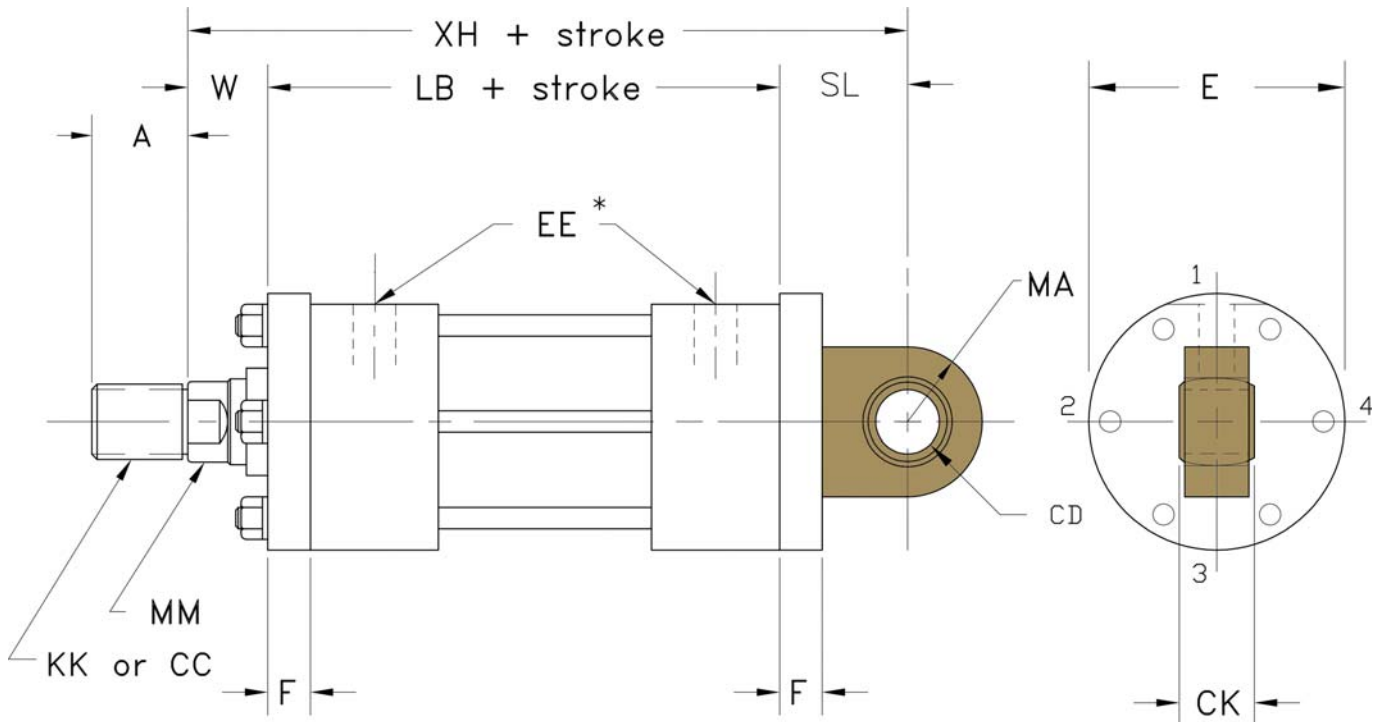
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XC	16 1/8		16 3/4		16 7/8		18 3/8		18 7/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
CB	1 1/2	2	2 1/2	2 1/2	3
CD	1	1 3/8	1 3/4	2	2 1/2
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
FL	2 5/8	3 1/4	3 3/8	3 3/4	4 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
LR	1 3/16	1 3/4	1 13/16	2 1/16	2 9/16
M	1	1 3/8	1 3/4	2	2 1/2

**PURAKAL SERIES 3500  
MPU-3 SPHERICAL EYE MOUNTING**



\* SEE PORT CHART FOR DETAILS

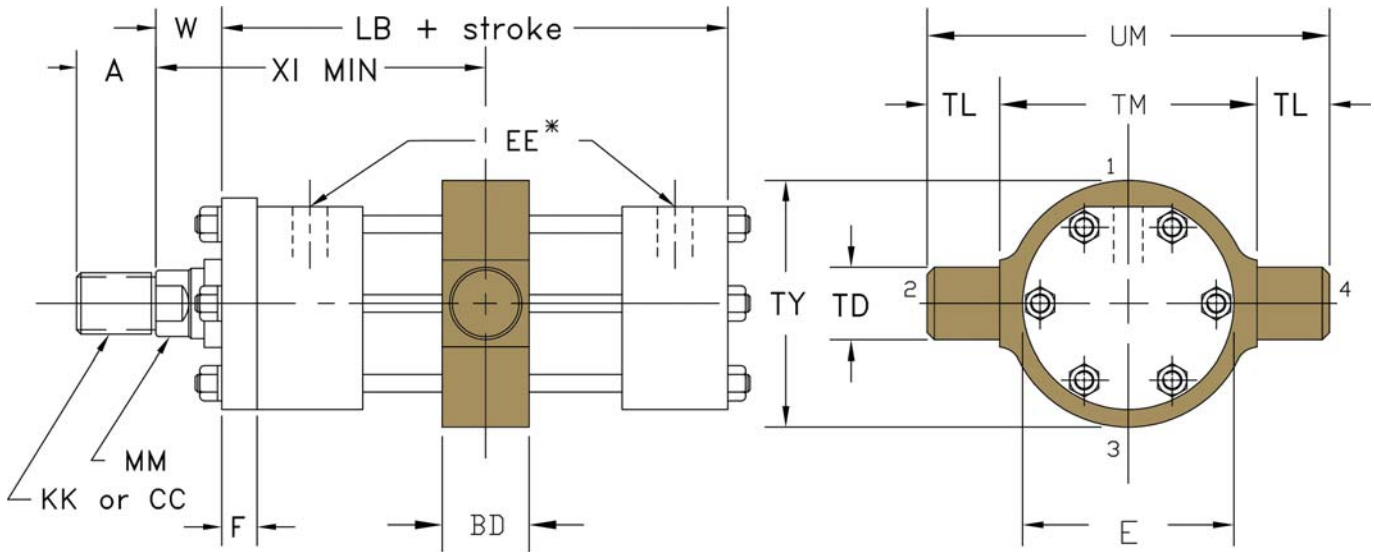
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XH	16 3/16		16 9/16		17 1/16		18 9/16		19 3/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
CD	1	1 3/8	1 3/4	2	2 1/2
CK	7/8	1 3/16	1 17/32	1 3/4	2 3/16
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
MA	1 1/2	1 3/4	2 1/4	2 3/4	3 1/2
SL	2 11/16	3 1/16	3 9/16	3 15/16	4 3/4

