Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valves - The control valve is actually a device which directs the fluid to the actuator. This device would include steel or cast iron spool which is located within a housing. The spool slides to various 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 blocked or returned to the tank. When the spool is slid to a 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 other direction, the supply and return paths are switched. When the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

Usually, directional control valves are built so as to be stackable. They normally have one valve per hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained extremely tightly, in order to handle the higher pressures and in order to prevent leaking. The spools will normally have a clearance within the housing no less than 25 Ã‚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.

Mechanical levers, solenoids or a hydraulic pilot pressure may actuate or push the spool left or right. A seal allows a portion of the spool to protrude outside 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 others are designed to be proportional, like in valve position to flow rate proportional. The control valve is amongst the most expensive and sensitive parts of a hydraulic circuit.