Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valves - The function of directional control valves is to direct the fluid to the desired actuator. Generally, these control valves include a spool located inside of a housing made either from 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 is centrally positioned, help in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. 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. As soon as the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

The directional control is normally made to be stackable. They generally have a valve per hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

To be able to avoid leaking and deal with the high pressure, tolerances are maintained very tight. Usually, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã‚Âµm. In order to prevent jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine' frame by a 3-point pattern.

The position of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool right or left. A seal enables a portion of the spool to stick out the housing where it is accessible to the actuator.

The main valve block is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, while others are designed to be proportional, as in flow rate proportional to valve position. The control valve is one of the most pricey and sensitive parts of a hydraulic circuit.