Forklift Hydraulic Control Valves

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

The spool has a neutral or central location which is maintained by springs. In this particular position, the supply fluid is returned to the tank or blocked. When the spool is slid to a side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite direction, the return and supply paths are switched. When 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 normally intended to be stackable. They usually have one valve for every hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained very tightly, to be able to tackle the higher pressures and to prevent leaking. The spools would normally have a clearance in the housing no less than 25 Âµm or a thousandth of an inch. To be able to prevent jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine' frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool left or right. A seal enables a part 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. Some of these valves are designed to be proportional, as a proportional flow rate to the valve position, while other valves are designed to be on-off. The control valve is amongst the most sensitive and pricey components of a hydraulic circuit.