

## Hydraulic Control Valve for Forklift

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 located inside of a housing created either of steel or cast iron. The spool slides to various places within the housing. Intersecting grooves and channels route the fluid based on the spool's location.

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

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

Tolerances are maintained extremely tightly, so as to handle the higher pressures and in order to prevent leaking. The spools will usually have a clearance inside 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 parts and distorting the valve, the valve block will be mounted to the machine's frame with a 3-point pattern.

The location of the spool can be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool right or left. A seal enables a portion 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. Some of these valves are designed to be proportional, as a valve position to the proportional flow rate, while some valves are designed to be on-off. The control valve is one of the most expensive and sensitive parts of a hydraulic circuit.