

Forklift Hydraulic Control Valves

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

The spool is centrally located, 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 a direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the other side, the supply and return paths are switched. As soon as the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into position.

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

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

A hydraulic pilot pressure, mechanical levers, or solenoids can 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 controls the stack of directional control valves by capacity and flow performance. Several of these valves are designed to be proportional, as a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is one of the most sensitive and expensive components of a hydraulic circuit.