

Hydraulic Control Valve for Forklift

Hydraulic Control Valve for Forklift - The control valve is actually a tool that directs the fluid to the actuator. This tool would comprise steel or cast iron spool which is positioned in a housing. The spool slides to various places within the housing. Intersecting grooves and channels route the fluid based on the spool's position.

The spool has a central or neutral position which is maintained with springs. In this position, the supply fluid is blocked or returned to the tank. If 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 moved to the opposite direction, the supply and return paths are switched. When the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are designed to be able to be stackable. They generally have one valve for every hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to deal with the higher pressures and in order to avoid leaking. The spools would usually have a clearance within the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. In order to avoid jamming the valve's extremely sensitive components and distorting the valve, the valve block will be mounted to the machine's frame by a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or push the spool left or right. A seal allows a part of the spool to stick out the housing where it is easy to get to 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, as a valve position to the proportional flow rate, whereas some valves are designed to be on-off. The control valve is one of the most costly and sensitive components of a hydraulic circuit.