Power Steering Systems and Components
Automotive and Light-duty Steering Applications

Robert Bosch Automotive Steering (formerly ZF Lenksysteme) is the world’s leading manufacturer of steering systems. The parts offered to the Independent Aftermarket benefit from that knowledge and competence, giving our customers peace of mind when fitting Bosch steering components.
Hydraulic Power Steering
HPS and EHPS

Automotive and Light-duty

Hydraulic systems are a classic example of robust steering systems utilized in millions of vehicles worldwide.

Hydraulic Power Steering

Function
Bosch hydraulic steering systems are manufactured with quality and reliability in mind. They provide dependable driver assistance by delivering a highly accurate output at any speed – when it matters the most. These proven systems have evolved with added functions – such as Servotronic and Active Steering – continually leading the way with the latest technology.

System Advantages:
- Low complexity
- Compact dimensions
- High reliability
- Proven system

Common Applications
From compact vehicles to light-duty commercial vehicles from the 1970s – present. Electric Hydraulic Power Steering (EHPS) is commonly fitted to the MINI Cooper and some GM applications.

Replacement Parts
Steering Gear: Rack & Pinion, Servotronic®, Active Steering®

Pumps: Mechanical (single- and dual-circuit)

Electric Hydraulic Power Steering
EHPS offers the hybrid solution of fuel-saving electric power on demand, with a proven and robust hydraulic steering rack.

Compact dimensions, low weight and reliable performance are the main advantages of hydraulic systems.
Electric Power Steering
EPS

This system uses an ECU controlled electric motor in place of a conventional hydraulic system. Control and steering assistance are powered by an electric current.

Automotive and Light-duty

compared with a hydraulic steering system in a two-liter gasoline engine passenger car, with an average fuel consumption of 30 MPG in urban traffic only:

-10% fuel consumption and CO₂ emissions

compared with conventional steering systems in the compact class. Servolectric® achieves this savings, in part, by reducing the number of components in the steering system.

-20% weight reduction

System Advantages:
- Power on demand = improved MPG
- Oil free – no maintenance required
- Additional comfort and safety functions
- Diagnostic capable
- Improved safety with possibility of added functions (e.g., Evasive Steering Support, Traffic Jam Assist, Parking Maneuver Assist)

Function
Based on the steering signal recorded by the torque sensor, the ECU calculates the optimum steering assistance and forwards this information to the electric motor, which provides the necessary force.

Common Applications
Mid-sized vehicles with an axle load of up to 3,500 lbs

Common Applications
Mid-sized vehicles with an axle load of up to 2,640 lbs

Common Applications
Compact mid-sized vehicles with a steering axle load of up to 2,200 lbs

Replacement Parts
Servolectric® EPSc
Column type gear

Servolectric® EPSdp
Dual pinion type gear

Servolectric® EPSapa
Axis parallel type gear

-10% fuel consumption and CO₂ emissions

Up to 20% weight reduction

Servo unit on the steering column is specifically for vehicles with low steering effort: entry-level sub-compact to mid-sized vehicles.

Servo unit on a second pinion provides the ideal electric power steering solution for mid-sized vehicles.

Provides the ideal electric power steering solution for vehicles with very high steering effort.
Medium and Heavy-duty Commercial Steering Applications

Robert Bosch Automotive Steering (formerly ZF Lenksysteme) is the world’s leading manufacturer of steering systems. With decades of experience, we offer products that fulfill every specified requirement for medium and heavy-duty (HD) trucks and buses.
Steering Gear

RB-Servocom®

Medium and Heavy-duty Commercial

RB-Servocom® is a reliable and compact recirculating-ball power steering gear.

High reliability
evident in its rugged design – proven 11 million times in all markets and applications.

Function
Ball and nut steering system assisted by hydraulics to deliver precise and reliable steering output. RB-Servocom® offers the best power-to-weight ratio of all hydraulic block steering systems.

System Advantages:
- Proven and reliable design
- Dual circuit system that meets statutory requirements for busses and HD vehicles
- Compact design with high output for heavy loads

Common Applications
RB-Servocom® is fitted to a wide range of American and European heavy-duty applications from 1985 – present.

Replacement Parts
RB-Servocom® Gearboxes

Best power-to-weight ratio
of all hydraulic block steering systems.

Pumps:
- Mechanical (single circuit)
- Mechanical (dual circuit)
Steering Pumps

Steering pumps are the heart of any hydraulic power steering system, delivering high-pressure fluid to the steering gear or cylinder.

Heavy-duty Commercial

Function
Delivers power steering fluid to the steering gear or cylinder at high pressure with a continuous uninterrupted volume.

System Advantages:
- Reliable and proven design
- Delivers the required pressure for the most demanding applications
- Multiple pumps can be used for extra safety, both engine- and road-wheel powered

Common Applications
A wide variety of HD applications across American and European brands.

Replacement Parts

Vane
- Average fuel savings of 20% – 40%

Varioserv
- Reduced CO₂ emissions and fuel consumption

Tandem
- Produces two independent volume flows

Radial
- High maximum pressure level of 200 bar

Up to 50% lower power consumption with Varioserv compared to a standard pump.
Up to 30% lower system temperature with Varioserv compared to a conventional power steering pump.

This hydraulic steering pump is used in commercial vehicles due to its high efficiency, compact, low-weight design and adaptability to individual circumstances.

Varioserv features a hydraulically moveable cam ring, with a variable displacement pump that makes an essential contribution to the energy savings of hydraulic steering systems. Depending on the pump speed, the pump displacement is adjusted to the required oil flow.

The tandem pump is a combined vane pump and gear pump. The housings are connected and both systems are driven by the same shaft, but produce two independent volume flows. For example, the vane pump feeds the power steering system while the gear pump pumps the fuel.

The constant flow direction of the radial pump – when driven in a clockwise or counterclockwise direction – enables it to be used mainly as a path-dependent emergency steering pump for commercial vehicles.
Supporting Steering Parts

**Function**
Bevel boxes, shafts and columns direct the steering input from the driver to the steering gear.

**System Advantages:**
- High-quality original products
- Heavy duty – built for demanding conditions
- Designed to deliver safe driving conditions without compromising on driver comfort

**Common Applications**
A wide variety of heavy-duty applications across American and European brands.

**Replacement Parts**
- **Bevel Gearboxes**
  - Used where a direct connection between the column and gear is not possible. They commonly divert the steering input by 90° but special variants also exist.
- **Shafts**
  - An important link between the steering wheel and steering gear, designed to absorb all the movement for driver comfort.
- **Columns**
  - Connects the steering wheel with the steering shaft and offers a full adjustment of height and tilt for driver comfort.

Robust alloy housing
Lightweight design, yet tough enough for demanding driving conditions.
OE Equivalent Replacement
Bosch steering components are designed to offer an exact fit solution without the need for modifications or adjustments to carry out the repair. We want to help technicians do the job right first time around.

100% Fully tested—Out-of-the-Box Performance
We pride ourselves in testing our units prior to packaging to ensure that all of our steering parts perform from the minute they are installed, without disappointment. Together – with our customers – we want a “fit and forget” repair, with peace of mind and complete driver satisfaction.

Original Quality
All components offered to the aftermarket both new and re-man are tested to the original quality specifications without compromise. Safety and reliability are paramount, especially with steering.

Cost Effective Options with Bosch Re-Man
Bosch Exchange (BX), commonly known as re-man, is a range of cost-effective replacement parts that offer improved performance utilizing remanufactured housings. All internal components are replaced with new and original parts and then tested to new specifications. This offers enhanced performance at a reduced cost to the customer and the environment.