Forklift Hydraulic Control Valves

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

The spool is centrally situated, help in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. If 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 supply and return paths are switched. When the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

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

Tolerances are maintained really tightly, in order to deal with the higher pressures and to be able to avoid leaking. The spools would normally have a clearance within the housing no less than 25 Âµm 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 would be mounted to the machine' frame by a 3-point pattern.

The position of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that 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 capacity and flow performance. Some valves are designed to be on-off, while some are designed to be proportional, like in flow rate proportional to valve position. The control valve is amongst the most pricey and sensitive parts of a hydraulic circuit.