

## Forklift Hydraulic Control Valves

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

The spool is centrally situated, held in place with springs. In this particular position, the supply fluid can 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 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 position.

The directional control is usually made to be stackable. They generally have a valve per hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained really tightly, so as to handle the higher pressures and to be able to prevent leaking. The spools would often have a clearance within 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 would be mounted to the machine's frame with a 3-point pattern.

The location of the spool could be actuated by hydraulic pilot pressure, mechanical levers, or solenoids that push the spool left or right. 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 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, whereas other valves are designed to be on-off. The control valve is amongst the most sensitive and costly parts of a hydraulic circuit.