Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valves - The function of directional control valves is to be able to direct the fluid to the desired actuator. Normally, these control valves comprise a spool situated within a housing made either of cast iron or steel. The spool slides to various places in the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool has a central or neutral position that is maintained with springs. In this particular location, the supply fluid is blocked or returned to the tank. When the spool is slid to one side, 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 supply and return paths are switched. Once the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are designed so as to be stackable. They usually have one valve per hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

Tolerances are maintained extremely tightly, to be able to tackle the higher pressures and to prevent leaking. The spools would usually have a clearance within the housing no less than 25 Ã?â??Ã?Âµm or a thousandth of an inch. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine' frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure may actuate or push the spool right or left. A seal enables a portion of the spool to protrude outside the housing where it is easy to get to to the actuator.

The main valve block is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, whereas others are designed to be proportional, like in valve position to flow rate proportional. The control valve is among the most pricey and sensitive parts of a hydraulic circuit.