## PURAKAL SERIES 3500 MT-4 MID TRUNNION MOUNTING



\* SEE PORT CHART FOR DETAILS

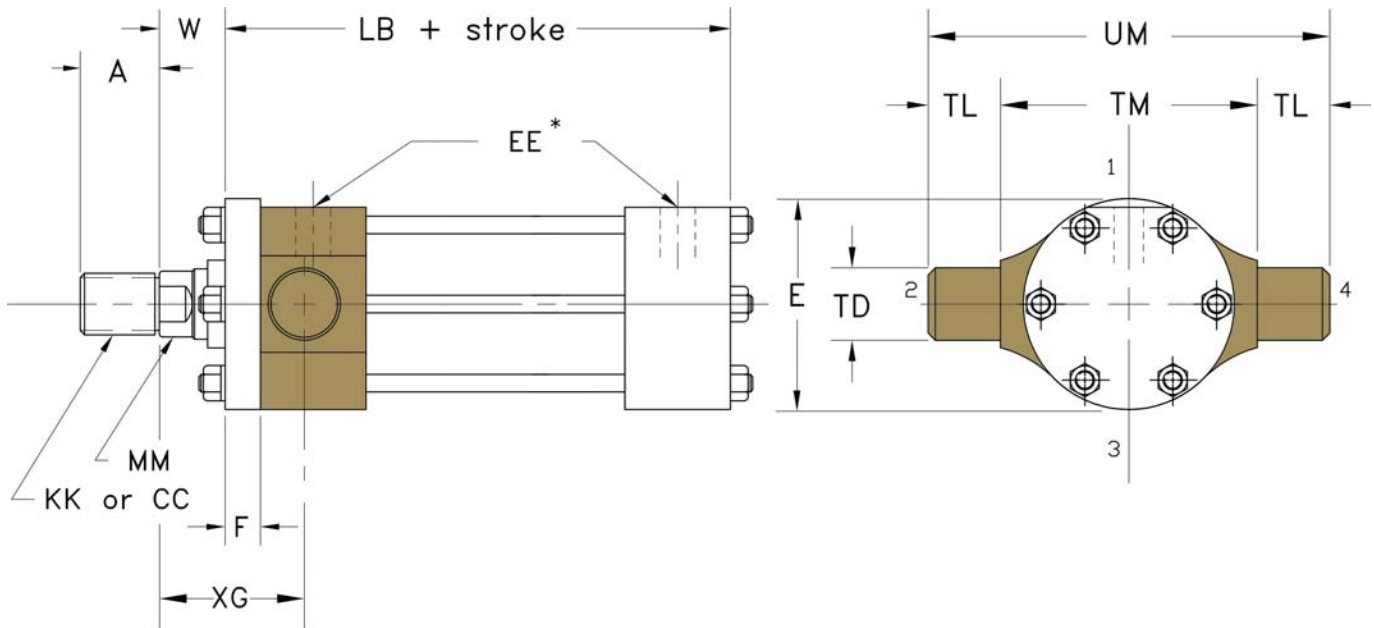
### ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XI-Min	8 3/8		8 7/8		8 7/8		9 1/2		9 3/4	

### ENVELOPE AND MOUNTING DIMENSIONS

BORE	2 1/2	3 1/4	4	5	6
BD	2	3	3	3	3 1/2
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
TD	1 3/4	2	2 1/2	2 1/2	3
TL	1 3/4	2	2 1/2	2 1/2	3
TM	5	6 1/4	7	9	10
TY	4 3/4	6	6 3/4	8 3/4	9 3/4
UM	8 1/2	10 1/4	12	14	16

**PURAKAL SERIES 3500**  
**MT-1 FRONT TRUNNION MOUNTING**



\* SEE PORT CHART FOR DETAILS

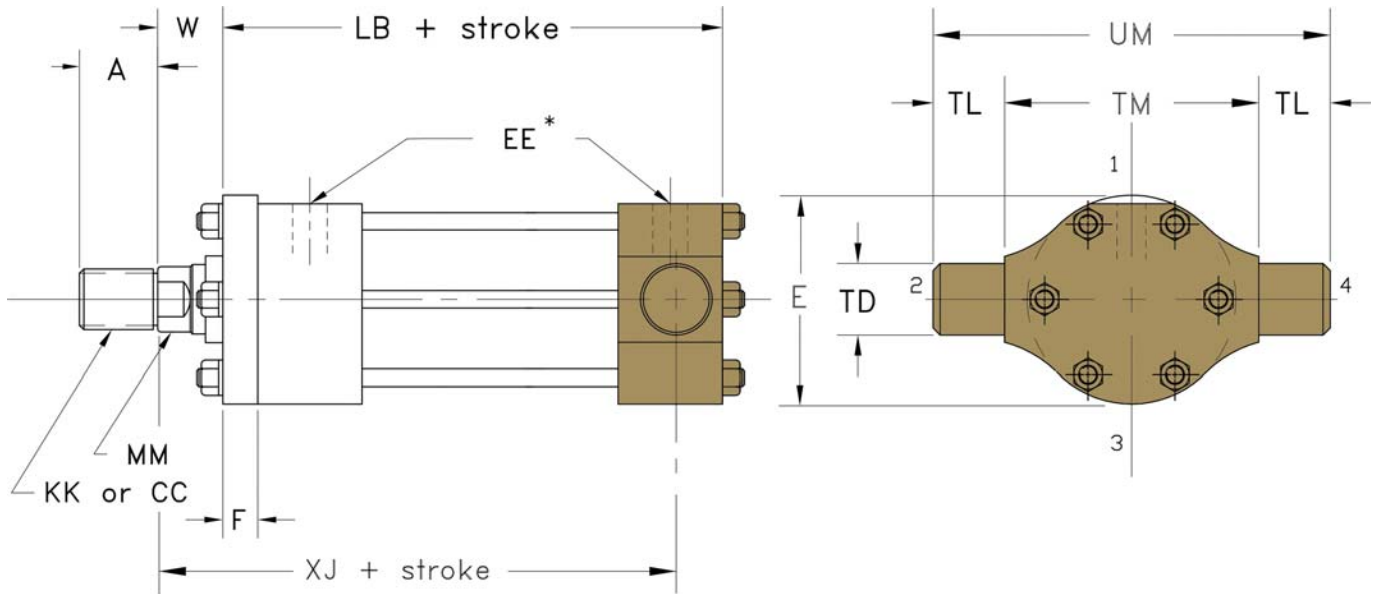
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XG	5		5		5		5 5/8		5 5/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
TD	1 3/4	2	2 1/2	2 1/2	3
TL	1 3/4	2	2 1/2	2 1/2	3
TM	5	6 1/4	7	9	10
UM	8 1/2	10 1/4	12	14	16

**PURAKAL SERIES 3500  
MT-2 REAR TRUNNION MOUNTING**



\* SEE PORT CHART FOR DETAILS

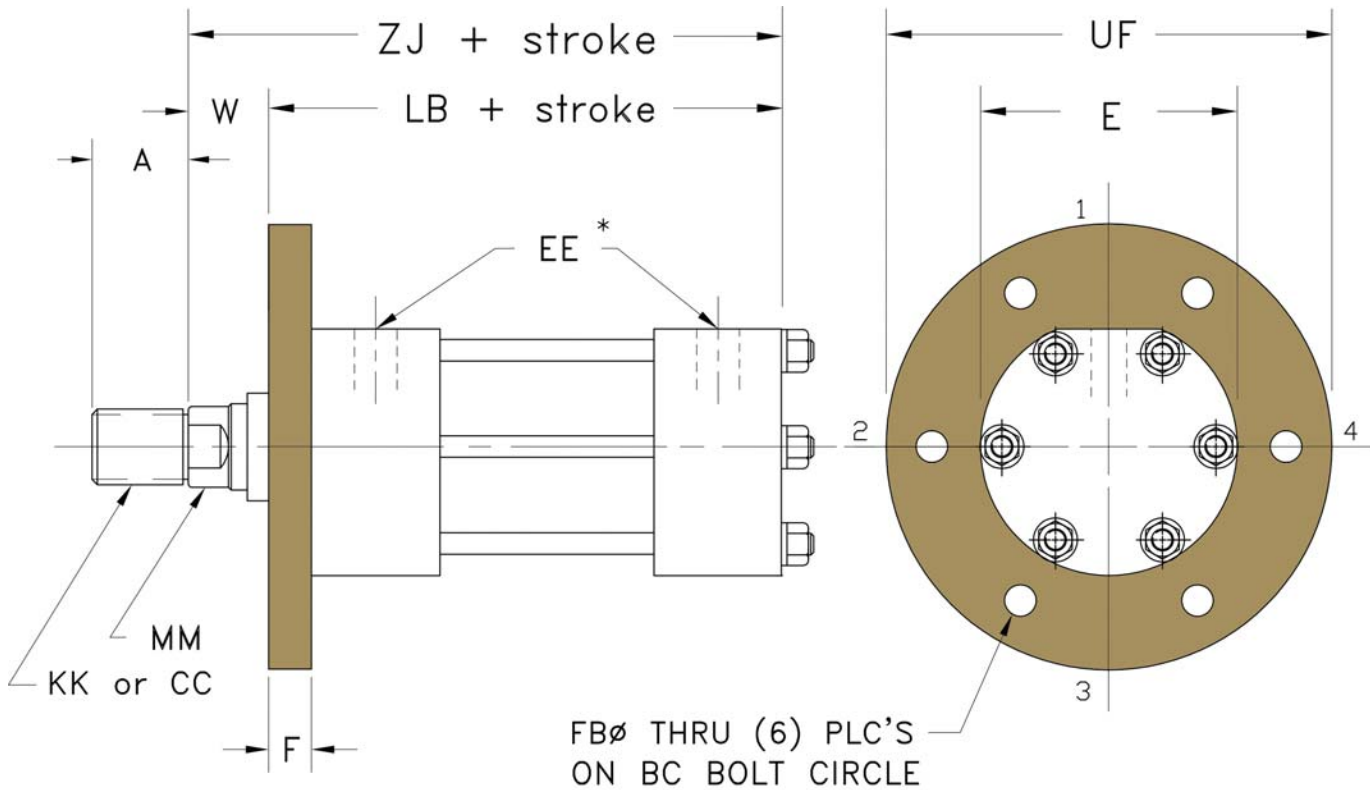
**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
XJ	11 5/8		11 5/8		11 5/8		12 3/4		12 3/4	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
TD	1 3/4	2	2 1/2	2 1/2	3
TL	1 3/4	2	2 1/2	2 1/2	3
TM	5	6 1/4	7	9	10
UM	8 1/2	10 1/4	12	14	16

