

Hydraulic Control Valves for Forklift

Hydraulic Control Valves for Forklift - The control valve is a tool which routes the fluid to the actuator. This device would include cast iron or steel spool which is situated within a housing. The spool slides to different places inside the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a central or neutral location which is maintained with springs. In this particular position, the supply fluid is returned to the tank or blocked. If the spool is slid to a side, 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 side, the return and supply paths are switched. As soon as the spool is allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are made so as to be stackable. They normally have one valve per hydraulic cylinder and a fluid input which supplies all the valves within the stack.

Tolerances are maintained really tightly, so as to deal with the higher pressures and so as to avoid leaking. The spools would often have a clearance in the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. In order to prevent 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 location of the spool may 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 protrude outside the housing where it is accessible to the actuator.

The main valve block is usually a stack of off the shelf directional control valves chosen by capacity and flow performance. Some valves are designed to be on-off, whereas some are designed to be proportional, like in flow rate proportional to valve position. The control valve is among the most sensitive and pricey components of a hydraulic circuit.