

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is actually a tool that routes the fluid to the actuator. This device would comprise steel or cast iron spool which is situated in a housing. The spool slides to various positions within the housing. Intersecting channels and grooves 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 a direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the other direction, the return and supply paths are switched. Once the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

The directional control is normally intended to be stackable. They generally have one valve per hydraulic cylinder and one fluid input that supplies all the valves within the stack.

Tolerances are maintained really tightly, in order to handle the higher pressures and to avoid leaking. The spools will normally have a clearance inside the housing no less than 25 μm or a thousandth of an inch. In order 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.

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

The main valve block is generally a stack of off the shelf directional control valves chosen by capacity and flow performance. Several valves are designed to be on-off, while others are designed to be proportional, as in valve position to flow rate proportional. The control valve is among the most costly and sensitive components of a hydraulic circuit.