

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to direct the fluid to the desired actuator. Usually, these control valves comprise a spool situated in a housing created either from cast iron or steel. The spool slides to various places in the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a central or neutral position 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 one side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the other side, the return and supply paths are switched. When the spool is enabled to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

Usually, directional control valves are made to be able to be stackable. They generally have one valve for each and every hydraulic cylinder and one fluid input which supplies all the valves in the stack.

Tolerances are maintained very tightly, so as to handle the higher pressures and so as to prevent leaking. The spools will often have a clearance within the housing no less than 25 μm or a thousandth of an inch. To be able to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine's frame by a 3-point pattern.

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

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