

## Hydraulic Control Valve for Forklift

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

The spool has a neutral or central location which is maintained by springs. In this particular location, the supply fluid is blocked or returned to the tank. When the spool is slid to a direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If 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 center or neutral position, the actuator fluid paths become blocked, locking it into place.

The directional control is typically made to be stackable. They generally have a valve for each hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

Tolerances are maintained extremely tightly, in order to handle the higher pressures and in order to avoid leaking. The spools will normally have a clearance in the housing no less than 25  $\mu\text{m}$  or a thousandth of an inch. 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' frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers may actuate or push the spool right or left. A seal enables a part 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. Some of these valves are designed to be proportional, as a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is among the most sensitive and costly components of a hydraulic circuit.