Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valve - The control valve is actually a device which routes the fluid to the actuator. This device would include steel or cast iron spool that is situated in a housing. The spool slides to different places in the housing. Intersecting grooves and channels route the fluid based on the spool's position.

The spool has a central or neutral location that is maintained with springs. In this position, the supply fluid is returned to the tank or blocked. If 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. If the spool is moved to the opposite direction, the supply and return paths are switched. Once the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

Usually, directional control valves are built to be able to be stackable. They generally have a valve for each hydraulic cylinder and a fluid input that supplies all the valves within the stack.

Tolerances are maintained very tightly, in order to deal with the higher pressures and so as to avoid leaking. The spools will usually have a clearance inside the housing no less than 25 Âµm or a thousandth of an inch. So as to avoid 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.

The location of the spool can be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal enables a part of the spool to stick out the housing where it is easy to get to to the actuator.

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