

Hydraulic Control Valves for Forklift

Hydraulic Control Valves for Forklift - The control valve is a tool that routes the fluid to the actuator. This tool will include cast iron or steel spool that is positioned within a housing. The spool slides to various places in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool is centrally located, held in place by 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 directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite side, the return and supply paths are switched. When the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

Normally, directional control valves are built in order to be stackable. They normally have one valve per hydraulic cylinder and a fluid input which supplies all the valves in the stack.

Tolerances are maintained really tightly, in order to handle the higher pressures and so as to prevent leaking. The spools would normally have a clearance in the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. In order 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 could 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 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, while some are designed to be proportional, like in flow rate proportional to valve position. The control valve is among the most sensitive and pricey parts of a hydraulic circuit.