

Forklift Hydraulic Control Valve

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

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

The directional control is typically intended to be stackable. They usually have one valve for every hydraulic cylinder and one fluid input that supplies all the valves within the stack.

In order to avoid leaking and deal with the high pressure, tolerances are maintained really tight. Usually, the spools have a clearance with the housing of less than a thousandth of an inch or $25\text{ }\mu\text{m}$. To be able to prevent jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool right or left. A seal allows a portion of the spool to protrude outside the housing where it is easy to get to to the actuator.

The main valve block is generally a stack of off the shelf directional control valves chosen by capacity and flow performance. Several valves are designed to be on-off, while others are designed to be proportional, as in flow rate proportional to valve position. The control valve is amongst the most sensitive and expensive components of a hydraulic circuit.