Forklift Hydraulic Control Valve

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

The spool has a central or neutral location which is maintained by springs. In this location, the supply fluid is returned to the tank or blocked. When 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. If the spool is transferred to the opposite direction, the supply and return paths are switched. As soon as the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

The directional control is usually designed to be stackable. They usually have a valve per hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

So as to avoid leaking and deal with 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 Ã?â??Ã?Âµm. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine' frame by a 3-point pattern.

The location of the spool may be actuated by hydraulic pilot pressure, mechanical levers, or solenoids which push the spool left or right. A seal enables a part 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, whereas others are designed to be proportional, like in valve position to flow rate proportional. The control valve is one of the most pricey and sensitive components of a hydraulic circuit.