

Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The control valve is a tool that directs the fluid to the actuator. This tool will include steel or cast iron spool that is positioned inside of housing. The spool slides to various positions in the housing. Intersecting channels and grooves route the fluid based on the spool's position.

The spool is centrally located, held in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to a direction, 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 other side, the return and supply paths are switched. As soon as the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

The directional control is typically intended to be stackable. They generally have one valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

In order to avoid leaking and tackle the high pressure, tolerances are maintained really tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or $25\text{ }\mu\text{m}$. So as 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 by a 3-point pattern.

The location of the spool could be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal allows a portion of the spool to stick out the housing where it is easy to get to the actuator.

The main valve block controls the stack of directional control valves by flow performance and capacity. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is amongst the most sensitive and costly components of a hydraulic circuit.