

Forklift Hydraulic Control Valve

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

The spool is centrally positioned, held in place by springs. In this particular position, the supply fluid can be blocked and 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 opposite direction, the return and supply paths are switched. As soon as the spool is allowed to return to the center or neutral position, the actuator fluid paths become blocked, locking it into place.

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

In order to prevent leaking and deal with the high pressure, tolerances are maintained extremely tight. Usually, the spools have a clearance with the housing of less than a thousandth of an inch or $25\text{ }\mu\text{m}$. So as to avoid jamming the valve's extremely sensitive parts and distorting the valve, the valve block would be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool left or right. A seal enables a portion 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 capacity and flow performance. Some of these valves are designed to be proportional, like a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is amongst the most pricey and sensitive components of a hydraulic circuit.