Forklift Hydraulic Control Valves

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

The spool has a central or neutral position which is maintained with springs. In this particular position, the supply fluid is returned to the tank or blocked. 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. When the spool is moved to the opposite side, the return and supply paths are switched. Once the spool is allowed to return to the neutral or center location, 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 in the stack.

To be able to avoid leaking and handle the high pressure, tolerances are maintained extremely tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã?â??Ã?Âµm. In order 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.

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

The main valve block controls the stack of directional control valves by flow performance and capacity. Some of these valves are designed to be proportional, like a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is amongst the most sensitive and costly components of a hydraulic circuit.