Forklift Hydraulic Control Valves

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

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 side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite side, the return and supply paths are switched. Once the spool is enabled to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

Typically, directional control valves are built to be able to be stackable. They normally have a valve per hydraulic cylinder and a fluid input that supplies all the valves in the stack.

In order to avoid leaking and tackle the high pressure, tolerances are maintained really tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã?â??Ã?Âµm. In order to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block will be mounted to the machine' frame with a 3-point pattern.

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