

Hydraulic Control Valves for Forklift

Forklift Hydraulic Control Valves - The control valve is a tool that routes the fluid to the actuator. This device would include steel or cast iron spool that is situated in a housing. The spool slides to different locations in the housing. Intersecting channels and grooves route the fluid based on the spool's location.

The spool is centrally positioned, held in place by springs. In this particular position, the supply fluid can be blocked and returned to the tank. When the spool is slid to one 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 enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

The directional control is normally 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 very tightly, so as to handle the higher pressures and in order to avoid leaking. The spools will usually have a clearance in the housing no less than $25\text{ }\mu\text{m}$ or a thousandth of an inch. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block will be mounted to the machine's frame by a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers might actuate or push the spool right or left. A seal allows a part of the spool to protrude outside the housing where it is accessible to the actuator.

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