

Hydraulic Control Valve for Forklift

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

The spool is centrally situated, held in place with springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to one 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 supply and return paths are switched. As soon as the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

The directional control is normally intended 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 extremely tightly, in order to handle the higher pressures and in order to avoid leaking. The spools would normally have a clearance in the housing no less than 25 μm or a thousandth of an inch. In order to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine's frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers may actuate or push the spool right or left. A seal allows a part of the spool to protrude outside the housing where it is easy to get 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, like a proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is one of the most sensitive and costly parts of a hydraulic circuit.