

Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valve - The control valve is a device which routes the fluid to the actuator. This device would consist of steel or cast iron spool which is situated inside of housing. The spool slides to different positions 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 returned to the tank or blocked. When the spool is slid to a side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the other direction, the return and supply paths are switched. When the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into position.

The directional control is typically made to be stackable. They generally have a valve per hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to deal with the higher pressures and in order to prevent leaking. The spools will often have a clearance inside the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. To be able to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine's frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers may actuate or push the spool right or left. 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 controls the stack of directional control valves by flow performance and capacity. Some of these valves are designed to be proportional, as a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is amongst the most pricey and sensitive parts of a hydraulic circuit.