

## Hydraulic Control Valves for Forklift

Hydraulic Control Valves for Forklift - The job of directional control valves is to direct the fluid to the desired actuator. Normally, these control valves consist of a spool located in a housing created either from cast iron or steel. The spool slides to various places inside the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool is centrally located, held in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. When the spool is slid to one side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the opposite side, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

Usually, directional control valves are built so as to be stackable. They generally have one valve for each and every hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained very tightly, in order to deal with the higher pressures and in order to prevent leaking. The spools would usually have a clearance inside the housing no less than  $25\text{ }\mu\text{m}$  or a thousandth of an inch. So as 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.

A hydraulic pilot pressure, mechanical levers, or solenoids can actuate or push the spool left or right. 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 is normally a stack of off the shelf directional control valves chosen by capacity and flow performance. Various valves are designed to be on-off, whereas some are designed to be proportional, as in valve position to flow rate proportional. The control valve is amongst the most sensitive and expensive components of a hydraulic circuit.