

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is actually a device that routes the fluid to the actuator. This tool would consist of cast iron or steel spool that is located in a housing. The spool slides to different places inside the housing. Intersecting channels and grooves direct the fluid based on the spool's position.

The spool is centrally situated, 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 routed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the other side, 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.

The directional control is usually intended to be stackable. They usually have a valve for each hydraulic cylinder and a fluid input which supplies all the valves inside the stack.

So as to avoid leaking and handle the high pressure, tolerances are maintained really tight. Typically, the spools have a clearance with the housing of less than a thousandth of an inch or 25 μm . To be able to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block will be mounted to the machine's frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers could actuate or push the spool right or left. A seal enables a portion 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. Some of these valves are designed to be proportional, like a proportional flow rate to the valve position, whereas some valves are designed to be on-off. The control valve is among the most costly and sensitive parts of a hydraulic circuit.