rexroth
A Bosch Company

SMV – Steering Mode Valve, compact, unique and safe solution for mobile applications' steering systems

Patented

BOSCH REXROTH INTRODUCES THE MOST ADVANCED AND COMPACT SOLUTION FOR THE MANAGEMENT OF THE STEERING SYSTEM IN MOBILE APPLICATIONS. THANKS TO THE SMV – STEERING MODE VALVE, INCREASED SAFETY AND REDUCED ENERGY CONSUMPTION ARE GUARANTEED ON AGRICULTURAL AND CONSTRUCTION MACHINES

The Steering Mode Valve is an electrically-actuated directional valve, which has been designed for the steering system of agricultural and construction machines, such as backhoe loaders, telescopic handlers and wheeled excavators,. Its innovative characteristics make it a unique solution that is suitable for use with machines that are different from each other and require different technical solutions, which are necessary to improve their performance.

Present solutions entail the use of two electrically-actuated 4/2 directional valves that are integrated in the same manifold and are provided with mechanical detent. Bosch Rexroth from the success already obtained with the LF1 valve, has developed the new Steering Mode Valve. Unlike other solutions on the market, Bosch Rexroth SMV consists of a 4/3 spool with very low leakage levels and delta P (5bar x 40l/min) and two solenoids that make the solution cost effective and with higher performance. The mechanical detent is integrated in the die-cast body and another solenoid releases the mechanical block.

The innovative use of a single 4/3 spool gives a series of advantages. The reduction of leakage prevents interferences with the steering mode preset by the operator, whereas the minimization of the delta P, together with the use of in line valve with symmetrical ports, aids the operator during the steering manoeuvres. Finally, the lower number of solenoids and electrical connections simplifies the solution making it cost effective.

In terms of safety, the integrated mechanical detent of the Steering Mode Valve makes it possible, in case of fault or involuntary switching off of the machine, to lock the spool by keeping the wheels in the position preset by the operator. The three-coil valve creates a redundancy system in the spool lock, which ensures better safety in case of faults: the electrical control overrides the mechanical block and keeps the spool in the position that defines the desired type of steering. The mechanical detent consists of a pin that fits groove made on an additional component that is integral to the spool. This prevents any possible wear or jamming of the spool, which would jeopardise the operation of the valve.

CUSTOMER BENEFITS

- Reduction of power consumption
- Simplification of the hydraulic and electrical circuit
- Only one operating spool
- Increased diagnostics capability and suitable in applications where high safety requirements have to be achieved
- Stand-alone configuration for direct line mounting

TECHNICAL DATA

- Flow rate: up to 40 l/min
- Max. working pressure P,T,A,B ports: 230 bar
- Max. peak pressure: 250 bar

APPLICATIONS

- Construction machines
- Agricultural machines

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