Forklift Hydraulic Control Valves

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

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. If the spool is slid to one side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the opposite side, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

Normally, directional control valves are made so as to be stackable. They usually have one valve per hydraulic cylinder and one fluid input which supplies all the valves inside the stack.

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

Solenoids, a hydraulic pilot pressure or mechanical levers might actuate or 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, while some valves are designed to be on-off. The control valve is among the most expensive and sensitive parts of a hydraulic circuit.