Hydraulic Control Valves for Forklift

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

The spool has a central or neutral location which is maintained with springs. In this location, the supply fluid is blocked or 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 direction, the supply and return paths are switched. Once the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

Typically, directional control valves are designed in order to be stackable. They normally have a valve for every hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

To be able to prevent leaking and handle the high pressure, tolerances are maintained really tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã‚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 by a 3-point pattern.

The position of the spool can be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool right or left. A seal enables a part of the spool to protrude outside the housing where it is easy to get to to the actuator.

The main valve block is generally a stack of off the shelf directional control valves chosen by capacity and flow performance. Several valves are designed to be on-off, whereas others are designed to be proportional, like in flow rate proportional to valve position. The control valve is amongst the most sensitive and costly components of a hydraulic circuit.