Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is a device that directs the fluid to the actuator. This device would consist of cast iron or steel spool that is located in a housing. The spool slides to various locations in the housing. Intersecting grooves and channels route the fluid based on the spool's position.

The spool is centrally positioned, help in place by springs. In this particular location, the supply fluid could be blocked and returned to the tank. When the spool is slid to one 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 opposite side, 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 place.

The directional control is usually intended to be stackable. They normally have a valve per hydraulic cylinder and one fluid input which supplies all the valves in the stack.

To be able to avoid leaking and handle the high pressure, tolerances are maintained extremely tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. To be able to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block will 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 that push the spool left or right. A seal enables 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 capacity and flow performance. Several 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 among the most sensitive and costly parts of a hydraulic circuit.