Hydraulic Control Valve for Forklift

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

The spool has a central or neutral position which is maintained with springs. In this particular location, the supply fluid is returned to the tank or blocked. If 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. When the spool is moved to the opposite side, the supply and return paths are switched. When the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

The directional control is typically designed to be stackable. They generally have a valve for every hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

To be able to prevent leaking and deal with the high pressure, tolerances are maintained extremely 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 jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine' frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers could actuate or push the spool right or left. A seal enables a portion 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 flow performance and capacity. Some of these valves are designed to be proportional, as a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is one of the most pricey and sensitive parts of a hydraulic circuit.