**PURAKAL SERIES 3500  
MF-5 FRONT FLANGE MOUNTING**



\* SEE PORT CHART FOR DETAILS

**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

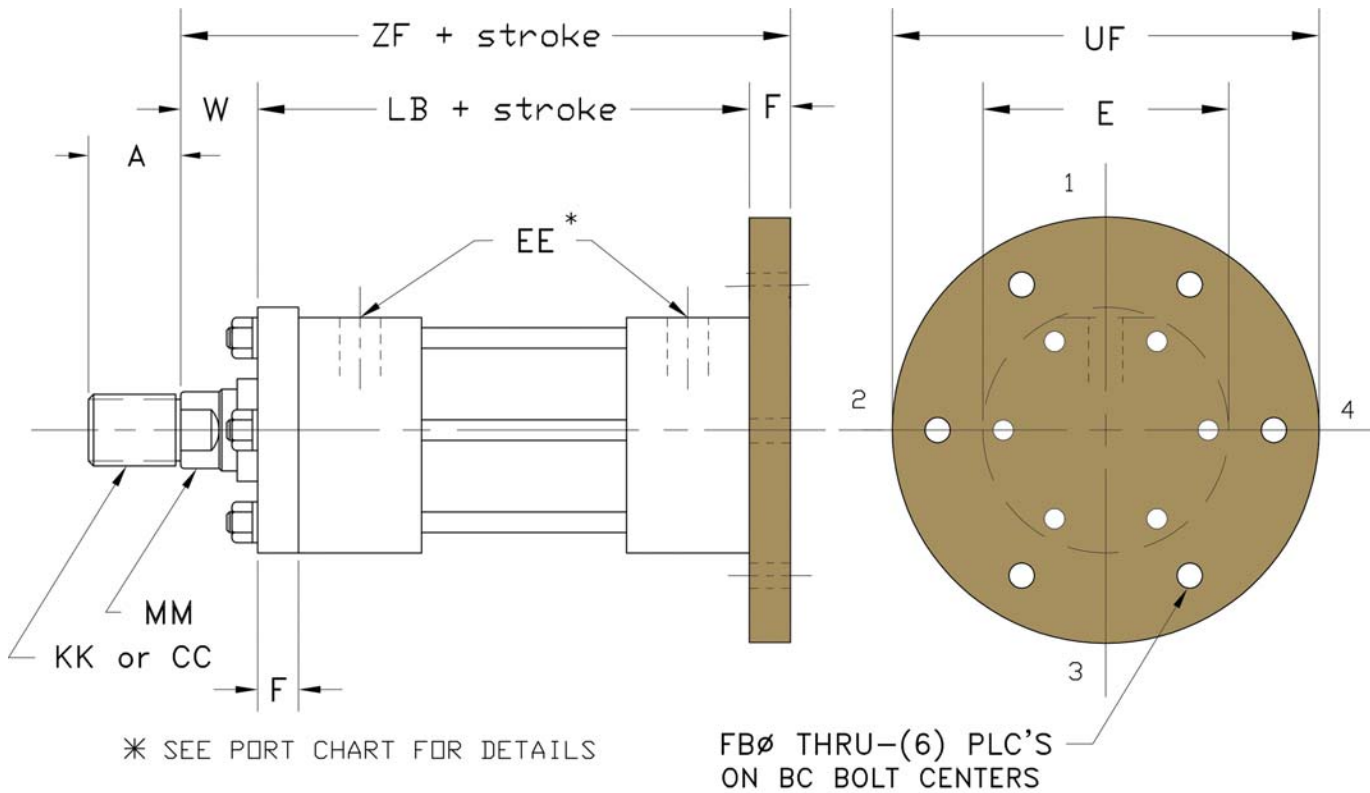
BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
ZJ	13 1/2		13 1/2		13 1/2		14 5/8		14 5/8	

**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
BC	5 1/2	6 7/8	7 5/8	10	11 3/8
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
FB	9/16	11/16	11/16	15/16	1 1/16
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
UF	6 1/2	8	8 3/4	11 1/2	13 1/4



**PURAKAL SERIES 3500  
MF-6 REAR FLANGE MOUNTING**



**ENVELOPE AND MOUNTING DIMENSIONS AFFECTED BY ROD SIZE**

BORE	2 1/2		3 1/4		4		5		6	
MM	1 3/8	1 3/4	1 3/4	2	2	2 1/2	2 1/2	3	3	3 1/2
A	1 5/8	2	2	2 1/4	2 1/4	3	3	3 1/2	3 1/2	
W	2		2		2		2 1/2		2 1/2	
KK	1-14	1 1/4-12	1 1/4-12	1 1/2-12	1 1/2-12	1 7/8-12	1 7/8-12	2 1/4-12	2 1/4-12	2 1/2-12
CC	1 1/4-12	1 1/2-12	1 1/2-12	1 3/4-12	1 3/4-12	2 1/4-12	2 1/4-12	2 3/4-12	2 3/4-12	3 1/4-12
ZF	14 5/8		14 5/8		14 5/8		15 7/8		15 7/8	

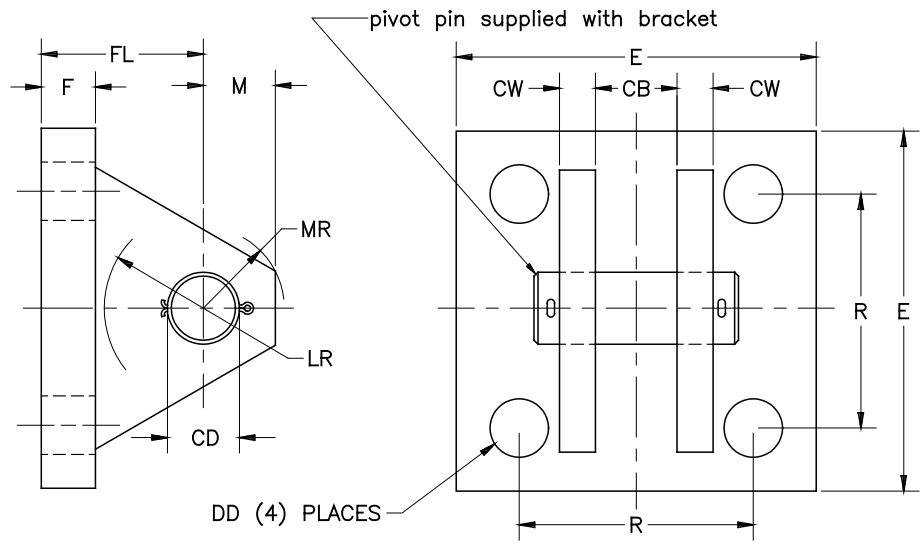
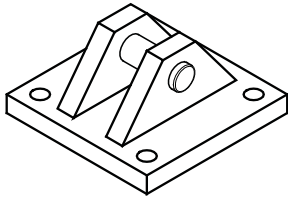
**ENVELOPE AND MOUNTING DIMENSIONS**

BORE	2 1/2	3 1/4	4	5	6
BC	5 1/2	6 7/8	7 5/8	10	11 3/8
E	4 1/2	5 3/4	6 1/2	8 1/2	9 1/2
EE*	3/4	1	1	1 1/2	1 1/2
F	1 1/8	1 1/8	1 1/8	1 1/4	1 1/4
FB	9/16	11/16	11/16	15/16	1 1/16
LB	11 1/2	11 1/2	11 1/2	12 1/8	12 1/8
UF	6 1/2	8	8 3/4	11 1/2	13 1/4

