

Hydraulic Control Valves for Forklift

Hydraulic Control Valves for Forklift - The function of directional control valves is to route the fluid to the desired actuator. Usually, these control valves include a spool located inside of a housing created either of cast iron or steel. The spool slides to different locations within 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 by springs. In this particular location, the supply fluid is returned to the tank or blocked. If 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 direction, the supply and return paths are switched. When the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

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

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

Mechanical levers, solenoids or a hydraulic pilot pressure can 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, like a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is amongst the most pricey and sensitive components of a hydraulic circuit.