

Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to direct the fluid to the desired actuator. Generally, these control valves include a spool situated inside of a housing created either from cast iron or steel. The spool slides to different places within the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a neutral or central position that is maintained by springs. In this particular position, the supply fluid is blocked or returned to the tank. If the spool is slid to a side, the hydraulic fluid is directed 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. Once the spool is allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are built in order to be stackable. They generally have a valve for each and every hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

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

A hydraulic pilot pressure, mechanical levers, or solenoids could actuate or push the spool right or left. A seal enables a portion of the spool to stick out the housing where it is easy to get 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, whereas some are designed to be proportional, as in valve position to flow rate proportional. The control valve is amongst the most costly and sensitive components of a hydraulic circuit.