Forklift Hydraulic Control Valves

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

The spool is centrally located, help in place with springs. In this particular location, the supply fluid could be blocked and returned to the tank. When the spool is slid to one side, the hydraulic fluid is directed 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. As soon as the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are designed so as to be stackable. They generally have one valve per hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

So as to prevent leaking and handle the high pressure, tolerances are maintained extremely tight. Usually, 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 would be mounted to the machine' frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers can actuate or push the spool right or left. 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 controls the stack of directional control valves by capacity and flow performance. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is one of the most sensitive and expensive parts of a hydraulic circuit.