

Forklift Hydraulic Control Valve

Hydraulic Control Valves for Forklift - The function of directional control valves is to be able to route the fluid to the desired actuator. Normally, these control valves include a spool situated inside of a housing created either from steel or cast iron. The spool slides to different locations within the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

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

Typically, directional control valves are built to be able to be stackable. They usually have one valve for every hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

Tolerances are maintained really tightly, to be able to tackle the higher pressures and in order to prevent leaking. The spools will normally have a clearance in the housing no less than 25 μm or a thousandth of an inch. So as to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block would be mounted to the machine's frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers can actuate or push the spool left or right. A seal enables a portion of the spool to stick out the housing where it is accessible 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, whereas some valves are designed to be on-off. The control valve is amongst the most sensitive and expensive parts of a hydraulic circuit.