

## Hydraulic Control Valves for Forklift

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

The spool has a central or neutral location which is maintained by springs. In this particular position, the supply fluid is blocked or returned to the tank. If the spool is slid to a direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the opposite side, the supply and return paths are switched. Once the spool is enabled to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are designed so as to be stackable. They usually have a valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained very tightly, to be able to handle the higher pressures and so as to prevent leaking. The spools will normally have a clearance in the housing no less than  $25\text{ }\mu\text{m}$  or a thousandth of an inch. In order to prevent 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 allows 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 capacity and flow performance. Several of these valves are designed to be proportional, like 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 expensive and sensitive components of a hydraulic circuit.