Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The function of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves include a spool situated inside of a housing made either of steel or cast iron. The spool slides to various positions within the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a neutral or central location that is maintained by springs. In this position, the supply fluid is returned to the tank or blocked. When the spool is slid to one side, 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 other side, the return and supply paths are switched. Once the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are made to be able to be stackable. They generally have a valve per hydraulic cylinder and a fluid input which supplies all the valves within the stack.

Tolerances are maintained really tightly, to be able to tackle the higher pressures and in order to prevent leaking. The spools would normally have a clearance in the housing no less than 25 Âµm or a thousandth of an inch. In order to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine' frame by 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 easy to get to to the actuator.

The main valve block is usually a stack of off the shelf directional control valves chosen by capacity and flow performance. Several 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 expensive parts of a hydraulic circuit.