Hydraulic Control Valves for Forklift

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

The spool is centrally situated, help in place by springs. In this particular position, the supply fluid can 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 moved to the opposite direction, the return and supply paths are switched. When the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are built so as to be stackable. They usually have one valve per hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

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

The position of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool left or right. A seal allows a portion of the spool to stick out the housing where it is easy to get to to the actuator.

The main valve block is generally a stack of off the shelf directional control valves chosen by capacity and flow performance. Several valves are designed to be on-off, while some are designed to be proportional, as in flow rate proportional to valve position. The control valve is among the most costly and sensitive components of a hydraulic circuit.