Hydraulic Control Valve for Forklift

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

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 a side, 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 opposite direction, the return and supply paths are switched. When the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into position.

The directional control is usually designed to be stackable. They generally have a valve for every hydraulic cylinder and a fluid input which supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to tackle the higher pressures and to prevent leaking. The spools would 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 parts 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 hydraulic pilot pressure, mechanical levers, 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 easy to get to to the actuator.

The main valve block is generally 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 sensitive and expensive components of a hydraulic circuit.