Hydraulic Control Valve for Forklift

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

The spool has a central or neutral 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 direction, the return and supply paths are switched. As soon as the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are made so as to be stackable. They usually have one valve per hydraulic cylinder and one fluid input that supplies all the valves within the stack.

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

Mechanical levers, solenoids or a hydraulic pilot pressure can actuate or push the spool left or right. 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 amongst the most costly and sensitive parts of a hydraulic circuit.