PCB  
PME  
PSE

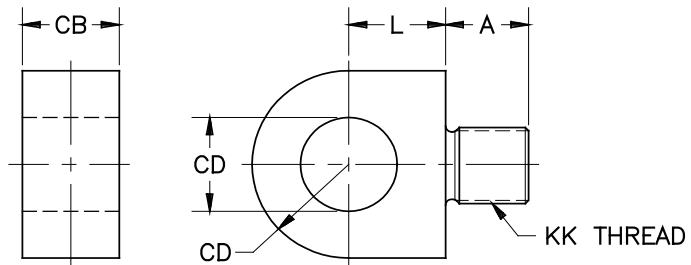
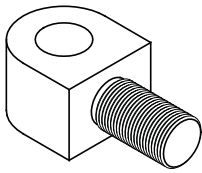
## PURAKAL SERIES 3500 MOUNTING ACCESSORIES

CLEVIS BRACKET



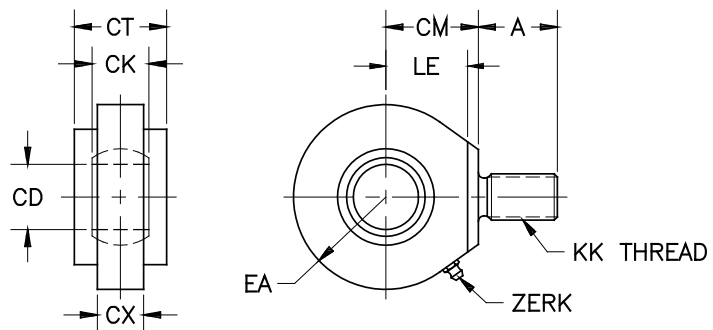
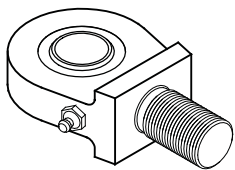
PCB

MALE ROD EYE



PME

SELF ALIGNING ROD EYE



PSE

**PURAKAL SERIES 3500  
MOUNTING ACCESSORIES**

PCB  
PME  
PSE

**CLEVIS BRACKET**

	PART NUMBER											
	PCB -05	PCB -07	PCB -10	PCB -13	PCB -17	PCB -20	PCB -25	PCB -30	PCB -30-35	PCB -35	PCB -40	PCB -40-45
<b>CB</b>	3/4	1 1/4	1 1/2	2	2 1/2	2 1/2	3	3	3 1/2	4	4 1/2	5
<b>CD</b>	1/2	3/4	1	1 3/8	1 3/4	2	2 1/2	3	3	3 1/2	4	4
<b>CW</b>	1/2	5/8	3/4	1	1 1/4	1 1/2	1 1/2	1 1/2	1 1/2	2	2	2
<b>DD</b>	13/32	17/32	21/32	21/32	29/32	1 1/16	1 3/16	1 5/16	1 5/16	1 13/16	2 1/16	2 1/16
<b>E</b>	3 1/2	5	6 1/2	7 1/2	9 1/2	12 3/4	12 3/4	12 3/4	12 3/4	15 1/2	17 1/2	17 1/2
<b>F</b>	1/2	5/8	3/4	7/8	7/8	1	1	1	1	1 11/16	1 15/16	1 15/16
<b>FL</b>	1 1/2	1 7/8	2 1/4	3	3 5/8	4 1/4	4 1/2	6	6	6 11/16	7 11/16	7 11/16
<b>LR</b>	3/4	1 3/16	1.5	2	2 3/4	3 3/16	3 1/2	4 1/4	4 1/4	5	5 3/4	5 3/4
<b>M</b>	1/2	3/4	1	1 3/8	1 3/4	2	2 1/2	3	3	3 1/2	4	4
<b>MR</b>	5/8	1 1/16	1 1/4	1 3/4	2 7/32	2 3/4	3 1/8	3 5/8	3 5/8	4 1/8	4 7/8	4 7/8
<b>R</b>	2.55	3.82	4.95	5.73	7.50	9.40	9.40	9.40	9.40	12.00	13.75	13.75

**MALE ROD EYE**

	PART NUMBER															
	PME -05	PME -05-05	PME -07	PME -10-08	PME -10	PME -13	PME -17	PME -20	PME -20-18	PME -25	PME -30	PME -30-27	PME -35	PME -35-35	PME -40	PME -40-45
<b>A</b>	3/4	3/4	1 1/8	1 1/8	1 5/8	2	2 1/4	2 1/4	3	3 1/2	3 1/2	3 1/2	4	5	5 1/2	5 1/2
<b>CB</b>	3/4	3/4	1 1/4	1 1/2	1 1/2	2	2.5	2 1/2	2.5	3	3	3 1/2	4	4	4 1/2	5
<b>CD</b>	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2	2	2 1/2	3	3	3 1/2	3 1/2	4	4
<b>L</b>	5/8	5/8	7/8	7/8	1 1/8	1 5/8	2	2	2 1/4	2 3/4	4 1/4	4 1/4	5	5	5 3/4	5 3/4
<b>KK</b>	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12	1 7/8-12	2 1/4-12	2 1/2-12	2 3/4-12	3 1/4-12	3 1/2-12	4-12	4 1/2-12

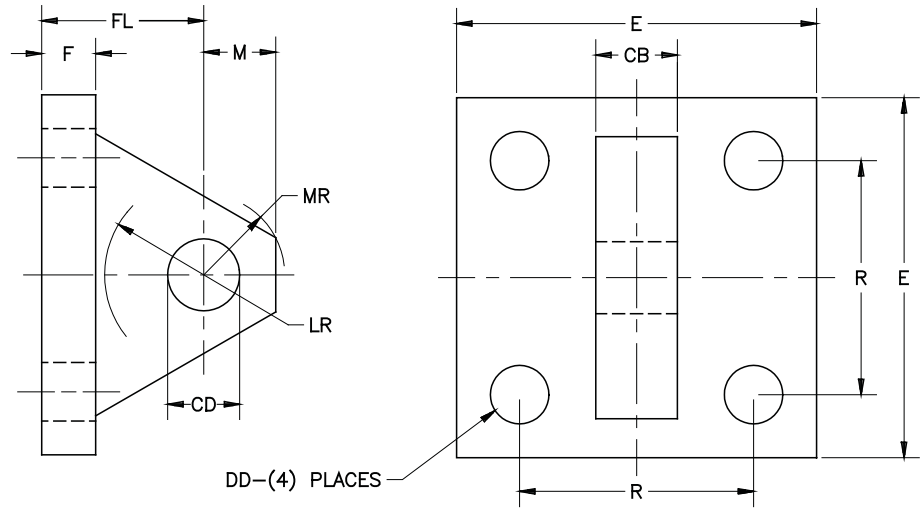
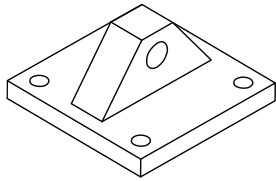
**SELF ALIGNING ROD EYE**

	PART NUMBER					
	PSE-05	PSE-07	PSE-10	PSE-13	PSE-17	PSE-20
<b>A</b>	3/4	1 1/8	1 5/8	2	2 1/4	3
<b>CD</b>	1/2	3/4	1	1 3/8	1 3/4	2
<b>CK</b>	7/16	21/32	7/8	1 3/16	1 17/32	1 3/4
<b>CM</b>	7/8	1 1/4	1 7/8	2 1/8	2 1/2	2 3/4
<b>CT</b>	1/2	7/8	1 1/8	1 1/2	1 3/4	2
<b>CX</b>	3/8	9/16	3/4	1 1/32	1 5/16	1 1/2
<b>EA</b>	7/8	1 1/4	1 3/8	1 13/16	2 3/16	2 1/2
<b>LE</b>	3/4	1 1/16	1 7/16	1 7/8	2 1/4	2 1/2
<b>KK</b>	7/16-20	3/4-16	1-14	1 1/4-12	1 1/2-12	1 7/8-12

