Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The job of directional control valves is to route the fluid to the desired actuator. Generally, these control valves include a spool located in a housing created either of steel or cast iron. The spool slides to different positions in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a central or neutral location which is maintained by springs. In this location, the supply fluid is returned to the tank or blocked. When the spool is slid to a direction, the hydraulic fluid is directed 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 position, the actuator fluid paths become blocked, locking it into position.

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

Tolerances are maintained very tightly, so as to handle the higher pressures and to be able to prevent leaking. The spools will normally have a clearance inside the housing no less than 25 Ã?â??Ã?Âµm or a thousandth of an inch. In order 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 hydraulic pilot pressure, mechanical levers, or solenoids that 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 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, while some are designed to be proportional, like in valve position to flow rate proportional. The control valve is one of the most costly and sensitive components of a hydraulic circuit.