Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The function of directional control valves is to be able to route the fluid to the desired actuator. Usually, these control valves comprise a spool positioned in a housing made either of cast iron or steel. The spool slides to various locations inside the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool has a central or neutral position that is maintained with springs. In this particular location, the supply fluid is blocked or returned to the tank. When the spool is slid to a direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the opposite direction, the return and supply paths are switched. As soon as the spool is enabled to return to the center or neutral position, the actuator fluid paths become blocked, locking it into position.

The directional control is normally intended to be stackable. They usually have one valve for every hydraulic cylinder and a fluid input which supplies all the valves within the stack.

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

A hydraulic pilot pressure, mechanical levers, or solenoids can 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. Several of these valves are designed to be proportional, as 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 sensitive and costly components of a hydraulic circuit.