Hydraulic Control Valves for Forklift

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

The spool has a neutral or central position which is maintained with springs. In this location, the supply fluid is returned to the tank or blocked. When the spool is slid to a direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the opposite direction, the return and supply paths are switched. As soon as the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into position.

The directional control is usually designed to be stackable. They generally have one valve for every hydraulic cylinder and one fluid input that supplies all the valves within the stack.

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

The position of the spool can be actuated by hydraulic pilot pressure, mechanical levers, or solenoids which push the spool right or left. A seal enables a portion of the spool to stick out 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, 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 pricey components of a hydraulic circuit.