

Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The control valve is a tool which directs the fluid to the actuator. This device would include steel or cast iron spool which is situated in a housing. The spool slides to different locations inside the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool is centrally situated, held in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. When the spool is slid to one side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the opposite side, the supply and return paths are switched. As soon as the spool is allowed to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are designed to be able to be stackable. They normally have one valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained very tightly, so as to deal with the higher pressures and so as to prevent leaking. The spools will normally have a clearance within the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. So as to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine's frame by a 3-point pattern.

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

The main valve block controls the stack of directional control valves by capacity and flow performance. Some of these valves are designed to be proportional, like a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is one of the most pricey and sensitive parts of a hydraulic circuit.