Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to be able to route the fluid to the desired actuator. Normally, 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 channels and grooves direct the fluid based on the spool's position.

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

The directional control is normally intended to be stackable. They normally have one valve for each and every hydraulic cylinder and one fluid input which supplies all the valves within the stack.

So as to avoid leaking and deal with the high pressure, tolerances are maintained very tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. In order to avoid 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.

The location of the spool could be actuated by hydraulic pilot pressure, mechanical levers, or solenoids that push the spool right or left. 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 flow performance and capacity. Several valves are designed to be on-off, while others are designed to be proportional, as in flow rate proportional to valve position. The control valve is among the most costly and sensitive components of a hydraulic circuit.