

Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The control valve is a tool which directs the fluid to the actuator. This tool would comprise steel or cast iron spool that is positioned inside of housing. The spool slides to various positions within the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool is centrally situated, held in place with springs. In this particular position, the supply fluid can be blocked and returned to the tank. If the spool is slid to a direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the other direction, the supply and return paths are switched. When the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are built in order to be stackable. They normally have one valve per hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to handle the higher pressures and to be able to prevent leaking. The spools will normally have a clearance inside the housing no less than 25 μm or a thousandth of an inch. To be able to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block will be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool right or left. A seal allows a portion of the spool to protrude outside the housing where it is easy to get to the actuator.

The main valve block is generally a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, whereas some are designed to be proportional, like in valve position to flow rate proportional. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.