Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to direct the fluid to the desired actuator. Generally, these control valves include a spool positioned in a housing created either of steel or cast iron. The spool slides to different positions in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

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

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

Tolerances are maintained very tightly, to be able to deal with the higher pressures and in order to prevent leaking. The spools will usually have a clearance within the housing no less than 25 Âµm or a thousandth of an inch. To be able to avoid jamming the valve's extremely sensitive components and distorting the valve, the valve block will be mounted to the machine' frame with a 3-point pattern.

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