

Hydraulic Control Valve for Forklift

Hydraulic Control Valve for Forklift - The control valve is a device which routes the fluid to the actuator. This tool will comprise steel or cast iron spool which is situated inside of housing. The spool slides to various locations within the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

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

The directional control is usually made to be stackable. They generally have a valve for every hydraulic cylinder and a fluid input which supplies all the valves within the stack.

In order to prevent leaking and deal with the high pressure, tolerances are maintained extremely 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 avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine's frame with a 3-point pattern.

The position of the spool can be actuated by hydraulic pilot pressure, mechanical levers, or solenoids that 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 is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Various valves are designed to be on-off, while some are designed to be proportional, like in valve position to flow rate proportional. The control valve is one of the most pricey and sensitive components of a hydraulic circuit.