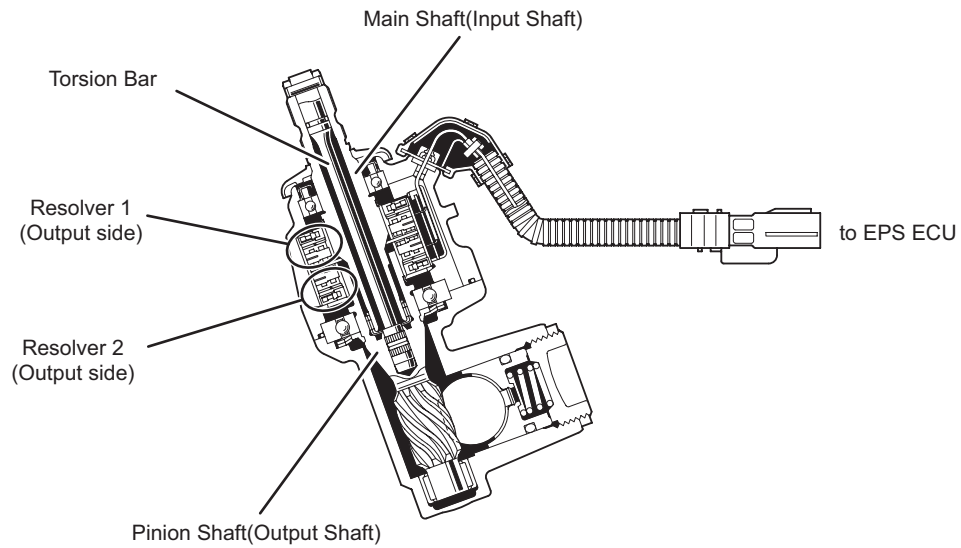


Torque Sensor

- The torque sensors consist of two resolver sensors. One is secured to the input shaft, which is coupled to the steering wheel; the other is secured to the output shaft, which is coupled to the pinion shaft. The two resolver sensors are connected by the torsion bar.
- When the driver turns the steering wheel, it causes the torsion bar to become twisted. This creates a relative difference in the angles detected by the two resolver sensors. The controller calculates the torque value based on this difference.



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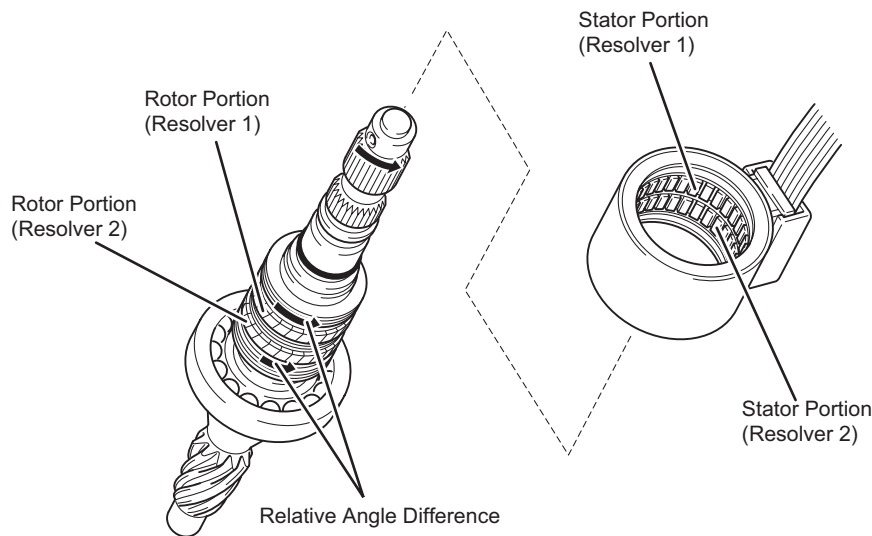
Torque Sensor Operation

- Straight-line Driving

If the vehicle is driven straight and the driver does not turn the steering wheel, the specified voltage that is output at this time is determined by the ECU to indicate the neutral position of the steering. Therefore, it does not apply current to the motor.

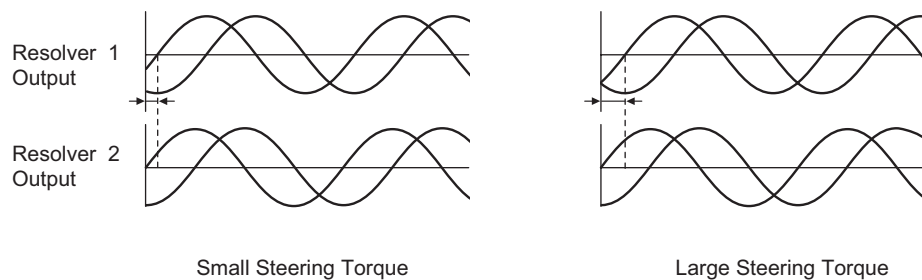
- When Steering

When the driver turns the steering wheel, a relative angle difference is created between the rotor portions of the resolvers 1 and 2, only in the amount that is equivalent to the twisting of the torsion bar. The stator portions of the resolvers 1 and 2 receive the angles of the rotors in the form of electric signals and output them to the EPS ECU. Based on these input signals, the EPS ECU calculates the relative angle difference between the angles detected by the two resolvers. The EPS ECU calculates the torque value based on that difference. Then, the EPS ECU calculates the assist current based on the calculated torque value and vehicle speed. Based on the information obtained from the rotation angle sensor, the EPS ECU actuates the motor at a predetermined current.



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Torque Sensor Output Image Diagram



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