

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is a device that routes the fluid to the actuator. This device will include steel or cast iron spool that is located in a housing. The spool slides to various locations within the housing. Intersecting channels and grooves route the fluid based on the spool's position.

The spool has a neutral or central position which is maintained with springs. In this particular position, the supply fluid is blocked or returned to the tank. If the spool is slid to one direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the other direction, the supply and return paths are switched. Once the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

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

Tolerances are maintained really tightly, in order to deal with the higher pressures and to avoid leaking. The spools would usually have a clearance in 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 parts, the valve block will be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids might actuate or push the spool left or right. A seal allows a part 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 flow performance and capacity. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is among the most pricey and sensitive parts of a hydraulic circuit.