

## Forklift Hydraulic Control Valve

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

The spool is centrally positioned, held in place by springs. In this particular location, the supply fluid could be blocked and returned to the tank. If the spool is slid to one direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the other side, the return and supply paths are switched. As soon as the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

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

Tolerances are maintained very tightly, to be able to deal with the higher pressures and to be able to prevent leaking. The spools will often have a clearance in the housing no less than 25  $\mu\text{m}$  or a thousandth of an inch. To be able to avoid jamming the valve's extremely sensitive components and distorting the valve, the valve block will be mounted to the machine's frame by a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure may actuate or push the spool left or right. A seal enables a portion of the spool to stick out 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. Several of these valves are designed to be proportional, as a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is among the most expensive and sensitive components of a hydraulic circuit.