

Forklift Hydraulic Control Valve

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

The spool is centrally located, held in place by springs. In this particular location, the supply fluid can be blocked and returned to the tank. When the spool is slid to one side, 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 direction, the supply and return paths are switched. As soon as the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are designed so as to be stackable. They normally have one valve for each hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

So as to prevent leaking and tackle the high pressure, tolerances are maintained really tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or $25\text{ }\mu\text{m}$. So as to avoid 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.

Solenoids, a hydraulic pilot pressure or mechanical levers could actuate or push the spool left or right. A seal enables a part of the spool to protrude outside the housing where it is accessible to the actuator.

The main valve block controls the stack of directional control valves by flow performance and capacity. Some 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 costly parts of a hydraulic circuit.