Hydraulic Control Valve for Forklift

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

The spool is centrally located, help in place by springs. In this particular location, the supply fluid could be blocked and 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 transferred to the other direction, the return and supply paths are switched. Once the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

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

To be able to prevent leaking and tackle 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 Âµm. In order to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine' frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers can 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 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, while some are designed to be proportional, as in flow rate proportional to valve position. The control valve is one of the most expensive and sensitive parts of a hydraulic circuit.