Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to direct the fluid to the desired actuator. Usually, these control valves include a spool positioned within a housing created either from cast iron or steel. The spool slides to various places within the housing. Intersecting channels and grooves route the fluid based on the spool's position.

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

Normally, directional control valves are designed in order to be stackable. They usually have one valve for each hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

In order to prevent leaking and deal with the high pressure, tolerances are maintained very 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 prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block will be mounted to the machine' frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids might actuate or push the spool left or right. A seal enables a portion of the spool to stick out 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, while others are designed to be proportional, like in valve position to flow rate proportional. The control valve is among the most costly and sensitive components of a hydraulic circuit.