Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to route the fluid to the desired actuator. Normally, these control valves include a spool situated in a housing made either of cast iron or steel. The spool slides to different positions inside the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a central or neutral position that is maintained by springs. In this location, the supply fluid is returned to the tank or blocked. When the spool is slid to one side, 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. As soon as the spool is allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

The directional control is normally designed to be stackable. They generally have one valve per hydraulic cylinder and one fluid input which supplies all the valves in the stack.

So as to prevent leaking and handle the high pressure, tolerances are maintained really tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. So as to prevent 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.

The location of the spool could be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal enables a portion of the spool to stick out the housing where it is accessible to the actuator.

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