Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to route the fluid to the desired actuator. Generally, these control valves comprise a spool located inside of a housing made either from cast iron or steel. The spool slides to different positions inside the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool has a neutral or central location 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. When the spool is transferred to the opposite direction, the supply and return paths are switched. Once the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

The directional control is normally made to be stackable. They generally have a valve for each and every hydraulic cylinder and one fluid input that supplies all the valves within the stack.

Tolerances are maintained extremely tightly, so as to tackle the higher pressures and to prevent leaking. The spools would usually have a clearance inside the housing no less than 25 Âµm or a thousandth of an inch. To be able 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.

The position of the spool may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool right or left. A seal enables 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 capacity and flow performance. Some of these valves are designed to be proportional, like 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 expensive and sensitive parts of a hydraulic circuit.