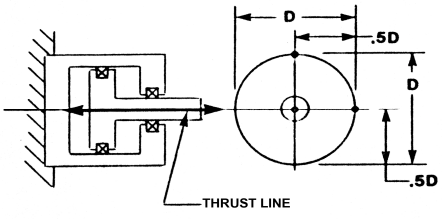
INSTALLATION GUIDELINES - SHORT STROKE CYLINDERS

IMPORTANT PRODUCT INFORMATION:
Mack Automation designs, develops, manufactures and markets the finest and most comprehensive line of proprietary short stroke pneumatic and hydraulic cylinders. Product quality is assured through “time-tested” manufacturing processes and quality control procedure. All assembled products are individually tested for proper function prior to shipping.

IMPORTANT SAFETY RECOMMENDATIONS:
Wear safety glasses. Follow OSHA safety requirements. Perform all work to local mechanical and electrical codes. Close off the branch line and bleed this line to zero PSI before starting work. Post warning notice at the shut-off valve. Make sure the fluid system does not exceed maximum pressure and temperature ratings for the cylinder.

SHORT STROKE CYLINDERS - (AS BUILT):
Short stroke cylinders are designed and machined with special attention to concentricity and squareness. Pistons float on seals at the geometric center-line of the cylinder body with no internally induced “off- axis” loading. Avoid introducing external “off-axis” loads when mounting. NOTE: To find the thrust line, indicate off the cylinder O.D. at two places, 90° apart or pilot on the outside diameter in a shallow pocket. The bolt circle is also concentric with the thrust line but allow for typical clearance over bolts.



IMPORTANT:

TWO MOST CRITICAL FACTORS INVOLVED IN EXTENDING SERVICE LIFE OF SHORT STROKE CYLINDERS ARE CONNECTING TO A CLEAN FLUID SYSTEM AND MOUNTING WITH PROPER ALIGNMENT TO AVOID “OFF-AXIS” LOADING.

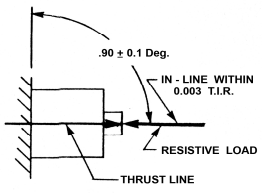
CONNECTING TO A CLEAN FLUID SYSTEM:

Before shipping, each Mack Automation cylinder is functionally tested with clean fluid and capped or enclosed in a plastic bag to avoid contaminants from entering inlet ports. Leave caps in place or sealed in the plastic bag until connecting to a system. Use extreme care when opening a system and keep connections clean. Cylinders are usually installed downstream of filters and any contaminants entering the system at this point do not benefit from filtering.

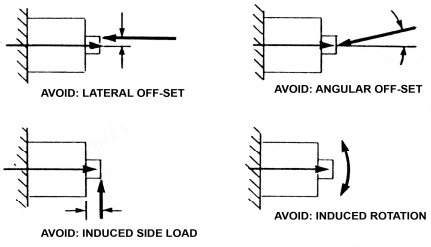
MOUNTING WITH PROPER ALIGNMENT:

Perhaps the most important factor of all in extending service life of cylinders is “proper alignment” of the “resistive load“ with the “thrust force”. Basically, all pneumatic and hydraulic cylinders are linear force devices with limitations when expected to also serve as guides. Any external loading or resistive force which does not act along the thrust line produces undesirable “off-axis” loading, reducing service life. The center-line of the “resistive load” should align with the center-line of the “thrust force” within .003 total indicator reading and with angular deviation to less than plus or minus 1/10 degree. Please consider the sketches shown below:

EXAMPLE OF GOOD ALIGNMENT:



AVOID “OFF – AXIS” LOADING:



NOTE: Following these simple guidelines can be very beneficial to you and your project. It can improve the performance and reliability of your system as well as minimize overall cost to your company.
Time spent in providing good guide and careful alignment is a good investment.