Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is a device which routes the fluid to the actuator. This device will include cast iron or steel spool that is positioned within a housing. The spool slides to various locations inside the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool has a central or neutral location that is maintained with springs. In this particular position, 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. If the spool is moved to the opposite direction, the supply and return paths are switched. As soon as the spool is enabled to return to the neutral or center location, the actuator fluid paths become blocked, locking it into position.

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

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

The location of the spool could be actuated by hydraulic pilot pressure, mechanical levers, or solenoids that push the spool left or right. A seal allows a part 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, as a proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is one of the most expensive and sensitive parts of a hydraulic circuit.