Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is actually a tool that directs the fluid to the actuator. This tool would comprise cast iron or steel spool which is positioned in a housing. The spool slides to various locations inside the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool is centrally located, help in place by springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to one side, the hydraulic fluid is directed 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. When the spool is allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are made to be able to be stackable. They normally have one valve per hydraulic cylinder and a fluid input that supplies all the valves within the stack.

Tolerances are maintained really tightly, so as to deal with the higher pressures and to prevent leaking. The spools would usually 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 by a 3-point pattern.

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