Hydraulic Control Valves for Forklift

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

The spool is centrally situated, help in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. If 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. If the spool is moved to the opposite direction, the supply and return paths are switched. When the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are built in order to be stackable. They usually have a valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained very tightly, in order to deal with the higher pressures and in order to avoid leaking. The spools will often have a clearance in the housing no less than 25 Âµm or a thousandth of an inch. So as to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block will 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 right or left. A seal allows a part of the spool to stick out 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. Various valves are designed to be on-off, whereas others are designed to be proportional, as in valve position to flow rate proportional. The control valve is among the most costly and sensitive parts of a hydraulic circuit.