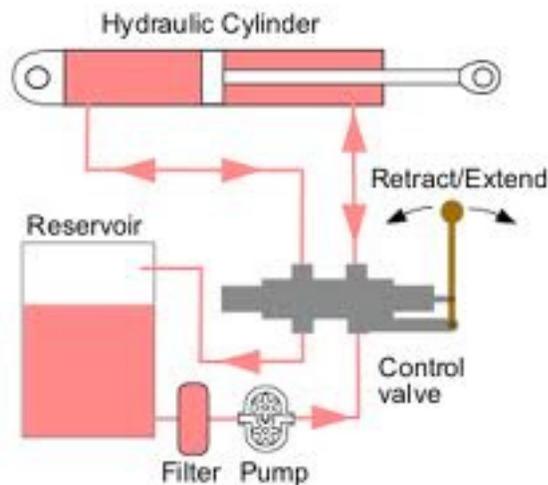


Hydraulic Actuator Comparison

Hydraulic systems are distinguished by their ability to produce large forces at high speeds. Applications are varied and include manufacturing systems, materials test machines, military installations, gas and steam turbine control and large process valves. Exlar actuators were designed with hydraulic replacement in mind, and can meet most hydraulic criteria.



All hydraulic systems require a supply of pressurized fluid. While this oil is not compressible, it is susceptible to temperature swings, and can exhibit several inherent non-linear effects impacting repeatability and performance. The oil pressure used is dependent on a range of factors, including size and maintenance. Low pressure means less leakage, but physically larger components are

required to develop a given force. High pressure systems suffer from more leakage, but have better dynamic performance and have a smaller footprint.

Fluid leaks are common, causing environmental contamination. In addition, hydraulics have high sensitivity to oil contamination and oil quality, therefore filters need to be installed to keep the oil clean.

New options for hydraulics are now available that are self-contained closed systems that do not require filters or oil clearing. These hydraulic actuators however, are still susceptible to temperature changes and leaks. Maintenance can still be high, as each has several complicated parts including internal pumps, valves, heaters and motors, in addition to a separate controller.



Exlar actuators have several advantages over hydraulic including higher energy efficiency, higher uptime from lower maintenance, repeatable performance, much smaller footprint and a less-costly infrastructure. Common process applications include inlet guide vanes, steam turbine governor valves, bypass valves and spray valves for the power industry as well as pipelines and isolation valves for the oil and gas industry.

Common Exlar products for hydraulic replacement include the GSX Series actuators, and the FT Series actuators.

For very high force hydraulic applications, Exlar actuators are used on the pilot or spool valve to increase the performance of the main hydraulic. It is coupled to the oil distributing pilot valve to control valve the positioning servomotor. Its positioner accepts the valve position demand from a digital electro hydraulic control system and performs servomotor position closed loop control.

One of the advantages of the Exlar actuator on a pilot valve is its ability to generate relatively large forces (order of magnitude higher than with existing hydraulics) on the pilot valve, with very small errors (<10mHz). Therefore, the effects of friction, and hydraulic reaction forces acting on the pilot valve are greatly reduced, leading to increased sensitivity.

Common Exlar products include the GSX and Tritex actuators for this application.

