Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves consist of a spool located within a housing made either from cast iron or steel. The spool slides to different places in the housing. Intersecting channels and grooves route the fluid based on the spool's position.

The spool is centrally situated, help in place by springs. In this particular location, the supply fluid can be blocked and returned to the tank. When the spool is slid to a 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 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 so as to be stackable. They generally have one valve per hydraulic cylinder and a fluid input that supplies all the valves in the stack.

Tolerances are maintained extremely tightly, to be able to handle the higher pressures and in order to avoid leaking. The spools will normally have a clearance in 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.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool left or right. A seal enables a part of the spool to protrude outside 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 proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is one of the most pricey and sensitive parts of a hydraulic circuit.