PEB  
PC  
PE

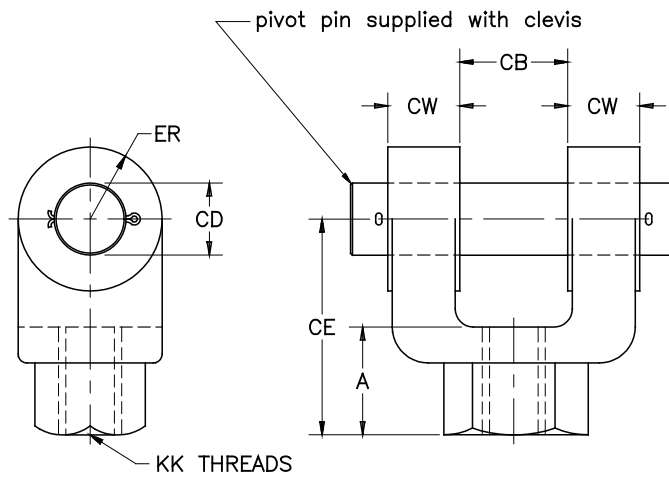
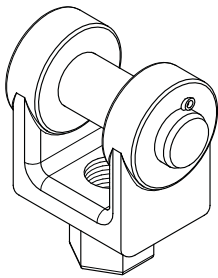
### PURAKAL SERIES 3500 MOUNTING ACCESSORIES

EYE BRACKET



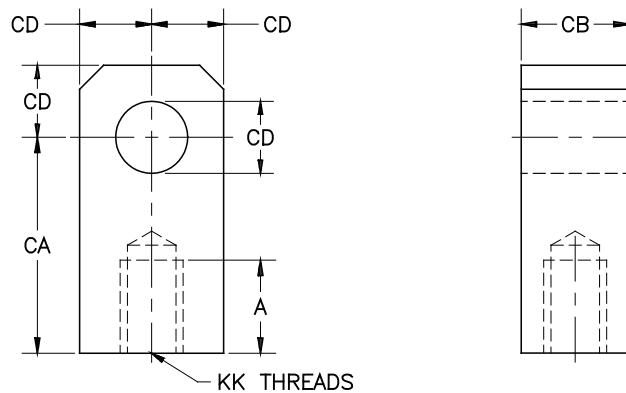
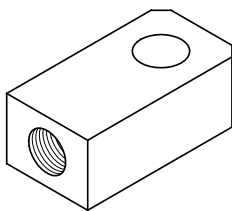
**PEB**

FEMALE ROD CLEVIS



**PC**

FEMALE ROD EYE



**PE**

**PURAKAL SERIES 3500  
MOUNTING ACCESSORIES**

PEB  
PC  
PE

**EYE BRACKET**

	PART NUMBER									
	PEB-05	PEB-07	PEB-10	PEB-13	PEB-17	PEB-20	PEB-25	PEB-30	PEB-35	PEB-40
<b>CB</b>	3/4	1 1/4	1 1/2	2	2 1/2	2 1/2	3	3	4	4 1/2
<b>CD</b>	1/2	3/4	1	1 3/8	1 3/4	2	2 1/2	3	3 1/2	4
<b>DD</b>	13/32	17/32	21/32	21/32	29/32	1 1/16	1 3/16	1 5/16	1 13/16	2 1/16
<b>E</b>	2 1/2	3 1/2	4 1/2	5	6 1/2	7 1/2	8 1/2	9 1/2	12 5/8	14 7/8
<b>F</b>	3/8	5/8	3/4	7/8	7/8	1	1	1	1 11/16	1 15/16
<b>FL</b>	1 1/8	1 7/8	2 1/4	3	3 1/8	3 1/2	4	4 1/4	5 11/16	6 7/16
<b>LR</b>	3/4	1 1/4	1 1/2	2 1/8	2 1/4	2 1/2	3	3 1/4	4	4 1/2
<b>M</b>	1/2	3/4	1	1 3/8	1 3/4	2	2 1/2	2 3/4	3 1/2	4
<b>MR</b>	9/16	7/8	1 1/4	1 5/8	2 1/8	2 7/16	3	3 1/4	4 1/8	5 1/4
<b>R</b>	1.63	2.55	3.25	3.82	4.95	5.73	6.58	7.50	9.62	11.45

**FEMALE ROD CLEVIS**

	PART NUMBER														
	PC-05	PC-05-05	PC-07	PC-10-08	PC-10	PC-13	PC-17	PC-20	PC-20-18	PC-25	PC-30	PC-30-27	PC-35	PC-40-35	PC-40
<b>A</b>	3/4	3/4	1 1/8	1 5/8	1 5/8	2	2 1/4	3	3	3 1/2	3 1/2	3 1/2	4 1/2	5	5 1/2
<b>CB</b>	3/4	3/4	1 1/4	1 1/2	1 1/2	2	2 1/2	2 1/2	2 1/2	3	3	3	4	4 1/2	4 1/2
<b>CD</b>	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2	2	2 1/2	3	3	3 1/2	4	4
<b>CE</b>	1 1/2	1 1/2	2 3/8	3 1/8	3 1/8	4 1/8	4 1/2	5 1/2	5 1/2	6 1/2	6 3/4	6 3/4	8 1/2	9 13/16	10
<b>CW</b>	1/2	1/2	5/8	3/4	3/4	1	1 1/4	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	2 1/4	2 1/4
<b>ER</b>	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2	2	2 1/2	2 3/4	2 3/4	3 1/2	4	4
<b>KK</b>	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12	1 7/8-12	2 1/4-12	2 1/2-12	2 3/4-12	3 1/4-12	3 1/2-12	4-12

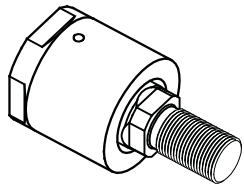
**FEMALE ROD EYE**

	PART NUMBER															
	PE-05	PE-05-05	PE-07	PE-10-08	PE-10	PE-13	PE-17	PE-20	PE-20-18	PE-25	PE-30	PE-30-27	PE-35	PE-35-35	PE-40	PE-40-45
<b>A</b>	3/4	3/4	1 1/8	1 1/8	1 5/8	2	2 1/4	2 1/4	3	3 1/2	3 1/2	3 5/8	4 1/2	5	5 1/2	5 1/2
<b>CA</b>	1 1/2	1 1/2	2 1/16	2 3/8	2 13/16	3 7/16	4	4 3/8	5	5 13/16	6 1/8	6 1/2	7 5/8	7 5/8	9 1/8	9 1/8
<b>CB</b>	3/4	3/4	1 1/4	1 1/2	1 1/2	2	2 1/2	2 1/2	2 1/2	3	3	3 1/2	4	4	4 1/2	5
<b>CD</b>	1/2	1/2	3/4	1	1	1 3/8	1 3/4	2	2	2 1/2	3	3	3 1/2	3 1/2	4	4
<b>KK</b>	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12	1 7/8-12	2 1/4-12	2 1/2-12	2 3/4-12	3 1/4-12	3 1/2-12	4-12	4 1/2-12

