

Forklift Hydraulic Control Valves

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

The spool is centrally positioned, held in place with springs. In this particular position, the supply fluid can be blocked and returned to the tank. If the spool is slid to a direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is transferred to the opposite side, the supply and return paths are switched. When the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into place.

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

So as to avoid leaking and handle the high pressure, tolerances are maintained very tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 μm . In order to prevent 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.

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