

Hydraulic Control Valve for Forklift

Forklift Hydraulic Control Valves - The control valve is a device that directs the fluid to the actuator. This device will include cast iron or steel spool which is situated inside of housing. The spool slides to different places inside the housing. Intersecting grooves and channels route the fluid based on the spool's position.

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

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

Tolerances are maintained really tightly, so as to tackle the higher pressures and to prevent leaking. The spools would usually have a clearance within the housing no less than 25 μm or a thousandth of an inch. To be able to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block would 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 enables 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 flow performance and capacity. Some of these valves are designed to be proportional, like a proportional flow rate to the valve position, while other valves are designed to be on-off. The control valve is one of the most sensitive and costly components of a hydraulic circuit.