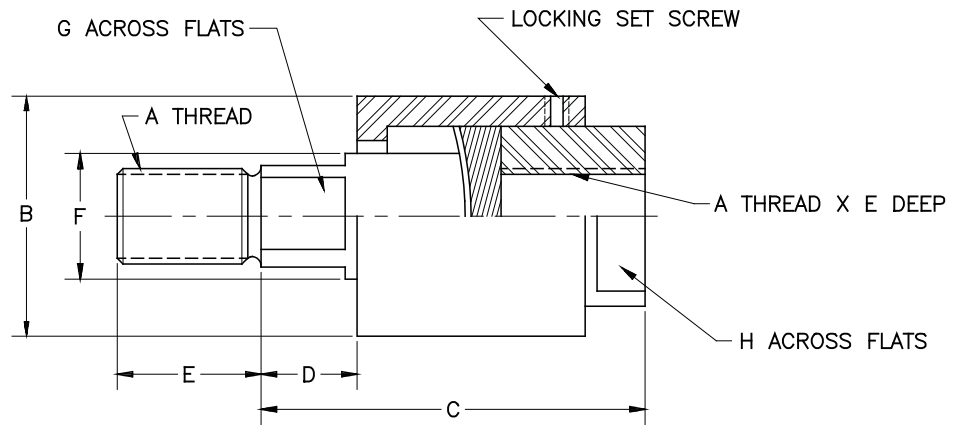
PAC  
PP

# PURAKAL SERIES 3500 MOUNTING ACCESSORIES

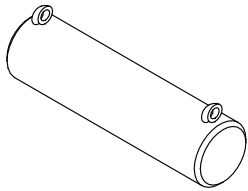
ALIGNMENT COUPLER



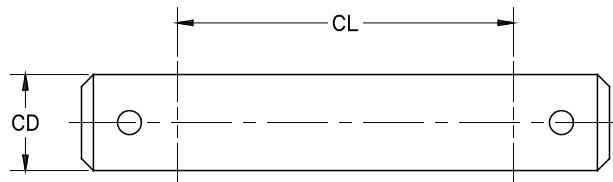
PAC



PIVOT PIN



PP



**PURAKAL SERIES 3500  
MOUNTING ACCESSORIES**

PAC  
PP

**ALIGNMENT COUPLER**

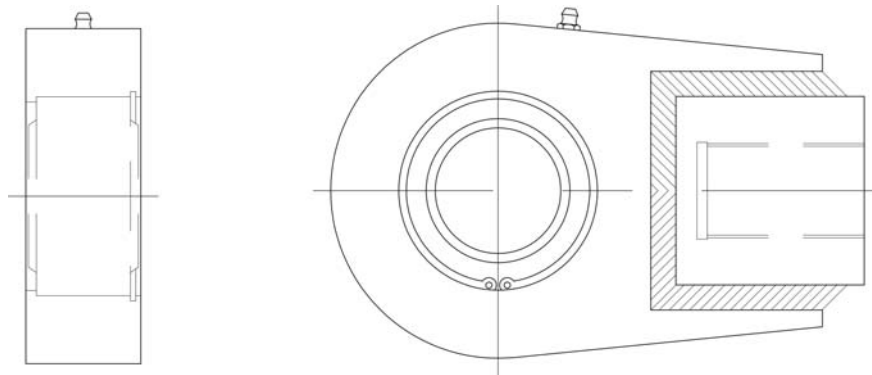
	PART NUMBER									
	PAC-04	PAC-05	PAC-07	PAC-08	PAC-10	PAC-12	PAC-15	PAC-17	PAC-18	PAC-20
<b>A</b>	7/16-20	1/2-20	3/4-16	7/8-14	1-14	1 1/4-12	1 1/2-12	1 3/4-12	1 7/8-12	2-12
<b>B</b>	1 1/4	1 1/4	1 3/4	1 3/4	2 1/2	2 1/2	3 1/4	3 1/4	3 3/4	3 3/4
<b>C</b>	2	2	2 5/16	2 5/16	2 15/16	2 15/16	4 3/8	4 3/8	5 7/16	5 7/16
<b>D</b>	1/2	1/2	1/2	1/2	1/2	1/2	13/16	13/16	7/8	7/8
<b>E</b>	3/4	3/4	1 1/8	1 1/8	1 5/8	1 5/8	2 1/4	2 1/4	3	3
<b>F</b>	5/8	5/8	31/32	31/32	1 3/8	1 3/8	1 3/4	1 3/4	2	2
<b>G</b>	1/2	1/2	13/16	13/16	1 5/32	1 5/32	1 1/2	1 1/2	1 7/8	1 7/8
<b>H</b>	1	1	1 1/2	1 1/2	2 1/4	2 1/4	3	3	3 1/2	3 1/2
<b>MAX PULL</b>	10,000	14,000	34,000	39,000	64,000	78,000	134,000	134,000	240,000	240,000

**PIVOT PIN**

	PART NUMBER												
	PP-05	PP-07	PP-10	PP-13	PP-17	PP-20	PP-20-55	PP-25	PP-30	PP-30-65	PP-35	PP-40-85	PP-40
<b>CD</b>	1/2	3/4	1	1 3/8	1 3/4	2	2	2 1/2	3	3	3 1/2	4	4
<b>CL</b>	1 3/4	2 1/2	3	4	5	5	5 1/2	6	6	6 1/2	8	8 1/2	9

**PURAKAL SERIES 3500  
SPECIAL MOUTING ACCESSORIES**

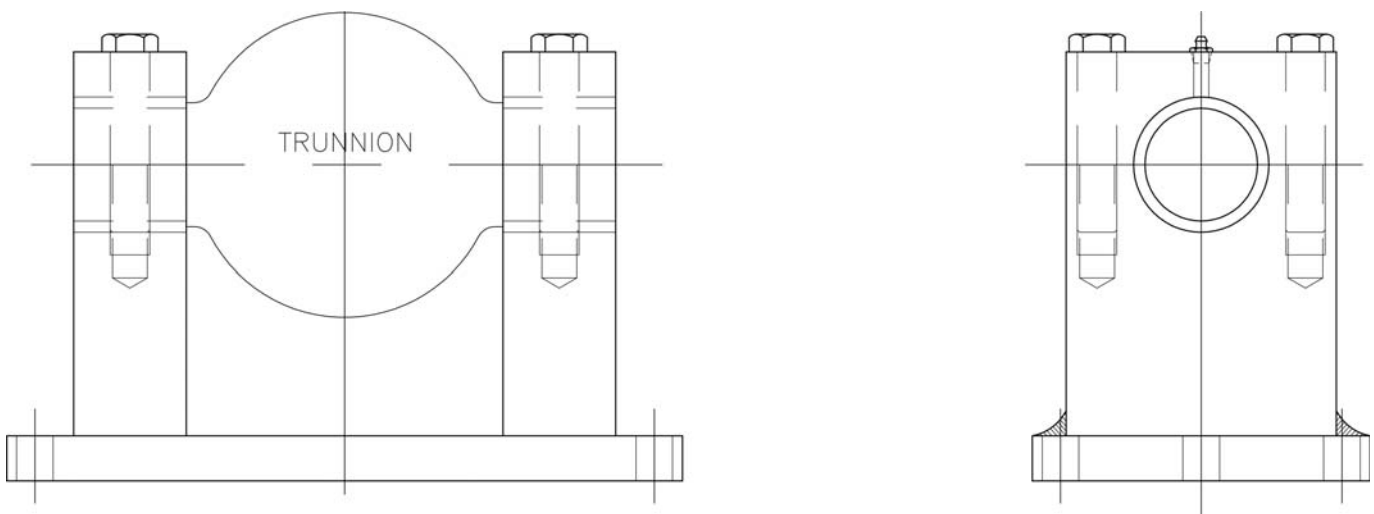
**HEAVY DUTY SPHERICAL ROD EYE**



**CONSULT FACTORY FOR DIMENSIONAL INFORMATION**

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**TRUNNION PILLOW BLOCK ASSEMBLY**



