Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is a tool that directs the fluid to the actuator. This device would consist of steel or cast iron spool that is situated within a housing. The spool slides to various places within the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

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

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

Tolerances are maintained very tightly, to be able to handle the higher pressures and in order to avoid 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 avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine' frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure may actuate or push the spool right or left. A seal enables a portion 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 capacity and flow performance. Several of these valves are designed to be proportional, like a valve position to the proportional flow rate, while some valves are designed to be on-off. The control valve is among the most sensitive and expensive components of a hydraulic circuit.