Forklift Hydraulic Control Valves

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

The spool is centrally positioned, help in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. If 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 opposite side, the return and supply paths are switched. As soon as the spool is allowed to return to the center or neutral location, the actuator fluid paths become blocked, locking it into position.

The directional control is typically made to be stackable. They generally have one valve for each and 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 extremely tight. Usually, 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 will be mounted to the machine' frame by a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids could actuate or push the spool left or right. A seal allows a part of the spool to protrude outside 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 proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is among the most expensive and sensitive parts of a hydraulic circuit.