Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The job of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves comprise a spool positioned in a housing made either of cast iron or steel. The spool slides to different locations inside 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 routed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the opposite side, the supply and return paths are switched. When 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 made to be able to be stackable. They usually have a valve for every hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

Tolerances are maintained extremely tightly, in order to deal with the higher pressures and to be able to avoid leaking. The spools will often have a clearance inside the housing no less than 25 Âµm or a thousandth of an inch. To be able to avoid jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine' frame with a 3-point pattern.

The position of the spool can be actuated by hydraulic pilot pressure, mechanical levers, 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 is normally 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, as in flow rate proportional to valve position. The control valve is amongst the most sensitive and expensive components of a hydraulic circuit.