Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The control valve is actually a tool that directs the fluid to the actuator. This device will comprise cast iron or steel spool that is positioned in a housing. The spool slides to different positions within the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool has a central or neutral location which is maintained by springs. In this location, the supply fluid is blocked or returned to the tank. When the spool is slid to a side, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the other direction, 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 normally made to be stackable. They normally have a valve for each hydraulic cylinder and a fluid input that supplies all the valves within the stack.

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

Mechanical levers, solenoids or a hydraulic pilot pressure could actuate or 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 is usually a stack of off the shelf directional control valves chosen by capacity and flow performance. Various valves are designed to be on-off, while others are designed to be proportional, like in flow rate proportional to valve position. The control valve is among the most expensive and sensitive components of a hydraulic circuit.