

Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is a tool that directs the fluid to the actuator. This device will consist of steel or cast iron spool that is positioned in 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 has a central or neutral location that is maintained with springs. In this position, the supply fluid is returned to the tank or blocked. When the spool is slid to one direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite side, the return and supply paths are switched. As soon as the spool is enabled to return to the neutral or center location, the actuator fluid paths become blocked, locking it into place.

Usually, directional control valves are made to be able to be stackable. They generally have a valve for each hydraulic cylinder and one fluid input which supplies all the valves within the stack.

Tolerances are maintained really tightly, in order to tackle the higher pressures and to prevent leaking. The spools will usually have a clearance inside the housing no less than 25 μm or a thousandth of an inch. So as to prevent jamming the valve's extremely sensitive parts and distorting the valve, the valve block will be mounted to the machine's frame by a 3-point pattern.

The location of the spool could be actuated by mechanical levers, hydraulic pilot pressure, or solenoids which push the spool left or right. 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, whereas some valves are designed to be on-off. The control valve is one of the most sensitive and costly parts of a hydraulic circuit.