Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The control valve is actually a device which routes the fluid to the actuator. This device will consist of steel or cast iron spool which is positioned in a housing. The spool slides to different places inside the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool is centrally positioned, help in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. When the spool is slid to a side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the other side, the return and supply paths are switched. As soon as the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into place.

Usually, directional control valves are made in order to be stackable. They normally have a valve for each hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained very tightly, so as to tackle the higher pressures and in order to avoid leaking. The spools will normally have a clearance inside 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 will be mounted to the machine' frame with a 3-point pattern.

The location 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 stick out the housing where it is accessible to the actuator.

The main valve block controls the stack of directional control valves by capacity and flow performance. Some of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is among the most sensitive and costly parts of a hydraulic circuit.