Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The job of directional control valves is to direct the fluid to the desired actuator. Usually, these control valves include a spool positioned inside of a housing made either from steel or cast iron. 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 neutral or central position which is maintained by springs. In this particular position, 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 transferred to the other direction, the return and supply paths are switched. Once the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

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

Tolerances are maintained extremely tightly, to be able to deal with the higher pressures and to prevent leaking. The spools would normally 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.

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or push the spool left or right. A seal allows a portion of the spool to stick out the housing where it is easy to get to to the actuator.

The main valve block is usually a stack of off the shelf directional control valves chosen by flow performance and capacity. Several valves are designed to be on-off, while some are designed to be proportional, as in flow rate proportional to valve position. The control valve is amongst the most expensive and sensitive parts of a hydraulic circuit.