

Forklift Hydraulic Control Valve

Hydraulic Control Valve for Forklift - The function of directional control valves is to direct the fluid to the desired actuator. Normally, these control valves include a spool positioned in a housing made either from steel or cast iron. The spool slides to various positions within the housing. Intersecting grooves and channels route the fluid based on the spool's position.

The spool has a central or neutral position which is maintained by springs. In this position, the supply fluid is returned to the tank or blocked. 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. If the spool is moved to the other side, the supply and return paths are switched. When the spool is enabled to return to the neutral or center location, the actuator fluid paths become blocked, locking it into position.

The directional control is normally intended to be stackable. They generally have one valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

So as to avoid leaking and handle the high pressure, tolerances are maintained extremely tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 μm . To be able to prevent distorting the valve block and jamming the valve's extremely sensitive parts, the valve block will be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids can actuate or push the spool left or right. A seal enables 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. 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 pricey and sensitive parts of a hydraulic circuit.