Forklift Hydraulic Control Valve

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 comprise a spool located inside of a housing made either from steel or cast iron. The spool slides to various positions within the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool has a central or neutral location which is maintained by springs. In this location, the supply fluid is blocked or returned to the tank. 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 transferred to the opposite side, the return and supply paths are switched. When the spool is allowed to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

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

Tolerances are maintained very tightly, in order to deal with the higher pressures and to be able to avoid leaking. The spools will often have a clearance inside the housing no less than 25 Ã?â??Ã?Âµm or a thousandth of an inch. To be able to avoid jamming the valve's extremely sensitive parts and distorting the valve, 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 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 is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Various valves are designed to be on-off, while some are designed to be proportional, like in flow rate proportional to valve position. The control valve is amongst the most costly and sensitive components of a hydraulic circuit.