

Forklift Hydraulic Control Valve

Hydraulic Control Valve for Forklift - The control valve is a tool that directs the fluid to the actuator. This device would include cast iron or steel spool which is located within a housing. The spool slides to various positions in the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool is centrally positioned, held in place with springs. In this particular location, the supply fluid can be blocked and returned to the tank. If 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 moved to the other direction, the return and supply paths are switched. Once the spool is allowed to return to the center or neutral location, the actuator fluid paths become blocked, locking it into place.

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

Tolerances are maintained very tightly, in order to handle the higher pressures and so as to avoid leaking. The spools will normally have a clearance within the housing no less than 25 μm or a thousandth of an inch. To be able to prevent 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.

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or push the spool right or left. A seal allows a part of the spool to stick out the housing where it is easy to get to the actuator.

The main valve block is usually a stack of off the shelf directional control valves chosen by flow performance and capacity. Some valves are designed to be on-off, whereas some are designed to be proportional, like in flow rate proportional to valve position. The control valve is amongst the most sensitive and costly components of a hydraulic circuit.