

## Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The control valve is a device that routes the fluid to the actuator. This tool would comprise cast iron or steel spool that is located within a housing. The spool slides to different positions in the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool is centrally situated, held in place by springs. In this particular location, the supply fluid could be blocked and 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 moved to the opposite side, the return and supply 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 place.

Usually, directional control valves are built in order to be stackable. They generally have one valve per hydraulic cylinder and a fluid input that supplies all the valves in the stack.

So as to avoid leaking and tackle the high pressure, tolerances are maintained very tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25  $\mu\text{m}$ . In order to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine's frame with a 3-point pattern.

The position of the spool could be actuated by hydraulic pilot pressure, mechanical levers, or solenoids which push the spool left or right. A seal enables 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, while some valves are designed to be on-off. The control valve is among the most sensitive and costly parts of a hydraulic circuit.