**CONSULT FACTORY FOR DIMENSIONAL INFORMATION**

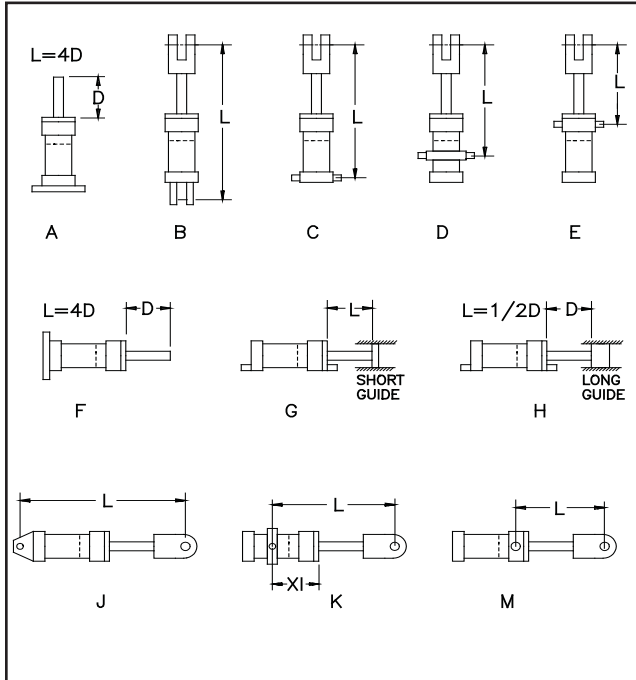


## PURAKAL SERIES 3500 ACCESSORY COMPARISON

ROD DIA							SELF ALIGNING ROD EYE							
KK	CC	THREAD	PIN	CLEVIS	ROD EYE	MALE ROD END		PIN	EYE BRACKET	CLEVIS BRACKET	SERIES 100	SERIES 2500	SERIES 3000	SERIES 3050
5/8		7/16-20	PP-05	PE-05	PE-05	PME-05	PSE-05	PP-05	PEB-05	PCB-05	1 1/2, 2, 2 1/2	1 1/2	1 1/2	1 1/2
	5/8	1/2-20	PP-05	PE-05-05	PE-05-05			PP-05	PEB-05	PCB-05	1 1/2, 2, 2 1/2	1 1/2	1 1/2	1 1/2
1		3/4-16	PP-07	PC-07	PE-07	PME-07	PSE-07	PP-07	PEB-07	PCB-07	3 1/4, 4, 5	2, 2 1/2	2, 2 1/2	2, 2 1/2
	1	7/8-14	PP-10	PC-10-08	PE-10-08	PME-10-08		PP-10	PEB-10	PCB-10	6, 8	3 1/4	3 1/4	3 1/4
1 3/8		1-14	PP-10	PC-10	PE-10		PSE-10	PP-10	PEB-10	PCB-10	6, 8	3 1/4	3 1/4	3 1/4
1 3/4	1 3/8	1 1/4-12	PP-13	PC-13	PE-13	PME-13	PSE-13	PP-13	PEB-13	PCB-13	10	4	4	4
2	1 3/4	1 1/2-12	PP-17	PC-17	PE-17	PME-17	PSE-17	PP-17	PEB-17	PCB-17	12	5	5	5
	2	1 3/4-12	PP-20	PC-20	PE-20	PME-20		PP-20	PEB-20	PCB-20		6	6	
2 1/2		1 7/8-12	PP-20-18	PC-20-18	PE-20-18	PME-20-18	PSE-20	PP-25	PEB-25	PCB-25		7	7	
3	2 1/2	2 1/4-12	PP-25	PC-25	PE-25	PME-25		PP-30	PEB-30	PCB-30		8	8	
3 1/2		2 1/2-12	PP-30	PC-30	PE-30	PME-30		PP-30	PEB-30	PCB-30		8	8	
	3	2 3/4-12	PP-30	PC-30-27	PE-30-27	PME-30-27								
4		3-12						PP-35	PEB-35	PCB-35		10	10	
4 1/2	3 1/2	3 1/4-12	PP-35	PC-35	PE-35	PME-35		PP-35	PEB-35	PCB-35		10	10	
5		3 1/2-12	PP-35		PE-35-35	PME-35-35		PP-40	PEB-40	PCB-40		12	12	
5		3 1/2-12	PP-40	PC-40-35										
	4	3 3/4-12						PP-40	PEB-40	PCB-40		12	12	
5 1/2, 7		4-12	PP-40	PC-40	PE-40	PME-40								
	4 1/2	4 1/4-12						PP-40	PEB-40	PCB-40		12	12	
8, 8 1/2		4 1/2-12	PP-40		PE-40-45	PME-40-45								
	5	4 3/4-12												
	5 1/2	5 1/4-12												
	7	5 1/2-12												
	8 1/2	6-12												

# PURAKAL SERIES 3500 STOP TUBE REFERENCE CHART

## MOUNTING STYLES



## STOP TUBE LENGTH

Stop tubes are spacers which increase the distance between the piston and rod head, maintaining alignment of the piston rod and cylinder bore. This reduces the eccentricity in the column, resulting in lower bending stress in the rod. The increased span also reduces the bearing stress on the piston and rod bearings.

Stop tubes are advisable for long stroke push cylinders mounted as styles A, B, C, D, J, and K. When the value of "L" exceeds 50 inches, use one whole inch of stop tube for each 10 inches of length in excess of 50 inches.

For a horizontally mounted cylinder with piston rod unsupported and no weight added to the rod (style F), use one whole inch of stop tube for every 10 inches of length in excess of 50 inches.

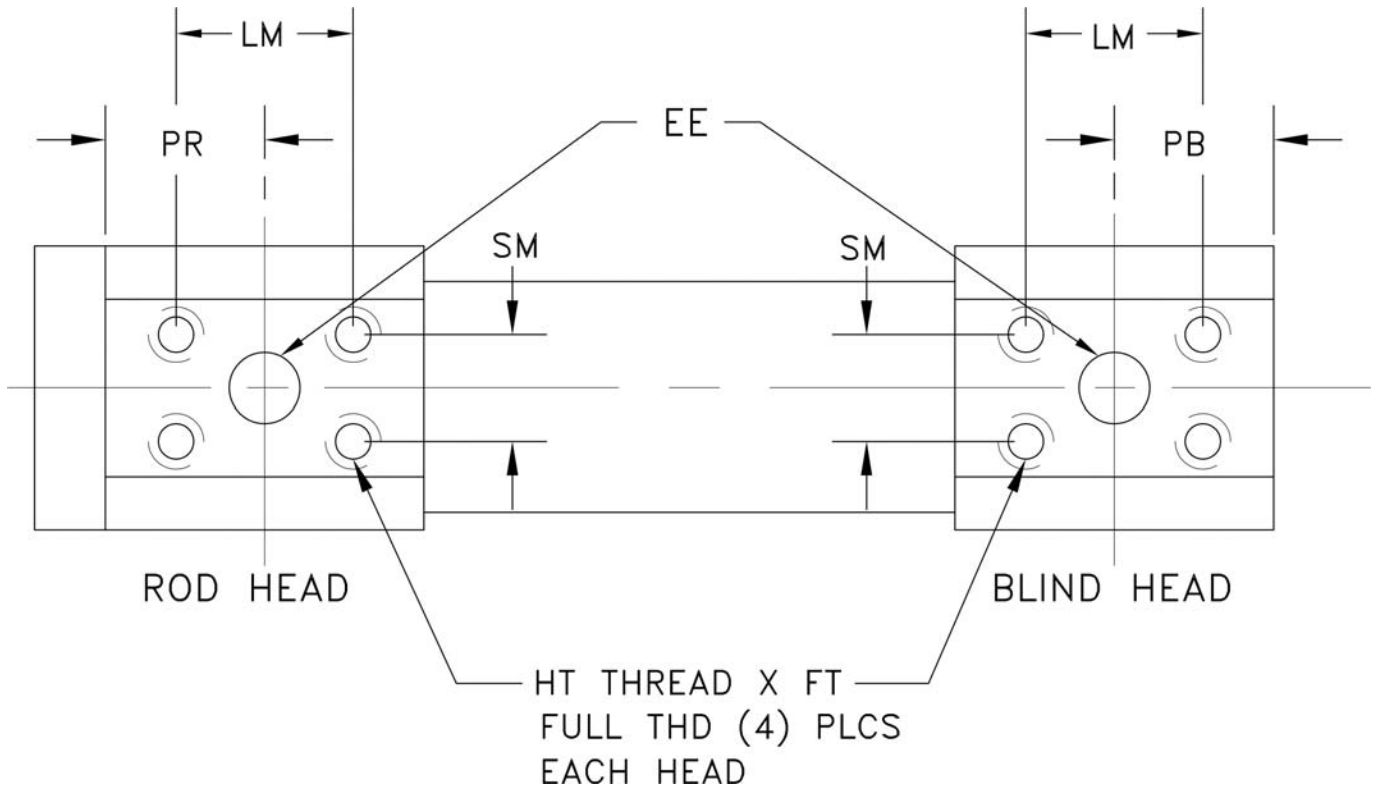
For horizontally mounted styles J, K, and M, it is advisable to calculate the bearing loads with the rod fully extended. The bearing loads should be limited to 200 psi for smooth operation and long life and not more than 350 psi under any condition.

For style K (center trunnion cylinder), the most favorable rod bearing load is obtained with the XI dimension equal to about 1/3 the total collapsed cylinder length.

