

# Steering business

Former automotive parts business (steering division)



Our steering business offers steering systems for automobiles. JTEKT was the first in the world to develop and mass produce electric power steering (EPS), and will continue to contribute to the evolution of both small and large-size automobiles through the strengths we possess in both our experience in answering customer needs, and our engineering capability.



In 1988, the first EPS was used in Cervo by Suzuki Motor Corporation

## TOPICS

### Rack parallel type EPS (RP-EPS) ▶ Figure-01

#### Contributing to higher fuel efficiency of vehicles

In the past, even though medium/large vehicle markets typically adopted hydraulic power steering, JTEKT saw the potential for EPS to contribute to improved fuel efficiency. As such it began the mass production of EPS and rack parallel type EPS (RP-EPS) for large/medium vehicles in December 2016 at its Hanazono Plant in Japan.

Furthermore, JTEKT foresees a shift to EPS in the global medium/large vehicle market, and as such is currently established a framework to accommodate such a demand in North America and China, to begin with. We will continue accelerating technological development and offering new value so that we may contribute to the realization of advanced driving assistance and autonomous driving.

[→ F\\_02~03 Related article](#)

#### Features of RP-EPS

- Motor/ECU located close to the front tires
- Alleviation of motor power loss caused by friction
- Excellent steering performance

Optimal for adoption in medium/large vehicles

### EPS for JFOPS

JFOPS (JTEKT Fail-Operational System)

#### Pursuing further EPS evolution focused on automated driving

To achieve automated driving, EPS must be designed to continue assist operations for handle maneuvers even if a problem occurs. JTEKT began support for such a function early on in our promotion of EPS development. We expect to begin the mass production of EPS with a “complete fail-operational function” by around the year 2020.

Autonomous driving level	Level 2	Level 3	Level 4	Level 5
	Driver-led		System-led	
	Partial automation	Conditional automation	Advanced automation	Full automation

Steering system	Passenger vehicle	EPS		Steer-by-wire
	Large vehicle	Steering actuator + hydraulic power steering		
Method of achieving autonomous driving level	Software backup	Hardware redundancy	Fully fail-operational	
Safety concept	JFOPS2	JFOPS3	JFOPS4	

\* C-EPS, P-EPS, DP-EPS, RP-EPS, RD-EPS, H-EPS and HPS are registered trademarks of JTEKT Corporation.  
\* JFOPS is a registered trademark of JTEKT Corporation.

## A look back on FY2016

### 1 Net sales 5.9% lower compared to last FY at 638.2 billion yen

Sales volume was 2.3 percent higher compared to last FY however due to currency exchange rates, net sales was 5.9 percent lower compared to last FY at 638.2 billion yen.

### 2 Strengthening competitive power

With global competition becoming even fiercer, JTEKT is engaging in efforts to promote frontloading activities (\*1) which support customers from the design phase, push forward with comprehensive cost price reduction activities such as the in-house manufacturing of key parts and fostering of manufacturing processes with less machines and labor in order to strengthen cost competitiveness.

\*1 **Frontloading activities** Solving problem points in the initial steps of product development to improve design quality.

### 3 Strengthening of business foundation

In order to respond to growing markets, JTEKT is strengthening its business foundation in all regions.

- Improve presence and offer better products/services in the Indian market through making our equity-method affiliates in India consolidated subsidiaries.
- Respond to demand with a focus on North Africa by establishing a Moroccan production base (scheduled to start production in 2020).

## Future prospect

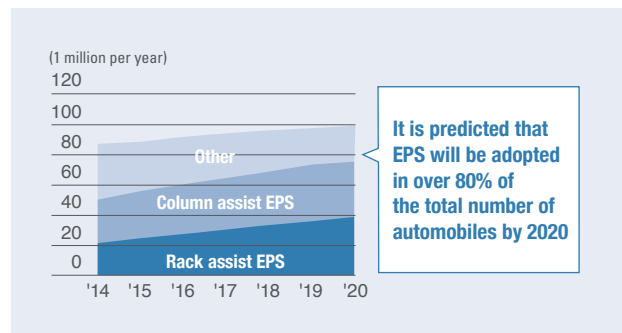
### 1 Initiatives at hand

Within our steering business, we strive to firmly maintain 25 percent of the global share as automobile production continues to expand throughout the world.

We expect to continue achieving this up until 2018, however with the potential for the medium/large vehicle market to undergo a transition from hydraulic steering systems to EPS,

we aim to continue maintaining a 25 percent share from 2019 onwards by establishing a global framework for rack assist type EPS, thus responding to our customers' expectations. Moreover, the steady promotion of our current comprehensive cost price reduction initiative is enabling us to strengthen our cost competitiveness and contributing towards the achievement of our goal.

### Global steering market trends



### 2 Actions for the future

Amidst an increase in the number of vehicles and an aging society, ADAS (\*2) is poised to widely penetrate society as a means of alleviating traffic congestion and supporting safe driving by the elderly. In addition, the practical realization of autonomous driving is predicted for the near future.

In order to help create a safe and secure car-orientated society, JTEKT is working to strengthen its development capabilities so it may offer optimal steering systems that satisfy the required performance at each phase and promote development of steer-by-wire steering systems in preparation for autonomous driving.

\*2 **ADAS** ADAS is an abbreviation of the Advanced Driving Assistance System for vehicles.

▶ Figure-01 Steering systems and relevant vehicle segment

