BODAS pressure sensor PR4
Compact design and high measurement accuracy

A basic requirement to control various functions in mobile machines is the pressure measurement in hydraulic circuits. There is often not enough space to measure the pressure by using a pressure sensor. With the BODAS PR4 sensor, Bosch Rexroth offers a compact pressure sensor with a variety of advantages and easy assembly for use in the field of mobile hydraulics. The sensor signal can be analyzed immediately by a BODAS RC controller or other control units. The BODAS pressure sensor PR4 is suitable for use in almost any mobile working machine – be it in the area of construction machines, agricultural machines or material handling applications.

CUSTOMER BENEFITS
- Compact design and easy assembly
- High measurement accuracy and reliability
- High resistance to vibrations and temperature shocks
- Internal error diagnosis
- Also available with digital signal (SENT)
- High tightening torque up to 50 Nm
- High quality standards of Bosch Automotive

APPLICATIONS

FUNCTION AND BENEFITS
High measurement accuracy and reliability
The measuring element of the BODAS pressure sensor PR4 is a resistance bridge applied on a steel membrane using thin-film technology. It has a very high measurement accuracy, with a very good value of 1.6% (analog variants) or 1.4% (SENT variants) across the whole temperature range and beyond the entire life cycle of 10,000 operating hours or 15 years. The PR4 sensor has outstanding reliability and resistance to vibrations, pressure peaks and temperatures. It also fulfills the high protection classes IP67 and IP69K. High irradiation of more than 150 V/m is possible regarding to the electromagnetic compatibility (EMC properties).

Internal error diagnosis
One significant function of the PR4 is the internal error diagnosis whose results are communicated by the output signal, e.g. to a BODAS RC control unit, with both the analog and the digital SENT variants. The following conditions are checked and reported by the sensor, among others: availability, pressure, temperature, ROM/RAM check, supply voltage too high/low, ADC signal input too high/low.
Digital SENT output signal with numerous advantages

Besides the PR4 variant with analog output signal, there is also a sensor version with digital SENT signal. A digital signal offers many advantages compared to analog data transmission. For example, the measured data is more accurate as there is no degradation in the signal between the sensor and the electronic control unit. As an example, with 600 bar the accuracy of the measurement can be improved by up to 14 bar compared to the analog signal. The digital SENT signal results in better EMC resistance as analog signals are disrupted far more by electro-magnetic radiation.

Furthermore, with the digital variant, the sensor’s diagnosis function is also better as a precise error code can be allocated to every error. Thanks to the used communication protocol a very secure transmission can be guaranteed, among other things because a CRC (Cyclic Redundancy Check) avoids transmission errors. The SENT variant of the PR4 sensor also makes it possible to measure the temperature and transmit this information together with the pressure signal.

High tightening torque up to 50 Nm

In contrast to many other sensors, the PR4 sensor has a tightening torque of up to 50 Nm, which guarantees extremely secure mounting.

High quality standards of Bosch Automotive

As the BODAS PR4 is a sensor from an automotive platform, it is produced in accordance with the high Bosch Automotive Electronics quality standards.