Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valves - The job of directional control valves is to be able to direct the fluid to the desired actuator. Generally, these control valves consist of a spool located inside of a housing created either of steel or cast iron. The spool slides to different places within the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool has a neutral or central location that is maintained by springs. In this position, the supply fluid is returned to the tank or blocked. If the spool is slid to a side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the opposite direction, the return and supply paths are switched. As soon as the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

The directional control is usually designed to be stackable. They usually have one valve per hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

So as to avoid leaking and handle the high pressure, tolerances are maintained really tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã?â??Ã?Âµm. To be able to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block would be mounted to the machine' frame by a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids could actuate or push the spool left or right. A seal allows a part of the spool to protrude outside the housing where it is easy to get to to the actuator.

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