

Mounting Information

Cylinders are manufactured in innumerable combinations of bore, rod, and stroke sizes with various standard mounting styles.

There is a direct relationship between the cylinder mounting style and the effects of the operating pressure upon the unit. The following information should be considered to assist in the selection of the proper style mounting for use in the intended application.

Standard mounting styles for fluid power cylinders are divided into two general classifications and three groups based upon the combined effects of force direction and mounting conditions. Those classifications are as follows:

Class I: *Cylinders which produce a straight line transfer of force.*

This class consists of models having fixed mounting styles that are secured in a rigid condition. Cylinder mountings of this type are divided into two groups: those models which absorb force on the cylinder centerline and those styles which do not absorb force on the centerline of the unit.

Class II: *Pivoted cylinders which transfer force along a variable path.*

This group consists of mounting styles which pivot around a fixed pin and are able to compensate for alignment changes in one plane during operation.

The way in which a cylinder is mounted is critical to its performance and service life. Improper mounting can result in damage to the cylinder as well as to the equipment on which it is being used. Inaccurate installation, or the use of an inappropriate mounting style may result in misalignment which causes harmful side loading, bending, and the

Cylinders Having Fixed Centerline Mounting

Mounting styles which allow the thrust produced by the cylinder to be absorbed in a plane coincident with the centerline of the unit are most desirable since the mounting bolts are subjected to straight line shear or tension loads only. Cylinders are not subject to forces which tend to sway or flex the unit as occurs with certain alternate style mountings. Cylinder mountings of the fixed centerline class are models C, D, K, L, P, R, T, and X.

FLANGE TYPE MOUNTINGS

Proper selection of a flange mounting style depends upon whether the primary work direction results in tension or compression loads being carried by the cylinder rod.

Front flange mounted units are preferred for "pull type" applications where the rod is held in tension. "Push type" applications which subject the cylinder rod to compression loads are best suited for rear flange style mountings.

Flange mount models are of the fixed centerline class, but if improperly mounted by the backside of the flange (mounted against flange face nearest the cylinder body) they may be subjected to destructive bending forces that can distort the mounting plate or fatigue the fasteners holding the assembly.

The only flange styles suitable for backside mounting are models "X" and "T" which feature the end cap and flange combined as an integral component.

Rectangular flange mount styles (models "C" and "D") may be subject to pressure limitations which vary with bore size, rod diameter, and stroke length. These conditions are explained in greater detail in the text material pertaining to the various models available in these mounting styles.

In applications which involve operating pressure levels in excess of those permitted with rectangular flange models, the square flange mounting styles (models "P" and "R") should be considered. This style provides a stronger mounting flange which permits operation at higher working pressure and provides more stable support for long stroke cylinders.

Mounting styles "X" and "T" feature an integral rectangular end cap and flange. This model provides the most rigid flange mounting available and is preferred for high pressure applications or those involving long stroke lengths. Rectangular head flanges of this type are the only flange mountings suitable for backside mounting.

EXTENDED TIE ROD MOUNTING

Cylinders which use extended tie rods for mounting purposes are available with the tie rod extension on the rod end, blind end, or both ends as required to suit application conditions. The location of the tie rod extension must be specified at the time of order placement.

The general use recommendations given for flange mount models also apply to units mounted by the tie rods. This mounting style provides a stable means of handling thrust loads and may be used whenever available clearances permit the installation of this model. Consideration should be given to providing added support to the cylinder body on horizontally mounted units having long stroke lengths.

CENTERLINE LUG MOUNTING

Model "K", centerline lug mounting is the most stable of the fixed mounting styles secured with mounting bolts perpendicular to the unit centerline since it is the only model which has the mounting points located on a plane coincident with the cylinder centerline.

Holding bolts are subject to straight line shear or tension loads only rather than more complex forces which are developed in all other models which have the mounting bolts similarly positioned but at non-centerline locations.

In applications involving high pressure or shock loads, the cylinder should be secured to the mounting surface by dowel pins placed through the mounting lugs. The lugs include sufficient clearance for the addition of such pins.