

Hydraulic Control Valve for Forklift

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

The spool is centrally located, held in place with springs. In this particular location, the supply fluid could 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 transferred to the other side, the supply and return paths are switched. When the spool is allowed to return to the neutral or center location, the actuator fluid paths become blocked, locking it into position.

Typically, directional control valves are made so as to be stackable. They normally have a valve for each hydraulic cylinder and one fluid input that supplies all the valves in the stack.

Tolerances are maintained very tightly, so as to deal with the higher pressures and so as to avoid leaking. The spools would often have a clearance inside the housing no less than 25 μm or a thousandth of an inch. To be able to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine's frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool left or right. A seal enables 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 capacity and flow performance. Several valves are designed to be on-off, while others are designed to be proportional, as in flow rate proportional to valve position. The control valve is amongst the most sensitive and costly components of a hydraulic circuit.