Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves comprise a spool positioned inside of a housing made either of steel or cast iron. The spool slides to various places in 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 with springs. In this particular location, the supply fluid is returned to the tank or blocked. When the spool is slid to one direction, 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 side, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into place.

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

In order to avoid leaking and deal with the high pressure, tolerances are maintained extremely tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. 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 by a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or push the spool right or left. A seal enables a portion 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. Several of these valves are designed to be proportional, as a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is amongst the most costly and sensitive components of a hydraulic circuit.