Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The function of directional control valves is to route the fluid to the desired actuator. Normally, these control valves comprise a spool positioned within a housing created either from steel or cast iron. The spool slides to various locations inside the housing. Intersecting channels and grooves direct the fluid based on the spool's position.

The spool has a neutral or central position that is maintained with springs. In this position, the supply fluid is blocked or returned to the tank. If the spool is slid to one 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 other side, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are designed in order to be stackable. They normally have one valve for every hydraulic cylinder and a fluid input which supplies all the valves in the stack.

To be able to avoid leaking and deal with the high pressure, tolerances are maintained really tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine' frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers might actuate or push the spool left or right. 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 normally a stack of off the shelf directional control valves chosen by capacity and flow performance. Several valves are designed to be on-off, while some are designed to be proportional, as in valve position to flow rate proportional. The control valve is one of the most sensitive and expensive components of a hydraulic circuit.