

## Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is actually a tool which routes the fluid to the actuator. This device will comprise steel or cast iron spool that is positioned inside of housing. The spool slides to various positions within the housing. Intersecting channels and grooves route the fluid based on the spool's position.

The spool has a central or neutral location that is maintained by springs. In this location, the supply fluid is returned to the tank or blocked. When 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 opposite side, the return and supply 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 position.

The directional control is usually designed to be stackable. They generally have one valve for each hydraulic cylinder and one fluid input which supplies all the valves within the stack.

To be able to prevent leaking and handle 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 prevent distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine's frame by a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure might actuate or push the spool right or left. A seal enables a part of the spool to stick out the housing where it is easy to get to the actuator.

The main valve block is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, while others are designed to be proportional, like in valve position to flow rate proportional. The control valve is one of the most sensitive and pricey parts of a hydraulic circuit.