Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to route the fluid to the desired actuator. Usually, these control valves comprise a spool located within a housing made either from cast iron or steel. The spool slides to different places within the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool is centrally situated, help in place with springs. In this particular location, the supply fluid can be blocked and returned to the tank. If 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. When the spool is moved to the opposite side, the supply and return paths are switched. Once the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

Usually, directional control valves are designed in order to be stackable. They normally have one 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 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 distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine' frame by a 3-point pattern.

The position of the spool could be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool left or right. A seal enables a portion of the spool to protrude outside 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 capacity and flow performance. Various valves are designed to be on-off, while some are designed to be proportional, like in flow rate proportional to valve position. The control valve is amongst the most sensitive and pricey parts of a hydraulic circuit.