Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves consist of a spool situated within a housing created either of steel or cast iron. The spool slides to different locations in the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a central or neutral location which is maintained with springs. In this location, the supply fluid is blocked or returned to the tank. When the spool is slid to a side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the other direction, the return and supply paths are switched. When the spool is allowed to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are built to be able to be stackable. They normally have a valve for every hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

Tolerances are maintained really tightly, in order to deal with the higher pressures and in order to avoid leaking. The spools would usually have a clearance in the housing no less than 25 Âµm or a thousandth of an inch. In order to prevent 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 location of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal allows a portion of the spool to protrude outside 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. Various 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 among the most costly and sensitive parts of a hydraulic circuit.