Electric Power Steering Systems
Our goal is sensational driving experiences – JTEKT
A Feeling of Unity between Driver and Car, and Steering Feel That Stimulates the Senses…

“Driving,” “Cornering” and “Stopping.”

Of the three basic vehicle performance functions, our forte is “Cornering.”

Committed to producing superior steering equipment, JTEKT developed the world’s first electric power steering (EPS) system in 1998.

Today, our products hold No. 1 market share around the globe.

Electric Power Steering Systems

JTEKT responds to market demand in support of a vehicle society of tomorrow as a steering system supplier.
Reliability backed by experience, immeasurable sensibility and technologies, and energy-saving features in tune with the times

Proudly No.1 in the Global Market  One in three vehicles is equipped with JTEKT electric power steering (EPS)

As the world’s No.1 contributor to the environment, JTEKT a comprehensive steering systems manufacturer committed to providing optimal systems that match vehicle use/purpose by ensuring products are well-balanced in all areas; from quality, cost and delivery to safety, comfort and ecology.

Proudly No.1 in the Global Market  One in three vehicles is equipped with JTEKT electric power steering (EPS)

Proposal of optimal electric power steering (EPS) system considering safety, comfort and ecology

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JTEKT is world No. 1 in contributing to the environment. Our EPS systems have top market share, offer superior fuel efficiency and contribute to environmental conservation to the highest degree. We are also working to improve the environmental efficiency of conventional hydraulic power steering systems.
A Confident, Relaxing Driving Experience… That’s what our steering systems provide

Steering System Configuration

Definition of steering system: Components used to control (steer) the direction a vehicle is moving; in short, the equipment for changing the direction of the tires.

Steering System Features

Basic steering operation

1. Steering wheel is turned.
2. The force input to the steering wheel (torque) twists the torsion bar.
3. Torsion bar twisting is detected as a torque signal by the torque sensor and input into the ECU.
4. ECU adds electric current to the motor based on torque signal and vehicle speed.
5. Motor rotating torque is increased by the reduction gear and transmitted to the pinion.
6. Pinion rotating torque (supplemental steering torque) on the power-assist side and pinion rotating torque (steering rotating torque) on the steering-wheel side are converted to rack axial force to change tire direction.

JTEKT products not only realize steering performance matching vehicle requirements (e.g., body, suspension, tires, brakes and drive-train), our steering systems act as a human-machine interface where the driver’s intentions are delivered to the vehicle and supplemental/accurate information is transmitted back to the driver, making it possible for the driver to feel “happier,” “safer” and “more comfortable” when driving the vehicle.
### JTEKT Steering Systems

**Standard System Proposal**

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<th>Rack force (kN)</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle segment</td>
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**System Features by Type**

**Column-assist**

Since the motor and ECU are inside the cabin, waterproofing is not required and there is no influence on engine and transmission layout.

**Rack-assist**

Excellent steering performance as the result of minimal friction between the time of turning the steering wheel and start of rack movement.

**Optimum steering system for compact vehicles with small rack force**

**Optimum steering system for medium- to large-sized vehicles that require better steering performance**

JTEKT EPS systems are compatible for most automobiles, from small vehicles to large SUVs.
Rack-assist realizes excellent steering feel with high rigidity and superior dynamic performance.

System structure with flexible mounting freedom realized by separating the assist unit from the steering wheel axle.

Enhanced degree of freedom in specific stroke on the steering-wheel side realized by adopting an optimal design to reinforce the assist unit.

System with excellent safety, comfort and environmental performance realized through the application of proven technologies.

Rack-assist realizes excellent steering feel with high rigidity and superior dynamic performance.

Easier installation realized with adoption of high-output, compact reduction gear.

System with excellent safety, comfort and environmental performance realized through the application of proven technologies.
**RD-EPS**
- Rack-assist realizes superior direct-response steering feel.
- Superior energy-saving system has less reduction gear loss and high machine efficiency.
- System with excellent safety, comfort and environmental performance realized through the application of proven technologies.

**H-EPS**
- Excellent safety, comfort and environmental performance realized using an energy-saving hydraulic power steering system equipped with an electric pump.
- Extremely flexible installation and ability to use for EV driving realized by adopting an independent electric pump.
- Excellent steering feel and improved fuel efficiency realized through optimum discharge setting (MAP) and special valve tuning.

**P-EPS**
- Rack-assist realizes excellent steering feel with high rigidity and superior dynamic performance.
- Small/compact system adopted in response to the engine room environment.
- System with excellent safety, comfort and environmental performance realized through the application of proven technologies.

**E-VGR**
- Variable steering-angle ratio system combining vehicle stability and steering performance.
- Steering performance improved by increasing steering angle ratio at low speed.
- Straight-line driving stability improved by decreasing steering-angle ratio at high speed.
- Vehicle stability improved by activating low-friction moment, etc.
Safer, More Reliable Power Steering Systems
to Customers Worldwide

JTEKT has been conducting activities to ensure compliance with functional safety standards in accordance with ISO26262 Road Vehicles – Functional Safety since 2005.

Ensuring the Delivery of Safer, More Reliable Power Steering Systems

Iga Proving Ground Enables Testing/Evaluations Simulating Roads Worldwide

Fully utilizing our knowledge as a world-leading systems supplier, JTEKT conducts driving evaluations and analyses of products installed in vehicles. We exhaustively pursue the highest standards in product safety and operation on a test course capable of simulating various road and weather conditions around the world. As a total systems supplier, our highest value is to provide our customers with products that deliver outstanding performance and the best quality that help to make automobiles that are more than just fun to drive.

Advanced Research & Development Facilities for Producing Next-generation EPS Systems

JTEKT R&D centers exchange information around the world, enabling the company to accurately understand market demand and provide the newest/best/optimal systems to meet the diversified needs of our customers.

Vehicle evaluation in cold regions

Electromagnetic Anechoic Chamber

Energy Consumption Measuring Apparatus

Power Steering System

JTEKT has been conducting activities to ensure compliance with functional safety standards in accordance with ISO26262 Road Vehicles – Functional Safety since 2005.

Activities started (2005)

Global organization established (2009)

Development process introduced (2011)

Process management - Structure management

Requirements management - Specifications management

Project management - Later management

Activities streamlined using management tool (2013)

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Site area: 500,000m²

Course area: 170,000m²

Combined circuit length: 2,200m

Dynamics pad area: 54,000m²

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