## ALLOWABLE COLUMN LOAD

THRUST (LBS)	PISTON ROD DIAMETER												
	5/8	1	1 3/8	1 3/4	2	2 1/2	3	3 1/2	4	4 1/2	5 1/2	7	8
50	62												
100	55	112											
200	47	99											
300	44	88	142										
500	38	75	130	180									
750	28	70	122	170	198	272							
1,000	25	60	103	156	191	258	332						
1,250	21	52	94	140	183	251	316	400					
1,500	19	50	92	136	168	240	300	390					
2,000	15	43	81	113	150	229	291	360	430	500			
4,000	12	31	62	96	120	170	252	309	380	445			
6,000		25	52	80	100	160	197	262	346	407			
8,000		22	45	75	99	134	189	230	310	372			
10,000		21	40	67	89	121	173	210	268	334	480		
20,000			27	48	63	104	142	171	216	275	375		
30,000				40	51	81	115	155	204	233	320		
40,000				30	45	70	99	135	176	225	292	420	
50,000					35	62	90	121	162	198	260	407	
60,000						56	82	110	144	181	254	382	
70,000						48	74	103	133	168	246	366	
80,000						43	70	96	125	157	234	352	400
90,000						37	66	90	119	149	225	340	387
100,000							60	84	112	141	212	330	373
125,000							48	76	100	125	190	308	344
150,000								64	91	115	174	288	320
200,000								55	69	100	150	259	281
250,000										80	134	233	254
300,000											121	212	232
350,000											105	196	217
400,000											85	180	200
450,000												163	187
500,000													172

**PURAKAL SERIES 3500  
STANDARD PORT DETAIL, RECOMMENDED TORQUE**



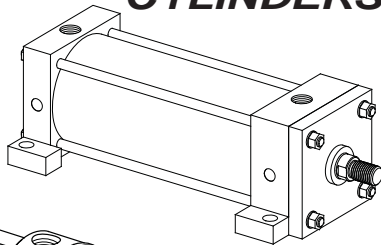
3,000 PSI FOUR BOLT FLANGE PORT DETAIL						
EE	LM	SM	PB	PR	HT	FT
3/4	1 7/8	7/8	2 3/16	2 3/16	3/8-16	3/4
1	2 1/16	1 1/32	1 7/8	1 7/8	3/8-16	7/8
1 1/2	2 3/4	1 13/32	1 7/8	1 7/8	1/2-20	1 1/8

**RECOMMENDED TIE ROD TORQUE VALUES FOR 3500 SERIES CYLINDERS**

BORE	2 1/2	3 1/4	4	5	6
TIE ROD THREAD	1/2-20	5/8-18	5/8-18	7/8-14	1-14
MODELS MF1 MF2 MF5 MF6	60	90	115	270	400
ALL OTHER MODELS	60	90	115	310	500



## CYLINDERS, INC

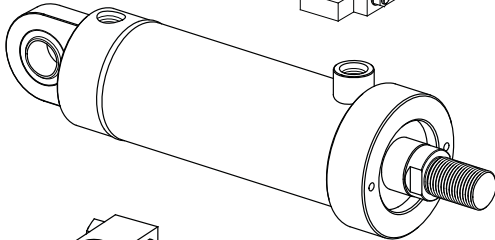


### 100 SERIES PNEUMATIC CYLINDER

250 PSI air/750 PSI hydraulic operating pressure

1 1/2" to 12" Bore

Tie rod cylinder \* Ground and polished hard chrome plated piston rod \* Honed and chrome plated barrel I.D. \* Polyurethane seals \* All NFPA mountings available

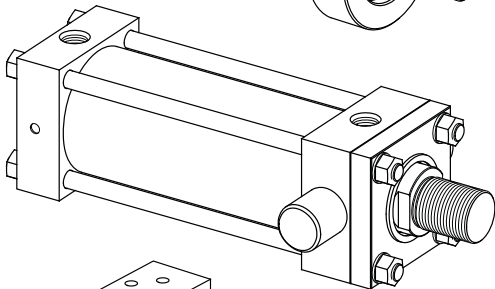


### 2500 SERIES HEAVY DUTY HYDRAULIC CYLINDER

3000 PSI operating pressure

1 1/2" to 6" Bore

Welded construction \* Ground and polished hard chrome plated piston rod \* Heavy wall honed barrel I.D. \* Polyurethane seals \* Clevis, Pin Eye, Single Lug, and Blind End Plate mounts \* NFPA interchangeable mounting dimensions

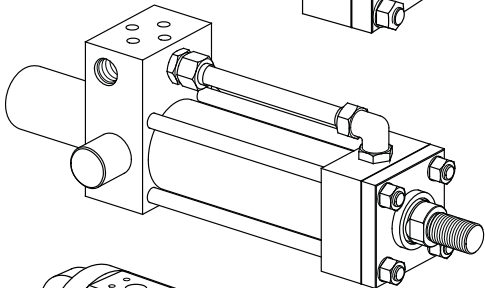


### 3000 SERIES HYDRAULIC CYLINDER

3000 PSI operating pressure

1 1/2" to 12" Bore

Tie rod cylinder \* Ground and polished hard chrome plated piston rod \* Heavy wall honed barrel I.D. \* Polyurethane seals \* All NFPA mountings available

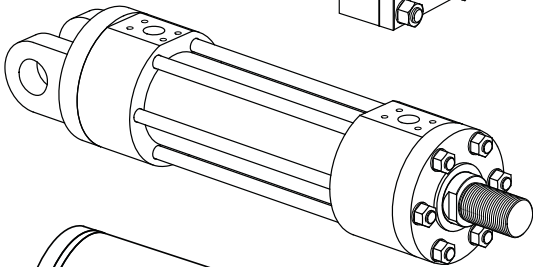


### 3050 SERIES LINEAR POSITIONING HYDRAULIC CYLINDER

3000 PSI operating pressure

2" to 5" Bore

Tie rod cylinder \* Ground and polished hard chrome plated piston rod \* Heavy wall honed barrel I.D. \* Low friction seals \* Most NFPA mountings available \* Direct Servo Valve Mounting \* Transducer position sensing \* Large bore models available on request

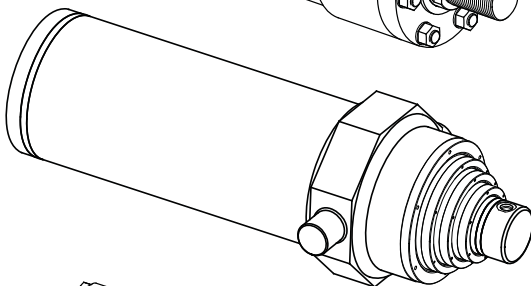


### 3500 SERIES SUPER HEAVY DUTY HYDRAULIC CYLINDER

3500 PSI operating pressure

2 1/2" to 6" Bore

Tie rod cylinder for extreme service requirements\* Ground and polished heavy chrome plated piston rod \* 4-Bolt Flange ports \* Polyurethane seals \* Tie rod, Clevis, Single Lug, Trunnion mounts \* Heavy duty cushions for high inertial loads

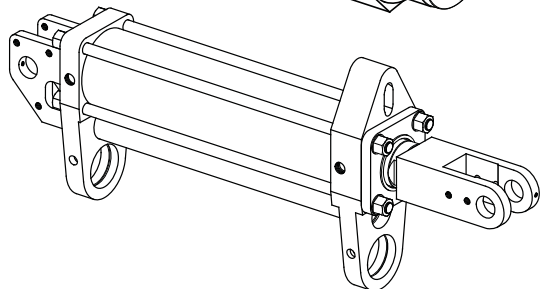


### 2100 SERIES TELESCOPIC HYDRAULIC CYLINDER

2000 PSI operating pressure

3 1/2" to 13 3/4" Bore

Multi-Stage telescopic cylinder for long strokes in a compact package \* Double Acting or Single Acting \* Ground and polished, hard chrome plated rods \* Quick and easy rod seal replacement in the field \* Bronze filled teflon piston bearings \* Available with trunnion mounts, eye mounts, and other special designs.



### SPECIAL DESIGNS

Intensifier cylinders \* Accumulators \* Multiport swivels \* Spring Loaded cylinders\* Computer aided design and analysis by an experienced engineering staff

Consult the PURAKAL distributor in your area or call our factory direct to discuss your unique applications.