Forklift Hydraulic Control Valve

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

The spool is centrally located, help in place by springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to a direction, 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 allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

The directional control is usually designed to be stackable. They usually have a valve per hydraulic cylinder and a fluid input that supplies all the valves within 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 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 with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure can actuate or push the spool right or left. A seal allows a portion of the spool to stick out the housing where it is accessible to the actuator.

The main valve block controls the stack of directional control valves by flow performance and capacity. Some of these valves are designed to be proportional, as a valve position to the proportional flow rate, whereas other valves are designed to be on-off. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.