

## Hydraulic Control Valve for Forklift

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

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

The directional control is normally designed to be stackable. They usually have one valve for every hydraulic cylinder and a fluid input that supplies all the valves within the stack.

To be able to prevent leaking and deal with the high pressure, tolerances are maintained really 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.

The position of the spool could be actuated by hydraulic pilot pressure, mechanical levers, or solenoids that push the spool right or left. A seal allows a portion of the spool to stick out the housing where it is easy to get to the actuator.

The main valve block is usually a stack of off the shelf directional control valves chosen by flow performance and capacity. Several 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 costly components of a hydraulic circuit.