

PISTON ROD DIAMETER SELECTION

Selection of the proper Piston Rod Diameter is important and requires careful consideration. Most cylinder models are offered with several rod sizes from which one must be chosen.

The smallest diameter available within each bore size is termed the “standard” rod. Rods of this description are suitable for use in all cylinders in which work loads are applied in the “pull” direction only. “Standard” rods are also suitable for many “push” applications, but other factors then become involved that may restrict their use. The cylinder mounting style, rod end condition, stroke length, and output force expressed in terms of “pounds of thrust” combine to produce variables which affect the rod size requirement as determined by column strength limitations.

After selection of the cylinder bore diameter, the procedure below should be followed to determine the recommended Piston Rod Diameter.

Step 1. Locate the cylinder mounting style and applicable rod end connection “Class” in the charted data below and calculate the Value of “L” using the appropriate formula. Information pertaining to the use of Stop Tubes with certain cylinder

Step 2. Using the calculated Value of “L”, refer to the chart located on next page to find the “Recommended Stop Tube Length.” If the use of a “Stop Tube” is indicated, review the “D” factor for possible equal increase in length. When applicable, recalculate the Value of “L” using this adjusted figure to determine length of Stop Tube recommended.

Step 3. Locate the Cylinder Thrust value in the “Rod Diameter Selection” chart located on the next page. If the exact cylinder thrust is not listed, use the next highest charted value. After locating the proper “Cylinder Thrust” column, read across until reaching the first figure which exceeds the computed Value of “L”. The column heading under which this value is located indicates the recommended Piston Rod Diameter.

If the recommended piston rod diameter exceeds that of the largest available within the selected cylinder size, it would then be necessary to reconsider design parameters. The first cylinder of a larger size having the recommended rod diameter as an available option should be selected for use at a reduced operating pressure to develop an output force equivalent to that of the unit initially selected.

VALUE OF “L” FACTOR

FOR USE IN SELECTING PISTON ROD DIAMETER AND DETERMINING STOP TUBE RECOMMENDATIONS.

CYLINDER MOUNTING	LENGTH OF “D” WITH STROKE EXTENDED	FORMULAS FOR THE VALUE OF “L”				ROD END CLASS (V ₁ CONNECTION)
		CLASS I	CLASS II	CLASS III	CLASS IV	
FOOT MOUNT MODEL “A” MODEL “W” CENTERLINE LUG MT. MODEL “K” SIDE MOUNT MODEL “G” END LUG MOUNT MODEL “J”		$L = \frac{D}{2}$	$L = \frac{D}{1.4}$	$L = D$	$L = 4D$	FIXED, SUPPORTED, AND GUIDED
FRONT FLANGE MOUNT MODEL “C” MODEL “P” MODEL “X” EXT’D TIE ROD MT. MODEL “L” FRONT END MTD.		$L = \frac{D}{2}$	$L = \frac{D}{1.4}$	$L = D$	$L = 4D$	CLASS I PIVOTED, SUPPORTED, AND GUIDED
REAR FLANGE MOUNT MODEL “D” MODEL “R” MODEL “T” EXT’D TIE ROD MT. MODEL “L” REAR END MTD.		$L = \frac{D}{2}$	$L = \frac{D}{1.4}$	$L = D$	$L = 4D$	CLASS II FIXED, SUPPORTED, AND UNGUIDED
FRONT TRUNNION MT. MODEL “E” REAR TRUNNION MT. MODEL “F” INTERMEDIATE TRUNNION MOUNT MODEL “N”		Not Suitable	$L = D$	Not Suitable	Not Suitable	CLASS III UNSUPPORTED, AND UNGUIDED
CLEVIS MOUNT MODEL “B” DETACH. CLEVIS MT. MODEL “BR” SINGLE LUG PIVOT MT. MODEL “BX” SPHERICAL BUSH. MT. MODEL “UB”		Not Suitable	$L = D$	Not Suitable	Not Suitable	CLASS IV
		CLASS I	CLASS II	CLASS III	CLASS IV	