

Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The control valve is a tool that directs the fluid to the actuator. This tool would consist of steel or cast iron spool that is situated in a housing. The spool slides to various locations within the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

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

Typically, directional control valves are designed so as to be stackable. They usually have a valve for each and every hydraulic cylinder and one fluid input that supplies all the valves inside the stack.

Tolerances are maintained very tightly, to be able to tackle the higher pressures and in order to avoid leaking. The spools will usually have a clearance inside the housing no less than 25 μm 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's frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers might actuate or push the spool right or left. A seal allows a part of the spool to protrude outside the housing where it is accessible to the actuator.

The main valve block controls the stack of directional control valves by flow performance and capacity. Some of these valves are designed to be proportional, as a valve position to the proportional flow rate, while some valves are designed to be on-off. The control valve is one of the most sensitive and expensive parts of a hydraulic circuit.