

Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is a device which directs the fluid to the actuator. This tool would comprise steel or cast iron spool that is situated within a housing. The spool slides to various places inside 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 direction, 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 opposite side, the return and supply paths are switched. As soon as the spool is enabled to return to the neutral or center location, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are built in order to be stackable. They usually have one valve for every hydraulic cylinder and one fluid input which supplies all the valves inside the stack.

Tolerances are maintained extremely tightly, to be able to deal with the higher pressures and to prevent leaking. The spools will normally have a clearance within the housing no less than 25 μm or a thousandth of an inch. So as to prevent 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.

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

The main valve block is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Several valves are designed to be on-off, while some are designed to be proportional, like in flow rate proportional to valve position. The control valve is one of the most sensitive and pricey parts of a hydraulic circuit.