Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The job of directional control valves is to route the fluid to the desired actuator. Normally, these control valves consist of a spool located inside of a housing created either from 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 located, help in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to one direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the opposite direction, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral place, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are made in order to be stackable. They usually have a valve per hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

So as to avoid leaking and tackle 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 Âµm. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, 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 left or right. 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 usually a stack of off the shelf directional control valves chosen by flow performance and capacity. Various 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 amongst the most expensive and sensitive components of a hydraulic circuit.