

Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The job of directional control valves is to direct the fluid to the desired actuator. Generally, these control valves include a spool positioned within a housing made either from steel or cast iron. The spool slides to different positions in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool is centrally positioned, held in place with springs. In this particular location, the supply fluid can be blocked and returned to the tank. If the spool is slid to a side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the other direction, 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 normally intended to be stackable. They generally have a valve for each hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

Tolerances are maintained really tightly, so as to deal with the higher pressures and to prevent leaking. The spools will often have a clearance in the housing no less than 25 μ m or a thousandth of an inch. To be able to avoid 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 might actuate or push the spool right or left. A seal enables a portion of the spool to protrude outside 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, as a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is one of the most pricey and sensitive components of a hydraulic circuit.