Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The control valve is a device that routes the fluid to the actuator. This device will comprise steel or cast iron spool which is located in a housing. The spool slides to various positions within the housing. Intersecting channels and grooves direct 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 blocked or returned to the tank. If 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 transferred to the opposite direction, the supply and return paths are switched. Once the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

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

To be able to avoid leaking and deal with 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. So as 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.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool right or left. A seal allows a portion of the spool to protrude outside the housing where it is accessible to the actuator.

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