Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The control valve is a device which routes the fluid to the actuator. This device would consist of cast iron or steel 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 location, the supply fluid could be blocked and returned to the tank. When 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 other side, the supply and return paths are switched. When the spool is enabled to return to the center or neutral location, the actuator fluid paths become blocked, locking it into position.

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

So as to prevent leaking and deal with the high pressure, tolerances are maintained very tight. Normally, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. To be able 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 hydraulic pilot pressure, mechanical levers, or solenoids which push the spool right or left. A seal enables 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 normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, while others are designed to be proportional, like in flow rate proportional to valve position. The control valve is one of the most sensitive and costly components of a hydraulic circuit.