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. Generally, these control valves include a spool situated in a housing made either from steel or cast iron. The spool slides to various places inside the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool is centrally located, help in place by springs. In this particular location, the supply fluid could be blocked and returned to the tank. If 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. When the spool is transferred to the other side, the return and supply paths are switched. Once the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

Typically, directional control valves are built so as to be stackable. They usually have one valve for each and every hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained very tightly, in order to deal with the higher pressures and to be able to prevent leaking. The spools will usually have a clearance within the housing no less than 25 Âµm or a thousandth of an inch. In order to avoid jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine' frame with a 3-point pattern.

The location of the spool could be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal allows 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 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 amongst the most sensitive and pricey parts of a hydraulic circuit.