

Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is actually a tool that routes the fluid to the actuator. This device would include steel or cast iron spool which is situated in a housing. The spool slides to various locations in the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool is centrally located, held in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. When the spool is slid to one 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 direction, the return and supply paths are switched. Once the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are made so as to be stackable. They usually have one valve per hydraulic cylinder and one fluid input which supplies all the valves in the stack.

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

Mechanical levers, solenoids or a hydraulic pilot pressure might actuate or push the spool right or left. A seal allows a portion 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, 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.