

## Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valves - The function of directional control valves is to direct the fluid to the desired actuator. Normally, these control valves include a spool situated within a housing made either of cast iron or steel. The spool slides to different locations in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a central or neutral position that is maintained by springs. In this location, the supply fluid is blocked or 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 moved to the other side, the supply and return paths are switched. As soon as 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 made to be able to be stackable. They generally have one valve per hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

So as to prevent leaking and tackle the high pressure, tolerances are maintained very tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or  $25\text{ }\mu\text{m}$ . To be able to avoid jamming the valve's extremely sensitive parts and distorting the valve, the valve block will 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 left or right. A seal enables a portion 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 capacity and flow performance. Several of these valves are designed to be proportional, as a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.