

Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The control valve is actually a tool which directs the fluid to the actuator. This tool will comprise steel or cast iron spool which is positioned inside of housing. The spool slides to different locations within the housing. Intersecting channels and grooves route the fluid based on the spool's position.

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

Normally, directional control valves are built in order to be stackable. They normally have a valve for each and every hydraulic cylinder and one fluid input which supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to deal with the higher pressures and so as to prevent leaking. The spools will usually 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 would be mounted to the machine's frame with a 3-point pattern.

The position of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal enables a portion 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, as a valve position to the proportional flow rate, whereas some valves are designed to be on-off. The control valve is one of the most costly and sensitive parts of a hydraulic circuit.