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 consist of a spool situated inside of a housing made either from cast iron or steel. The spool slides to various locations within the housing. Intersecting grooves and channels route the fluid based on the spool's location.

The spool has a neutral or central position which is maintained by springs. In this particular location, the supply fluid is returned to the tank or blocked. If the spool is slid to a direction, 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 other direction, the return and supply 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 position.

Usually, directional control valves are designed so as to be stackable. They normally have one valve for every hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

Tolerances are maintained very tightly, in order to handle the higher pressures and to prevent leaking. The spools would often have a clearance in the housing no less than 25 Âµm or a thousandth of an inch. In order to avoid jamming the valve's extremely sensitive parts and distorting the valve, the valve block would be mounted to the machine' frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers might actuate or push the spool left or right. A seal allows a portion of the spool to stick out 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. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is among the most sensitive and costly components of a hydraulic circuit.