

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 comprise cast iron or steel spool that is located within a housing. The spool slides to different positions within the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool has a central or neutral location that is maintained by springs. In this location, the supply fluid is blocked or 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. When the spool is transferred to the opposite side, the return and supply paths are switched. Once the spool is enabled to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

The directional control is normally made to be stackable. They usually have a valve per hydraulic cylinder and a fluid input that supplies all the valves within the stack.

So as to avoid leaking and tackle 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 . So as to avoid distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine's frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure 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 easy to get to 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 valve position to the proportional flow rate, whereas some valves are designed to be on-off. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.