Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The control valve is a tool which routes the fluid to the actuator. This tool will consist of steel or cast iron spool which is situated in a housing. The spool slides to different places inside the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a neutral or central position that is maintained with springs. In this location, the supply fluid is returned to the tank or blocked. If the spool is slid to a side, 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 side, the return and supply paths are switched. As soon as the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are designed in order to be stackable. They normally have a valve for every hydraulic cylinder and a fluid input which supplies all the valves within the stack.

So as to avoid leaking and handle the high pressure, tolerances are maintained extremely tight. Usually, the spools have a clearance with the housing of less than a thousandth of an inch or 25 Âµm. So as to prevent jamming the valve's extremely sensitive components and distorting the valve, the valve block will be mounted to the machine' frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers can actuate or push the spool right or left. A seal allows 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, like a valve position to the proportional flow rate, whereas other valves are designed to be on-off. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.