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 positioned in a housing created either from cast iron or steel. The spool slides to different locations within the housing. Intersecting grooves and channels route the fluid based on the spool's location.

The spool has a neutral or central 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 directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the other side, the supply and return paths are switched. When the spool is allowed to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

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

Tolerances are maintained extremely tightly, in order to deal with the higher pressures and in order to prevent leaking. The spools will normally have a clearance within the housing no less than 25 Âµm or a thousandth of an inch. In order to avoid 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.

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 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. Several valves are designed to be on-off, whereas others are designed to be proportional, as in flow rate proportional to valve position. The control valve is amongst the most pricey and sensitive parts of a hydraulic circuit.