

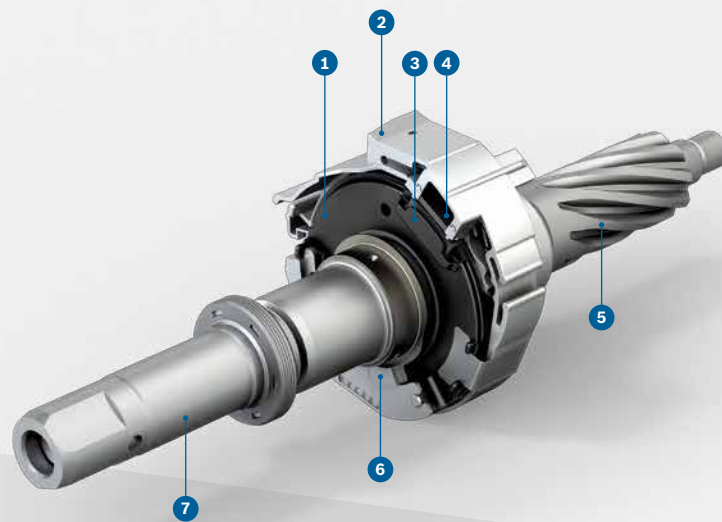
# Servolectric® electric power steering system

Torque sensor



**BOSCH**

Invented for life



## PRODUCT BENEFITS

- ▶ Highly precise measurement of the steering torque for exacting safety requirements placed on electric steering systems
- ▶ Extremely robust digital interface to the electric power steering system's ECU

- 1 Sensor module
- 2 Sensor plug
- 3 Index magnet (optional)
- 4 Index sensor (optional)
- 5 Steering pinion
- 6 Pole wheel
- 7 Input shaft



# 0.015 Nm

Together with the torque sensor, the ECU can calculate the steering angle on the basis of sensor data with this resolution.

## -40 °C to +125 °C

The torque sensor in the electric power steering system works absolutely reliably over this temperature range.

### TASK

The torque sensor in the Servolectric® electric power steering system measures the torque the driver applies to the steering wheel. Based on this data, the electronic control unit calculates the steering assistance which the electric motor needs to apply.

### FUNCTION

The sensor sits on the steering pinion. A pole wheel is fitted on the input shaft, which is connected to the steering pinion by means of the torsion bar. When the driver applies torque to the steering wheel, the torsion bar is rotated and, in turn, the magnet relative to the sensor. The sensor consists of magnetoresistive elements whose resistance changes as the field direction changes. The sensor's measuring range covers +/-10 Nm. A mechanical angle limiter prevents the torsion bar from being overloaded when higher steering torques are applied.

### VARIANTS

Optionally, an index magnet and an index sensor can be incorporated into the torque sensor. The index sensor delivers a signal to the ECU for each full turn of the steering wheel.

### TECHNICAL CHARACTERISTICS

Measuring principle	Magnetoresistive effect
Interface	PAS – robust digital two-wire current interface
Signal transmission	With clock spring
Measuring range	+/- 10 Nm
Temperature range	-40 °C to +125 °C
Resolution	0.015 Nm at 2 Nm/°
Torsion bar stiffness	2.0 to 2.5 Nm/° at 25 °C
Calibration function	Data is stored in the sensor
Steering angle	Can be displayed as an option with index extension

