

Forklift Hydraulic Control Valve

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

The spool has a neutral or central location which is maintained with springs. In this location, the supply fluid is blocked or 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 moved to the other side, 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.

Normally, directional control valves are built so as to be stackable. They normally have one valve per hydraulic cylinder and a fluid input that supplies all the valves in the stack.

Tolerances are maintained extremely tightly, in order to deal with the higher pressures and to avoid leaking. The spools would often 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 will be mounted to the machine's frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers 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 easy to get to to the actuator.

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