Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valves - The job of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves consist of a spool positioned inside of a housing made either of cast iron or steel. The spool slides to various positions inside the housing. Intersecting channels and grooves direct 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 can be blocked and returned to the tank. When the spool is slid to a side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the other side, the supply and return paths are switched. When the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into position.

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

To be able to avoid leaking and handle the high pressure, tolerances are maintained very tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Ã?â??Ã?µm. In order to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine' frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure might actuate or push the spool right or left. A seal allows 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. Various valves are designed to be on-off, whereas some are designed to be proportional, like in flow rate proportional to valve position. The control valve is among the most costly and sensitive components of a hydraulic circuit.