

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to direct the fluid to the desired actuator. Normally, these control valves comprise a spool situated inside of a housing made either from steel or cast iron. The spool slides to different locations in the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool is centrally positioned, held in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. If 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. When the spool is transferred to the other side, the supply and return paths are switched. When the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into position.

Usually, directional control valves are designed in order to be stackable. They generally have one valve for every hydraulic cylinder and one fluid input which supplies all the valves inside the stack.

Tolerances are maintained very tightly, in order to tackle the higher pressures and in order to avoid leaking. The spools would often 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 components and distorting the valve, the valve block would be mounted to the machine's frame by a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids might actuate or push the spool right or left. A seal allows a portion of the spool to stick out the housing where it is accessible to the actuator.

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