

Hydraulic Control Valves for Forklift

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

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

The directional control is usually intended to be stackable. They normally have a valve for each and every hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained really tightly, to be able to handle the higher pressures and to be able to prevent leaking. The spools will usually have a clearance in the housing no less than 25 μm or a thousandth of an inch. In order to avoid 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 may be actuated by mechanical levers, hydraulic pilot pressure, or solenoids that push the spool left or right. A seal allows a portion of the spool to stick out 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. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, while other valves are designed to be on-off. The control valve is among the most expensive and sensitive components of a hydraulic circuit.