

Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The control valve is actually a device which directs the fluid to the actuator. This tool will comprise cast iron or steel spool which is positioned in a housing. The spool slides to various places within the housing. Intersecting channels and grooves route 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. When 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. If the spool is transferred to the other direction, the return and supply paths are switched. When the spool is allowed to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

Typically, directional control valves are designed in order to be stackable. They generally have a valve per hydraulic cylinder and a fluid input that supplies all the valves inside the stack.

Tolerances are maintained very tightly, to be able to handle the higher pressures and in order to avoid leaking. The spools would often have a clearance inside the housing no less than 25 μm or a thousandth of an inch. In order to prevent jamming the valve's extremely sensitive components and distorting the valve, the valve block would be mounted to the machine's frame by a 3-point pattern.

The location of the spool can be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool left or right. A seal enables a part of the spool to protrude outside 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. Some of these valves are designed to be proportional, as a proportional flow rate to the valve position, whereas other valves are designed to be on-off. The control valve is amongst the most sensitive and costly parts of a hydraulic circuit.