Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to direct the fluid to the desired actuator. Generally, these control valves include a spool situated in a housing made either of cast iron or steel. The spool slides to different places in the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a neutral or central position which is maintained with springs. In this particular position, the supply fluid is blocked or 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. If the spool is transferred to the other side, the supply and return 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 place.

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

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

A hydraulic pilot pressure, mechanical levers, or solenoids may 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 flow performance and capacity. Some of these valves are designed to be proportional, as a valve position to the proportional flow rate, whereas some valves are designed to be on-off. The control valve is one of the most sensitive and expensive parts of a hydraulic circuit.