Forklift Hydraulic Control Valve

Forklift Hydraulic Control Valve - The job of directional control valves is to be able to route the fluid to the desired actuator. Normally, these control valves consist of a spool positioned inside of a housing created either from cast iron or steel. The spool slides to various positions inside the housing. Intersecting channels and grooves direct the fluid based on the spool's location.

The spool is centrally positioned, help in place by springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to a direction, the hydraulic fluid is directed to an actuator and provides a return path from the actuator to tank. If the spool is transferred to the opposite side, the supply and return paths are switched. Once the spool is enabled to return to the neutral or center place, the actuator fluid paths become blocked, locking it into position.

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

Tolerances are maintained very tightly, to be able to tackle the higher pressures and so as to prevent leaking. The spools would normally have a clearance within 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 would be mounted to the machine' frame with a 3-point pattern.

Solenoids, a hydraulic pilot pressure or mechanical levers may actuate or push the spool right or left. A seal enables 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 flow performance and capacity. Various valves are designed to be on-off, while others are designed to be proportional, like in valve position to flow rate proportional. The control valve is one of the most expensive and sensitive parts of a hydraulic circuit.