Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is a tool which directs the fluid to the actuator. This device will include cast iron or steel spool which is positioned in a housing. The spool slides to different positions within the housing. Intersecting grooves and channels route the fluid based on the spool's position.

The spool has a neutral or central position which is maintained by springs. In this position, the supply fluid is returned to the tank or blocked. 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 moved to the other direction, the supply and return paths are switched. As soon as the spool is allowed to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

Usually, directional control valves are designed to be able to be stackable. They usually have a valve per hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

Tolerances are maintained extremely tightly, in order to deal with the higher pressures and to prevent leaking. The spools would normally have a clearance inside the housing no less than 25 Âµm or a thousandth of an inch. So as to avoid distorting the valve block and jamming the valve's extremely sensitive components, 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 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 controls the stack of directional control valves by capacity and flow performance. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is one of the most costly and sensitive components of a hydraulic circuit.