Hydraulic Control Valve for Forklift

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

The spool has a neutral or central position that is maintained by springs. In this particular location, the supply fluid is returned to the tank or blocked. When the spool is slid to one direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite side, the return and supply paths are switched. When the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

The directional control is typically designed to be stackable. They normally have one valve per hydraulic cylinder and a fluid input that supplies all the valves in the stack.

Tolerances are maintained very tightly, so as to tackle the higher pressures and to be able to prevent 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 avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine' frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers could 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. Several of these valves are designed to be proportional, as a valve position to the proportional flow rate, while other valves are designed to be on-off. The control valve is one of the most sensitive and costly parts of a hydraulic circuit.