Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The control valve is actually a device which routes the fluid to the actuator. This device will comprise steel or cast iron spool which is situated in a housing. The spool slides to various places in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a neutral or central location that is maintained with springs. In this particular position, the supply fluid is returned to the tank or blocked. When the spool is slid to one direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the other side, the return and supply paths are switched. Once the spool is enabled to return to the neutral or center location, 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.

In order to avoid leaking and handle the high pressure, tolerances are maintained very tight. Typically, 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 will be mounted to the machine' frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or push the spool right or left. A seal enables a part of the spool to protrude outside 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, like a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is amongst the most expensive and sensitive parts of a hydraulic circuit.